

Gender Equality and Coastal Climate Resilience: Women's Agency in Indonesia, Vietnam, and Bangladesh

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Abstract

Coastal communities in Indonesia, Vietnam, and Bangladesh are increasingly exposed to climate-related hazards that threaten livelihoods, ecosystems, and social well-being. Although previous studies have extensively documented women's vulnerability to climate change, comparatively little attention has been paid to the mechanisms through which gender equality strengthens coastal climate resilience across different governance contexts. This study examines the relationship between gender equality and coastal climate resilience through a qualitative comparative analysis of Indonesia, Vietnam, and Bangladesh. The analysis integrates primary evidence from Focus Group Discussions (FGDs) conducted in Indonesia with secondary evidence from Vietnam and Bangladesh, complemented by policy documents and scholarly literature. Data were analysed using thematic analysis. The findings demonstrate that women make substantial contributions to climate adaptation through livelihood diversification, local ecological knowledge, environmental stewardship, collective action, and disaster preparedness. However, these contributions remain constrained by unequal access to productive resources, limited participation in decision-making, and persistent socio-cultural and institutional barriers. The comparative analysis further demonstrates that gender equality strengthens adaptive capacity by enabling women's agency, while inclusive governance determines the extent to which this agency can be translated into long-term coastal climate resilience. The study advances an integrated conceptual framework positioning women's agency as the central mechanism linking gender equality, adaptive capacity, and coastal climate resilience across diverse institutional contexts. These findings contribute to Feminist Political Ecology by demonstrating that resilient coastal communities are shaped not only by technological adaptation but also by inclusive governance that recognises women's knowledge, participation, and leadership.

Keywords : Gender Equality, Women's Agency, Coastal Climate Resilience, Feminist Political Ecology, Climate Governance.

INTRODUCTION

Climate change has become one of the most pressing challenges of the twenty-first century, with coastal regions among the areas most vulnerable to its impacts. Rising sea levels, coastal erosion, saltwater intrusion, increasingly frequent extreme weather events, and the degradation of marine ecosystems threaten not only livelihoods and food security but also the social and institutional structures that enable communities to adapt to environmental change. These challenges are particularly acute in developing countries, where coastal populations depend heavily on fisheries, agriculture, and marine resources for their economic and social well-being (Malik et al., 2021; Mori & Shimura, 2022; Roy et al., 2021). As climate pressures intensify, strengthening resilience has become inseparable from addressing the social inequalities that shape communities' adaptive capacity.

Among these inequalities, gender represents one of the most significant factors influencing vulnerability and adaptation. The impacts of climate change are not determined solely by environmental exposure but are also shaped by unequal access to productive resources, education, financial services, land ownership, and decision-making processes. In many coastal communities, these structural inequalities limit women's adaptive capacity while simultaneously increasing their responsibilities for securing household livelihoods, managing natural resources, and maintaining food security (Kabir et al., 2016; Malik et al., 2021). Consequently, climate change should be

understood not only as an environmental challenge but also as a gendered development issue that reflects broader patterns of social exclusion and unequal power relations.

Despite these structural constraints, women are increasingly recognised as active agents of climate adaptation rather than passive victims of environmental change. Through their knowledge of local ecosystems, participation in fisheries and coastal resource management, livelihood diversification, and contributions to disaster preparedness, women make substantial contributions to strengthening community resilience (Shanthi et al., 2017; Torre-Castro et al., 2022). Growing recognition of these contributions has encouraged the integration of gender equality into international climate and sustainable development agendas, reflecting the understanding that inclusive governance improves both the effectiveness and equity of climate adaptation (Dewi et al., 2022; Roy et al., 2021).

Although the relationship between gender and climate adaptation has received increasing scholarly attention, important gaps remain. Existing studies have predominantly examined women's vulnerability to climate change or assessed gender-responsive adaptation policies within individual national contexts. Comparatively little research explains the mechanisms through which gender equality contributes to coastal climate resilience across different governance systems and socio-cultural settings. As a result, limited attention has been given to understanding how women's agency, local ecological knowledge, and institutional arrangements interact to strengthen resilience in climate-vulnerable coastal communities. Addressing this gap is essential for advancing both theoretical understanding and policy development in gender-responsive climate governance.

