



The Climate Crisis Is Not Gender-Neutral: Why Do Women Bear a Heavier Ecological Burden?

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Abstract

Climate change and environmental degradation affect communities unevenly, and gender is a critical dimension of this unequal vulnerability. Women, particularly Indigenous women and women in coastal communities, frequently carry disproportionate responsibilities for food provision, water collection, household care, and livelihood adaptation while having limited influence over environmental decision-making. This article examines the gendered dimensions of ecological burdens in Indonesia by connecting experiences of coastal communities, Indigenous peoples, displacement, and extractive development. Cases such as Kawasi and the Balik community provide important entry points for understanding how environmental transformation affects women's livelihoods, social reproduction, cultural practices, and political participation. The article employs feminist political ecology to analyze the relationship between environmental change and gendered power structures. It argues that relocation, pollution, resource scarcity, and ecosystem degradation do not simply affect households collectively; they can intensify women's unpaid labor and reduce their economic and political autonomy. At the same time, women's knowledge and experiences are frequently marginalized in formal environmental governance. A gender-just approach to climate policy therefore requires more than identifying women as vulnerable groups. It must recognize women as political actors and rights holders whose knowledge is essential to environmental decision-making. The article concludes that climate justice requires gender-responsive governance, protection of livelihoods, meaningful participation, and recognition of the unequal distribution of ecological labor and risk.

[Perubahan iklim dan degradasi lingkungan berdampak tidak merata pada masyarakat, dan gender merupakan dimensi penting dari kerentanan yang tidak setara ini. Perempuan, khususnya perempuan adat dan perempuan di



masyarakat pesisir, seringkali memikul tanggung jawab yang tidak proporsional untuk penyediaan pangan, pengumpulan air, perawatan rumah tangga, dan adaptasi mata pencaharian, sementara pengaruh mereka terhadap pengambilan keputusan lingkungan terbatas. Artikel ini mengkaji dimensi gender dari beban ekologis di Indonesia dengan menghubungkan pengalaman masyarakat pesisir, masyarakat adat, penggusuran, dan pembangunan ekstraktif. Kasus-kasus seperti Kawasi dan masyarakat Balik memberikan titik masuk penting untuk memahami bagaimana transformasi lingkungan memengaruhi mata pencaharian perempuan, reproduksi sosial, praktik budaya, dan partisipasi politik. Artikel ini menggunakan ekologi politik feminis untuk menganalisis hubungan antara perubahan lingkungan dan struktur kekuasaan berbasis gender. Artikel ini berpendapat bahwa relokasi, polusi, kelangkaan sumber daya, dan degradasi ekosistem tidak hanya memengaruhi rumah tangga secara kolektif; hal tersebut dapat memperintensifkan kerja tak berbayar perempuan dan mengurangi otonomi ekonomi dan politik mereka. Pada saat yang sama, pengetahuan dan pengalaman perempuan seringkali terpinggirkan dalam tata kelola lingkungan formal. Oleh karena itu, pendekatan yang adil gender terhadap kebijakan iklim membutuhkan lebih dari sekadar mengidentifikasi perempuan sebagai kelompok rentan. Hal itu harus mengakui perempuan sebagai aktor politik dan pemegang hak yang pengetahuannya sangat penting untuk pengambilan keputusan lingkungan. Artikel ini menyimpulkan bahwa keadilan iklim membutuhkan tata kelola yang responsif gender, perlindungan mata pencaharian, partisipasi yang bermakna, dan pengakuan atas distribusi tenaga kerja dan risiko ekologis yang tidak merata.]

Keywords: gender justice, climate change, feminist political ecology, Indigenous women, environmental vulnerability

Introduction

Climate change is frequently described as a universal environmental crisis, but its consequences are not experienced universally. Exposure to floods, droughts, coastal erosion, declining agricultural productivity, water scarcity, and ecosystem degradation is mediated by social position, economic resources, political authority, and access to environmental decision-making. Gender is therefore not an incidental variable in climate vulnerability; it is part of the institutional and social structures through which environmental risks are produced and distributed. Research across developing countries demonstrates that climate shocks can deepen pre-existing gender inequalities, particularly where women have weaker access to economic resources, political institutions, and formal employment (Eastin 2018). The relationship is consequently recursive: existing gender inequalities shape women's vulnerability to climate change, while climate-related disruptions can subsequently reproduce or intensify those inequalities.

The gendered character of climate vulnerability is especially visible in everyday activities that remain statistically and politically undervalued. Women in many rural, coastal, and Indigenous communities carry substantial responsibility for obtaining water, securing food, caring for children and elderly family members, maintaining household health, and adapting livelihoods to ecological changes. When environmental conditions deteriorate, these responsibilities do not disappear; instead, they may require more time, greater physical effort, and additional forms of unpaid labor. The climate crisis can therefore operate through a care burden multiplier: declining environmental resources increase the amount of labor required to reproduce everyday life. Research on gender and global environmental change emphasizes that women's everyday knowledge and work are central to adaptation, while gendered institutions can simultaneously restrict women's access to resources and decision-making (Ravera et al. 2016; Arora-Jonsson et al. 2016).

This burden should not, however, lead to the simplistic conclusion that women are naturally more vulnerable to climate change. Feminist climate scholarship has challenged precisely this type of essentialism. MacGregor (2010) demonstrates that representations of women as either inherently vulnerable or inherently environmentally virtuous can obscure the political and institutional structures that produce unequal vulnerability. Similarly, Lau et al. (2021) warn that climate policy frequently treats women as a homogeneous category of vulnerable subjects, thereby overlooking differences in class, race, ethnicity, age, livelihood, location, and political power. The relevant analytical question is therefore not simply why women are vulnerable, but which social arrangements make particular women more exposed to environmental risk and less able to influence the decisions producing that risk.

This distinction is particularly important in Indonesia, where environmental vulnerability intersects with extensive coastal settlements, Indigenous territories, agricultural communities, and rapidly expanding extractive industries. Environmental transformation may affect women through several interconnected pathways: declining fisheries can alter household food security and women's income-generating activities; water contamination can increase the labor associated with securing safe water; displacement can disrupt women's social networks and customary livelihood practices; and industrial development can transform the ecological spaces on which household reproduction depends. Such effects are often inadequately captured by conventional environmental-impact assessments because they measure aggregate environmental damage without adequately examining the differentiated distribution of labor, risk, and decision-making authority within households and communities.

Feminist political ecology provides a particularly useful framework for understanding these processes. Rather than treating environmental degradation as a purely biophysical phenomenon, feminist political ecology examines how ecological change is shaped by political economy, institutions, social identities,

and unequal relations of power. Sundberg (2017) describes feminist political ecology as an approach that brings feminist theory and practices into political ecology, emphasizing the relationship between environmental processes and structures of power. This perspective changes the analytical focus from “women as victims of climate change” toward the political organization of environmental vulnerability. It asks who controls land and resources, whose knowledge is recognized, who performs ecological labor, who receives compensation, and who participates in decisions concerning environmental transformation.

The relevance of this framework becomes particularly clear in Indigenous and coastal contexts. Women's relationship with ecosystems is often mediated through customary practices, food production, fishing, gathering, water management, and social reproduction. When these ecosystems are transformed, the consequences may extend beyond income loss to include disruptions of cultural practices and collective identity. Research on gender and environmental change emphasizes that informal institutions and customary resource arrangements can themselves be gendered, sometimes restricting women's access to land and communal resources while simultaneously relying heavily on their environmental labor (Arora-Jonsson et al. 2016). Thus, the analysis of Indigenous women's vulnerability must consider both external environmental pressures and internal power relations within communities.

This issue is especially significant in Indonesia because Indigenous rights themselves remain embedded within a system of conditional legal recognition. Article 18B(2) of the 1945 Constitution recognizes and respects Indigenous peoples and their traditional rights, while Article 28I(3) recognizes cultural identity and traditional community rights. Yet the implementation of these provisions frequently depends on administrative recognition and the interaction between customary institutions and state law. A study published in *Pattimura Law Journal* emphasizes that customary land relationships are not merely economic arrangements but are connected to political, social, cultural, and ecological dimensions of Indigenous life. The article further notes the continuing tension between state development policies, investors, and Indigenous communities in the management of natural resources. These tensions have gendered implications because women may experience changes in customary territories differently from men.

The environmental governance literature from the Pattimura legal scholarship tradition reinforces the importance of recognizing Indigenous communities as active environmental subjects. Noya (2023), examining the Kewang customary institution in Maluku, shows how Indigenous institutions can contribute to environmental protection through customary rules such as *sasi*. The study connects community participation and customary environmental governance with the constitutional right to a good and healthy environment. This insight is important for feminist environmental analysis because Indigenous women should not be positioned merely as beneficiaries of environmental protection. They can also be knowledge holders and participants in customary institutions, although their actual

participation may be constrained by gendered authority structures. A gender-just environmental policy must therefore recognize both the ecological contributions of customary institutions and the internal inequalities that may determine who speaks within them.

The relationship between climate change and gender also extends to political participation. Women may possess detailed knowledge concerning changes in water availability, agricultural productivity, fisheries, food security, household health, and ecological cycles, yet such knowledge is frequently classified as “domestic” rather than political. Lau et al. (2021) demonstrate that climate policy can reproduce gender inequality when participation is reduced to numerical representation rather than meaningful influence. The distinction is crucial: appointing women to consultation meetings does not necessarily mean that women possess decision-making power. Genuine participation requires that women's knowledge can influence the definition of environmental problems, the design of adaptation measures, the allocation of resources, and the evaluation of environmental projects.

Climate policy can also inadvertently deepen gender inequality when adaptation is conceptualized as a technical process rather than as a social process. Schofield and Gubbels (2019), examining climate adaptation in an informal settlement in Dar es Salaam, demonstrate that adaptation is embedded in everyday gendered realities and cannot be understood independently of household responsibilities and social relations. This finding has broader implications for Indonesia. A flood-control project, relocation program, water infrastructure project, or livelihood intervention may appear gender-neutral at the aggregate level while producing highly differentiated consequences for women and men. An infrastructure project that restores physical access to water, for instance, may reduce women's labor; conversely, a project that relocates households away from established water and food sources may unintentionally increase it.

The issue becomes even more complicated when climate vulnerability intersects with displacement and extractive development. Relocation can reorganize not only physical space but also household economies, social networks, customary practices, and gender relations. Women may lose access to informal income-generating activities, gardens, fishing areas, gathering sites, or reciprocal community networks that previously supported household survival. Such losses are often difficult to capture through conventional compensation mechanisms because they involve social reproduction and non-market environmental values. Feminist political ecology therefore directs attention to the hidden ecological economy of care: the labor required to transform environmental resources into food, water, health, and social well-being.

