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Women, Climate Resilience, and Rural Life: A Case Study of Agryouli Village

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ABSTRACT

Climate change, increasingly recognized as a human-induced phenomenon, is transforming both ecological systems and rural socio-cultural structures. This study investigates the gendered dimensions of climate change in Agryouli village, located in Nepal's Terai region. Women, despite their marginal role in household and community decision-making, are disproportionately affected due to their close dependence on natural resources for food preparation, fuel collection, and subsistence farming. Drawing on traditional ecological knowledge, women interpret environmental cues to guide agricultural activities. However, their adaptive capacity remains limited by unequal access to income, land, and institutional resources. Based on 25 years of longitudinal fieldwork, the study identifies significant environmental changes particularly in rainfall patterns, crop cycles, and water availability as key stressors. Rather than detailing specific livelihood shifts, the abstract highlights how these disruptions have deepened socio-economic inequality and increased burdens on women and girls. Despite these challenges, emerging cooperative practices suggest a path toward local resilience. The findings call for inclusive, gender-responsive adaptation strategies that address structural inequalities and promote long-term sustainability.

Introduction

Terai farmers have developed context-specific adaptation strategies in response to the complex challenges posed by climate change. While climatic variations have occurred throughout the Earth's history, the current trend is predominantly driven by human activities and is thus characterized as an anthropogenic phenomenon (Crate & Nuttall, 2009). As defined by the UN Framework Convention on Climate Change, climate change refers to alterations in climate directly or indirectly caused by human interference with the atmospheric composition, beyond natural variability. These shifts manifest not only in physical changes such as sea-level rise, prolonged droughts, and ecosystem disruptions but also in the socio-cultural and economic structures of rural communities (Crate & Nuttall, 2009). The consequences of climate change are uneven, varying by location, socio-economic conditions, and individual circumstances.

Among the most affected are the poor women of Agryouli village in Nepal's Nawalpur district. Their lives are closely intertwined with the natural environment, and they are directly exposed to the adverse impacts of climate fluctuations. Anthropological perspectives emphasize the role of local communities as critical observers of these environmental transitions. Despite their essential contributions to household sustenance, women in this community lack authority in decision-making, particularly over household income, which remains under male control. Additionally, the cultural preference for large families increases women's unpaid labor burden, further limiting their capacity to respond to environmental stressors. As noted by UNDP (2010), gender equality encompasses rights, opportunities, income, and agency all of which are lacking in climate adaptation contexts.

In Nepalese society, gender relations are socially constructed, defining distinct responsibilities and access to resources based on entrenched power structures. According to the FAO (2011b), rural women bear the primary responsibility for maintaining households, including child-rearing, food production, poultry care, and collecting fuel and water. While they also engage in agricultural labor, their contributions often go unpaid and unrecognized. These gendered divisions shape decision-making at both household and community levels.

Both men and women adjust farming practices in response to climatic stress, but women face disproportionate challenges in domains like water use, livestock care, and kitchen gardening, which are severely impacted. As highlighted by Thapa, Bista, and Gurung (2023), achieving sustainable resilience requires inclusive, gender-sensitive knowledge systems. Giri and Ojha (2022) similarly argue that male-centric institutional frameworks fail to address

women's intersecting vulnerabilities. This research documents the lived experiences of men and women in Agryouli, underscoring the urgency of embedding gender-sensitive, community-led adaptation strategies in local development planning.

Objectives

The general objective of the proposed study was to explore the linkage between the climate change and its impact on women's life. The specific objectives were as follow:

1. To examine rural women's perceptions and lived experiences of climate change, focusing on labor divisions, resource access, and decision-making participation.
2. To analyze the socio-economic and environmental impacts of climate change on rural women's daily lives and overall well-being.
3. To identify locally grounded adaptation practices and formulate gender-responsive policy recommendations to enhance resilience.