Indonesia, Vietnam, and Bangladesh provide an appropriate comparative context for addressing these questions. All three countries experience significant coastal climate risks, including sea-level rise, coastal degradation, and increasing disaster frequency, while exhibiting different governance structures, socio-economic conditions, and institutional approaches to climate adaptation. Examining these diverse contexts comparatively provides opportunities to identify both shared patterns and context-specific differences in how gender equality shapes adaptation processes and resilience-building across coastal communities.

Accordingly, this study examines how gender equality contributes to strengthening coastal climate resilience through a comparative analysis of Indonesia, Vietnam, and Bangladesh. Rather than treating gender equality solely as a normative development objective, this article conceptualises women's agency as the critical mechanism linking gender equality with coastal climate resilience. Specifically, it analyses women's roles in climate adaptation, identifies the structural barriers limiting their participation, and explores opportunities for promoting more inclusive climate governance.

By bringing together comparative evidence from three climate-vulnerable coastal countries, this study makes three important contributions to the literature. First, it shifts the analytical focus from women's vulnerability towards women's agency as a key driver of resilience. Second, it demonstrates how institutional contexts and socio-cultural conditions shape gender-responsive adaptation across different coastal settings. Third, it advances an integrated understanding of gender equality as a practical mechanism for strengthening adaptive capacity, inclusive climate governance, and the long-term.

THEORY

Climate adaptation is increasingly understood as a process shaped not only by environmental conditions but also by social, political, and institutional factors that determine how individuals and communities respond to climate-related risks. Contemporary climate scholarship argues that vulnerability and adaptive capacity are socially produced through unequal access to resources, institutions, and decision-making rather than determined solely by exposure to environmental hazards (Forty-Ninth Session of the IPCC: Report From the IPCC Task Group on

Gender, 2019). From this perspective, gender equality is not simply a normative principle of sustainable development but an essential condition for strengthening communities' capacity to anticipate, respond to, and recover from climate-related disturbances.

Gender inequalities continue to influence access to education, productive resources, financial services, land ownership, technology, and political participation in many coastal communities (Kabir et al., 2016; Malik et al., 2021). These structural inequalities constrain women's adaptive capacity while simultaneously limiting the effectiveness of community-wide climate responses. Conversely, greater gender equality expands opportunities for women to participate in decision-making, contribute local knowledge, and influence adaptation planning. Accordingly, gender-responsive climate governance seeks not merely to reduce disparities but to ensure that women participate meaningfully in designing, implementing, and evaluating climate adaptation strategies (Dewi et al., 2022; UN Women, 2021.) Within this perspective, gender equality becomes a practical mechanism through which adaptive capacity and long-term resilience can be strengthened.

To explain how gender relations shape climate adaptation, this study draws upon Feminist Political Ecology (FPE) as its principal analytical framework. Feminist Political Ecology argues that environmental governance is inseparable from broader political, economic, and cultural power relations that determine who controls natural resources, whose knowledge is recognised, and whose voices influence environmental decision-making (Nightingale, 2006; Ojeda et al., 2022; Rocheleau et al., 1996). Rather than viewing gender as an individual characteristic, FPE conceptualises gender as a relational system embedded within institutions, policies, and everyday social practices. This perspective enables a deeper understanding of why climate vulnerability differs across communities and why adaptation outcomes depend upon unequal access to power and resources rather than environmental conditions alone.

Within coastal communities, Feminist Political Ecology also highlights the importance of women's local ecological knowledge acquired through everyday engagement with fisheries, mangrove ecosystems, coastal agriculture, household livelihood management, and disaster preparedness. Such knowledge represents an important yet frequently overlooked resource for strengthening adaptive capacity, ecosystem conservation, and community resilience (Shanthi et al., 2017; Torre-Castro et al., 2022). Consequently, excluding women from climate governance not only reinforces gender inequality but also diminishes communities' ability to respond effectively to climate-related challenges.

Building upon Feminist Political Ecology and the literature on adaptive capacity, this study proposes that gender equality strengthens coastal climate resilience through women's agency, while institutional support determines the extent to which this agency can be translated into effective adaptation. Accordingly, the study advances a comparative analytical framework in which women's agency functions as the central mechanism linking gender equality, adaptive capacity, and coastal climate resilience. This proposition guides the comparative analysis presented in the following sections.