This perspective is particularly relevant to the cases of Kawasi and the Balik community identified in this article. In Kawasi, ecological transformation associated with nickel development raises questions not only about environmental degradation but also about how relocation and landscape transformation affect

household reproduction, livelihoods, and community relations. In the Balik context, the relationship between Indigenous identity, land, and environmental transformation similarly requires analysis beyond aggregate measures of economic development. The central issue is not simply whether households receive compensation or alternative housing, but whether women retain meaningful access to the ecological and social systems through which they have historically organized everyday life. Feminist political ecology makes these hidden dimensions analytically visible.

The Indonesian legal framework provides a basis for moving beyond a gender-blind model of environmental governance. Law No. 32 of 2009 on Environmental Protection and Management recognizes the right to a good and healthy environment, participation in environmental management, access to information, and access to justice. These rights are formally universal, but universal language does not automatically produce equal outcomes. Gender-responsive environmental governance requires institutions to assess whether women and men can actually exercise those rights under equivalent conditions. A legal right to participate has limited substantive value if women lack information, transportation, time, financial resources, institutional access, or authority to influence environmental decisions.

International legal norms reinforce this substantive approach. The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) requires states to eliminate discrimination against women, while its Committee has emphasized the relationship between gender equality and environmental change. CEDAW General Recommendation No. 37 specifically addresses the gender-related dimensions of disaster risk reduction in the context of climate change. The Paris Agreement likewise recognizes the importance of gender-responsive approaches to climate action and calls for gender equality and the empowerment of women. These instruments indicate that climate governance should not treat gender equality as an optional social-development component but as part of the architecture of effective and legitimate climate action.

The significance of this argument extends beyond vulnerability toward environmental citizenship. Women should not be understood merely as recipients of adaptation assistance because such a framework reproduces a paternalistic model in which institutions identify women's needs without recognizing women's political agency. Feminist political ecology instead emphasizes that women possess situated knowledge derived from their everyday interactions with ecosystems. Ravera et al. (2016), using a feminist intersectional approach, show that adaptation strategies vary according to intersecting identities and power relations rather than being determined by gender alone. Women's ecological knowledge can therefore constitute a resource for environmental governance rather than simply evidence of vulnerability.

At the same time, women should not be romanticized as inherently ecological actors. The literature warns against precisely this assumption. MacGregor (2010) demonstrates that the portrayal of women as environmentally virtuous can become

another form of gender essentialism, while Lau et al. (2021) show how assumptions that women are naturally caring and environmentally connected can generate poorly designed climate interventions. The objective of gender justice is consequently not to assign women additional responsibility for environmental protection. Instead, it is to redistribute environmental responsibility, recognize unpaid ecological labor, expand women's political authority, and ensure that environmental policies do not reproduce the inequalities they claim to address.

Recent scholarship further strengthens this argument by connecting feminist political ecology with climate and health. Kotsila, Ruiz Cayuela, and González-Hidalgo (2026) argue that conventional vulnerability frameworks often fail to adequately address the structures of power determining why, where, and by whom climate-related health risks are experienced. Their feminist political ecology approach places power and contestation at the center of vulnerability analysis. This approach is highly relevant to Indonesia, where environmental degradation can simultaneously produce health risks, livelihood insecurity, displacement, and increased care responsibilities. A gender-sensitive climate policy must therefore assess not merely the physical exposure of populations but the institutional structures that determine their capacity to respond.

The central argument of this article is consequently that the climate crisis is not gender-neutral because the social organization of environmental risk is not gender-neutral. Women may bear heavier ecological burdens not because of biological characteristics but because gendered divisions of labor, unequal access to resources, political marginalization, and environmental dispossession distribute the costs of ecological change unevenly. Climate justice therefore requires more than identifying women as a vulnerable category. It requires transforming the institutional arrangements through which environmental decisions are made and ecological labor is distributed. The cases of Kawasi and the Balik community provide an important Indonesian context for examining these dynamics, particularly where climate vulnerability intersects with extractive development, Indigenous rights, displacement, and coastal ecological change.

Accordingly, this article asks three interconnected questions: (1) why do environmental and climate-related risks translate into disproportionate burdens for women; (2) how do extractive development, displacement, and ecological degradation reshape women's labor, livelihoods, and political agency; and (3) what legal and institutional reforms are necessary to achieve gender-just environmental governance in Indonesia? By addressing these questions through feminist political ecology and environmental-justice perspectives, the article seeks to move beyond the conventional narrative of women as vulnerable victims. Its central proposition is that climate justice requires recognizing women simultaneously as rights holders, knowledge producers, livelihood actors, caregivers, and political subjects whose participation is indispensable to legitimate and sustainable environmental governance.

Previous Studies: Gender, Climate Vulnerability, and Feminist Political Ecology

Previous scholarship demonstrates that the relationship between climate change and gender cannot be adequately explained through exposure to environmental hazards alone. Gender structures access to land, income, water, food, technology, social networks, and political institutions, thereby shaping the capacity of individuals to respond to ecological disruption. Eastin (2018), using cross-national evidence from developing countries, finds that gender inequality is closely associated with greater vulnerability to climate change. The significance of this finding is that vulnerability is socially produced rather than naturally distributed. Women may experience greater exposure because they are concentrated in livelihood activities dependent on natural resources, while simultaneously possessing fewer assets with which to respond to environmental shocks. Climate change thus interacts with existing inequalities instead of creating an entirely new hierarchy of vulnerability. This perspective is important for Indonesia because climate risks increasingly intersect with rural poverty, coastal dependence, Indigenous territorial marginalization, and unequal access to environmental decision-making. Gender-responsive climate policy must therefore examine the institutions that produce vulnerability rather than merely identifying women as a demographic category at risk.

A second body of literature focuses on the relationship between women's everyday labor and environmental change. Ravera et al. (2016) demonstrate that climate adaptation is shaped by intersecting relations of gender, class, ethnicity, and social position. Their feminist intersectional approach shows that women do not experience environmental change uniformly and that adaptation strategies emerge from particular social and ecological contexts. This is particularly relevant to rural and Indigenous communities where women frequently combine productive and reproductive responsibilities. When water becomes scarce, agricultural productivity declines, or fisheries deteriorate, women may compensate through additional labor rather than through formal adaptation programs. The result is an often-invisible transfer of environmental costs into unpaid household labor. Feminist political ecology makes this transfer analytically visible by asking not only whether a community has adapted but also who performs the work required to make adaptation possible. In this sense, climate resilience can become socially regressive when the costs of resilience are transferred disproportionately to women without corresponding redistribution of resources or authority.

The literature also warns against treating women's vulnerability as an inherent characteristic. MacGregor (2010) argues that feminist approaches to climate change must avoid constructing women simultaneously as helpless victims and naturally virtuous environmental protectors. Such representations can reproduce rather than challenge gender stereotypes. The political significance of this critique is substantial: if women are represented primarily as vulnerable caregivers, climate policies may assign them additional responsibilities for adaptation while leaving existing structures of inequality intact. Conversely, representing women as

inherently more environmentally responsible may obscure the political and economic institutions that determine environmental degradation. The appropriate analytical approach is therefore relational. Women become vulnerable under particular combinations of environmental exposure, economic dependency, political exclusion, and gendered labor arrangements. Feminist political ecology is particularly useful because it connects ecological processes with power relations rather than treating either gender or the environment as independent variables. The question is consequently not whether women are intrinsically more vulnerable, but why specific social systems make women's environmental risks heavier and their political responses more constrained.

Another important strand of research concerns women's participation in climate governance. Lau et al. (2021) argue that gender-responsive climate policy requires more than simply increasing the numerical presence of women in institutions. Meaningful inclusion requires attention to intersecting forms of inequality and to the institutional conditions determining whose knowledge is recognized as legitimate. This distinction is particularly important in environmental governance because women frequently possess detailed experiential knowledge about water availability, food production, household health, fisheries, forests, and changing ecological conditions. Yet such knowledge may be classified as domestic or informal rather than treated as evidence relevant to environmental policy. The exclusion is therefore epistemic as well as political. When environmental decision-making recognizes technical expertise while marginalizing everyday ecological knowledge, women can become simultaneously essential to environmental adaptation and invisible within environmental governance. Gender justice consequently requires institutional mechanisms through which women's experiential knowledge can influence policy formulation rather than simply being collected as supplementary information.

The Indonesian context provides particularly strong evidence for this argument. Niravita, Adinda, and Santosa (2024), examining rural climate resilience, find that Indonesian women experience disproportionate impacts from water scarcity, agricultural decline, and disasters while simultaneously possessing important adaptive capacities derived from local knowledge, caregiving responsibilities, and community networks. Their study identifies gendered land tenure, inadequate financial and technical support, and limited participation in decision-making as structural barriers to women's climate resilience. The importance of this study lies in its rejection of a purely vulnerability-oriented framework. Women are not merely recipients of climate assistance; they are already active participants in adaptation. The policy problem is that institutions frequently fail to recognize or support these capacities. Consequently, gender-responsive climate governance should shift from a model of “protecting vulnerable women” toward one of strengthening women's rights, resources, autonomy, and political agency.

This argument is reinforced by scholarship on Indigenous women's participation in Indonesian law and governance. Tridewiyanti et al. (2023)

demonstrate that Indigenous women have historically experienced discrimination in legal and political processes partly because patriarchal norms are reflected in both social institutions and legal structures. Their feminist legal analysis argues that the experiences and voices of Indigenous women are necessary for developing non-discriminatory legal norms and identifies their participation as an important condition of democratic governance. Although their study focuses on law-making rather than climate policy specifically, its implications for environmental governance are substantial. Environmental decisions concerning customary territories frequently involve legal recognition, land allocation, natural-resource management, and development planning. If Indigenous women are excluded from these processes, environmental governance may reproduce gendered exclusion even when Indigenous communities are formally recognized as stakeholders.

The relationship between customary territory and gender is particularly significant because environmental resources are embedded in systems of social and cultural authority. Laturette (2017) demonstrates that *ulayat* rights constitute collective territorial relationships in which Indigenous communities exercise customary authority over land and resources, while formal recognition under Indonesian law remains conditional. The unequal relationship between state authority and customary authority can weaken Indigenous communities' ability to defend their territories. From a feminist perspective, this territorial insecurity has gendered consequences because women often depend upon customary ecological spaces for subsistence, food processing, household production, gathering, and social reproduction. When customary territories are restricted or transformed, the resulting burden is therefore not distributed evenly within households. The loss of ecological access may translate into additional labor for women even when compensation is calculated at the household or community level.

Indigenous environmental governance itself can provide an important alternative to state-centered models. Noya (2023), examining the Kewang institution and *sasi* in Maluku, demonstrates that Indigenous institutions can contribute to environmental protection through customary rules and community-based ecological governance. Similarly, research on marine *sasi* in the Aru Islands emphasizes its role in protecting natural resources through customary restrictions and community-based conservation. Sorloy, Matuankotta, and Uktelseja (2023) show that *sasi* operates as a mechanism for regulating access to marine resources and supporting ecological sustainability. These studies are important because they challenge the assumption that environmental governance must originate from centralized state institutions. However, a gender-just approach must also ask who participates in customary governance. Recognition of customary institutions should not automatically be equated with gender equality; women's substantive participation within those institutions remains an independent question.

