Equitable adaptation?

Intersectionality shapes farmers' adaptation to climatic and non-climatic stressors

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Abstract

In light of the increased impacts of climate change, farmers' adaptation is highly inequitable. Yet, much adaptation literature investigating justice concerns draws on a single-axis analysis of inequities, overlooking how overlapping categories of discrimination create unique experiences of injustices. To enrich the debate on intersectional inequities in adaptation, this study aims to investigate and develop an understanding of how farmers' intersecting identities shape equitable adaptation to stressors posed by climatic and non-climatic changes. Drawing on approximately 30 semi-structured interviews and participatory observations with farming households in rural Nepal, the thesis demonstrates that inequity is intersectional, which in turn, nurtures inequitable adaptation. The results show more specifically (1) what climatic and non-climatic changes related stressors are perceived and experienced amongst farmers, (2) how farmers adapt to the perceived stressors, (3) how intersectionality shapes adaptation to the perceived stressors. More specifically, farmers from across two districts in Nepal, Ramechhap and Dolakha, are experiencing and adapting to the growing stressors of increased temperatures, erratic rainfall, insect invasions, wildlife conflicts, migration and work burden. Associated adaptation strategies identified in this thesis are adjustments in livestock management, collective actions, and support from local governments. Findings reveal, however, that adaptation capacities are differentiated between farmers depending on their overlapping social identities. For instance, the findings show that gender and age intersect to exclude old female farmers from households' decision-making on livestock adjustments. Another example is gender and education, leading to the exclusion of uneducated female farmers from participating in community groups through which collective actions are taken. For male farmers, intra-group differences also appeared to shape adaptive capacities, most specifically at the intersection of disability and socioeconomic status, leading to an exclusion of these farmers from receiving adequate adaptation resources from the local government. By addressing the role of intersectionality in shaping equitable adaptation, the thesis expands the discussion on adaptation within globally marginalised, yet heterogeneous, rural communities. In particular, the thesis sheds light on how an intersectional lens can sharpen climate justice dimensions by illustrating how intra-group differences shape procedural (decision-making), distributive (economic) and recognitional justice dimensions for farmers with intersectional identities.

Keywords: adaptation, intersectionality, climate justice, agriculture, Nepal

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Abbreviations and Glossary

CFUG	Community Forest User Group
KII	Key Informant Interview
PRA	Participatory Rural Appraisal
SIAS	Southasian Institute of Advanced Studies
Ward Office	The lowest governmental authority body in Nepal

1. Introduction

Climate change introduces new risks for individuals and communities worldwide (Eriksen et al. 2015). Farming systems are particularly vulnerable to climate variabilities such as floods and droughts, leading to exacerbating food insecurity, increasing workloads, and economic uncertainties for farmers (ibid). The impacts of climate change are, however, not equal across different sections of communities (Hellin et al. 2022). Evidence indicates that rural communities in the global south are most vulnerable to climate change because of socio-, political-, and ecological instabilities (Sapkota et al. 2016; Nagoda & Nightingale 2017). Within these communities, marginalised groups such as women or landless farmers experience the most severe consequences of climate change (Bhattarai et al. 2015; Nagoda & Nightingale 2017). By addressing equity, research on adaptation can incorporate a broader agenda on climate justice (Hellin et al. 2022). Recognition of the historically rooted inequities related to factors such as gender, ability, and age is vital for tackling the complexity of climate vulnerabilities. Understanding how these factors shape adaptation capacities amongst farmers is needed to build resilient and just farming systems in light of ongoing rapid climate change (ibid).

While considerable advances in our understanding of climate change stressors and the associated adaptation strategies have been made, significant gaps remain in the literature on intersectional inequities (Erwin et al. 2021; Hellin et al. 2022; Udo et al. 2024). Despite acknowledging the inequitable impacts of climate variabilities on farmers across communities, the majority of researchers use a single identity category, such as gender, to analyse and define who experiences these inequities (Thompson-Hall et al. 2016; Erwin et al. 2021). Focusing exclusively on one identity constitutes a form of single-axis analysis, which often leads to assumptions that the analysed community is homogeneous (ibid).

The oversight of how intersecting identities interplay to shape equitable adaptation, furthermore, often leads to limited and inadequate descriptions of the structural factors that hinder some subgroups of farmers from adapting to climate related stressors (Udo et al. 2024). While an intersectional approach can reveal the cumulative effects of intersecting identities, such as disability, socioeconomic status, and gender (ibid), these investigations are poorly documented and seldom integrated into broader strategies, thereby undermining the effectiveness of climate adaptation policies (Onta & Resurreccion 2011; Erwin et al. 2021; Udo et al. 2024). To bridge this gap, Mikulewicz et al (2023) call for an extension of intersectionality theory into the field of climate justice to address the intersectional nature of climate change. An intersectional approach to climate justice concerns can sharpen our

understanding of who experiences oppression in access to resources, whose voices are heard, and who is left behind in adaptation processes (Djoudi et al. 2016; Hathaway 2020; Erwin et al. 2021; Mikulewicz et al. 2023; Petesch et al. 2024).

To address the above-stated knowledge gap, this study focuses on how farmers' intersecting identities shape equitable adaptation in Ramechhap and Dolakha districts in Nepal. The country is an interesting case as it is situated in South Asia, a region that is particularly vulnerable to climate change (Ensor et al. 2019). In Nepal, this vulnerability steams particularly from the country's biophysical conditions of the Himalayan mountain range, as well as high levels of natural resource-dependent livelihoods, and a complex socio-political history (Bhattarai et al. 2015; Sapkota et al. 2016). The vulnerability is further exacerbated by social and political conditions, as the sociopolitical landscape of Nepal has a longstanding history of social exclusion, state incapacity, and a protracted political process, which followed a decade-long civil war (Ojha et al. 2016; Khatri et al. 2022). As a result, communities are not only vulnerable to the biophysical impacts of climate change, but more importantly, because of the country's weak institutions and exclusionary governance at different scales (Lawoti 2008; Ojha et al. 2016; Khatri et al. 2022).

Furthermore, social inequities are deeply rooted in the country because of the caste systems[1], leading to inherent social positions and exclusions for certain groups (Sapkota et al. 2016). Evidence shows that individuals who are most vulnerable to climate change are often facing significant disadvantages in Nepali society, thus, the link between climate vulnerabilities and injustices is clear in Nepal (Ojha et al. 2016). To draw an example, Dalit farmers (low-caste groups) have reported facing more vulnerability to climate-induced stress, such as rising temperatures, compared to high caste farmers. This is due to limited access to resources that facilitate adaptation (Nagoda & Nightingale 2017). Another group that faces inequities in Nepal are non-caste ethnic communities. Farmers from these communities are marginalised because of historical land ownership as well as limited influence in state governance (Nightingale 2017).

Considering the rapid ongoing climate changes and issues of justice in rural Nepal, this study aims to investigate and develop an understanding of how farmers' intersecting identities shape equitable adaptation. The following three questions guide the study:

[1] The caste system is the traditional Hindu system of social stratification in Nepal (Bhawana & Race 2020). Four broad social categories constitute the caste systems: *Brahmin* (originally priests and at the top of the social hieracy), *Chhetris* (solider and rulers), *Vaisya* (trade people and farmers) and Sudra (groups such as craftsmen and unskilled workers) (ibid).

Rq1. What climatic and non-climatic change related stressors are perceived and experienced amongst farmers?
Rq2. How do farmers adapt to the perceived stressors?
Rq3. How does intersectionality shape adaptation to the perceived stressors?

To address the aim of this thesis, I begin by critically exploring previous literature on adaptation as well as contextualising the case of Nepal. Then, in section 3, I describe the theoretical concepts that inform the thesis. This is followed by a presentation of the methodology. In section 5, the findings of the analysis are presented, followed by a discussion in section 6, in which I seek to advance debate on the interplay of justice, intersectionality and adaptation. Lastly, in section 7, a conclusion is presented.

