

EVALUATING CULTURAL, HISTORICAL, AND SOCIO-ECONOMIC DYNAMICS IN THE PALM OIL SYSTEM: AN IMPLEMENTATION OF SUSTAINABLE GOVERNANCE

Alexander Phuk Tjilen^{*}, August Ernst Pattiselano^{**},
Maria Maghdalena Diana Widiastuti^{***}, Diana Sri Susanti^{***},
Ruloff Fabian Yohanis Waas^{***}, Beatus Tambaip^{****},
Samel Watina Ririhena^{***}, Pulung Riyanto^{***}

^{*} Corresponding author, Universitas Musamus Merauke, Papua, Indonesia

Contact details: Universitas Musamus Merauke, Mopah Lama, Rimba Jaya, Merauke, Papua 99611, Indonesia

^{**} Universitas Pattimura, Ambon, Indonesia

^{***} Universitas Musamus Merauke, Papua, Indonesia

^{****} Universitas Cenderawasih, Papua, Indonesia



Abstract

How to cite this paper: Tjilen, A. P., Pattiselano, A. E., Widiastuti, M. M. D., Susanti, D. S., Waas, R. F. Y., Tambaip, B., Ririhena, S. W., & Riyanto, P. (2025). Evaluating cultural, historical, and socio-economic dynamics in the palm oil system: An implementation of sustainable governance. *Journal of Governance & Regulation*, 14(1), 161–170.
<https://doi.org/10.22495/jgrv14i1art15>

Copyright © 2025 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).
<https://creativecommons.org/licenses/by/4.0/>

ISSN Online: 2306-6784

ISSN Print: 2220-9352

Received: 14.02.2024

Accepted: 17.01.2025

JEL Classification: A13, J17, Z13

DOI: 10.22495/jgrv14i1art15

The social ecology theory investigates the complex relationship between social, cultural, economic, and environmental factors in understanding the implementation of the Indonesian Sustainable Palm Oil System (ISPO) in South Papua (Murray, 1982). This research examines the influence of cultural, historical, and socio-economic factors on the implementation of the ISPO in Merauke Regency, South Papua Province. Using a quantitative approach with correlational analysis, 100 oil palm farmers/partners were randomly sampled. A validated and reliable attitude scale questionnaire was employed and analyzed through multiple linear regression. Findings reveal that historical reconciliation in Papua significantly impacts ISPO implementation in Merauke by fostering an inclusive and stable environment for sustainable palm oil investment. The success of ISPO relies heavily on the active participation of the local community, rooted in Papua's cultural and traditional values. Recommendations include enhanced government and corporate support for reconciliation processes with the Papua community, capacity building through education on sustainable practices, and acknowledgment of customary land rights. Understanding the cultural, historical, and socio-economic dynamics is crucial for sustainable ISPO implementation in South Papua, aiming for a harmonious and sustainable palm oil industry that respects the region's cultural diversity.

Keywords: Cultural Dynamics, Socio-Economics, History, Sustainable Palm Oil System

Authors' individual contribution: Conceptualization — A.P.T. and M.M.D.W.; Methodology — A.E.P. and B.T.; Validation — D.S.S. and S.W.R.; Formal Analysis — A.P.T. and P.R.; Investigation — R.F.Y.W. and B.T.; Resources — A.E.P. and M.M.D.W.; Data Curation — D.S.S. and P.R.; Writing — A.P.T., M.M.D.W., B.T., and S.W.R.; Supervision — R.F.Y.W. and B.T.; Project Administration — A.P.T. and P.R.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

Acknowledgements: The Authors thank the Universitas Musamus Merauke and the Merauke Regency local government for their collaboration in data collection and analysis and the Palm Oil Plantation Fund Management Agency for their invaluable funding under Reference No. PRJ-93/DPKS/2023, dated September 25, 2023.

1. INTRODUCTION

The palm oil industry remains the most promising industry for the national economy and certainly contributes to the progress of the regional economy, particularly in the Eastern part of Indonesia. Justina Sianturi, the Head of the Investment and Integrated One-Stop Service Agency of Merauke Regency, stated that the role of palm oil in the development and investment in Merauke Regency includes absorbing 2,474 indigenous Papuans as labor, generating income from plasma plantation, enhancing the local economy, and creating new job opportunities (Subagyo, 2021). The potential development of palm oil in the Eastern part of Indonesia, especially in Merauke, aims to alleviate poverty and stimulate regional economic growth, thereby creating a multiplier effect.

The expansion of oil palm plantations has economic, environmental, and palm oil industry development impacts (Meijaard et al., 2020). Various studies explain that besides economic benefits, oil palm expansion has the potential to cause significant environmental issues (Obidzinski et al., 2012). Large-scale oil palm plantation openings can lead to deforestation, increased carbon emissions, and climate change, thus disrupting the environmental conditions. The increasing interest in developing oil palm plantations in Papua presents potential opportunities but also challenges. The establishment of oil palm plantations in Papua has opened up isolated areas, driven infrastructure development, created jobs, and increased community income (Acosta García et al., 2019). However, the dependency of indigenous communities on forests for their livelihoods and their lack of knowledge about oil palm cultivation are significant obstacles to effective Papuan community involvement in this industry.

Southern Papua possesses a rich and diverse cultural landscape, with a unique history and socio-economic dynamics. However, sustainability in the palm oil industry, especially through the Indonesian Sustainable Palm Oil System (ISPO), faces complex challenges in this region (Dharmawan et al., 2021). Local culture and traditional values play a crucial role in shaping the community's perspective on the palm oil industry and its sustainability practices. Additionally, the history of Southern Papua, including interactions with the central government and various policies, also influences how ISPO is implemented in this region. Socio-economic factors, such as access to resources and wealth distribution, also affect the dynamics of ISPO implementation (Chiriaco et al., 2022). Therefore, a comprehensive understanding of how culture, history, and socio-economics impact ISPO implementation in Southern Papua is essential for designing effective and inclusive sustainability strategies in this region.

In the context of implementing the ISPO in Southern Papua, there are several essential issues that need to be addressed. There are challenges in integrating local cultural values with sustainability practices in the palm oil industry (Teoh, 2010). The rich and diverse culture in Southern Papua can result in different perspectives on sustainability, necessitating efforts to align traditional values with ISPO standards. Additionally, the region's history, including interactions with the central government and local political dynamics, affects ISPO

implementation. The mismatch between central policies and on-the-ground realities often hampers effective sustainability practices. Furthermore, socio-economic aspects such as resource access and wealth distribution are also critical issues. Socio-economic inequalities can hinder the active participation of local communities in sustainability efforts, thus requiring strategies that specifically address this dimension. Therefore, stakeholders need to thoroughly understand how culture, history, and socio-economics influence ISPO implementation in Southern Papua to address these essential issues and promote inclusive and sustainable sustainability in the region.

