



# Women forest defenders and inclusive institutionalism: Assessing gender capacity and policy instruments in community-based forestry

Lutfia Azizah<sup>1,\*</sup>

<sup>1</sup> *Gaia Restoration Ecology Nusantara, Mataram, West Nusa Tenggara Province 83127, Indonesia.*

\*Correspondence: [lutfiaazizah2805@gmail.com](mailto:lutfiaazizah2805@gmail.com)

Received Date: December 20, 2025

Revised Date: January 25, 2026

Accepted Date: January 27, 2026

## ABSTRACT

**Background:** The Social Forestry (SF) Scheme is a national policy that aims to enhance community livelihoods while ensuring ecological sustainability. It does so by providing local communities with access to forest management. In West Nusa Tenggara (NTB) Province, the area under various management models encompasses 60,160 hectares, exhibiting considerable promise for the advancement of agroforestry, non-timber forest products (NTFPs), and ecotourism. However, the program continues to encounter substantial implementation challenges, particularly with regard to the involvement of women. Despite the substantial contributions of women to NTFP processing, household economics, and the maintenance of traditional ecological knowledge, their involvement in formal decision-making remains limited due to socio-cultural norms, gender-insensitive policies, the absence of gender-disaggregated data, and a male-dominated licensing system. **Method:** The present study analyzes the implementation of Social Forestry in NTB. This analysis is based on a systematic review of secondary documents, including national and regional policy documents, PIAPS, official social forestry statistics, civil society organization reports, and peer-reviewed scientific articles. The study focuses on assessing policy relevance. Policy relevance is defined as the alignment between the objectives, instruments, and mechanisms of Social Forestry policies with the principles of inclusive governance and gender equality in implementation practices. The present study employs a descriptive qualitative approach and thematic analysis of the document corpus. **Finding:** Social Forestry in NTB has evolved through the following mechanisms: the strengthening of forest-based economies, the consolidation of community institutions, and the adoption of adaptive agroforestry practices. These outcomes are strengthened by the program's integration into the Integrated Regional Development (IRD) framework. However, the extent of women's participation remains constrained and often symbolic, with persistent disparities in leadership, planning, and resource control despite their high involvement in production activities. **Conclusion:** It is evident that initiatives such as the Women Forest Defenders (WFD) program signify advancements in enhancing gender capacity. However, a comprehensive and empirically substantiated evaluation of the efficacy of policy instruments remains deficient. Therefore, the enhancement of gender capacity, the refinement of policy instruments, the provision of gender-disaggregated data, and the integration of women's roles throughout the Social Forestry value chain are imperative prerequisites for achieving equitable, inclusive, and sustainable Social Forestry governance. **Novelty/Originality of this article:** The study's primary contribution lies in its systematic mapping of the Social Forestry policy framework and instruments in NTB from a gender governance perspective, thereby identifying discrepancies between policy design and implementation practices at the ground level.

**KEYWORDS:** social forestry, gender participation, women empowerment, NTB Province.

## Cite This Article:

Azizah, L. (2026). Women forest defenders and inclusive institutionalism: Assessing gender capacity and policy instruments in community-based forestry. *Jurnal Bisnis Kehutanan Dan Lingkungan*, 3(2), 92-107. <https://doi.org/10.61511/jbkl.v3i2.2026.2560>

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## 1. Introduction

The Social Forestry (Perhutanan Sosial, PS) scheme is a flagship policy implemented by the Indonesian government to provide legal access to state forest management for communities living in and around forest areas (Purwanto et al., 2021; Suryaningsih, 2024; Erbaugh, 2019; Gunawan et al., 2022; Umar et al., 2021). The Ministry of Environment and Forestry/*Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia* (KLHK) has set a target of 12.7 million hectares of forest area to be covered under the SF scheme (Wong et al., 2020). This scheme encompasses several models, including Community Forestry/*Hutan Kemasyarakatan* (HKm), Village Forestry, Customary Forestry, Community Plantation Forestry/*Hutan Tanaman Rakyat* (HTR), and Forestry Partnerships (Anugrah et al., 2022).

Beyond a policy framework, PS represents a socio-ecological governance model that positions communities as primary actors in managing forest resources on both state and private lands. Its dual objectives are twofold: to promote community welfare and to ensure ecological sustainability (Fisher et al., 2018; Budi et al., 2021; Sahide et al., 2020). PS promotes the sustainable utilization of both timber and non-timber forest products (NTFPs) by communities, thereby enhancing livelihoods while preserving forest cover and ecological balance (Martono, 2020).