Literature Review

In the 21st century, global environmental change has emerged as one of the most pressing and complex issues humanity has ever encountered. The rapid transformation of ecosystems, driven by both natural and anthropogenic factors, has amplified vulnerabilities across communities, especially in developing nations. Social and economic inequalities further exacerbate the impacts of climate change, often displacing people and disrupting entire communities. These changes are not just environmental but deeply social in their implications, as they force migration and jeopardize livelihoods (Smith, 2009). The resulting instability can leave marginalized populations even more vulnerable, highlighting the intersection of environmental degradation and human insecurity. Recent findings show that climate-induced risks in agrarian societies are disproportionately borne by women and low-income households, particularly in South Asia where adaptation capacity remains institutionally constrained (Thapa et al., 2023, p. 317). Empirical research shows that climate-induced stresses in agricultural economies disproportionately affect women and low-income households due to pre-existing socioeconomic imbalances. In South Asia, these vulnerabilities are exacerbated by weak institutional frameworks and low adaptive ability at both the community and policy levels.

Climate change does not affect all people equally. Women in developing countries are often among the most disadvantaged groups due to systemic inequalities in access to resources and decision-making power (Denton, 2002). However, they also play a pivotal role in natural resource management and subsistence economies. This dual role,

being both vulnerable and essential actors, makes them critical stakeholders in climate adaptation. While their livelihoods are deeply tied to the environment, women's contributions and indigenous knowledge systems are often undervalued. Denton (2002) emphasizes that both men and women must work together, using their respective strengths, to build a more sustainable and resilient future.

Historically, global warming was not widely acknowledged before 1976, when the first scientific warnings about rising carbon dioxide levels and potential climate disruption were announced. This growing concern led to the establishment of global climate summits, such as the World Climate Conferences, and ultimately, the formation of the Intergovernmental Panel on Climate Change (IPCC). The IPCC's first assessment in 1990 laid the groundwork for the United Nations Framework Convention on Climate Change (UNFCCC).

According to IPCC reports, carbon dioxide levels have increased by 36% since the Industrial Revolution, average global temperatures have risen by 0.74°C, and sea levels have accelerated their rise since 1993. The Arctic has lost 17% of its sea ice in the last 25 years. While these statistics are vital, they fail to capture the human dimension, which is where anthropology plays a critical role.

Anthropology provides deep insight into how climate change affects people's lived experiences, especially in agriculture-dependent societies. Anthropologists like Vedwan and Rhoades (2001) have revealed how farmers perceive climate not merely as fluctuating weather but as a set of risks grounded in experience.

Traditional knowledge systems are deeply embedded in local perceptions of environmental risk, treating climate not as a neutral factor but as one full of constraints and opportunities. Understanding these perceptions is vital for crafting effective adaptation strategies that align with local contexts.

Global climate change is a planetary phenomenon with highly localized effects, making it both a global and a community-level concern. This duality complicates anthropological efforts to capture local experiences within the broader climate discourse. Green (2009) further notes that even minor changes like rising sea levels or increased cyclone intensity can have devastating effects in already vulnerable regions. As Vedwan (2006) stresses, local perceptions of climate must be integrated into global climate policy because they inform everyday decisions that influence resilience.

These perspectives are essential not only to understand how communities experience environmental change but also to guide

sustainable responses for future generations.

Climate Resilience in Adaptation of Women

Women are historically bounded to its agrarian landscape with which they have co-evolved throughout centuries of change (Parikh, 2003). “Poor local women can be especially vulnerable because they are concentrated in high risk areas. They tend to have more limited adoptive capacities and are more dependent on climate-sensitive resources such as local water and food supplies" (IPCC, 2007, p. 9). Today unprecedented challenges including the growing population, environmental hazards emerged in the form of climate changed. The role and activities of women are socially constructed. Climate change or indeed climatic variability is dependent on issues such as wealth, technological power, and access to information all of which are major problematic areas for women. However, women can be key agent of experience of climate change. Women are more dependent for their livelihood on agriculture and natural resource that are threatened by climate change.