This concern is particularly important because feminist analysis distinguishes between recognizing a community and recognizing individuals within that community. A policy can recognize an Indigenous community as a collective rights

holder while simultaneously overlooking inequalities among its members. If environmental negotiations occur exclusively through male customary leaders, women may remain invisible even though they experience significant consequences from environmental transformation. Tridewiyanti et al. (2023) directly address this problem by arguing that Indigenous women's participation is necessary to ensure that legal norms reflect women's experiences rather than reproducing patriarchal assumptions. Thus, environmental justice requires a dual recognition framework: the state must recognize collective Indigenous rights while also guaranteeing women's substantive participation within processes governing those collective territories.

Research from Pattimura University provides further evidence that women's agency can be central to community environmental governance. Sunarti and Murwani's study of community-based ecotourism in Liang, Maluku, demonstrates that women function not merely as beneficiaries but as change agents connecting environmental advocacy, livelihood strategies, and cultural preservation. Their findings challenge the assumption that women enter environmental politics only when external organizations invite them to participate. Instead, women can actively construct environmentally sustainable economic and cultural spaces from within communities. This evidence is important for the present study because it suggests that women's ecological agency should be examined alongside vulnerability. A woman who experiences climate-related burdens may simultaneously be an entrepreneur, environmental organizer, cultural actor, caregiver, and knowledge producer. A policy framework that sees only vulnerability will therefore underestimate the political resources already present within communities.

The legal scholarship also demonstrates that women's rights cannot be separated from broader human-rights obligations. Batuwael, Hanafia, and Leatemia (2023) emphasize that discrimination against women constitutes a human-rights concern and engages questions of state responsibility. While their analysis concerns gender discrimination more broadly, its relevance to climate justice lies in the principle that states have positive obligations to create conditions in which rights can be effectively exercised. Climate adaptation programs that formally include women but fail to address structural barriers may therefore reproduce substantive inequality. Gender-responsive environmental governance must address access to information, participation, livelihood resources, legal remedies, and protection from discrimination. The relevant standard is not merely equal treatment in the abstract but whether environmental policies produce conditions under which women can exercise environmental rights on an equal and meaningful basis.

The international literature further suggests that climate adaptation itself can become a site where gender relations are renegotiated. Adaptation policies may create opportunities for women to gain access to new technologies, financial resources, leadership positions, and livelihood opportunities. Yet adaptation can also reinforce traditional gender roles if programs assume that women will provide unpaid care, maintain household food security, or mobilize community networks

without compensation. The distinction between adaptation for women and adaptation with women is therefore crucial. The first treats women as targets of policy intervention; the second recognizes them as political actors capable of shaping the objectives and methods of adaptation. Feminist political ecology favors the latter because it asks how adaptation changes relations of power rather than merely whether it reduces physical exposure.

This issue becomes particularly acute under conditions of displacement. Relocation associated with extractive development or climate adaptation can remove communities from ecological systems that have supported their livelihoods for generations. The consequences cannot be measured solely through housing quality or monetary compensation. Displacement may disrupt access to gardens, fisheries, gathering areas, water sources, informal markets, social networks, and culturally significant places. Women may experience these disruptions disproportionately because their daily responsibilities are often closely connected to these ecological spaces. The resulting burden is a form of social-reproductive displacement: the household may receive a new physical residence while losing the ecological infrastructure that previously sustained everyday life. Feminist political ecology therefore provides a necessary corrective to relocation assessments that measure compensation at the household level while ignoring intra-household differences.

The Kawasi case is especially useful for examining this problem because nickel-driven landscape transformation cannot be assessed solely through aggregate economic benefits or environmental indicators. If relocation separates households from established ecological and social networks, women may face changes in livelihood opportunities, care responsibilities, food access, and social support. The issue is not simply whether relocation provides technically adequate housing but whether it preserves the conditions necessary for social reproduction and political participation. This is consistent with the broader feminist political-ecology argument that environmental transformation restructures everyday relations between bodies, labor, territory, and political authority. Consequently, environmental impact assessments should incorporate gender-disaggregated assessments of livelihood loss, unpaid labor, access to resources, and participation before relocation or extractive expansion is approved.

The Balik community provides another important dimension because Indigenous territorial identity and environmental governance are inseparable from questions of recognition. Where customary rights remain conditional or incompletely recognized, environmental transformation can weaken the institutional foundations through which communities defend territory. Laturette (2017) argues that the conditional legal recognition of *ulayat* rights can strengthen state dominance over customary territories. From a gender perspective, the consequences can be multiplied: women may have less formal property authority than men while simultaneously depending heavily on communal ecological resources. Thus, insecure customary tenure can become a gendered mechanism of

environmental vulnerability. Protecting Indigenous women's climate resilience requires not only gender-responsive programs but also secure collective territorial rights.

Taken together, the previous studies reveal three important gaps. First, much climate-vulnerability research identifies gender differences but does not sufficiently connect them to the political economy of extractive development and territorial transformation. Second, Indigenous-rights scholarship increasingly recognizes collective territorial rights but often pays less attention to gendered differences within Indigenous communities. Third, environmental law scholarship recognizes participation and community rights but rarely analyzes the unpaid ecological and reproductive labor through which women absorb environmental costs. The contribution of this article is therefore to bring these strands together through feminist political ecology. Rather than treating climate vulnerability, Indigenous rights, displacement, and gender inequality as separate issues, the article conceptualizes them as interconnected manifestations of unequal environmental power. This approach makes it possible to ask not only who is exposed to ecological risk, but also who performs the labor of adaptation, who controls environmental decisions, and whose knowledge determines what counts as a legitimate environmental solution.

The resulting analytical framework moves beyond the conventional vulnerability paradigm toward a concept of gendered ecological injustice. Such injustice occurs when environmental risks, adaptation costs, ecological labor, and decision-making authority are distributed unequally along gendered lines. Women bear a heavier ecological burden when they are expected to compensate for environmental degradation through unpaid labor while possessing limited authority over the decisions producing that degradation. Conversely, environmental justice becomes more substantive when women gain secure access to resources, political representation, legal protection, livelihood opportunities, and institutional recognition of their ecological knowledge. The literature therefore supports the central proposition of this article: climate justice cannot be achieved simply by adding women to existing climate programs. It requires transforming the social and legal structures through which environmental risks and responsibilities are distributed.

Theoretical and Legal Framework

1. Feminist Political Ecology and Gendered Environmental Burden

Feminist political ecology provides the principal theoretical foundation for examining why climate and ecological risks are distributed unevenly between women and men. Rather than treating environmental vulnerability as a purely physical response to climate hazards, feminist political ecology examines how ecological processes interact with gender, class, ethnicity, livelihood, and political authority. Rocheleau, Thomas-Slayter, and Wangari (1996) established an important foundation for this approach by demonstrating that gender shapes

people's relationships with environmental resources, labor, knowledge, and power. More recent scholarship develops this argument by emphasizing that environmental change is simultaneously a material and political process. Sundberg (2017) describes feminist political ecology as an approach concerned with the intersections between gendered social relations and ecological processes. This framework is particularly appropriate for Indonesia because climate vulnerability frequently overlaps with customary land relations, extractive development, coastal dependence, and unequal access to environmental governance. The key analytical issue is therefore not simply whether women experience greater exposure to environmental hazards, but how social institutions produce that differentiated exposure.

A central concept derived from feminist political ecology is the gendered division of ecological labor. Environmental resources are transformed into household well-being through labor, much of which remains unpaid and socially invisible. Women frequently perform activities involving food preparation, water acquisition, childcare, household health, agricultural processing, and resource management. When environmental degradation reduces the availability or quality of natural resources, the amount of labor necessary to sustain households can increase. A polluted water source, for example, may require households to travel farther for clean water; declining fisheries may require more time to secure alternative food or income; and ecological disasters may increase care responsibilities. These costs may not appear in conventional environmental-economic assessments because they occur within unpaid domestic labor. Feminist political ecology therefore reveals a hidden mechanism through which ecological degradation is transferred into women's time and bodies. The environmental burden is not simply pollution or resource scarcity itself, but the additional labor required to compensate for ecological deterioration.

This argument challenges conventional understandings of climate adaptation. Adaptation is frequently measured through infrastructure, technology, financial assistance, or changes in livelihood practices, while the labor necessary to implement these strategies receives considerably less attention. Eastin (2018) demonstrates that gender inequality is associated with differences in climate vulnerability, while Ravera et al. (2016) show that adaptation capacities are shaped by intersecting social identities and power relations. These findings suggest that resilience should not be measured solely according to whether households recover from an environmental shock. It should also consider who pays the social cost of recovery. If a household remains economically functional because women undertake additional unpaid labor, the household may appear resilient statistically while women experience declining time, health, autonomy, and economic opportunity. A gender-sensitive climate policy must therefore distinguish between household-level resilience and individually distributed resilience.

Feminist political ecology also emphasizes situated ecological knowledge. Women's knowledge is often produced through repeated interaction with forests,

farms, fisheries, water systems, and household environments. Such knowledge can include observations concerning seasonal changes, food availability, species behavior, water quality, agricultural productivity, and environmental hazards. Yet institutional environmental governance frequently privileges technical or scientific expertise over experiential knowledge. This creates what can be described as an epistemic dimension of environmental injustice: women may possess critical environmental knowledge but lack the institutional authority to have that knowledge recognized. Lau et al. (2021) demonstrate that gender-responsive climate governance requires more than formal representation because meaningful participation depends on whether women can actually influence policy decisions. The exclusion of women's knowledge consequently represents not only a participation deficit but also a loss of potentially valuable environmental information.

The theoretical framework also requires an intersectional approach. “Women” are not a homogeneous environmental category. The experience of an Indigenous woman in a remote coastal community can differ fundamentally from that of an urban professional woman, a female agricultural worker, or a woman living in a low-income settlement. Ravera et al. (2016) emphasize that gender interacts with ethnicity, class, age, livelihood, and other dimensions of social position in shaping adaptive capacity. This is particularly relevant to Indigenous women because their environmental vulnerability can be simultaneously produced by gender discrimination, insecure territorial rights, poverty, political marginalization, and environmental dispossession. An intersectional feminist political ecology therefore avoids the analytical mistake of treating gender as an independent variable and instead examines how multiple forms of power converge in particular ecological contexts.

