

Gender Equality in Forest Bioeconomy Based on Nahdlatul Ulama's Ahlussunnah wal Jama'ah (Aswaja) Values: A Conceptual Framework for Strengthening Indonesia's Non-Military Defense

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Abstract: The growing complexity of non-military threats requires Indonesia to strengthen national resilience through approaches that extend beyond conventional defense institutions. In this context, forest bioeconomy, gender equality, and community-based social values have strategic relevance for enhancing non-military defense. This study aims to develop a conceptual framework integrating gender equality in forest bioeconomy based on the values of Ahlussunnah wal Jama'ah (Aswaja) promoted by Nahdlatul Ulama as a strategy to strengthen Indonesia's non-military defense. The research employed a qualitative approach using the Integrative Literature Review (ILR) method by synthesizing scientific publications, institutional theories, social capital literature, and relevant national policy documents. The findings indicate that Aswaja values function as informal institutions that provide social legitimacy for gender equality, while gender-inclusive forest bioeconomy enhances governance quality, women's participation, social capital, collective action, and community resilience. These interrelated processes contribute to strengthening national capacity in addressing non-military threats through improved food, energy, water, environmental, economic, and social resilience. The main contribution of this study is the development of an interdisciplinary conceptual framework connecting institutional theory, gender studies, forest bioeconomy, social capital, and non-military defense within the Indonesian context. This framework provides a theoretical foundation for integrating forestry development, gender mainstreaming, and national defense policies toward Indonesia Emas 2045.

Kata Kunci:

Aswaja; bioekonomi kehutanan;
kesetaraan gender; modal sosial;
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Abstrak: Meningkatnya kompleksitas ancaman nonmiliter menuntut Indonesia memperkuat ketahanan nasional melalui pendekatan yang melampaui institusi pertahanan konvensional. Dalam konteks tersebut, bioekonomi kehutanan, kesetaraan gender, dan nilai-nilai sosial masyarakat memiliki peran strategis dalam mendukung penguatan pertahanan nirmiliter. Penelitian ini bertujuan mengembangkan kerangka konseptual integrasi kesetaraan gender dalam bioekonomi kehutanan berbasis nilai-nilai Ahlussunnah wal Jama'ah (Aswaja) Nahdlatul Ulama sebagai strategi penguatan pertahanan nirmiliter Indonesia. Penelitian menggunakan pendekatan kualitatif dengan metode Integrative Literature Review (ILR) melalui

sintesis berbagai artikel ilmiah, teori kelembagaan, teori modal sosial, serta dokumen kebijakan nasional yang relevan. Hasil penelitian menunjukkan bahwa nilai-nilai Aswaja berfungsi sebagai institusi informal yang memberikan legitimasi sosial terhadap implementasi kesetaraan gender, sementara bioekonomi kehutanan yang inklusif meningkatkan kualitas tata kelola, partisipasi perempuan, modal sosial, aksi kolektif, dan resiliensi masyarakat. Rangkaian proses tersebut memperkuat kapasitas bangsa dalam menghadapi ancaman nonmiliter melalui peningkatan ketahanan pangan, energi, air, lingkungan, ekonomi, dan sosial. Kontribusi utama penelitian ini adalah pengembangan kerangka konseptual lintas disiplin yang menghubungkan teori kelembagaan, studi gender, bioekonomi kehutanan, modal sosial, dan pertahanan nirmiliter dalam konteks Indonesia. Kerangka ini menjadi landasan konseptual bagi integrasi kebijakan kehutanan, pengarusutamaan gender, dan pembangunan pertahanan menuju Indonesia Emas 2045.

INTRODUCTION

The rapidly evolving global strategic environment has fundamentally reshaped the understanding of national defense. Contemporary security threats extend far beyond conventional military aggression and increasingly emerge through economic instability, environmental degradation, climate change, food insecurity, public health crises, technological disruption, and social fragmentation. These multidimensional challenges have shifted the focus of national security from purely military preparedness toward strengthening societal resilience, sustainable resource governance, and institutional capacity to withstand non-military threats (Rahayu et al., 2024).

Indonesia has responded to this transformation by reinforcing the Universal People's Defense and Security System (Sistem Pertahanan dan Keamanan Rakyat Semesta—SISHANKAMRATA), which recognizes all citizens, territories, and national resources as integral components of the national defense system. Within this framework, ministries and government institutions outside the defense sector assume primary responsibility for addressing non-military threats according to their respective mandates, while military institutions provide supporting capabilities. Consequently, sustainable development, natural resource management, environmental protection, economic resilience, and human capital development are increasingly regarded as strategic pillars of Indonesia's national defense architecture.

This policy orientation is further strengthened by Presidential Regulation No. 111 of 2025 concerning the General Policy of National Defense (2025–2029), which explicitly positions non-military defense as a central component of national development. The regulation emphasizes strengthening the institutional capacity of ministries, local governments, and communities to enhance economic resilience, social cohesion, technological capability, early warning systems, and civic participation in addressing non-military threats. At the same time, these priorities are closely aligned with Indonesia's national development agenda under Asta Cita, particularly the pursuit of self-sufficiency in food, energy, water, the green economy, and the blue economy.

Within this strategic landscape, the forestry sector occupies an increasingly important position. Forests are no longer viewed solely as ecological assets or sources of timber production but also as strategic national resources that support food security, renewable energy, water sustainability, biodiversity conservation, climate resilience, and rural livelihoods. Presidential Regulation No. 111 of 2025 further identifies the Ministry of Forestry as one of the principal institutions responsible for strengthening Indonesia's non-military defense through forest governance, biodiversity protection, forest-based bioeconomy development, watershed rehabilitation, and forest and land fire management. These functions directly contribute to mitigating environmental, economic, and technological risks that increasingly shape contemporary security challenges.

