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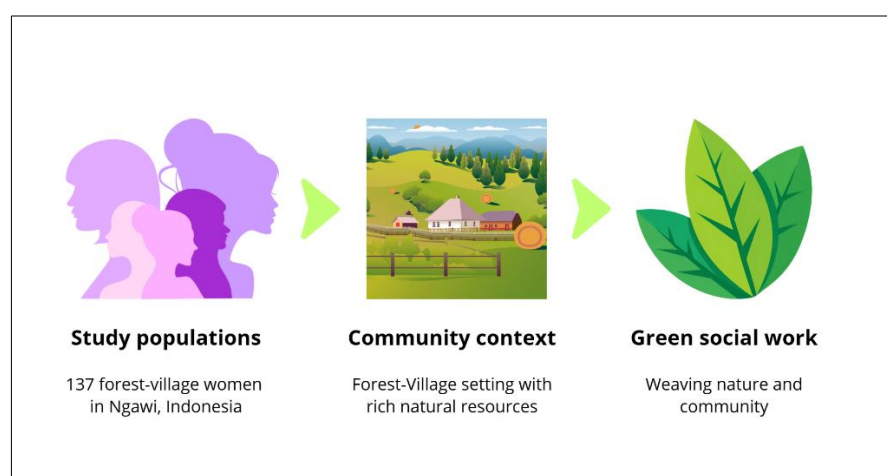
Community Strength and Natural Resource Capital Among Forest-Village Women in Indonesia: Insights for Green Social Work

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ABSTRACT: This study examines community strength and natural resource capital among women in the Forest Village Women's Group (Kelompok Perempuan Desa Hutan, KPDH) in Madiun Regency, East Java, Indonesia. A quantitative descriptive design was applied, with data collected from 137 women through a four-point Likert-scale questionnaire, structured observation, and documentary study across four capital dimensions: natural resource, economic production, human, and social-institutional capital. The findings reveal a pronounced imbalance across these dimensions. Social and institutional capital, rooted in *gemeinschaft* solidarity and an ethic of care, proved the community's strongest asset, sustaining the Women's Cooperative (KOPWAN) and collective mobilisation. Human capital, by contrast, was constrained by limited formal education, with 62% of respondents having completed only primary school. Natural resource capital presented a paradox: substantial assets, including fertile land, teak forests, and non-timber forest products such as leaves and fuelwood, remained underused because of insecure land tenure (91% without ownership under Perhutani's authority) and limited processing capacity. Economic production capital was further weakened by geographical isolation and dependence on intermediaries for market access. The study offers insights for a Green Social Work framework integrating natural resource stewardship, capacity building, and institutional strengthening to support sustainable, gender-just empowerment for forest-village women.

GRAPHICAL ABSTRACT:



1. INTRODUCTION

Poverty remains one of the most persistent structural challenges facing developing countries, including Indonesia. As a multidimensional phenomenon, it extends beyond the failure to meet minimum material or financial living standards. It also encompasses restricted access to fundamental rights, including education, health care, productive capital, and participation in decision-making (Istyawan, 2025). Addressing poverty of this nature therefore requires strategies that are comprehensive, integrative, and sustained, rather than isolated economic interventions (Balasubramanian et al., 2023).

The burden of poverty in Indonesia is not evenly distributed. It reflects a marked gender disparity. According to the Central Statistics Agency of Indonesia, the national poverty rate stood at 8.47% as of March 2025, affecting approximately 23.85 million people (BPS RI, 2025). When disaggregated by sex, however, the poverty rate among women (8.56%) exceeded that of men (8.38%), reflecting what has been globally recognised as the feminisation of poverty, a structural and cultural condition that leaves women disproportionately exposed to economic shocks (BPS RI, 2025).

This layered vulnerability intensifies for women living in rural areas that border state forest land, commonly identified as forest-village communities. In East Java Province alone, approximately 1.5 million people depended on forest-adjacent land for their livelihoods in 2025, of whom 12.86% lived below the poverty line (BPS East Java, 2025). Forest-village communities typically depend heavily on natural resource capital, principally teak forest ecosystems and rain-fed dry land. Limited economic diversification, minimal post-harvest technology, and low formal education compound this economic fragility, and women bear the heaviest share of the resulting burden.