In West Nusa Tenggara (NTB) Province, the PS scheme has been implemented extensively, encompassing approximately 60,160 hectares under permits valid until May 2024, as delineated in the Indicative Map of PS Areas (PIAPS) Revision VIII of 2023. The region exhibits considerable promise for the cultivation of community-based forest economies, notably through agroforestry, NTFP processing, and ecotourism. Nevertheless, challenges persist in translating these opportunities into equitable and sustainable outcomes. According to the field reports, a considerable number of PS groups continue to encounter limitations in their governance capacity, constrained by market factors and a paucity of inclusive participation. Pattirol & Global Affairs Canada (2021) conducted a rapid study on gender in NTB, the results of which indicated that as of 2019, only two women's groups had obtained PS permits, and only 5% of PS groups were led by women. This finding indicates that structural barriers to women's participation persist despite policy efforts.

Social and cultural norms continue to impose limitations on women's participation in forest decision-making processes, despite their substantial contributions to resource management and household livelihoods (Begum et al., 2024; Qanti et al., 2022). The KIC Survey (2020) similarly reported that while women are highly active in informal and domestic forest-related activities, they have limited access to leadership roles and resource control, often resulting in inequitable benefit distribution (Friman, 2024; Kinasih & Wulandari, 2021). Research by Anugrah et al. (2022) further revealed that women are frequently unrecognized as primary land users and have minimal representation in PS management groups, reinforcing gender injustice within PS institutions.

Prior studies on PS in Indonesia have predominantly centered on institutional governance, ecological outcomes, and livelihood impacts (Fisher et al., 2018; Sahide et al., 2020; Erbaugh, 2019). The existing body of research on gender dynamics, with a particular focus on women's leadership and agency, is still in its infancy. For instance, Siscawati et al. (2018) from CIFOR examined gender and forest tenure reform in Lampung and Maluku, revealing that although national policy frameworks include gender equality, implementation at the community level remains deficient due to the persistence of social norms. In a similar vein, examined women's participation in PS across five provinces and found that women's roles are often constrained by structural and cultural barriers, but they also demonstrate collective agency in local contexts. These findings underscore the uneven progress of gender-inclusive PS implementation across Indonesia.

However, the majority of these studies have been concentrated in western Indonesia (Java, Sumatra, and Kalimantan), resulting in a paucity of research on eastern regions such

as NTB. In their global review of gender and community forestry, Ota et al. (2024) underscored the persistent geographical bias in research coverage, which frequently fails to consider the nuances of gender relations and leadership patterns within smaller island contexts. This discrepancy underscores the necessity for further empirical investigation into the manner in which women in NTB engage with, influence, and benefit from PS governance structures.

Concurrently, several initiatives by the provincial government and NGOs in NTB have commenced the integration of gender perspectives into forestry programs. These initiatives encompass training for women's groups in NTFP processing, leadership capacity building, and enhancing market access. These initiatives signify a mounting cognizance that gender-equitable forest governance enhances both women's well-being and community socio-ecological resilience. Nevertheless, systematic evaluation of these interventions remains limited.

To address these numerous gaps, this study proposes an analytical framework for inclusive and equitable governance, assessed through five key dimensions: The following five points are to be considered in order to achieve a comprehensive understanding of the issue at hand: firstly, the representation of women in SF institutional structures; secondly, the voice and influence of women in decision-making processes; thirdly, the control and access to resources and productive assets; fourthly, the sharing of economic and non-economic benefits; and fifthly, the leadership opportunities and strategic roles of women. According to the tenets of this framework, the present study posits four primary research inquiries. The following inquiries must be addressed in order to achieve a comprehensive understanding of the role of women in SF governance structures and practices in NTB: What is the actual role of women in SF governance structures and practices in NTB?; What social, cultural, and institutional barriers exist that limit women's participation and leadership?; To what extent do SF policy instruments accommodate gender equality, and where gaps lie?; and What policy and institutional pathways enable meaningful women's participation and equitable benefit sharing? The present study utilizes the aforementioned framework and inquiries with the objective of systematically evaluating the contributions of women to SF governance in NTB, as well as identifying mechanisms that enhance inclusivity and gender equity. The research findings are expected to provide an empirical basis for the formulation of more gender-responsive PS policies and practices, while strengthening the socio-ecological sustainability and welfare of forest communities in eastern Indonesia.

## **2. Methods**

### *2.1 Research design and setting*

This research was conducted in NTB Province from September to October 2025. This study employs a descriptive qualitative approach, enabling researchers to comprehensively understand the research methodology with a focus on the context and meaning of the method (Maksimović & Evtimov, 2023). This methodological approach has been demonstrated to facilitate the collection and analysis of data, which can be adapted to align with the specific research requirements and the characteristics of the subjects being studied (Dewi, 2024).

### *2.2 Data collection and sources*

The data utilised in the research is of a secondary nature. Secondary data is defined as a source of research data that is obtained indirectly through intermediary media. This data can be obtained from a variety of sources, including documents, government publications, industry analyses in the media, websites, and the internet. In the context of secondary data collection, researchers are tasked with the analysis of relevant documents to identify and examine information pertinent to the research subject. Furthermore, researchers utilise a

range of sources, including books, journals, and online databases, to obtain the necessary data.

