Migration as a Pathway to Climate Resilience? Precarities, Adaptive Capacity, and Wellbeing in Denchukha-Thimphu Migration Corridor

PEMA CHODEN & TSHERING CHODEN[1]

Abstract: This article examines migration as a potential pathway to climate resilience in Bhutan focusing on the Denchukha–Thimphu corridor. Environmental stressors such as erratic rainfall, declining crops, and water scarcity threaten rural livelihoods pushing farmers to move to Thimphu, yet migration remains largely absent from national adaptation plans. Using Scoones' Sustainable Livelihood Framework and a mixed-methods tracer study incorporating surveys, interviews, and rapid ethnography, the research examines how migration emerges as an adaptive strategy, providing income diversification and expanded social networks, but it also produces trade-offs, including labour loss and social isolation. The findings demonstrate that migration redistributes adaptive capacity rather than simply increasing it, highlighting the importance of equitable, context-specific policies that

[1] Pema Choden holds a MSc in Global Environment and Development from the University of Copenhagen and University of Warsaw with a specialization in Sustainable Environmental Development under the Erasmus Mundus Scholarship. She belongs to the first cohort of Anthropology at Royal Thimphu College. Currently, she is working with a startup company on green energy transition as a Sustainability and Impact Analyst. Tshering Choden is a master's student specializing in Criminology at Murdoch University and a certified legal practitioner in Bhutan. She holds a Bachelor of Law from Jigme Singye Wangchuck School of Law, Paro Bhutan. Her legal expertise informs her scholarship and underpins her commitment to justice. Guided by this ethos, she is particularly interested in the intersections of environmental change, livelihoods, and human mobility. Pema Choden can be contacted at: choedayy23@outlook.com.

Rig Tshoel, Volume 8, Number 1 (2025): 86-112
Special Issue: Migration, Climate Change, and Social Change

integrate mobility into broader climate adaptation and development strategies.

Keywords: climate change, migration, adaptive capacity, rural livelihoods, remittances, precarity, climate resilience

Introduction: Situating Climate Change and Migration in Bhutan

Bhutan is becoming increasingly aware of the effects of climate change. Globally, climate change has exacerbated environmental challenges such as warming, extreme weather events, and agricultural stress, and Bhutan is no exception to experiencing this. In Bhutan, agriculture and, to a lesser extent, pastoralism, are primary livelihoods for many local communities. This leaves them vulnerable to climate change impacts and causes significant crop losses, affecting food security and prompting shifts in cropping patterns (Katel et al., 2024). Livelihoods that are heavily dependent on agriculture are increasingly at risk due to climate change; hence, migration due to these long-term stressors is becoming a consequence of vulnerabilities and in some contexts, a response to environmental stress (Adger et al., 2020). However, Bhutan has very scarce resources and equally scant literature through which to understand the relationship between climate change impacts and migration. This research contributes to filling this gap through a tracer study to examine local experiences and perspectives of climate change impacts and their influence on migration decisions, trends, and consequences.

While migration has always been integral to Bhutan's history, more recent migration trends include extensive youth outmigration to urban areas like Thimphu and Phuntsholing or internationally to Australia, New Zealand,

Canada, and the US. Simultaneously, the effects of anthropogenic climate change, are increasingly undermining agricultural productivity and prompting shifts in crop selection and farming techniques (Paldon et al., 2025). Despite overlapping patterns, migration and climate change are studied as separate issues with rare appearances in climate reports and national policy. For example, Bhutan's National Adaptation Plan (2023) mentions 'migration' only once, which is in relation to wildlife, and not human mobility. Similarly, a government report on migration (NSB, 2018) mentions climate change just once, and only in the context of sustainability, not as a factor influencing human movement (Paldon et al., 2025).

Climate change-induced water scarcity, along with other manifestations, is a significant driver of migration, influenced by a complex interplay of socioeconomic, environmental, and policy dimensions (Adger et al. 2020). While migration may reduce vulnerability by increasing household income through remittances, diversifying income sources and social networks, the benefits are not guaranteed. Migration entails financial costs, social separation, and, for some, precarious employment in destination areas. In some cases, migration may exacerbate inequalities by privileging households with the resources to move while leaving the poorest trapped in place.

In Bhutan, migration has been viewed as evidence of government failure in dominant policy-circles. However, migration is a living reality, so the significant question is under what conditions of climate change could it also be seen as a form of adaptation, as potentially part of the solution rather than merely a problem to be addressed (Paldon et al., 2025). Recent scholarship has reframed migration as a form of adaptive response in the context of climate change, and emerging evidence further shows that migration can improve adaptive capacity of vulnerable populations, challenging the view that it is solely a problem to be managed (Adger et al., 2020). In Bhutan's policy

discourse, rural–urban migration is often framed as a threat to rural vitality, linked to the phenomenon of 'gungtong' or empty rural houses (Wangchuk et al., 2023). The case of Denchukha, which we take up in this article, is somewhat different and involves complex dynamic. Denchukha does not exhibit 'gungtong' as a dominant phenomenon. Migration has not led to significant depopulation but to a circulation of people, remittances, and ideas that, while creating vulnerabilities, also open adaptive possibilities. This challenges dominant narratives and suggests the need for more place-specific understandings of mobility. In this article, we will use the Scoones' Sustainable Livelihood Framework (SLF) (Natarajan et al., 2022) to also analyze the complex factors influencing livelihoods due to climate change, and how it may trigger internal migration. The multidimensional framework examines how natural, human, social, financial, and physical capital interact to shape a household's resilience and migration decision, highlighting the application of the framework in diverse contexts. Various research methods were used including indepth semi-structured interviews/life histories, household surveys and rapid ethnography to collect the data, and further analysed using NVivo-software and Excel.