This condition is clearly reflected in Madiun Regency, particularly its northern areas bordering Perhutani-managed forest land. Madiun records an overall poverty rate of approximately 13.81%, with a poverty line of IDR 445,865 per capita per month (BPS East Java, 2025). These areas are typically hilly and arid, dominated by teak plantations. During prolonged dry seasons, declining agricultural yields sharply reduce the income of forest farmers, locally known as *pesanggem*. In 2025, the number of Socio-Economically Vulnerable Women (Perempuan Rawan Sosial Ekonomi, PRSE) in Madiun reached 114,900, or 13.62% of the local female population (BPS East Java, 2025). This constraint is evident among forest-adjacent communities in Madiun Regency, where average monthly household income remains around IDR 1,500,000, considerably below the regional minimum wage.

Within this marginal setting, forest-village women commonly carry a double burden. They manage full domestic responsibility while also engaging in labour-intensive subsistence activities, including farm labour, livestock fodder collection, and the harvesting of non-timber forest products (NTFPs) such as teak leaves and fuelwood. This labour, however, is not matched by adequate human capital. Most women in these communities have completed only primary or lower-secondary education, which limits their capacity to absorb external training and technological innovation.

In response, the Indonesian government, through Perum Perhutani, established the Forest Village Women's Group (Kelompok Perempuan Desa Hutan, KPDH) as part of the Social Forestry programme. This initiative is formalised under Regulation of the Minister of Environment and Forestry No. 4 of 2023 concerning Social Forestry, and supported by the Ministry of Cooperatives and Small and Medium Enterprises Decree No. 02/Kop.M/IX/2009 on Women's Cooperative (Koperasi Wanita, KOPWAN) guidelines. Since its introduction in Madiun in 2007, the KPDH programme has expanded to all 95 forest villages under the regency's administration.

Through the Collaborative Forest Management scheme (Pengelolaan Hutan Bersama Masyarakat), Perhutani combines agroforestry activities with productive skills training, ranging from catfish aquaculture and woven-plastic handicrafts to cassava and banana chip processing. At the empirical level, however, empowerment efforts among forest-village women in Madiun continue to face internal constraints. The prevailing approach has relied heavily on externally driven, one-directional interventions, with limited attention paid to strengthening the community's internal capacity.

Natural resource capital appears abundant, encompassing fertile agricultural land, teak forest cover, extensive maize harvests, and a nearby reservoir. Yet these assets remain largely unconverted into value-added economic output, constrained by insecure land tenure, limited processing technology, and restricted market access (Chen et al., 2022; Ma & Sexton, 2021). These structural weaknesses raise a critical question: to what extent can a community's collective strength offset constrained natural and economic capital, and what does this imply for future empowerment models?

Prior research on forest-village poverty alleviation and social forestry management leaves a significant gap. Existing studies are predominantly qualitative and tend to examine indigenous communities in general terms (Chen et al., 2022; Toumbourou et al., 2025; Widyaningsih et al., 2022). Where social capital and community participation are measured quantitatively, women are often treated as passive beneficiaries rather than as a distinct collective entity with gender-specific dynamics. To date, no comprehensive quantitative study has measured community strength among forest-village women as an integrated construct spanning natural resource, economic production, human, and social-institutional capital simultaneously, within a locus characterised by full dependence on Perhutani-managed land and supported by an active women's cooperative, as found in Madiun Regency.

This study therefore aims to examine, quantitatively and systematically, the community strength of the Forest Village Women's Group (KPDH) in Madiun Regency, East Java, with particular attention to the utilisation of natural resource capital. By empirically mapping which capital dimensions function as dominant strengths and which remain critical weaknesses, this study seeks to offer grounded insights for the development of a Green Social Work framework (Dominelli, 2013), one that integrates ecological stewardship with gender-just, community-based empowerment for forest-village women.