2. Environmental Justice and the Distribution of Ecological Risk

Environmental justice complements feminist political ecology by providing a framework for analyzing the distribution of environmental benefits, burdens, rights, and political recognition. Schlosberg (2004) argues that environmental justice should not be reduced to distributive equality. It also involves recognition and participation. This multidimensional conception is especially important in the Indonesian context because environmental burdens may be imposed on communities that possess limited political influence while economic benefits flow to corporations, urban consumers, or state institutions. Gender adds another layer to this distribution because environmental burdens experienced by communities can be distributed unevenly within households. Women may bear additional care and livelihood costs even when environmental compensation is formally provided to the community or household as a whole.

The distributive dimension of justice asks a straightforward but politically consequential question: who receives environmental benefits and who bears environmental risks? In the context of extractive development, the benefits may

include employment, infrastructure, government revenue, industrial investment, and national economic growth, while risks may include pollution, displacement, loss of customary resources, and livelihood insecurity. Yet distributive analysis must go beyond the community level. If men obtain formal employment in industrial projects while women lose access to subsistence resources, the aggregate household may be described as economically compensated even though women experience a decline in economic autonomy. Environmental justice therefore requires attention to the intra-community distribution of benefits and burdens.

The recognition dimension is equally important. Fraser (2000) argues that injustice can arise when social groups are misrecognized or treated as inferior participants in social interaction. Applied to environmental governance, misrecognition occurs when communities' identities, knowledge, customary relationships, or environmental concerns are not treated as legitimate bases for decision-making. For Indigenous women, the problem can become doubly structured. Their Indigenous territorial knowledge may be marginalized by state institutions while their gender may restrict their authority within community institutions. Consequently, recognition must operate at multiple levels: the state must recognize Indigenous territorial and cultural rights, while community governance must also ensure women's substantive participation. Recognition without participation risks becoming symbolic rather than transformative.

Political participation constitutes the third dimension of environmental justice. A community may formally be consulted about an industrial or climate-related project while having little capacity to alter the project's design or reject it. Arnstein's (1969) classic theory of the ladder of citizen participation remains useful because it distinguishes genuine power-sharing from symbolic consultation. In gendered environmental governance, this distinction is crucial. Women can be physically present in consultation meetings but remain politically marginalized if decision-making authority remains concentrated among state officials, corporate representatives, or male community leaders. Meaningful participation requires access to information, adequate time, institutional support, freedom from intimidation, and actual capacity to influence outcomes.

These principles are directly applicable to relocation and extractive development in Kawasi and other vulnerable communities. If relocation decisions are made without meaningful consultation with women, the process may fail to identify gender-specific livelihood losses and care burdens. A relocation plan can therefore satisfy formal procedural requirements while producing substantive injustice. Environmental justice requires decision-makers to assess whether relocation preserves access to water, food sources, markets, social networks, customary spaces, and livelihood opportunities. Gender-disaggregated impact assessments are particularly important because household-level compensation can conceal differences in how environmental transformation affects individual members.

3. Indonesian Constitutional and Environmental Law

Indonesia's constitutional framework provides an important legal basis for environmental and gender justice. Article 28H(1) of the 1945 Constitution recognizes everyone's right to live in physical and spiritual prosperity, to have a place to live, and to obtain a good and healthy environment. Article 28I(2) establishes protection against discriminatory treatment, while Article 18B(2) recognizes and respects Indigenous communities and their traditional rights subject to constitutional conditions. These provisions create a legal foundation for understanding environmental protection, equality, and Indigenous rights as interconnected constitutional concerns. Nevertheless, constitutional recognition does not automatically ensure substantive equality. The effectiveness of these rights depends upon legislation, administrative institutions, participation mechanisms, and judicial enforcement.

Law No. 32 of 2009 on Environmental Protection and Management is particularly significant because it establishes environmental rights, participation, information access, and environmental management obligations. Article 65 recognizes the right to a good and healthy environment and provides rights relating to environmental information, participation, and access to justice. Article 66 is also relevant because it protects individuals who struggle for the right to a good and healthy environment. Although these provisions are formally gender-neutral, their implementation should be interpreted through substantive equality. Equal environmental rights do not necessarily produce equal environmental outcomes when women face structural barriers to exercising those rights. Consequently, the implementation of environmental law should incorporate gender-disaggregated participation, access to information, livelihood assessment, and environmental-impact analysis.

Law No. 7 of 1984, through Indonesia's ratification of CEDAW, provides a complementary legal basis for addressing gender discrimination. CEDAW requires states to eliminate discrimination against women across political, economic, social, and cultural spheres. Its relevance to climate governance is strengthened by General Recommendation No. 37, which recognizes the differentiated effects of climate change and disasters on women and girls and calls for gender-responsive disaster-risk reduction and climate policies. The implication is important for Indonesian environmental governance: climate adaptation cannot be considered legally adequate merely because it applies equally to men and women on paper. It should also address structural conditions that prevent women from exercising rights on an equal basis.

Indigenous women's rights additionally require consideration of international norms concerning Indigenous peoples. The United Nations Declaration on the Rights of Indigenous Peoples recognizes Indigenous peoples' rights to participation, cultural integrity, traditional knowledge, and relationships with their territories and resources. Although UNDRIP is not a treaty imposing identical obligations to those found in ratified conventions, it provides an important interpretive framework for

Indigenous participation and rights. The principle of free, prior, and informed consent is particularly relevant where development projects affect Indigenous territories. From a feminist perspective, however, consultation should not treat “the Indigenous community” as internally homogeneous. Procedures should create opportunities for Indigenous women to participate independently and meaningfully in decisions affecting their territories.

The legal significance of participation is therefore broader than procedural compliance. Participation is a mechanism through which environmental rights become substantively exercisable. If women lack access to environmental information, cannot attend consultation processes, or have no influence over the final decision, formal consultation becomes insufficient. Environmental governance should therefore incorporate mechanisms such as gender-responsive public consultation, accessible information, community monitoring, gender-disaggregated impact assessments, and grievance procedures that can be accessed independently by women. Such mechanisms would translate constitutional equality and environmental participation rights into practical institutional safeguards.

4. Toward a Gender-Just Model of Climate Governance

The combined theoretical and legal framework developed here leads to a broader conception of climate justice. A gender-just climate policy must address at least four interconnected dimensions: distribution, recognition, participation, and redistribution of ecological labor. Distribution concerns who receives benefits and bears environmental risks. Recognition concerns whose identities, knowledge, and territorial relationships are treated as legitimate. Participation concerns who has actual authority in environmental decisions. Redistribution concerns who performs the labor required to respond to ecological change. The fourth dimension is particularly important because conventional environmental-justice frameworks may overlook unpaid care and ecological labor within households. Feminist political ecology makes this dimension visible and demonstrates why climate policy can fail even when aggregate environmental outcomes appear positive.

This framework also changes how climate adaptation should be evaluated. A successful adaptation program should not simply reduce physical exposure to floods, droughts, coastal hazards, or ecological degradation. It should also avoid increasing women's unpaid labor, weakening their economic autonomy, or excluding them from decision-making. Adaptation should therefore be assessed through both environmental and social indicators. For example, a relocation project should evaluate not only housing safety but also women's access to water, food, employment, markets, healthcare, schools, transportation, community networks, and customary spaces. Such indicators would transform gender from a supplementary variable in environmental assessment into a substantive criterion of project legitimacy.

The same principle applies to extractive development. Industrial projects are frequently justified through national economic growth, employment creation,

energy transition, or regional development. Yet a project's contribution to economic growth does not establish that its environmental burdens are distributed justly. Where industrial expansion displaces communities or transforms ecosystems, gender-responsive environmental assessment should determine how the costs are distributed among women and men. This is particularly relevant to nickel development because the transition toward low-carbon technologies can itself generate new forms of extraction. A climate policy that reduces global carbon emissions while producing severe local ecological and social burdens cannot automatically be described as just.

The central theoretical proposition is therefore that gender justice is not an additional component of climate justice; it is one of its constitutive conditions. Climate policies cannot be considered socially just when they ignore the gendered distribution of ecological labor, territorial rights, livelihood losses, and political authority. The cases of Kawasi and the Balik community demonstrate why environmental governance must move beyond aggregate measurements of vulnerability toward an analysis of differentiated power. Women should be recognized not only as people exposed to climate and ecological risks but also as political actors capable of producing knowledge, organizing communities, sustaining livelihoods, and shaping environmental futures. Such recognition provides the conceptual bridge to the subsequent analysis of how climate change, extractive development, displacement, and environmental governance interact to produce gendered ecological burdens in Indonesia.

Gendered Ecological Burdens in Extractive and Climate-Vulnerable Communities

1. Environmental Transformation and the Intensification of Women's Unpaid Ecological Labor

The gendered consequences of environmental degradation become particularly visible when ecological transformation disrupts the material foundations of everyday life. In communities dependent on forests, coastal waters, gardens, rivers, and agricultural land, environmental resources are not simply sources of income; they constitute part of the infrastructure of social reproduction. Women frequently transform these resources into food, water, household health, and care, meaning that ecological degradation can increase women's workload even when they do not directly participate in extractive activities. This mechanism is especially important in Indonesia because many rural and Indigenous households continue to combine subsistence activities with informal economic production. When access to ecological resources becomes more difficult, women often compensate through additional labor. The resulting burden is therefore not adequately captured by conventional indicators such as household income or employment. From a feminist political-ecology perspective, environmental degradation effectively transfers part of its economic cost into unpaid labor, and women frequently become the social mechanism through which households absorb that cost (Ravera et al. 2016; Eastin 2018).

Water provides one of the clearest examples of this process. When rivers, springs, groundwater, or coastal water become contaminated or inaccessible, the environmental problem immediately becomes a household labor problem. Someone must travel farther, purchase alternative supplies, collect water from different locations, or undertake additional treatment. In gendered divisions of labor, these responsibilities frequently fall disproportionately upon women. The resulting burden involves not only additional physical work but also lost time that could otherwise be used for education, paid employment, political participation, or rest. Thus, water insecurity can produce a form of time poverty that conventional climate assessments frequently overlook. The environmental burden becomes socially invisible precisely because it is absorbed within domestic routines. Feminist political ecology makes this hidden transfer visible: the degradation of an ecosystem does not end at the polluted river or depleted water source; it continues into households through the redistribution of labor required to maintain everyday life.

The Kawasi case illustrates how this process can operate under extractive transformation. Available reporting indicates that nickel development on Obi Island has been associated with concerns regarding water contamination, reduced access to fishing areas, ecological degradation, and relocation pressures. Local residents have reported difficulties accessing clean water and changes in fishing conditions, while community organizations have raised concerns regarding flooding, sedimentation, and pollution. These allegations should be distinguished from the company's position: Harita Nickel has rejected allegations of environmental damage and stated that its operations follow applicable mining standards. For an academic analysis, however, the significance lies not in presuming responsibility before independent adjudication but in examining the distributional consequences of environmental transformation. Where access to water, fisheries, gardens, and forests becomes more difficult, women can experience ecological change through an intensification of household and livelihood labor even when the official project assessment measures impacts primarily in aggregate environmental or economic terms.