RESEARCH METHODS

The study adopted a comparative qualitative design that integrated primary empirical evidence from Indonesia with secondary documentary evidence from Vietnam and Bangladesh. A qualitative approach is particularly appropriate for exploring complex social, institutional, and governance processes that cannot be adequately understood through quantitative indicators alone (Creswell & Poth, 2018). Comparative qualitative research further enables researchers to identify both common patterns and context-specific differences across multiple cases, thereby generating a richer understanding of social phenomena within diverse institutional settings (Yin, 2018).

Indonesia, Vietnam, and Bangladesh were selected as comparative cases because they share significant exposure to coastal climate risks, including sea-level rise, coastal erosion, saltwater

intrusion, and increasingly frequent climate-related disasters. At the same time, the three countries differ in governance structures, socio-economic conditions, and institutional approaches to climate adaptation. These similarities and differences provide an appropriate basis for comparative analysis. Table 1 summarises the principal characteristics of the three case studies that constitute the empirical foundation of this research.

Table 1. Comparative Characteristics of the Three Case Studies

Dimension	Indonesia	Vietnam	Bangladesh
Coastal study area	Puger, East Java	Mekong Delta	Patuakhali District
Major climate hazards	Sea-level rise, saltwater intrusion, coastal erosion	Flooding, salinity intrusion, typhoons	Cyclones, flooding, sea-level rise
Dominant livelihood sectors	Fisheries, fish processing, aquaculture	Rice farming, fisheries, aquaculture	Agriculture, fisheries, and household enterprises
Gender-related challenges	Limited participation in coastal governance and decision-making	Persistent gender norms affecting leadership and resource access	Limited access to land, finance, and formal decision-making
Primary data source	Focus Group Discussions (FGDs) and secondary literature	Secondary literature	Secondary literature

(Source: Developed by the authors)

The study combined primary and secondary data sources. Primary data were collected in Indonesia through a series of Focus Group Discussions (FGDs) conducted with members of the Regional Centre of Expertise on Education for Sustainable Development (RCE ESD) network during July – August, 2024. The Global RCE Programme, coordinated by the United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS), is a worldwide multi-stakeholder initiative established to promote Education for Sustainable Development (ESD) and support the implementation of the Sustainable Development Goals (SDGs). By bringing together universities, government institutions, civil society organisations, local communities, and the private sector, the programme provides a collaborative platform for addressing sustainability challenges through research, education, and community engagement.

The FGDs involved 45 participants representing universities, government agencies, civil society organisations, community leaders, and practitioners working in coastal environmental management and climate adaptation. The discussions explored participants' experiences and perspectives regarding women's participation in climate adaptation, local ecological knowledge, institutional arrangements, gender-responsive governance, and community resilience. The FGD approach enabled participants to exchange experiences, reflect collectively on local adaptation practices, and generate deeper insights through interactive discussion, making it particularly suitable for exploring complex social issues such as gender and climate resilience (Morgan, 1997).

To broaden the comparative perspective, secondary data were collected for Vietnam and Bangladesh through an extensive review of peer-reviewed journal articles, books, policy documents, government publications, and reports issued by international organisations. These sources were selected because they provide comprehensive evidence concerning gender equality, women's livelihoods, coastal governance, climate adaptation, and resilience-building in both countries.

Integrating primary evidence from Indonesia with secondary evidence from Vietnam and Bangladesh enabled a systematic comparison across different institutional, governance, and socio-cultural contexts.

The collected data were analysed using thematic analysis following the approach proposed by (Braun & Clarke, 2006). Data obtained from FGDs, policy documents, scholarly literature, and institutional reports were systematically organised, coded, and categorised to identify recurring themes related to gendered vulnerability, women's agency, adaptive capacity, institutional arrangements, and climate governance. The identified themes were subsequently compared across the three countries to identify both common patterns and context-specific variations, allowing broader analytical insights into the relationship between gender equality and coastal climate resilience.

To enhance the credibility and trustworthiness of the findings, this study employed methodological triangulation by integrating evidence from FGDs, documentary analysis, scholarly literature, and reports from international organisations (Denzin, 1978). The use of multiple data sources enabled the researchers to validate interpretations, minimise potential bias, and strengthen the robustness of the comparative analysis. Trustworthiness was further enhanced through prolonged engagement with the empirical materials, iterative data analysis, and continuous comparison across different sources of evidence, consistent with the criteria of credibility and dependability proposed by Lincoln and Guba (1985).