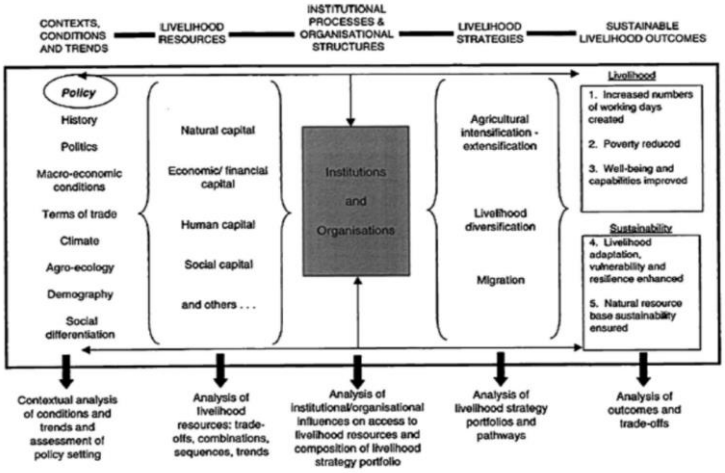


Figure 1: Scoones' Sustainable Livelihood Framework

Study Area

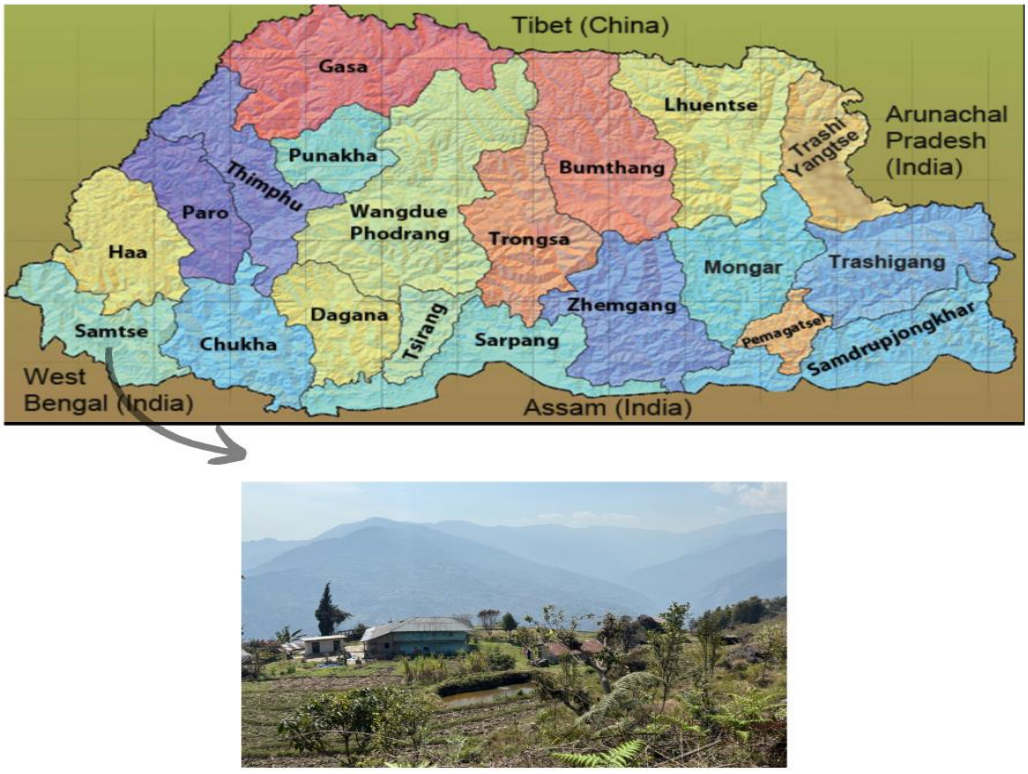


Figure 2: visual representation of the study area. Courtesy: authors

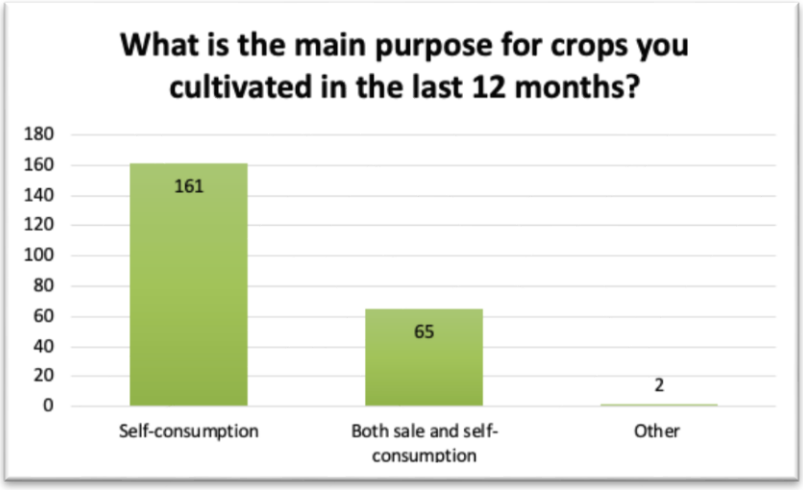
This research takes on a corridor approach to study migration by linking an origin to a destination place, namely Denchukha in Samtse district and Thimphu. Denchukha is a rural region located in the Southeastern pocket of Bhutan and has experienced significant climate-related challenges; such as landslides, flash floods, irregular rainfall patterns, and increasing temperatures. Many people have moved out of Denchukha in search of opportunities with Thimphu being a common destination for these migrations. These two sites thus form a migration corridor that is central in understanding how climate change exacerbates migration and precarities.

Living with Precarity: Environment, Livelihoods, and Everyday life in Denchukha

According to local narratives, life in Denchukha has long been shaped by remoteness, physical hardship, and subsistence agriculture. For the longest time, there were no roads, and the villagers had to walk for up to 3 days to trade and to secure their basic needs. The villager Zangmo recalled, "There weren't any roads in the past; we used to walk to school. Everyone in the village used to practice agriculture." Agriculture included labour-intensive work such as fetching water from long distances, often carried in bamboo baskets on their backs. The community lacked access to modern health services and facilities. Due to the lack of roads and transportation, people had to travel by foot for days to visit the market and sell their produce. Karma recounted, "We used to carry oranges for three days till Samtse. I remember carrying 180 pieces of oranges for which I only got around Nu 300. Nowadays, it only takes a few hours." These challenges constrained livelihood patterns, which were closely tied to the land and reliant on traditional agricultural practices. One respondent shared, "I used to work in the paddy field and raise livestock. We had to walk to Samtse to buy oil, masala(spice), and tea bags. We used to earn an income from rice and maize, and it would take three days to travel to Samtse to collect supplies."

Climate change related experiences of the local community, as shared with us, also demonstrated how climate-related pressures such as increasing temperature, untimely rainfall, crop pests and diseases, and water scarcity are altering agricultural practices. These correspond with the findings in the IPCC (2022) report, which emphasizes that smallholder farmers in mountainous, rain-fed agrarian systems are particularly at risk from climate fluctuations.

Data from the household survey also show that out of all the households engaged in agriculture, a total of 161 reported that they cultivated crops primarily for self-consumption. An additional 65 households grew crops both for sale and self-consumption, while only 2 indicated other purposes. These figures reflect a high dependency on agriculture with limited engagement in market-oriented production.



Against this backdrop of heavy reliance on agriculture and limited market integration, the weakening of cardamom production assumes particular significance. Cardamom is the main cash crop in Denchukha but is now being affected by climate change. Changes in cardamom yields can also shape household economic stability and adaptive capacity.

