JPPIPA 12(4) (2026)

Jurnal Penelitian Pendidikan IPA

http://jppipa.unram.ac.id/index.php/jppipa/index

Impact of the SVLK Policy Post UUCK on the Sustainability of Community Forests in Banten Province, Indonesia

Tutik Handayani[1*], Bramasto Nugroho[2], Leti Sundawati [2]

[1] Postgraduate Study Program in Forest Management Science, Faculty of Forestry and Environment, IPB University, Bogor, Indonesia
[2] Departement of Forest management, Faculty of Forestry and Environment, IPB University, Bogor, Indonesia.

Received: February 09, 2026
Revised: March 02, 2026
Accepted: April 25, 2026
Published: April 30, 2026

Corresponding Author:
Tutik Handayani
tutikhan2007@gmail.com

DOI: 10.29303/jppipa.v12i4.14553

Abstract: The Timber Legality Verification System (SVLK) is a policy instrument designed to ensure the legality of timber forest products and sustainability of community forest management in Indonesia. This study aims to analyze the implementation of the SVLK policy in Banten Province, map the roles and interests of stakeholder, and assess its economic impact on the income of community forest farmers before and post implementation of the Job Creation Law (UUCK). The study used a mixed method approach (combining qualitative and quantitative) using structured and in-depth interviews to farmers and related stakeholders. The analysis used consist of policy implementation analysis, stakeholder analysis (actor grid), income analysis, and the Revenue Cost Ratio (R/C) analysis. The results indicate that SVLK implementation has not been effective due to limitations in human resources, budget, policy communication, and the absence of specific SOPs. The Forest Management Unit (FMU) is a forest farmer association formed with a common goal and has a management, which will undergo SVLK certification in Banten Province. The FMU and the Ministry of Forestry play the role of Key Players with the highest level of interest and influence. Economically, self-funded SVLK certification causes losses for farmers, while financial facilitation from the state budget (APBN) improves business feasibility but has not significantly improved farmer welfare. This study recommends improvements to the SVLK policy design through strengthening institutional capacity, regulatory consistency, and fairer economic incentive schemes for community forest farmers.

Keywords: Community Forest; Economic viability; Sustainability; Timber legality

Introduction

Forests are strategic natural resources that play a vital role in maintaining ecological balance, supporting the economy, and sustaining social life (Gupta et al., 2026). Based on their ownership regime, forests in Indonesia are classified into state forests, private forests, and customary or community forests (Nugroho & Tiryana, 2013). State control of forests is based on Article 33 paragraph (3) of the 1945 Constitution, which affirms the mandate to manage natural resources for the greatest prosperity of the people (Diantoro, 2025). Meanwhile, community forests have developed as a form of ownership based on property rights and communal management that is closely linked to the livelihood systems of local communities (Tadjudin, 2000; (Diantoro, 2025). These differences in ownership characteristics have implications for forest product management (Eriksson & Fries, 2021) and forest governance patterns in Indonesia (Alhafizin & Handrayani, 2025).

The increasing rate of global and national deforestation has driven the development of a sustainable forest management paradigm that emphasizes legality, traceability, and sustainability (Tegegne et al., 2018). International market pressure on illegal logging has fueled demand for wood products produced through legal, environmentally friendly mechanisms (Putro, 2015). In response to these demands, various forestry certification schemes have developed since the early 1990s as instruments to ensure sustainable forest management (Cubbage et al., 2009). In

How to Cite:
Handayani, T., Nugroho, B., & Sundawati , L. (2026). Impact of the SVLK Policy Post UUCK on the Sustainability of Community Forests in Banten Province, Indonesia. *Jurnal Penelitian Pendidikan IPA*, *12*(4), 307-322. https://doi.org/10.29303/jppipa.v12i4.14553

Indonesia, this approach is realized through the Legality and Sustainability Verification System (SVLK) (Astana et al., 2020), which serves as a mechanism to ensure the legality of forest products and to increase the competitiveness of forestry products in the global market (Huang et al., 2013).

Although the SVLK is mandatory for all forestry business actors, its implementation in community forests continues to face various structural obstacles (Iriyani et al., 2024). Community forest farmers often view the SVLK as a burdensome policy due to high certification costs, administrative complexity (Nurrochmat et al., 2016), and the lack of timber price incentives in the domestic market (Nugroho et al., 2017). This situation indicates a gap between the policy's normative objectives and its implementation at the ground level (Gracela et al., 2024). The government then responded to this problem through regulatory reforms following the Job Creation Law (UU No 11 of 2020), specifically with the issuance of Regulation of the Minister of Forestry and Environment No. 8 of 2021 and Decree of the Minister of Forestry and Environment No. 9895 of 2022 (Putranto et al., 2024), which simplified SVLK obligations for community forests through the Self Declaration of Conformity (SDoC) mechanism (Rochmayanto et al., 2022). However, to date, there are still limited empirical studies evaluating the effectiveness of this policy, particularly from the perspective of implementation and economic impacts for community forest farmers.

Evaluation of the implementation of the SVLK policy after the UUCK is crucial to ensure that the regulatory simplification truly alleviates the burden on farmers without compromising the principles of legality, traceability and sustainability. Community forests have unique characteristics because their sustainability depends heavily on the economic benefits they generate for their owners (Refani et al., 2024). Therefore, this research is relevant to bridge the gap between policy design and field practice. This study aims to analyze the implementation of the SVLK policy after the UUCK in community forests in Banten Province, analyze the roles of stakeholders, and assess the economic impacts to community forest farmers.

Method

Research Time and Location

The data collection was conducted from September to November 2025. The research location was in District Serang, District Pandeglang, and District Lebak. (Figure 2). The selection of the research locations was based on interviews with the Banten Province Environment and Forestry Service, which confirmed that community forestry farming groups in Banten Province were only found in these three regencies. The location selection was carried out purposively with the consideration that Banten Province has community forest farmers who are members of the KPH group that has been certified by SVLK (some are still maintained, and some have been suspended).

