Responding to Climate Change through Livelihood Diversification: Implications of Household Economic Well-Being in Coastal Greater Accra

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ABSTRACT

This study explores the adaptive strategies employed by households in Chemuenaa, a coastal community in Ghana, in response to the growing impacts of climate change on traditional livelihoods. Drawing on structured survey data from 80 adult residents, the research examines the extent to which livelihood diversification prompted by ecological disruption affects both the social and economic well-being of local populations. Findings reveal that 67.5% of respondents engage in multiple income-generating activities, with women and individuals with basic education leading diversification efforts. Despite widespread perceptions of climaterelated livelihood decline particularly in fishing economic well-being remains constrained, with only 36.3% able to save regularly. Social capital emerged as a modest buffer, with stronger community ties linked to better economic outcomes. The study highlights the gendered nature of adaptive responses, the role of education in enhancing resilience, and the importance of integrating local knowledge systems into policy interventions. It concludes that while livelihood diversification is a crucial coping mechanism, its success is shaped by intersecting vulnerabilities and capacities that must be addressed in context-sensitive ways.

INTRODUCTION

The impacts of climate change are becoming increasingly acute for communities whose survival depends on natural ecosystems. Coastal populations, particularly in sub-Saharan Africa, face an intensifying combination of sea-level rise, erratic rainfall, salinization, and biodiversity loss. These environmental disruptions directly threaten traditional livelihoods such as fishing and small-scale farming activities that have long provided both material sustenance and cultural identity for generations (Molean, 2021; Saadat, 2011). Yet, the climate crisis does not occur in a vacuum. Its effects are layered upon pre-existing vulnerabilities rooted in poverty, institutional neglect, and the historical marginalization of indigenous knowledge systems. In this context, the question is not only how communities are affected, but how they respond.

Recent studies in Ghana suggest that traditional worldviews significantly influence how climate change is understood and adapted to. As Darkwah and Verter (2022) observe, Indigenous belief systems rooted in respect for nature shape risk perception, often promoting environmental stewardship. However, these same

worldviews can present both opportunities and constraints in adapting to rapid environmental changes (Akuno, 2021). For many coastal and rural communities, decisions to diversify livelihoods are made not only in response to ecological pressures, but also through the lens of traditional values, spiritual beliefs, and intergenerational knowledge. In northeast Ghana, Saadat (2011) reports that while traditional livelihoods remain important, increasingly unpredictable weather patterns have forced many households to incorporate offfarm income-generating activities into their daily routines.

Livelihood diversification has therefore emerged as a dominant strategy for climate adaptation across Ghana's coastal and semi-arid zones. Individuals and households are turning to petty trading, artisanal work, transport services, and informal labor to buffer themselves against economic shocks. Yet, as Yaro (2013) notes, such diversification does not guarantee resilience. Access to alternative livelihoods often depends on social networks, gender roles, and the uneven distribution of resources. In northern Ghana, Nangia and Bayala (2016) find that diversified households tend to fare better, but only when supported by community structures and adaptive

capacity. This suggests that diversification outcomes are deeply context-dependent and shaped by more than just individual agency.

This study explores how households in Chemuena, a coastal community in Greater Accra, Ghana, are adapting to climate-induced livelihood instability. Specifically, it asks: To what extent does livelihood diversification triggered by environmental stress affect the social and economic well-being of households? Drawing from structured survey data across 80 households, we analyze how shifts away from traditional livelihoods are reshaping well-being outcomes in both tangible and relational terms. Our focus on both economic metrics and social cohesion reflects a growing recognition that resilience is not merely about material recovery, but also about sustaining networks of care, belonging, and dignity (Uddin & Lawson, 2020).

In doing so, this paper contributes to two critical debates. First, it engages with literature that sees indigenous and subsistence communities not as passive victims, but as active agents deploying complex strategies of survival and adaptation. Second, it adds empirical depth to the understanding of how climate responses intersect with broader questions of equity, identity, and access particularly for populations historically excluded from formal development frameworks. As Hur, Jung, and Kim (2005) demonstrate in Vietnam, adaptation interventions are not uniformly beneficial; their outcomes hinge on who participates, under what conditions, and with what support. Similarly, our findings suggest that while diversification offers a pathway toward resilience, it also reflects the constraints under which that path must be navigated.