From Abundance to Uncertainty: Cardamom Decline in Denchukha

A key indicator of climate change for the community is the decline in agricultural productivity, especially cardamom and oranges. Dorji expressed

his concerns: “We used to grow oranges and cardamom. We cannot grow them anymore”. Another respondent, in contrast, adds, “It's very warm now. We didn't grow oranges and mangoes before, but now we can. However, increased heat also contributes to diseases affecting these crops."

Respondents said that cardamom, previously harvested around September and October, has become increasingly difficult to grow due to new crop diseases and unfavorable weather. Norbu reflected on this: “We used to harvest around September and October. There has been a Cardamom disease outbreak that has spoiled all the roots and killed the crops. In terms of oranges, we used to produce excess oranges but due to lack of transportation it would go to waste. We used to transport them with horses. The yield of oranges has however, decreased even though we have transportation facilities now. I think it is linked to global warming. We are now experiencing the climate from lower altitude”

Another respondent added, “There has been a cardamom disease outbreak, spoiling roots and killing the plants. We used to produce about 60 kg, but we have stopped growing them." Respondents offered a nuanced perspective, noting that rising temperatures for a while allowed them to grow more, but these are accompanied by increased risks and significant trade-offs. The respondents described rising temperature as a double-edged sword because it allowed the growth of crops that were previously unsuitable for the region, including ginger, potatoes cauliflower, broccoli and betel nut whilst also increasing diseases in the crops. This aligns with a study in Nepal (Maharjan et al., 2020) where farms associated growth of diverse crops with warmer weather but alo identified the need for higher pest control inputs. Dorji added, “Betel nuts, previously unsuitable due to lower temperatures, are now grown." Karma further elabourated, “We know the temperature is changing based on the changing cropping patterns. In the past, ginger, oranges, and chillies

(Dolay) weren't suitable to grow here, but since it's becoming hotter now, it has become adaptable now that we can grow it here."

In Denchukha, this change might provide more diverse livelihood options for certain families. However, it does not counterbalance the overall decline in cardamom's production, leaving many exposed to economic instability. The decline of cardamom production due to rising temperatures, pests, and diseases was emphasized by several respondents. This illustrates how Denchukha is exposed to environmental stress, which is also reflected in studies from the eastern Himalayan region where cardamom is highly sensitive to even a slight increase in temperature and pathogen spread (Sharma et al., 2016). For Denchukha, the decline of cardamom production is not only an agricultural challenge, but it also diminishes their financial assets, forcing the household to find other sources of income (Paldon et al., 2025). The decline in cardamom production in Denchukha is not a standalone case, but follows a wider pattern in the country, which the following graph illustrates.