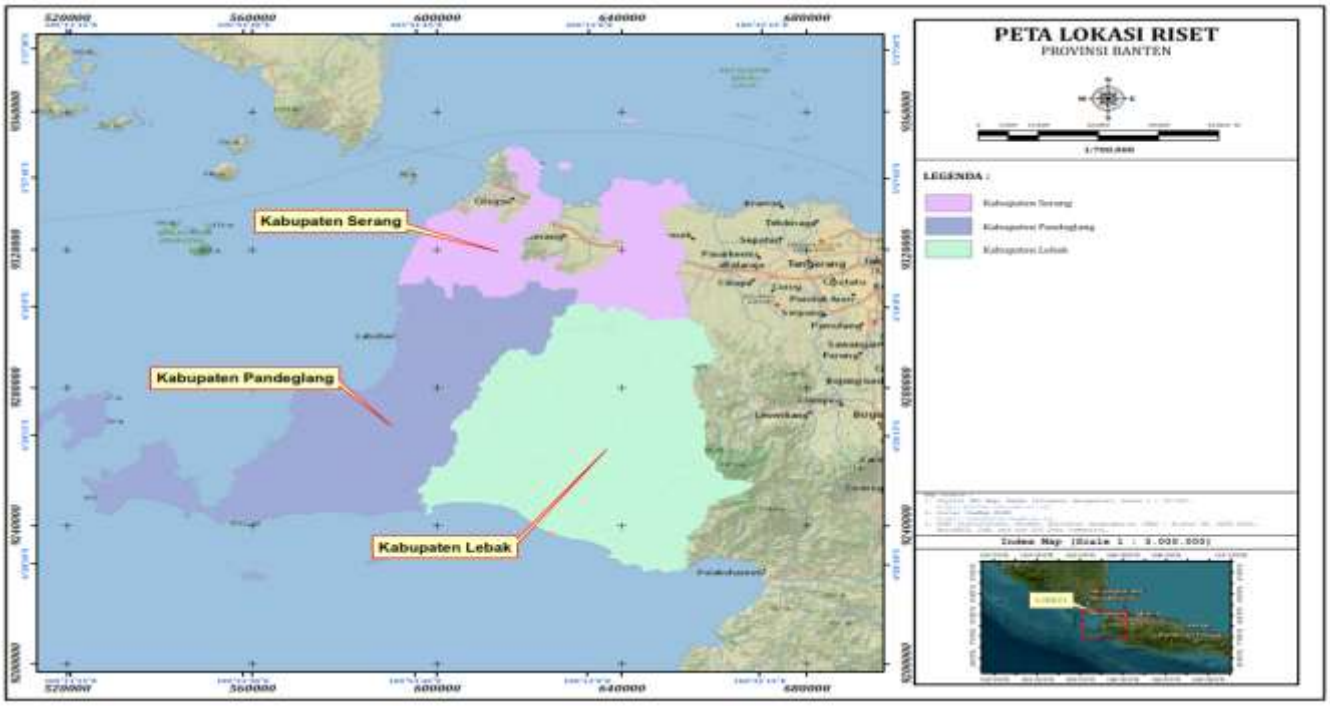

Figure 1. Research location map

Research Design and Type

This study employed a mixed-methods design with a quantitative approach supported by qualitative data (Curry et al., 2009) (Sudarli et al., 2025). The quantitative approach was used to measure the economic impact and respondents' perceptions of SVLK implementation, while the qualitative approach was used to explore policy implementation, stakeholder roles, and the social and institutional dynamics involved at the site level. This design was chosen to generate a comprehensive and contextual understanding of the phenomenon under study.

Data Collection

The study population was community forest farmers in Banten Province who were involved in, or were currently implementing, SVLK certification. Based on preliminary data (SILK, 2024), 513 farmers from 20 Forest Management Units (FMUs) were identified, of whom 60 still hold active SVLK certificates. There are two categories of information sources in this study: informants and respondents. Informants were determined based on their level of in-depth understanding of the SVLK. There were 17 informants representing the Ministry of Forestry, the Provincial Environmental and Forestry Agency of Banten, Certification Bodies, the timber industry, timber Collectors, Village Governments, the Forestry Agency Branch, and FMU Management. The selected respondents were community forest farmers across three districts in Banten Province: Serang Regency (45), Pandeglang Regency (37), and Lebak Regency (39), for a total of 121.

The sampling technique used was purposive sampling combined with snowball sampling (Rhouma & Bouzid, 2025; Ayu et al., 2025), where initial respondents recommended subsequent respondents until data saturation was reached. Research variables included SVLK policy implementation, the role and influence of stakeholders, and the economic impact of community forest management. Data collection was conducted through field observations, structured interview using questionnaires, in-depth interviews, and focus group discussions (FGDs.

Data analysis

Data analysis was conducted qualitatively and descriptively by integrating primary and secondary data (Costa, 2024). The analysis of SVLK policy implementation refers to the Edward III (1980) model, which includes four main variables: communication, resources, disposition, and bureaucratic structure. Stakeholder roles were analyzed using the interest and influence matrix (actor grid) to classify stakeholders into the categories of subjects, key players, context setters, and the crowd, according to Reed et al. (2009 b).

Economic impact analysis is carried out through analysis of changes in income and costs, by calculating the difference between total income and total costs using the formula (Suratiyah, 2015):

$$I = Tr - Tc \quad (1)$$

Information:
I : Income
TR : Total Revenue
TC : Total Cost

Business feasibility analysis using the Revenue Cost Ratio (R/C) (Suratiyah, 2015):

$$R/C = \frac{TR}{TC} \quad (2)$$

Information:
R/C : Revenue Cost Ratio
TR : Total Revenue
TC : Total Cost

Result and Discussion

Respondent Characteristics

There are two categories of information sources in this study: informants and respondents. Informants were determined based on their level of in-depth understanding of the SVLK. There were 17 informants representing the Ministry of Forestry, Provincial Environmental and Forestry Agency of Banten, Certification Bodies, timber industry, timber Collectors, Village Governments, Forestry Agency Branch, and FMU Management. The selected respondents were community forest farmers across three districts in Banten Province: Serang Regency (45), Pandeglang Regency (37), and Lebak Regency (39), for a total of 121. Informant and Respondent characteristics included occupation, gender, age, and education level, as presented in Table 1.

Respondents ranged in age from under 30 to over 60. Differences in respondent age can influence mindsets, experience levels, and the strategies implemented in land management. Respondents aged 50–60 years were the largest age group, at 47%, while the smallest was the under-30 age group. The low participation of young respondents is thought to be related to the younger generation's tendency to prefer work in other sectors. These are considered more challenging and more promising for future development than land management activities (Stavi & Lal, 2015). Overall, respondents were predominantly farmer members of the FMU, confirming their primary role in community-based forest management. The high school graduate education level, which predominated,

indicated a sufficient understanding of forest management programs, while the predominance of male respondents reflected the gendered role division in land management. The majority of respondents were aged 50–60, indicating a high level of experience but also indicating challenges to regeneration due to low youth participation.

Analysis of SVLK Policy Implementation

The implementation of the Legality and Sustainability Verification System (SVLK) policy in community forest management in Banten Province shows that various structural and operational barriers persist. Based on Edward III's (1980) policy implementation framework, presented in Table 2, communication and resource factors are the primary determinants influencing the effectiveness of SVLK implementation at the site level. From a communication perspective, research indicates that communication patterns among the Forestry Service, FMU managers, and FMU members are not optimal. Communication tends to be administrative, and coordination and program evaluation are lacking, resulting in information asymmetry that makes SVLK policies difficult for target groups to understand and implement effectively. This situation is exacerbated by a hierarchical bureaucratic structure and policy inconsistencies among stakeholders (Omoigberale et al., 2025), which create ambiguity and multiple interpretations regarding the objectives and priorities of SVLK implementation (Kafiil et al., 2025)

Table 1. Respondent characteristics

No	Characteristics	Respondent					Informant
		Research location			Percentage (%)	Total	Percentage (%)
		Serang	Pandeglang	Lebak			
Main occupation							
1	Farmers	41	26	35	84	2	12
2	Private Sector	0	5	1	5	5	29
3	Traders	1	4	1	7	1	6
4	Self-Employed	0	0	2	2	3	18
5	Civil Servants	1	2	0	2	6	35
Total		45	37	39	100	17	100
Education							
6	No Schooling	0	1	3	3	0	0
7	Elementary School	4	7	9	17	0	0
8	Middle School	3	6	8	14	0	0
9	High School	33	20	17	58	2	12
10	Diploma	2	1	1	3	3	18
11	Bachelor's Degree & Magister	3	2	1	5	12	71
Total		45	37	36	100	17	100
Gender							
12	Male	41	32	34	88	15	88
13	Famale	4	5	5	12	2	12
Total		45	37	39	100	17	100
Age (years)							
14	>60	6	1	3	8	0	0
15	50 – 60	27	19	11	47	10	59
16	40 – 50	7	11	18	30	4	24
17	30 – 40	4	4	5	11	3	18
18	<30	1	2	2	4	0	0
Total		45	37	39	100	17	100

Regarding resources, limitations in the quality and quantity of human resources (HR) pose a significant obstacle to implementing the SVLK policy. Although some FMUs have relatively adequate human resources, their technical capabilities, leadership skills, and understanding of the SVLK remain limited. Weak human resource capabilities undermine program effectiveness and can lead to wasted resources without measurable results. Furthermore, limited funding, sourced solely from the state and regional budgets, also limits the intensity of outreach, mentoring, and community services.