The transition toward a forest bioeconomy, however, depends not only on technological innovation or sustainable resource utilization but also on inclusive governance capable of mobilizing the full potential of society. Among the most critical dimensions of inclusive governance is gender equality. A growing body of literature demonstrates that women play indispensable roles in forest management through non-timber forest product utilization,

biodiversity conservation, community entrepreneurship, and household economic resilience. Nevertheless, women continue to face persistent barriers in accessing productive resources, leadership positions, decision-making processes, financial services, and gender-responsive forestry policies (Bitzer et al., 2024; Elias et al., 2024; Jagati, 2024; Thakuri et al., 2024). Likewise, systematic reviews on forest bioeconomy indicate that gender remains one of the least developed dimensions within bioeconomy research, despite its substantial influence on governance quality, social innovation, and long-term sustainability (Roos et al., 2021; Sanz-Hernández et al., 2022).

Indonesia has made significant progress in institutionalizing gender mainstreaming within the environmental and forestry sectors. Various national policies have encouraged women's leadership, gender-responsive planning, and institutional reforms across forestry governance. However, implementation remains uneven due to limitations in institutional capacity, intersectoral coordination, organizational culture, and the integration of gender perspectives throughout planning, implementation, monitoring, and evaluation processes (Hartono & Khalwani, 2022; Cameron, 2023). These challenges suggest that regulatory reforms alone are insufficient to achieve meaningful gender inclusion without broader social legitimacy and community acceptance.

In Indonesia, social legitimacy is closely connected to religious and cultural values that shape community behavior. As the country's largest Islamic organization, Nahdlatul Ulama (NU) has increasingly promoted gender-inclusive interpretations through the ethical principles of Ahlussunnah wal Jama'ah (Aswaja), particularly tawassuṭ (moderation), tawāzun (balance), tasāmuḥ (tolerance), i'tidāl (justice), and maṣlahah (public benefit). Recent studies suggest that these principles have provided normative support for women's leadership, community empowerment, and gender equality while maintaining Indonesia's religious and cultural identity (Ratnawati et al., 2020; Isnaini et al., 2021; Wulandari, 2023; Irhamsyah & Anshor, 2023; Rozi et al., 2025; Smith-Hefner, 2025). Rather than viewing gender equality as an external normative agenda, this perspective frames it as a socially legitimate process rooted in moderate Islamic values.

Despite the growing body of literature on forest bioeconomy, gender equality, Islamic social values, and non-military defense, these research streams have largely evolved independently. Forest bioeconomy studies primarily emphasize technological innovation, biomass utilization, and sustainable economic development (Roos et al., 2021; Sanz-Hernández et al., 2022), whereas gender research focuses on women's participation, leadership, and empowerment in forest governance (Bitzer et al., 2024; Elias et al., 2024). Studies on Nahdlatul Ulama mainly examine Islamic moderation, women's leadership, and gender discourse within Islamic scholarship (Ratnawati et al., 2020; Wulandari, 2023; Smith-Hefner, 2025), while non-military defense research generally concentrates on state institutions, security governance, and national defense policies (Rahayu et al., 2024). Consequently, there remains limited conceptual understanding of how religious values, gender-inclusive governance, and forest bioeconomy can collectively strengthen societal resilience as an essential pillar of Indonesia's non-military defense.

Addressing this gap, the present study develops an interdisciplinary conceptual framework that integrates Aswaja values, gender equality, forest bioeconomy, social capital, and non-military defense into a unified analytical model. Unlike previous studies that examine these domains separately, this article argues that Aswaja values function as informal institutions that strengthen the social legitimacy of gender equality, thereby fostering more inclusive forest bioeconomy governance. Through enhanced women's participation, stronger social capital, collective action, and community resilience, this governance model contributes to strengthening Indonesia's capacity to address contemporary non-military threats.

Accordingly, this study aims to develop a conceptual framework of gender equality in forest bioeconomy based on Nahdlatul Ulama's Aswaja values as a strategy for strengthening Indonesia's non-military defense. Beyond connecting four previously fragmented research

domains, this article contributes a new perspective by explaining the institutional mechanisms through which ethical values, inclusive governance, and community resilience interact to reinforce national defense. The proposed framework is expected to enrich the theoretical development of community-based non-military defense while providing a conceptual foundation for integrating forestry policy, gender mainstreaming, and sustainable national development toward the vision of Indonesia Emas 2045.

METHOD

This study employed a qualitative research design using the Integrative Literature Review (ILR) approach to develop a conceptual framework linking gender equality, forest bioeconomy, Nahdlatul Ulama's Ahlussunnah wal Jama'ah (Aswaja) values, social capital, and Indonesia's non-military defense. An ILR was selected because it enables the integration of diverse theoretical perspectives, empirical findings, and policy evidence to generate new conceptual understanding rather than merely summarizing existing literature. This approach is particularly appropriate for interdisciplinary studies where concepts originate from different academic traditions and have not previously been synthesized into a unified analytical framework (Torraco, 2016).

The review incorporated secondary data from peer-reviewed journal articles, scholarly books, government policy documents, and national regulations relevant to the research topic. Scientific publications were collected from major academic databases, including Scopus, Web of Science, ScienceDirect, SpringerLink, Taylor & Francis Online, Wiley Online Library, and Google Scholar, to complement nationally indexed publications. Policy documents included Law No. 3 of 2002 on National Defense, Law No. 23 of 2019 on the Management of National Resources for National Defense, Law No. 59 of 2024 on the National Long-Term Development Plan (RPJPN) 2025–2045, Presidential Regulation No. 12 of 2025 on the National Medium-Term Development Plan (RPJMN) 2025–2029, Presidential Regulation No. 111 of 2025 on the General Policy of National Defense 2025–2029, Regulation of the Minister of Forestry No. 18 of 2025 concerning the Strategic Plan of the Ministry of Forestry 2025–2029, and The State of Indonesia's Forests 2024, all of which provide the institutional context for the proposed conceptual framework.