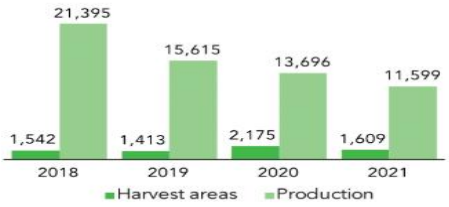


Figure 5.04 Production of cardamom from 2018-2021

Climate change has been significantly impacting the traditional management practices of cardamom farming (ASR, 2021).

Climate change and all these challenges have impacted the productivity and production of cardamom growers. (ASR, 2021).

Table 5.12 Cardamom production by *dzongkhag*, 2021

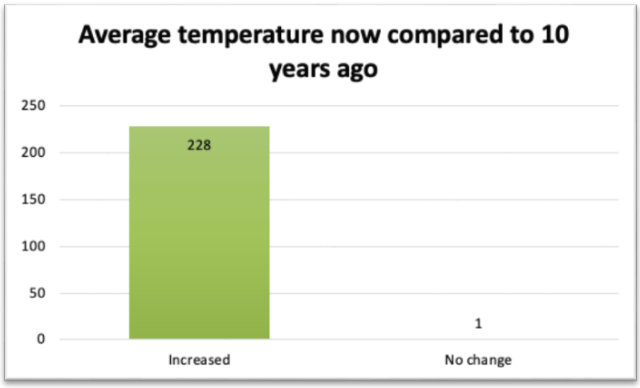
Dzongkhag	Cardamom		
	Sown Area (Acre)	Harvested Area (Acre)	Production (MT)
Bumthang	-	-	-
Chukha	2,358.36	2,005.42	225.16
Dagana	1,988.56	1,764.81	250.38
Gasa	-	-	-
Haa	553.31	467.07	65.24
Lhuentse	65.38	60.72	7.14
Mongar	146.86	137.51	18.46
Paro	-	-	-
Pema Gatshel	333.40	303.75	97.70
Punakha	29.97	29.82	4.67
Samdrup Jongkhar	374.38	368.65	47.56
Samtse	2,764.67	2,616.58	294.62
Sarpang	1,390.40	1,299.80	199.91
Thimphu	-	-	-
Trashigang	92.45	86.61	11.29
Trashi Yangtse	12.60	11.26	1.71
Trongsa	470.64	405.64	53.15
Tsirang	1,617.12	1,524.21	266.90
Wangdue Phodrang	11.19	10.27	1.47
Zhemgang	604.17	507.14	63.73
Bhutan	12,813.45	11,599.27	1,609.08

Table 4. 25 Cardamom production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cardamom)		
Bumthang	-	-	-
Chhukha	3,629.65	3,549.77	250.14
Dagana	2,080.67	2,022.78	171.11
Gasa	0.41	0.41	0.04
Haa	637.81	637.28	58.58
Lhuntse	53.22	53.22	3.31
Monggar	173.75	171.99	16.76
Paro	-	-	-
Pema Gatshel	547.71	533.67	44.15
Punakha	27.75	26.39	1.90
Samdrup Jongkhar	450.44	444.85	45.60
Samtse	4,337.61	3,953.63	336.95
Sarpang	1,500.28	1,383.71	188.67
Thimphu	-	-	-
Trashigang	146.26	145.77	17.50
Trashi Yangtse	33.74	33.40	1.38
Trongsa	327.82	255.96	49.24
Tsirang	1,859.12	1,817.57	185.42
Wangdue Phodrang	28.79	27.96	1.89
Zhemgang	580.02	556.40	40.58
TOTAL	**16,415.06**	**15,614.77**	**1,413.20**

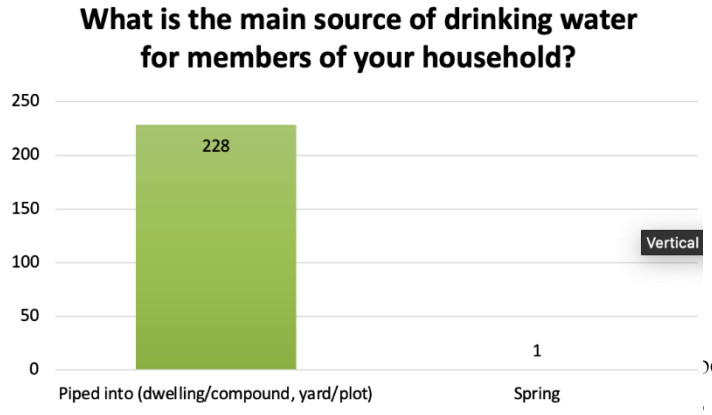
Government data on the decline of cardamom (NSB, 2021)

The graph below illustrates the general perception among surveyed households in Denchukha that temperatures have increased over the past decade. 228 households reported that the average temperature has increased, while only 1 household reported no change. This shows that climate change, as expressed in rising temperatures, is lived, experiential reality in Denchukha. This finding aligns with what the interview participants mentioned, such as warmer temperatures, the suitability of new crops (e.g., oranges, mangoes, betel nuts), and changes in agricultural patterns resulting from heat.