2. Previous literature

To gain insights from the empirical findings, the thesis relies on a pluralistic epistemological approach for defining adaptation to climate change. More information on this conceptualisation of adaptation is provided under the subheading 2.1, which is called Placing adaptation in a wider context. In the second section, 2.2. I contextualise what adaptation to climatic and non-climatic change related stressors means in Nepal, a country in transition.

2.1 Placing adaptation in a wider context

Over the past 20 years, studies on how rural communities in the global south develop adaptation strategies to climate change have increased (Adger 2001; Adger et al. 2003; Erwin et al. 2021). Some of the most prominent scholars in the field have identified five main adaptation strategies to respond to the stressors posed by climate change (Agrawal et al. 2008). These are mobility, storage, diversification, communal pooling, and market exchange (Agrawal et al. 2008). Burnham and Ma (2016) add two more categories: labour migration and environmental management. The authors argue that smallholders in the global south can reduce climate vulnerability through actions like the usage of irrigation, fertilisers, pesticides, as well as through labour migration to diversify incomes (Burnham & Ma 2016).

While the literature illustrates a variety of strategies undertaken by rural households to adapt to the impacts of climate change, scholars have long recognised barriers to adaptation. Some of the most important barriers include education, age, wealth, access to extensions and credits, and gender (Deressa et al. 2009). In their writings, Mersha and van Leaderhoven (2016) present an example of how gender institutions create barriers for female farmers in Ethiopia to adapt to drought. Through constraining rules, norms, and practices, female farmers face additional barriers and obstacles compared to their male peers regarding accessing resources from external actors to enhance their adaptive capacity (Mersha & Van Laerhoven 2016). As the example of female farmers in Ethiopia illustrates, adapting to climate-induced risks is not shaped by environmental or climatic factors alone, but by broader social, economic, and institutional contexts (Adger 2001; Adger et al. 2007).

Despite scholars' increased attention to structural factors creating barriers for some groups, much adaptation research focuses on biophysical impacts from climate change, often ignoring social, economic, and political contexts that shape individuals' adaptive capacities (Burnham & Ma 2016; Ensor et al. 2019). Biophysical approaches, which promote technocritical solutions to respond to

climatic stressors, continue to dominate the adaptation discourse across the globe (Ojha et al. 2016; Nightingale 2017; Ensor et al. 2019; Chakraborty et al. 2021). Critical environmental scholars have begun to advocate for an epistemologically pluralistic approach to climate change adaptation (Chakraborty et al. 2021). An approach that centres on justice, equity, and the inclusion of diverse knowledges to challenge the dominance of apolitical and technocratic approaches. Thus, a pluralistic approach to adaptation offers a more holistic and contextually grounded alternative to conventional, biophysical-oriented frameworks (Nagoda & Nightingale 2017; Chakraborty et al. 2021; Erwin et al. 2021).

By drawing on the epistemologically pluralistic approach, this thesis can hopefully contribute to a better understanding of the complex and diverse forms of climatic and non-climatic related stressors affecting farmers in the Himalaya. Illustrating that farmers' adaptation to stressors posed by climate change cannot be separated from wider rural transformations in order to fully understand the lived realities of equitable adaptation.

2.2 Contextualise Nepal: A country in transition

Nepal, a landlocked country situated in South Asia, located in the Himalayas between India and Tibet (China), is home to roughly 26 million people (Biggs et al. 2013). Agriculture remains the primary source of livelihood for about 60 per cent of Nepalis, either directly or indirectly (ICIMOND 2010; Biggs et al. 2013; Yogi et al. 2025). The country is currently ranked as one of the most vulnerable countries worldwide to climate risks due to its geographical location, weak institutions (Khatri et al. 2022), high dependence on natural resource-based livelihoods, and inherent social inequalities[2] (Ojha et al. 2016). Placed in the Himalayan Mountain range, Nepal is warming in a significantly higher rate compared to the global average (Biggs et al. 2013; Joshi & Dongol 2018; Ranabhat et al. 2023). Consequently, the country is particularly susceptible to various climate-related disasters, including floods, glacier melting, and drought (Biggs et al. 2013; Joshi & Dongol 2018; Ensor et al. 2019).

Changed climatic conditions have already begun to influence agricultural productivity in Nepal (Ranabhat et al. 2023), and the Intergovernmental Panel on Climate Change (IPCC) (2023) warns that crop yields in the Himalayas are likely to decline even more in the coming years due to ongoing climate change. While rising temperatures and unpredictable rainfall patterns have caused glacial melting

[2] Social inequalities are generally inherited through the caste-system.

and seasonal shifts, these changes not only affect agricultural productivity but also local ecosystems and everyday life in rural Nepal (Xu et al. 2009).

In addition to climate change stressors affecting Nepali farmers, various other transformations are occurring simultaneously. In their writing on adaptation in rural Nepal, Ensor et al. (2019:233) highlights the intertwined nature of these shifts, noting that "[…] *while extreme weather events and climate change are causing changes in farming practices, these changes are equally, if not more, influenced by out-migration, changing income opportunities, and desires to shift away from land dependency*." As the quote states, other significant transformations are driving farmers to adapt to changes in circumstances, one such driver is caused by the rise of rural out-migration (Bhawana & Race 2020). Over the past century, such demographic shifts have profoundly impacted and transformed agricultural livelihoods (Joshi & Dongol 2018; Bhawana & Race 2020), often leading to a rationalisation and commercialisation of farming practices (Ensor et al. 2019). Migration has also brought major economic transformations through remittance money. In 2015, remittance money was estimated to constitute 32 per cent of the Gross Domestic Production (GDP) (Bhawana & Race 2020). Compared to approximately 30 years ago, remittance money constituted only about 1.5 per cent of GDP in 1993, whereas in 2015 it constituted about 32.2 per cent of GDP (Bhawana & Race 2020).

3 Theory

In this section, I introduce the theoretical lenses and concepts employed in this thesis. The theory section is divided into three subthemes: An intersectional lens; Climate Justice Framework; Justice for whom? In the first section (3.1), I present the role of social differentiation and how intersectionality can reveal systems of power and oppression. In the second section (3.2), climate justice, rooted in the norm of *participatory parity* is presented, followed by three subheadings in which distributive, procedural and recognitional justice dimensions are presented. In the third section (3.3), I present how an intersectional lens can sharpen climate justice dimensions.

3.1 An intersectional lens

This thesis aims to investigate and develop an understanding of how farmers' intersecting identities shape equitable adaptation. To achieve the aim and answer the research questions, I employ intersectionality theory as an analytical lens. I draw on Kimberlé Crenshaw's (1989; 1991) work on intersectionality as well as literature that has applied the theory in agrarian settings.

Intersectionality, a concept coined by Kimberlé Crenshaw (1989; 1991), describes how multiple forms of oppression, such as racism, sexism, or classism, intersect to shape unique experiences of marginalisation. Crenshaw's theoretical contributions steam from the Black feminist movement of the 1980s, where she addressed the unique issues that black women face. In the U.S. legal system, women of colour were not recognised for facing double oppression from being black and female. To address the issue of oppression faced by groups with intersecting identities, Crenshaw introduced intersectionality. She critiqued mainstream liberal feminist and racism discourses, which tended to treat issues of gender, race, and other identity categories as separate, yet equally valued experiences. Crenshaw's theory thus challenges dominant feminist and legal discourses by highlighting how these fail to account for intersecting forms of marginalisation.

Scholars have expanded the critique of a single-axis analysis. Osborne (2015) explains that intersectionality helps address longstanding blind spots within academia and identity politics, as these often neglect intragroup differences. In her writing, she explains that identities cannot be reduced to the sum of their parts but are inherently intersectional. Being Black and a woman, for instance, cannot be understood as separate experiences (Osborne 2015). Similarly, Barager (2009:2) states that: "*Blackness is lived differently by women than by men, and being female*

is not a uniform experience across race, class, age, or disability.". Implying that racism is not a uniform experience but rather is shaped by other power relations such as age, ability, and class. These perspectives deepen our understanding of how individuals relate to systems of power in complex and uneven ways (Barager 2009; Osborne 2015).