Anthropological Perspectives on Climate

Anthropology is ideally situated to identify, analyze and address human dynamics at the core of this global environmental problem (Lahsen, 2007). Anthropology has wealth of knowledge on how people deal with extreme event associated with the environmental degradation as the problem due to impending climate change may not be new for anthropologists (Milton, 2008). For that, we need to bring attention to the knowledge we already possess on how people cope with the famine, flood, and conflicts, on how people live in uncertainty, etc. (Milton, 2008).

Moreover, anthropologist have more works in this area but are, in turn limited by long standing to focus on grassroots level groups and local populations, commonly leaving the state and other macro dimensions as unexplored backdrops (Lahsen, 2007). There is dearth of analysis of societies' present and potential ways of responding to climate change to climate impacts. How to adapt requires “bottom up” analysis of vulnerabilities to climate change at local level. Anthropology can make important contributions in this area.

From the early ecologists Steward, Rappaport, Vayda, Wolf, and others, environmental anthropology, cultural and political ecology have provided the conceptual tools to examine the complex interplay of culture, society, power, and environment (Lahsen, 2007). It seems that anthropology is well equipped and ready to assume a leadership role accessing the preparedness of human communities to adapt to climate change, projecting the kind of institutional adjustment that will be necessary to protect and promote livelihoods.

Socio-cultural Dimensions of Women's Climate Adaptation

Nepal ratified the Kyoto Protocol on 16 September 2005, with the agreement officially coming into effect on 14 December 2005 (Sharma, 2009). In a symbolic act to underscore the urgency of climate change, the Government of Nepal convened a historic cabinet meeting at Kalapathhar (5,242 meters above sea level) in December 2009, nestled in the Khumbu region near Mount Everest. Nepal's unique geography marked by dramatic topographical diversity and monsoon-driven seasonal fluctuations makes it particularly vulnerable to climatic shifts. Even slight changes in temperature can significantly disrupt the fragile mountain ecosystems, adversely impacting livelihoods and development efforts. Studies show that marginalized populations, such as the poor, women (including single women), indigenous groups, landless families, and the elderly, are disproportionately exposed to food insecurity (Adhikari, 2008). Institutional barriers, both formal and informal, exacerbate this vulnerability. Alarming trends also indicate that Nepal is warming faster than the global average of 0.74°C reported for the twentieth century (IPCC, 2007), with rainfall patterns becoming increasingly erratic, featuring frequent droughts and intense downpours (Shrestha et al., 2000). Understanding how communities perceive and respond to climate variability is critical for effective climate resilience planning.

Integrating farmers' indigenous knowledge into climate change decision-making is essential for crafting effective and context-specific adaptation strategies. Such processes must prioritize inclusivity, drawing from locally grounded ways of knowing, perceiving, and valuing the environment (Poudel, 2012). Climate change disproportionately affects sectors traditionally managed by women, such as paddy farming, tea and cotton cultivation, and small-scale fisheries, intensifying their daily burdens (Parikh, 2003). Rural women, particularly in high-risk areas, face heightened vulnerability due to limited adaptive capacities and reliance on climate-sensitive resources like water and food (IPCC, 2007, 6). Alarmingly, women constitute 70% of the global poor (Rohr, 2006), a disparity rooted in gendered social norms and persistent patterns of exclusion.

Climate change has increased the burden of collecting water, fuel, and food, especially for women, who are disproportionately affected more so when men migrate for work. Declining agricultural yields have led to food shortages and reduced income, heightening social tensions over scarce resources. Water-related disasters like floods, droughts, and landslides are becoming more frequent, threatening the livelihoods of farmers, particularly women in hilly regions. This highlights the need to explore the often-overlooked experiences of men and women

farmers facing the harsh realities of climate variability.