Participation in the Focus Group Discussions was voluntary, and all participants were informed about the objectives of the study prior to data collection. Verbal informed consent was obtained from each participant, and confidentiality was maintained by anonymising all responses and reporting the findings in a manner that protects participants' identities.

DISCUSSION

Gendered Vulnerability as a Socially Constructed Condition

The findings demonstrate that climate vulnerability in coastal communities cannot be understood solely through the lens of environmental exposure. Instead, vulnerability emerges from the interaction between climate hazards and socially constructed gender inequalities that shape access to resources, decision-making, and adaptive opportunities. Across Indonesia, Vietnam, and Bangladesh, women experience disproportionate climate impacts not simply because they are exposed to similar environmental risks as men, but because structural inequalities limit their capacity to anticipate, respond to, and recover from climate-related shocks. This finding reinforces the argument that vulnerability is fundamentally a social and political condition rather than merely a biophysical consequence of climate change.

Although the three countries differ in their institutional arrangements and socio-political contexts, the comparative analysis reveals a remarkably consistent pattern of gendered vulnerability. Women continue to shoulder primary responsibilities for household welfare, food security, water collection, and informal economic activities while simultaneously possessing fewer productive assets, more limited access to financial services, and weaker representation in local governance. Consequently, climate-induced disruptions—including sea-level rise, saltwater intrusion, flooding, and increasingly unpredictable fisheries—generate multiple layers of vulnerability that extend beyond environmental degradation to encompass economic insecurity, increased unpaid care work, and reduced livelihood opportunities. Rather than representing isolated national experiences, these

shared patterns indicate that gender inequality constitutes a common structural constraint across climate-vulnerable coastal communities.

These findings are broadly consistent with earlier studies demonstrating that climate risks are mediated through unequal social relations rather than determined solely by geographical exposure (Kabir et al., 2016; Malik et al., 2021a). Previous research has shown that women frequently experience greater livelihood losses, food insecurity, and caregiving burdens following climate-related disasters because unequal access to land, financial resources, education, and political participation reduces their adaptive capacity. However, the present study extends this literature by demonstrating that these structural disadvantages operate similarly across three different national contexts despite variations in governance systems and development trajectories. This suggests that gender inequality functions as a persistent mechanism reproducing climate vulnerability across diverse institutional settings.

The findings also support the central proposition of Feminist Political Ecology, which argues that environmental vulnerability is produced through power relations embedded within social institutions rather than through ecological change alone (Rocheleau et al., 1996). Women's experiences in coastal communities illustrate how environmental risks intersect with socially assigned gender roles that influence labour divisions, access to natural resources, and participation in environmental governance. Climate change therefore magnifies existing inequalities instead of creating entirely new forms of vulnerability. This perspective challenges technocratic adaptation approaches that prioritise infrastructure and engineering solutions while overlooking the social structures that determine who can benefit from adaptation interventions.

An important implication emerging from this comparative analysis is that reducing climate vulnerability requires addressing the institutional and social conditions that reproduce gender inequality. Investments in coastal infrastructure or disaster risk reduction alone are unlikely to generate equitable resilience if women continue to face barriers in accessing productive resources, financial services, education, and decision-making processes. Consequently, strengthening coastal resilience demands simultaneous attention to environmental adaptation and social transformation, positioning gender equality as an essential prerequisite rather than a complementary objective of climate policy.

Women's Agency as the Foundation of Coastal Climate Resilience

While the findings confirm that women experience disproportionate climate vulnerability, they simultaneously reveal that women are indispensable agents in strengthening coastal climate resilience. This apparent paradox highlights an important shift in perspective: vulnerability and agency should not be viewed as mutually exclusive conditions. Instead, women often develop adaptive responses precisely because they are positioned at the frontline of environmental change and household livelihood management. Across Indonesia, Vietnam, and Bangladesh, women's daily interactions with coastal ecosystems enable them to generate practical knowledge, mobilise collective action, and sustain household resilience despite increasingly severe climate pressures.

The comparative findings demonstrate that women's agency is expressed through multiple and interconnected forms of adaptation rather than through isolated livelihood activities. These include livelihood diversification, sustainable fisheries management, mangrove restoration, disaster preparedness, household resource management, and the preservation of local ecological knowledge.

