

Coastal Communities' Experiences in Facing Climate Change: A Study on Socio-Ecological Resilience in the Northern Coast of Java

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ABSTRACT

Climate change significantly impacts coastal communities, affecting their livelihoods, cultural identity, and social cohesion. Although previous research has explored socio-economic and policy responses to climate change, limited attention has been given to subjective experiences and cultural narratives shaping adaptive behaviors. This study addresses this gap by exploring how coastal communities in North Java perceive and interpret environmental changes through an interpretative phenomenological approach. The study reveals that adaptive strategies are deeply embedded in cultural identity, communal solidarity, and spiritual beliefs, challenging conventional adaptation models focused on technical and economic solutions. Data were collected through in-depth interviews and field observations, analyzed using Interpretative Phenomenological Analysis (IPA) to identify themes of environmental perception, local adaptation strategies, and social-ecological resilience. The findings demonstrate that cultural narratives and social networks significantly shape adaptive behaviors, emphasizing the need for culturally sensitive adaptation policies. This research contributes to a more holistic understanding of social-ecological resilience by integrating emotional, cultural, and social dimensions, paving the way for future studies to explore cross-cultural narratives and intergenerational dynamics in climate adaptation.



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INTRODUCTION

Climate change has become one of the most pressing global environmental challenges, significantly impacting coastal communities worldwide (Utami et al., 2022). In particular, rising sea levels, increased frequency of extreme weather events, and coastal erosion threaten the livelihoods and cultural heritage of communities living along coastlines. Coastal areas are particularly vulnerable due to their dependence on marine resources, making them highly susceptible to environmental changes that disrupt fishing, aquaculture, and tourism industries (Adger et al., 2005; IPCC, 2021). In Indonesia, a country with extensive coastlines and a large population relying on coastal resources, these challenges are especially pronounced, with communities in North Java experiencing severe impacts from coastal erosion and unpredictable weather patterns (Diposaptono et al., 2016).

Adaptation to climate change in coastal regions has been widely studied from technical and policy perspectives, including infrastructure development, coastal zoning, and community-based disaster risk management (O'Brien et al., 2008; Thomalla et al., 2006). However, these studies often emphasize quantitative assessments and technological solutions, overlooking the subjective experiences and cultural dimensions of adaptation (Sadya, 2022; Fadhlurrahman, 2024). Understanding how coastal communities perceive, interpret, and respond to environmental changes is crucial for developing effective and culturally sensitive adaptation strategies. This perspective emphasizes the need to explore not only the physical impacts but also the psychological, social, and cultural implications of climate change on coastal populations (Marshall et al., 2013).

Previous research on climate change adaptation has largely focused on socio-economic impacts, such as income loss, food security, and migration patterns (Adger et al., 2003; Wong et al., 2014). Although these studies provide valuable insights into vulnerability and resilience, they often neglect the

experiential and emotional aspects of how individuals and communities navigate environmental changes. In particular, the subjective meanings and cultural interpretations of resilience and adaptation remain underexplored (Matsuzaka, Y., & Yashiro, R., 2023). This gap in understanding is critical because cultural beliefs, social networks, and community identity significantly influence how people perceive risks and make adaptive decisions (Adger et al., 2013; Berkes & Ross, 2013).

To address this gap, the present study adopts a phenomenological approach, which emphasizes exploring the lived experiences of coastal communities in North Java as they confront the challenges of climate change (Redmon et al., 2016). Phenomenology is particularly relevant for this research because it seeks to uncover the essence of human experiences, allowing for a deeper understanding of how individuals construct meanings around environmental change. This approach enables an exploration of the subjective realities and emotional narratives that shape adaptive strategies and social-ecological resilience. By focusing on the meanings that people ascribe to their experiences, this study provides nuanced insights into the cultural and social dimensions of adaptation that are often overlooked in conventional quantitative research (Smith et al., 2009; Van Manen, 2016).