The literature search was conducted using combinations of the following keywords: gender equality, forest bioeconomy, forest governance, community forestry, women's empowerment, social capital, community resilience, Nahdlatul Ulama, Aswaja, Islam Nusantara, non-military defense, national resilience, and Indonesia. The review prioritized publications from the most recent decade to ensure contemporary relevance while retaining seminal theoretical works that underpin the concepts of institutions, social capital, collective action, and resilience. Literature was selected based on four principal criteria: (1) relevance to the research objectives, (2) scientific quality and publication credibility, (3) conceptual contribution to one or more analytical domains of the study, and (4) suitability for interdisciplinary synthesis.

The review process consisted of four sequential stages. First, relevant literature was identified through systematic database searches using predefined keywords. Second, publications were screened by examining titles, abstracts, and full texts to assess their relevance to the study objectives while excluding duplicated or conceptually unrelated sources. Third, the selected literature was classified into five thematic domains: forest bioeconomy, gender equality, Aswaja and Nahdlatul Ulama, social capital, and non-military defense. Finally, an iterative conceptual synthesis was conducted to identify theoretical relationships across these domains and to construct an integrated conceptual framework.

Data analysis employed qualitative content analysis supported by thematic coding and conceptual synthesis. The analysis began with identifying key concepts and theoretical constructs across the selected literature, followed by thematic categorization to explore recurring patterns, complementarities, and conceptual relationships. These findings were subsequently synthesized to explain the mechanisms through which Aswaja values function as informal institutions that strengthen gender-inclusive forest bioeconomy governance, foster social capital and collective

action, enhance community resilience, and ultimately contribute to Indonesia's non-military defense. Throughout the analysis, theoretical consistency, empirical support, and policy relevance were continuously compared to ensure that the proposed conceptual model remained coherent, analytically rigorous, and applicable to Indonesia's contemporary development and defense context.

RESULTS AND DISCUSSION

Repositioning Forest Bioeconomy within Indonesia's Non-Military Defense Paradigm

The concept of national defense has undergone a profound transformation over the past several decades. While conventional defense traditionally focused on safeguarding national sovereignty through military capabilities, contemporary security increasingly encompasses the capacity of states and societies to anticipate, absorb, and recover from multidimensional non-military threats. Climate change, biodiversity loss, food insecurity, energy vulnerability, environmental degradation, economic instability, pandemics, and technological disruption have emerged as strategic challenges capable of undermining national resilience without involving armed conflict. Consequently, strengthening societal resilience through sustainable development has become an increasingly important dimension of national defense (Rahayu et al., 2024).

This evolving security landscape has encouraged governments to redefine natural resource governance as an integral component of national resilience. Rather than being viewed solely as productive assets, forests are increasingly recognized as strategic resources that sustain ecological stability, support livelihoods, secure water and food systems, conserve biodiversity, mitigate climate risks, and strengthen rural economies. These multiple functions position forests not merely within environmental policy but also within broader national security strategies aimed at reducing structural vulnerabilities and enhancing societal resilience.

Indonesia has formally adopted this broader perspective through the Universal People's Defense and Security System (SISHANKAMRATA), which recognizes citizens, natural resources, infrastructure, and national territory as interconnected components of the national defense system. Under this approach, non-military threats are addressed primarily by civilian institutions according to their respective mandates, while defense institutions provide strategic support. This institutional arrangement reflects an understanding that national defense cannot rely exclusively on military preparedness but must also strengthen the country's economic, environmental, technological, and social resilience.

The strategic role of the forestry sector has become increasingly evident within this policy framework. Presidential Regulation No. 111 of 2025 concerning the General Policy of National Defense explicitly identifies sustainable forest management as one of the national priorities for strengthening Indonesia's non-military defense. Likewise, the Ministry of Forestry's Strategic Plan (2025–2029) positions forest governance, biodiversity conservation, forest landscape restoration, watershed management, forest fire prevention, and forest bioeconomy development as strategic contributions to national resilience. These priorities demonstrate that forestry policy is no longer confined to environmental management but has become an integral element of Indonesia's broader security and development agenda.

Within this context, the forest bioeconomy represents an important shift from conventional resource extraction toward the sustainable utilization of renewable biological resources to generate economic value while maintaining ecological integrity. Unlike extractive development models that frequently generate environmental degradation and social inequality, the forest bioeconomy seeks to balance economic productivity with ecosystem conservation, circular resource use, technological innovation, and community welfare (Roos et al., 2021; Sanz-Hernández et al., 2022). This transition aligns closely with the principles of sustainable development because it simultaneously addresses economic growth, environmental sustainability, and social inclusion.

However, the strategic contribution of the forest bioeconomy extends beyond economic transformation. From a non-military defense perspective, bioeconomy development enhances

national resilience by reducing structural vulnerabilities that frequently trigger broader security challenges. Sustainable forest management supports food security through diversified forest-based products, strengthens renewable energy production from biomass, protects water resources essential for human security, generates rural employment, reduces poverty, and increases communities' adaptive capacity to environmental change. These interconnected outcomes reinforce social stability while reducing the likelihood of ecological degradation evolving into wider social, economic, or political crises.