The research results in Table 3 show that the implementation of the Legality and Sustainability Verification System (SVLK) for privately owned forests in Banten Province still faces serious obstacles, particularly in terms of resources, the disposition of implementers, and the bureaucratic structure. In terms of financial resources, the increase in certification costs following the 2016 regulatory revision, which more than

doubled compared to the previous provisions, poses a heavy burden for smallholder forest farmers.

Costs for small and medium-sized enterprises can range from IDR 6.6 million to IDR 170 million, depending on the size of the enterprise, and additional annual surveillance costs can reach IDR 132 million (excluding auditor transportation costs) (Villanueva, 2025). The relatively high cost of certification, especially when combined with mandatory periodic inspections, has the potential to discourage community forest farmers from participating. and ultimately undermine the SVLK policy's goal of promoting legality and sustainable community forest management.

Table 2. Edward III Policy Implementation Parameters (1980)

Variables and Indicators	Existing Conditions	Implications
Communication		
Transmission	Inappropriate communication patterns in the target group and limited to administrative formalities	Asymmetric information, hampering policy implementation
Want policies not only to be conveyed to implementers but also to policy target groups		
Clarity		
Clear communication messages so as not to cause misinterpretations of existing policies	Miscommunication, weak information transfer	Slow implementation of regulations and programs
Consistency		
The policy taken does not confuse the implementer	Unclear priority programs, policy inconsistencies between stakeholders	Multiple program interpretations, policy misperceptions
Resources		
Human Resources	Inadequate HR Qualifications	Low implementation of programs on an immeasurable scale
Staff are the most important resource in implementing policies	Limited human resources with forestry competence in the field of SVLK	
Budget Resources		
The limited budget available causes the quality of services that should be provided to the community to be limited	Budget limitations for activity programs that rely on the State Budget	Low quality of service, and counseling
Equipment Resources		
Equipment is a means used for operationalization implementation of a policy to facilitate the providing services	Inadequate operational facilities due to limited funding. Funding allocation depends on the priority scale and governance plan which may change at any time	Weak technical activities, Success indicators are not outcome-based
Resources Authority		
The main policy actors should be given sufficient authority to make their own decisions to implement their own policies	The lack of clarity of authority in the Forestry Service in transferring policy information	Limited space for movement and program implementation, programs are formalistic and sectoral
Disposition		
Bureaucratic appointment	Low commitment of SVLK program management officials	Weak management performance, hampered policy implementation, increased transaction costs
Bureaucracy is people those who have a dedication to the policies that have been set, more specifically to the interests of the community	Disorientation of the interests of the Forestry Service	
Incentives		
By manipulating incentives, it is hoped that it can overcome the problem of the attitude of the implementers in achieving the goals of policy	Incentives as a benchmark for performance, no punishment scheme	Implementation is not optimal; farmer participation is low
Bureaucracy		
Standard operational procedure	Lack of understanding of SVLK	Low flexibility, low evaluation and monitoring performance due to no SOPs
SOP to ensure internal demands for certainty of time, resources and uniformity needs in complex and broad work organizations	Weak socialization to target groups, there is no exit strategy in the implementation of SVLK	
Fragmentation		

Variables and Indicators	Existing Conditions	Implications
Spreading policy responsibilities to several different bodies so that coordination is required	Weak coordination, low management knowledge, individualistic, unclear delegation of authority and focused on government policies	The implementation of SVLK activities is only administrative.

Several studies have shown that certification costs and mandatory periodic monitoring represent significant financial barriers for small businesses or community forest managers. For example, research in the community forestry sector reports FSC certification costs of around USD 13,000 and SVLK certification costs of around IDR 40 million, not including annual inspection costs of USD 7,000–IDR 25 million per cycle, placing a significant financial burden on small businesses (Purwanto, 2016). Furthermore, community forest holders often do not perceive comparable financial benefits from SVLK certification, thus discouraging them from participating in the certification scheme (Nugroho et al., 2022).

In addition to costs, weak infrastructure and support, and the absence of specific Standard Operating Procedures (SOPs) at the regional level, reflect low institutional readiness to implement national policies. The lack of public awareness and understanding of SVLK objectives among implementers and target groups triggers community resistance, increases transaction costs, and reduces the effectiveness of policy implementation. Bureaucratic fragmentation, weak coordination between units, and the placement of personnel not based on forestry competencies (Wicaksono et al., 2025), exacerbated by the absence of clear incentive and punishment schemes, further hamper the performance of implementers at the grassroots level. These findings confirm that SVLK's success depends heavily on adaptive policy integration, adequate resource support, and the strengthening of regional-level bureaucratic capacity and governance.

Table 3. SVLK certification costs according to the Regulation of the Minister of Forestry in 2013 and 2016

Type of business	P.1/MENLHK/SETJEN/PHPL.1/1/2016
IRT	IDR 7.787.500
TDI & IUI with Investment Value < 500 million	IDR 15.275.000
IUIPHHK Capacity 2,000 – 6,000 M^3/Year	IDR 26.332.500
IUI with Investment Value > 500 million & IUIPHHK Capacity > 6,000 M^3/Year	IDR 36.785.000
TPT	IDR 20.222.500
Community Forest	IDR 27.320.000 – IDR 62.870.000 (does not include transportation, accommodation and consumption of auditors)

***Note:** IRT (Household Industry); TDI (Industrial Registration Certificate); IUI (Industrial Business Permit); IUIPHHK (Timber Forest Products Primary Industry Business Permit); TPT (Registered Shelter)

Stakeholder Analysis in SVLK Implementation in Banten Province

The research findings indicate that the implementation of the Timber Legality Verification System (SVLK) in Banten Province involves various stakeholders from the government, community, and private sectors, each with varying roles and levels of interest (Table 4). This diversity of actors confirms that the SVLK is a multi-sectoral policy that requires coordination across institutions and levels of government for its effective implementation. At the national level, the Ministry of Forestry plays a key role in formulating SVLK policy, establishing regulations in line with the Job Creation Law, and providing general guidance and oversight of timber legality implementation.

The ministry also plays a role in facilitating certification costs. However, interviews indicate that this facilitation has not fully reached smallholder forest farmers, with the policy's benefits predominantly felt by medium- and large-scale businesses. At the regional level, the Banten Province Environment and Forestry Service and its branches play a strategic role in coordinating SVLK implementation, providing technical guidance, and mentoring smallholder forest farmers. The research findings demonstrate that these agencies play a significant role in bridging central government policies with local conditions. However, limited human resources and budget mean the intensity of field assistance is suboptimal and uneven across regions.

Forest Management Unit (FMU) administrators play a direct role in local forest management, including regulating community forest operations and providing technical supervision. Research findings indicate that FMUs are key actors in implementing the principles of legality and sustainability. However, coordination

between FMUs, village governments, and certification bodies remains fragmented and poorly structured, impacting the effectiveness of SVLK implementation. Certification bodies play a central role in the timber legality verification process and the issuance of SVLK certificates. Research results indicate that certification bodies are relatively consistent in carrying out technical functions in accordance with standards but are perceived by community forest farmers as focused on procedures and costs. This perception is one factor that reduces farmers' interest in participating in independent certification. Village governments play a role in facilitating community forest farmer institutions, disseminating SVLK policies, and providing administrative support. Research findings indicate that the effectiveness of the village government's role depends heavily on the capacity of the village apparatus and the level of village commitment to forestry issues.