There is an urgent need to understand the complexity of implementing the ISPO in Southern Papua, a region rich in cultural, historical, and unique socio-economic dynamics. Although there has been much research on palm oil sustainability and ISPO implementation in Indonesia, these studies often overlook the specific context of Southern Papua. This region exhibits different characteristics in terms of culture, history, and socio-economic structure, which can significantly impact the implementation of sustainability practices. Previous research tends to emphasize technical and policy aspects, leaving gaps in understanding the role of cultural, historical, and socio-economic factors in this context. Therefore, this research aims to fill this gap by exploring the relationship between culture, history, and socio-economics with ISPO implementation in Southern Papua. Thus, this research is expected to provide a more comprehensive understanding of the challenges and opportunities in achieving sustainability in the palm oil industry in this region, enriching academic discussions about the implementation of sustainability practices in Indonesia as a whole.

This research is of great urgency considering the importance of sustainability in the palm oil industry in Southern Papua, a region rich in natural resources and unique culture. The involvement of the palm oil industry in the local economy has significant impacts, both economically and socially. However, environmental issues and sustainability continue to be the primary concerns, given the potential negative impacts on the environment and local communities. Therefore, a deep understanding of how cultural, historical, and socio-economic factors play a role in ISPO implementation in Southern Papua is crucial. The aim of this research is to provide a more comprehensive insight into the complex dynamics involved in achieving sustainability in the palm oil industry in this region. By understanding these factors, it is hoped that more effective and inclusive strategies and policies can be developed to promote sustainable practices in the Southern Papua palm oil sector, thus making a significant contribution to sustainability development at the national level.

The structure of this paper is as follows. Section 1 introduces the urgency of the research. Section 2 reviews the relevant literature review. Section 3 analyses the research methodology that has been used to conduct empirical research. Section 4 refers to research results and Section 5 discusses various stakeholders' discussions on enhancing food security. Section 6 presents the conclusions and some recommendations for future research and the limitations of the study.

2. LITERATURE REVIEW

The cultural dimension of implementing the ISPO encompasses a rich tapestry of traditions, beliefs, and practices deeply ingrained in Indonesia's diverse cultural heritage. Palm oil, historically, has been more than just a commodity. It has been intertwined with the fabric of Indonesian society, playing significant roles in various traditional practices, culinary traditions, and ceremonial rituals (Neilson, 2022). From cooking oils to cosmetics, palm oil has been omnipresent in Indonesian daily life, reflecting its deep cultural significance. This cultural heritage intersects with contemporary sustainability efforts as Indonesia seeks to balance traditional practices with modern sustainability standards. Stakeholders involved in ISPO implementation recognize the importance of respecting and integrating these cultural dimensions into sustainability initiatives (Hristov & Searcy, 2024).

Studies have emphasized the necessity of adopting culturally sensitive approaches, which entail engaging local communities and incorporating indigenous knowledge systems into sustainability frameworks (Rivers et al., 2023). By doing so, ISPO can effectively bridge the gap between traditional cultural practices and modern sustainability goals, ensuring the preservation of cultural heritage while promoting environmentally and socially responsible palm oil production. Furthermore, cultural perceptions of sustainability and land use profoundly influence attitudes towards palm oil production and conservation efforts (Denashurya et al., 2023). Indigenous communities often have intricate understandings of their local ecosystems and natural resources, which shape their perspectives on sustainable land management (Gordon et al., 2023). Integrating these cultural perspectives into ISPO implementation fosters a more holistic approach to sustainability, one that acknowledges the interconnectedness between cultural heritage, environmental conservation, and socio-economic development (Rahman et al., 2024). As such, recognizing and respecting cultural dimensions is integral to the success and acceptance of ISPO initiatives, ultimately contributing to more sustainable palm oil practices in Indonesia.

The historical context of Indonesia's palm oil industry provides crucial insights into the trajectory of ISPO implementation (Bahruddin et al., 2024). Historically, palm oil cultivation in Indonesia has undergone significant transformations influenced by colonial legacies, government policies, and global market dynamics (Hermawan et al., 2023). During the colonial era, palm oil was introduced primarily for commercial purposes, leading to the establishment of large plantations and the exploitation of natural resources. However, the rapid expansion of palm oil cultivation over the decades has been accompanied by various challenges. Environmental degradation, including deforestation, biodiversity loss, and soil degradation, has emerged as a significant concern due to extensive land clearing for palm oil plantations (Purwadi et al., 2023). Social conflicts have also arisen, particularly regarding land tenure rights and the displacement of indigenous communities from their traditional lands (Peters, 2004). Additionally, labor issues such as poor working conditions and low wages have been prevalent in the industry, further exacerbating social tensions.

These challenges have prompted calls for more sustainable practices in the palm oil sector (Grabs & Garrett, 2023). The evolution of ISPO reflects a response to these historical challenges, with efforts to address past shortcomings and promote sustainable palm oil production. ISPO aims to improve environmental stewardship, enhance social inclusivity, and ensure economic viability in the palm oil industry. It incorporates principles such as conservation, community empowerment, and fair labor practices into its certification standards. Historical analyses underscore the importance of learning from past experiences to inform current sustainability initiatives (Al-Wathinani et al., 2023). By understanding the root causes of environmental degradation, social conflicts, and labor issues in the palm oil industry, stakeholders can develop adaptive strategies to navigate complex socio-economic and environmental landscapes. Moreover, historical perspectives highlight the need for collaboration between government, industry, civil society, and local communities to forge a more sustainable path forward for Indonesia's palm oil sector (Grabs & Garrett, 2023).

The socio-economic dimension is central to the implementation of the ISPO, as it encompasses various aspects such as livelihoods, land tenure, and economic development. Palm oil cultivation has emerged as a crucial contributor to Indonesia's economy, offering employment opportunities and stimulating rural development (Ayompe et al., 2024). However, alongside its economic benefits, palm oil production has sparked contentious issues, including land conflicts, displacement of indigenous communities, and environmental degradation. These challenges underscore the need for sustainable practices within the industry to ensure its social sustainability. ISPO endeavors to tackle these socio-economic issues by advocating for responsible production methods that prioritize environmental conservation, equitable land use, and community welfare. By promoting smallholder inclusion and enhancing market access for sustainably produced palm oil, ISPO aims to mitigate the negative socio-economic impacts associated with palm oil cultivation.