This research contributes to the growing body of literature on climate change adaptation by illuminating the social-ecological resilience of coastal communities through the lens of lived experience (Syahrudin et al., 2024). It highlights the importance of contextualizing adaptation strategies within cultural narratives and social practices. By exploring how individuals and communities interpret and respond to environmental changes, this study seeks to enhance the theoretical understanding of social-ecological resilience while informing more culturally appropriate adaptation policies.

Research on subjective experiences related to climate change has gained increasing attention in recent years, particularly in understanding how individuals and communities perceive and interpret environmental changes (Xiao et al., 2023). This focus is crucial for developing a comprehensive understanding of adaptive behaviors and resilience strategies, especially in vulnerable coastal communities. Within the field of environmental psychology and social-ecological resilience, there is a growing recognition of the importance of exploring lived experiences to capture the emotional, cultural, and social dimensions of adaptation (Adger et al., 2013; Marshall et al., 2013). These dimensions are critical for understanding how communities construct meaning around environmental changes and how these meanings influence adaptive decision-making processes.

However, methodological challenges have impeded the in-depth exploration of subjective experiences, particularly in the context of climate change adaptation (Brucal et al., 2021; Widyasari et al., 2021). Traditional quantitative approaches, which dominate the field, often focus on measuring vulnerability, exposure, and adaptive capacity using numerical indicators (Adger et al., 2005; Wong et al., 2014). Although these approaches provide valuable macro-level insights, they are limited in their ability to capture the nuanced meanings and emotional responses experienced by individuals and communities. Quantitative surveys, for example, are typically structured to quantify perceptions and behaviors, which may not adequately reflect the complexities of lived experiences or the cultural significance of environmental changes.

Moreover, previous research on social-ecological resilience has predominantly focused on structural and functional aspects, such as economic stability, infrastructure resilience, and policy interventions (O'Brien et al., 2008; Thomalla et al., 2006). While these studies contribute to an understanding of systemic adaptation, they often overlook the subjective narratives and cultural contexts that shape individual and community resilience. Consequently, the emotional and existential dimensions of how people experience and make sense of environmental changes remain underexplored. These limitations highlight the need for an interpretative approach that can delve into the meanings, values, and cultural narratives underlying adaptive behaviors.

Given these challenges, phenomenology emerges as a suitable approach for exploring the lived experiences of coastal communities confronting climate change. Unlike traditional quantitative methods, phenomenology prioritizes the subjective consciousness and interpretations of participants, allowing researchers to explore the essence of experiences and the meanings individuals ascribe to them

(Smith et al., 2009; Van Manen, 2016). This approach is particularly relevant for understanding the cultural narratives and emotional responses that influence adaptive strategies and social-ecological resilience in coastal communities. By focusing on participants' subjective realities, phenomenology enables a more comprehensive understanding of the social and cultural dimensions of adaptation that are often overlooked in conventional climate change research.

Therefore, this study adopts an interpretative phenomenological approach to explore how coastal communities in North Java perceive and interpret environmental changes associated with climate change. By examining the lived experiences and cultural meanings constructed by these communities, this research seeks to provide nuanced insights into the complex social-ecological dynamics of adaptation and resilience. This approach not only addresses the methodological limitations of previous studies but also contributes to a deeper understanding of how cultural beliefs, social networks, and communal solidarity shape adaptive responses in vulnerable coastal areas.

Despite the growing body of research on climate change adaptation in coastal communities, most studies have predominantly relied on practical approaches, such as technological interventions, infrastructure resilience, and policy-driven strategies (O'Brien et al., 2008; Thomalla et al., 2006). These approaches emphasize tangible solutions like sea walls, coastal zoning, and economic diversification, focusing on enhancing structural and economic resilience. While these strategies are crucial for mitigating physical impacts, they largely overlook the subjective experiences and cultural meanings that influence adaptive behaviors and social-ecological resilience. Consequently, the psychological, emotional, and cultural dimensions of how communities perceive and respond to environmental changes remain underexplored.