Study Questions

This study addresses the following questions:

1. What are the demographic characteristics of KPDH respondents in Madiun Regency?
2. To what extent is natural resource capital utilised in the women's empowerment programme?
3. To what extent is economic production capital utilised?
4. To what extent is human capital developed?
5. To what extent do social and institutional capital support the sustainability of the group?

2. MATERIALS AND METHODS

2.1 Study Design

This study adopted a quantitative descriptive design to examine community strength among women in the Forest Village Women's Group (KPDH) in Madiun Regency, East Java. The quantitative approach allowed the researchers to measure the four capital dimensions of community strength objectively and systematically, converting social phenomena into statistical indicators while minimising subjectivity (Thomas, 2021). The descriptive component was used to present a comprehensive account of respondent characteristics and the level of availability and utilisation of natural resource, economic production, human, and social-institutional capital.

2.2 Population and Sample

The study population comprised all women formally registered as active members of KPDH and the Women's Cooperative (KOPWAN) in the study area, totalling 209 individuals (57 KPDH members and 152 KOPWAN members). The sample size was determined using the Slovin formula with a 5% margin of error, yielding 137 respondents. Proportional Stratified Random Sampling was then applied, allocating the sample across the two institutional strata in proportion to their respective membership sizes, so that both groups were represented fairly in the final dataset (Ahmed, 2024).

2.3 Data Collection

Three complementary techniques were used to gather valid and mutually reinforcing data. A structured questionnaire, measured on a four-point Likert scale (very low, low, high, very high), served as the primary instrument (Taufique et al., 2026). The neutral midpoint was deliberately excluded to encourage respondents to provide a definite response rather than a non-committal one. Structured observation was conducted to record the physical condition of village infrastructure, productive activities among KPDH members, non-timber forest product processing, and routine institutional meetings. Documentary study supplemented the primary data, drawing on village monographic profiles, sub-district records, KPDH membership registers, KOPWAN financial reports, and relevant social forestry regulations.

2.4 Instrument Validity and Reliability

Prior to full deployment, the questionnaire was pre-tested with 30 forest-village women who shared comparable socio-economic characteristics with the study population but were not included in the main sample (Lenzner et al., 2023). Item validity was assessed using Pearson product-moment correlation, while internal consistency was assessed using Cronbach's alpha. The criteria applied are summarised in Table 1.

Table 1. Summary of Instrument Validity and Reliability Testing

Test	Method	Criterion	Decision Rule
Validity	Pearson product-moment correlation (n = 30)	r-table = 0.361 ($\alpha = 0.05$)	Item retained if r-count > r-table
Reliability	Cronbach's alpha	Threshold = 0.60	Instrument deemed reliable if $\alpha > 0.60$

All questionnaire items met the validity and reliability criteria and were subsequently used for full data collection.

2.5 Data Analysis

Primary data were processed through editing, coding, tabulation, and cleaning prior to analysis. Descriptive statistical techniques, including frequency distribution, percentage calculation, and mean scores, were then applied to each capital dimension (Schneiderberg et al., 2026). To aid interpretation, the actual score range obtained for each dimension was classified into four theoretical interval categories (very low, low, high, very high), derived from the Likert scale structure. The resulting patterns were narratively interpreted to address the study questions outlined in Section 1.

3. RESULTS

Data were obtained from 137 women affiliated with the Forest Village Women's Group (KPDH) and the Women's Cooperative (KOPWAN) in Madiun Regency, East Java. The following sections present respondent characteristics, followed by findings across the four capital dimensions of community strength: natural resource, economic production, human, and social-institutional capital.

3.1 Respondent Characteristics

Most respondents belonged to the mature productive age group, and formal education levels were markedly low across the sample. Table 2 summarises the demographic profile.

Table 2. Demographic Characteristics of Respondents (N = 137)

Characteristic	Category	n*	%
Age	35 to 49 years	74	54
	50 years and above	42	31
	Below 35 years	21	15
Education	Primary school	85	62
	Lower secondary school	33	24
	Upper secondary school	16	12
	Higher education	3	2
Primary occupation	Forest land cultivator (<i>pesanggem</i>) or agricultural labourer	93	68
	Small-scale trading	25	18
	Domestic work and small livestock keeping	19	14

Household income	Below regional minimum wage (IDR 1,000,000 to 1,500,000/month)	99	72
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Note. *n* calculated independently per item as $\% \times 137$ respondents (rounded) and totals are not expected to sum to 137.