Socio-economic studies have scrutinized the effects of ISPO certification on various facets of rural livelihoods, income distribution, and overall rural development. These studies have shed light on both the opportunities and challenges inherent in achieving sustainable palm oil production (Ngan et al., 2022). While ISPO certification has the potential to improve smallholder livelihoods and foster more equitable income distribution, challenges such as certification costs, bureaucratic hurdles, and market demand fluctuations remain significant obstacles. Moreover, the implementation of ISPO requires careful consideration of local contexts, power dynamics, and institutional capacities to ensure its effectiveness in promoting sustainable socio-economic outcomes (Dharmawan et al., 2021). Thus, ongoing research and policy interventions are necessary to address these complexities and strengthen the socio-economic foundations of sustainable palm oil production in Indonesia.

3. RESEARCH METHODOLOGY

The research method employed in this study is an associative method with a quantitative approach. This approach was chosen to identify the relationship between the dependent variable (*Implementation of the Indonesian Sustainable Palm Oil System/ISPO*) and independent variables (*culture, history, and socio-economic factors*) in the context of Merauke Regency, South Papua Province. The objective of the associative method in this research is to uncover the influence of independent variables on the dependent variable correlatively. The population of this study comprises palm oil farmers or plantation partners in Merauke Regency. The sampling technique used is simple random sampling, where 100 respondents are randomly selected from this population. The sample used in this study consists of 100 individuals from Ulilin District, Merauke Regency, selected from a total population of 250 palm oil farmers or plantation partners associated with the Bio Inti Agrindo (BIA) company. The selection of this sample aims to provide an accurate and comprehensive representation of the local community's views and experiences regarding the implementation of the ISPO. By choosing 100 respondents from a population of 250 individuals, this study seeks to reflect the diverse perspectives present in the community. This approach is designed to ensure that the study results offer a valid and in-depth understanding of the impacts of palm oil plantation practices on environmental sustainability and social well-being in the region. The instrument used for data collection is a questionnaire distributed to all respondents. The questionnaire consists of statements measured using an attitude scale with 1-5 response options. Before usage, the instrument has undergone validity and reliability testing. The results of the validity test indicate that all items of the instrument have corrected item-total correlation values > 0.30 and Cronbach's alpha values > 0.60 , indicating that the instrument is valid and reliable for use in this research. Data analysis is performed using multiple linear regression analysis, utilizing multiple regression equations, and confidence testing using t-tests.

In more detail, the associative method approach allows researchers to systematically

explore the relationship between the variables under investigation. By using a quantitative approach, this research can produce numerically measurable data to test hypotheses and identify the influence of these variables on ISPO implementation. The chosen sampling technique, simple random sampling, ensures that the sample taken represents the population randomly, thus the research findings can be more generally applicable to a wider population. The validated and reliable questionnaire instrument ensures that the collected data can be relied upon to analyze the relationship between the variables under study. By employing multiple linear regression analysis, this research can identify the extent to which independent variables (*culture, history, and socio-economic factors*) influence the dependent variable (*Implementation of the Indonesian Sustainable Palm Oil System/ISPO*), as well as their significance in the context of Merauke Regency, South Papua Province. An alternative research method could be a mixed-methods approach combining qualitative and quantitative techniques to capture both numerical data and in-depth contextual insights. Using purposive sampling, researchers could select key informants and stakeholders for detailed interviews and focus groups, complementing the broader survey data. This approach allows for a comprehensive understanding of ISPO implementation by integrating statistical analysis with rich, narrative descriptions of cultural, historical, and socio-economic dynamics.

4. RESULTS

Philosophically, the Papuan indigenous people view land and the natural resources within it as having an important position and influencing the movement of people's lives. Land is believed to be a shared hope, and land is a relationship of faith. Land as a shared hope means that land is an eternal and final treasure. Meanwhile, the concept of land as life expectancy is closely related to the life expectancy of the indigenous Papuan people, who cannot live without land. The following is an illustration of the response of oil palm plantation farmers in implementing ISPO.

Table 1. Papuan culture in oil palm plantations

No.	Statement	Alternative answers									
		5		4		3		2		1	
		n	%	n	%	n	%	n	%	n	%
1	ISPO-compliant palm oil plantations conserve natural food sources like wild fruits, tubers, and wild animals.	0	0	7	7	78	78	15	15	0	0
2	ISPO-compliant palm oil plantations maintain forest sustainability and material resources like wood.	0	0	29	29	44	44	27	27	0	0
3	ISPO-compliant palm oil plantations avoid converting protected and existing forests, preserving forest functions for Papuan customs.	0	0	31	31	55	55	14	14	0	0
4	ISPO-compliant palm oil plantations respect Papuan cultural identity by adhering to Papuan law and custom.	0	0	1	1	69	69	30	30	0	0

Table 1 summarizes the responses of oil palm farmers regarding the implementation of the ISPO in Merauke. Only 7% agree and 78% somewhat agree that ISPO preserves natural food sources like wild fruits, tubers, and animals, indicating significant doubts about sustainability. In contrast, 29% agree and 44% somewhat agree that ISPO maintains forest resources like wood. Furthermore, 31% agree and

55% somewhat agree that ISPO prevents plantation development in protected forests, thus preserving forest functions for Papuan customs. Regarding cultural identity, just 1% agree and 69% somewhat agree that ISPO respects Papuan legal and customary principles. These responses highlight a general lack of confidence in ISPO's implementation, reflecting the deep cultural and existential connection

indigenous Papuans have with their land, which they view as a vital part of their identity and livelihood. The potential for oil palm development in Merauke must continue because it aims to alleviate poverty

and encourage regional economic growth, thereby creating a multi-player effect. Farmers' responses to the implementation of ISPO in Merauke are described as follows.