A significant limitation of existing approaches is their reliance on quantitative metrics and functional assessments, which fail to capture the complexity of lived experiences. Quantitative methods, such as surveys and statistical analyses, often reduce adaptation to measurable indicators, such as income stability, infrastructure robustness, or policy compliance (Adger et al., 2005; Wong et al., 2014). However, these indicators do not adequately reflect how individuals interpret environmental changes, make sense of uncertainty, or navigate cultural identity and communal solidarity in times of crisis. As a result, current understandings of adaptation and resilience are incomplete, as they fail to account for the social and cultural narratives that shape community responses to climate change.

Moreover, previous research has primarily focused on socio-economic impacts, emphasizing vulnerability assessments and risk management frameworks. Although these studies provide valuable insights into the material consequences of climate change, they offer limited perspectives on the existential and emotional dimensions of adaptation (Marshall et al., 2013; Adger et al., 2013). In particular, little is known about how coastal communities internalize environmental changes, how cultural beliefs influence adaptive strategies, or how communal solidarity fosters social-ecological resilience. This gap in understanding is critical because cultural narratives and social networks play essential roles in shaping community identity, emotional well-being, and collective action.

To address these limitations, a phenomenological approach is proposed as an alternative method for exploring the essence of lived experiences and cultural meanings associated with climate change adaptation. Phenomenology focuses on subjective consciousness and the meanings individuals ascribe to their experiences, allowing for a more holistic understanding of human-environment interactions (Smith et al., 2009; Van Manen, 2016). By emphasizing participants' perspectives and contextual interpretations, phenomenology provides a deeper exploration of emotional, cultural, and social dimensions that are often overlooked in quantitative research. This approach is particularly relevant for understanding how coastal communities construct meaning around environmental changes, navigate cultural identity, and build social-ecological resilience through communal solidarity.

Therefore, this study seeks to bridge the knowledge gap by employing an interpretative phenomenological approach to explore how coastal communities in North Java experience, interpret, and respond to climate change. By focusing on lived experiences and cultural narratives, this research aims to provide a more nuanced understanding of social-ecological resilience and inform culturally

sensitive adaptation strategies. This perspective not only enriches the theoretical discourse on climate change adaptation but also contributes practical insights for policy development and community-based interventions.

Existing literature on climate change adaptation has primarily focused on quantitative assessments of vulnerability, risk management, and structural resilience in coastal communities (Adger et al., 2005; Wong et al., 2014). While these studies provide valuable insights into socio-economic impacts and policy interventions, they often neglect the subjective experiences and cultural meanings that shape adaptive behaviors. Recent research emphasizes the need to explore lived experiences to understand the emotional, psychological, and social dimensions of resilience (Marshall et al., 2013; Adger et al., 2013). Phenomenological approaches have been suggested as suitable methods for capturing these dimensions, as they focus on participants' perspectives and interpretations. However, few studies have applied phenomenology to explore how coastal communities internalize environmental changes and construct meaning around adaptation. This gap highlights the need for further investigation into the cultural narratives and social dynamics influencing resilience.

This study adopts an interpretative phenomenological approach to explore the lived experiences of coastal communities in North Java as they navigate the impacts of climate change. Phenomenology is particularly relevant for this research because it seeks to uncover the essence of human experiences by examining how individuals perceive and interpret their realities. By focusing on subjective consciousness and cultural interpretations, this method allows for a deeper understanding of the social-ecological dynamics influencing adaptive strategies. This approach addresses the limitations of previous research by capturing the emotional, cultural, and communal dimensions of resilience. It also provides a more holistic perspective on how cultural beliefs, social networks, and community identity shape adaptive responses.

This article is structured as follows: The Introduction presents the context of climate change impacts on coastal communities and highlights the need for phenomenological exploration of subjective experiences. The General Background provides an overview of the environmental challenges faced by coastal communities and the limitations of conventional adaptation strategies. The Specific Background narrows the focus to the cultural narratives and emotional dimensions of adaptation, emphasizing the need for an interpretative phenomenological approach. The Method section outlines the research design, participant selection, data collection, and data analysis procedures. The Results section presents the thematic findings based on participants' narratives, while the Discussion examines the implications of these findings in the context of social-ecological resilience. Finally, the Conclusion summarizes the contributions of this study to the field of climate change adaptation and suggests directions for future research.