Recent documentation provides particularly revealing evidence of this gendered dimension. Reporting from Kawasi describes women carrying agricultural produce along the Akelamo River, including during flooding, while upstream mining activity has transformed the river environment. This example is analytically significant because it demonstrates how environmental degradation can become incorporated into women's everyday mobility and livelihood practices. The woman is not merely an individual exposed to a flood hazard; she is simultaneously a producer, transporter of food, household contributor, and participant in a local ecological economy. When environmental degradation makes the route more dangerous, the cost is not necessarily registered as a "mining impact" in conventional economic calculations. Yet the increased physical risk and labor are real. Feminist political ecology therefore expands the meaning of environmental

impact by asking how ecological transformation restructures the ordinary activities through which communities reproduce themselves.

The same mechanism operates through declining access to forests and gardens. In Kawasi, reporting indicates that areas previously used for coconut, clove, nutmeg, and sago production have been transformed by industrial development, with some areas becoming inaccessible to residents. Such changes matter because subsistence resources can provide food, materials, and supplemental income that do not appear fully in formal household accounts. Their disappearance may increase dependence on purchased goods, thereby transferring ecological loss into financial vulnerability. Women can experience this transition acutely because household food preparation and care responsibilities remain gendered. If locally available food declines, women may need to spend more money, time, or labor securing substitutes. Environmental dispossession thus becomes simultaneously an economic and gendered process.

The concept of social reproduction is particularly useful here. Social reproduction refers broadly to the labor and social processes required to sustain households and communities across time. Environmental resources are an important component of this reproductive infrastructure. Forests can provide food and medicinal plants; coastal ecosystems can provide fish; gardens can supply vegetables and spices; rivers can provide water; and customary territories can sustain cultural practices. When extractive development disrupts these systems, the costs are not distributed evenly. The market may compensate for some lost resources through wages or commercial goods, but it cannot automatically replace social networks, ecological knowledge, or the unpaid labor previously embedded in local systems. Women frequently stand at the intersection of these systems because their work links ecological resources with household welfare. Environmental degradation can therefore create a reproductive deficit, requiring more labor to achieve the same level of household well-being.

This dynamic complicates the conventional narrative that mining creates employment and therefore improves local welfare. Employment benefits must be compared with the loss of non-market resources and the redistribution of labor within households. A household may gain one formal wage while losing access to fishing grounds, gardens, forests, or clean water. If the formal wage is earned predominantly by men while women absorb the increased costs of household reproduction, the economic transformation may simultaneously increase gender inequality. The relevant question is therefore not simply whether mining creates employment but whose labor becomes monetized and whose labor remains unpaid. Feminist political ecology exposes this asymmetry by examining the relationship between formal economic production and informal reproductive labor. In this respect, gender analysis does not reject development; it asks whether the benefits and costs of development are distributed equitably.

The problem becomes more pronounced when relocation is introduced as a solution to environmental vulnerability. Relocation can reduce physical exposure

to mining operations or environmental hazards, but it can also disrupt established systems of social reproduction. Moving a household away from customary gardens, fisheries, forests, rivers, markets, schools, and social networks may create new forms of vulnerability even where the new settlement offers technically superior housing. Women can be particularly affected because their daily livelihoods frequently depend on proximity to multiple resources rather than on a single workplace. A relocation site designed around residential infrastructure may therefore fail to reproduce the ecological conditions necessary for women's existing livelihood strategies. This is why relocation should be evaluated not simply as a spatial movement but as a reorganization of labor, resources, and social relations.

The concept of “Eco Village” associated with the Kawasi relocation debate illustrates this tension. Available reports indicate that relocation negotiations have involved a planned settlement farther from the existing village, while residents and civil-society organizations have raised concerns about displacement, access to livelihoods, and environmental conditions. The analytical question is consequently whether relocation provides an equivalent ecological and social foundation for community life. A house can replace a house, but a building cannot automatically replace a sago forest, fishing ground, garden, river, or network of reciprocal support. If women historically depend upon these resources for food production and household welfare, their loss can create additional unpaid labor. A gender-sensitive relocation assessment should therefore calculate not only physical assets lost but also time, livelihood, care, ecological knowledge, and social-network losses.

The distribution of environmental risks also intersects with health. Pollution and ecological degradation can increase exposure to unsafe water, contaminated food, dust, smoke, or other environmental hazards. Women may experience these risks through their own exposure as well as through increased responsibilities for caring for children and other household members. Where environmental health deteriorates, care work can increase even when women themselves are not formally classified as affected workers. This creates a double burden: women may experience environmental hazards directly while also absorbing the consequences of environmental illness through unpaid care. Climate and environmental policies that measure health outcomes only through individual morbidity statistics therefore risk overlooking the broader gendered costs of illness.

Children are especially relevant to this mechanism because women frequently carry primary or substantial responsibility for childcare. If environmental contamination increases respiratory problems, waterborne illness, nutritional insecurity, or other health risks, the consequences may translate into additional care work. Reports concerning Kawasi have raised allegations regarding health concerns associated with mining-related environmental changes, including concerns about water quality and children's health. These reports should be treated as claims requiring appropriate scientific and regulatory verification rather than as conclusive proof of causation. Nevertheless, from a gender-justice perspective, the existence of health-risk allegations itself demonstrates why environmental governance should

include gender-sensitive health monitoring. If environmental harm is established, policymakers must account for the unpaid care economy through which its consequences are distributed.

Environmental transformation can also affect women's economic autonomy. In many rural communities, women's economic contributions are partly generated through small-scale agriculture, processing of agricultural products, fishing-related activities, trading, handicrafts, and informal markets. These activities may depend upon access to ecological resources rather than formal employment contracts. When land or water resources are restricted, women may lose income streams that are individually controlled or semi-independent from household wages. This can increase dependence on other household members and weaken bargaining power. Consequently, environmental dispossession can have an economic effect that is not captured by aggregate household income. A gender-disaggregated analysis should therefore examine who owns income-generating activities, who controls compensation payments, and who gains access to new employment opportunities after environmental transformation.

This issue is particularly significant where compensation is paid at the household or community level. Formal compensation can create the appearance of distributive justice while masking internal inequalities. If compensation is transferred to male household heads, for example, women may have limited control over how resources are spent. Similarly, a community development fund may finance infrastructure without restoring women's lost livelihood opportunities. Environmental justice therefore requires intra-household and intra-community distributional analysis. It is insufficient to ask whether "the community" received compensation; researchers and policymakers must ask who received it, who controlled it, what resources were lost, and whether women obtained meaningful economic alternatives.

The Indonesian legal framework provides a basis for addressing these concerns, but implementation requires a substantive understanding of equality. Law No. 32 of 2009 provides rights to environmental information, participation, and access to justice, while Indonesian constitutional law recognizes both environmental rights and equality. These provisions should be interpreted together with Indonesia's obligations under CEDAW. A gender-responsive environmental assessment should consequently identify differential effects on women and men before decisions are made. Participation should not be limited to informing residents about a predetermined project. Women should have opportunities to influence the assessment of alternatives, relocation conditions, compensation structures, livelihood programs, environmental monitoring, and remediation.

The deeper implication is that environmental degradation can create a gendered ecological debt. Communities may bear the environmental costs of development over time, but women frequently absorb a disproportionate share of the unpaid labor required to compensate for those costs. This ecological debt is difficult to see because it is distributed through everyday practices rather than

formal transactions. It appears in longer journeys for water, additional food preparation, increased childcare, more difficult transportation of agricultural products, reduced access to forests and fisheries, and greater dependence on purchased goods. A just climate policy must therefore make these hidden costs visible. Without doing so, policies may declare environmental and economic success while reproducing gender inequality through the privatization of ecological costs within households.

2. Indigenous Women, Territorial Dispossession, and Political Marginalization

The burden experienced by Indigenous women is further intensified when environmental degradation intersects with insecure territorial rights. Indigenous territories are not merely physical spaces containing natural resources; they are systems of livelihood, culture, identity, spirituality, and political authority. When these territories are transformed through mining, plantations, infrastructure, conservation, or relocation, the consequences can extend beyond the loss of property. Indigenous communities can lose access to the ecological systems through which knowledge and social relationships are reproduced. For women, these effects may be particularly significant because their everyday environmental practices often connect household welfare with communal resources. Feminist political ecology therefore requires the analysis of territorial dispossession at both collective and gendered levels. Recognition of Indigenous rights must be accompanied by examination of who within the Indigenous community has authority to negotiate, receive compensation, and determine the future of customary territory.

The Balik community provides an important context for this analysis. Where Indigenous territorial identity is challenged by competing claims over forests, mining areas, or development zones, women may encounter a double marginalization. First, the community may face limited recognition from state institutions. Second, women within the community may have less authority than men in negotiations over customary land. This produces a layered form of political exclusion. The legal recognition of an Indigenous community does not automatically guarantee that Indigenous women participate equally in territorial governance. Feminist legal scholarship therefore insists that collective rights and gender equality must be considered simultaneously. A rights framework that recognizes only the community as a collective entity can unintentionally reproduce patriarchal structures if internal participation is dominated by male representatives.

Territorial dispossession also has an epistemic dimension. Women's ecological knowledge is often generated through activities that are not formally recognized as "expert" knowledge. Knowledge concerning medicinal plants, food species, water sources, seasonal patterns, household nutrition, and ecosystem changes may emerge from everyday activities such as gathering, farming, processing, fishing, and caring for family members. When development projects transform ecological spaces, this knowledge can become less useful or disappear with the ecosystem

itself. Yet environmental assessments may fail to document it because technical assessments prioritize standardized scientific measurements. The result is a double loss: communities lose ecological resources while institutions lose locally embedded knowledge capable of identifying environmental change. Gender-responsive environmental governance should therefore recognize women's ecological knowledge as a legitimate source of evidence, while avoiding the romanticization of women as inherently closer to nature.

Political marginalization becomes particularly visible during consultation processes. Indonesian environmental law provides for public participation, but participation can remain procedural if consultation occurs after key decisions have already been made. Women may face additional barriers because meetings are scheduled at times incompatible with care responsibilities, information is delivered through formal channels inaccessible to some residents, or customary decision-making structures prioritize male representatives. Meaningful participation therefore requires institutional design that actively addresses these barriers. Women should have access to information before decisions are finalized, adequate time to deliberate, opportunities to participate independently of male representatives, and mechanisms to challenge decisions that threaten their rights. Participation should be measured by influence over outcomes rather than attendance alone.

This distinction is particularly important for free, prior, and informed consent. The concept requires that affected communities receive adequate information and participate before projects proceed. However, consent processes can become problematic if “the community” is treated as a single political actor. Where internal gender hierarchies exist, obtaining consent from male leaders may not adequately represent women's interests. A gender-sensitive interpretation of meaningful consent should therefore require attention to intra-community participation. This does not mean imposing external institutional models on Indigenous communities; rather, it means ensuring that women are not systematically excluded from decisions concerning territories upon which they depend. Indigenous self-determination and women's equality should be treated as mutually reinforcing rather than competing principles.