While intersectionality has been widely used in social theory, its application in adaptation research remains limited, though highly important (Erwin et al. 2021). When applied in the field of Feminist Political Ecology, scholars like Udo (2024) illustrate how black women's vulnerability and adaptation to floods have been overlooked in the mainstream adaptation literature. By centring the analysis on poverty, limited access to resources, and socio-cultural contexts, the author shows how black female farmers experience unique forms of vulnerability to climate-induced floods. Onta & Resurreccion (2011) provide another example of the intersectional nature of adaptation by illustrating the connection between caste and gender in shaping adaptation capacities in South Asia. While Ensor et al (2019) highlight how low-caste Dalit farmers, already marginalised by caste and socio-economic status, are disproportionately exposed to climate risks and neglected from decision-making spaces. These studies illustrate that intersecting forms of disadvantage can compound vulnerability and constrain adaptation in ways that would remain hidden under single-category analyses. Given the increasing concern about the effects climate change has on rural communities in the global south (Djoudi et al., 2016; Erwin et al., 2021; Hellin et al., 2018), there is a need to integrate an intersectionality lens to analyse how farmers with intersecting identities adapt to these changes (Sapkota et al. 2016; Erwin et al. 2021).

3.2 Climate Justice Framework

While intersectionality provides a valuable lens for understanding the heterogeneity of farmers, it does not necessarily address justice concerns in light of ongoing climate change. To be able to create an understanding of how intersecting identities shape just adaptation, the thesis is also informed by climate justice, rooted in participatory parity.

According to Petches et al (2024) participatory parity is the norms that encourage all members of society to interact with each other as equal peers. The ideal fosters synergistic dimensions of justice, including procedural, distributive and recognitional, that are essential for equitable adaptation to climate change. Nancy Fraser (1998:5) similarly describes participatory parity as the condition of social justice in which all adult members of society have the necessary cultural status, economic resources, and political voices to participate as equal peers *"[…] justice*

requires social arrangements that allow all (adult) members of society to interact as equals."

In climate justice frameworks, these three dimensions are encompassed to understand the interplay climate change and justice: (a) distributive justice (how costs and benefits are distributed amongst groups and individuals); (b) procedural justice (the degree to which people can influence decision making processes or have their perspectives represented in governance or institutional processes); (c) recognitional justice (how acknowledgement and respect is given to identity, norms, values and beliefs) (Hellin et al. 2022). The following sub-sections delve deeper into the three dimensions of climate justice.

Distributive dimensions

Distributive justice focuses on the fair allocation of resources, benefits and burdens across society (Fraser, 1998) and often raises questions of who gains and who loses from climate change (Schlosberg 2013; Schlosberg & Collins 2014; Coolsaet & Bullard 2021; Albertyn et al. 2023). While distributive justice is often described as economic or resource-accumulative justice, Newell et al (2021) have extended its scope. The authors highlight three key considerations for understanding distributive justice: (1) the identification of goods and bads being distributed, (2) the entities between whom distribution occurs, and (3) the mode of distribution, which may be based on factors such as status, needs, merits, rights or social identities.

Procedural dimensions

Procedural justice involves making decisions to ensure climate change impacts and responses are fair, accountable, and transparent (Newell et al. 2021). Equitable procedures include fair distribution of goods but also having transparent and accountable decision-making processes. In practice, this means access to information and meaningful participation in decision-making (ibid). Hellin et al (2022) exemplify this in their work on adaptation in food systems by explaining that procedural justice refers to how decisions are made, and the degree to which groups of people can influence these decisions (Hellin et al., 2022). The authors underscore that all members of society need to have their knowledge and perspectives incorporated through the role of institutions, governance, and participation (Hellin et al. 2022). Similarly, Petesch et al (2024) argue that justice is advanced when poor and vulnerable people can gain decision-making powers that expand their access to resources and opportunities necessary to adapt to environmental or climatic changes.

Recognitional dimensions

Recognitional justice addresses the need for recognition and respect of diverse identities, values, and norms (Fraser, 1998). Scholars argue that the concept is closely related to both procedural and distributive justice, because without recognition, social equity is difficult to advance (Fraser 1998; Newell et al. 2021; Huff & Naess 2025). Recognitional justice is particularly relevant for marginalised groups, such as indigenous people or socially disadvantaged members of society, who face cultural, social, and political marginalisation (Newell et al. 2021). This dimension of justice involves acknowledging the social and cultural identities of individuals to ensure that these identities are respected in the political and economic spheres (Hellin et al. 2022).

3.3 Justice for whom?

While climate justice scholars underscore the importance of the three justice dimensions to address differentiated adaptation and vulnerability to climate change (Huff & Naess 2025), the linkage to intersectionality is yet limited (Mikulewicz et al. 2023). Climate justice studies are often informed by a single variable category of vulnerability, such as focusing on ‘women’ to analyse the social vulnerability to climate impacts (Arora-Jonsson 2011; Kaijser & Kronsell 2014; Djoudi et al. 2016). Feminist scholars have however, critiqued this mainstream liberal feminist approach by pointing out how dominant feminist frameworks have centred on the experiences of White, middle-class, heterosexual women as the standard of women's oppression, thereby overlooking the heterogeneity within women's experiences (Young 1990; Arora-Jonsson 2011; Thompson-Hall et al. 2016a). Feminist climate justice scholars have a tendency to portray gender as a dichotomy in which all females are presented as vulnerable and all males as polluters (Arora-Jonsson 2011).

By addressing ‘justice for what’ and ‘justice for whom’, the climate justice framework can places these issues in a wider context of vulnerability and adress the lived experiences of having multiple identities (Hellin et al. 2022). By implication, this contributes to an understanding of how inequities are intersectional and how these may be reproduced in light of climate change (ibid). By applying an intersectional lens, I hope to gain a deeper understanding of how farmers’ intersecting identities such as gender, social age, and disability shape just adaptation to climate change. The intersectional approach can help create an understanding of who gains resources, who has decision-making power, and who is recognised. Questions that risk go unaddressed within current frameworks of climate justice (Hellin et al. 2022)

4 Methodology

In this section, I introduce the methodological choices and strategies used in the study. The methodology section is divided into 3 subthemes. In the first (4.1), I present the case and its fields as well as detailed information about the interviews, sampling of respondents and participatory approaches. The second section (4.2) includes the analytical strategy, and the third section (4.3) delves deeper into ethics, positionality, and reflexivity.

4.1 The case and its ethnographic field

This case study is situated in Mid-Hills Nepal, more specifically in Ramechhap and Dolakha districts. Two field sites were selected to represent the case, namely rural communities in exposed areas in the Mid-Hills. The first study site is a village situated in Ramechhap district, with high social heterogeneity, subsistence farming practices, and water scarcity. The second study site is a village in Dolakha district with less social differentiation, more semi-commercialised farming practices, and water abundance. Names of the villages have been removed to protect the anonymity of the participants. See location of the study sites below (OpenStreetMap 2025a; b)

Figure 1. Map of Ramechapp district

Figure 2. Map of Dolakha district

The field sites were selected based on criteria like social diversity, climatic stressors, population size, farming practices, and geographical locations. By choosing two neighbouring districts, the methodological choice allows for a comparative analysis to illustrate similarities and differences across sites with differential climatic stressors and social context. While the selected field sites are

geographically different, they also have various social, economic, and demographic histories. Thus, the selected sites serve not only as a geographical boundary but also as an ethnographic field boundary. In his writings on ethnographic methods, Madden (2010:38) describes ethnographic fields as places that " […] *provides an interrogative boundary to map onto a geographical and/or social and/or emotional landscape that is inhabited by a participant group*". Drawing on the work of Madden, this study uses the field sites to represent a geographical, social, and emotional landscape in which farmers live.