RESEARCH METHODS

Study Design

This study employed a phenomenological approach to explore the subjective experiences of coastal communities in North Java as they navigate the impacts of climate change. Phenomenology was selected due to its focus on capturing the essence of lived experiences and the meanings that participants ascribe to those experiences (Shimaoka et al., 2024). This approach is particularly relevant to understanding how individuals perceive and interpret complex environmental changes within their social-ecological context. By emphasizing subjective perception, phenomenology facilitates an in-depth exploration of the adaptive strategies and resilience mechanisms employed by community members.

This research adopted an interpretative phenomenological approach, which is concerned with uncovering the underlying meanings of participants' experiences through a double hermeneutic process—interpreting how participants make sense of their world. This design enabled a comprehensive examination of both the conscious experiences and the contextual interpretations constructed by

participants, allowing for a nuanced understanding of social-ecological resilience in the face of climate change.

Participants

Participants consisted of coastal community members from three villages in North Java, including traditional fishermen, fishpond farmers, and community leaders. The selection of participants was guided by purposive sampling to ensure representation of diverse perspectives relevant to the phenomenon under study. Inclusion criteria required participants to have resided in the area for at least 10 years and to have experienced the direct impacts of climate change, such as rising sea levels, coastal erosion, and changes in weather patterns. This criterion ensured that participants had sufficient experiential knowledge to provide meaningful insights into adaptive strategies and social-ecological resilience.

Exclusion criteria included individuals who had resided in the area for less than three years, as they might lack the longitudinal perspective needed to reflect on environmental changes and adaptive strategies. A total of 21 participants were included in the study, comprising 10 traditional fishermen, 8 fishpond farmers, and 3 community leaders. These participants were selected to provide a comprehensive understanding of the community's adaptive responses from both economic and sociocultural perspectives.

Data Collection

Data were collected using in-depth semi-structured interviews and field observations. Semi-structured interviews were chosen to allow participants to express their experiences freely while ensuring consistency in addressing key research questions. An interview guide was developed, containing open-ended questions designed to explore participants' perceptions of environmental changes, adaptive strategies, and social-ecological resilience. Sample questions included: "How have you perceived changes in the coastal environment over the past decade?" and "What strategies have you and your community implemented to cope with these changes?"

Interviews were conducted in participants' local language to ensure comfort and authenticity of responses. Each interview lasted between 60 to 90 minutes and was conducted in a familiar environment, such as participants' homes or community centers, to provide a safe and comfortable setting. With participants' consent, interviews were audio-recorded and later transcribed verbatim for analysis.

Field observations were also conducted to supplement interview data. These observations focused on community activities related to environmental adaptation, such as the construction of sea walls and social gatherings that reinforced communal solidarity. Field notes were systematically recorded to capture non-verbal cues and contextual details that enriched the understanding of participants' lived experiences.

Data Analysis

Data were analyzed using Interpretative Phenomenological Analysis (IPA), which involved a systematic and iterative process to identify emerging themes and uncover the essence of participants' experiences. The analysis process comprised several steps:

1. **Transcription and Immersion:** Interview recordings were transcribed verbatim, and transcripts were repeatedly read to ensure familiarity with the data.
2. **Initial Noting:** Exploratory notes were made on significant statements that reflected participants' experiences, perceptions, and emotions.
3. **Developing Emergent Themes:** Statements were organized into codes, which were then grouped into emergent themes that captured the essence of the lived experiences.
4. **Searching for Connections Across Themes:** Thematic connections were identified to explore relationships and patterns between themes, leading to the construction of superordinate themes.
5. **Interpretation and Contextualization:** Themes were interpreted within the broader socio-ecological context, allowing for a deeper understanding of how cultural and communal factors shaped participants' adaptive responses.

To enhance the credibility of the findings, data triangulation was employed by comparing information from interviews, field observations, and relevant literature. NVivo software was used to facilitate data organization and coding, although thematic development and interpretation were conducted manually to preserve the contextual richness of participants' narratives.