The predominance of primary-level education (62%) corresponded closely with reliance on land-based subsistence work, with 68% of respondents engaged directly in forest cultivation or agricultural labour. This pattern indicates a structural link between limited formal education and constrained livelihood diversification.

3.2 Natural Resource Capital

Respondents widely perceived the surrounding ecological environment as abundant, yet formal control over land remained highly restricted (Table 3).

Table 3. Natural Resource Capital Indicators

Indicator	n	%	Reported Level
35 to 49 years	116	85	Very high
50 years and above	107	78	Very high
Below 35 years	12	9	Very low

Note. *n* calculated independently per item as $\% \times 137$ respondents (rounded) and totals are not expected to sum to 137.

Whilst 85% of respondents regarded local land and forest resources as extensive and fertile, only 9% held formal ownership or certification. The remaining 91% held cultivator status under Perhutani's authority, working through profit-sharing arrangements rather than independent land tenure. This asymmetry between ecological abundance and legal control represents a defining paradox within the natural resource capital dimension.

3.3 Economic Production Capital

Institutional financial access appeared reasonably strong, but market infrastructure presented substantial constraints (Table 4).

Table 4. Economic Production Capital Indicators

Indicator	n	%	Reported Level
KOPWAN regarded as strategically important	121	88	Very high
Benefit from Gapoktan input support (subsidised fertiliser)	89	65	High
Geographic and infrastructural barriers to market access	101	74	High

Note. *n* calculated independently per item as $\% \times 137$ respondents (rounded) and totals are not expected to sum to 137.

Although 88% of respondents valued KOPWAN as a critical source of working capital, 74% reported substantial difficulty reaching district markets because of poor road conditions and limited transport. This isolation contributed to dependence on intermediaries, who purchased unprocessed maize at prices below the prevailing market rate.

3.4 Human Capital

Training participation was high, but the translation of skills into sustained economic activity, and into leadership confidence, remained limited (Table 5).

Table 5. Human Capital Indicators

Indicator	n	%	Reported Level
Participation in skills training programmes	107	78	High
Consistent application of training in income-generating activity	38	28	Low
Difficulty with financial bookkeeping and administration	97	71	High (constraint)

Preference for passive membership over leadership roles	88	64	High (constraint)
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Note. *n* calculated independently per item as % $\times$ 137 respondents (rounded) and totals are not expected to sum to 137.

Despite high participation in skills training (78%), only 28% of respondents consistently applied these skills to generate additional income. Furthermore, 71% reported difficulty with financial bookkeeping, and 64% preferred to remain passive members rather than pursue leadership positions, citing low self-confidence and limited public-speaking experience. Together, these findings suggest a substantial gap between training exposure and functional capability.

3.5 Social and Institutional Capital

Social and institutional capital emerged as the strongest dimension, though external networking remained a persistent weakness (Table 6).

Table 6. Social and Institutional Capital Indicators

Indicator	n	%	Reported Level
High mutual trust and solidarity (gotong royong)	126	92	Very high
Accommodative relationship with village government	104	76	High
Weak external ties beyond Perhutani (bridging capital)	111	81	Very low (constraint)

Note. *n* calculated independently per item as % $\times$ 137 respondents (rounded) and totals are not expected to sum to 137.

Trust and solidarity were rated very high by 92% of respondents, reflecting strong internal cohesion. Formal recognition from the village government, expressed through KPDH representation in the annual Village Development Planning Forum (Musrenbangdes), was regarded positively by 76% of respondents. However, 81% indicated that external relationships beyond Perhutani, including links to private sector partners, government agencies, or academic institutions, remained weak, pointing to a largely inward-facing institutional structure.

3.6 Synthesis Across Capital Dimensions

Table 7 presents a qualitative synthesis of the four capital dimensions, based on the patterns reported above.