### *2.3 Research corpus and literature search*

The data sources employed in this research encompass prominent academic journals such as Scopus and Sinta Journal, in addition to platforms including Harzing's Publish or Perish and Google Scholar. The utilisation of multiple sources facilitates researchers in attaining a more comprehensive understanding of mixed methods from varied perspectives (Susanto et al., 2024). The merits of secondary data are manifold. Its accessibility and ease of access are well-documented, as is its greater time and cost efficiency in comparison with primary data (Sawitri, 2025).

The research corpus specifically includes national and regional policy documents related to Social Forestry, PIAPS data and maps, official Social Forestry statistics, non-governmental organization reports, and peer-reviewed scientific articles covering the period 2015–2025. A comprehensive literature search was conducted using keywords such as "social forestry," "governance," "inclusivity," "community participation," "gender," and "NTB." The inclusion criteria encompassed publications that were directly pertinent to the domain of Social Forestry governance, exhibited adequate methodological quality, and centered on the Indonesian or NTB context. Exclusion criteria encompassed opinion articles, non-scientific publications, and documents lacking a clear empirical basis.

### *2.4 Data analysis and quality assurance*

The data analysis was conducted through thematic and content analysis with category coding representing governance dimensions, namely participation, transparency, accountability, equity, and inclusivity. In order to ensure the reliability of the findings, this study employed source triangulation across policy documents, statistics, and NGO reports. Additionally, source validation was based on publisher reputation and peer review status. The study also incorporated coding consistency checking through repeated readings and, where possible, inter-coder checking.

## **3. Results and Discussion**

### *3.1 PS Scheme in NTB Province*

West Nusa Tenggara Province has demonstrated its commitment to national priority programs through the Community Forestry Scheme (PS Community), which aims to build a community-based forest conservation model while simultaneously increasing economic prosperity, maintaining environmental balance, and strengthening social independence. This initiative is congruent with President Joko Widodo's sustainable development mission and the Nawacita agenda, which aims to provide community access to 12.7 million hectares of forest areas across Indonesia through the National Medium-Term Development Plan (Ministry of Environment and Forestry, 2022).

In West Nusa Tenggara (NTB), the program has been implemented as a solution to reduce land tenure conflicts, improve community welfare, and conserve forests. According to the Central Statistics Agency of West Nusa Tenggara Province (2023), the population of impoverished individuals in NTB is approximately 751,230, dispersed across all regencies and cities (BPS NTB, 2023). Consequently, the provision of legal access to forest areas through the implementation of the Social Forestry Scheme is regarded as a strategic opportunity to enhance the quality of life of local communities. However, the direct impact of this initiative is contingent upon the design of the program and the institutional capacity at the local level.

In 2024, the Social Forestry area in West Nusa Tenggara (NTB) encompassed 60,160.71 hectares, benefiting 42,320 beneficiary families, according to data from the West Nusa Tenggara Provincial Environment and Forestry Service. The implementation of social forestry schemes encompasses various categories, including village forests, community forests, community plantation forests, customary forests, and forestry partnerships (Dewi et al., 2018; Wandira et al., 2020). Each initiative is designed to facilitate the establishment of participatory forest management structures within the community. A Community Forest Management permit confers upon communities the right to utilise timber and non-timber forest products. In addition, these communities are responsible for maintaining the ecological function of the forest in order to ensure its sustainability. The following Table 1 provides a comprehensive overview of the PS area, based on the outlined scheme.

Table 1. Distribution of PS Schemes in NTB Province in 2024

No	PS Scheme	Number of KTH/SK	Area (ha)	Number of Members (KK)
1	Community Plantation Forest (HTR)	12	3,152.88	2,916
2	Community Forest (HKm)	223	43,456.59	31,357
3	Forestry Partnership (KK)	103	12,797.16	7,752
4	Village Forest (HD)	4	754.08	295
Total		338	60,160.71	42,320

(NTB Environment and Forestry Service, 2024)

In practice, the SF scheme in NTB prioritizes the development of a productive economy centered on forest products. The primary commodities that are managed by community groups include forest honey, coffee, candlenut, bamboo, rattan, and medicinal plants. These economic activities have been documented to enhance household incomes, generate local employment, and diversify livelihoods in numerous case studies and program reports (Tajuddin et al., 2019; Wulandari & Inoue, 2018; Markum et al., 2024). However, the extent and sustainability of these impacts vary across different locations and management groups.