Data and insights from these study sites were gathered through ethnographic fieldwork. I spent a total of 10 weeks in Nepal, from February to April 2025. Four weeks were spent on gathering empirical material, with two weeks spent in each village. The remaining time was spent at the Southasian Institute of Advanced Studies (SIAS). My presence in the country made it possible for me to gain a deeper understanding of Nepal's political, economic, historical, and social context. Being able to follow the ebbs and flows of everyday life in Nepal, experience the contrasting life of Kathmandu, and the rural life of farmers in Ramechhap and Dolkaha provided me with insights beyond what could be documented in articles.

To manage everyday life in Nepal, I was supported by an interpreter, Miss Jeni Dahal, whose background in environmental sciences and knowledge of local areas of Ramechhap and Dolakha provided valuable insights. Besides interpreting and translating, she also facilitated travel, coordinated contacts with interviewees, managed communication with hotels and host families, and offered cultural and historical guidance. Her support was indispensable for accessing the field, collecting data and contextualising the empirical findings.

4.2 The interviews

In total, 24 household interviews and 3 key informant interviews (KII) were conducted.

Table 1. Overview of the interviews

	Female Household Interviewees	**Male Household Interviewees**	**Key Informant Interviewees**
Study site 1, Ramechhap.	7	7	2
Study site 2, Dolakha	6	5	1
Total number of conducted interviews	13	11	3*

**3 key informants: all males*

All interviews, both household and KIIs, were conducted in person, and most of them took place in farmers' homes. The rationale for this methodological choice was based on the idea that locations exist within a context. Elwood and Martins (2000:649) call this for micro-geographic and describes them as "[…] *interview sites and situations are inscribed in the social spaces* […]". Since many farmers who participated in this study were either suspicious of formal interviews or anticipated some kind of aid from these situations, interviews were often held in a place where farmers felt comfortable. This most often meant that interviews were conducted on the veranda of farmers' houses or over a cup of tea in a local restaurant. Furthermore, printed documents and folders were often associated with local authorities or international NGO:s coming to the villages, thus Jeni and I quickly removed unnecessary papers or notes while conducting interviews to make sure we did not send the wrong signals. The only papers we brought with us were an interview checklist, which is common tool when conducting semi-structured (Robson & McCartan 2016; Creswell & Creswell 2018), and the following topics permeated the interview checklists:

(1) **Warm-up questions:** Name, age, occupation, marital status, family, livelihood, agriculture, livestock, migration.
(2) **Thematic block 1:** Perception and experiences of climatic and non-climatic change[3] and associated adaptation strategies.
(3) **Thematic block 2:** Perceptions of justice and its relation to social positions.
(4) **Thematic block 3:** Power and freedom[4].

The interview checklists were intended to enable participant to share their perceptions and experiences freely while still imposing a natural flow of conversation over certain topics. The checklists did, however, not work out as intended at first. Interviews conducted in the beginning of the study were often structured as they followed the checklists strictly, and there was little room for the participants to come up with their own inputs. Our lack of experience working in an interpreting interview situation caused a more structured interview technique initially, but when Jeni and I became more comfortable with each other and in the interpretation process, our interview technique transformed from structured to more narrative. In the ladder form, participants could engage and contribute to the conversation while simultaneously ensuring interviews were conducted systematically (Creswell & Creswell 2018).

[3] Named 'climate change' in the preliminary interview guide but was later changed to 'climatic and non-climatic' changes as this reflected the lived experiences of participants better.
[4] Included rating exercises. These were asked for during data collection in field site 1, but removed during data collection in field site 2.

Another challenge with the interview checklist was rating exercises. While conducting the initial interviews, we asked participants to rate themselves on a 1-5 scale of adaptation, well-being, and decision-making powers. The idea was to operationalise certain themes, but in practice, the tables were not as efficient as anticipated. Participants often found it difficult to score their positions. Thus, the rating exercises were removed after data collection in field site 1. However, the question around the topics remained. This example shows how data collection required a sense of flexibility and that the interview lists had to be done inductively. As the interviews went on, new patterns of topics arose, and we added questions to match the challenges to get a checklist that reflected the local contexts.

Sampling respondents

As this thesis is focused on how intersecting identities shape just adaptation, the sampling of respondents has been central to illustrating how categories of class, gender, education, and disability, among others, are interrelated and mutually shaping farmers' adaptation. During the field work, this meant that Jeni Dahal and I had a debriefing session each morning, where we discussed the participants from certain categories we wanted to target during the day. Then we purposely selected the households and key informant interviewees based on the previous material we had collected.

Household interviewees were sampled based on the criteria of gender, age and occupational groups. This form of selection process is often referred to as stratified sampling, which is a strategy in which participants are divided into subgroups based on the characteristics they share, such as gender, age, caste and socioeconomic status (Robson & McCartan 2016). Then, we purposively sampled households to get an equivalent number of participants for each criterion. Despite selecting participants based on these criteria, the analysis revealed other identity factors that turned out to be vital in the intersectional analysis. Factors such as disability and education were not purposively sampled for, but they appeared as important as the analysis progressed. Alongside the emergence of disability and education as forms of social differentiations, other identity markers such as ethnicity and caste were meant to be sampled for and analysed, but appeared to be less significant as the thesis progressed.

The sampling of respondents to key informants' interviews (KII) had only one criterion: to be engaged in a community role. This criterion provided us with persons who had insights about the village history and changes in agricultural practices, demography, infrastructure, weather, and the impacts these changes had on the broader community. Purposive sampling, which is described to "[…] *enables*

the researcher to satisfy their specific needs in a project." (Robson & McCartan 2016:281), was the strategy that guided the sampling of KII respondents. Generally, the KII we sampled were ward heads or community forest user group leaders.

Triangulations with participatory tools and observations

In addition to interviews, participatory approaches have been employed in data collection. Triangulation, which refers to a process in which data is gathered through multiple sources to find similarities and differences in the material (Fischer et al. 2020), was done with participatory observations and Participatory Rural Appraisal (PRA) tools. PRA tools were considered the most suitable observational methodology because they are rapid and relatively cheap (Helvetas 2015), which suited the practicalities of this thesis. In total, 2 transect walks, 2 seasonal calendars, 2 hazard calendars, and 2 resource maps were conducted.

At the beginning of each field site visit, Jeni and I began data collection by interviewing a person in a leadership position. This was done to gain insight into local contexts and is often referred to as a key informant interview (KII), a form of general interview with a village leader (Helvetas 2015). Quickly after the KII was done, we asked the same person to draw a map together with us to highlight what resources the villages obtained. The maps provided us a visual representation of the resources available, including infrastructure, health care clinics, schools, religious places, markets, water resources, agricultural land, and common-pool resources (such as forest or pastureland). During the sessions Jeni and I also asked questions such as "*Who lives in this area? What about ethic groups?"* to gain insight into social stratification. This exercise is often called a resource map (Helvetas 2015). After finishing the resource maps, we marked the area in which we believed was the most suitable to focus the study on. Guided by a person who knew the village, we jointly walked through the villages to gather knowledge about the villages, including historical, demographic, and landscape changes impacting people's lives, which is often referred to as a transect walk (Helvetas 2015). Transect walks are tools built upon the resource map, and the aim is to learn more about the environmental, economic, and social resources within a limited geographical area (Helvetas 2015).

Figure 3. Transect walks in both study sites. Picture nr 1 and 2 (from left) were taken by the author Tilde Lindbäck. Picture nr 3 was taken and approved to be used by Jeni Dahal.