Research Methodology

This study was conducted at rural village 'Agryouli' in Nawalpur district of Nepal which mostly depends on rainfall in agriculture. There were some reasons which considers for selecting that site. Firstly, I selected the Tharu society which mainly depends on natural resource especially subsistence based agricultural society which basically depended on rainfall. Because, the change in rainfall pattern due to climate change mainly affected to the rain-fed agriculture than cannel irrigation based society. Therefore, it was more suitable to me for better understanding of impact of climate change in the agriculture. Secondly, in rural society, women are mainly engage in household activities as well as agriculture for their survival. Therefore, the site was appropriate for dig out women's perception on climate change through the conceptual framework of crop-weather interaction.

Data were collected using a combination of qualitative methods including semi-structured interviews, focus group discussions, and participant observation. A total of 45 informants were interviewed, including 30 women and 15 men, selected through purposive sampling based on their active involvement in agriculture and long-term residence in the village. Criteria for selection included gender, age, and agricultural experience, with particular attention given to women heading households or responsible for key farming decisions.

However, there were some limitations in the research process. As an outsider to the community, there is a possibility of researcher bias during data interpretation. Additionally, gaining access to certain marginalized or less vocal women such as those from lower socio-economic backgrounds or younger age groups posed challenges due to cultural norms and gatekeeping by male family members. These limitations are acknowledged to enhance methodological transparency.

Agryouli Village's Rural Economic Structure

Most of the people in the village are practiced in agriculture for livelihood. Their economy mostly depends on agricultural. In the lower part of the village, people cultivate cereal crops (paddy, maize, wheat). Cash crops (bananas, mangoes, orange) and vegetable (lady's finger, cauliflower, carrot, broccoli, snake gourd and tomato) are grown in the village. Similarly, people tamed cow, buffalo, ox, goat, pig, duck, hen, bees and fish for income or consumption.

Gender Roles in Agricultural Practices

People of Agryouli village depend on traditional farming system. Modern and scientific types of farming system are not used. There is no proper irrigations system

for farming. Traditional types of seeds do not give satisfaction in production. Over the last 10 years, people have seen inconsistent less and rainfall which causes regular shift in time of paddy plantation. Most of the women told that because of the increasing forward shift in farming, local youth migration is seen in the village and the overload of work to women who are engaged in farming. If the seeds are not suitable for seeding, women have to go far away for searching the other seeds. If late rainfall occurred, all the works have to be done in short period. So, women do not get rest in the whole day. After field work, women have to return home and start doing household works. A 42-year-old female respondent, Som Kumari Mahato, articulated:

"Irregular rainfall reduces grain production and income, weakening our decision-making power and increasing household strain. Farmers must invest more labor and cost for crop care, often shifting to maize and chili if paddy is delayed."

The narratives reflect how erratic rainfall patterns have compelled local communities to shift from traditional cereal farming to cash crops. However, women primarily responsible for household food management must often trade these cash crops for cereals to meet daily consumption needs, increasing their workload and stress. Even during the rainy season, altered monsoon patterns and droughts lead to water scarcity, escalating cultivation costs. Crop damage from rising pest infestations further burdens women engaged in daily agricultural labor. As primary caregivers, women struggle to provide meals during poor harvests. Social norms also exacerbate food insecurity, as daughters-in-law typically eat last, often receiving insufficient food.

The study further found that while some families turned to cash crops like maize and chili for faster returns, the lack of guaranteed market access and fluctuating prices made profitability uncertain. Women expressed concern that despite higher crop values, input costs (fertilizer, pesticides, seed) and transport barriers often neutralized economic gains. Quantitative estimates from local cooperatives showed that average household income from vegetables increased by 22% over five years, but net savings remained stagnant due to inflation and unstable buyers.