In some villages, village governments play an active role in encouraging farmer participation, while in others, this role remains limited. From a private-sector perspective, the timber industry and wood collectors play a role in shaping market demand for legal timber and in maintaining supply chain sustainability. Research shows that the timber industry tends to comply with SVLK requirements due to regulatory pressures and the export market. However, this compliance has not been accompanied by significant price incentives for community forest farmers. Wood collectors hold a strategic position as a link between farmers and the industry, but they can also become a weak point in SVLK compliance if monitoring is inconsistent.

Table 4. The roles and rights of each stakeholder involved in the implementation of SVLK

Stakeholder	Role	Entity
Ministry of Forestry	Formulation of national SVLK policies, establishment of post–Job Creation Law regulations, general guidance, supervision of timber legality policies, and provision of cost facilitation	Government
Forest Management Unit (FMU) Management	On-site forest management, regulation of community forest operational management, technical supervision, and implementation of legality and sustainability principles	Community
Certification Bodies	Timber legality verification, compliance assessment with SVLK standards, issuance of timber legality certificates, and monitoring of standard compliance	Private Sector
Provincial Environmental and Forestry Agency of Banten	Coordination of SVLK implementation at the provincial level, technical guidance, supervision of community forest management, and institutional facilitation	Government
Village Government 1	Institutional facilitation for community forest farmers, dissemination of SVLK policies, administrative support, and strengthening community participation	Government
Village Government 2	Institutional facilitation for community forest farmers, dissemination of SVLK policies, administrative support, and strengthening community participation	Government
Village Government 3	Institutional facilitation for community forest farmers, dissemination of SVLK policies, administrative support, and strengthening community participation	Government
Timber Industry 1	Utilization of legally sourced timber, compliance with SVLK requirements, creation of demand for legal timber, and support for supply chain sustainability	Private Sector
Timber Industry 2	Utilization of legally sourced timber, compliance with SVLK requirements, creation of demand for legal timber, and support for supply chain sustainability	Private Sector
Timber Industry 3	Utilization of legally sourced timber, compliance with SVLK requirements, creation of demand for legal timber, and support for supply chain sustainability	Private Sector
Timber Collectors	Collection and distribution of timber from community forest farmers, linkage between farmers and timber industries, influence on pricing, and compliance with SVLK requirements	Private Sector
Forestry Agency Branch 1	Technical implementation of SVLK policies, field-level dissemination, assistance to community forest farmers, and supervision of community forest management	Government

Stakeholder	Role	Entity
Forestry Agency Branch 2	Technical implementation of SVLK policies, field-level dissemination, assistance to community forest farmers, and supervision of community forest management	Government

The facilitator serves as a technical actor who bridges the FMU's limited capacity (Alif et al., 2016), particularly in document preparation, field verification assistance, and the facilitation of corrective actions if non-conformity is found. The Forestry Service acts as the main supervisor, providing policy direction, technical guidance, and counseling to FMU administrators and members to improve understanding and compliance with SVLK standards. In carrying out this guidance function, the Forestry Service is supported by district coordinators who act as liaisons between local governments and FMUs at the site level, so that coordination, communication, and the effectiveness of SVLK policy implementation can run more optimally.

Analysis of Stakeholder Influence and Interest Levels

The research results (Table 5) show that the stakeholder with the greatest influence was the Ministry of Forestry. This is because the Ministry of Forestry, as a regulator with human resources who understand the SVLK, also acts as a facilitator, providing funding for SVLK certification. During SVLK implementation, representatives of the Ministry of Forestry conducted direct monitoring to ensure a smooth rollout of SVLK certification.

The analysis table on stakeholder influence and interest levels shows the variation in actors involved in implementing the Timber Legality Verification System (SVLK) policy for community forest management in Banten Province. This analysis is based on the stakeholder interest and influence mapping approach as proposed by (Reed et al., 2009)) and widely used in natural resource policy studies.

Table 5. Level of stakeholder interest and influence

Stakeholder Name	Interest Score	Influence Score	Description
Ministry of Forestry	67	87	Very high interest and very high influence
FMU Management	66	92	Very high interest and very high influence
Non-Governmental Organization (NGO)	53	64	Moderate interest and moderate influence
Provincial Environmental and Forestry Agency of Banten	50	40	Moderate interest and low influence
Village Government 1	54	51	Moderate interest and moderate influence
Village Government 2	54	51	Moderate interest and moderate influence
Village Government 3	54	51	Moderate interest and moderate influence
Timber Industry 1	15	65	Low interest and high influence
Timber Industry 2	18	65	Low interest and high influence
Timber Industry 3	17	65	Low interest and high influence
Timber Collectors	23	64	Low interest and high influence
Forestry Agency Branch 1	14	20	Low interest and low influence
Forestry Agency Branch 2	14	20	Low interest and low influence

The analysis shows that the Ministry of Forestry and the Forest Management Unit (FMU) are categorized as key players with very high levels of importance and influence. The Ministry of Forestry holds strategic authority in formulating regulations, oversight, and directing SVLK policies following the Job Creation Law, while the FMUs play a central role in translating policies into community forest management practices at the grassroots level. The dominance of these two actors underscores their key role in determining the effectiveness of SVLK implementation and the sustainability of community forest management (Reed et al., 2009; Bryson, 2004).

Certification bodies and village governments are categorized as having moderate importance and influence. Certification bodies play a direct role in verifying and issuing timber legality certificates, which determine market access, while village governments

serve as liaisons between formal policies and community forest management practices through institutional facilitation and policy dissemination (Freeman, 1984).

The Banten Provincial Environment and Forestry Office have moderate importance but relatively low influence, with its primary role being coordination and technical guidance. The Forestry Service Branch demonstrated low levels of importance and influence, reflecting limited authority in strategic decision-making, although it still plays a role at the operational level.

The timber industry and wood collectors are classified as context-setters, meaning stakeholders with high influence but low interests. Their influence stems from control over markets, prices, and the timber supply chain, while their primary focus remains on economic interests, rather than the sustainability of community forests, as outlined in a stakeholder analysis based on an interest-influence matrix (Reed et al., 2009).

Overall, the success of SVLK implementation in Banten Province is largely determined by the synergy between key players, particularly the Ministry of Forestry and the FMU Management, with support from certification bodies and village governments. Meanwhile, highly influential but low-interest stakeholders need to be managed through effective regulation and oversight to maintain alignment with the goals of sustainable community forest management (Bryson, 2004).

The stakeholder analysis in this study uses an interest-influence matrix to identify the positions and roles of actors in implementing the Timber Legality Verification System (SVLK) policy following the Job Creation Law on the sustainability of community forests in Banten Province (Figure 3). The interest-influence matrix approach is a commonly used method for mapping actors based on their level of importance and ability to influence the policy decision-making process (Reed et al., 2009; Bryson, 2004). This approach groups stakeholders into four quadrants: Key Players, Subjects, Context Setters, and Crowd.