Other PRA tools used in this thesis include seasonal crop calendars and hazard intensity calendars. Seasonal calendars are participatory tools that explore seasonal changes. The purpose of these tools is to learn more about livelihoods over the year, show seasonality in agricultural workloads, food availability, gender specific incomes, etc. (Sontheimer et al. 1999). The seasonal calendars were helpful to understand how major agrarian production has shifted in the last ten years, with a particular focus on changes in planting and harvesting due to weather extremes, which could indicate the occurrence of climate change stressors. Besides agricultural calendars, I also wanted to gain insights into what the most common climatic events were and how they had shifted. This was done through the support of a hazard intensity calendar.

Figure 5. Seasonal calendars from study site 2. Picture taken by Tilde Lindbäck.

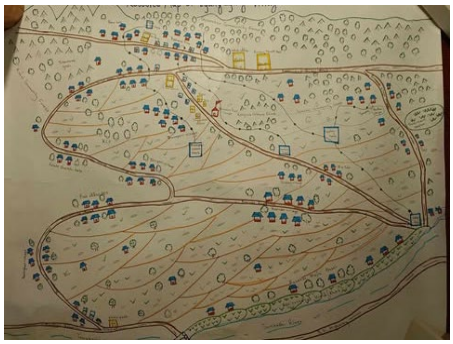

Figure 4. Resource map from study site 1. Picture taken approved to be used by Jeni Dahal.

In addition, I also conducted participatory observations. Following the ebbs and flows of everyday activities in Ramechap and Dolkaha provided a rich material beyond the verbal. Furthermore, most household interviews were conducted at

farms. Being able to sit down with the farmers and look out over the landscape created an opportunity to understand how human and natural experiences are intertwined. To be physically close to the environment while talking to the participants describing climatic changes made me aware of how not only livelihoods, but also knowledge, spiritualities and emotions are connected to the physical surroundings. Together with respondents, we could jointly see the climatic and non-climatic changes affecting the landscape and talk about how they developed strategies to respond to these change related stressors. The closeness between the participants and the physical environment also helped spark emotions. To draw an example, in an interview with an older farmer, he talked about pest infections increasing as periods of drought intensified, resulting in the death of his pomegranate trees. He lacked knowledge about how to treat the sick trees, so he needed to cut them down. After the man had told me this story in an interview, we walked jointly to his dead pomegranate trees. Walking together in the landscape and establishing trust to the farmer helped get material beyond the verbal. I could sense a form of sadness when the man showed us the dead trees, giving me direct insights into the effects of climatic changes not only have on livelihoods but also on emotional well-being.

4.3 Analytical strategy

Data analysis started already in the field. At the end of each day, I made notes from the interviews and observations in my research diary. This journaling included details about the conversations as well as descriptions of the interview context. It served as a form of analysis, in which I clustered themes of relevance based on the conversations I had during the day. Besides fieldnotes, Jeni Dahal and I had systematic debriefing sessions during breakfast each day. In these sessions, we went through the previous interviews and jointly reflected. She could provide me with essential information that I had missed and fill in the gaps of the local context that I was unfamiliar with. Her knowledge and familiarity with the research context were indispensable.

In addition to keeping a research diary, all interviews except 3, which have been removed due to low quality, have been transcribed and translated from Nepali to English. Jeni Dahal was working on the transcription between March-May 2025. Transcripts were made as a supplement to the analysis in the field, and the most appropriate transcription strategy was intelligent verbatim. This means reducing unnecessary wordings to provide a readable transcript that simultaneously stays true to the intent and meanings of the participants (McMullin 2023). Thereafter, the material was carefully reviewed, and as themes of theoretical significance were

revealed in the material, these were clustered into more comprehensible sections of codes (Rosén 2020). See coding framework[5] below.

Table 2. Overview of coding framework

Coding framework	
Principle codes	**Sub-codes**
Distribution	Connection-based, need-based, market-based, subsidies, resources
Recognition	Gender norms, education, power and freedom, disability
Procedural	Community groups, household decision-making, public meetings, influence, Ward Heads
Stressors (climatic and non-climatic)	Erratic rainfalls, temperature, wildlife, migration, work burden, insect invasions
Adaptation	Collective actions, support from local government, adjustments in livestock managements

The methodological choice of clustering the empirical material into themes resonates with the literature on thematic coding, an analytical method where recurring themes in the data are coded, i.e. structured into different labels, to review data in relation to its relevance to the research question and aim (Robson & McCartan 2016). In this thesis, a combination of deductive and inductive coding has been conducted, with both preestablished codes and others that have arisen as the analysis progresses.

4.4 Ethics, positionality and reflexivity

Ethical considerations were maintained by following the Swedish University of Agricultural Sciences and the Swedish Research Council's guidelines. During data collection, informed consents were obtained verbally from all participants, with detailed information about the research objectives and methods. Through interpretive support, all participants were fully aware of their rights, including the right to withdraw from the study at any time without needing to declare reasons to leave. These methodological choices were made to meet the information and consent requirement, which emphasise that participants should be enlightened about the research topic and the conditions of the study, including the right to withdraw at any time (Vetenskapsrådet 2002). Sensitive data related to personal experiences was handled with care and discretion. To further ensure that the research participants' integrity was protected, the names of the villages and

[5] Inspired by Patti Petches et al (2024) methodological work on social justice and transformative adaptation.

interviewed farmers have been removed. These methodological choices respond to the confidentiality requirement, which emphasises that ethically sensitive data about individuals and all data that can identify persons should be handled with discretion (Vetenskapsrådet 2002). Lastly, the usability requirement refers to data obtained for research purposes shall not be used for commercial purposes of non-academic research aims (Vetenskapsrådet 2002). This requirement has been met by not using the data outside the scope of this thesis.

In addition to following the codes of ethics, my role as a researcher, my position and my background are necessary factors to reflect upon as they influence research design as well as the interpretation of the data (Creswell & Creswell 2018). As a white European woman from a middle-class background, I started the design of this thesis with humility. Aware of the privileged position I hold within the field of intersectional climate justice studies and cautious of the risk of appropriation and its implications for the thesis (Barager 2009).

One of the first challenges that arose was during data collection. My lack of Nepali culture, traditions and norms made it hard for me to develop a comprehensive interview checklist that suited the Nepali context. The collaboration with Southasian Institute of Advanced Studies (SIAS) was indispensable to overcoming this challenge. Through the support of colleagues, I was provided with inputs on how to formulate the research checklist to suit a Nepali context. Without the engagement of SIAS researchers, the checklist would probably look different and I assume they would not be as effective as they were in the local context as I lacked knowledge about this.

Another part of data collection to reflect upon is the participation and support of an interpreter. Since I do not speak Nepali, I had to rely entirely on Miss Jeni Dahal for conducting, as well as transcribing and translating the interviews. The interpreter may, on one hand, have missed details about the conversation, not providing the full depth of the interview during interpreting. On the other hand, as a local interpreter, she knew the local culture. This provided me with more accurate information beyond the verbal and gave me insights into local contexts that were important for the study.

Lastly, I had the opportunity to discuss my preliminary findings with senior researchers at the SIAS Institute. Being able to present my preliminary analysis and get comments on it from SIAS colleagues enabled me to get insights into topics that I would not have been able to do alone. I am grateful that I have had the chance to ask questions, get feedback and share thoughts with researchers who have a lot of expertise in the research area.

5 Empirical findings

In this section, I present the empirical findings from the thematic analysis. In the first section (5.1) I present the perceived and experienced stressors posed by climatic and non-climatic changes, and the associated adaptation strategies to respond to these stressors. Following that, section 5.2 presents the role of intersectionality in shaping adaptation strategies, delving deeper into how social differentiation nurtures (in)equitable adaptation.