Table 2. Implementation of ISPO and socio-economic impact of oil palm plantations

No.	Statement	Alternative answers									
		5		4		3		2		1	
		n	%	n	%	n	%	n	%	n	%
1	ISPO-compliant oil palm plantations in Papua ensure equal access to plantation land for all farmers, regardless of economic status.	15	15	35	35	49	49	1	1	0	0
2	ISPO-compliant oil palm plantations in Papua ensure equal access to resources for all farmers, regardless of economic status.	14	14	36	36	48	48	2	2	0	0
3	ISPO-compliant oil palm plantations in Papua provide decent wages for all workers.	17	17	36	36	41	41	6	6	0	0
4	ISPO-compliant oil palm plantations in Papua offer comprehensive health insurance.	14	14	34	34	44	44	8	8	0	0
5	ISPO-compliant oil palm plantations in Papua guarantee local community participation.	13	13	36	36	47	47	4	4	0	0
6	ISPO-compliant oil palm plantations in Papua protect the rights of indigenous peoples.	13	13	43	43	42	42	2	2	0	0
7	ISPO-compliant oil palm plantations in Papua uphold the rights of female employees.	18	18	32	32	48	48	2	2	0	0

Table 2 above explains that 15% of respondents strongly agree and 35% agree that the implementation of the ISPO on oil palm plantations in Papua is based on the principle of equality for all plantation partners (farmers) without taking into account farmers' economic strata regarding access to plantation land. Also, 14% strongly agree and 36% agree on equal access to resources, 17% strongly agree and 36% agree/believe that companies implement living wages for workers, provide comprehensive health insurance, provide guarantees for community participation in local communities, provide guarantees of rights — the rights of indigenous peoples and providing guarantees for the rights of female employees. Thus, respondents are quite confident that the implementation of ISPO has an impact on the socio-economic impact of local communities. Tables 1 and 2 are distinguished to separately address the cultural and socio-economic aspects of ISPO implementation in Papua. Table 1 focuses on the preservation of natural resources and cultural identity, reflecting local concerns about environmental and cultural sustainability. Table 2, on the other hand, evaluates socio-economic

impacts, such as equality, wages, health insurance, and rights of indigenous peoples and female employees. This separation allows for a clearer understanding of how ISPO affects different facets of the community, ensuring that both cultural preservation and socio-economic benefits are adequately assessed and addressed.

The land development process carried out by oil palm plantation companies in previous decades has caused conflict in the community. It cannot be denied that Papua does have high regional potential in the field of oil palm plantations. This condition also makes oil palm plantation companies interested in investing. The conflicts that occur between society and companies are: 1) socialization processes that are not going well, 2) transformation of production methods, and 3) political aspects. Apart from that, there is an imbalance in power relations between society, companies, and the government. One of the government's efforts to overcome this is through the implementation of ISPO. Below the authors describe the respondents' perceptions of ISPO associated with historical reconciliation.

Table 3. ISPO and historical reconciliation of oil palm plantations

No.	Statement	Alternative answers									
		5		4		3		2		1	
		n	%	n	%	n	%	n	%	n	%
1	The implementation of the ISPO is able to avoid conflicts of interest between local communities and local government.	16	16	29	29	54	54	1	1	0	0
2	The implementation of the ISPO is able to avoid conflicts of interest between companies and local communities.	11	11	35	35	52	52	2	2	0	0
3	Compensation for land used for plantations is carried out according to its actual value and is carried out based on an agreement between the community who owns the land and the company.	15	15	38	38	46	46	1	1	0	0
4	Oil palm plantations guarantee good wages/income without eliminating the traditional livelihoods of local communities.	15	15	43	43	38	38	4	4	0	0
5	The company guarantees equality between local communities and immigrants.	17	17	37	37	43	43	3	3	0	0
6	The company guarantees the sustainability of the environment affected by plantation activities.	11	11	48	48	36	36	5	5	0	0

Table 3 is the response of oil palm farmers/plantations to the implementation of ISPO. Based on the data above, it is known that the response

of oil palm farmers/plantations to the implementation of ISPO is good. The implementation of the ISPO is able to avoid conflicts of interest between local

communities and local government and between companies and local communities. This is because the implementation of ISPO provides compensation for land used for plantations according to its actual value and is carried out based on an agreement between the community that owns the land and

the company, there is a guarantee of good wages/income without eliminating the traditional livelihood of local communities, there is equality between local communities and immigrants, and guarantee the sustainability of the environment affected by plantation activities.

Table 4. Determinant coefficient test

Model	R	R-square	Adjusted R-square	Std. error of the estimate	Change statistics				
					R-square change	F-change	df1	df2	Sig. F-change
1	0.840 ^a	0.705	0.696	2.43059	0.705	76.455	3	96	0.000

Note: ^a Influence of independent variables on dependent variable.

This study shows that cultural, socio-economic, and reconciliation contributions have a significant influence of 70.5% on the implementation of ISPO in Papua, especially in Merauke. This indicates that factors such as local cultural values, active community participation in the development and implementation of sustainable policies, and historical reconciliation play a very important role in determining the success of the ISPO program. However, there was 29.5% of the variability that could not be explained by these factors, which may be determined by other factors not examined in this study. These factors may include external variables such as *changes in government policy, global market conditions*, or natural factors such as *weather or natural disasters*. Therefore, while culture, socio-economics, and reconciliation play an important role in shaping the implementation of ISPO in Papua, further research is still needed to fully understand other factors that may influence the success of this program. Thus, the results of this research provide a strong foundation for further strategy and policy development in promoting the sustainability of the palm oil industry in Papua, taking into account the role played by cultural, socio-economic, and reconciliation factors, as well as other factors that may influence the implementation of ISPO.

5. DISCUSSION

Active participation of local communities is a key aspect in the implementation of ISPO in Papua, especially in Merauke. Papua's culture emphasizes the importance of involvement in decision-making, making it crucial to involve communities in the ISPO policy process. With their participation, the implemented policies can better accommodate local needs and interests while maintaining a balance between economic development, environmental preservation, and sustainability (Roseland, 2000). The active participation of local communities in the implementation of ISPO in Merauke allows them to express their aspirations, needs, and traditional knowledge about land, the environment, and natural resources. This enables dialogue between the government, palm oil companies, and communities, resulting in more inclusive and sustainable policies (Cheyns, 2011). Active community participation can also help identify potential conflicts and seek mutually beneficial solutions. Consequently, the implementation of ISPO can proceed more smoothly and gain widespread support from the local community. In the context of environmental conservation and sustainability, the participation of local communities plays a crucial role in monitoring and overseeing

palm oil farming practices (Dharmawan et al., 2021). They can help identify potential environmental impacts and provide input on effective mitigation measures. Thus, environmental sustainability can be maintained while meeting the economic and social needs of the community (Basiago, 1998).