The PS scheme in NTB has been shown to have a multifaceted impact, with implications for both the economy and the strengthening of community institutions. The establishment of PS Business Groups has been demonstrated to facilitate the dissemination of knowledge pertaining to organisational governance, business management, and market access among communities. The establishment of robust institutional frameworks is paramount for ensuring the long-term viability of these programmes, as it empowers communities to assume greater autonomy in the planning, execution and assessment of forest management initiatives.

The Social Forestry Scheme in NTB has demonstrated significant impact on the strengthening of community institutions. The establishment of Social Forestry Business Groups/*Kelompok Usaha Perhutanan Sosial (KUPS)* has reportedly facilitated capacity building in organizational governance, business management, and market access, particularly through technical assistance and network strengthening. The enhancement of this institutional framework is regarded as paramount to the program's long-term sustainability, as it fosters community autonomy in the domains of forest management planning, implementation, and evaluation.

This multi-stakeholder collaboration is instrumental in ensuring that PS is not merely a local initiative, but rather constitutes a component of an inclusive and sustainable regional development strategy. Moreover, the implementation of agroforestry, defined as the integration of forestry crops with agricultural commodities, emerges as a pivotal factor in the success of SF utilisation in NTB. The following Table 2 illustrates several commendable practices in SF management in NTB province.

Table 2. Good practices of PS management in NTB Province

Scheme	Group	Area (Ha)	KK	Regency	Good Practice
HKm	Meleko Bangkit (1,284 ha/765 families), North Lombok	1,284	765	North Lombok	Developing products with a transaction value of IDR 317.4 billion by 2023. Designated as the second best national KUPS. The main product is coffee and environmentally based ecotourism management.
HKm	Rimba Lestari Farmers Group	840	1,200	Central Lombok	Managing non-timber forest products (NTFPs) and environmental services (ecotourism). NTFP revenue is approximately IDR 2.4 billion per year, while tourism (Benang Setokel Waterfall and Benang Kelambu) generates IDR 30 million per month.
HTR	Batu Jangkih, Joint Multi-Enterprise Cooperative	130.22	147	Central Lombok	Rehabilitation of critical forests through planting wood plants (sengon, mahogany, teak, gamalina) and developing intercrops (corn).
HKm	Syaqotra Athargiri	200	170	Sumbawa	Utilizing environmental services to protect springs. Wonogiri Hamlet, Sebedo Village, receives its clean water supply from the forest through a canal built by the community.

(Markum et al., 2024)

The economic performance data presented in Table 2 have been sourced from Markum et al. (2024) and program reports from management groups prepared by facilitators and relevant technical agencies. It is imperative to acknowledge that revenue and transaction value figures across groups are not directly comparable due to variations in reporting periods, financial recording methods, and business scale. Consequently, these data are utilized as an indication of relative performance and good practices, not as a uniform measure of causal impact across locations.

The significant progress of the PS program in NTB, as reflected in the expansion of social forestry areas, the strengthening of community institutions, and the emergence of innovative livelihood models, indicates that PS has evolved beyond a mere access and conservation policy. It has gradually become a strategic instrument for regional development. Recent studies have shown that social forestry initiatives in Indonesia increasingly serve as platforms for community-driven economic transformation, ecological restoration, and institution-building, particularly when supported by enabling policy environments and multi-stakeholder collaboration (Maryudi & Myers, 2022; Wulandari et al., 2020). In recent years, the Provincial Government of West Nusa Tenggara has incorporated the Social Forestry Scheme into the Integrated Area Development (IAD) framework, recognizing that sustainable forest management cannot be separated from broader territorial, economic, and socio-ecological systems. Through this integration, PS areas are positioned not only as conservation spaces, but also as nodes of local economic growth, community empowerment, climate resilience, and intersectoral collaboration. This approach is consistent with global frameworks highlighting the importance of landscape-level governance and integrated development planning in enhancing socio-ecological resilience (Reed et al., 2022; Ros-Tonen et al., 2020). The IAD approach enables the alignment of forestry, agriculture, tourism, water management, and village development programs within a single spatial and economic planning mechanism, thereby

enhancing coherence, efficiency, and long-term sustainability (Saragih & Widiyanto, 2023; Sayer et al., 2013).

In this context, PS becomes an anchor for inclusive and green economic transformation in NTB. Integration into the IAD system allows Social Forestry Business Groups to benefit from coordinated support involving supply-chain development, infrastructure provision, innovation incentives, and spatial-based market access. This is in line with the growing body of literature demonstrating that social forestry enterprises can flourish when supported through landscape-level value chain integration and market linkages (Myers et al., 2020; Larson et al., 2021). Moreover, IAD strengthens linkages between upstream forest protection activities and downstream economic sectors, such as ecotourism, agroforestry-based enterprises, green MSMEs, and climate-smart agriculture. The synergy generated through the IAD framework significantly increases the effectiveness of PS, as community groups gain not only legal certainty but also structured pathways for value-adding, enterprise scaling, and regional competitiveness. Integrating PS into IAD thus represents a paradigm shift—one where forest-dependent communities are empowered to become central actors in sustainable territorial development, aligning local aspirations with regional priorities and national sustainable development agendas. This strategic shift echoes recent findings that emphasize the critical role of integrated landscape governance in achieving long-term sustainability and enhancing community resilience in forested regions (DeFries et al., 2022; Moeliono et al., 2023).