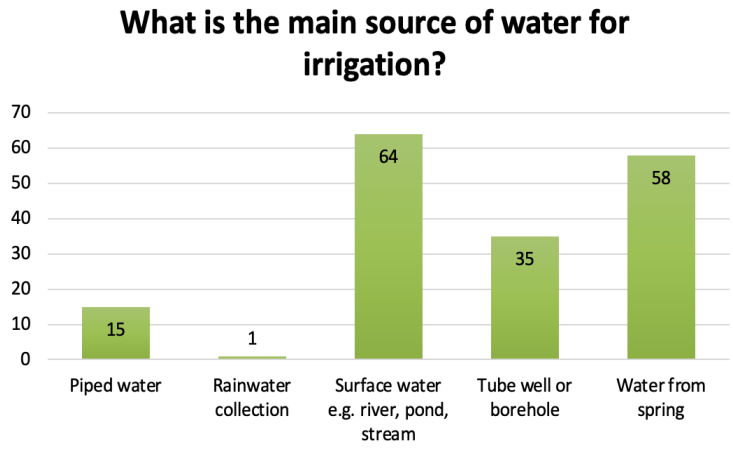
Disrupted Rainfall and Everyday Precarity

Several respondents also emphasized issues such as irregular rainfall patterns that disrupt the cultivating time and eventually affect agricultural productivity. They observed that rainfall, previously consistent from June to September, now begins as early as March, often heavy and affecting the timing of agricultural activities. The community also describes altered cropping patterns due to irregular precipitation and increasing temperature. Tshering stated: "We used to experience rainfall from June till September, but now it starts from March. The heavy rains and irregular heat spells damage the crops, allowing weeds and pests to proliferate."



The graph above shows that 228 households reported using piped water in their dwelling, compound, or yard, indicating good access to piped water infrastructure, with only one household using spring water. However, respondents in the interview also highlighted the challenges in water availability and that infrastructure does not resolve deeper scarcity issues. This underscores a collective vulnerability, in which even minor disruptions to water sources can have cascading effects on the entire community. The narratives of water scarcity in rural adaptation literature reveal that infrastructure (e.g., piped water systems) does not necessarily equate to secure water access (Naidoo et al., 2013; Singh et al., 2019).

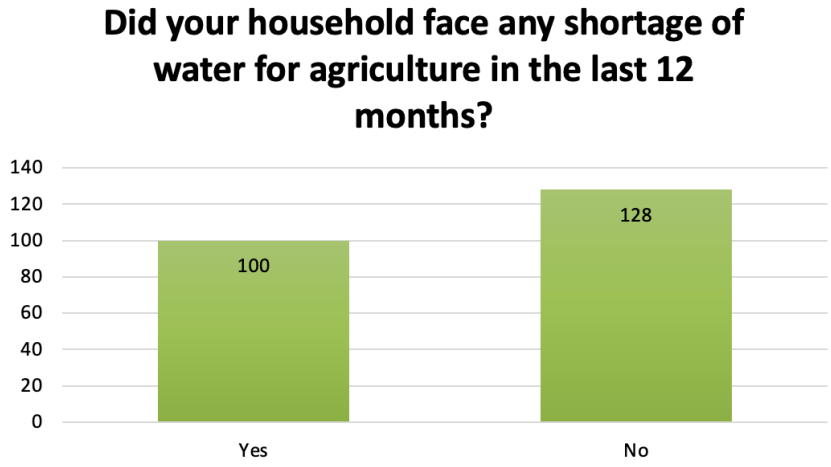
Despite 228 households reporting having piped water access, they repeatedly highlighted seasonal shortages due to erratic rainfall and disrupted irrigation channels due to road construction. This reflects a critical distinction between infrastructural access to water and reliable, climate-resilient water availability (Adger et al., 2020). Delays in crop growth due to insufficient water, mentioned by multiple respondents, align with these concerns. For example, one participant noted, "Water shortages are increasing. It delays the growth of the crop and affects crop yield. We used to have sufficient water from snowfall in November, but now snow is rare, and water availability has also decreased significantly."



The graph illustrates the main sources of irrigation water used by the households. It highlights the heavy reliance on surface water and spring water for agricultural needs. It is evident that surface water (such as rivers, ponds, and streams) is the most common source for irrigation, reported by 64 households, and that spring water is another major source. The data aligns with the qualitative insights where villagers noted drying springs and disrupted water channels due to road construction, increasing the precarity of water access for agriculture. Dawa explained, "Road construction diverted water sources, causing irrigation problems. When there is enough sunlight, there is less water, and vice versa, affecting crop yield."

The observations of shifts in rainfall pattern by the respondents, from the regular monsoon usually from June to September to earlier and more erratic rainfall, corroborate with the findings of recent studies that highlight significant changes in Indian summer monsoon rainfall patterns over the years (Viswambharan, 2019). Such variability has affected the critical growth period, evidenced by delayed planting, crop damage from heavy rainfall, and reduced yields from insufficient irrigation. Sources such as surface and spring water are susceptible to changes in precipitation and disruptions in land use,

and relying on these sources exacerbates vulnerabilities in agricultural productivity and food security in the region (Imran, 2018). Understanding these dynamics is crucial for developing adaptive strategies that can mitigate the adverse effects of climate variability on farming systems (Mussetta et al., 2016).



