



INTERNATIONAL JOURNAL OF FORESTRY AND ECOSYSTEM (IJFE)

VOLUME 1 ISSUE 1 (2023)



PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA

Climate Change Discourse in Nepal: Phenomenological Analysis

Dipesh Tandukar^{1*}, Khilanath Luitel², Shyam Maharjan²

Article Information

Received: August 20, 2024

Accepted: September 23, 2024

Published: December 31, 2024

Keywords

Afforestation, Climate Change, Mitigation Strategies, Policy Frameworks, Sustainability

ABSTRACT

Climate change, which is characterized by notable variations in weather patterns mostly caused by greenhouse gas emissions and other human activities, poses enormous difficulties to ecosystems and societies around the world. This study investigates the effects of climate change in Nepal, a country that is highly dependent on agriculture and is especially vulnerable to abrupt changes in the weather. This study examines the perspectives and experiences of regional climate experts using a phenomenological research approach in order to comprehend the intricate effects of climate change and evaluate the effectiveness of existing mitigation measures. The results show that extreme weather events, like unpredictable rainfall and rising temperatures, are signs of climate change and cause disruptions to agricultural productivity and a rise in food inequality. The study brings to light the shortcomings of current policy frameworks and emphasizes the urgent need for a comprehensive strategy that incorporates community- and government-based initiatives. With its many advantages—such as improved soil, temperature control, and carbon sequestration—afforestation is shown to be a feasible approach. The study supports a coordinated approach to increase resistance and advance sustainability that combines short-term, localized measures with long-term legislative initiatives. Nepal can address the urgent difficulties posed by climate change and move towards a sustainable future by coordinating government and grassroots efforts. This study encourages a comprehensive strategy to successfully reduce the effects of climate change that combines strong regulations with nature-based alternatives.

INTRODUCTION

Climate can be understood as the distribution of weather patterns over time, which may occur under constant external conditions, varying external conditions, or relative to systems with behavior influenced by these changing conditions (Pielke, 2004).

A major ecological and social concern of the twenty-first century that has a profound effect on both communities and individuals is climate change (Dietz *et al.*, 2020). The term “climate change” describes modifications to climatic patterns that are mostly caused by greenhouse gas emissions from human and natural sources (Fawzy *et al.*, 2020). Climate change refers to a substantial variation from the usual weather patterns of a particular area, region, or the entire globe. These variations can be seen in average temperature, wind patterns, and precipitation (Aba *et al.*, 2017). Global warming brought on by human activity has already risen by around 1.0 °C over pre-industrial levels (Fawzy *et al.*, 2020). The global temperature is predicted to climb by up to 2 °C by 2100, in line with the continued growth in greenhouse gas emissions (Malhi *et al.*, 2021). Unpredictable occurrences including rising global temperatures, more intense droughts, floods, and cyclones, decreased agricultural output, a decline in biodiversity, and changing seasons are caused by climate change (Aba *et al.*, 2017). Climate change is influenced by global warming, which also has an impact on other facets of life, such as disaster management and social behavior, all of which have an effect on regional development (Faradiba & ZET, 2020). The frequency of natural disasters like storms,

floods, wildfires, and droughts. Important industries include infrastructure, food, water, health, ecosystems, and human habitats which are particularly vulnerable to the impacts of climate change (Fawzy *et al.*, 2020). A major worldwide danger to food and nutritional security is climate change (Malhi *et al.*, 2021).

One of the most important global issues of our day is climate change, which has a profound impact on communities, economies, and ecosystems all around the world. The conversation about climate change is nevertheless fragmented and frequently marked by differing degrees of comprehension and interpretation, even in spite of the growing knowledge of its effects. Because it may result in differences in how climate change is understood, dealt with, and reduced, this discrepancy is very worrisome.