The integration of PS into the IAD framework also plays a vital role in enhancing landscape-level climate resilience. NTB's ecological landscapes are characterized by dryland ecosystems that are highly vulnerable to climate variability, water scarcity, and land degradation. Social Forestry areas provide strategic ecological functions—such as watershed protection, soil conservation, microclimate regulation, and biodiversity enhancement—that are essential for climate adaptation.

Agroforestry systems promoted under PS and strengthened through IAD contribute to climate-smart land use practices by integrating perennial trees with agricultural crops, thereby improving soil fertility, water retention, and carbon sequestration (Lasco et al., 2014). These systems create diversified livelihood options that reduce household risk exposure, especially during dry seasons or market fluctuations. Through multi-sector collaboration, IAD encourages the adoption of climate-resilient species, sustainable harvesting techniques, and environmentally responsible value-chain mechanisms. This reinforces the ecological sustainability of PS areas while simultaneously supporting livelihood diversification and resource conservation.

### *3.2 The role of women in the PS scheme*

Women play an instrumental role in various pivotal activities that facilitate the implementation of the SF Scheme in NTB Province. Their contributions encompass key areas such as forest product processing, agroforestry product development, and the preservation of local knowledge. This involvement has been shown to contribute to increased household income and group capacity; however, the level and form of women's participation varies across schemes, locations, and management stages.

Moreover, women are instrumental in the development of agroforestry products that boast high sales value, including processed cocoa (Wati, 2019), coffee, and forest honey (Lubis et al., 2019). The involvement of women in these activities has been demonstrated to have a dual benefit, contributing to the enhancement of household welfare while concurrently fortifying their position within the community-based forestry group structure. In addition to processing forest products, women also participate in ecotourism development as an effort to diversify income sources and preserve the environment (Anggraini et al., 2022; Sedhain & Galang, 2022). It is evident that, as a consequence of this strategic role, women have become pivotal in the effort to ensure the sustainability of forests, whilst concomitantly optimising the economic potential of local natural resources.

Furthermore, women play a crucial role in strengthening family and village

economies. Their economic activities not only provide additional income for their families, but also serve as a driving force for the village economy through sustainable forest management. Furthermore, women maintain and preserve traditional knowledge, such as the use of medicinal plants, local food processing techniques, and environmentally friendly agricultural practices (Rasheed et al., 2020). This knowledge and expertise enriches the agroforestry system within the PS scheme, while supporting the sustainability and well-being of the village community as a whole.

In practice, however, the extent to which women contribute to PS management remains limited in many cases (Aspita, 2021). A plethora of studies have demonstrated that the roles assigned to women in these programmes are frequently negligible, and at times, even symbolic. The following Table 3 provides a comprehensive overview of the contributions and roles of women in the field of PS management.

Table 3. Contribution of women in PS management in NTB Province

No	Writer	Year	Research Title	Research result
1.	Winda Pratiwi, Markum, and Budhy Setiawan	2018	The Role of Women in Community Forest Management (Hkm) Dongo Baru, East Lombok Regency	In general, the role of women in HKm management is at category.
2.	A'anggina Pebrianti Putri, Markum, Andi Tri Lestari	2019	Gender Participation in the Management of the Mertak Grepek Forestry Partnership in Kabul Village, Central Lombok	The level of male participation in Forestry Partnership management is in the high category (50%), while female participation is mostly in the low category (41%).
3.	Baiq Maya Lispiani, Markum, Eni Hidayati 1	2019	The Role of Women in Forest Management in Farmer Groups Semaring Peak Forest, Mekar Sari Village, East Lombok Regency	The level of women's participation in the management of the Partnership Forest at the Puncak Semaring Farmers' Group still tends to be low or quite involved. and where the continuum line is located at a value of 57.
4.	Adelia Zahra, Markum, Febriana Tri Wulandari	2024	Analysis of Gender Roles in Community Forest Management in Aik Bual Village, Kopang District, Central Lombok Regency	The level of involvement of men and women in the three aspects of HKm management is at 87% or is considered quite involved for men, while for women it is considered less involved with a value of 68%.

The gender participation percentages presented in Table 3 have been derived from survey results and measurement instruments utilized in each respective study. However, the utilization of disparate participation definitions, sample sizes, and measurement methods across studies hinders the direct comparability of results. Therefore, the purpose of this table is to illustrate the general pattern of low to moderate female participation, rather than to provide a precise quantitative comparison between locations.