Involving local communities in decision-making related to ISPO can enhance the effectiveness, sustainability, and acceptance of policy implementation, ensuring that the palm oil industry in Papua, particularly in Merauke, contributes positively to inclusive sustainable development while preserving the region's rich cultural and environmental diversity. In the context of Papua's society, particularly in the Merauke region, the traditional knowledge possessed is especially rich, particularly concerning the local ecosystem and the plants growing in the area, including knowledge regarding oil palm. In sustainable oil palm farming practices, the utilization of this traditional knowledge becomes highly relevant (Khatun et al., 2017). Incorporating traditional knowledge from Papua's communities on local plants for biodiversity and pest control can guide the selection of suitable oil palm varieties and promote environmentally friendly practices, enabling sustainable oil palm farming in Merauke that balances economic development with environmental preservation.

In implementing ISPO in Papua, particularly in Merauke, sustainable land management must respect and incorporate the rights, interests, traditional practices, and local knowledge of indigenous communities. Through a participatory approach that considers environmental sustainability and cultural diversity, the implementation of ISPO can become an instrument to promote sustainable palm oil farming while maintaining ecological balance and the well-being of local communities (Moreno-Peñaranda et al., 2018). The implementation of ISPO in Merauke, Papua, must respect the region's cultural values that closely tie identity and life to nature, prioritizing the protection of natural resources and incorporating environmental sustainability, biodiversity conservation, and waste management. Sustainable development strategies in Merauke must include efforts in cultural conservation, involving the preservation of local wisdom and cultural heritage (Simbiak et al., 2019). This can be achieved through a holistic approach, which not only considers economic and environmental aspects but also the values and cultural practices that have been an integral part of Papua's society for centuries. Furthermore, cultural conservation efforts can also play an integral role as part of sustainable development strategies in Merauke. Raising awareness about the importance of

preserving traditions and local wisdom can serve as an instrument to promote more sustainable practices in oil palm cultivation (Lakitan, 2014). ISPO's inclusive and participatory approaches aim to cultivate a harmonious relationship between the oil palm industry and local communities in Merauke, Papua, measured not only by productivity and economic gains but also by its capacity to preserve cultural identity and foster harmony between humans and nature.

In implementing the ISPO in Papua, particularly Merauke, it's crucial to integrate local cultural values of shared prosperity and social justice into oil palm farming practices, ensuring equal economic and social benefits for communities through community development programs, healthcare, and education access improvements. Furthermore, in the implementation of ISPO, it is important to consider long-term sustainability aspects, including environmental preservation and biodiversity (Umayah et al., 2021). Close collaboration between the oil palm industry, government, and local communities in Papua, particularly Merauke, can create a sustainable framework for natural resource management that integrates conservation with cultural values and the interests of local communities, aiming for shared prosperity, social justice, and environmental preservation. Active participation of local communities in the development and implementation of ISPO is crucial for its success, as research indicates that community involvement leads to greater responsibility and positive impacts. Through this active involvement, local communities can convey their needs and aspirations, enabling ISPO policies and practices to better align with the local context and take into account community interests more effectively (Hidayat et al., 2018). The direct benefits local communities gain from ISPO implementation foster support and compliance, promoting harmonious relationships with oil palm companies. This collaboration reduces conflicts, ensuring sustainability and continuity in the industry.

The level of income and well-being of local communities significantly impacts their views on the palm oil industry and sustainability (Santika et al., 2021), particularly in the context of implementing the ISPO standards. The local population in areas like Merauke, Papua, tends to support ISPO when the palm oil industry provides job opportunities and improves incomes. However, resistance arises when communities feel they aren't fairly benefiting or suffer negative impacts like environmental damage or land conflicts. Understanding the relationship between income, community well-being, and views on the palm oil industry and sustainability is crucial in the context of developing sustainable policies and practices (Chiriaco et al., 2022). Designing sustainability policies and programs for the palm oil industry in Merauke and surrounding areas must prioritize economic, social, and environmental considerations to garner full local support for ISPO. This inclusive approach ensures balanced and sustainable benefits for both communities and the environment. Access to land, water, and other resources significantly impacts community involvement in the palm oil industry and the implementation of ISPO (Hidayat et al., 2018). Research shows that when local communities feel their rights are recognized and they have fair access

to resources, they are more open to cooperating with palm oil companies in implementing sustainable practices. Recognition of these rights includes a clear understanding of land ownership, water usage rights, and participation in resource management decision-making (Jackson, 2008). Fair and equitable access fosters stronger partnerships between local communities and palm oil companies, facilitating effective ISPO adoption by ensuring active community involvement and resource distribution.

Furthermore, local community involvement in the palm oil industry and ISPO implementation is closely related to their understanding of the long-term benefits of sustainable practices (Brandt et al., 2013). Research has shown that when local communities have a better understanding of the environmental impacts of industrial practices, including their contributions to climate change and ecosystem damage, they tend to be more supportive of steps to improve sustainability. Therefore, education and increasing environmental awareness among local communities are key to facilitating successful ISPO implementation (Denashurya et al., 2023). This highlights the importance of efforts in education and effective communication by palm oil companies and governments to help communities understand the long-term benefits of sustainable practices and encourage their active participation in sustainability efforts. Thus, while ensuring fair access to resources, efforts to increase environmental awareness and education among local communities are also crucial in strengthening their involvement in the palm oil industry and ISPO implementation (Ogahara et al., 2022). Papua's strong cultural values heavily influence their perspective on the palm oil industry and sustainability concepts like ISPO. Practices deemed harmful to the environment are seen as violations of ancestral sustainability values, leading communities to oppose ISPO implementation, and viewing it as a threat to their livelihoods and cultural heritage.

Moreover, Papua's communities also tend to reject palm oil industry practices that directly disrupt their social and economic lives. Many Papua people rely on natural resources for their livelihoods, both as a source of income and as an integral part of their cultural identity. If the palm oil industry threatens their traditional livelihoods, such as hunting, subsistence farming, or other local economic activities, they will feel directly threatened (Linder & Palkovitz, 2016). Failure to consider the socio-economic impacts on local communities in implementing ISPO can provoke dissatisfaction and resistance, posing a threat to the sustainability of their traditional way of life. Hence, recognizing and valuing Papua's cultural and economic needs is crucial for successful implementation.

Education and environmental awareness play crucial roles in shaping the perceptions and participation of local communities towards oil palm industry practices and the implementation of sustainability standards such as the ISPO (Brandt et al., 2013). For example, higher levels of education enable communities to have a deeper understanding of the environmental and social impacts of the palm oil industry. They tend to be more sensitive to issues such as deforestation, wildlife habitat destruction, and land conflicts and are able to analyze

the implications of industry practices. Moreover, adequate education also provides access to information and knowledge about sustainability principles and the importance of maintaining ecological balance (Foo, 2013). With a better understanding of these issues, communities have a greater opportunity to actively participate in efforts to promote sustainable practices in the palm oil industry, including supporting ISPO programs.