This divided debate can have serious consequences in places like Nepal, where the effects of climate change are disproportionately severe in comparison to the country's contribution to global greenhouse gas emissions. Ineffective research and resource allocation, along with a lack of a comprehensive understanding of climate change, impede the development and execution of effective policies. Because of this, the country is more susceptible to the negative consequences of climate change, which include rising temperatures, unpredictable rainfall patterns, and a rise in the frequency of natural disasters. These effects together put the country's already delicate ecosystems and socioeconomic stability in risk. A critical analysis of the discourse surrounding climate

¹ FHEAL, Nepal

² Nepal Kasthamandap College, Nepal

* Corresponding author's e-mail: dipeshandukar33@gmail.com

change is desperately needed in light of these difficulties, especially in sensitive areas like Nepal. In order to improve mitigation and adaptation methods that are more successful and suitable for the local environment, a phenomenological approach to this analysis might yield insightful information about how local people perceive and experience climate change.

This research's primary objective is to understand the current situation of climate change in Nepal and to examine the importance of holding discussions on this critical issue to promote awareness, drive policy changes, and encourage collective action for sustainable development and environmental protection.

LITERATURE REVIEW

Climate change refers to the impacts of human activities such as burning fossil fuels, deforestation, and other actions that increase greenhouse gases in the atmosphere, thereby altering the planet's climate. According to the United Nations Framework Convention on Climate Change (UNFCCC, 1992), climate change includes changes in the global atmospheric composition that are directly or indirectly linked to human actions, beyond natural climate variability observed over similar time periods.

The primary cause of climate change is the increase in greenhouse gas concentrations in the Earth's atmosphere, predominantly due to human activities. Burning fossil fuels like coal, oil, and natural gas releases substantial amounts of CO₂, methane, and nitrous oxide, which trap heat and contribute to global warming (World Bank Group, 2022). Deforestation, driven by logging, urbanization, and agriculture, results in the release of stored carbon back into the atmosphere, further increasing greenhouse gas concentrations (ADB, 2015). Industrial processes also contribute to greenhouse gas emissions, with the production of chemicals, steel, and cement releasing strong synthetic greenhouse gases like hydro fluorocarbons (HFCs), which have a much higher warming potential than CO₂ (ADB, 2015).

Agricultural activities further exacerbate climate change. The use of synthetic fertilizers releases nitrous oxide, a potent greenhouse gas. Additionally, methane emissions from livestock, particularly cattle, and rice cultivation in flooded paddies are significant contributors (World Bank Group, 2022).

The term "global warming" refers to the gradual increase in Earth's average surface temperature, primarily driven by the atmospheric buildup of greenhouse gases such as CO₂, methane (CH₄), and nitrous oxide (N₂O). These gases, emitted through burning fossil fuels, deforestation, and other human activities, cause the greenhouse effect by trapping heat. This temperature rise leads to altered precipitation patterns, increased frequency and intensity of heatwaves, rising sea levels, ecosystem changes, and impacts on socioeconomic systems and human health (ADB, 2015).

Climate change involves long-term shifts in weather

patterns from the tropics to the poles, posing a global threat and affecting various sectors (Abbass *et al.*, 2022). While natural processes like solar variations and volcanic eruptions contribute to climate change, the predominant causes of current irregular shifts are substantial greenhouse gas emissions and unsustainable human activities. Over the past century, Earth's average temperature has increased by 1.5°F, with projections suggesting a rise of up to 8.6°F in the next century (Sapkota & Rijal, 2016).

Human activities are the primary drivers of global climate change, although natural processes also play a role. The main human-induced causes include changes to the land surface, ozone layer depletion, and continuous emissions of greenhouse gases and aerosols into the atmosphere (Aba *et al.*, 2017).

Nepal, situated in the Hindu Kush Himalayan region, is particularly vulnerable due to its rapid rate of temperature increase compared to the global average. Major sectors in Nepal, including agriculture, hydropower, food security, and tourism, are significantly affected by climate change. The nation's erratic topography, dependence on agriculture, and reliance on hydroelectric power heighten its vulnerability. It is anticipated that climate-related disasters such as landslides, droughts, and floods will increase, impacting the economy and the livelihoods of its people (Sapkota & Rijal, 2016).