5.1 The inseparable changes and associated adaptation strategies

A central phenomenon across the study sites was a widespread perception of social, economic, environmental, and climatic changes occurring simultaneously, driving farming households to adapt to the inseparable nature of the stressors related to these changes. While the perceptions of the intensity of each change varied between the two study sites, the overall findings could be identified into five major stressors occurring across both sites. In an attempt to simplify the complexity and inseparable nature of the change-related stressors, the findings have been clustered into the following themes: erratic rain, changes in temperatures, increased insect invasions, prevalence of migration, wildlife conflicts, and work burden. A detailed scheme with explanatory quotes of the reported experiences and perceptions of stressors posed by climatic and non-climatic changes in both districts is provided in Table 3[6].

Table 3. Prominent experiences and perceptions of changes in Ramechhap and Dolakha

Experiences and/or perceptions of changes in climatic and non-climatic related stressors	Shift from…	Shift towards…	Exemplary quotes of change
Erratic rain	Timely rainfall patterns. Stable rainfalls.	Less water from rain and snow-caps.	"Previously, we used to get a lot of rainfall at this time, and we also got snowfall. After the snow melted, our fields would be wet for plant growth. Now it's dried all over, maybe this is another reason too." (HH_DK_06_F) "In the past, there

[6] The design of the table has been made with inspiration from Erwin et al (2021:7) table that illustrates agricultural stakeholders' perception and experiences of socioecological changes.

			were ponds where we took animals to drink, but now they've all dried up. We rely entirely on tap water. There used to be ponds in the forest and near the river, plenty of water for livestock. But now, even those have disappeared." (HH_RM_02_M). "Agricultural production has decreased compared to the past due to less rainfall and frequent droughts." (HH_RM_08_F)
Changes in temperatures	Predictable seasons and temperatures.	Variation in temperatures; rainfalls; snowfall.	"There has been an increase in wildfires due to rising temperatures." (HH_RM_02_M). "[…] also the temperature has increased in this place nowadays compared to the past." (HH_DK_12_M).
Insect invasions	Stable pressure from pests.	More plants dying. Prolonged periods of drought increase pest outbreaks.	"Nowadays, there are many insect attacks during maize cultivation, forcing us to use pesticides. Also, this area is much drier compared to other parts of the district. Maize can tolerate some drought, but other crops fail when it gets too dry." (HH_RM_12_F); "This may be due to changing times, I don't know exactly why insects are increasing. My guess is it's because of untimely rainfall and the drying of land and crops." (HH_DK_06_F)
Wildlife conflicts	Predictability in monkey, porcupine and deer attacks.	Plants destroyed by wildlife invasion. Especially maize, wheat.	"The biggest problem is monkeys destroying our crops. They leave nothing for us. I just came back from the field after chasing them away. Before, when there weren't so many monkeys, we used to grow a lot of potatoes and maize. We'd sell them in the market and buy rice. But now, the monkey problem is getting worse, making life very difficult. We have to guard the fields all day to scare them off." (HH_DK_04_F). "Previously, we used to do agriculture on our lower land, but we also suffered a lot from monkey attacks. Because of the monkeys, we reduced our farming, and after moving here, the land has become completely barren." (HH_DK_08_M)
Out-migration flows	People living in the villages for a long time, with some mobility.	Increased movement of people on district, national, international level.	"If there are employment opportunities and good income sources, the youth shouldn't have to leave the village. But there are no such opportunities here. Living in your own village is better than going out, but even those who moved abroad or to cities are doing better and earning more than in the village. In the past, only one person would go to the city. Everyone used to live in the village, doing agriculture and labour. Now, there is not a single youth left in the house." (HH_RM_08_M)
Workloads	Predictable workloads	Higher domestic and agricultural work (especially for women).	"Women have to face more burdens. For example, women are responsible for collecting water. I also think men face their share of burdens. Sometimes, men have to go for labour work, and during those times, women become more responsible for household activities. We also have to cut grass to feed the livestock." (HH_DK_04_F).

The table illustrates a pattern of rural households undergoing major shifts in Nepal. While some of these changes are likely caused by climate change, others are caused by wider processes of rural transformations.

Without a proper assessment, it might be speculative to suggest that erratic rainfalls and changes in temperatures are caused by climate change, but much points towards that direction as the knowledge of the farmers interviewed in this study shows to be consistent with scientific knowledge (Ensor et al. 2019). Nevertheless, non-climatic stressors such as those caused by social, environmental, and economic changes show that wider rural transformations are also driving farmers in the Himalaya to adapt. As an implication, the findings suggest that adaptation cannot be compressed to a bio-physical response alone. Instead, changes in rural Nepal appeared to be inseparable, and the associated adaptation strategies were thus interconnected to respond to multiple change related stressors. In the empirical material, I could identify three prominent adaptation strategies, which include: adjustments in livestock management, collective actions, and support from local governments.

Adjustments in livestock management encompass all dimensions of changes in breeds, numbers of animals, or fodder provided to the animals. While most farmers in the study sites in Dolakah and Ramechhap practice livestock management, primarily through goat, buffalo, or cow herding, the reasoning behind adjustments in livestock management somewhat varied between the study sites.

Based on the interviews, livestock reduction was frequently discussed as a strategy employed by farmers to adapt to changes in labour availability, rainfall, and work burdens. One representative statement was made by an indigenous male farmer in study site 1.

> We've reduced the number of livestock because irregular rainfall patterns have affected grass growth. Also, it's just my wife and me at home now, and we face a labour shortage. If our children were here, they could help, but there are no job opportunities in the village, no factories or industries. So, they've migrated to the city in search of work. (HH_RM_09_M, male farmer in 60's)

The increase of rural out-migration, causing a labour shortage, and the decline in fodder availability due to erratic rainfall, drive farming households who are enrolled in subsistence or semi-commercial practices to reduce the number of animals. One indigenous female farmer expressed this.

> I have reduced the number of livestock because my children are not here to help. Collecting forage from the forest is also difficult because we are only allowed to go on certain days when it is open for everyone. There isn't enough grass around our land, and I am scared to go to the forest alone. We have to go in groups when the forest is open; otherwise, we cut grass and graze our livestock on our own land. **(**HH_RM_11_F, female farmer in 30's)

As these quotes reflect, subsistence farmers in study site 1 often made adjustments in livestock management as a coping strategy in response to stressors caused by the

increase of work burdens, declining pastures, and rural youth out-migration. By contrast, testimonies from more commercialised farming contexts, such as study site 2, reveal that adjustments in livestock management are associated with increased commercialisation of farming. As rural households engage more in commercialised farming practices, reducing livestock as a way to respond to stressors is also associated with a change in breeds, from local to market-oriented breeds (often referred to as modern or hybrid breeds). In a conversation with a high-caste female farmer in study site 2, she expressed the shift as follows. "*We are attracted to hybrid cows because they give better milk than buffalo. So if we have more milk, even selling it at a low price benefits us because buffalo milk production is lower compared to hybrid cows."* (HH_DK_04_F, female farmer in 50's). As the quote states, changing breeds is a way to adapt to the wider process of engaging in a market-oriented economy.

In study site 2, adjustments in livestock were commonly described to enhance incomes. A female farmer in study site 2 made a representative statement for the households that practice commercialised farming in Dolakha.

> […] we've reduced the number of animals because hybrid cows give more milk and earn more money than local cows. Before, we used to keep buffaloes, calves, local cows, and goats, but now we only have hybrid cows because they're easier to manage. They don't require cutting fresh grass all the time since they can be fed dried straw and market grains. Plus, they bring in more income. (HH_DK_12_F, female farmer in 50's)

The quotes reflect a common bearing across study site 2, namely, in the cases of shifting to hybrid varieties, farmers can decrease the number of livestock to focus the production on one or two hybrid animals, which was noted by a male farmer. "*Hybrid cows give more milk, which helps us earn more income by selling their milk*." (HH_DK_09_M, high caste male farmer in 60's). In commercialised farming contexts, such as study site 2, farmers tend to reduce herd sizes while investing in high-yield breeds that are easier to manage and more profitable. Fodder reliance also shifts as the modern breeds increasingly rely on purchased fodder, allowing farmers to reduce labour demands and decrease work burdens, which was described by a farmer in Dolakha. *"We used to keep a lot of livestock in the past, and we took them uphill to the forest area for seasonal grazing. But nowadays, people don't want to do hard work and only keep one or two hybrid cows while staying at home."*(HH_DK_09_M, male farmer in 60's). As rural out-migration increases, this causes a labour shortage. Adjustments in livestock management are thereby made towards more commercialised and intensified farming practices in study site 2.