Table 7. Qualitative Synthesis of Community Strength Across Capital Dimensions

Capital Dimension	Dominant Pattern	Overall Assessment
Social and institutional	Strong internal trust and cooperative participation; weak external networking	Strongest dimension
Natural resource	Ecological abundance; restricted formal land tenure	Asymmetric
Economic production	Functional local financial institution; severe market and infrastructural isolation	Constrained
Human capital	High training exposure; low functional translation into practice	Weakest dimension

Note. *n* calculated independently per item as % $\times$ 137 respondents (rounded) and totals are not expected to sum to 137.

This table reflects a qualitative synthesis of reported patterns rather than a computed composite score.

4. DISCUSSION

The findings presented above describe a community whose strength is unevenly woven. Where natural endowment is generous, institutional entitlement is thin. Where social trust runs deep, economic reach remains shallow. Read together, these patterns describe not four isolated conditions but a single fabric in which some threads, natural resources, human capacity, market access, and collective solidarity, are pulled taut while others hang slack (Jones, 2022). Understanding forest-village women's empowerment therefore requires attention to how these threads are woven together, and where the weave has come undone.

This weaving metaphor is not merely rhetorical. It corresponds closely to the Community Capitals Framework, which conceptualises rural development as the interaction of multiple, interdependent forms of capital, including natural, human, social, and financial capital, that reinforce or undermine one another depending on how they are invested (Mkhize, 2025). Viewed through this lens, the four dimensions measured in this study are not competing explanations of community strength but strands of one system (Jaye et al., 2023). A deficit in one capital constrains the productive use of the others, a pattern strongly visible in this study.

The most striking asymmetry lies within natural resource capital itself. The study area is materially rich. Fertile land, extensive teak forest, and a reliable nearby water source together constitute a natural resource base that many rural communities would consider enviable. Yet this abundance coexists with near-total landlessness, with 91% of respondents holding no formal ownership over the land they cultivate. This is not an isolated local anomaly. National-level research on Indonesia's forest tenure reform has found that gender mainstreaming policies remain well developed at the national policy level but are implemented in a largely gender-neutral manner at the provincial and district level, leaving women's practical access to forest land governance structurally weak (M, 2020).

A closely related case study of two Indonesian social forestry villages found that women were frequently not formally recognised as primary land users or farmers at all, despite performing the bulk of cultivation labour, and were correspondingly underrepresented in decisions over land allocation and benefit sharing (Anugrah et al., 2022). The pattern observed in this study mirrors this finding closely. Women perform the physical labour of planting, weeding, and harvesting, while decisions over land allocation, profit-sharing terms, and resource governance remain vested in Perhutani and, within the community, in a small circle of male leadership. Natural resource stewardship, in this configuration, is asked of women without being entrusted to them.

This gendered exclusion from resource governance intersects with a second constraint: the fragility of human capital. Skills training under the KPDH programme reaches most members (78%), yet only 28% translate this training into sustained income-generating activity. Rather than reading this gap as an individual failure to apply new knowledge, a strengths-based reading situates it within structural barriers produced by decades of limited access to formal education (Bitzer et al., 2024). When 62% of respondents have completed only primary schooling, the cognitive and administrative demands of financial literacy, digital bookkeeping, and price calculation become genuine obstacles rather than matters of motivation or effort. Natural resource capital and human capital are, in this sense, mutually constraining. Ecological assets cannot be converted into durable livelihoods without the capacity to process, price, and market them, yet that capacity has been systematically underdeveloped in the very communities most dependent on natural resources for survival (Witenstein & Iyengar, 2023).

Economic production capital exposes a third strand of the same weave, and it is here that the gendered division of forest labour becomes most economically consequential. Global comparative evidence on forest product use indicates that women disproportionately undertake the collection, processing, and small-scale trading of non-timber forest products, while men are more often positioned to control transport, bulk sale, and negotiation with external buyers (Magry et al., 2022). This division mirrors what was observed in this study, where women gather teak leaves and fuelwood as part of daily subsistence work, yet the surplus maize they cultivate is sold, unprocessed, to intermediaries who visit the community. With 74% of respondents reporting serious barriers to reaching district markets, this arrangement leaves natural resources flowing out of women's hands at the point of highest labour input and lowest price capture. The Women's Cooperative (KOPWAN) demonstrates that when women are given functioning financial institutions, they mobilise them effectively, with 88% of respondents regarding it as strategically vital. Nevertheless, this internal financial strength cannot compensate for external isolation. In Putnam (2020) terms, the community possesses strong bonding capital but weak bridging capital. The ties that connect women to one another are robust, but the ties that would connect their labour and their natural resources to fair-value markets are largely absent.