Weather variations pose serious risks to food production and availability, particularly in regions where agriculture is a major economic activity. Climate change also disrupts ecosystems and accelerates species extinction, threatening biodiversity. The impact of climate change on biodiversity spans individual organisms, populations, species, communities, ecosystems, and biomes (Bellard *et al.*, 2012). Furthermore, climate change exacerbates public health issues by increasing the risk of food, water, and vector-borne diseases and contributing to antibiotic resistance. The global tourism industry is also facing a decline as many tourist destinations become less viable due to climate change (Abbass *et al.*, 2022).

These changes have immediate effects on communities worldwide, especially those reliant on agriculture, which face increased food insecurity and economic instability. The overall quality of life is impacted by the growing burden on public health systems, environmental degradation, and biodiversity loss (Abbass *et al.*, 2022).

Nepal's mountainous terrain makes it especially vulnerable to rapid changes in altitude and warming patterns. These impacts threaten critical economic sectors such as energy, tourism, and agriculture, as well as the health and well-being of the population (Karki *et al.*, 2009). Due to its location in the heart of the Himalayas, Nepal must take a leading role in both national and international climate change mitigation efforts (Karki *et al.*, 2009).

To mitigate climate change effectively, halting the use of fossil fuels and the generation of methane and chlorofluorocarbons would be ideal. However, these options are impractical without the development of

alternative technologies (Aba *et al.*, 2017). Carbon sinks, such as forest plantations, are vital for reducing atmospheric greenhouse gas emissions (Bäckstrand & Lövbrand, 2006). Large-scale tree planting projects can significantly reduce climate change impacts by absorbing CO₂ through expansive canopies and biomass (Aba *et al.*, 2017).

Trees help mitigate climate change by affecting the hydrological cycle, withstanding windstorms and desertification, preserving soil through deep root systems, supporting biodiversity, providing renewable energy, and sequestering carbon. Integrating trees into public spaces, urban areas, and agricultural systems can reduce CO₂ emissions, enhance food production, and alleviate poverty and food insecurity (Aba *et al.*, 2017). However, in drier and warmer regions, forest restoration might increase the risk of fires. Climate-smart approaches such as grassland recovery or wetlands restoration may be more suitable, offering similar climate benefits while creating less flammable landscapes (Hermoso *et al.*, 2021). In light of the growing vulnerabilities and negative consequences of climate change, particularly in Nepal where agriculture is crucial to the economy, developing and implementing adaptation strategies is essential. Effective strategies include accessing financial resources, diversifying income and agricultural practices, spatial adaptation, climate-smart agriculture, sharing resources and social action, utilizing traditional and local knowledge, and securing food and water. Although these strategies are often temporary solutions, integrating them into national plans is crucial (Rijal *et al.*, 2022).

Renewable energy is vital for both mitigating and adapting to climate change, especially in sensitive countries like Nepal. Although renewable energy currently accounts for only about 3% of Nepal's total energy consumption (with conventional sources making up roughly 70%), there is significant potential for expansion. Increased use of renewable energy can enhance adaptation plans by saving time, providing alternative income sources, and improving local employment opportunities, health, and education (Acharya, 2021).

The impacts of climate change on drinking water highlight the urgent need for action-based research and specific initiatives tailored to regional needs (Sharma *et al.*, 2021). Countries like Nepal, which are poor, developing, landlocked, and island nations, are particularly vulnerable to the effects of climate change (Manandhar *et al.*, 2011). Recognized as one of the greatest challenges of the modern era, climate change requires comprehensive research and urgent action (GC & Yeo, 2020).