"Water shortages are increasing. It delays the growth of the crop and affects crop yield. We used to have sufficient water from snowfall in November, but now snow is rare, and water availability has also decreased significantly", Dawa exclaims. According to the survey responses, there are limited and unevenly distributed coping strategies to water scarcity in Denchukha. It was found that 51 households 'did nothing' to address water shortages, suggesting constraints in adaptive capacity which may be due to financial limitations, lack of information, technological options, or social fragmentation. As highlighted in the survey and interview, the burden of fetching water fell disproportionately on women and children, reflecting that the repercussions of water scarcity are highly gendered, as Rao (2020) reminds us. Respondents also shared that in the past, women were primarily responsible for managing household water, which means during the shortages, they had to travel long

distances, mirroring patterns observed elsewhere in South Asia where women's burden increases during environmental stress (Rao, 2020).

Taken together, the decline of cardamom, disrupted rainfall patterns, water scarcity, labour shortages, and uneven adaptive capacities illustrate livelihood precarity in Denchukha. Climate change does not operate as a singular shock but as a cumulative stressor that gradually erodes natural, financial, and human capital. Hence, migration increasingly becomes part of the livelihood calculus. It is not simply a demographic trend nor an outcome of aspiration alone, but also a response emerging from environmental uncertainty and constrained rural opportunity. Studies on climate change and migration often note that households usually tend to migrate when primary livelihood assets, such as agricultural land productivity or access to irrigation, are compromised (Warner et al., 2014). In Denchukha, the decline of high-value cash crops lowers financial capital, and the water scarcity constrains both current production and the viability of climate-resilient diversification strategies. Thus, migration manifests itself as a planned adaptation to transfer livelihood assets through remittances, skill acquisition, and extended social networks (Black et al., 2011).

However, migration is not a 'one size fits all' solution for households due to the uneven distribution of water shortages and differing levels of crop loss. Households that have better income opportunities or access to alternative sources may adapt. At the same time, families that lack the resources to invest in new crops or irrigation may feel forced to migrate. This supports the argument that migration as adaptation is highly contingent on the level of institutional support received and the existing assets (Szaboova et al., 2023).

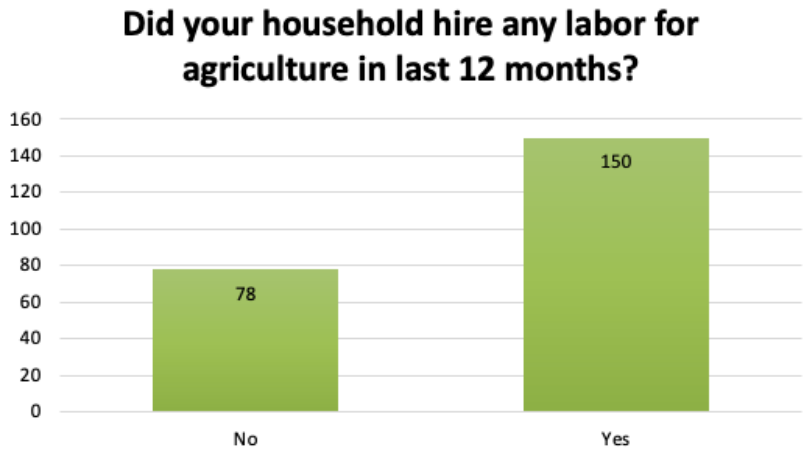
Holding the Farm Together from Afar: Post-Migration Effects on Households

Migration from Denchukha to urban areas such as Thimphu has had a profound impact on both the families who remain and those who have migrated. For many households, the departure of family members initially results in labour shortages, especially agriculture, as most migrants are of working age. This shift has contributed to reduced rice and maize production, with some families reporting that they now purchase rice instead of growing it, a direct reversal of previous self-sufficiency.

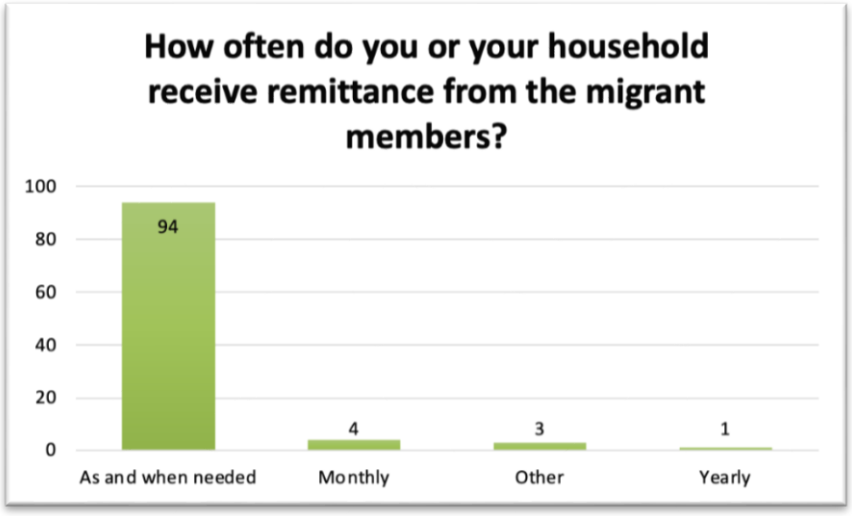
However, this reduction in self-sufficiency in Denchukha is partly overcome through better access to the market, on the one hand through recent road construction linking Denchukha to market places, but especially also through remittances that arrive from migrants in Thimphu, which offers those who stay in Denchukha with the financial capital.