Figure 3. Stakeholder interest and influence matrix

Key Players are stakeholders with the highest level of interest and influence. The Ministry of Forestry and the Forest Management Unit (FMU) are in this group. The Ministry of Forestry plays a strategic role as a regulator in policy formulation, regulatory adjustments following the Job Creation Law, and oversight of SVLK implementation. Meanwhile, the FMU plays a direct role in community forest management at the grassroots level through member organizations, timber inventory, and SVLK certification applications. The dominance of actors with high interest and influence indicates that policy success largely depends on key actors with regulatory and operational authority (Reed et al., 2009).

Subjects include stakeholders with high interest but relatively low influence, namely the Environment and Forestry Service, certification bodies, and village governments. Actors in this group generally have a strong commitment to policy objectives, but limited authority makes their contributions more facilitative and coordinating (Bryson, 2004).

Context Setters consist of the timber industry and wood collectors, who have high influence but low interest. Their influence stems primarily from their control over supply chains, prices, and market demand. Reed et al. (2009) assert that this group can indirectly influence policy despite not being directly involved in achieving sustainability goals, thereby requiring strong regulation and oversight.

The crowd includes the Environmental and Forestry Service Branch, which acts as a facilitator for SVLK implementation. Stakeholders in this group generally have limited influence and interests, but it is still crucial to involve them in proportion to maintain stability and smooth policy implementation (Eden & Ackermann, 1998).

Overall, stakeholder mapping indicates that the success of SVLK implementation depends heavily on synergy among key players, support from high-stakes actors, and the management of the influence of economic stakeholders to ensure alignment with the sustainable goals of community forest management (Reed et al., 2009).

Economic Impact Analysis of SVLK Implementation

The economic impact of SVLK implementation in Banten Province was quantified using Changes in Income and Costs. Analysis of changes in income and costs was conducted to determine the costs that must be incurred by community forests in implementing SVLK (before the UUCK) and DHHM (after the UUCK). The inflow component of results from community forests, both with and without SVLK implementation, comes from harvests on their respective farmland. The planting pattern used by farmers in Banten Province combines

seasonal plantings and timber plantings. The types of plants that exist include sengon, mahogany, pete, melinjo, jengkol, durian, sobsis, lute, jabon, teak and pulai.

The sale of each farmer's forest products is not simultaneous. They harvest forest products, both wood and non-wood, according to their individual needs, especially for farmers who do not have side jobs and depend entirely on forest products for their livelihood. Sales of forest products in the form of wood are usually for non-fruiting tree species such as sengon, mahogany, teak, sobsis, and jabon. On average, they sell once a month to pay for their children's education and electricity bills, and to meet their daily needs by selling non-wood forest products. Harvesting of non-wood forest products is carried out on average every two weeks. Types of non-wood forest products harvested to meet daily needs include petai, jengkol, pepper, melinjo, and durian for each available during the fruiting season. The average yield of community forest farmers' crops per hectare of land per year has been multiplied by the average selling price received by community forest farmers before and after the UUCK.

Based on Table 6, selling prices have increased, aligning with market prices for both timber and non-timber forest products. Before the enactment of the UUCK, the average yield of smallholder planting per hectare per year was IDR 25,900,000. After the enactment of the UUCK, the average yield increased to IDR 37,120,000. The largest portion of farmers' income comes from non-timber forest products, while the rise in timber production income before and after the UUCK is not attributable to the implementation of SVLK. This is because the market price of wood has risen, and the wood sold is grade A or pest-free. Most smallholders stated they did not welcome the increase in timber prices following the implementation of SVLK. The majority of farmers' income sources are from non-timber forest products. There was no increase in timber prices during SVLK implementation due to specific requirements (to be attached to a legality certificate) for timber shipments. This causes most FMUs in Banten Province to hesitate to continue investing. However, FMUs that still hold a Certificate of Legality (SVLK) incur certification and inspection costs, often subsidized by the government.

Table 6. Total income (inflow) obtained by farmers per hectare per year before and after the UUCK

No	Income	Before UUCK/ha/year	after UUCK/ha/year
1	Wood	IDR 2.700.000	IDR 3.900.000
2	Non-Wood	IDR 23.200.000	IDR 33.220.000
Total		IDR 25.900.000	IDR 37.120.000

Expenditure (outflow) of Community Forest Products in Banten Province. The costs incurred consist of several things, namely: 1. production input costs, which are the cost of purchasing seeds for embroidery and filling the land that has been cut down, because most of the farmers' land in Banten Province has been planted. The type of seedling chosen varies with each farmer's preferences. Besides that, there is a cost for fertilizers and pesticides; they are usually applied only at the beginning of planting. After a year, the plants are left to live on their own in nature. 2. Equipment costs, for goods or tools that are not used once, are calculated according to the results of interviews with average respondents every year for the service and addition of tools. 3. The wages of labor or laborers before the UUCK are still cheaper than after the UUC. This is natural, given the increasing number of years and the rising cost of living. 4. In addition to these costs, there are also other costs or unexpected costs, such as motorcycle tax payments for transportation to the forest, monthly contribution fees, transportation costs if there is a gathering, and others.

Based on Table 7, the total expenditure (outflow) per hectare per year for farmers has increased significantly after the enactment of the Job Creation Law (UUCK). Before the UUCK, farmers' total expenditure was IDR 5,300,000 per hectare per year; after the UUCK, it increased to IDR 7,767,000 per hectare per year. This rise indicates an increase in the burden of production costs that farmers must bear to carry out farming activities. The expenditure component that experienced the largest increase was production input costs, which rose from IDR 1, 912, 925 to IDR 3, 312, 925 per hectare per year. This suggests higher prices for inputs such as seeds, fertilizers, and pesticides, likely due to changes in agricultural input trading policies and reduced subsidies following the Law's implementation. This situation could reduce the efficiency of farming if it is not offset by increased productivity or crop prices. Additionally, labor wages increased significantly from IDR 1,760,000 to IDR 2,640,000 per hectare per year. This increase can be linked to rising wage standards and the limited availability of agricultural labor in rural areas, making labor costs one of the largest components of expenditure after the UUCK. This aligns with the trend of rising labor costs driven by shifts in the socio-economic structure of growing rural communities. Expenses for equipment and miscellaneous costs also increased, though more modestly than for other components. The rise in equipment costs from IDR 702,963 to IDR 814,713 reflects the growing need to maintain or replace production equipment, while the increase in other expenses reflects higher support costs, such as transportation and administration. Overall, the

increase in farmers' total expenditure after the UUCK indicates greater pressure on production costs within the farming system. This situation could reduce farmers' net income unless offset by increased revenue (inflows). Therefore, supporting policies are necessary to reduce production costs or enhance farm efficiency, such as strengthening input subsidies, expanding access to production technology, and protecting agricultural product prices to ensure farmers' economic sustainability.

Table 7. Total expenditure (outflow) obtained by farmers per hectare per year before and after the Law

No	Production Type	Before UUCK	After UUCK
1	Production Input Costs	IDR 1.912.925	IDR 3.312.925
2	Production Input Costs	IDR 702.963	IDR 814.713
3	Equipment Cost	IDR 1.760.000	IDR 2.640.000
4	Labor Wages	IDR 925.000	IDR 1.000.000
Total		IDR 5.300.888	IDR 7.767.638

Revenue Analysis

Revenue is the difference between revenue and total expenses incurred. In addition to timber products, Banten Province also has non-timber products, including fruits, vegetables, and spices. As a result of filling out questionnaires and conducting interviews with farmers, the following income was obtained,

Table 8 shows that farmers' economic performance is strongly influenced by the type of commodity cultivated and the certification financing scheme, both before and after the enactment of the Job Creation Law (UUCK). The difference in impact is clearly evident in the value of net income across land-area categories. Timber commodities with self-certification have suffered significant economic losses. Before the UUCK, the net income of farmers with a land area of <25 ha was recorded at -IDR 19,850,888, while farmers with a land area of 25–50 person and >50 person suffered losses of -IDR 3,767,988 and -IDR 3,422,988, respectively. After the UUCK, although total revenue increased from IDR 2,700,000 to IDR 3,900,000, total cost also increased from IDR 5,300,888 to IDR 7,767,638, resulting in losses of IDR 15,367,638 for land <25 person. This shows that the increase in revenue after the UUCK has not been sufficient to cover the burden of production and certification costs.