Climate change is linked to shifts in agricultural practices, variations in crop yields, and an increase in the frequency of disease pests (Rai & Gurung, 2005). Additionally, climate change affects agriculture from the perspective of food security (Porter *et al.*, 2014). The concept of "climate change adaptation," which involves local-level adjustments to address changes under specific socioeconomic constraints, is relatively new.

While research on adaptation has expanded, assessing determinants remains rare (Piya *et al.*, 2013).

Nepal is among the most climate change-sensitive nations (Mainali & Pricope, 2017), with its vulnerability increasing due to various socioeconomic and physical limitations (Manandhar *et al.*, 2011). A trend analysis from 1975–2005 revealed an average annual temperature increase of 0.06°C and a mean monthly precipitation decrease of 3.7 mm per decade. Projected scenarios suggest an annual mean temperature rise of 1.3–3.8°C by 2060 and a 10%–20% decrease in annual average precipitation (MoPE, 2016). Given Nepal's high vulnerability, comprehensive research on climate change is urgently needed (GC & Yeo, 2020).

The world is studying climate change, the biggest danger of the twenty-first century, in great depth to determine its negative effects and mitigation techniques. Nepal's understanding of climate change is behind that of industrialized nations due to its varied geographic, altitudinal, socioeconomic, and biological characteristics (Tripathi & Pandey, 2022). Farmers in Nepal are facing unique changes such as variations in temperature, rainfall, weed dynamics, pest outbreaks, hazardous events, season length, weather unpredictability, production and productivity losses, food insecurity, soil degradation, and biological losses. Adaptive methods at the local and governmental levels have been proposed; however, their effectiveness varies depending on the context (Tripathi & Pandey, 2022).

Prioritizing local, site-specific adaptive solutions is crucial, and financial concerns need to be addressed. Agroforestry, crop rotation, timing changes, modern technology, crop selection and cultivation, weather forecasting, soil and water conservation, and off-farm interactions are key adaptations. Factors such as the age, gender, level of education, and outreach of the head of the household, as well as cash flow and resource availability, influence adoption rates (Tripathi & Pandey, 2022).

Climate change, combined with population growth and changing lifestyles, exacerbates global water and food crises, increasing cycles of civil unrest and conflict (Kwame *et al.*, 2022). Rising temperatures have led to deadly heat waves, while changes in rainfall patterns have caused severe flooding and droughts. These harsh conditions significantly impact water security and agricultural productivity. Insufficient data and knowledge hinder local communities from effectively addressing the severe effects of climate change on food and water resources (Kwame *et al.*, 2022).

MATERIALS AND METHODS

A phenomenological research design was used in this qualitative study to explore the conversation about climate change. This method was selected because it is capable of recording and examining the complex viewpoints of those who are actively involved in climate-related issues. Four participants in the study, all of whom are engaged in climate change issues in Nepal, were interviewed. The

purpose of focusing on these four people was to collect a wide range of perspectives about their perceptions of and experiences with climate change.

These in-depth interviews served as the primary method of gathering data for the study, enabling the researchers to gain subjective viewpoints on the perception of the effects of climate change on day-to-day living. The interviews followed a thorough coding and transcription process to guarantee that every relevant detail was precisely recorded. Thematic analysis was then applied to this data in order to find recurrent themes and patterns.

RESULTS AND DISCUSSION

Human-Induced Climate Change

Climate change is increasingly manifesting in various ways across Nepal, particularly through extreme weather patterns that are disrupting daily life. An interview with a climate change expert from Kathmandu sheds light on the gravity of these issues. The interviewee shared:

“What I have understood about climate change is that it’s a natural process, but currently, the change in climate that we are feeling is human-induced. Mostly because of excessive greenhouse gasses in the atmosphere, and that has caused a lot of negative impacts in the world.”