Although the specific activities vary across countries according to local ecological and institutional conditions, they collectively strengthen adaptive capacity by reducing livelihood risks, enhancing food security, protecting coastal ecosystems, and reinforcing community solidarity. Women's contributions, therefore, extend beyond supporting household survival; they actively shape the long-term resilience of coastal socio-ecological systems.

This finding reinforces growing evidence that women's local ecological knowledge constitutes a critical yet frequently underestimated resource in climate adaptation. Previous studies have shown that women possess extensive knowledge of seasonal environmental changes, coastal resource management, water use, and community coping strategies developed through everyday engagement with local ecosystems (Torre-Castro et al., 2022; Zvobgo et al., 2022). The present study supports these observations while demonstrating that such knowledge acquires greater significance when translated into collective action through community organisations, informal social networks, and local adaptation initiatives. Consequently, adaptive capacity should not be understood solely in terms of technological innovation or financial investment but also as a socially embedded process rooted in local knowledge, cooperation, and inclusive participation.

The findings also provide further empirical support for Feminist Political Ecology, which argues that environmental governance is shaped by unequal power relations as well as by differentiated access to ecological knowledge (Rocheleau et al., 1996). Rather than portraying women as passive recipients of externally designed adaptation programmes, the comparative evidence demonstrates that women actively interpret environmental changes, negotiate household adaptation strategies, and contribute to community decision-making through everyday practices. These forms of agency are frequently overlooked because conventional climate governance tends to privilege formal institutions and technical expertise while undervaluing locally generated knowledge and informal leadership. Recognising women's agency therefore requires expanding the understanding of climate governance beyond formal participation to include the diverse ways women influence adaptation processes within families and communities.

More importantly, the comparative analysis challenges the dominant narrative that continues to frame women primarily as victims of climate change. Although structural inequalities undoubtedly increase women's vulnerability, the findings indicate that vulnerability does not preclude agency. Instead, women's experiences illustrate how adaptive capacity emerges through continuous interactions between environmental challenges, local knowledge, and collective action. This perspective moves beyond binary representations that categorise women either as vulnerable populations or as empowered leaders. Rather, women simultaneously navigate structural constraints while exercising agency to sustain livelihoods and strengthen community resilience. Such an understanding provides a more nuanced interpretation of gender and climate adaptation than approaches that emphasise vulnerability alone.

The principal theoretical contribution of this study lies in demonstrating that women's agency functions as the critical mechanism linking gender equality with coastal climate resilience. Existing research has generally examined gender equality and climate resilience as parallel objectives within sustainable development, often assuming that improvements in gender equality will automatically strengthen adaptation outcomes. The findings presented here suggest a more dynamic relationship. Gender equality creates the institutional and social conditions that enable women to exercise agency through greater access to resources, participation in decision-making, leadership

opportunities, and recognition of local knowledge. Women's agency subsequently enhances adaptive capacity, which in turn strengthens community resilience. This causal pathway positions women's agency as the missing analytical link connecting gender equality with effective climate adaptation.

Accordingly, the findings suggest that policies designed to enhance coastal resilience should move beyond simply increasing women's participation in adaptation programmes. Greater participation alone is insufficient unless accompanied by institutional arrangements that recognise women's knowledge, expand their decision-making authority, and improve equitable access to productive resources. Climate adaptation therefore becomes most effective when women are not merely included as programme beneficiaries but recognised as strategic actors whose agency directly contributes to environmental sustainability, social inclusion, and resilient coastal governance.

Institutional Contexts and the Effectiveness of Gender-Responsive Climate Governance

The comparative analysis demonstrates that differences in governance arrangements do not, by themselves, determine the effectiveness of gender-responsive climate adaptation. Rather, the critical factor is the extent to which institutions enable women's participation, recognise local knowledge, and translate gender equality into adaptive capacity. Although Indonesia, Vietnam, and Bangladesh represent different political and institutional contexts, the evidence consistently suggests that inclusive governance mediates the relationship between women's agency and coastal climate resilience.