As demonstrated in Table 3, the findings of numerous studies suggest that, despite women's involvement in SF management, their level of participation remains comparatively limited in comparison to that of men (Armbruster et al., 2019). The level of involvement of women is, in general, low to moderate, particularly with regard to institutional and business management aspects. This suggests that their position in decision-making processes and group management is still suboptimal (Asnuryati, 2023). This condition indicates the need for specific strategies to strengthen women's capacity, expand their access to resources, and enhance their role in forest farmer group institutions.

A similar phenomenon has been observed in NTB Province, as well as in several other regions across Indonesia. For instance, Rusadi (2025) research on gender roles and involvement in the Community Forestry scheme in Kahayya Village, South Sulawesi, demonstrates that women's participation in Community Forest (HKm) management in the

village remains negligible. As indicated by the extant literature (Akbar et al., 2023; Anugrah et al., 2022), the fields of technical activities, decision-making and resource management are overwhelmingly dominated by male participation. In contrast, female participation is largely confined to physical activities such as planting and harvesting. However, women do not have equal access to and control over institutions or benefit distribution, so their role in PS management remains very limited (Danso & Ojo 2020).

Another study conducted examined women's participation in PS in five provinces: The provinces of Nanggroe Aceh Darussalam, Bengkulu, West Kalimantan, Central Sulawesi, and West Papua exemplify this phenomenon. Despite the programme's inclusive vision of resource distribution and opportunities for women, the participation rate of women remains low. PS policies have not been fully responsive to the realities on the ground, particularly in the context of village forest schemes. This has resulted in the maintenance of strong male dominance and gender hierarchies (Sikhulumile 2019). Furthermore, in the context of training and planning, women are often not involved (Yuliati et al., 2024).

It is evident that support for gender equality remains deficient across various societal, institutional, economic, and ecological domains. This shortcoming is further compounded by the absence of adequate policy frameworks. A 2021 Rapid Assessment Report from PATTIRO & Global Affairs Canada (2021) posits that Gender Mainstreaming (GM) policies in development, including in the forestry and environmental sectors, as well as in the PS programme, are fundamentally quite strong. However, technical GS policies remain gender-neutral and do not specifically integrate GM. In practice, PUG has not been fully implemented in terms of mentor management, institutional governance, or area management. Despite the notable involvement of women in business management activities, their participation in formulating business development strategies remains constrained, and access to capital continues to be predominantly male-dominated (Pratama & Rijanta, 2021).

The collection of statistical data pertaining to women's participation in PS programmes remains deficient, as the current data set is predominantly derived from PS permit holders, a demographic which is largely comprised of males. This phenomenon can be attributed to the stipulations of the PS permit application mechanism, which necessitates the Head of the Family to act as the applicant, a role typically assumed by a male individual. This situation indicates that the implementation of gender-disaggregated data is not yet supported by gender-disaggregated data. Moreover, the integration of a gender perspective into government programmes and activities has been found to be suboptimal, both in terms of the central government's and the West Nusa Tenggara Provincial Government's (through the Environment and Forestry Office) efforts to collaborate. Consequently, the concept of gender mainstreaming in forest management has not been fully realised.

It is imperative to affirm technical PS policies to ensure the optimal participation of both women and men in a balanced manner (Witno et al., 2020). It is evident that the establishment of a comprehensive policy fosters greater clarity regarding the respective roles of the involved parties in the context of PS management. This, in turn, serves to mitigate the likelihood of overlap in their respective functions. This approach has been demonstrated to enhance the efficacy of programme implementation, whilst concurrently fostering an inclusive, equitable, and responsive governance framework that caters to the diverse needs of all stakeholders.

### *3.3 Policy, gender equality, and innovation in social forestry*

According to the 2021 PATTIRO and Global Affairs Canada Rapid Assessment Report, gender mainstreaming policies in development, including in the forestry and environmental sectors, essentially have a fairly robust normative framework. However, technical policies on social forestry still maintain a gender-neutral approach and have not systematically integrated operational gender mainstreaming instruments (Darmastuti &

Wijaya, 2018). However, the practical implementation of PUG remains deficient in several domains, including the management of companions, institutional governance, and area management. Despite the notable presence of women in business management activities, their participation in formulating business development strategies remains limited. Moreover, access to capital continues to be predominantly controlled by men.

The collection of statistical data concerning women's participation in SF programs remains constrained due to the primary database being derived from SF permit holders, who are predominantly male. This situation is consistent with the limitations of gender-disaggregated data systems reported by the Ministry of Environment and Forestry (KLHK, 2022) and Bappenas (2023), thus preventing the implementation of gender mainstreaming from being fully supported by an adequate information system. Consequently, gender mainstreaming in forest management has not been fully realized. The central government and the NTB Provincial Government's collaboration, facilitated by the LHK Service, has been suboptimal in terms of integrating PUG into programs or activities related to PS.