From this statement, it becomes evident that there is a strong awareness of the anthropogenic factors contributing to climate change, particularly the role of greenhouse gasses. Despite this awareness, the interviewee highlighted significant local impacts, such as the urban heat island effect and the agricultural challenges resulting from unpredictable rainfall patterns. The interview further explored the perceived role of government and community actions in mitigating climate change. The interviewee expressed concern over the government’s lack of proactive measures:

“It’s mostly reliant on the government because the government can still have proper tracking systems... But what we can do at a very community level is maybe find a way to install certain systems that keep them alert from different catastrophes... Trees are the answer, so whether it’s a city or rural spaces, what cools down the locality are trees and pocket, native forests.”

From this statement, a suggestion was given that there needs to be a focus to plant trees and develop local forests points to a practical, nature-based solution that can help mitigate some of the impacts of climate change. There is a need for an integrated approach that combines government-led policies with community-driven efforts. By prioritizing both immediate, localized actions and long-term, strategic planning, Nepal can better adapt to the ongoing challenges posed by climate change.

Shifting Weather Patterns

Weather patterns have been drastically changed by climate change, severely disrupting people whose agricultural activities depend on rainfall. This disturbance impacts agricultural output, which in turn affects the availability and cost of food. It is not just a minor inconvenience,

but a significant challenge. Farmers, who are essential to the production of food, have a harder time growing crops because of erratic and insufficient rainfall. The consequences of this problem are not limited to people living in rural areas; metropolitan populations are also affected. Food production problems lead to increased food costs and restricted food availability, which directly affects people who live in urban areas. The relationship between urban food security and agricultural health is highlighted by this cascading impact. In this context, a climate change professional shared:

“When we talk about the impact of climate change, we go back to the basics—like the farmers who provide us with food. When they don’t receive proper rainfall, they can’t provide food to the community, and even the food that does grow takes longer to reach the city, causing prices to rise. Climate change impacts everything from small to large aspects of community life, affecting people’s livelihoods and lifestyles... This is something we can prevent but are not currently addressing.”

This statement underscores the pressing need to address the root causes of climate change and mitigate its impacts. Despite the recognition of these challenges, effective actions to counteract the adverse effects have been insufficient. The expert further emphasized that meaningful change must begin at the individual and community levels adding:

“...addressing climate change has to start with us. We need to make small changes, like addressing pollution... additionally, planting trees is a common and effective action...planting one tree is a step towards helping nature...”

This viewpoint emphasizes how crucial it is for local initiatives to work in unison with larger government initiatives. The creation of forested areas, or reforestation, appears to be a particularly promising tactic. Planting trees offers several environmental advantages, including lowering local temperatures, improving soil health, and promoting biodiversity, in addition to aiding in the sequestration of carbon. Consequently, afforestation initiatives are promoted as a successful strategy for halting climate change. Such natural solutions can be incorporated into larger initiatives for mitigating climate change, providing a practical means of addressing local and global environmental issues.

Community Challenges and the Call for Broader Action

The effects of climate change are becoming increasingly apparent, particularly through irregular weather patterns that are disrupting life in various regions. The interviewee also discussed how these changes have affected daily life in the community:

“..., the heavy rainfall makes travel difficult, especially in the cities where the runoff is excessive. Yes, there was runoff in the past too, but now it is just severe. Water clogs everywhere. That is something very common nowadays. Besides that, the irregular rainfall has led the farmers to be in a state of turmoil because they don’t exactly know

when the rain is going to fall, and even when it does, there is heavy rainfall. So, their lives are greatly affected.”

From the above statement, we can understand that both urban and rural residents are suffering from the impacts of climate change and it is not just a single community that is affected by it. There might be regions that are affected more by the excessive rainfall but the reality is every individual and every community is affected just as much. And the unpredictability of the weather has especially impacted the daily lives of every individual and this is inferred to be more problematic to the farmers who rely on the rainfall. The interviewee also pointed out some of potential solutions but a strong belief for collective action was prioritized.

“... trees can be an answer to this. Having lots of trees should help with the runoff issues and the heatwaves, but what I see is that this is not enough. There needs to be more done. There needs to be action at both the national and international levels. Climate change is not just an issue of our country. We need to do more. And this has to begin with us, of course, but this requires broader involvement. There needs to be change from the policy level if we want to see any improvement.”