Across the three countries, governments have increasingly incorporated gender considerations into national climate adaptation and disaster risk reduction policies. However, the implementation of these commitments remains uneven. While policy frameworks frequently recognise women as important stakeholders, practical opportunities for meaningful participation in planning, resource allocation, and environmental decision-making continue to vary considerably. Consequently, institutional commitment alone is insufficient to ensure gender-responsive climate governance without corresponding mechanisms that enable women to exercise influence within local governance processes.

The comparison reveals important institutional differences in the implementation of gender-responsive climate governance across the three countries. In Indonesia, gender mainstreaming has been progressively incorporated into climate adaptation programmes and coastal resource management initiatives. Nevertheless, implementation at the local level remains inconsistent because of variations in administrative capacity, inter-agency coordination, and resource availability. Women's contributions to fisheries management, mangrove conservation, and household adaptation are widely acknowledged within communities but remain underrepresented in formal decision-making structures. Consequently, women's adaptive knowledge contributes substantially to community resilience but remains insufficiently institutionalised within formal governance and adaptation planning.

Compared with Indonesia, Vietnam presents a relatively stronger institutional framework for gender-responsive climate governance, characterised by close coordination between government agencies and mass organisations, particularly the Vietnam Women's Union. This institutional coordination has expanded women's participation in disaster preparedness, livelihood transformation, and community-based adaptation initiatives. However, persistent gender norms

continue to constrain women's leadership opportunities and access to productive resources. The Vietnamese experience therefore demonstrates that institutional inclusion alone is insufficient to overcome structural gender inequalities unless it is accompanied by broader social transformation that enables women's agency to strengthen adaptive capacity and coastal climate resilience.

Bangladesh offers another distinctive governance pathway in which non-governmental organisations have become central actors in promoting community resilience. Development organisations have played a pivotal role in expanding women's access to microfinance, livelihood programmes, disaster preparedness training, and post-disaster recovery initiatives. Nevertheless, persistent inequalities in land ownership, financial resources, and political representation continue to limit women's influence within formal governance institutions. Consequently, although community-based adaptation has strengthened local resilience, broader institutional transformation remains necessary to sustain women's agency and ensure more equitable and resilient adaptation outcomes.

Rather than highlighting differences alone, the comparative evidence identifies a common institutional pattern across the three countries. Effective climate adaptation depends less on the existence of gender-responsive policies than on the capacity of governance systems to transform those policies into meaningful participation, equitable resource distribution, and shared decision-making. Governance quality therefore mediates the relationship between women's agency and adaptive capacity. Where institutions recognise women's knowledge, facilitate collaborative decision-making, and provide equitable access to productive resources, women's adaptive initiatives are more likely to contribute to sustained coastal resilience. Conversely, where governance remains fragmented, hierarchical, or gender-blind, women's contributions are frequently confined to informal community practices with limited influence on broader adaptation planning.

These findings extend existing scholarship on gender-responsive climate governance by demonstrating that institutions should be understood not merely as administrative structures but as mechanisms that shape power relations, resource access, and knowledge legitimacy. From the perspective of Feminist Political Ecology, environmental governance is inseparable from broader social and political processes that determine whose knowledge is recognised, whose voices are represented, and whose priorities influence adaptation policies (Rocheleau et al., 1996). The present study therefore argues that strengthening coastal climate resilience requires governance reforms that move beyond policy rhetoric towards institutional arrangements capable of redistributing opportunities, recognising local ecological knowledge, and enabling women to participate as equal partners in environmental decision-making.

Overall, the comparative analysis indicates that institutional transformation constitutes an indispensable component of climate resilience. Investments in coastal infrastructure, ecosystem restoration, and disaster risk reduction are likely to generate more sustainable outcomes when accompanied by governance reforms that strengthen women's leadership, improve access to productive resources, and institutionalise participatory decision-making. Gender-responsive climate governance thus functions as the enabling environment through which women's agency is translated into collective adaptive capacity and, ultimately, more resilient coastal communities.