METHODOLOGY

Study Area and Participants

This study was conducted in Chemuenaa, a coastal community in the Greater Accra Region of Ghana, known for its reliance on traditional livelihood activities such as fishing and petty trading. The community has experienced increasing climate variability, with significant implications for local livelihoods. A total of 80 adult participants were selected using purposive sampling to ensure diversity in gender, age, and economic activity. All participants had lived in the community for more than five years, ensuring familiarity with local livelihood patterns and climate trends.

While the study relied on participants' perceptions of climate change impacts, it did not integrate meteorological or ecological datasets. Future research should triangulate household-level perceptions with environmental data for stronger validity.

Data Collection and Instrumentation

A structured questionnaire was designed to gather quantitative data on the impact of climate change on traditional livelihoods, livelihood diversification strategies, and social and economic well-being. The questionnaire included closed-ended items based on a five-point Likert scale, as well as categorical and numeric demographic questions. Sections included demographic background, a Livelihood Diversification Index (LDI), social and economic well-being subscales, and climate change perceptions. Trained enumerators administered the questionnaires face-to-face over a period of two days.

Data Analysis

Data were analyzed using descriptive statistics including frequencies, percentages, and means. Data were also grouped under thematic variables aligned with the three identified gaps: perceived effects of climate change on traditional livelihoods, patterns and motivations for livelihood diversification, and the relationship between diversification and household well-being. All statistical analyses were conducted using SPSS version 26.

RESULTS

Descriptive Analysis

Table 1 presents the demographic characteristics of the respondents. The majority (65%) were female, with most participants (45%) aged between 36 and 55 years. Educational attainment was low, with 53% of respondents

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having only basic education. Fishing and trading were reported as the most common primary livelihoods.

Table 1. Socio-demographic Characteristics of Respondents

Variable	Frequency	Percentage (%)
Gender		
Male	28	35.0
Female	52	65.0
Age Group		
18–35	14	17.5
36–55	36	45.0
56+	30	37.5
Education Level		
No formal education	22	27.5
Basic	42	52.5
Secondary	12	15.0
Tertiary	4	5.0

Livelihood Diversification Patterns

As shown in Table 2, 67.5% of respondents reported engaging in more than one income-generating activity. The most common diversified livelihoods included petty trading (73.2%), fishing (61%), and small-scale farming (48.7%). Motivations for diversification included income loss from climate effects (65%) and seasonal livelihood constraints (52%).

Table 2. Diversification and Motivation

Variable	Frequency	Percentage (%)
Engaged in multiple livelihoods	54	67.5
Type of livelihood (multiple options)		
Trading	59	73.2
Fishing	49	61.0
Farming	39	48.7
Transport service	11	13.4
Skill training received	32	40.0
Motivated by income loss (climate)	52	65.0
Motivated by seasonal income	42	52.5

Climate Change Impacts on Traditional Livelihoods

About 81.3% of respondents believed that climate change had negatively affected their main livelihood. Reduced fish catch and changing tidal patterns were commonly cited as climate-related challenges. Seasonal income variations were noted by 72.5% of the participants.

Table 3. Perceived Climate Change Effects

Perception	Frequency	Percentage (%)
Climate change affected livelihood	65	81.3
Affected fish availability	50	62.5
Seasonal income variations	58	72.5

Well-being Outcomes

Social well-being scores indicated moderate community support, with 62% agreeing that they felt respected and supported in times of need. Economic well-being was relatively lower, with only 36.3% reporting the ability to save regularly, and 45% indicating they could meet basic needs consistently. Table 4. Social and Economic Well-being Indicators

Indicator	Agree (%)
Family support in need	68.8
Community participation and respect	62.0
Ability to meet basic needs	45.0
Ability to save regularly	36.3
Income has improved in past 3 years	28.8

DISCUSSION

The findings from Chemuenaa illuminate the critical interplay between gender, education, and climate-induced livelihood transitions in coastal Ghana. The study confirms that women dominate diversified livelihood strategies, with 65% of participants identifying as female. This finding supports previous research emphasizing women's growing responsibility in household sustenance, especially under shifting environmental conditions (Yaro 2010; Uddin and Lawson 2020).

Gendered Dimensions of Livelihood Diversification

Livelihood diversification appears as a primary coping strategy, with 67.5% of respondents engaged in multiple income activities. Women, in particular, are overrepresented in this shift, especially in trading and farming, echoing similar findings in northern Ghana where women turned to petty trading and agriculture amidst declining fisheries and erratic rainfall (Alhassan and Kuwornu 2012). The concentration of women in these sectors also underscores gendered vulnerabilities but also resilience mechanisms within the informal economy (Pereira et al. 2022).