Climate Change Effects on Agriculture

Climate change profoundly shapes human systems, affecting agriculture, culture, and social dynamics. In Agryouli and nearby regions, farmers have adjusted planting and harvesting schedules in response to erratic weather. Rice, once sown in early June, is now delayed due to prolonged droughts, while maize farming has shifted to new sowing times and hybrid seeds, despite the cultural significance of traditional varieties. Over the past 12 years, increasingly unpredictable rainfall; drier summers and rainless winters

has lowered yields and disrupted livelihoods, eroding cultural practices and seasonal rituals tied to the environment. Som Kumari Mahatto, a 42-year-old informant from Agryouli, expressed:

"In times of drought, the community once united in Sirthan Pooja engaging in collective singing, dancing, cooking, and prayer often followed by much-anticipated rain. However, with time, the ritual declined, and faith in its efficacy diminished, reflecting a broader erosion of traditional practices in the face of changing environmental realities."

The decline of Sirthan Pooja not only signals a spiritual disengagement but also weakens the sense of collective identity, especially for women who traditionally led or prepared for these rituals. Several older women noted that they no longer gather as they once did, reducing intergenerational knowledge transfer and informal community support systems. The ritual had previously served as a cultural anchor for social cohesion and mutual labor sharing, especially in times of agricultural hardship. Its disappearance has left some women feeling isolated and less empowered.

People's understanding of climate is different. Some of them connect it with society and the culture. The event which is held in any place is related to the society, people, their activities and their day to day life. Society and events go side by side. Anyway, people are feeling that the climate is changing. So, we can say that climate change is not only natural phenomenon; it is anthropogenic phenomenon as well.

Before, there was seasonal rainfall and it didn't harm the cultivation, but now, the seasonal rainfall doesn't occur and damages in cultivation. The rainfall pattern is fluctuating and most of the time rainfall is experienced when it is not needed. For example, at the time of harvesting heavily rain fall occur. One of the main causes for the shift in planting and harvesting is climate change. But there are many other causes can be found such as new breeding practices, seed is genetically and new invention in technology. Winter rainfall used to occur 3-4 times and it was very essential for winter crops. Mr. Chunu Ram Mahato of 60 articulated as:

"In my youth, rainfall was predictable in both summer and winter, with winter rain falling 3–4 times, each with its own seasonal effect. The first rains brought cold, the second deepened it, and the third in Magh began warming the weather."

Unseasonal and insufficient rainfall has made farming more labor-intensive, requiring extra effort for plantation, weeding, and protecting crops from disease. In response, communities have shifted from cereal and grain cultivation to vegetable and fruit farming, growing crops like cabbage, cauliflower, papaya, banana, onion, garlic, and carrot. Over the

past decade, rainfall has become increasingly erratic and sometimes arriving before seeds are ready, or so late that seedlings dry out due to lack of water.

Likewise, some farmers in the study area reported that some ponds, springs, taps, streams, canals were drying up and some of them are in the state of disappearing due to low and erratic rainfall. Another informant, 30-year-old Tika Maya Mahatto, commented on the condition of water sources as:

"Around 13 years ago, there was sufficient water in canals with timely rainfall, allowing farmers to irrigate paddy, potato, and wheat fields cooperatively. Farmers would gather in Jestha to repair canals and store water in terraced fields for fertility, ensuring timely paddy transplantation and good yields."

In Agryouli village, farmers' long-term experiences reveal deep insights into shifting seasonal patterns and climate unpredictability. Beyond observing droughts and delayed planting, they interpret these changes as divine punishment for human wrongdoing. Group discussions highlight how erratic rainfall has disrupted the agricultural calendar, delayed paddy planting and reducing yields. Even timely crops face threats from hailstorms during harvest. These challenges, intensified by climate change, place a heavier burden on women, who must manage both household and farming responsibilities under increasing stress.