This broader interpretation reflects an important conceptual shift in the relationship between forestry and national defense. Forests should no longer be understood merely as strategic territorial assets requiring physical protection; instead, they function as strategic socio-ecological systems whose sustainability directly influences the resilience of communities and the state. Consequently, the effectiveness of non-military defense depends not only on institutional preparedness but also on the capacity of society to manage forest resources sustainably through inclusive governance, collaborative institutions, and equitable access to development opportunities.

Nevertheless, existing literature on forest bioeconomy has largely concentrated on technological innovation, biomass utilization, industrial competitiveness, and the transition toward green economic growth (Roos et al., 2021; Sanz-Hernández et al., 2022). Comparatively little attention has been devoted to the governance dimensions that determine whether bioeconomy development can effectively strengthen societal resilience. In particular, questions concerning social inclusion, gender equality, community participation, and locally embedded value systems remain insufficiently integrated into prevailing conceptualizations of the forest bioeconomy.

This limitation is particularly relevant in Indonesia, where forest governance is inseparable from community institutions, cultural traditions, and religious values that shape patterns of participation and collective action. Sustainable forest bioeconomy cannot be achieved solely through technological innovation or policy reform; it also requires social legitimacy, inclusive institutions, and collaborative governance capable of mobilizing local communities as active development actors. Therefore, repositioning the forest bioeconomy within Indonesia's non-military defense paradigm necessitates expanding the analytical framework beyond environmental and economic considerations to incorporate the social and institutional dimensions that generate long-term community resilience.

Accordingly, this study argues that the forest bioeconomy should be understood as a strategic instrument for strengthening Indonesia's non-military defense through the development of inclusive socio-ecological resilience. In this perspective, sustainable forest governance, gender equality, social capital, and community-based institutions are not peripheral considerations but constitute the core mechanisms through which the bioeconomy contributes to national security. This conceptual repositioning provides the foundation for the subsequent discussion on how Nahdlatul Ulama's Aswaja values can strengthen gender-inclusive forest bioeconomy governance and, ultimately, reinforce Indonesia's capacity to respond to contemporary non-military threats.

Gender Equality as Social Capital in the Forest Bioeconomy

The transition toward a sustainable forest bioeconomy requires more than technological innovation, institutional reform, or market development. Its long-term success depends fundamentally on the capacity of communities to collaborate, share knowledge, build trust, and participate collectively in managing forest resources. These social processes are closely associated with social capital, which enables communities to coordinate collective action, strengthen institutional legitimacy, and enhance resilience in the face of environmental, economic, and social change. Within this context, gender equality should not be viewed merely as a normative commitment to human rights or social justice, but as a strategic form of social capital that expands the adaptive capacity and governance effectiveness of forest-dependent communities. Contemporary scholarship increasingly recognizes that women's participation

contributes substantially to sustainable forest governance. Across diverse socio-ecological contexts, women play central roles in biodiversity conservation, the utilization of non-timber forest products, household livelihood diversification, environmental stewardship, and intergenerational knowledge transfer. Their involvement frequently broadens the range of local knowledge incorporated into decision-making processes, strengthens resource management practices, and improves the long-term sustainability of forest-based livelihoods (Bitzer et al., 2024; Elias et al., 2024; Jagati, 2024; Thakuri et al., 2024).

Beyond their direct economic contributions, women often function as key actors in maintaining social cohesion within rural communities. Through community organizations, informal networks, cooperatives, and household institutions, women facilitate communication, mutual assistance, conflict resolution, and collective learning. These interactions generate trust, reciprocity, and shared norms that constitute the core elements of social capital. Consequently, increasing women's participation in forest governance not only improves representation but also strengthens the institutional relationships that enable communities to organize collective responses to environmental and socioeconomic challenges.

This perspective represents an important shift from conventional approaches to gender mainstreaming. Rather than measuring gender equality solely through numerical representation or formal participation, recent studies emphasize its contribution to improving governance quality, institutional effectiveness, and community resilience. Inclusive decision-making enables communities to incorporate a wider diversity of experiences, knowledge systems, and livelihood strategies, thereby enhancing their capacity to adapt to changing ecological and economic conditions (Bitzer et al., 2024; Elias et al., 2024). Gender equality therefore becomes an institutional resource that enhances the effectiveness of collaborative forest governance.

Nevertheless, significant structural barriers continue to limit women's participation throughout the forest bioeconomy. Women remain underrepresented in leadership positions, producer organizations, land tenure arrangements, financial services, and policy-making processes. Persistent gender norms, unequal access to productive resources, limited institutional support, and insufficient gender-responsive policies constrain women's capacity to contribute fully to forest-based economic development (Bitzer et al., 2024; Jagati, 2024; Thakuri et al., 2024). As a result, considerable social capital remains underutilized despite its potential contribution to sustainable forest governance.

Systematic reviews of the forest bioeconomy similarly reveal that gender remains one of the least integrated dimensions within contemporary bioeconomy research. Existing scholarship continues to focus predominantly on biomass innovation, industrial competitiveness, technological development, and circular economic systems, while paying comparatively limited attention to governance, social inclusion, and community participation (Roos et al., 2021; Sanz-Hernández et al., 2022). This imbalance suggests that technological advancement alone cannot guarantee a successful bioeconomy transition unless accompanied by institutional arrangements capable of mobilizing the knowledge, capacities, and social relationships embedded within local communities.

Indonesia has demonstrated growing commitment to institutionalizing gender mainstreaming across the forestry sector through national development planning and sectoral policies. Various initiatives have promoted women's participation in forest management, strengthened gender-responsive planning, and encouraged greater inclusion in environmental governance. However, implementation remains uneven due to disparities in institutional capacity, organizational culture, inter-agency coordination, and local governance practices (Hartono & Khalwani, 2022; Cameron, 2023). These experiences indicate that formal regulations provide an important foundation, yet they do not automatically generate meaningful participation or inclusive governance at the community level.