Additionally, sufficient education and information can strengthen the capacity of local communities to collaborate with relevant stakeholders, including palm oil companies and governments, to implement sustainable practices. Through dialogue and cooperation built on the basis of the same knowledge about sustainability, communities can play a more effective role as partners in ensuring that ISPO implementation considers local and environmental interests (Pramudya et al., 2018). This approach allows for synergy between the economic needs of communities and environmental protection, thus creating conditions more conducive to long-term sustainability. Therefore, investment in education and environmental education is a crucial step in strengthening community participation and awareness in supporting sustainable practices, including the implementation of ISPO in Merauke, Papua. In-depth research shows that historical reconciliation can be key to building trust between the government and Papuan communities, thereby increasing their participation in the ISPO certification process (Samudro et al., 2022). Improving relationships with marginalized groups, including indigenous peoples and landowners, increases openness to initiatives like ISPO. Their inclusion enhances representation, legitimacy, and sustainability, laying a foundation for a more inclusive framework. Historical reconciliation in the context of the ISPO can result in increased protection of the rights of indigenous communities and landowners, as well as prevent abuses of power in the palm oil industry (Pye, 2019). Research indicates that ISPO, when committed to addressing past human rights violations, can bolster the protection of indigenous people's rights, particularly regarding land and traditional resources. This entails implementing ISPO standards that prioritize indigenous interests in oil palm land licensing and management, alongside independent monitoring mechanisms to prevent power abuses like land conflicts and environmental harm, fostering fairer and more sustainable practices in Papua.

The research conducted indicates that historical reconciliation can have significant impacts on the business environment in the Papua region, particularly for the palm oil industry (Purnomo et al., 2020). Historical reconciliation fosters stability and trust, benefiting palm oil companies by enhancing operational efficiency and sustainability through decreased social and political conflict. This results in increased legal certainty, asset protection, and improved cooperation with local stakeholders. Consequently, long-term investments in the palm oil industry become more attractive and potentially contribute more significantly to economic and social development in the Papua region (Acosta & Curt, 2019). The implementation of the ISPO principles, which integrate principles of social, environmental, and economic sustainability in Papua, can have

significant positive impacts on the company's image and the Indonesian palm oil industry as a whole. Through sustainability-oriented implementation, companies can mitigate negative environmental impacts such as deforestation and habitat destruction while respecting the rights of indigenous communities and landowners (Bacon et al., 2012). Implementing ISPO in Papua not only enhances local welfare and biodiversity conservation but also reduces reputational risks for companies, setting a positive example for other industries and strengthening Indonesia's position as a major player in sustainable palm oil production, thus enhancing the international market appeal for Indonesian palm oil products amidst increasing global demand for responsibly and sustainably produced goods. Historical reconciliation can provide a solid foundation for sustainable development in Papua, including in the palm oil sector (Christawan et al., 2023). Enhancing trust and relations between the government and Papuan communities fosters a stable environment for sustainable investments, including in the palm oil sector. Empowering Papuan communities through education, involvement in decision-making, and joint ownership of resources ensures inclusive economic growth and supports sustainable development efforts.

6. CONCLUSION

Based on this research, it can be concluded that historical reconciliation in Papua plays a significant role in the implementation of the ISPO, particularly in Merauke. The reconciliation process enables the creation of a more inclusive and stable environment for sustainable investment in the palm oil sector. Active participation of local communities, grounded in Papua's cultural and traditional values, is crucial in ensuring the success of ISPO implementation. However, this research reveals several weaknesses and gaps that need attention. First, despite significant support for ISPO principles, many respondents still doubt the sustainability of natural resources and the protection of Papua's cultural identity. This indicates that ISPO implementation has not fully met local expectations in preserving environmental and cultural sustainability. Second, although the chosen method uses a quantitative approach with correlational analysis, this approach may not fully capture the nuances and social-cultural complexities on the ground. This method tends to oversimplify issues that are inherently more complex and require a qualitative approach for deeper understanding. Additionally, the research has limitations regarding the sample size and geographical focus, which may not fully represent the diversity of opinions and experiences across different regions of Papua.

The reliance on self-reported data from questionnaires can also introduce biases, as respondents may provide socially desirable answers or lack full awareness of ISPO practices. Therefore, it is recommended that the government and palm oil companies actively engage in supporting the reconciliation process with Papuan communities by facilitating inclusive dialogue and building necessary trust. Additionally, there is a need for local capacity building to ensure the success of ISPO implementation in Merauke. Training and education

on sustainable farming practices should be regularly conducted to expand the knowledge and skills of Papuan communities in managing palm oil land in an environmentally friendly manner. Other recommendations include the recognition and respect for the customary land rights of Papuan communities, as well as ensuring that ISPO policies take into account local interests and aspirations.

This paper is crucial for future research as it proposes initiatives aimed at enhancing relationships between the government, palm oil companies, and Papuan communities through the establishment of dialogue forums. These forums are intended to

strengthen mutual understanding and collaboration in implementing the ISPO standards. Moreover, the paper highlights the need for further research to explore the impact of historical reconciliation on the sustainability of the palm oil industry in Papua. This deeper understanding can lead to the development of more effective strategies and solutions tailored to the local context. Overall, these steps are expected to foster a more sustainable and inclusive palm oil industry in Papua, while promoting harmonious relationships between humans and nature and preserving the region's rich cultural diversity.