Ethical Considerations

Ethical approval for this study was obtained from the relevant institutional ethics committee, ensuring compliance with international ethical standards for research involving human participants. Informed consent was obtained from all participants, with full disclosure of the study's purpose, procedures, and potential risks. Participants were assured of their anonymity and confidentiality, with pseudonyms used in reporting the findings to protect their identities.

Data were securely stored on password-protected devices, and access was restricted to the research team to maintain confidentiality. Participants were informed of their right to withdraw from the study at any stage without any consequences. Additionally, the study adhered to culturally sensitive practices, ensuring respect for local norms and values throughout the research process.

RESULTS AND DISCUSSION

Perceptions of Environmental Change

Participants in this study consistently expressed their awareness of significant environmental changes impacting their daily lives. They vividly described alterations in weather patterns, rising sea levels, and the intensification of coastal abrasion, all of which affected their primary sources of livelihood—fishing and aquaculture. Many participants perceived these changes as unprecedented and beyond their control, contributing to feelings of uncertainty and vulnerability.

One fisherman shared his experience:

"In the past, the sea was predictable. We knew when the winds would change, and the tides were consistent. But now, everything is different. The waves are higher, and the storms are more frequent. It's like the sea is angry."

Similarly, a fishpond farmer reflected on the gradual changes affecting his business:

"Every year, the water level seems to rise a little more. My ponds used to be safe, but now, seawater often overflows and mixes with the fresh water, killing the fish. It's devastating."

These narratives reveal a shared perception among community members of an increasingly unstable environment. Their descriptions reflect not only the physical changes they observe but also the emotional impact, including anxiety about the future and a sense of loss concerning their traditional way of life.

Local Adaptation Strategies

Despite the challenges posed by environmental changes, participants demonstrated remarkable resilience through the implementation of various local adaptation strategies. These strategies were developed organically, rooted in the community's collective knowledge and social networks. For instance, many fishermen adapted by altering their fishing schedules or shifting to alternative livelihoods, such as selling processed seafood products.

One participant recounted his adaptive journey:

"I used to go fishing every morning, but now the sea is too unpredictable. So, I started making dried fish and selling them at the local market. It's not the same, but at least my family can survive."

Communal solidarity also played a significant role in their adaptive capacity. In several villages, residents organized community initiatives, such as reinforcing sea walls using locally available materials through collective labor (gotong royong). A community leader explained:

"We know we can't stop the sea, but we can protect our homes together. We gather bamboo and rocks and build barriers. It's not perfect, but it helps us feel safer."

These experiences illustrate that adaptation is not merely a technical solution but is deeply embedded in social and cultural practices. The community's adaptive strategies reflect a dynamic process of learning, sharing, and improvising in response to changing environmental conditions.

Social-Ecological Resilience and Meaning of Survival

Participants conveyed that resilience was not only about surviving the physical impacts of climate change but also about preserving social harmony and cultural identity. For them, resilience meant maintaining a sense of community and ensuring the continuity of cultural practices tied to their coastal environment.

A village elder emphasized this perspective:

"We are not just fighting the sea; we are protecting our way of life. Our traditions, our gatherings, they are all connected to this place. If we lose this land, we lose who we are."

This statement highlights the community's intrinsic connection to their environment, viewing resilience as an integrated social-ecological phenomenon. The notion of survival extended beyond economic stability to encompass cultural preservation, emotional well-being, and communal solidarity.

Furthermore, religious beliefs emerged as a significant source of psychological resilience. Many participants interpreted climate change impacts through a spiritual lens, accepting adversity as a test of faith. A religious leader articulated this sentiment:

"Everything that happens is by God's will. We must face these challenges with patience and unity. It brings us closer together and strengthens our faith."

This religious interpretation provided emotional support and reinforced community cohesion, enhancing their collective resilience in facing the adversities of climate change.