Timber commodities with self-certification have suffered significant economic losses. Before the UUCK, the net income of farmers with a land area of <25 person was recorded at -IDR 19,850,888, while farmers with a land area of 25–50 person and >50 person suffered Losses of -IDR 3,767,988 and -IDR 3,422,988, respectively. After the UUCK, although total revenue increased from IDR 2,700,000 to IDR 3,900,000, total cost also increased from IDR 5,300,888 to IDR 7,767,638, resulting in losses of IDR 15,367,638 for land <25 person. This shows that the increase in revenue after the UUCK has not been able to cover the burden of production and certification costs.

Table 8. Farmers' Income under Different Certification Schemes and Commodity Types (Before and After UUCK)

Commodity	Certification Scheme	Period	Total Revenue (TR) (IDR)	Total Cost (TC) (IDR)	Net Income (IDR) <25	25–50 person	>50 person
Timber	Self-financed	Before UUCK	2,700,000	5,300,888	-19,850,888	-3,767,988	-3,422,988
Timber	Self-financed	After UUCK	3,900,000	7,767,638	-15,367,638	-4,645,705	-4,415,705
Timber	State-facilitated	Before UUCK	2,700,000	5,300,888	-2,600,888	-2,600,888	-2,600,888
Timber	State-facilitated	After UUCK	3,900,000	7,767,638	-3,867,638	-3,867,638	-3,867,638
Timber & non-Timber	Self-financed	Before UUCK	25,900,000	5,300,888	3,349,112	19,432,012	19,777,012
Timber & non-Timber	Self-financed	After UUCK	37,120,000	7,767,638	17,852,362	28,574,295	28,804,295
Timber & non-Timber	State-facilitated	Before UUCK	25,900,000	5,300,888	20,599,112	20,599,112	20,599,112
Timber & non-Timber	State-facilitated	After UUCK	37,120,000	7,767,638	29,352,362	29,352,362	29,352,362

In contrast, in the combined timber and non-timber commodities with self-certification, farmers' incomes show a much more positive pattern. Before the UUCK, the net income of farmers with a land area of <25 person had reached IDR 3,349,112, while farmers with a land area of 25–50 person and >50 person received IDR 19,432,012 and IDR 19,777,012, respectively. After the UUCK, the increase in revenue from IDR 25,900,000 to IDR 37,120,000 directly impacted net income, which was IDR 17,852,362 (<25 person), IDR 28,574,295 (25–50 person), and IDR 28,804,295 (>50 person). This data

shows that commodity diversification can offset increased production and certification costs.

The best economic performance is found in timber and non-timber commodities with state-facilitated certifications. Before the UUCK, farmers' net income was relatively high and uniform, at IDR 20,599,112 across all land areas. After the UUCK, this value increased significantly to IDR 29,352,362, up by around IDR 8.75 million per year. This condition confirms that the combination of commodity diversification and the elimination of certification costs has the greatest real impact on increasing farmers' incomes, including for smallholder farmers.

The best economic performance is found in timber and non-timber commodities with state-facilitated certifications. Before the UUCK, farmers' net income was relatively high and uniform, at IDR 20,599,112 across all land areas. After the UUCK, this value increased significantly to IDR 29,352,362, up by around IDR 8.75 million per year. This condition confirms that the combination of commodity diversification and the elimination of certification costs has the greatest real impact on increasing farmers' incomes, including for smallholder farmers.

The increase in income is influenced by several factors, including standards and guidelines before UUCK, as set out in the Regulation of the Director General of Sustainable Production Forest Management Number: P.14 / PHPL / SET / 4/2016 dated April 29, 2016, jo. Number: P.15 / PHPL / PPHH / HPL.3 / 8/2016 dated August 31, 2016, concerning Standards and Guidelines for the Implementation of Performance Assessment of Sustainable Production Forest Management and Timber Legality Verification, with Surveillance or inspection periods carried out every 24 (twenty-four) months during the certificate validity period (10 years). After UUCK Surveillance or inspection in accordance with the Ministerial Decree (2022), concerning Standards and Guidelines for the Implementation of the Legality and Sustainability Verification System, is carried out every 36 (thirty-six) months during the certificate validity period (9 years). In addition, it is influenced by the increase in wood and non-wood forest products, which follow market prices.

Based on interviews with farmers, in addition to the cost of forest farming, they also incur other costs to improve their welfare. The different needs of farmers every month are living expenses, school fees, electricity costs, and vehicle tax costs, each of which has the following average details, Table 9 shows that farmers' monthly costs consist of vehicle tax, children's school fees, electricity, and kitchen needs, with the average monthly amount before the UUCK at IDR 3,097,405 and after the UUCK at IDR 3,838,289. The increase in costs is due to several factors, including higher vehicle and electricity taxes, higher prices for necessities, and higher costs for motorcycle taxis and public transportation.

Table 9. Miscellaneous costs other than forest management costs

No	Expenses incurred	Before UUCK/Ha/month	After UUCK/Ha/month
1	Vehicle Tax	IDR 250.000	IDR 300.000
2	Children's school fees	IDR 350.000	IDR 523.000
3	Electricity cost	IDR 265.000	IDR 350.000
4	Cost of kitchen needs	IDR 2.232.405	IDR 2.665.289
Total		IDR 3.097.405	IDR 3.838.289

R/C Analysis

Suratiyah (2015) stated that the Revenue Cost Ratio (R/C) is known as the ratio of revenue to total cost. Revenue Cost Ratio is an analysis used to determine the relative benefits of community forest management, with criteria for feasibility including,

a. R/C ratio > 1, meaning that the community forest business carried out is profitable and feasible.

b. R/C ratio = 1, meaning that the community forest business does not make a profit or does not suffer losses (break-even).

c. If the R/C ratio is < 1, then the community forest business is at a loss or not suitable to continue.

The analysis of the Income-Cost Ratio (R/C), presented in Table 10, shows that the financial feasibility of forestry for farmers is greatly influenced by the type of commodity, the certification financing scheme, land tenure size, and the policy period (before and after the UUCK). Overall, timber production alone remains economically unviable, while timber and non-timber production combined show strong financial performance.

Under self-financed certification, timber production recorded R/C values of 0.12–0.44 before UUCK and 0.20–0.47 after UUCK across all landholding classes. Although total revenue increased from IDR 2.7 million to IDR 3.9 million, R/C values remained below unity, indicating that certification costs and operational expenses exceeded revenues. This confirms that timber-based smallholder forestry with self-financed certification is not financially viable.

In contrast, when certification costs were fully subsidized by the government, timber R/C values improved and became uniform across land sizes,

reaching 0.51 before UUCK and slightly declining to 0.50 after UUCK. Despite remaining below the feasibility threshold, the removal of certification costs substantially reduced the financial burden on farmers, highlighting the importance of public support mechanisms.