It is social and institutional capital that ultimately holds this uneven fabric together. The strength of mutual trust, reported by 92% of respondents, reflects Hao et al. (2024) described as *gemeinschaft*, a form of solidarity grounded in shared life and kinship rather than transactional exchange. Understood through a feminist social work lens, this solidarity can be read as an expression of an ethic of care historically sustained by women, and it is what allows KPDH and KOPWAN to function at all in the relative absence of external institutional support. Yet 81% of respondents also reported weak ties beyond Perhutani, indicating that this social capital remains inward-facing. Trust has been woven tightly within the community but has not yet

been extended outward to the institutions, markets, and partnerships that could convert natural and social assets into lasting economic security.

Taken together, these four strands point toward a single conclusion. The empowerment of forest-village women is not primarily constrained by an absence of resources. Natural assets exist, human capacity exists in latent form, financial institutions exist, and social trust exists in abundance (Espada & Kainer, 2023). What is missing is the connective tissue that would allow these assets to reinforce rather than merely coexist with one another. This is precisely the conceptual space that Green Social Work is positioned to occupy. Dominelli (2013) defines environmental injustice as society's failure to ensure the equitable distribution of natural resources in meeting human needs, while simultaneously safeguarding the wellbeing of people and the environment for the future, and argues that social workers have a professional responsibility to organise and mobilise communities toward more equitable models of resource use. In a related contribution aimed directly at practitioners, Dominelli (2013) calls for environmental justice to be embedded as a core, rather than peripheral, concern of social work practice and education. Applied to this study, this framework suggests that empowerment interventions should treat natural resource stewardship, human capacity building, market bridging, and institutional trust not as four separate programme components but as interdependent parts of a single, sustainable design.

Table 8 draws these threads together, positioning each capital dimension alongside its underlying mechanism, the supporting literature, and the corresponding insight for a Green Social Work framework.

Table 8. Weaving Community Strength Findings into Insights for Green Social Work

Capital Dimension	Empirical Pattern	Underlying Mechanism	Supporting Literature	Insight for Green Social Work
Natural resource	Ecological abundance alongside near-total landlessness (91%)	Gendered exclusion from natural resource governance under external authority	(Anugrah et al., 2022; M, 2020)	Pair ecological stewardship with advocacy for women's formal participation in resource decision-making
Human Capital	High training uptake (78%), low functional application (28%)	Structural barriers linked to limited formal education	(Bitzer et al., 2024; Witenstein & Iyengar, 2023)	Replace short-term training with sustained, embedded mentorship suited to women's learning pace
Economic production	Strong local cooperative (88%), severe market isolation (74%)	Gendered division of forest labour; weak bridging capital	(Hao et al., 2024; Putnam, 2020)	Build cross-sectoral partnerships to connect women's natural resource products to fair-value markets
Human capital	High internal trust (92%), weak external ties (81%)	Inward-facing gemeinschaft solidarity	(Dominelli, 2013; Espada & Kainer, 2023)	Use bonding capital as the foundation for deliberately expanding bridging and linking capital

Read as a whole, this table suggests that the four capitals identified in this study are not four separate deficits requiring four separate solutions, but one interdependent system requiring one integrated design, in which natural resource stewardship and women's social empowerment are woven together rather than pursued in parallel (Dominelli, 2013).