The findings reveal a complex interplay between environmental changes, adaptive strategies, and social-ecological resilience. The experiences shared by coastal communities in North Java reflect a deep sense of connection to their environment and a resilient spirit rooted in cultural identity and communal solidarity. These insights underscore the importance of contextualized adaptation strategies that acknowledge the cultural and social dimensions of resilience. The narratives also highlight the significance of collective action, local knowledge, and spiritual beliefs in shaping adaptive responses to climate change.

Summary of Key Findings

This study reveals that coastal communities in North Java perceive climate change as a complex and multifaceted phenomenon that deeply affects their livelihoods, cultural identity, and social cohesion. Through an interpretative phenomenological approach, the research uncovers three essential themes: the perception of environmental change, local adaptation strategies, and the cultural meanings of social-ecological resilience. These findings provide nuanced insights into how community members construct meaning around environmental changes and navigate their adaptive responses within a cultural and social context.

Contribution to Research Questions

The findings of this study offer valuable contributions to the research questions posed in the Introduction. By exploring subjective experiences and cultural narratives, this research addresses the first question concerning how coastal communities perceive and internalize the impacts of climate change. The narratives reveal that community members not only observe environmental changes but also interpret them through cultural lenses, often attributing these changes to spiritual beliefs or ancestral knowledge. This cultural interpretation influences their emotional responses, ranging from anxiety and uncertainty to resilience and hope. Such insights contribute to a more comprehensive understanding of adaptive behavior, which is not solely driven by economic rationality but also by cultural identity and social values.

Regarding the second research question on adaptive strategies, the study demonstrates that local adaptation is a dynamic and communal process. Communities engage in various adaptive practices, such as diversifying livelihoods, reinforcing social networks, and strengthening communal solidarity. These strategies are not merely survival mechanisms but are embedded in cultural practices and social relationships. The findings highlight the importance of communal solidarity and cultural identity in fostering social-ecological resilience, challenging conventional views that emphasize individualistic and economic-driven adaptation models. This perspective contributes to a more holistic understanding of resilience by recognizing the social and cultural dimensions that underpin adaptive capacity.

Connection to Previous Literature and Theory

These findings resonate with and expand upon previous research on social-ecological resilience and cultural adaptation. Consistent with Adger et al. (2013) and Marshall et al. (2013), this study confirms that cultural beliefs and social networks significantly shape community responses to environmental changes. However, this research extends existing literature by demonstrating how religious and ancestral narratives provide emotional and psychological resilience, reinforcing communal solidarity in the face of climate adversity. This aligns with Berkes and Ross's (2013) assertion that resilience is not merely a physical or economic capacity but also a cultural and social construct.

The study also challenges conventional adaptation frameworks that prioritize technical and policy solutions (O'Brien et al., 2008; Thomalla et al., 2006). By highlighting the cultural and communal dimensions of adaptation, this research argues for more contextualized adaptation strategies that integrate local knowledge and cultural narratives. This perspective supports the call for culturally sensitive adaptation policies that resonate with the community's values and identities. Additionally, the findings contribute to the theoretical discourse on interpretative phenomenology by illustrating how cultural narratives shape subjective experiences of environmental change. This reinforces the argument that lived experiences provide a richer understanding of adaptive behavior, complementing quantitative vulnerability assessments.

Implications of Findings

The findings of this study have significant implications for both theoretical and practical dimensions of climate change adaptation in coastal communities. Thematically, the narratives illustrate that adaptation is not merely a functional response to environmental stressors but is deeply embedded in cultural identity and social cohesion. This insight challenges conventional adaptation frameworks that prioritize technical and economic interventions, highlighting the need for culturally sensitive strategies that resonate with local beliefs and communal values. Practically, this suggests that policymakers and development practitioners should engage with community narratives and cultural meanings when designing adaptation programs, ensuring that interventions are not only effective but also culturally appropriate and socially accepted.