This challenge highlights the importance of social legitimacy as a complementary dimension of institutional reform. Community participation is influenced not only by formal policies but also by shared cultural values, local traditions, and religious norms that shape

perceptions of leadership, cooperation, and social responsibility. Consequently, strengthening gender equality within Indonesia's forest bioeconomy requires governance approaches that resonate with the social and cultural contexts in which forest-dependent communities operate. Gender-inclusive institutions are more likely to become sustainable when they are supported by locally accepted ethical values rather than being perceived solely as externally imposed policy agendas.

From the perspective of non-military defense, gender equality contributes to national resilience by strengthening the social foundations upon which adaptive communities are built. Communities characterized by high levels of trust, inclusive participation, collaborative leadership, and equitable access to resources are generally better equipped to respond to environmental degradation, climate-related disasters, economic shocks, and other non-military threats. In this sense, gender equality should be understood not only as a development objective but also as a strategic investment in societal resilience. By expanding participation and reinforcing social capital, gender-inclusive forest governance enhances the collective capacity required to sustain the forest bioeconomy while simultaneously contributing to Indonesia's broader non-military defense architecture.

Accordingly, this study argues that gender equality constitutes a critical institutional mechanism linking forest bioeconomy and non-military defense. Women's participation strengthens social capital by fostering trust, collective action, knowledge exchange, and inclusive governance, all of which increase community resilience. However, the effectiveness of this process depends on the presence of normative values capable of generating broad social legitimacy for gender-inclusive institutions. It is within this context that the ethical principles of *Ahlussunnah wal Jama'ah* (Aswaja), as developed by Nahdlatul Ulama, become particularly relevant. Rather than functioning merely as religious doctrine, these values provide a culturally embedded normative framework through which gender equality can be socially accepted, institutionalized, and transformed into a driver of sustainable forest bioeconomy and national resilience.

Aswaja Values as an Ethical Foundation for Strengthening Gender Equality in the Forest Bioeconomy

Efforts to strengthen gender equality within the forest bioeconomy cannot rely solely on regulatory reform or institutional arrangements. Although formal policies provide an essential legal foundation, their effectiveness is ultimately influenced by the extent to which they are accepted and internalized by local communities. In many rural societies, participation in natural resource governance is shaped not only by formal institutions but also by cultural traditions, religious beliefs, and shared ethical values that influence perceptions of leadership, cooperation, justice, and social responsibility. Consequently, gender-inclusive forest governance requires normative legitimacy alongside institutional capacity.

Within the Indonesian context, Nahdlatul Ulama (NU) represents one of the country's most influential socio-religious institutions in shaping ethical values and community life. Through the theological tradition of *Ahlussunnah wal Jama'ah* (Aswaja), NU has developed a moderate Islamic perspective that emphasizes social harmony, justice, inclusiveness, and public welfare. Rather than functioning solely as a theological doctrine, Aswaja has evolved into a living ethical framework that guides community interaction, social organization, and collective action across many regions of Indonesia (Ratnawati et al., 2020; Isnaini et al., 2021; Wulandari, 2023).

The ethical principles of Aswaja—including *tawassuṭ* (moderation), *tawāzun* (balance), *tasāmuḥ* (tolerance), *i'tidāl* (justice), and *maṣlaḥah* (public benefit)—provide normative guidance that is highly compatible with inclusive and sustainable forest governance. These principles encourage balanced decision-making, mutual respect, equitable participation, and collective responsibility in addressing social and environmental challenges. Consequently, Aswaja offers an ethical foundation through which gender equality can be understood not as an externally imposed development agenda but as a socially legitimate expression of Islamic moderation and community welfare.

Recent scholarship demonstrates that Nahdlatul Ulama has increasingly promoted gender-inclusive interpretations within Islamic discourse while maintaining fidelity to its theological traditions. Women's leadership, educational participation, community empowerment, and broader public engagement are increasingly interpreted as consistent with the objectives of justice (*i'tidāl*) and public benefit (*maṣlaḥah*) embedded within Aswaja values (Ratnawati et al., 2020; Irhamsyah & Anshor, 2023; Rozi et al., 2025; Smith-Hefner, 2025). This evolving interpretation illustrates that gender equality and religious values need not be viewed as competing normative frameworks; rather, they can reinforce one another when grounded in culturally accepted ethical principles.

From an institutional perspective, Aswaja functions as an informal institution that complements formal governance structures. While government policies establish legal obligations for gender mainstreaming, ethical values embedded within local communities' influence whether these policies are accepted, implemented, and sustained over time. Informal institutions shape patterns of trust, cooperation, reciprocity, and collective norms that frequently determine the effectiveness of community-based natural resource governance. In this sense, Aswaja contributes not only to moral guidance but also to the social legitimacy necessary for strengthening gender-inclusive institutions.

This institutional function becomes particularly significant within the forest bioeconomy, where collaboration among diverse stakeholders is essential for sustainable resource management. Forest-dependent communities rely heavily on collective decision-making, knowledge sharing, and mutual trust to balance ecological conservation with economic development. Ethical principles such as *tawassuṭ* encourage dialogue and moderation in managing competing interests, *tawāzun* promotes balance between economic utilization and ecological sustainability, *taṣāmuḥ* strengthens social inclusion and respect for diversity, *i'tidāl* reinforces fairness in the distribution of opportunities and responsibilities, while *maṣlaḥah* directs collective action toward the common good. Together, these principles create a normative environment that supports inclusive participation in forest governance.