Table 2. Comparative Synthesis of Institutional Contexts and Gender-Responsive Climate Governance

Analytical Dimension	Indonesia	Vietnam	Bangladesh	Comparative Insight
Institutional setting	Decentralised governance with uneven implementation	Strong state coordination and women's organisations	NGO-supported community governance	Institutional arrangements differ, but all seek to strengthen local adaptation.
Women's participation	Active at community level but limited in formal decision-making	Higher institutional participation through women's organisations	Strong community engagement, weaker formal representation	Participation is generally stronger in community initiatives than in formal governance.
Major governance constraints	Administrative capacity and policy implementation gaps	Persistent gender norms despite institutional support	Socio-economic inequality and limited resource access	Structural barriers continue to constrain women's adaptive capacity.
Governance contribution to resilience	Moderate	Relatively strong	Moderate–strong at community level	Governance quality determines how effectively women's agency contributes to resilience.
Policy implication	Strengthen participatory local governance	Expand women's leadership and decision-making	Improve equitable access to land, finance, and institutions	Inclusive governance is essential for sustainable climate resilience.

(Source: Developed by the authors)

Towards an Integrated Framework of Gender Equality and Coastal Climate Resilience

The comparative findings from Indonesia, Vietnam, and Bangladesh provide the basis for developing a more integrated understanding of the relationship between gender equality and coastal climate resilience. Rather than viewing gender equality as an independent development objective, this study demonstrates that it constitutes a fundamental enabling condition for strengthening adaptive capacity and promoting sustainable resilience in coastal communities. The analysis suggests that resilience emerges not from isolated interventions but from dynamic interactions among social inclusion, women's agency, institutional support, and community adaptation.

The evidence consistently indicates that gender equality influences climate resilience indirectly through women's agency. Improved access to education, productive resources, decision-making processes, and institutional participation enables women to mobilise local ecological knowledge, diversify livelihoods, strengthen social networks, and engage actively in environmental governance. These adaptive practices subsequently enhance household and community capacities to anticipate, respond to, and recover from climate-related hazards. In this sense, women's agency functions as the critical mechanism through which gender equality is translated into practical resilience outcomes.

However, the study also demonstrates that women's agency alone cannot fully explain variations in adaptive capacity across different institutional settings. As discussed in the previous section, governance institutions mediate the effectiveness of women's adaptive initiatives by determining opportunities for participation, access to resources, and recognition of local knowledge. Inclusive institutions therefore amplify the positive effects of women's agency, whereas fragmented or gender-blind governance limits the capacity of individual and collective initiatives to influence long-term resilience. Coastal climate resilience should consequently be understood as the outcome of mutually reinforcing relationships among gender equality, agency, institutional effectiveness, and adaptive capacity rather than as the product of any single factor.

Based on these findings, this study proposes an integrated conceptual framework in which gender equality serves as the foundational condition for enhancing coastal climate resilience (Figure 1). Within this framework, gender equality expands women's agency by improving access to education, productive assets, leadership opportunities, and decision-making processes. Women's agency subsequently strengthens adaptive capacity through livelihood diversification, environmental stewardship, collective action, and knowledge sharing. Institutional support reinforces this process by creating governance arrangements that enable meaningful participation, equitable resource distribution, and collaborative adaptation planning. Together, these interconnected processes contribute to more resilient coastal socio-ecological systems capable of responding to long-term climate change.

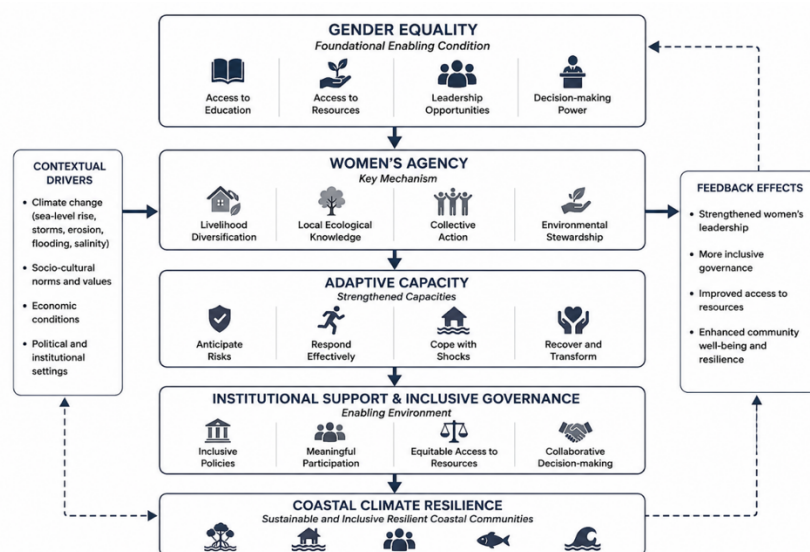


Figure 1. Integrated Framework Linking Gender Equality and Coastal Climate Resilience
(Source: Developed by the authors (2025))