Table 10. R/C Value of People's Forestry Business Based on Certification Scheme, Period, and Land Area

Commodity	Certification Scheme	Period of project	TR (IDR	TC Outflow (IDR	Certificatior Fe (IDR) <25 ha	25–5(perso	>50 persor	R/C <25 person	R/C 25–50 person	R/C >50 person
Wood	Self-Sufficient	Before UUCK	2.700.000	5.300.888	17.250.000	29.177.500	41.105.000	0,12	0,42	0,44
Wood	Self-Sufficient	After UUCK	3.900.000	7.767.638	11.500.000	19.451.667	27.403.333	0,2	0,46	0,47
Wood	State-Facilitated	Before UUCK	2.700.000	5.300.888	0	0	0	0,51	0,51	0,51
Wood	State-Facilitated	After UUCK	3.900.000	7.767.638	0	0	0	0,5	0,5	0,5
Wood & non-Wood	Self-Sufficient	Before UUCK	25.900.000	5.300.888	17.250.000	29.177.500	41.105.000	1,15	4	4,23
Wood & non-Wood	Self-Sufficient	After UUCK	37.120.000	7.767.638	11.500.000	19.451.667	27.403.333	3,9	4,34	4,46
Wood & non-Wood	State-Facilitated	Before UUCK	25.900.000	5.300.888	0	0	0	4,89	4,89	4,89
Wood & non-Wood	State-Facilitated	After UUCK	37.120.000	7.767.638	0	0	0	4,78	4,78	4,78

A markedly different pattern emerged for combined timber and non-timber forest products (NTFPs). With self-financed certification, R/C values exceeded 1 across all land sizes, ranging from 1.15 to 4.23 before UUCK and increasing sharply to 3.90–4.46 after UUCK, in line with rising total revenue (from IDR 25.9 million to IDR 37.12 million). These results demonstrate that income diversification significantly enhances cost efficiency and economic resilience.

The highest and most stable R/C values were observed under government-facilitated certification for combined timber and non-timber production, reaching 4.89 before UUCK and 4.78 after UUCK, regardless of land size. This indicates a highly efficient cost structure, even with increased operational costs following UUCK. Overall, the findings confirm that certification costs are a critical determinant of financial viability in smallholder forestry. Policy reforms under UUCK improved revenues but were insufficient to ensure the profitability of timber-only systems without certification subsidies. Conversely, product diversification combined with state-supported certification emerges as a robust strategy to strengthen the economic sustainability of smallholder forest management.

The primary objective of government-provided financial assistance is to improve the quality of life for farmers. Farmers in Banten Province are considered prosperous if all costs other, excluding forestry costs in Table 7 and forest management costs in Table 9, can be covered with forest products. The financial assistance provided by the Ministry of Forestry does not significantly impact the welfare of community forest farmers in Banten Province. Timber forest products in community forests in Banten Province are no longer reliable as a primary commodity to support farmers' livelihoods, but non-timber forest products are a very promising alternative if managed properly and are much more profitable for farmers without damaging the forest ecosystem. The allocation of SVLK (Standard Legal Entity Verification System) facilitation funds in Banten Province can be directed to other activities that can provide maximum benefits. The SVLK certification budget for community forests can be diverted to other urgent needs such as pest and disease eradication and facilitation of direct sales to industry (Nugroho et al. 2024).

Conclusion

This study shows that the 2022 DHHM policy provides a more practical and flexible alternative to the SVLK system for timber from community forests, particularly those grown on private land, by simplifying administrative requirements through its integration with SAKR. However, SVLK implementation in Banten Province remains ineffective due to limited human resource capacity, insufficient budgets, inconsistent policies, weak communication, and the absence of clear SOPs, which also result in low farmer awareness. From a stakeholder perspective, the Forest Management Unit (FMU) and the Ministry of Forestry act as key players with high influence and importance, while other actors,

such as local government, certification bodies, and village institutions, play supporting roles with limited influence, and timber collectors and industry function as context setters. This imbalance weakens coordination and reduces policy effectiveness. Economically, timber production under SVLK is not feasible for smallholders due to high certification and transaction costs, whereas non-timber forest products (NTFPs) offer more profitable and sustainable alternatives without requiring SVLK certification. The selective use of timber from NTFPs supported by DHHM documentation provides a more balanced approach between legality, economic viability, and ecological sustainability. Thus, this research contributes to SVLK policy by emphasizing the need for adaptive, cost-efficient, and stakeholder-integrated approaches that better align regulatory frameworks with local socio-economic conditions.

This study is limited to Banten Province and may not represent other regions, relies mainly on qualitative stakeholder analysis and R/C calculations, and lacks long-term data to assess broader impacts. Therefore, it is recommended to strengthen the integration of SVLK and DHHM through clear SOPs and simplified procedures, improve stakeholder capacity and coordination, promote NTFP-based livelihood strategies, and conduct further research across different regions using more comprehensive and longitudinal approaches to evaluate long-term socio-economic and environmental outcomes.

Acknowledgments
Thank you to all parties who have helped in this research so that this article can be published.

Author Contributions
Conceptualization, T.H., B.N and L.S; methodology, T.H., B.N and L.S.; software, T.H.; validation, T.H., B.N. and L.S.; formal analysis, T.H.; investigation, T.H.; resources, T.H.; data curation, T.H.; writing—original draft preparation, T.H.; writing—review and editing, T.H. B.N and L.S.; visualization, T.H.; supervision, T.H.; project administration, T.H.; funding acquisition, T.H. All authors have read and agreed to the published version of the manuscript

Funding
Purely using personal funds without funding assistance from anywhere.

Conflicts of Interest
The authors declare no conflict of interest in this research.

References

Alhafizin, M., & Handrayani. (2025). Development of Ecotourism Based on Ecosystem Services in the Tanjung Batu Mangrove Ecosystem, Central Sekotong, Indonesia. *Indonesian Journal of Tropical Biology*, *1*(3), 147–155. https://doi.org/10.65622/ijtb.v1i3.187

Alif, M., Sahide, K., Maryudi, A., Supratman, S., & Giessen, L. (2016). Forest Policy and Economics Is Indonesia utilising its international partners ? The driving forces behind Forest Management Units. *Forest Policy and Economics Journal*, *69*, 11–20.

Astana, S., Riva, W. F., Hardiyanto, G., Komarudin, H., & Sukanda, A. (2020). Towards improved forestry performance : evaluating the added value of the timber legality assurance system in Indonesia. *International Forestry Review*, *22*(1), 19–32. https://doi.org/https://doi.org/10.1505/146554820828671517

Ayu, H., S, I. S. W., Hidayat, S., & Jannah, M. (2025). Pineapple Waste Processing Design as Functional Food to Support Agrotourism in. *Indonesian Journal of Tropical Biology*, *1*(3), 122–130. https://doi.org/10.65622/ijtb.v1i3.192

Costa, J. (2024). Mixed Methods in Educational Large-Scale Studies : Integrating Qualitative Perspectives into Secondary Data Analysis. *Education Sciences*, *14*(12), 1347. https://doi.org/https://doi.org/10.3390/educsci14121347

Cubbage, F., Moore, S., Henderson, T., & Araujo, M. M. F. C. (2009). Costs and benefits of forest certification in the Americas. *Natural Resources: Management, Economic Development and Protection*, 1–29. https://doi.org/10.34800/fsc-international523

Curry, L. A., Nembhard, I. M., & Bradley, E. H. (2009). Qualitative and mixed methods provide unique contributions to outcomes research. *Circulation*, *119*(10), 1442–1452. https://doi.org/https://doi.org/10.1161/CIRCULATIONAHA.107.7 42775