Extractive development can also alter the gender composition of local economies. Industrial projects often create formal employment opportunities in sectors such as mining, construction, transportation, and processing, which may be disproportionately occupied by men. At the same time, women may lose informal livelihood activities associated with agriculture, food processing, petty trade, fisheries, or forest resources. This can produce a gendered restructuring of the local economy in which men's work becomes more monetized while women's work becomes less economically visible. The result may be an increase in household dependence on wage income and a weakening of women's economic autonomy. Such transformations should be included in environmental and social impact assessments because they represent a redistribution of economic power, not simply a change in employment patterns.

This issue is especially relevant to nickel development on small islands because industrial expansion can transform multiple ecological systems simultaneously. Research and reporting concerning Obi Island indicate extensive concerns about deforestation, water contamination, marine impacts, and livelihood disruption. (A 2020 policy study similarly found environmental-management weaknesses associated with nickel mining on Obi Island, including concerns regarding environmental planning, AMDAL implementation, and hazardous-waste management. The significance of these findings for feminist analysis lies in their connection to livelihood systems. Environmental governance failures do not affect all members of a community in identical ways; they may intensify the gendered labor required to secure food, water, and household health.

The political economy of nickel further complicates the meaning of climate justice. Nickel has become strategically important to global energy-transition narratives because of its role in battery technologies. Yet the expansion of low-carbon mineral supply chains can produce local environmental and social costs. Research on extractive frontiers demonstrates that the global demand for minerals can externalize environmental burdens onto resource-producing communities. In the Obi context, reporting has explicitly framed the contradiction between global energy transition and local ecological costs. From a feminist political-ecology perspective, this contradiction must be analyzed at multiple scales. The benefits of low-carbon technologies may accrue to consumers and corporations across national borders, while ecological and reproductive costs are absorbed locally by communities and disproportionately by women.

This creates what can be described as a gendered geography of the energy transition. The geography is gendered because the environmental costs of mineral extraction interact with gendered livelihood systems. Women living near mining areas may experience declining access to food and water, increased care responsibilities, loss of informal economic activities, and reduced political influence, while distant consumers experience the benefits of “green” technologies without encountering those local costs. Climate justice therefore requires attention to the full supply chain of low-carbon technologies. A transition cannot be considered just simply because the final product contributes to decarbonization. The social and ecological conditions under which minerals are extracted are part of the climate policy itself.

The concept of a just transition should therefore be expanded beyond workers in carbon-intensive industries. It should include communities affected by mineral extraction, including women whose livelihoods depend on ecosystems transformed by energy-transition projects. A narrow worker-centered approach may recognize male industrial employment while overlooking women whose informal livelihoods disappear. A broader just-transition framework should assess livelihood displacement, unpaid care, environmental health, territorial rights, and community participation. In this sense, gender justice becomes an important test of whether the

energy transition is actually socially transformative or merely a transition in technologies.

Indigenous women also play an important role in maintaining cultural continuity. Environmental resources can have meanings that exceed market value. Sago forests, coastal fishing areas, springs, gardens, and sacred sites may form part of collective identity and customary practices. When these spaces are transformed, women may lose not only sources of food or income but also opportunities to transmit ecological knowledge across generations. Cultural loss is therefore inseparable from ecological loss. An environmental impact assessment that calculates only hectares of forest or monetary compensation cannot fully capture these consequences. Recognition of cultural and gendered values should consequently become part of environmental governance in Indigenous territories.

The legal implications are substantial. Article 18B(2) of the Constitution, together with the broader framework governing Indigenous rights and environmental protection, establishes a basis for recognizing customary communities and their traditional relationships with territory. However, conditional recognition can leave communities vulnerable to competing claims and administrative discretion. The legal insecurity of Indigenous territory can consequently become a precondition for environmental dispossession. From a gender perspective, strengthening collective tenure security should be accompanied by safeguards ensuring women's participation in decisions over customary resources. Otherwise, territorial recognition may strengthen community authority while leaving gendered internal inequalities unresolved.

The same principle applies to compensation and benefit-sharing. A gender-just system should require transparency regarding compensation recipients, community funds, employment opportunities, livelihood restoration, and monitoring mechanisms. Women should have direct access to grievance mechanisms and information concerning financial arrangements. Where compensation is negotiated collectively, institutions should examine whether women have meaningful influence over its allocation. Such safeguards are not merely social-policy additions; they are necessary to ensure that environmental rights and Indigenous rights are substantively exercised.

Ultimately, the political marginalization of Indigenous women reveals why environmental governance cannot rely exclusively on aggregate concepts such as “community,” “household,” or “local population.” These categories may conceal internal distributions of power. A community can be collectively marginalized in relation to a corporation or the state while simultaneously containing gender inequalities within itself. Feminist political ecology addresses both dimensions. It recognizes external structural domination while examining internal relations of power. This makes it particularly appropriate for analyzing the Balik and Kawasi contexts, where environmental transformation intersects with Indigenous identity, territorial claims, extractive development, and gendered livelihoods.

3. Relocation, Health, and the Reproduction of Gendered Vulnerability

Relocation is frequently presented as a technical solution to environmental vulnerability, but feminist political ecology demonstrates that moving people does not necessarily eliminate vulnerability. It can redistribute it. A relocation program can improve physical housing while simultaneously weakening access to livelihood resources, social networks, customary territories, and environmental knowledge. This distinction is particularly important in communities affected by extractive development because the environmental problem may be spatially inseparable from the community's economic and cultural identity. If residents are relocated away from forests, fisheries, farms, gardens, or coastal areas, the physical distance between home and livelihood resources can increase. Women may experience this change disproportionately because their daily responsibilities often involve multiple forms of resource collection and care.

Kawasi illustrates the complexity of this problem. Reports indicate that relocation negotiations have involved the movement of residents to a newly developed settlement farther from the mining area, while residents and civil-society organizations have raised concerns about livelihood disruption and pressure associated with relocation. The legal and policy question is therefore not simply whether the proposed settlement is physically safer. It is whether relocation restores or improves the conditions necessary for social reproduction. A gender-responsive relocation assessment should compare travel time, access to food sources, water availability, employment, schools, healthcare, markets, fishing grounds, agricultural land, and social networks before and after relocation. Without such analysis, relocation may convert environmental exposure into a new form of socioeconomic vulnerability.

Women can be especially affected because relocation may increase the spatial distance between household and livelihood resources. If a woman previously obtained food from a nearby garden or forest, the loss of that resource may require purchasing food or traveling farther. If water collection becomes more difficult, household labor increases. If social networks are dispersed, informal childcare and mutual assistance may decline. These changes represent real economic costs even when they do not appear on official compensation schedules. Feminist analysis therefore requires treating time, mobility, and care as measurable components of relocation impact. A household that receives a new house but requires substantially more unpaid labor to sustain itself has not necessarily experienced an improvement in welfare.

Environmental health creates another pathway through which gendered vulnerability can intensify. Environmental contamination can affect women through direct exposure and indirectly through increased care responsibilities. Where children or elderly family members experience environmental illness, women may undertake additional caregiving, transportation to health facilities, treatment management, and household adjustments. This is particularly important where health systems are distant or expensive. A gender-sensitive health assessment

should therefore measure both morbidity and the distribution of care labor. Otherwise, the social costs of environmental pollution can disappear into unpaid household work.

The available evidence concerning Obi Island includes allegations of water contamination, health impacts, and concerns regarding chromium-6 associated with the processing system. These allegations have been contested by the company, which has stated that its operations comply with applicable standards. The appropriate academic approach is therefore to distinguish allegations from independently established causal relationships. Yet uncertainty does not justify ignoring gendered health impacts. Environmental governance should instead require independent monitoring, transparent publication of environmental-health data, and gender- and age-disaggregated health assessments. Where risks are uncertain but potentially serious, the precautionary principle provides a basis for preventive action rather than waiting until irreversible harm has been conclusively established.

The health dimension also demonstrates why climate vulnerability should be understood as cumulative rather than event-specific. A community may simultaneously experience pollution, flooding, heat, livelihood decline, water insecurity, and displacement. These risks can interact rather than simply accumulate. Women may be particularly exposed because they are responsible for maintaining household functioning under conditions of environmental uncertainty. For example, a flood may damage a garden, forcing households to purchase food; water contamination may increase the time needed to obtain clean water; and reduced fishing may eliminate another source of protein or income. The cumulative effect can intensify household insecurity and increase women's unpaid labor.

Climate justice must therefore account for compound vulnerability. A policy focused on one hazard at a time may miss how environmental changes interact. In Kawasi, for instance, mining-related landscape transformation and rainfall can interact to produce flooding and sedimentation concerns. Reports in 2025 described flooding associated with a breach of a sediment pond, although the precise causal contribution of the facility and rainfall requires independent investigation. From a feminist perspective, the relevant question extends beyond the immediate cause of flooding: when flooding occurs, who cleans homes, replaces food supplies, cares for affected children, and restores household livelihoods? These questions connect environmental risk directly to gendered labor.

The same logic applies to climate adaptation infrastructure. A seawall, drainage system, water facility, or relocation project may reduce one category of physical risk but generate new burdens if poorly designed. Infrastructure should therefore be assessed according to its effects on daily mobility and care. A water facility that is technically available but distant from households may not reduce women's workload. A relocation site with roads but limited access to livelihood resources may increase household dependence. A flood-control structure that protects industrial infrastructure while leaving community areas exposed may reproduce

spatial inequality. Feminist environmental assessment therefore requires attention to how infrastructure redistributes environmental security.

This is where the principle of substantive equality becomes particularly important. Treating every household identically does not necessarily produce equal outcomes because households begin from different social positions. Women with limited control over household income, Indigenous women without formal land titles, and women responsible for extensive unpaid care may require different forms of institutional support to achieve equivalent capacity to adapt. Gender-responsive climate governance should therefore provide differentiated support where structural inequality produces differentiated vulnerability. This is not preferential treatment; it is a recognition that equal rights require conditions enabling people to exercise those rights effectively.

4. From Vulnerable Subjects to Environmental Political Actors

The preceding analysis demonstrates that women should not be understood solely as vulnerable recipients of climate policy. Such a representation can unintentionally reinforce the very inequalities that produce vulnerability. Women in Indigenous and coastal communities are often already active in food production, environmental monitoring, livelihood adaptation, cultural preservation, and community organizing. Their environmental knowledge is therefore not simply a resource to be extracted by policymakers; it is part of their political agency. A gender-just climate policy should recognize this agency by creating institutional mechanisms through which women can influence environmental decisions. This requires moving from a protection model toward an empowerment and rights model.