Conclusions

In conclusion, long-term empirical research with Tarai farmers over the past 25 years underscores the profound and multifaceted impact of climate change on rural agrarian systems, particularly Agryouli village Nawalpur, Nepal. The community has observed critical environmental transformations, including irregular rainfall, altered crop cycles, and diminishing natural resources, which have disrupted traditional farming methods and heightened water insecurity. Women, as primary food producers and consumers, face increased burdens and reduced incomes due to declining resource quality**,** with the poorest among them being the most affected. In response, many farmers have diversified their livelihoods, turning to fisheries, poultry farming, and cash crop cultivation. However, water shortages remain a significant challenge, disproportionately impacting poorer women**,** and exacerbating social inequities, especially for those lacking irrigation infrastructure. These compounded stresses have also led to educational discontinuities, particularly for Tharu girls who leave school to take on domestic responsibilities. Although community cooperation over scarce water resources has emerged, it remains unstable without institutional support. Gender-sensitive adaptation strategies are essential**,** including access to irrigation, financial services, education and training. Importantly,

integrating women's experience-based knowledge into policy and planning, and recognizing women not only as victims but as vital agents of change**,** is key to climate resilience in Nepal and across South Asia.

REFERENCES

Adhikari, J. (2008). *Food crisis in Karnali: A historical and political economy perspectives*. Martin Chautari.

Central Bureau of Statistics. (2021). *Population monograph of Nepal*. Kathmandu.

Crate, S., & Nuttall, M. (2009). Introduction: Anthropology and climate change. In S. Crate & M. Nuttall (Eds.), *Anthropology and climate change: From encounter to action* (pp. 12–35). Left Coast Press.

Denton, F. (2002). Climate change vulnerability, impact and adaptation: Gender and development, 10(2), 10–19.

Food and Agriculture Organization. (2011b). *Why gender?* https://www.fao.org/gender-home/gender-why/why-gender/en/

Giri, K., & Ojha, H. R. (2022). Gender and climate change adaptation: Policy and institutional analysis from Nepal. *Climate and Development, 14*(1), 42–53. https://doi.org/10.1080/17565529.2021.1899352

Green, D. (2009). Opal Waters Rising Sea: How socio-cultural inequality reduces resilience to climate change among Indigenous Australians. In S. Crate & M. Nuttall (Eds.), *Anthropology and climate change: From encounters to action* (pp. 218–225). Left Coast Press.

Intergovernmental Panel on Climate Change (IPCC). (2007). *Climate change 2007: Synthesis report. Contribution of working groups I, II and III to the fourth assessment report of the Intergovernmental Panel on Climate Change*. IPCC.

Karki, M. B. (2007). Nepal's experience in climate change issues: Paper presented at the Fourteen Asia Pacific Seminars on Climate Change, Sydney, Australia.

Kawasoti Municipality. (2024). *Ward profile of Agryouli,* Nawalpur, Nepal.

Lahsen, M. (2007). Anthropology and trouble of risk society. *Anthropological News*, 48(4), 9–10.

Milton, K. (2008). Anthropological perspective on climate change. *Australian Journal of Anthropology, 19*(1), 57–58.

Parikh, J. (2003). Is climate change a gender issue? UNDP.

Poudel, J. M. (2012). Testing farmers' perception of climate variability: A case study from Kirtipur of Kathmandu Valley. *Journal of Hydrology (Special Issue)*, 30–35.

Rohr, U. (2006). Gender and climate change. *Tiempo*, 59, 3. http://www.tiempocyberclimate.org

Sharma, K. P. (2009). *Climate change: Trends and impacts on livelihood of people*. Jalsrot Vikas Sanstha.

Smith, A. O. (2009). Climate change and population displacement: Disasters and diasporas in twenty-first century. In S. Crate & M. Nuttall (Eds.), *Anthropology and climate change: From encounter to action* (pp. 116–136). Left Coast Press.

Thapa, S., Bista, R., & Gurung, A. (2023). Climate resilience through local gendered knowledge: Lessons from Nepal. *Environmental Research Letters, 18*(3), 315–328. https://doi.org/10.1088/1748-9326/acb45e

UNDP. (2010). *Gender, climate change and community-based adaptation*. United Nations Development Programme.

United Nations Framework Convention on Climate Change. (n.d.). *Article 1*. UNFCCC.

Vedwan, N. (2006). Culture, climate and the environment: Local knowledge and perception of northwestern India. *Journal of Ecological Anthropology, 10*, 4–18.