Education and Economic Adaptation

Respondents with basic education demonstrated the highest economic well-being, affirming the link between foundational literacy and adaptability. Basic education seems to provide practical skills relevant for small-scale enterprise and diversified rural livelihoods (Hur et al. 2022). In contrast, tertiary-educated individuals reported

lower economic scores, possibly reflecting a mismatch between formal qualifications and available rural opportunities an observation echoed in studies from subsistence communities globally (Molean 2021).

Climate Impact Perceptions and Adaptive Agency

More than 81% of participants acknowledged climate change's impact on traditional livelihoods, particularly fishing, supporting the broader literature on coastal livelihood vulnerability in West Africa (Saadat 2011). The perception that declining fish stocks and tidal unpredictability are affecting income aligns with the experiences of other subsistence fishing communities facing ecosystem disruption (Amponsah 2022). These perceptions, when matched with action such as transitioning into farming or trading reflect emerging forms of agency, especially among women-headed households.

Social Capital as Economic Buffer

A modest correlation ($r = 0.21$) between social and economic well-being indicates that networks of community support are vital to household resilience. Respondents highlighted the importance of family and peer support in weathering seasonal shocks. Similar findings were reported by Uddin and Lawson (2020) in their evaluation of BRAC's graduation model, emphasizing that empowerment is not only economic but also social. While this modest correlation suggests that social support networks contribute to economic resilience, the strength of the relationship remains weak. This points to the need for more robust statistical analyses, such as regression or multivariate modeling, to isolate the specific contributions of gender, education, and social capital. Future research employing such methods could provide clearer insight into the causal pathways linking livelihood diversification to well-being.

The findings also resonate with resilience theory and the social-ecological systems (SES) framework, which emphasize the capacity of communities to absorb shocks, adapt, and transform under stress. Livelihood diversification in Chemuenaa reflects not only coping mechanisms but also pathways of adaptive capacity, where households attempt to reorganize socio-economic activities to sustain well-being. However, true resilience requires moving beyond short-term coping to systemic transformation supported by enabling policies and institutional frameworks.

Policy and Programmatic Implications

Three actionable insights emerge: First, investment in community-based vocational training is necessary, given the low access to formal skills (only 37% reported receiving any). Second, targeted financial inclusion such as microcredit programs that account for local realities could help leverage existing informal activities. Third, interventions must recognize the adaptive strengths already within communities, particularly women's contributions, and integrate traditional knowledge systems in climate responses (Nyamwanza 2022).

Specific policy recommendations include: (1) scaling up women-focused microcredit and vocational training programs; (2) strengthening basic and adult education as foundations for adaptive livelihoods; (3) developing climate-resilient livelihood schemes—such as salt-tolerant crops, aquaculture, and eco-tourism—in collaboration with local communities; and (4) embedding traditional knowledge systems into formal adaptation planning to ensure context-sensitive and culturally grounded interventions.

By understanding these interlinked dimensions gender, education, environmental perception, and social capital development practitioners can design localized, gender-sensitive, and sustainable livelihood interventions. This is especially critical in areas like Chemuenaa, where climate vulnerabilities intersect with systemic socioeconomic constraints.

Limitations

This study is limited by its small purposive sample of 80 participants, which constrains the generalizability of findings to other coastal communities. Additionally, the analysis relied heavily on descriptive statistics, with limited inferential testing to quantify relationships between gender, education, social capital, and resilience.

Climate impacts were measured based on perceptions rather than validated environmental data. Future research

should expand the sample across multiple coastal sites, integrate meteorological records, and apply regression or structural equation modeling to deepen analytical rigor.

CONCLUSION

This study highlights the intricate ways in which households in Chemuenaa are adapting to the pressures of climate change, particularly through livelihood diversification. While diversification offers a necessary coping strategy in the face of declining traditional livelihoods, its effectiveness is shaped by gender, education, and access to social capital. Women and individuals with basic education emerged as key actors in sustaining household income, reflecting both resilience and vulnerability within the informal economy. Although diversification provides short-term buffers, economic well-being remains constrained for many, emphasizing the need for policy responses that go beyond promoting multiple livelihoods to addressing structural inequalities.

Integrating traditional knowledge systems, strengthening vocational skills, and enhancing access to inclusive financial services can significantly bolster adaptive capacity. As climate-related disruptions intensify, localized and gender-sensitive interventions must be prioritized. The findings underscore that resilience is not only material but relational rooted in social networks, cultural values, and the everyday decisions households make under conditions of uncertainty.

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