The second adaptation strategy I identified was ***collective actions,*** which include participating in community forest user groups, women's groups, borrowing money,

and sharing information at public meetings. Many interviewed farmers reported that participation and engagement in community groups such as savings, water management, women's, or forest users' groups has several benefits to adaptive capacities. In these groups, farmers can come together, share information, and gain access to resources which can support adaptation. Some examples of goods that are distributed by community groups are seeds, water tanks, and fertilisers[7]. A representative statement was made by a female farmer from study site 2.

> We, the women's group, have received some seeds of tomato and vegetables and made seedlings for distributing to the villagers. We had made a women's groups and we work together for growing plants and cultivating our land. For these efforts, the ward provides medicine to spray on vegetables and also provides tunnel material for those who want to run tunnel farming commercially. (HH_DK_12_F, female farmer in 60's)

In commercialised farming communities, such as study site 2, collective actions are often associated with the tangible benefits of accessing resources that could enhance agricultural productivity. By contrast, in the more subsistence or semi-commercialised areas, such as study site 1, collective actions are more often associated with savings groups. In these groups, farmers can come together to lend out money on a rotational basis. Saving groups are thereby often described as enabling farmers to have a buffer for responding to unpredictable events. Two statements about savings groups were made by farmers in study site 1.

> We contribute 100 rupees every month. Previously, we used to save 10 rupees, but it has increased to 100 rupees now. Some members collect the money from us and take it to the office for saving. We can withdraw it when we are in need. In the past, we used to withdraw it when we were in dire need. (HH_RM_08_M, male farmer in 70's)

> It's our own savings, and we withdraw money when we need it. Sometimes, when there's a shortage of expenses, we withdraw money to buy things from the market (HH_RM_01, female farm in 70's).

The responses from interviewed farmers imply that collective actions through community groups are becoming increasingly important as farmers move towards a market-based economy. As farmers engage with markets to access education, health care, agricultural inputs (such as fertilisers or fodder), and many other everyday necessities that require money, coming together to save money supports farmers to respond to unpredictable stressors.

> Most of the time, we manage on our own, but sometimes, when it's urgent, we have to borrow money from neighbours. Since we live in a village, sharing things with each other is part of our culture. We help each other in times of need, which is why we call it a village, there's a sense of community and emotional support. If I need something, I

[7] In the interviews with farmers, fertilisers were often referred to 'medicines for plants'.

> borrow from them, and if they need something, I help them in return. That's how we manage our activities. (HH_RM_11_F, female farmer in 30's)

As the quote states, in subsistence farming systems such as study site 1, community groups often help farmers cope with challenges reactively. Whereas in more commercialised farming systems, like study site 2, collective actions through community groups are more often proactively adapting to stressors posed by climatic and non-climatic changes.

The third adaptation strategy identified was through the ***support of local governments***, including Ward Offices. Improved agricultural tools, such as drought-resistant seeds or tunnel farms, were presented as strategies that can enhance the capacity to adapt to stressors caused by climatic and non-climatic changes. One female farmer made a representative statement about the benefits of using hybrid seeds provided by the ward office when climatic conditions change.

> [the ward office] distributed hybrid maize seeds. The plants look healthy, and the seeds inside the corn are good and compact, which increases the yield. It seems to be a drought-resistant seed […] after using hybrid seeds, we get good, thick fruits. (HH_RM_11_F, female farmer in 30's)

The female farmer had, like many other farmers in study site 1, received the technical interventions of agricultural tools and expressed satisfaction when using such. Despite the positive effects of resources distributed from local ward offices, a common bearing from both villages was that such support from ward offices prioritised large-scale and registered farms.

> Now the ward officials say help or assistance is only available for commercial and large-scale farming. We've heard that agricultural tools are available at the agriculture office, but they prioritize people with large farms, so we don't expect anything. Whether it's the ward or other organizations, they only focus on helping commercial farmers with large farms through assistance and training. (HH_DK_01_F, female farmer in 50's)

In the 26 interviews conducted, the narrative of large-scale and registered farms being prioritised in the distribution of agricultural tools and other goods was a recurring theme. In a conversation with a Ward Chair from study site 1, he explained the prioritisation of resource distribution as follows:

> […] we provide opportunities to those who are most willing to run a farm and deliver good results. Most farmers must register their farms for commercial farming, so we support those who have officially registered their agricultural businesses. For poor individuals who cannot afford to register a firm but are still willing to farm, we provide hybrid seeds for vegetables and crops, as well as water pipes at subsidized rates or

> sometimes for free, to help them sustain their farming activities. (Ward Chair in study site 1)

As the quote states, commercial and registered farming households are given priority in local authorities' resource distribution, though subsidised goods are provided to poor households who cannot afford to register. A similar statement was also made by the Head of Community Forest User Group (CFUG) in study site 2.

> Some agriculture-related offices publish a notice that agricultural tools are available in their office, and the farmers have to register an agricultural farm to get those tools from the office. If they had registered it, they would get agricultural tools from the agriculture office. Most of the villagers haven't registered a farm because they have to pay a tax every year, which is not possible for everyone. (Head of CFUG in study site 2)

The quote reflects a widely perceived conflict across both study sites. Namely, despite resources being available, the requirement of needing to be registered excluded many small-scale or semi-commercialised farmers from receiving these. While the barriers to obtaining resources were reflected in both sites, study site 2 had a higher proportion of high caste households who were formally registered and engaged in commercialised agricultural practices, often giving them better access to support from local authorities. By contrast, in study site 1, although some farmers had received support from local authorities, the majority of indigenous or low-caste households who practised subsistence or semi-commercialised farming were excluded due to cost and complicated registration processes.

To sum up, many adaptation strategies were developed to address multiple stressors. While the themes of adjustments in livestock management, collective actions, and support from local authorities were shared by participants across the two villages, the findings sparked some questions of who adapts, and how social differentiation affects farmers' opportunities to adapt.

5.2 The role of intersectionality in shaping adaptation to climatic and non-climatic stressors

To learn more about the role of social differentiation in shaping equitable adaptation to climatic and non-climatic change related stressors, I employ an intersectional lens in the following analysis. The strategies I present in the following section are built on the adaptation strategies presented above: adjustments in livestock management, collective actions, and support from local authorities.

5.2.1 Gender and age intersect to shape decision-making about adjustments in livestock management

From the empirical findings, testimonies coded in 'adjustments in livestock management' indicate that farmers are not participating as equal peers in households' decision-making processes, especially regarding decisions concerning decreasing or selling livestock. Gendered differences in the social arrangements were prominent in the case of household-level decision-making, which is illustrated in the quotation below. *"To be honest, men still have more powers in household decisions, though nowadays with equal education, women are more involved in community decisions. But in homes, men still make most decisions."* **(**HH_RM_02_M, male farmer in 60's). Like the quote states, women generally encounter obstacles in households' decision-making processes. These obstacles are later translated into inequitable adaptation outcomes as women have limited power to make decisions about adaptation strategies.