Financial Remittance

Many migrants often send money home in the form of remittances. Financial transfers are helpful in meeting everyday requirements, paying for children's education materials, and covering medical travel costs, according to both migrants and family members in Denchukha. This economic support, while significant, does not entirely compensate for the loss of labour and knowledge that comes from the absence of younger generations. In several cases, respondents highlighted that, when crops fail due to events like the armyworm outbreak or drought, the help they receive is primarily financial. As one respondent shared, “The help they give us is mostly financial and not in the form of physical help or labour.”



As the graph above illustrates, financial remittances in Denchukha function as a safety net embedded within the system of household hired agricultural labour. For the longest time, Denchukha has been long dependent on family labour and reciprocal work sharing arrangements, where households assist one another during labour-intensive periods such as planting and harvesting. These systems were grounded in social capital, mutual help, and long-term reciprocity rather than monetary exchange.



The coexistence of high labour hiring and remittance inflows shows that as members of the household migrate, there are increasing labour shortages which are later covered by wage labours. Hence, there is always a risk of social relations becoming more transactional. Households without migrants may also struggle to secure labour potentially widening inequality within the village and affecting their adaptive capacity to climate change impacts.

Social Remittance

Remittances are not only in the form of cash, but also as knowledge, skills, ideas, through the Thimphu migrants to the villagers and secondly through return migration by which returnees bring new ideas, and skills. The respondents in the interviews highlighted the migrants sending food items, clothes, or goods home during an annual ritual or in times of need. Education and skill transfer have also been influenced by migration. Households note that the absence of youth limits local knowledge-sharing and results in fewer opportunities for upskilling in modern agricultural methods or technologies. However, for those who do return periodically, there are benefits in terms of skill sharing, particularly in using new machinery or establishing small businesses.

Respondents noted that while some youth left to pursue better opportunities, they also brought back new skills, practices, or aspirations. One example includes attempts to promote entrepreneurship. As one respondent, a returned migrant, shared: "I encouraged the young girl who has recently graduated to take up entrepreneurship and enroll in a four-week entrepreneurship course. I encouraged her to adopt a mushroom, aquaponic, or greenhouse model." Several villagers also reflected that modern agricultural techniques and innovations were becoming better known

through digital exposure and returning youth. One respondent remarked: "I do think there are opportunities now in agriculture because of YouTube videos and research, such as vermi-compost and aquaponics, which encourage me now." However, these new ideas are not always implemented, largely due to limitations such as poor access to infrastructure or markets.

Another respondent observed that return migrants occasionally come back with new ideas about how to set up small shops or start businesses in Thimphu, indicating a shift in aspiration that moves beyond traditional farming. Nevertheless, they often noted that these ambitions were not easily realized back in Denchukha due to limited market access: "They think it's better to just set up small shops in Thimphu and go. Some of the migrants were not able to sustain themselves in towns, so they mortgaged their lands to pay back loans and came back here."

Additionally, migration has an impact on Denchukha's social and cultural fabric. Community gatherings have become less frequent, and some families celebrate major festivals only when everyone returns from the city. "If all families come together to celebrate, I feel very happy," one elder stated, highlighting the value of communal ties. These post-migration narratives also included reflections on emotional and social impacts. For example, some families expressed feeling lonely at home. Respondents shared that the absence of their children is greatly felt, and often, the elderly parents expressed their desire for their children to remain in the village. "Living here is difficult. Children cannot work in the field. They went looking for job opportunities, and right now she is living her life by working in a ward here and there." The trend is reflected similarly in urban areas where social networks are no longer as close as in rural areas. Karma exclaimed, "My rent is so expensive I am not sure if I will be able to live here in the future. It is so difficult to sustain by just driving a taxi". One of the respondents also added,

"I lived in a hut when I arrived here. I had no one to rely on, and it was so difficult to live a proper life. Now I am doing a little better, but the earnings are just hand to mouth". The labourers who migrated to Thimphu often face various housing and sanitation problems, especially living in closed colonies.

Migration and Household Adaptive Capacity

In Denchukha, migration is deeply interwoven with the community's evolving adaptive capacity in response to environmental and climate pressures. The tracer study documents significant changes in agricultural practice and productivity over time, with climate change contributing to crop failures, shifts in suitable crops, outbreaks of disease, and water scarcity. These findings echo the theoretical framing of Adger et al. (2002) and the IPCC (2022), who position adaptation as both a material and social process. The survey reveals that nearly all households have experienced environmental shocks, whether through declining orange and cardamom yields, irregular rainfall, or wildlife encroachment, prompting a search for secure alternatives. Migration, particularly youth and working-age adults, is increasingly viewed as an adaptive response, a way to diversify livelihood strategies and secure income from outside the immediate risk zone.