5. CONCLUSION

This study demonstrates that community strength among forest-village women in Madiun Regency, East Java, is neither uniformly strong nor uniformly weak, but unevenly distributed across four interdependent capitals, natural resource, economic production, human, and social-institutional, with social and institutional capital serving as the community's most robust asset and human and natural resource capital remaining its most constrained. The abundance of natural resources surrounding the study area, including fertile land, teak forest, and a nearby reservoir, has not translated into sustainable prosperity for the women who labour within it, primarily because insecure land tenure, limited processing capacity, and restricted market access prevent

these assets from being converted into lasting economic security. These findings indicate that future empowerment efforts should move beyond the provision of isolated training or financial schemes and instead pursue an integrated model that treats natural resource stewardship, human capacity building, market access, and institutional trust as interdependent rather than separate concerns, an approach consistent with the principles of Green Social Work. Strengthening the connective tissue between the resources these women already possess, rather than introducing entirely new ones, offers the most credible pathway toward empowerment that is both ecologically grounded and gender-just.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICS APPROVAL

This study was approved by the Research Ethics Committee of Politeknik Kesejahteraan Sosial Bandung in 2026.

AUTHOR CONTRIBUTIONS

Bambang Rustanto contributed to conceptualization, methodology, and supervision, and participated in writing, review and editing. **Tuti Kartika** contributed to formal analysis and validation, and participated in writing, review and editing. **Aep Rusmana** was responsible for software and visualization. **Laode Taufik Nuryadin** and **Iyan Kusmadiana** jointly conducted the investigation and responsible for resources. **Aryohaji Istyawan**, as corresponding author, contributed to conceptualization, data curation, and project administration, and led the writing of the original draft. Funding acquisition was not applicable, as this study received no external funding.

REFERENCES

- [1] Ahmed, S. K. (2024). How to choose a sampling technique and determine sample size for research: A simplified guide for researchers. *Oral Oncology Reports*, 12, 100662. <https://doi.org/https://doi.org/10.1016/j.oor.2024.100662>
- [2] Anugrah, D., Muin, A. V. F., Irlan, I., Tomasina, M. A., Azila, N., Sirimorok, N., Dungga, N. E., & Alam, S. (2022). Injustice against women in a social forestry program: case studies from two Indonesian villages. *Forest and Society*, 6(2 SE-Regular Research Articles), 723–741. <https://doi.org/10.24259/fs.v6i2.20006>
- [3] Balasubramanian, P., Burchi, F., & Malerba, D. (2023). Does economic growth reduce multidimensional poverty? Evidence from low- and middle-income countries. *World Development*, 161, 106119. <https://doi.org/https://doi.org/10.1016/j.worlddev.2022.106119>
- [4] Bitzer, V., Moździerz, M., Kuijpers, R., Schouten, G., & Juju, D. B. (2024). Gender and forest resources in low- and middle-income countries: A systematic literature review. *Forest Policy and Economics*, 163, 103226. <https://doi.org/https://doi.org/10.1016/j.forpol.2024.103226>
- [5] BPS East Java. (2025). Report on rural poverty macro-indicators and a profile of communities surrounding forests in East Java.
- [6] BPS RI. (2025). Percentage of the population living below the national poverty LINE, by sex (percent), 2025.
- [7] Chen, C., Restuccia, D., & Santaaulàlia-Llopis, R. (2022). The effects of land markets on resource allocation and agricultural productivity. *Review of Economic Dynamics*, 45, 41–54. <https://doi.org/https://doi.org/10.1016/j.red.2021.04.006>