The distinction matters because vulnerability and agency can coexist. A woman can simultaneously face disproportionate environmental burdens and possess substantial capacity to respond to them. Treating her only as vulnerable may justify paternalistic policies that speak on her behalf. Recognizing her as an environmental political actor changes the relationship between community and state. The state becomes responsible for creating conditions under which women can participate, access information, organize safely, and exercise legal rights. This approach is consistent with feminist political ecology and with the broader environmental-justice principle that affected communities should participate meaningfully in decisions concerning environmental risks.

Women's participation should also extend beyond consultation to environmental monitoring. Women who interact daily with water sources, food systems, agricultural land, and household health may detect environmental changes before they become visible through periodic technical monitoring. Community-based monitoring can therefore complement scientific assessment. However, institutions must avoid simply transferring monitoring responsibilities to women without resources or compensation. Recognition of women's knowledge should not become another mechanism through which unpaid environmental labor

is extracted. Genuine participation requires training, institutional recognition, access to data, and the capacity to trigger regulatory responses when environmental standards are violated.

The legal framework can support such participation. Environmental law provides rights to information, participation, and access to justice, while constitutional equality and CEDAW establish broader principles against discrimination. The challenge is operationalization. Environmental agencies should require gender-responsive participation plans for projects with significant community impacts. Environmental-impact assessment procedures should identify gendered livelihood and health consequences. Public consultations should provide separate spaces where necessary for women to articulate concerns without social pressure. Grievance mechanisms should be accessible, confidential where appropriate, and capable of producing remedies rather than merely recording complaints.

The Indonesian environmental-law scholarship from Pattimura reinforces the importance of community participation and environmental accountability. Research on environmental permitting and mining governance emphasizes that environmental approval cannot be separated from the quality of environmental management and public protection. Zam Zam and Putrawan (2020), for example, found weaknesses in environmental governance associated with nickel mining on Obi Island and identified shortcomings in planning and environmental-management implementation. Similarly, recent legal analysis of Kawasi argues that although the designation of the mining area may have a formal legal basis, implementation raises questions concerning compliance with sustainable-development principles. These findings strengthen the argument that formal legality is insufficient to establish substantive environmental justice.

This distinction between legality and legitimacy is central. A project can obtain permits under existing regulatory procedures while still producing distributive, recognitional, or participatory injustice. Environmental law should therefore not be reduced to the question of whether required documents exist. It must also ask whether environmental decisions were based on reliable information, whether affected communities were meaningfully involved, whether cumulative impacts were considered, and whether vulnerable groups were protected. Gender analysis strengthens this inquiry by revealing impacts that aggregate environmental assessments can conceal.

The role of women as environmental political actors also requires recognition of collective organizing. Women can participate through customary institutions, community associations, religious organizations, environmental movements, cooperatives, and informal networks. Their political agency should not be confined to state-defined participation mechanisms. In many communities, social relationships outside formal institutions are crucial for disseminating information and organizing responses to environmental threats. Environmental governance that recognizes only formal organizations may therefore overlook important forms of

women's collective action. A more inclusive model should recognize diverse forms of community organization while ensuring that women can exercise political agency without intimidation or retaliation.

This is particularly important in extractive conflicts, where community resistance can become politically sensitive. If women raising environmental concerns face social pressure, threats, or exclusion from negotiations, the resulting silence can create the appearance of community consent. Environmental justice requires freedom to express environmental concerns without retaliation. This principle is connected to broader protections for environmental defenders and access to environmental justice. Women environmental defenders may face gender-specific forms of pressure because political activism can conflict with traditional expectations concerning women's domestic roles. Protecting environmental participation therefore requires attention to the security and social conditions under which women can speak.

A gender-just model should also transform benefit-sharing. Women should have meaningful access to employment, entrepreneurship, training, financing, and compensation associated with environmental projects. Yet these programs should not simply place women into low-paid auxiliary positions while men receive the primary economic benefits of industrialization. Gender-responsive benefit-sharing requires analysis of ownership, income control, skills development, and long-term economic autonomy. If environmental transformation destroys women's traditional livelihoods, replacement livelihoods should provide comparable or greater autonomy rather than merely compensating the household collectively.

Finally, climate governance should recognize the principle of redistributive responsibility. Women should not be expected to carry the increasing ecological burden created by policies, industries, and consumption patterns beyond their control. Corporations, governments, and higher-income beneficiaries should bear a greater share of the costs associated with environmental prevention, remediation, adaptation, and livelihood restoration. This is especially important for low-carbon mineral development. If the global energy transition depends on nickel extracted from environmentally vulnerable territories, the transition must include strong safeguards for local communities and women. Otherwise, decarbonization may reduce one form of environmental harm while reproducing another form of social inequality.

The analysis therefore suggests that gender justice requires a transformation in how climate policy defines both vulnerability and responsibility. Women should be recognized as rights holders and political actors, while corporations and public institutions should be held accountable for preventing and remedying environmental harms. Indigenous communities should have secure territorial rights, but Indigenous women must also possess meaningful authority within processes governing those territories. Relocation should restore social and ecological conditions rather than merely provide physical housing. Environmental assessments should account for unpaid ecological labor, care work, health, and livelihood

autonomy. Participation should be measured through actual influence rather than attendance.

In this framework, the climate crisis becomes a test of democratic environmental governance. A policy is not gender-just merely because it mentions women, includes women in a stakeholder list, or provides women-specific programs. It becomes gender-just when women can exercise environmental rights, influence decisions, retain livelihood autonomy, and avoid disproportionate exposure to ecological risks. The cases of Kawasi and the Balik community demonstrate why this requires linking climate policy to Indigenous rights, environmental law, social reproduction, and political participation. The central lesson is that protecting women from environmental vulnerability and empowering women to shape environmental decisions are not separate objectives. They are mutually dependent dimensions of climate justice.

Discussion: Toward Gender-Just Climate and Environmental Governance in Indonesia

1. Beyond the “Vulnerable Women” Paradigm

The preceding analysis demonstrates that describing women merely as a “vulnerable group” is analytically insufficient. Vulnerability is not a fixed characteristic attached to women by nature; it is produced through social institutions, economic structures, territorial arrangements, and unequal access to political authority. Climate change, environmental degradation, and extractive development become gendered because existing divisions of labor and power determine who has access to resources, who makes decisions, and who performs the labor necessary to absorb environmental shocks. This argument corresponds with the broader environmental-justice literature, which emphasizes that vulnerability must be understood in relation to unequal distributions of power and resources (Schlosberg, 2004; Sultana, 2021). In Indonesia, the implication is significant: climate policy should move beyond identifying women as recipients of adaptation programs and instead address the institutional structures that systematically transfer ecological costs into women's unpaid labor.

The conventional vulnerability paradigm can also produce a form of policy paternalism. When women are represented primarily as victims, policies may be designed *for* them rather than *with* them. This is problematic because women in Indigenous, agricultural, and coastal communities possess substantial knowledge concerning environmental change. Their daily interaction with water, food systems, forests, fisheries, and household health can generate detailed observations concerning ecological transformation. Feminist political ecology emphasizes that knowledge is situated within social relationships and that marginalized groups can possess forms of environmental knowledge excluded from formal institutions (Rocheleau et al., 1996; Nightingale, 2006). Consequently, gender-responsive governance should not simply collect information from women; it should recognize

women as knowledge producers whose observations can contribute to environmental assessment and policy design.

The distinction between vulnerability and agency is especially important in the context of Kawasi and other extractive frontiers. Women may experience increased ecological burdens while simultaneously participating in livelihood strategies, community organizing, environmental monitoring, and resistance to unwanted development. Their vulnerability does not eliminate their political agency. Indeed, environmental disruption may produce new forms of collective organization in which women become increasingly visible political actors. A governance model that recognizes only vulnerability risks concealing these forms of agency. The appropriate approach is therefore one that combines protection with empowerment: women require protection against disproportionate environmental harm, but they must also possess the institutional capacity to influence the decisions producing or responding to that harm.

2. Integrating Gender into Environmental Impact Assessment

One of the most immediate institutional reforms is to strengthen the gender dimension of environmental impact assessment. Indonesia's environmental regulatory system already requires environmental assessment and public participation, but conventional assessments can remain focused on aggregate ecological indicators, technical risks, and formal economic impacts. A gender-responsive assessment should additionally identify differentiated consequences for women and men. Such assessment should examine livelihood disruption, unpaid labor, care responsibilities, access to water and food, health, mobility, political participation, and control over compensation. This would operationalize the principle of substantive equality by recognizing that formally identical environmental conditions may generate substantially different consequences for different social groups.

A gender-responsive AMDAL should therefore contain a specific social-reproduction analysis. Before an industrial project is approved, assessors should identify the ecological resources used by women for food production, household water, small-scale commerce, medicine, and other activities. They should estimate changes in the time required to obtain these resources after the project begins. Such analysis would make visible costs normally externalized into households. If a project causes women to spend an additional two hours each day obtaining water or food, for example, that time represents a real social cost even if it does not appear in the project's financial accounts. Incorporating these costs would substantially improve the quality of environmental decision-making.

The same principle should apply to cumulative impacts. Environmental degradation rarely results from a single project operating in isolation. Mining, plantations, roads, ports, settlements, and industrial facilities can collectively transform landscapes. Cumulative impacts may affect water systems, fisheries, forests, air quality, transportation, and local economies simultaneously. Women

may experience these changes through the combined effects on household reproduction. Consequently, project-level assessment alone may underestimate gendered impacts. Indonesian environmental governance should strengthen cumulative-impact assessment, particularly in small islands where ecological carrying capacity is limited and multiple industrial activities can rapidly transform interconnected ecosystems.

3. Participation, Consent, and Environmental Democracy

Meaningful participation represents another essential condition of gender-just environmental governance. Article 65 of Law No. 32 of 2009 recognizes public participation in environmental protection and management. Yet participation should not be understood as simply providing information or organizing formal consultation meetings. Arnstein's (1969) framework demonstrates that participation varies considerably in the degree of actual decision-making power transferred to citizens. In environmental conflicts, consultation can become symbolic if the fundamental decision has already been made. Gender-sensitive participation therefore requires institutional arrangements that enable women to influence the substance of environmental decisions rather than merely express opinions about predetermined proposals.

The principle becomes even more important where Indigenous territories are involved. International standards concerning Indigenous peoples emphasize participation and, in appropriate circumstances, free, prior, and informed consent. Yet consent must be understood as a continuing process rather than a single administrative event. Information must be understandable, timely, and sufficiently comprehensive to allow communities to evaluate alternatives and risks. From a gender perspective, consent should also involve mechanisms ensuring that women are not excluded from decision-making because of internal community hierarchies. Collective Indigenous rights should not become a justification for silencing Indigenous women. Rather, secure collective territorial rights should create stronger foundations for inclusive community governance.