Remittances are invested not only in daily consumption but also in climate-resilient infrastructure for agricultural purposes, further building adaptive capacity in Denchukha. Some households have used migration earnings to install irrigation, purchase drought-tolerant seeds, or access better healthcare, further reducing vulnerabilities in the future. These remittances support the 'social capital' (Adger et al., 2005) and improve adaptive capacities in the village. At the same time, the absence of working-age family members can limit the adaptive potential of those who remain. With more respondents

reporting labour shortages, many elderly households find it increasingly difficult to practice agriculture as they did before and adopt innovations. In this context, migration leads to more of a rural labour drain or what we would call a 'muscle drain' interrupting the transfer of traditional skills and knowledge (FAO, 2024) Despite these challenges, return migration has emerged as a potential source of adaptive learning. Returnees bring new skills, exposure to urban practices, and sometimes capital for small-scale enterprises. Their experiences can help the community to introduce and accelerate local innovation in agriculture. However, the sustainability of such benefits depends on support, information, and policy facilitation, as highlighted by Black et al. (2011).

Additionally, the discovery that savings are the primary means of financing migration in Denchukha indicates that migration decisions are planned (Adger et al., 2014) and made at a household level to diversify income (Massey et., al 1993). It aligns with the idea of migration as an adaptive livelihood strategy that requires prior preparation and household-level resource mobilization. This also highlights a key aspect of migration precarity, meaning only those with sufficient savings can afford to migrate, which may leave poorer or more vulnerable households trapped in place, unable to use migration as a resilience mechanism.

Migration and Well-being

Migration and well-being in Denchukha are complex and multi-dimensional, extending beyond material security. The findings reveal both positive and negative aspects, illustrating a pattern consistent with the broader literature (King, 2012). For many, migration has brought tangible improvements in quality of life. Households receiving remittances report better access to food,

health care, and education for their children. These resources contribute to a sense of 'sukha' meaning well-being and happiness, that contrasts sharply with the earlier narratives of suffering and hardship. "Since my son left for the city, we have been able to fix the roof, buy school materials, and even save a little. We feel more hopeful," as one respondent shared. This echoes King's (2012) argument that migration can elevate household well-being through increased income and opportunity.

Access to good healthcare is another benefit connected to migration, which is an essential dimension of well-being in the Denchukha-Thimphu migration corridor. Most members indicated that they were able to stay with relatives when traveling to Thimphu for medical treatment. These relatives had migrated previously. They thus did not have to worry about accommodation and reduced their expenses. This reflects the importance of social networks in providing support and wellbeing.

Yet these material gains are offset by social and emotional costs. The departure of youth and working-age adults from the village leaves older generations and women with increased responsibilities, especially in agriculture and caregiving. More than half of respondents reported feelings of loneliness, isolation, or sadness linked to family separation, and the degrading of communal traditions such as festival gatherings was frequently mentioned. Carling (2008) similarly describes how migration's mental toll can often blunt its material benefits. Finally, the findings of the survey and interviews suggest that well-being is contingent on the success and stability of migration itself. Failed migration attempts, irregular remittances, or exploitative conditions in the city can quickly turn migration from a source of hope into a new vector of risk.

Conclusion

This study has examined the Denchukha-Thimphu migration corridor to gain an understanding of how migration interacts with climate change, household precarity, adaptive capacity, and well-being in the Bhutanese context. Using a mixed-methods approach, it has provided empirical evidence from a context that is under-represented in both migration and climate adaptation scholarship. The Scoones' Livelihood Framework analysis has allowed us to understand how environmental stressors like irregular rainfall disrupt cardamom, and agricultural production erodes natural and financial capital in Denchukha while reshaping human and social capital through migration.

The key findings demonstrate that Denchukha has undergone significant changes over the past decade. The introduction of roads, improved access to health care and education, and exposure to urban life have reshaped daily experiences and long-term aspirations. While agriculture remains the backbone of local livelihoods, climate change and environmental stressors, including irregular rainfall, pest outbreaks, and wildlife conflict, have led to a decline in agricultural productivity and food security. As a result, households increasingly view migration as both a necessity and an opportunity. By situating Denchukha as a distinct case that diverges from dominant Bhutanese narratives of *gungtong* and rural abandonment, the study challenges oversimplified depopulation frameworks. It highlights the importance of place-specific histories and social networks in shaping migration outcomes. What Denchukha is experiencing suggests that the potential of migration as a resilience-building mechanism depends on pre-existing household resources, supportive policy environments, and the ability to integrate migration with local adaptation investments. Adaptive capacity is therefore redistributed rather than simply increased.

The case of Denchukha shows that migration is a multi-dimensional strategy that provides support against shocks due to high reliance on remittances for basic needs, education, and healthcare. However, it also has various disadvantages, including labour shortages at home, changing family structures, and challenges in maintaining traditional practices. Return migration, which is gaining momentum, is motivated by a combination of economic difficulty in cities and the desire for familial and cultural reconnection. In summary, migration in Denchukha is both a source of hope and a reflection of ongoing vulnerabilities. It has transformed individual lives, household economies, and the social fabric of the village, but it has not erased precarity. Instead, it has reshaped its contours in new ways.

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