Importantly, the contribution of Aswaja extends beyond legitimizing women's participation alone. By strengthening trust, mutual respect, and collective responsibility, these values reinforce the social capital required for collaborative governance. Communities characterized by strong ethical cohesion are generally better positioned to organize collective action, resolve conflicts peacefully, exchange local knowledge, and adapt to environmental and socioeconomic change. Thus, Aswaja serves as a catalyst through which gender equality contributes more effectively to strengthening community resilience within the forest bioeconomy.

This perspective also addresses an important limitation within existing bioeconomy scholarship. Current studies have largely examined technological innovation, sustainability transitions, and gender inclusion as separate analytical domains (Roos et al., 2021; Sanz-Hernández et al., 2022; Bitzer et al., 2024; Elias et al., 2024). Comparatively little attention has been devoted to the ethical and cultural foundations that enable inclusive governance to emerge and endure within local communities. By positioning Aswaja as an informal institution that generates social legitimacy for gender equality, this study extends the conceptual understanding of how ethical values shape governance quality and strengthen the social foundations of sustainable bioeconomy development.

Accordingly, this study proposes that Aswaja values constitute the ethical mechanism connecting gender equality with community resilience in the forest bioeconomy. Rather than operating as abstract religious principles, these values function as institutional resources that strengthen inclusive governance, foster social capital, encourage collective action, and enhance communities' capacity to manage forest resources sustainably. Through these interconnected processes, Aswaja contributes not only to gender-responsive forest governance but also to the broader objective of strengthening Indonesia's non-military defense through resilient, inclusive, and socially cohesive communities.

A Conceptual Model Integrating Gender Equality into the Forest Bioeconomy Based on Aswaja Values for Strengthening Indonesia's Non-Military Defense

The preceding discussion demonstrates that the relationships among forest bioeconomy, gender equality, Aswaja values, social capital, and non-military defense should not be understood as separate policy domains. Rather, they constitute an interconnected institutional system through which ethical values, inclusive governance, and community resilience mutually reinforce one another. Building upon this synthesis, this study proposes a conceptual model that explains the institutional mechanisms linking these five dimensions into a coherent framework for strengthening Indonesia's non-military defense.

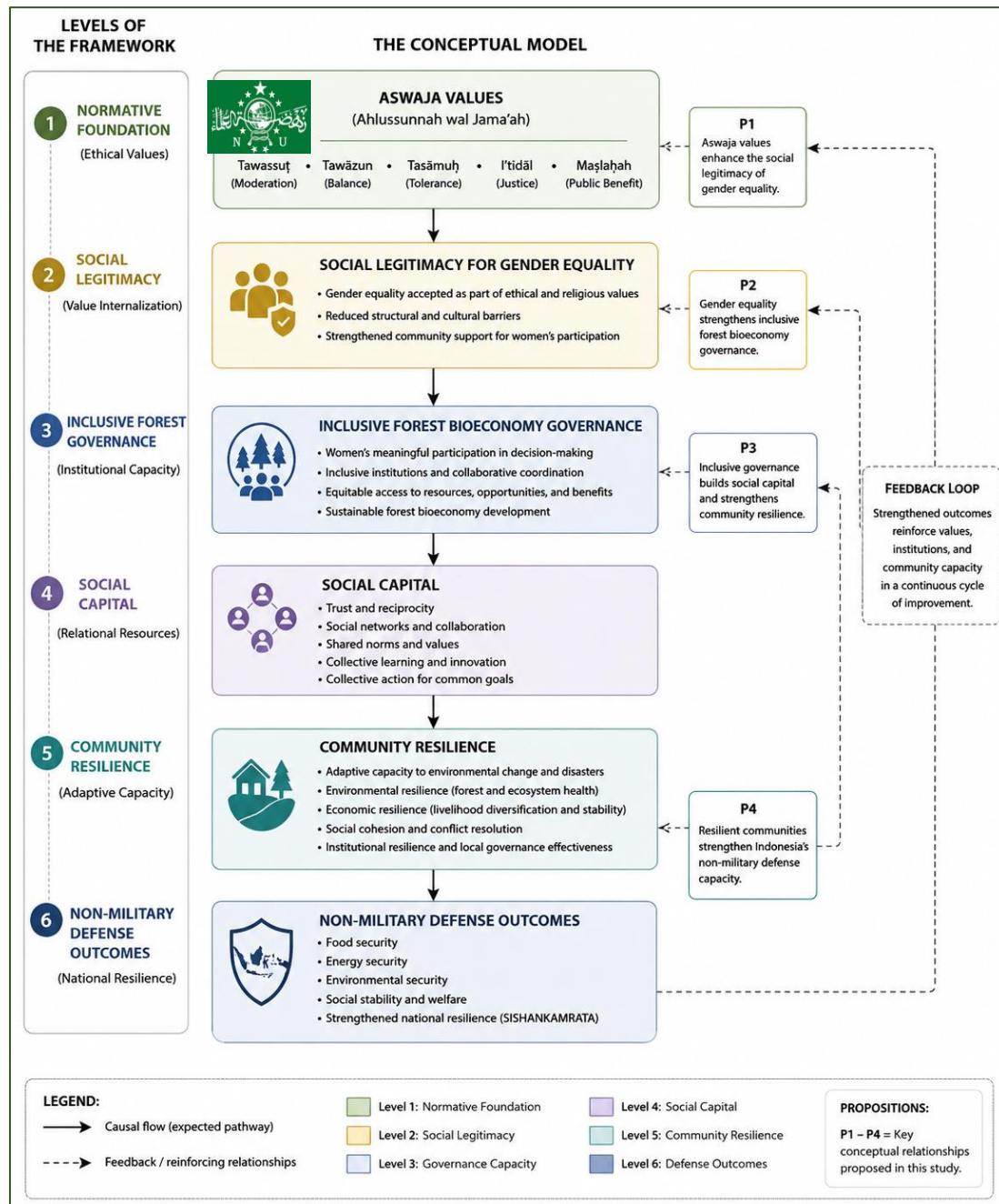


Figure 1. Proposed Conceptual Model Integrating Gender Equality into the Forest Bioeconomy Based on Aswaja Values for Strengthening Indonesia's Non-Military Defense
(Source: Developed by the authors based on an Integrative Literature Review)