The statement illustrates that there needs to be a multifaceted approach for combating climate change, wherein small-scale initiatives at local level like planting trees are necessary but insufficient in and of itself. Since climate change is a worldwide issue that requires extensive policy changes and greater involvement to produce major improvements, the interviewee suggests coordinated efforts at both the national and international levels. In addition to the appeal for stricter laws and greater international collaboration to lessen the effects of climate change, this perspective emphasizes it is important to tackle these issues as soon as possible. There is a need for greater action to ensure that this issue doesn't get out of hand.

CONCLUSION

This study highlights the significant impact of climate change on Nepal, emphasizing its urgent and multifaceted nature. Key findings reveal that unpredictable rainfall patterns and unseasonal weather severely disrupt agricultural productivity, leading to food scarcity and economic instability for local communities. Regional experts express a heightened awareness of the need for decisive climate action; however, current responses are often fragmented and insufficient.

The research underscores the necessity of a coordinated approach that integrates comprehensive government policies with actionable community-driven initiatives. Notably, afforestation and the establishment of green spaces emerge as effective strategies for mitigating climate impacts. These initiatives not only reduce local temperatures but also enhance community resilience and promote biodiversity, addressing both immediate and long-term environmental challenges.

The findings also stress that combating climate change is a collective responsibility, requiring collaboration across various sectors, including local communities, governmental bodies, and international partners. Effective climate action in Nepal necessitates a blend of long-term strategic planning and localized responses tailored to regional needs.

Moreover, ongoing education and community engagement are vital for fostering resilience and enhancing local capacity to adapt to climate change. By improving communication and coordination among stakeholders, Nepal can develop a cohesive response to climate challenges. Ultimately, integrating proactive community efforts with robust government actions will strengthen Nepal's ability to address climate change, ensuring both environmental and economic stability for its people.

REFERENCES

- Abbass, K., Qasim, M. Z., Song, H., Murshed, M., Mahmood, H., & Younis, I. (2022). A review of the global climate change impacts, adaptation, and sustainable mitigation measures. *Environmental Science and Pollution Research*, 29(28), 42539-42559. <https://doi.org/10.1007/s11356-021-16196-9>
- Acharya, S. (2021). Role of renewable energy technologies in climate change adaptation and mitigation: A brief review from Nepal. *Renewable and Sustainable Energy Reviews*, 151, 111524. <https://doi.org/10.1016/j.rser.2021.111524>
- Asian Development Bank. (2015). *Partnership for inclusive development*. <https://doi.org/10.22617/FLS157739>
- Bäckstrand, K., & Lövbrand, E. (2006). Planting trees to mitigate climate change: Contested discourses of ecological modernization, green governmentality, and civic environmentalism. *Global Environmental Politics*, 6(1), 50-75. <https://doi.org/10.1162/glep.2006.6.1.50>
- Dietz, T., Shwom, R. L., & Whitley, C. T. (2020). Climate change and society. *Annual Review of Sociology*, 46(1), 135-158. <https://doi.org/10.1146/annurev-soc-121919-054614>
- Faradiba, F., & ZET, L. (2020). The impact of climate factors, disaster, and social community in rural development. *Journal of Asian Finance, Economics and Business*, 7(9), 707-717. <https://doi.org/10.13106/jafeb.2020.vol7.no9.707>
- Fawzy, S., Osman, A. I., Doran, J., & Rooney, D. W. (2020). Strategies for mitigation of climate change: A review. *Environmental Chemistry Letters*, 18, 2069-2094. <https://doi.org/10.1007/s10311-020-01059-w>
- GC, A., & Yeo, J. H. (2020). Perception to adaptation of climate change in Nepal: An empirical analysis using multivariate probit model. *Science*, 2(4), 87. <https://doi.org/10.3390/sci2040087>
- Hermoso, V., Regos, A., Morán-Ordóñez, A., Duane, A., & Brotons, L. (2021). Tree planting: A double-edged sword to fight climate change in an era of megafires. *Global Change Biology*, 27(13), 3001-3003. <https://doi.org/10.1111/gcb.15697>