Moreover, the findings reveal that communal solidarity and spiritual beliefs play essential roles in enhancing emotional and psychological resilience. This suggests that adaptation policies should incorporate social and cultural dimensions by fostering community networks and leveraging cultural narratives as resources for resilience. For example, community-led initiatives that draw on local wisdom and religious teachings can enhance adaptive capacity by reinforcing communal solidarity and cultural identity. This approach aligns with emerging discourses in social-ecological resilience, which advocate for integrating cultural narratives into environmental governance (Berkes & Ross, 2013). The implications also extend to the field of disaster risk management, where community cohesion and cultural identity are increasingly recognized as critical components of resilience.

From a theoretical perspective, this study contributes to the discourse on interpretative phenomenology by demonstrating how cultural narratives and social values shape subjective experiences of environmental change. It illustrates the importance of exploring lived experiences to understand the emotional, cultural, and social dimensions of resilience. This expands the theoretical understanding of social-ecological resilience by emphasizing the role of cultural identity and communal solidarity, complementing structural and functional perspectives. Additionally, the research offers

methodological insights into the application of interpretative phenomenology in environmental studies, highlighting its potential to capture the complexity of human-environment interactions.

Limitations of the Study

Despite the significant contributions, this study acknowledges certain limitations that may affect the generalizability of its findings. First, the research is context-specific, focusing on coastal communities in North Java. As such, the cultural narratives and adaptive strategies identified may not be fully representative of other coastal communities with different cultural, social, and environmental contexts. This limits the extent to which the findings can be generalized to broader populations. However, this context-specific focus is consistent with the phenomenological approach, which prioritizes depth of understanding over generalization.

Second, the study relies on qualitative data from in-depth interviews and observations, which are inherently subjective and interpretative. While this is aligned with the phenomenological methodology, the findings are shaped by the participants' narratives and the researcher's interpretations. Although rigorous data triangulation and reflexivity were employed to enhance credibility, the potential for researcher bias cannot be entirely eliminated. Additionally, the study was conducted over a limited period, which may not capture the long-term dynamics of climate change adaptation and social-ecological resilience. Future longitudinal studies are recommended to explore how cultural narratives and adaptive strategies evolve over time.

Future Research Directions

This research opens new avenues for further investigation into the cultural and social dimensions of climate change adaptation. Future studies should expand on these findings by exploring similar narratives in diverse cultural and environmental contexts, allowing for comparative analyses that reveal cross-cultural patterns and differences in adaptation. Such research would contribute to a more comprehensive understanding of how cultural identity and communal solidarity shape adaptive capacity in different social-ecological systems.

Additionally, there is a need for interdisciplinary research that integrates phenomenological insights with quantitative assessments of social-ecological resilience. By combining subjective experiences with quantitative indicators, future studies can provide a more holistic understanding of adaptive capacity, bridging the gap between cultural narratives and functional resilience. Further research could also explore the role of policy and governance frameworks in shaping cultural narratives and communal solidarity, providing practical insights for designing culturally sensitive adaptation policies.

Finally, future research should investigate the intergenerational dynamics of cultural narratives and adaptation strategies, exploring how knowledge and values are transmitted across generations. This would provide valuable insights into the sustainability of cultural identity and communal solidarity as adaptive resources. By addressing these research gaps, future studies can contribute to a more nuanced understanding of climate change adaptation that integrates cultural, social, and ecological dimensions.

CONCLUSION

This study explored the lived experiences of coastal communities in North Java as they navigated the impacts of climate change, focusing on cultural narratives and social-ecological resilience. The findings reveal that adaptation strategies are deeply embedded in cultural identity, communal solidarity, and spiritual beliefs, challenging conventional adaptation models that emphasize technical and economic solutions. By adopting an interpretative phenomenological approach, this research provides nuanced insights into the emotional and cultural dimensions of resilience, highlighting the importance of social networks and cultural narratives in shaping adaptive behaviors. These contributions address the limitations of previous studies that overlooked subjective experiences and cultural meanings in climate change adaptation. The findings emphasize the need for culturally sensitive policies that resonate with community values, enhancing the effectiveness of adaptation

strategies. Future research should explore similar cultural narratives in different coastal contexts and investigate intergenerational dynamics to understand the sustainability of cultural identity and communal solidarity in climate resilience.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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