- [8] Dominelli, L. (2013). *Green social work: from environmental crises to environmental justice* (2nd ed.). John Wiley & Son. <https://books.google.co.id/books?id=EXTjAQAQBAJ>
- [9] Espada, A. L. V., & Kainer, K. A. (2023). Women and timber management: From assigned cook to strategic decision-maker of community land use. *Land Use Policy*, 127, 106560. <https://doi.org/https://doi.org/10.1016/j.landusepol.2023.106560>
- [10] Hao, J., Bijman, J., Heijman, W., & Gao, M. (2024). The effect of trust and social pressure on member commitment in agricultural cooperatives – Evidence from China. *Annals of Public and Cooperative Economics*, 95(3), 919–944. <https://doi.org/https://doi.org/10.1111/apce.12467>
- [11] Istyawan, A. (2025). Kemiskinan perdesaan dan perkotaan: sebuah literature review. *AKADEMIK: Jurnal Mahasiswa Humanis*, 5(2 SE-Articles), 973–986. <https://doi.org/10.37481/jmh.v5i2.1365>
- [12] Jaye, C., McHugh, J., Doolan-Noble, F., & Wood, L. C. (2023). Rurality and latent precarity: Growing older in a small rural New Zealand town. *Journal of Rural Studies*, 99, 144–152. <https://doi.org/https://doi.org/10.1016/j.jrurstud.2023.03.008>
- [13] Jones, S. (2022). Extending multidimensional poverty identification: from additive weights to minimal bundles. *The Journal of Economic Inequality*, 20(2), 421–438. <https://doi.org/10.1007/s10888-021-09477-8>
- [14] Lenzner, T., Hadler, P., & Neuert, C. (2023). An experimental test of the effectiveness of cognitive interviewing in pretesting questionnaires. *Quality & Quantity*, 57(4), 3199–3217. <https://doi.org/10.1007/s11135-022-01489-4>
- [15] M, S. (2020). *Gender and forest tenure reform in Indonesia* (1st ed.). Center for International Forestry Research (CIFOR). <https://doi.org/10.17528/cifor/007572>
- [16] Ma, M., & Sexton, R. J. (2021). Modern agricultural value chains and the future of smallholder farming systems. *Agricultural Economics*, 52(4), 591–606. <https://doi.org/https://doi.org/10.1111/agec.12637>
- [17] Magry, M. A., Cahill, D., Rookes, J., & Narula, S. A. (2022). An integrated value chain analysis of non-timber forest products: a case of Jharkhand State of India. *Small-Scale Forestry*, 21(4), 621–645. <https://doi.org/10.1007/s11842-022-09520-0>
- [18] Mkhize, T. R. (2025). A community capitals framework for advancing sustainable development goal #4 through resource mobilization in rural schools. *Discover Education*, 4(1), 463. <https://doi.org/10.1007/s44217-025-00907-7>
- [19] Putnam, R. D. (2020). *Bowling alone: revised and updated: the collapse and revival of American community* (1st ed.). Simon & Schuster. <https://books.google.co.id/books?id=C7cCEAAAQBAJ>
- [20] Schneijderberg, C., Wieczorek, O., & Steinhardt, I. (2026). *The handbook of qualitative and quantitative content analysis* (1st ed.). Routledge. <https://doi.org/10.4324/9781003496397>
- [21] Taufique, K. M. R., Sabbir, M. M., & Rabbanee, F. K. (2026). A guide to key decision criteria for likert-scale use in survey research. *Global Business and Organizational Excellence*, 45(5), 493–508. <https://doi.org/https://doi.org/10.1002/joe.70032>
- [22] Thomas, C. G. (2021). *Research methodology and scientific writing* (2nd ed.). Springer Nature. <https://doi.org/10.1007/978-3-030-64865-7>
- [23] Toumbourou, T. D., Dunphy, M. B., Mulyani, L., Auwalin, I., Rumayya, Hartoto, A. S., Aji, G. B., Utomo, M. M. B., Amin, N. A., Yaman, Y., Fakhrani, F. A., Yasmin, P. A., Afriyani, A. A., Masri, Arisanti, D., Tjawikrama, D., Friedman, R. S., & Rawluk, A. (2025). Social forestry for a good life? The uneven well-being benefits of Indonesia's social forestry scheme. *People and Nature*, 7(6), 1443–1463. <https://doi.org/https://doi.org/10.1002/pan3.70042>
- [24] Widyaningsih, T. S., Darwin, M. M., Pangaribowo, E. H., & Maryudi, A. (2022). Harnessing social innovations and mobilizing networks for improving local livelihoods: cases of two community-managed forests from Indonesia. *Forests, Trees and Livelihoods*, 31(1), 27–44. <https://doi.org/10.1080/14728028.2021.2018668>
- [25] Witenstein, M. A., & Iyengar, R. (2023). Policies, practices and the future of technical and vocational education and training for communities in the margins – a special issue commentary and introduction. *Diaspora, Indigenous, and Minority Education*, 17(3), 163–167. <https://doi.org/10.1080/15595692.2023.2222503>