The proposed model positions Aswaja values as the normative foundation of the system. Unlike conventional governance models that primarily emphasize formal institutions and regulatory arrangements, this framework recognizes that sustainable governance also depends on informal institutions that shape collective norms, trust, and social legitimacy. Within Indonesia's socio-cultural context, the ethical principles of *tawassut*, *tawāzun*, *tasāmuḥ*, *i'tidāl*, and *maṣlaḥah* function as normative resources that encourage moderation, justice, inclusiveness, balance, and collective responsibility. These values create favorable social conditions for accepting gender-inclusive governance while strengthening cooperation among community members (Ratnawati et al., 2020; Isnaini et al., 2021; Wulandari, 2023; Rozi et al., 2025).

The first proposition (P1) suggests that stronger internalization of Aswaja values enhances the social legitimacy of gender equality within forest governance. Gender equality is therefore understood not merely as compliance with formal policy but as a socially accepted institutional practice rooted in culturally embedded ethical values. When communities perceive women's participation as consistent with principles of justice, moderation, and public benefit, barriers arising from traditional norms and institutional resistance become less pronounced. Consequently, gender-inclusive participation becomes more sustainable because it is supported simultaneously by legal frameworks and community values.

Building upon this ethical foundation, the model proposes (P2) that gender equality strengthens the institutional capacity of the forest bioeconomy through more inclusive governance. Greater participation by women broadens the diversity of knowledge, experiences, and leadership available within community decision-making processes. Inclusive governance encourages collaborative problem-solving, strengthens accountability, improves resource allocation, and expands innovation in sustainable forest utilization. Rather than functioning solely as beneficiaries of development, women become active contributors to biodiversity conservation, forest-based entrepreneurship, household resilience, and community adaptation to environmental change (Bitzer et al., 2024; Elias et al., 2024; Jagati, 2024; Thakuri et al., 2024).

The third proposition (P3) argues that gender-inclusive forest governance generates stronger social capital, which subsequently enhances community resilience. Social capital emerges through repeated interactions characterized by trust, reciprocity, shared norms, and collective action. Inclusive participation strengthens communication among stakeholders, facilitates knowledge exchange, reduces social conflict, and improves cooperation in managing common forest resources. These institutional relationships enable communities to respond more effectively to ecological degradation, climate variability, economic uncertainty, and other multidimensional challenges associated with sustainable forest management. Accordingly, social capital serves as the principal mechanism through which gender equality influences long-term resilience within forest-dependent communities.

The final proposition (P4) extends this argument by positioning community resilience as a strategic component of Indonesia's non-military defense. Contemporary security challenges increasingly arise from environmental crises, food insecurity, natural disasters, resource scarcity, social fragmentation, and economic instability rather than exclusively from military confrontation (Rahayu et al., 2024). Communities possessing high levels of social cohesion, collaborative governance, adaptive capacity, and institutional trust are better equipped to anticipate, absorb, and recover from these non-military threats. Consequently, strengthening community resilience contributes directly to national resilience and reinforces the broader objectives of Indonesia's Universal People's Defense and Security System (SISHANKAMRATA).

Taken together, these four propositions describe a sequential institutional process. Ethical values generate social legitimacy for gender equality; gender equality strengthens inclusive governance; inclusive governance builds social capital; social capital enhances community resilience; and resilient communities reinforce non-military defense. Rather than representing isolated causal relationships, these components operate as an integrated and mutually reinforcing system in which improvements at one level strengthen outcomes across the entire governance framework.

An important contribution of this conceptual model lies in its interdisciplinary integration. Previous studies have generally examined forest bioeconomy, gender equality, Islamic values, and non-military defense as separate fields of inquiry (Roos et al., 2021; Sanz-Hernández et al., 2022; Bitzer et al., 2024; Elias et al., 2024; Rahayu et al., 2024). This study advances the literature by demonstrating that ethical values function not merely as moral guidance but as institutional resources that strengthen governance quality and community resilience. In doing so, the model extends existing bioeconomy scholarship beyond technological and economic perspectives by incorporating cultural legitimacy and social institutions as essential determinants of sustainable development.

Furthermore, the model offers practical implications for public policy. Gender mainstreaming within the forestry sector should move beyond increasing women's numerical representation toward strengthening inclusive governance supported by locally embedded ethical values. Likewise, forest bioeconomy policies should integrate community empowerment, social capital development, and institutional collaboration as complementary objectives alongside economic growth and environmental sustainability. Such an integrated approach is expected to enhance the effectiveness of national development strategies while simultaneously contributing to Indonesia's capacity to address increasingly complex non-military threats.

Although conceptual in nature, the proposed framework provides a foundation for future empirical research. Each proposition may be operationalized into measurable constructs and tested using quantitative, qualitative, or mixed-method approaches across different forest governance contexts. Future studies may also examine how variations in local institutions, religious values, and community characteristics influence the relationships among gender equality, social capital, forest bioeconomy, and non-military defense. Such empirical validation will further refine the model and strengthen its applicability for both academic research and public policy.