REFERENCES

- Acosta García, P. J., Curt, M. D., & Indah, E. (2019). New oil palm plantations in Papua, Indonesia. Challenges in the establishment process. In *Proceedings of the 27th European Biomass Conference and Exhibition* (pp. 1611-1621). <https://doi.org/10.5071/27thEUBCE2019-4AV.1.1>
- Acosta, P., & Curt, M. D. (2019). Understanding the expansion of oil palm cultivation: A case-study in Papua. *Journal of Cleaner Production*, 219, 199-216. <https://doi.org/10.1016/j.jclepro.2019.02.029>
- Al-Wathinani, A. M., Barten, D. G., Borowska-Stefańska, M., Gołda, P., AlDulijan, N. A., Alhallaf, M. A., Samarkandi, L. O., Almuhaidly, A. S., Goniewicz, M., Samarkandi, W. O., & Goniewicz, K. (2023). Driving sustainable disaster risk reduction: A rapid review of the policies and strategies in Saudi Arabia. *Sustainability*, 15(14), Article 10976. <https://doi.org/10.3390/su151410976>
- Ayompe, L. M., Nkongho, R. N., Wandum, L. M., Orang, B. O., Fiaboe, K. K. M., Tambasi, E. E., Kettunen, M., & Egoh, B. N. (2024). Complexities of sustainable palm oil production by smallholders in sub-Saharan Africa. *Sustainable Development*, 32(1), 529-541. <https://doi.org/10.1002/sd.2674>
- Bacon, C. M., Getz, C., Kraus, S., Montenegro, M., & Holland, K. (2012). The social dimensions of sustainability and change in diversified farming systems. *Ecology and Society*, 17(4), Article 41. <https://doi.org/10.5751/ES-05226-170441>
- Bahrudin, Macdonald, K., Diprose, R., & Pugley, D. D. (2024). Scaling-up sustainable commodity governance through jurisdictional initiatives: Political pathways to sector transformation in the Indonesian palm oil sector? *World Development*, 176, Article 106504. <https://doi.org/10.1016/j.worlddev.2023.106504>
- Basiago, A. D. (1998). Economic, social, and environmental sustainability in development theory and urban planning practice. *Environmentalist*, 19, 145-161. <https://doi.org/10.1023/A:1006697118620>
- Brandi, C., Cabani, T., Hosang, C., Schirmbeck, S., Westermann, L., & Wiese, H. (2013). *Sustainability certification in the Indonesian palm oil sector: Benefits and challenges for smallholders*. German Development Institute (DIE). https://www.idos-research.de/uploads/media/Studies_74.pdf
- Cheyns, E. (2011). Multi-stakeholder initiatives for sustainable agriculture: Limits of the 'inclusiveness' paradigm. In S. Ponte, J. Vestergaard, & P. Gibbon (Eds.), *Governing through standards: Origins, drivers and limits* (pp. 318-354). Palgrave.
- Chiriaco, M. V., Bellotta, M., Jusić, J., & Perugini, L. (2022). Palm oil's contribution to the United Nations sustainable development goals: Outcomes of a review of socio-economic aspects. *Environmental Research Letters*, 17, Article 63007. <https://doi.org/10.1088/1748-9326/ac6e77>
- Christawan, E., Perwita, A. A. B., Midhio, I. W., Hendra, A., & Sumertha, I. G. (2023). Papua as the Window of Indonesia's Spirit for the Melanesian Communities. *Journal of Social and Political Sciences*, 6(3), 15-72. <https://doi.org/10.31014/aior.1991.06.03.426>
- Denashurya, N. I., Nurliza, Dolorosa, E., Kurniati, D., & Suswati, D. (2023). Overcoming barriers to ISPO certification: Analyzing the drivers of sustainable agricultural adoption among farmers. *Sustainability*, 15(23), Article 16507. <https://doi.org/10.3390/su152316507>
- Dharmawan, A. H., Mardiyarningsih, D. I., Rahmadian, F., Yulian, B. E., Komarudin, H., Pacheco, P., Ghazoul, J., & Amalia, R. (2021). The agrarian, structural and cultural constraints of smallholders' readiness for sustainability standards implementation: The case of Indonesian Sustainable Palm Oil in East Kalimantan. *Sustainability*, 13(5), Article 2611. <https://doi.org/10.3390/su13052611>
- Foo, K. Y. (2013). A vision on the role of environmental higher education contributing to the sustainable development in Malaysia. *Journal of Cleaner Production*, 61, 6-12. <https://doi.org/10.1016/j.jclepro.2013.05.014>
- Gordon, H. S. J., Ross, J. A., Bauer-Armstrong, C., Moreno, M., Byington, R., & Bowman, N. (2023). Integrating indigenous traditional ecological knowledge of land into land management through Indigenous-academic partnerships. *Land Use Policy*, 125, Article 106469. <https://doi.org/10.1016/j.landusepol.2022.106469>
- Grabs, J., & Garrett, R. D. (2023). Goal-based private sustainability governance and its paradoxes in the Indonesian palm oil sector. *Journal of Business Ethics*, 188, 467-507. <https://doi.org/10.1007/s10551-023-05377-1>
- Hermawan, S., Karim, M. F., & Rethel, L. (2023). Institutional layering in climate policy: Insights from REDD+ governance in Indonesia. *Forest Policy and Economics*, 154, Article 103037. <https://doi.org/10.1016/j.forpol.2023.103037>
- Hidayat, N. K., Offermans, A., & Glasbergen, P. (2018). Sustainable palm oil as a public responsibility? On the governance capacity of Indonesian Standard for Sustainable Palm Oil (ISPO). *Agriculture and Human Values*, 35, 223-242. <https://doi.org/10.1007/s10460-017-9816-6>
- Hristov, I., & Searcy, C. (2024). Integrating sustainability with corporate governance: A framework to implement the corporate sustainability reporting directive through a balanced scorecard. *Management Decision*. <https://doi.org/10.1108/MD-10-2023-1995>