Diantoro, T. D. (2025). A Critical Review of the Actualization of the Right to Control by the State Doctrine in the Policy on Revocation of Forest Area Permits / Concessions. *Jurnal Pembangunan Hukum Indonesia*, *7*(2), 250–272. https://doi.org/https://doi.org/10.14710/jphi.v7i2.71-93

Eriksson, L., & Fries, C. (2021). Relations between structural characteristics, forest involvement, and forest knowledge among private forest owners in Sweden. *European Journal of Forest Research*, *140*(1), 51–63. https://doi.org/10.1007/s10342-020-01314-3

Gracela, A., Nugroho, B., & Sundawati, L. (2024). Effectiveness of Policy Implementation Acceleration of Social Forestry in Central Sulawesi Province. *Contributions of Central Research Institute*

for Agriculture, *18*(4), 193–203. https://doi.org/10.59651/ccria

Gupta, G., Kumar, R., Singh, K., Rawat, V., Lavania, P., Kumari, P., Rani, M., Dobriyal, M., Srivastav, M., & Kumar, P. (2026). Forest resources: sustainable exploitation and management. *In Advanced Geospatial and Ground Based Techniques in Forest Monitoring*, (2005), 85–109. https://doi.org/https://doi.org/10.1016/B978-0-443-18949-4.00003-8

Huang, W., Wilkes, A., Sun, X., & Terheggen, A. (2013). Who is importing forest products from Africa to China ? An analysis of implications for initiatives to enhance legality and sustainability. *Environment, Development and Sustainability*, *15*(2), 339–354. https://doi.org/10.1007/s10668-012-9413-1

Iriyani, S., Arman, M., Nugroho, B., Buchori, D., & Setiajiati, F. (2024). Indigenous Custodianship and Timber Legality Assurance System: Challenges and Opportunities for Customary Forest Management in Indonesia. *Jurnal Sylva Lestari*, *12*(3), 929–947. https://doi.org/https://doi.org/10.23960/jsl.v12i3.948

Kafiil, G. M., Jehan, R., & Irsadanar, P. (2025). From Trade to Transformation : How EU Investment Provisions Shape Environmental Governance in Indonesia and Vietnam. *BIO Web of Conferences 199, 199*(02015), 1–9.

Nugroho, B., Buchori, D., Iriyani, S., & Setiajiati, F. (2022). Efektivitas Penerapan SVLK pada Berbagai Tipe Alas Hak. *Policy Brief Pertanian, Kelautan, Dan Biosains Tropika, 4*(3), 334–337. https://doi.org/https://doi.org/10.29244/agro-maritim.0403.334-337

Nugroho, B., Soedomo, S., & Dermawan, A. (2017). Policy Effectiveness of Loan for Delaying Timber Harvesting for Smallholder Private Forest in Indonesia. *Jurnal Manajemen Hutan Tropika V*, *23*(2), 61–70. https://doi.org/10.7226/jtfm.23.2.61

Nugroho, B., & Tiryana, T. (2013). Implication s of the Private Property Right to the Community Forest Businesses Formalization through the Certification Policy. *Jurnal Manajemen Hutan Tropika*, *XIX*(December), 178–186. https://doi.org/10.7226/jtfm.19.3.178

Nurrochmat, D. R., Dharmawan, A. H., Obidzinski, K., Dermawan, A., & Erbaugh, J. T. (2016). Contesting national and international forest regimes: Case of timber legality certification for community forests in Central Java, Indonesia. *Forest Policy and Economics*, *68*, 54–64. https://doi.org/10.1016/j.forpol.2014.09.008

Omoigberale, O., Nwogwugwu, N., Nwanazia, O. W., & Nwanakwe, C. (2025). African Journal of Politics and Administrative Studies (AJPAS). *African Journal of Politics and Administrative Studies (AJPAS)*, *18*(1), 40–61. https://doi.org/https://dx.doi.org/10.4314/ajpas.v18i1.3

Purwanto, A. (2016). Implementation of Forest Certification in Small Farm Community Forest in Gunung Kidul Regency, Indonesia Student number S1633481 MASTER OF ENVIRONMENTAL AND ENERGY MANAGEMENT. In *THESIS* (pp. 1–63). UNIVERSITY OF TWENTE.

Putranto, A. H., Nilasari, B. M., & Utha, M. A. (2024). The Effectiveness of the Implementation of HRDD and SIA in Advancing Sustainable Forest Management Certification in Indonesia. *American Journal of Open Research*, *3*(7), 194–203. https://doi.org/10.58811/opsearch.v3i7.120

Putro, H. A. (2015). Peran sertifikasi bagi petani hutan rakyat di provinsi daerah istimewa yogyakarta handyan atyanto putro. In *(Doctoral dissertation, Bogor Agricultural University (IPB)*.

Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C. H., & Stringer, L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management*, *90*(5), 1933–1949. https://doi.org/https://doi.org/10.1016/j.jenvman.2009.01.001

Refani, A., Sundawati, L., & Sanudin. (2024). Dinamika Kelompok Tani Hutan pada Hutan Hak dan Perhutanan Sosial di Kabupaten Bandung, Jawa Barat, Indonesia. *Jurnal Penelitian Hutan Dan Konservasi Alam*, *20*(2), 1–15. https://doi.org/https://doi.org/10.59465/jphka.v20i2.206

Rhouma, A., & Bouzid, S. (2025). Plant Diseases : Types, Causes and Impacts. *Egyptian Journal of Agricultural Sciences*, *76*(3), 21–46. https://doi.org/10.21608/EJARC.2025.441655

Rochmayanto, Y., Nurrochmat, D. R., Locke, C., Casse, T., Nugroho, B., & Darusman, D. (2022). Evaluating the "Village Forests" in Indonesia: Property Rights and Sustainability Perspectives. *Small-Scale Forestry 21*, *21*(3), 461–481. https://doi.org/https://doi.org/10.1007/s11842-022-09506-y

Stavi, I., & Lal, R. (2015). Achieving Zero Net Land Degradation : Challenges and opportunities. *Journal of Arid Environments*, *112*, 44–51.

https://doi.org/http://dx.doi.org/10.1016/j.jaridenv.2014.01.016

Sudarli, Widhiantari, I. A., Cicilia, S., Amaro, M., Ayu, H., Ahmadi, & Amrullah. (2025). Farmers' Perceptions of Integrated Farming Systems for Sustainable Agrotourism in Das Batu Lanteh Sumbawa, Indonesia. *Indonesian Journal of Tropical Biology*, *1*(3), 140–146. https://doi.org/10.65622/ijtb.v1i3.177

Suratiyah, K. (2015). *Ilmu usahatani*. Penebar Swadaya Grup.

Tegegne, Y. T., Cramm, M., & Brusselen, J. Van. (2018). Sustainable Forest Management, FLEGT, and REDD + : Exploring Interlinkages to Strengthen Forest Policy Coherence. *Sustainability Review*, *10*(12), 1–22. https://doi.org/10.3390/su10124841

Villanueva, M. S. F. D. P. (2025). Regional Forest Governance Arrangements : Institutional diversity, Lobby influence, and their Effects. In *Dissertation* (pp. 1–119). TECHNISCHE UNIVERSITAT DRESDEN.

Wicaksono, A., Novi, R., Sevia, U., & Amarta, R. (2025). Actor collaboration in the implementation of business licensing integrated with the land use framework : Indonesian case study. *Urban Governance Journal*, *52*(10), 1–13. https://doi.org/10.1016/j.ugj.2025.10.003