In response to these challenges, the Women Forest Defender (WFD) program, implemented by Konsepsi NTB in collaboration with The Asia Foundation (TAF) as the funding partner, represents a concrete effort to strengthen the role of women in forest governance and climate resilience. The WFD program is predicated on the empowerment of women at the grassroots level to act as key agents in forest conservation and sustainable natural resource management. The program utilizes a multifaceted approach, incorporating training, advocacy, and participatory learning to enhance women's competencies in forest monitoring, disaster risk reduction, and livelihood diversification. Additionally, it fosters gender-inclusive decision-making processes within community forest groups. This initiative not only addresses the existing gender disparity in social forestry but also emphasizes the leadership role of women in addressing environmental and climate issues. Integration of gender perspectives into local forest management is a strategy employed by the WFD, which thereby complements ongoing government efforts and demonstrates the operationalization of Gender Mainstreaming (PUG) principles within the broader framework of Social Forestry in NTB.

It is imperative to affirm technical policies for PS, ensuring that the participation of women and men is optimized in a balanced manner. Clear policies further delineate the roles of each party in PS management, thereby reducing overlapping roles, increasing the effectiveness of program implementation, and supporting inclusive, equitable, and responsive PS governance to the needs of all parties. However, women continue to experience unequal access to and influence over institutional frameworks and resource allocation, thereby constraining their involvement in social forestry administration (Kilic et al., 2014; Katukiza et al., 2014; Baycheva-Merger & Sotirov, 2020).

The strategy implemented by the NTB Provincial Government is to establish the Regional Low Carbon and Climate Resilient Development Plan as a strategic instrument to ensure that development does not only focus on short-term economic growth, but also considers environmental sustainability and social justice (Konsepsi, 2025). The low-carbon agenda encompasses an energy transition towards renewable sources, forest conservation, land management, integrated waste management, and the development of low-emission transportation systems (UNFCCC, 2021). Concurrent with this initiative, the climate resilience agenda encompasses the provision of resilient infrastructure, the management of water resources, coastal protection measures, and the diversification of livelihoods (Bappenas, 2023). The comprehensive agenda is bolstered by the integration of Gender, Disability, and Social Inclusion (GEDSI) to ensure the participation of women and vulnerable groups in the program planning, implementation, and evaluation processes. The GEDSI study is a research instrument employed to evaluate the extent to which climate program designs are responsive to the needs of women, people with disabilities, the economically disadvantaged, and indigenous communities. It is also used to ensure that equality indicators can be measured objectively.

The integration of GEDSI has been demonstrated to facilitate greater parity in access

and roles for women, particularly within the domains of forest management and social forestry. This encompasses activities such as business planning, activity monitoring, and decision-making at the community level. Focus Group Discussions (FGDs) across sectors and stakeholders—including regional government agencies, regional legislative councils, academics, NGOs, business actors, and civil society groups—facilitate data validation, formulate priority agendas, and co-produce policies that have political and social legitimacy. This participatory model enables women to articulate their aspirations directly, contribute to forest conservation efforts, and ensure that climate development programs also benefit natural resource management and family economic resilience.

The Regional Low Carbon and Climate Resilient Development Plan instrument is integrated into the NTB Province development planning framework, including the Provincial Medium-Term Development Plan, Strategic Plans, Regional Development Plans, and Environmental Impact Assessments. This integration ensures that the low-carbon and climate-resilient agenda is consistent across programs and sectors, rather than being isolated. The implementation of the program is characterized by a multifaceted approach, involving coordination by Regional Development Planning Agency/*Badan Perencanaan Pembangunan Daerah* (BAPPEDA), thematic Musrenbang forums, multi-stakeholder consultations, and annual evaluations. This comprehensive strategy ensures that program implementation is measurable, accountable, and adaptable to local needs. Regulations are meticulously crafted to ensure that implementation is firmly grounded in a clear and sustainable legal foundation.

The Regional Low Carbon and Climate Resilient Development Plan offers strategic advantages for the future of NTB, including the reinforcement of the legal framework, the augmentation of opportunities for access to national and international climate finance, and the promotion of green economic transformation through renewable energy, ecotourism, and environmentally friendly agriculture. Moreover, the instrument under consideration has been demonstrated to augment the adaptive capacity of communities through the implementation of sustainable natural resource management and ecosystem protection strategies. The Regional Low Carbon and Climate Resilient Development Plan, an official guideline, is based on a dynamic systems framework, GEDSI studies, and participatory mechanisms. It ensures that development in NTB is not only climate resilient and green competitive, but also socially inclusive, particularly by strengthening the role of women in PS management.