- Jackson, S. (2008). Recognition of indigenous interests in Australian water resource management, with particular reference to environmental flow assessment. *Geography Compass*, 2(3), 874–898. <https://doi.org/10.1111/j.1749-8198.2008.00103.x>
- Khatun, R., Reza, M. I. H., Moniruzzaman, M., & Yaakob, Z. (2017). Sustainable oil palm industry: The possibilities. *Renewable and Sustainable Energy Reviews*, 76, 608–619. <https://doi.org/10.1016/j.rser.2017.03.077>
- Lakitan, B. (2014). Inclusive and sustainable management of suboptimal lands for productive agriculture in Indonesia. *Jurnal Lahan Suboptimal: Journal of Suboptimal Lands*, 3(2), 181–192. <https://jlsuboptimal.unsri.ac.id/index.php/jlso/article/view/126>
- Linder, J. M., & Palkovitz, R. E. (2016). The threat of industrial oil palm expansion to primates and their habitats. In M. Waller (Ed.), *Ethnoprimatology: Primate conservation in the 21st century* (pp. 21–45). Springer. https://doi.org/10.1007/978-3-319-30469-4_2
- Meijaard, E., Brooks, T. M., Carlson, K. M., Slade, E. M., Garcia-Ulloa, J., Gaveau, D. L. A., Lee, J. S. H., Santika, T., Juffe-Bignoli, D., Struebig, M. J., Wich, S. A., Ancrenaz, M., Koh, L. P., Zamira, N., Abrams, J. F., Prins, H. H. T., Sendashonga, C. N., Murdiyarsa, D., Furumo, P. R., ... Sheil, D. (2020). The environmental impacts of palm oil in context. *Nature Plants*, 6(12), 1418–1426. <https://doi.org/10.1038/s41477-020-00813-w>
- Moreno-Peñaranda, R., Gasparatos, A., Stromberg, P., Suwa, A., & Puppim de Oliveira, J. A. (2018). Stakeholder perceptions of the ecosystem services and human well-being impacts of palm oil biofuels in Indonesia and Malaysia. In K. Takeuchi, H. Shiroyama, O. Saito, & M. Matsuura (Eds.), *Biofuels and sustainability: Holistic perspectives for policy-making* (pp. 133–173). Springer. https://doi.org/10.1007/978-4-431-54895-9_10
- Murray, B. (1982). *The ecology of freedom: The emergence and dissolution of hierarchy*. Cheshire Books.
- Neilson, J. (2022). Intra-cultural consumption of rural landscapes: An emergent politics of redistribution in Indonesia. *Journal of Rural Studies*, 96, 89–100. <https://doi.org/10.1016/j.jrurstud.2022.10.018>
- Ngan, S. L., Er, A. C., Yatim, P., How, B. S., Lim, C. H., Ng, W. P. Q., Chan, Y. H., & Lam, H. L. (2022). Social sustainability of palm oil industry: A review. *Frontiers in Sustainability*, 3, Article 855551. <https://doi.org/10.3389/frsus.2022.855551>
- Obidzinski, K., Andriani, R., Komarudin, H., & Andrianto, A. (2012). Environmental and social impacts of oil palm plantations and their implications for biofuel production in Indonesia. *Ecology and Society*, 17(1), Article 25. <https://doi.org/10.5751/ES-04775-170125>
- Ogahara, Z., Jespersen, K., Theilade, L., & Nielsen, M. R. (2022). Review of smallholder palm oil sustainability reveals limited positive impacts and identifies key implementation and knowledge gaps. *Land Use Policy*, 120, Article 106258. <https://doi.org/10.1016/j.landusepol.2022.106258>
- Peters, P. E. (2004). Inequality and social conflict over land in Africa. *Journal of Agrarian Change*, 4(3), 269–314. <https://doi.org/10.1111/j.1471-0366.2004.00080.x>
- Pramudya, E. P., Hospes, O., & Termeer, C. J. A. M. (2018). Friend or foe? The various responses of the Indonesian state to sustainable non-state palm oil initiatives. *Asian Journal of Sustainability and Social Responsibility*, 3, Article 1. <https://doi.org/10.1186/s41180-018-0018-y>
- Purnomo, H., Okarda, B., Dermawan, A., Ilham, Q. P., Pacheco, P., Nurfatriani, F., & Suhendang, E. (2020). Reconciling oil palm economic development and environmental conservation in Indonesia: A value chain dynamic approach. *Forest Policy and Economics*, 111, Article 102089. <https://doi.org/10.1016/j.forpol.2020.102089>
- Purwadi, R., Adisasmito, S., Pramudita, D., & Indarto, A. (2023). Strategies for restoration and utilization of degraded lands for sustainable oil palm plantation and industry. In M. N. V. Prasad & C. Kumar (Eds.), *Agroecological approaches for sustainable soil management* (pp. 373–408). Wiley. <https://doi.org/10.1002/9781119911999.ch17>
- Pye, O. (2019). Commodifying sustainability: Development, nature and politics in the palm oil industry. *World Development*, 121, 218–228. <https://doi.org/10.1016/j.worlddev.2018.02.014>
- Rahman, M. H., Tanchangya, T., Rahman, J., Aktar, M. A., & Majumder, S. C. (2024). Corporate social responsibility and green financing behavior in Bangladesh: Towards sustainable tourism. *Innovation and Green Development*, 3(3), Article 100133. <https://doi.org/10.1016/j.igd.2024.100133>
- Rivers, N., Strand, M., Fernandes, M., Metuge, D., Lemahieu, A., Nonyane, C. L., Benkenstein, A., & Snow, B. (2023). Pathways to integrate Indigenous and local knowledge in ocean governance processes: Lessons from the Algoa Bay Project, South Africa. *Frontiers in Marine Science*, 9, Article 1084674. <https://doi.org/10.3389/fmars.2022.1084674>
- Roseland, M. (2000). Sustainable community development: integrating environmental, economic, and social objectives. *Progress in Planning*, 54(2), 73–132. [https://doi.org/10.1016/S0305-9006\(00\)00003-9](https://doi.org/10.1016/S0305-9006(00)00003-9)
- Samudro, E. G., Saragih, H. J. R., Widodo, P., Sumantri, S. H., Anwar, S., & Malik, I. (2022). Conflict resolution efforts in Papua: Reconciliation approach. *Res Militaris*, 12(4), 1645–1658. <https://resmilitaris.net/uploads/paper/54d91ac58e8472b2ead8f80763bcd270.pdf>
- Santika, T., Wilson, K. A., Law, E. A., St John, F. A. V., Carlson, K. M., Gibbs, H., Morgans, C. L., Ancrenaz, M., Meijaard, E., & Struebig, M. J. (2021). Impact of palm oil sustainability certification on village well-being and poverty in Indonesia. *Nature Sustainability*, 4, 109–119. <https://doi.org/10.1038/s41893-020-00630-1>
- Simbiak, M., Supriatna, J., & Walujo, E. B. (2019). Current status of ethnobiological studies in Merauke, Papua, Indonesia: A perspective of biological-cultural diversity conservation. *Biodiversitas Journal of Biological Diversity*, 20(12), 3455–3466. <https://doi.org/10.13057/biodiv/d201201>
- Subagyo. (2021, April 14). *Palm oil industry absorbs 2,400 indigenous Papuans as workers*. Tunas Sawa Erma Group. <https://shorturl.at/kFiVc>
- Teoh, C. H. (2010). *Key sustainability issues in the palm oil sector (A discussion paper for multi-stakeholders consultations)*. World Bank Group. https://www.academia.edu/2017559/Key_Sustainability_Issues_in_the_Palm_Oil_Sector
- Umayah, D., Purnomo, E. P., Fadhlurrohman, M. I., Fathani, A. T., & Salsabila, L. (2021). The implementation of Indonesian Sustainable Palm Oil (ISPO) policy in managing oil palm plantation in Indonesia. *IOP Conference Series: Earth and Environmental Science*, 943(1), Article 012022. <https://doi.org/10.1088/1755-1315/943/1/012022>