Participation also requires freedom from intimidation. Environmental defenders and community activists may face pressure when challenging projects supported by economically powerful actors. The shrinking of civic space can therefore undermine environmental democracy. If women fear social, economic, or physical retaliation for raising environmental concerns, formal participation mechanisms become ineffective. Protecting environmental participation must consequently include safeguards for environmental defenders, access to legal remedies, and transparent grievance procedures. The legitimacy of climate and environmental policy depends partly on whether affected communities can criticize policies without fearing retaliation.

4. Policy Implications for a Gender-Just Transition

The analysis suggests that Indonesia's climate and energy-transition agenda should adopt a broader definition of a just transition. The transition should not be evaluated solely through emissions reductions, renewable-energy capacity, industrial investment, or employment creation. It should also be evaluated according to whether environmental burdens are equitably distributed. Nickel development demonstrates why this matters. The mineral is increasingly important to battery and electric-vehicle supply chains, but the environmental and social conditions of extraction occur in particular territories and affect particular communities. A transition that produces global climate benefits while transferring ecological risks to vulnerable communities can reproduce the logic of environmental injustice under a new technological form.

Gender should therefore become an explicit dimension of transition planning. Government agencies should require gender-disaggregated assessments of mining, renewable-energy, infrastructure, and adaptation projects. Such assessments should consider employment, land access, livelihood displacement, care work, health, compensation, and participation. Women should also receive equitable access to new economic opportunities created by the transition. Otherwise, the energy transition may reproduce traditional gender inequalities by concentrating formal employment and decision-making in male-dominated sectors while leaving women responsible for unpaid adaptation and care work.

The principle of beneficiary pays should also be complemented by a principle of polluter and risk creator responsibility. Where industrial activities create significant environmental risks, corporations should bear a substantial responsibility for prevention, monitoring, remediation, and livelihood restoration. This is consistent with the polluter-pays principle embedded in contemporary environmental governance. However, financial compensation alone cannot repair all environmental losses. If a community loses access to a customary forest, fishing ground, or culturally significant ecosystem, monetary compensation may not restore the social and ecological functions previously provided by that territory. Gender-sensitive remediation must therefore include ecological restoration, livelihood restoration, public health protection, and social-reproduction support.

A final implication concerns the relationship between environmental protection and women's political citizenship. Women should not have to demonstrate exceptional vulnerability before receiving political recognition. Their participation should be institutionalized as a normal component of environmental governance. This requires gender-balanced consultation mechanisms, accessible environmental information, community monitoring, gender-sensitive grievance procedures, and representation in local environmental decision-making. Such reforms would transform women from passive recipients of climate adaptation into co-producers of environmental policy.

Taken together, these measures suggest a shift from gender-responsive policy toward gender-transformative environmental governance. Gender responsiveness

seeks to ensure that existing policies do not disproportionately harm women. Gender-transformative governance goes further by changing the institutional structures that produce unequal environmental burdens in the first place. For Indonesia, this means reforming environmental assessment, strengthening Indigenous territorial rights, recognizing unpaid ecological labor, improving women's participation, protecting environmental defenders, and ensuring that low-carbon development does not reproduce extractive inequalities. Climate justice becomes meaningful only when environmental sustainability and social equality are pursued simultaneously rather than sequentially.

This argument ultimately reinforces the central proposition of the article: the climate crisis is not gender-neutral because the political economy of environmental vulnerability is not gender-neutral. Women experience ecological change through differentiated responsibilities, resource access, health exposure, livelihood dependence, and political authority. Indigenous and coastal women can therefore face a particularly complex combination of environmental and social vulnerability. Yet they are also holders of knowledge, rights, and political agency. A just climate strategy must recognize both dimensions simultaneously. The objective should not merely be to reduce women's vulnerability but to redistribute environmental power so that women can participate meaningfully in determining how ecosystems, territories, and development pathways are governed.

Conclusion

The analysis demonstrates that the climate crisis in Indonesia cannot be adequately understood through gender-neutral approaches to environmental vulnerability. Climate change, ecological degradation, extractive development, and displacement interact with pre-existing inequalities in access to resources, political authority, and economic opportunity. Women, particularly Indigenous and coastal women, frequently absorb these pressures through increased unpaid ecological labor, reduced livelihood security, greater care responsibilities, and limited participation in environmental decision-making. The cases of Kawasi and the Balik community illustrate how environmental transformation can extend beyond physical exposure to pollution or climate hazards and restructure the social conditions of everyday life. Feminist political ecology reveals that these consequences are produced through unequal relations of power rather than through environmental hazards alone (Rocheleau et al., 1996; Nightingale, 2006). Environmental justice consequently requires attention not only to the distribution of environmental risks but also to recognition, participation, and the redistribution of ecological labor (Schlosberg, 2004; Fraser, 2000).

A gender-just climate governance framework therefore requires Indonesia to move from the protection of women as “vulnerable groups” toward recognition of women as environmental rights holders and political actors. Environmental impact assessments, relocation programs, extractive projects, and climate-adaptation policies should incorporate gender-disaggregated assessments of livelihood, health,

unpaid labor, care, participation, and access to natural resources. These requirements are supported by the constitutional right to a good and healthy environment, Law No. 32 of 2009 on Environmental Protection and Management, Indonesia's obligations under CEDAW, and international standards concerning Indigenous participation and environmental rights. Ultimately, climate justice cannot be achieved by pursuing decarbonization or economic development while externalizing ecological costs onto women and marginalized communities. A genuinely just transition must ensure that environmental protection, Indigenous territorial rights, gender equality, livelihood security, and democratic participation reinforce one another. The fundamental challenge is therefore not simply to include women within existing climate governance, but to transform the institutions and economic arrangements that determine who benefits from environmental development and who bears its costs.

References

- Arnstein, Sherry R. "A Ladder of Citizen Participation." *Journal of the American Institute of Planners* 35, no. 4 (1969): 216–224. <https://doi.org/10.1080/01944366908977225>.
- Eastin, Joshua. "Climate Change and Gender Equality in Developing States." *World Development* 107 (2018): 289–305. <https://doi.org/10.1016/j.worlddev.2018.02.021>.
- Fraser, Nancy. "Rethinking Recognition." *New Left Review*, no. 3 (2000): 107–120.
- Lau, Jacqueline D., Daniel Kleiber, Sarah Lawless, and Philippa J. Cohen. "Gender Equality in Climate Policy and Practice Hindered by Assumptions." *Nature Climate Change* 11 (2021): 186–192. <https://doi.org/10.1038/s41558-021-00999-7>.
- Nightingale, Andrea J. "The Nature of Gender: Work, Gender, and Environment." *Environment and Planning D: Society and Space* 24, no. 2 (2006): 165–185. <https://doi.org/10.1068/d01k>.
- Ravera, Federica, Berta Martén-López, Unai Pascual, and Andrew G. Drucker. "The Diversity of Gendered Adaptation Strategies to Climate Change of Indian Farmers: A Feminist Intersectional Approach." *Ambio* 45 (2016): 335–351. <https://doi.org/10.1007/s13280-016-0833-2>.
- Rocheleau, Dianne, Barbara Thomas-Slayter, and Esther Wangari, eds. *Feminist Political Ecology: Global Issues and Local Experiences*. London: Routledge, 1996.
- Schlosberg, David. "Reconceiving Environmental Justice: Global Movements and Political Theories." *Environmental Politics* 13, no. 3 (2004): 517–540. <https://doi.org/10.1080/0964401042000229025>.

- Sultana, Farhana. "Gendering Climate Change: Geographical Insights." *The Professional Geographer* 66, no. 3 (2014): 372–381. <https://doi.org/10.1080/00330124.2013.821730>.
- Sultana, Farhana. "Climate Change, COVID-19, and the Co-Production of Injustices: A Feminist Reading of Overlapping Crises." *Social & Cultural Geography* 22, no. 4 (2021): 447–460. <https://doi.org/10.1080/14649365.2021.1910994>.
- Sultana, Farhana. "Critical Climate Justice." *The Geographical Journal* 188, no. 1 (2022): 118–124. <https://doi.org/10.1111/geoj.12417>.
- Sultana, Farhana. "The Unbearable Heaviness of Climate Coloniality." *Political Geography* 99 (2022): 102638. <https://doi.org/10.1016/j.polgeo.2022.102638>.
- Sundberg, Juanita. "Feminist Political Ecology." In *International Encyclopedia of Geography: People, the Earth, Environment and Technology*, edited by Douglas Richardson, Noel Castree, Michael F. Goodchild, Audrey Kobayashi, Weidong Liu, and Richard A. Marston. Hoboken, NJ: Wiley, 2017. <https://doi.org/10.1002/9781118786352.wbieg0804>.
- Totononu, R. J. L., D. D. Putong, J. J. Lanawaang, and L. L. Lombok. "Implementation of the Designation of Nickel Mining Area in Kawasi Village, Island of Obi." *International Journal of Applied Science and Sustainable Development* 7, no. 1 (2025): 39–48. <https://doi.org/10.36733/ijassd.v7i1.9438>.
- Zam Zam, Z., and I. M. Putrawan. "Evaluasi Kebijakan Pengelolaan Lingkungan Pertambangan di Pulau Obi Provinsi Maluku Utara." *Jurnal Ilmiah Pendidikan Lingkungan dan Pembangunan* 21, no. 2 (2020): 58–68. <https://doi.org/10.21009/PLPB.212.05>.

Legal and International Instruments

- Republic of Indonesia. *The Constitution of the Republic of Indonesia of 1945*. Particularly arts. 18B(2), 28H(1), and 28I(2).
- Republic of Indonesia. *Law No. 7 of 1984 Concerning the Ratification of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)*. 1984.
- Republic of Indonesia. *Law No. 32 of 2009 Concerning Environmental Protection and Management*. 2009.
- United Nations. *United Nations Declaration on the Rights of Indigenous Peoples*. United Nations General Assembly Resolution 61/295. September 13, 2007.
- United Nations Committee on the Elimination of Discrimination against Women. *General Recommendation No. 37 on Gender-Related Dimensions of Disaster Risk Reduction in the Context of Climate Change*. 2018.

Online and Empirical Sources

ANTARA News. "Harita Nickel Bantah Tudingan Merusak Lingkungan di Pulau Obi." March 27, 2023.

Business & Human Rights Resource Centre. "Indonesia: Environmental and Social Challenges Linked to Nickel Projects at Obi Island." 2023–2026.

Climate Rights International. *Does Anyone Care?* Report on Human Rights and Nickel Development in Indonesia. 2025.

Dialogue Earth. "Nickel Mining's Toll on Indonesia's Small Islands: Stories of Resistance and Survival." 2025.

Sawal, Rabul. "Pendanaan 'Hijau' di Balik Industri Nikel Pulau Obi." *Mongabay Indonesia*, May 10, 2026.

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