It is important to acknowledge that the quantitative findings presented in this section are derived from secondary data sources, including various institutional records and extant studies. The utilization of disparate indicator definitions, reference years, and data collection methodologies across sources has the potential to result in variations in findings. In an effort to minimize the potential for bias, this study exclusively utilized data from official sources and peer-reviewed publications. Furthermore, it employed a meticulous cross-checking process of policy documents, government statistics, and program reports. Claims were further constrained to general patterns that demonstrated consistency across sources. Key claims regarding the number of impoverished individuals, land area, number of beneficiaries, economic performance, and gender participation were traced back to verifiable formal citations.

#### 4. Conclusions

The involvement of women in the PS scheme in NTB Province is imperative for the success of sustainable development, rural community welfare, and the achievement of low-carbon and climate-resilient development targets. Women's contributions to forest product management, the development of high-value products, and the preservation of local wisdom and ecosystems are significant. These contributions also support forest conservation and the enhancement of carbon stocks. However, constrained access to decision-making processes, educational opportunities, and resources impedes their optimal engagement. Social and cultural norms that favor male dominance necessitate the

implementation of targeted strategies. These strategies should include capacity building, integration of gender considerations at all levels of forest management, and strengthening institutional inclusivity.

Achieving successful, inclusive, and equitable PS governance necessitates a policy commitment that systematically implements gender mainstreaming and collaboration among the government, community institutions, and stakeholders. This objective is consistent with the goals outlined in the NTB Provincial Medium-Term Development Plan, which aims to achieve sustainable, equitable development, maintain ecological balance, and empower local communities. This study offers an initial understanding of women's participation in PS governance in NTB and underscores the necessity for additional research to delve more profoundly into the analysis of gender-inclusive practices across diverse socio-ecological contexts. The implementation of such research endeavors is poised to facilitate the development of adaptive and responsive policy frameworks that are designed to address the needs of women and the broader community.

It is imperative to acknowledge the limitations of this study. First, the research relies predominantly on secondary data, which may not fully capture the dynamic social realities, informal participation patterns, or intra-household decision-making processes within Social Forestry (PS) groups. Secondly, the geographical scope is confined to NTB Province, thereby limiting the generalizability of findings to other regions in Indonesia that may exhibit different socio-cultural and ecological conditions. Thirdly, the absence of longitudinal or ethnographic data hinders the capacity to analyze changes in women's participation, leadership, and decision-making over time. These limitations may influence the interpretation of findings, particularly regarding the effectiveness of gender-inclusive policies and the actual contributions of women to forest governance.

To address these gaps, future studies are recommended to adopt mixed-method approaches, combining gender-disaggregated quantitative data with participatory qualitative research. A comparative analysis between Western and Eastern Indonesia is imperative to evaluate regional disparities in the implementation of gender mainstreaming within PS programs. Subsequent investigations should also explore the intersection of gender, class, and customary institutions to understand how local norms and power relations shape women's access to forest resources.

In practice, it is essential to strengthen the active involvement of women's groups in planning, monitoring, and evaluating PS initiatives to ensure governance is more inclusive, equitable, and responsive to all stakeholders. Programs that prioritize the empowerment of women, the provision of training, and the facilitation of access to resources should be expanded. The enhancement of women's technical skills, leadership capacity, and economic opportunities is instrumental in enabling them to assume a more effective role in community-based forest management and contribute meaningfully to sustainable and equitable forest governance.

### **Acknowledgement**

The author expresses sincere gratitude to the Cluster for Social Environment, Community Empowerment, and Environmental Economics Research, School of Sustainable Development, Universitas Indonesia, for providing the opportunity to conduct this research and for the token of appreciation extended. Appreciation is also extended to the reviewers for their valuable feedback, insightful comments, and constructive suggestions that improved the quality of this manuscript.

### **Author Contribution**

The author contributed to all components of this study, including conceptualization, methodology, data collection, formal analysis, drafting of the original manuscript, review and editing, visualization, and project administration.

**Funding**

This research received no external funding

**Ethical Review Board Statement**

Not available.

**Informed Consent Statement**

Not available.

**Data Availability Statement**

Data supporting the findings of this study were obtained from publicly available secondary sources cited within the manuscript.

**Conflicts of Interest**

The author declares no conflict of interest.

**Declaration of Generative AI Use**

During the preparation of this work, the author used Grammarly to assist in improving the grammar, clarity, and academic tone of the manuscript. After using this tool, the author carefully reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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### Biography of Author

**Lutfia Azizah**, is Gaia Restoration Ecology Nusantara, Mataram, West Nusa Tenggara Province 83127, Indonesia.

- Email: [lutfiaazizah2805@gmail.com](mailto:lutfiaazizah2805@gmail.com)
- ORCID: N/A
- Web of Science ResearcherID: N/A
- Scopus Author ID: N/A
- Homepage: N/A