This framework extends existing literature in several important ways. Previous studies have generally examined gender equality either as a social outcome of climate adaptation or as one of many factors influencing vulnerability. In contrast, the present study conceptualises women's agency as the central analytical mechanism linking gender equality to resilience. By integrating insights from Feminist Political Ecology with comparative evidence from three climate-vulnerable coastal contexts, the study demonstrates that resilience is fundamentally shaped by social power relations and institutional arrangements rather than by technological adaptation alone. This perspective broadens current understandings of climate resilience by positioning gender equality as a strategic driver of adaptive governance instead of merely a complementary policy objective.

The proposed framework also offers broader relevance beyond the three cases examined in this study. Although Indonesia, Vietnam, and Bangladesh differ in governance structures, socio-economic conditions, and institutional capacities, the comparative analysis identifies recurring processes that are likely to characterise many coastal regions confronting similar climate risks. The framework therefore provides a transferable analytical lens for future comparative research examining how gender-responsive governance contributes to resilience across diverse environmental and institutional settings.

Overall, this study argues that strengthening coastal climate resilience requires moving beyond sectoral approaches that treat gender, governance, and climate adaptation as separate policy domains. Instead, resilience should be understood as an integrated socio-institutional process in which gender equality expands women's agency, effective governance enables adaptive action, and collective capacities emerge through inclusive participation and equitable access to resources. This integrated perspective represents the principal theoretical contribution of the study and provides a foundation for more comprehensive approaches to climate adaptation in vulnerable coastal communities.

CONCLUSION

This study has examined how gender equality contributes to strengthening coastal climate resilience through a comparative analysis of Indonesia, Vietnam, and Bangladesh. The findings demonstrate that climate vulnerability is shaped not only by environmental exposure but also by structural gender inequalities that influence access to productive resources, decision-making processes, and adaptive opportunities. Across the three countries, women continue to face socio-economic and institutional barriers that constrain their participation in climate adaptation. Nevertheless, the comparative evidence consistently shows that women play indispensable roles in strengthening resilience through livelihood diversification, environmental stewardship, disaster preparedness, collective action, and the application of local ecological knowledge.

The principal theoretical contribution of this study lies in demonstrating that women's agency constitutes the critical mechanism linking gender equality with coastal climate resilience. Rather than conceptualising gender equality merely as a normative development objective or one determinant among many influencing adaptation, this study proposes an integrated analytical framework in which gender equality creates the enabling conditions for women's agency, women's agency strengthens adaptive capacity, and inclusive governance determines how effectively these capacities contribute to long-term resilience. By integrating insights from Feminist Political Ecology with comparative evidence from three climate-vulnerable coastal contexts, the study advances a

more comprehensive understanding of resilience as a socio-institutional process shaped by power relations, participation, and knowledge systems.

The findings also carry important policy implications. Strengthening coastal resilience requires moving beyond conventional adaptation strategies that focus primarily on physical infrastructure and technological interventions. Governments and development organisations should instead adopt gender-responsive climate governance that expands women's access to education, productive resources, leadership opportunities, climate information, and meaningful participation in environmental decision-making. Recognising women's local ecological knowledge and institutionalising their participation within adaptation planning will not only promote gender equality but also enhance the effectiveness, inclusiveness, and sustainability of climate adaptation policies.

Several limitations should be acknowledged. While the comparative analysis provides valuable cross-country insights, primary fieldwork was conducted only in Indonesia, whereas the analyses of Vietnam and Bangladesh relied primarily on secondary evidence. Consequently, the findings should be interpreted as analytically transferable rather than statistically generalisable. Future research could strengthen and refine the proposed framework by incorporating primary fieldwork across multiple countries, mixed-method approaches, or longitudinal studies to examine how women's agency and gender-responsive governance evolve under changing climate conditions. Such research would provide further empirical validation of the integrated framework proposed in this study and contribute to a deeper understanding of inclusive climate resilience in diverse coastal settings.

Ultimately, building resilient coastal communities requires recognising that climate resilience is not achieved solely through technological innovation or environmental management, but through inclusive governance that enables women to participate as equal agents of adaptation and sustainable development.

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