- Karki, M., Mool, P., & Shrestha, A. (2009). Climate change and its increasing impacts in Nepal. *The Initiation*, 3, 30-37. <https://doi.org/10.3126/init.v3i0.2423>
- Kwame, A. R., Danny, S. M., & Memory, R. (2022). The threats of climate change on water and food security in South Africa. *American Journal of Environment and Climate*, 1(2), 73-91. <https://doi.org/10.1007/s10584-015-1459-9>
- Mainali, J., & Pricope, N. G. (2017). Geospatial datasets in support of high-resolution spatial assessment of population vulnerability to climate change in Nepal. *Data in Brief*, 12, 459-462. <https://doi.org/10.1016/j.dib.2017.04.024>
- Malhi, G. S., Kaur, M., & Kaushik, P. (2021). Impact of climate change on agriculture and its mitigation strategies: A review. *Sustainability*, 13(3), 1318. <https://doi.org/10.3390/su13031318>
- Manandhar, S., Vogt, D. S., Perret, S. R., & Kazama, F. (2011). Adapting cropping systems to climate change in Nepal: A cross-regional study of farmers' perception and practices. *Regional Environmental Change*, 11, 335-348. <https://doi.org/10.1007/s10113-010-0137-1>
- Ministry of Population and Environment. (2016). *Nationally determined contributions*. Government of Nepal.
- Piya, L., Maharjan, K. L., & Joshi, N. P. (2013). Determinants of adaptation practices to climate change by Chepang households in the rural Mid-Hills of Nepal. *Regional Environmental Change*, 13, 437-447. <https://doi.org/10.1007/s10113-012-0359-5>
- Porter, J. R., Xie, L., Challinor, A. J., Cochrane, K., Howden, S. M., Iqbal, M. M., ... & Travasso, M. I. (2014). Food security and food production systems. In C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, ... & L. L. White (Eds.), *Climate change 2014: Impacts, adaptation, and vulnerability* (pp. 485–533). Cambridge University Press.
- Rai, S. C., & Gurung, A. (2005). Raising awareness of the impacts of climate change: Initial steps in shaping policy in Nepal. *Mountain Research and Development*, 25(4), 316–320. [https://doi.org/10.1659/0276-4741\(2005\)025\[0316:RAOTIO\]2.0.CO;2](https://doi.org/10.1659/0276-4741(2005)025[0316:RAOTIO]2.0.CO;2)
- Rijal, S., Gentle, P., Khanal, U., Wilson, C., & Rimal, B. (2022). A systematic review of Nepalese farmers' climate change adaptation strategies. *Climate Policy*, 22(1), 132-146. <https://doi.org/10.1080/14693062.2021.1992474>
- Sapkota, R., & Rijal, K. (2016). Climate change and its impact in Nepal. *Tribhuvan University Journal*.
- Sharma, S., Baidya, M., Poudel, P., Panthi, S. R., Pote-Shrestha, R. R., Ghimire, A., & Pradhan, S. P. (2021). Drinking water status in Nepal: An overview in the context of climate change. *Journal of Water, Sanitation and Hygiene for Development*, 11(6), 859-866. <https://doi.org/10.2166/washdev.2021.143>
- Tripathi, A., & Pandey, M. (2022). Climate change: Its causes, inflicted hazards, adopted strategies and opportunities in agriculture of Nepal: A detailed review. *American Journal of Environmental Economics*, 1(1), 1-12. <https://doi.org/10.1007/s10584-015-1459-9>
- World Bank Group. (2022). *Country climate and development report*. <https://doi.org/10.1596/978-1-4648-1817-5>