Overall, the conceptual model proposed in this study repositions gender equality as more than a social or developmental objective. Instead, it demonstrates that gender equality constitutes a strategic institutional mechanism through which ethical values, inclusive governance, social capital, and community resilience converge to strengthen the sustainability of the forest bioeconomy and, ultimately, Indonesia's non-military defense. This integrated perspective represents the principal theoretical contribution of the present study and offers a new analytical framework for examining the relationship between sustainable development and national security in Indonesia.

Theoretical Contributions and Policy Implications

This study contributes to the growing body of literature on forest bioeconomy by extending its analytical focus beyond technological innovation and economic transformation toward the institutional and socio-cultural dimensions of sustainable development. Previous studies have primarily examined forest bioeconomy from the perspectives of biomass utilization, circular economy, industrial competitiveness, and environmental sustainability (Roos et al., 2021; Sanz-Hernández et al., 2022). While these perspectives have significantly advanced the understanding of bioeconomy transitions, they provide only limited explanation of how inclusive governance emerges and why some community-based bioeconomy initiatives are more resilient than others.

The conceptual framework proposed in this study addresses this gap by integrating five domains that have largely developed independently in the existing literature: Aswaja values, gender equality, forest bioeconomy, social capital, and non-military defense. Rather than treating gender equality solely as a social objective or policy requirement, this study conceptualizes it as an institutional mechanism through which inclusive participation strengthens social capital, collective action, and community resilience. At the same time, Aswaja values are positioned not merely as religious principles but as informal institutions that generate social legitimacy for gender-inclusive governance. This perspective offers a broader understanding of how ethical

values interact with formal institutions to support sustainable forest management and strengthen national resilience.

The proposed model also contributes to the expanding discourse on non-military defense. Existing studies generally emphasize the role of state institutions, public policy, and security governance in addressing contemporary non-military threats (Rahayu et al., 2024). This study complements that perspective by arguing that resilient communities constitute an equally important strategic asset within Indonesia's defense architecture. Community resilience is not produced solely through government intervention but also through inclusive institutions, trusted social relationships, and culturally embedded values that encourage collaboration and collective responsibility. Consequently, sustainable forest governance should be viewed not only as an environmental or economic agenda but also as an investment in long-term national resilience.

From a policy perspective, the findings suggest that strengthening gender equality in the forestry sector requires approaches that extend beyond administrative compliance and numerical representation. Gender mainstreaming should be accompanied by efforts to strengthen community institutions, expand women's meaningful participation in decision-making, and promote locally accepted ethical values that foster social legitimacy. Policies emphasizing participation, collaboration, and community empowerment are more likely to produce durable institutional change than approaches relying exclusively on regulatory instruments.

The study further highlights the strategic role of faith-based social organizations, particularly Nahdlatul Ulama, in supporting sustainable development. Through the ethical principles of Ahlussunnah wal Jama'ah (Aswaja), these organizations possess significant potential to facilitate public acceptance of gender-inclusive forest governance while strengthening social cohesion within local communities. Integrating culturally embedded values into forestry and rural development policies therefore represents not a departure from modern governance principles but an opportunity to enhance their effectiveness through locally grounded institutional legitimacy. Finally, this conceptual framework provides a foundation for future empirical research. The proposed relationships among Aswaja values, gender equality, social capital, community resilience, and non-military defense can be operationalized into measurable constructs and examined across different forest governance contexts in Indonesia. Such empirical validation would not only refine the proposed model but also contribute to a deeper understanding of how socio-cultural institutions shape the effectiveness of sustainable forest bioeconomy policies. In this respect, the framework serves both as a theoretical contribution to interdisciplinary scholarship and as a practical reference for developing more inclusive, resilient, and socially legitimate forestry governance toward the realization of Indonesia Emas 2045.

CONCLUSION

This study develops a conceptual framework that repositions gender equality as a strategic institutional mechanism within the forest bioeconomy for strengthening Indonesia's non-military defense. Through an Integrative Literature Review, the study demonstrates that sustainable forest bioeconomy cannot be achieved solely through technological innovation, economic transformation, or regulatory reform. Rather, its long-term effectiveness depends on inclusive governance supported by social legitimacy, community participation, and culturally embedded ethical values. In this framework, the values of Ahlussunnah wal Jama'ah (Aswaja) function as informal institutions that strengthen the acceptance of gender equality within forest governance. By fostering inclusive participation, these values reinforce social capital, collective action, and community resilience, thereby enhancing the capacity of forest-dependent communities to address contemporary non-military threats.

The principal contribution of this study lies in integrating five analytical domains that have largely evolved independently in previous scholarship: Aswaja values, gender equality, forest bioeconomy, social capital, and non-military defense. Unlike earlier studies that primarily examine these themes separately, this article proposes a coherent institutional model explaining how ethical values generate social legitimacy for gender-inclusive governance, which

subsequently strengthens social capital, community resilience, and national resilience. This perspective broadens the discourse on forest bioeconomy by emphasizing that sustainable development is not only an ecological or economic transition but also a process of institutional and socio-cultural transformation. At the same time, the study extends the concept of non-military defense by highlighting resilient communities as strategic assets within Indonesia's national defense architecture.

Although conceptual in nature, the proposed framework provides a theoretical foundation for future empirical research. Subsequent studies may operationalize the proposed relationships into measurable constructs and examine them across different forest governance contexts, social forestry schemes, and community-based bioeconomy initiatives in Indonesia. Such empirical validation will refine the conceptual model and strengthen its applicability for policy development. From a practical perspective, the framework offers strategic insights for integrating gender mainstreaming, community empowerment, and culturally grounded governance into forestry policies, thereby supporting the realization of a sustainable forest bioeconomy and contributing to Indonesia's vision of Indonesia Emas 2045.

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