While most interviewed women expressed that they face barriers to influence household decisions, the material indicates that older[8] women face even more significant barriers because of their overlapping identities of age and gender. In interviews with women over 50 in study site 1, many report that they seek permission from male family members when selling livestock to adapt to the perceived changes. These barriers were illustrated by two older female farmers. "*I do ask my husband. I also discuss it with my son and explain to him how we sell the livestock […]"* (HH_RM_04_F, indigenous female farmer in 50's): *I have to ask my husband before selling [livestock], and he makes the decision.* (HH_RM_08_F, female farmer in 70's). These quotes align with the findings from the participatory observations conducted with female farmers herding goats. In the observations, a broader theme of gendered differences in decision-making processes was revealed,

[8] Participants over 50 years were clustered into this category; most were over 70 or 80 years.

especially amongst older females. Despite older women being responsible for the daily management of animals, the social arrangements of making decisions about livestock reduction include a need to seek permission from male peers.

Other female farmers of this subgroup reported that they do not have any influence at all in these processes. When asking how decisions about selling livestock to adapt to changes were made, a 70-year old female farmer reported: "*My husband handles all the dealings with buyers. I'm not involved in that kind of work, all decisions are made by him."* (HH_RM_01_F, female farmer in 70's). Like many other stories I came across, the quote reflected that daily management of livestock does not translate into decision-making authority because of restrictive gender norms. Thus, the intersectional analysis of the empirical findings implies that social arrangements do not allow every adult farmer to participate as equal peers, which may lead to systematic exclusion of certain sub-groups of farmers.

Nevertheless, some older women reported having little decision-making power but only under certain circumstances. These often belonged from ethic groups and could exercise more power than females from Brahmin, Chhetri and Dalits castes. One indigenous woman in study site 2 exemplifies this by describing how she sells goats if prices are already predetermined. *"If the price is fixed, I can handle the sale. Otherwise, my husband negotiates for a better price."* (HH_DK_12, female farmer in 60's). The quotes reflect that some older female farmers have decision-making powers for easier tasks, yet their husbands are perceived as more suitable for dealing with more complex decisions, such as negotiation.

In comparison to the interviews conducted with younger female farmers, many reported higher decision-making power over livestock reduction. In a closer examination of the material, the analysis showed that young female farmers, especially from indigenous communities, had higher agency in decision-making. A representative statement was made by an indigenous female farmer from study site 2: " *[…] most of the time, we are apart due to my husband's job. My mother-in-law passed away earlier, and my father-in-law is very old and does not hear very well, so all household decisions are made by me."* (HH_DK_01_F, female farmer in 40's). In the conversation, she also expressed that:*" […] household decisions are simple, so I handle them myself"* (HH_DK_01_F, female farmer in 70's). She later clarified that household decisions included selling livestock, such as goats and buffalo. The quote reflects a broader theme of higher agency and female empowerment among young women, which is translated into more adaptation strategies to respond to stressors posed by climatic and non-climatic changes. One possible explanation for this can be male outmigration. The lack of male peers in younger households may shift the dynamics, leading to young female farmers

becoming heads of their households in the absence of their husbands. Thereby, change the social arrangements regarding how decisions about adaptation strategies are made.

While male outmigration permeated most stories from young female, not all of them gained full authority to decide on livestock reduction in their husbands' absence. One indigenous female farmer illustrated this: *"We usually discuss selling livestock together and make decisions jointly."* (HH_RM_12_F, female farmer in 40's). The quote reflects that young female farmers gain more decision-making powers as male peers migrate to find labour. While some gained full authority, other young female farmers expressed that when their husbands are at home, household decisions regarding livestock reduction are made jointly as equal peers.

To sum up, an intersectional lens supports the development of an understanding of how gender and age intersect to influence decision-making dimensions of adaptation. Findings from Ramechhap and Dolakha suggest that gender is not a fixed identity in light of ongoing changes in rural Nepal. Instead, the perceived stressors seem to reinforce gender inequities for some female farmers, while empowering others.

5.2.2 Gender and education intersect to shape collective actions

Most farmers interviewed were considered 'uneducated' as many were illiterate or had not obtained any education beyond high school. When the 'uneducated' status intersected with gender, options for participating in public spheres, such as community groups, often differed between men and women. An indigenous female farmer in her 30's from study site 1, who had not obtained higher education than middle school, exemplified this.

> If programs are organized, most women aren't informed initially. Even if some women find out, they often don't share the information with others in the village. Sometimes, the authorities call and ask us to attend meetings or help them with something. At those times, I feel frustrated because they only call when they need us, not when there are opportunities […]. It hurts when I think about why the Ward doesn't listen to me. If I had got those opportunities, I could have managed my time between household chores and earning some money for personal expenses. It's also my wish to learn new skills. (HH_RM_11_F, female farmer in 30's)

Two more representative statements demonstrate the issues of not being called to public meetings "*I'm not talented enough to make decisions, and I don't know*

anything, why would they call me? I'm just an old lady [laughing]".
(HH_DK_06_F, female farmer in 80's).

> Why would community group leaders call an old, uneducated woman like me, who can't read or write? [laughs]. Everywhere, people favour those they like and ignore the poor. Those in power don't listen to the elderly because they think we won't live much longer, so they disregard our voices. (HH_RM_13_F, female farmer in 70's)

Other female farmers expressed that they get information about public meetings or community groups. In these cases, however, a common bearing across the interviewed female farmers is that the lack of education creates barriers for meaningful participation, which is noted by a female farmer from study site 1.

> There is a women's group in the village, but I don't go because I am uneducated. I can't read or write. Only those who are educated speak, and I don't understand much. (HH_RM_13_F, female farmer in 70's)

As the reasoning above implies, community groups often prioritise the educated farmers of the village who can read governmental documents or write protocols. The female farmers who have the status 'uneducated' were often expressing a form of intersectional exclusion. They are not only excluded because of constraining gender norms, but also because of low educational background.

Furthermore, for many of the 13 interviewed female farmers, the absence or low engagement in schooling is not simply about missing out on skills such as being able to read or write, but also about losing the social position and confidence needed to participate as equal peers in public forums. A female farmer in her mid-30s reflected on this dynamic.

> My husband participates everywhere, and when he doesn't have time to attend small meetings, I join there […] but I am weaker in speaking than my husband. He is a well-spoken person due to his long-term experience. (HH_DK_03_F, female farmer in 30's).

Like the quote states, male partners are often perceived to obtain skills that make them more suitable for participating in public spheres across. The 'uneducated' female farmers frequently discussed and agreed that men are more prone and suitable to participate in community groups. Some farmers in the subgroup of uneducated female farmers disagree, however, claiming that all household members are uneducated and withdraw from any formal setting in which collective actions are discussed. This leads to an exclusion of the whole household from community groups or public meetings. The following quote from a female farmer in her 80s illustrates this:

> Neither of us is in such groups. The group members select people who can manage the forest and give them positions. We're not very educated and can't read well, so we're not interested. (HH_RM_01_F, female farmer in 80's).

At first glance, the quote appears to describe equal marginalisation between husbands and wives, both of them mutually stepping back from community group engagement due to limited education. While the statement describes both male and female farmers not being interested in public participation, many of the interviewed female farmers later clarified that their husbands, in fact, did attend public meetings. The following quote from an indigenous 'uneducated' female farmer illustrates the issue of women not having time to attend: "*My husband attends most of the meetings. I also go when I'm free from household work."* (HH_RM_01_F, female farmer in 70's). The reasoning in the quote illustrates a common bearing in the villages, that the lack of interest is in these cases, mutual, but in practice, there is a clear distinction in attendance between women and men. For households where both husbands and wives obtain the status of 'uneducated', female farmers furthermore face barriers due to domestic burdens.

As the interviews continued, another constraint to public sphere participation emerged. While some spaces, such as women's groups, are more welcoming of 'uneducated' female farmers as legitimate stakeholders, they often face difficulties when attempting to expand or manage more complex responsibilities. An indigenous female farmer made a statement about an issue a women's group face when trying to expand the group.

> I've been leading it from the start. I'm not highly educated myself, but many women in our village can't even write their names. The group continues to function because I keep motivating the women, explaining how such savings can help us in times of need. We save just 100 rupees per month, and I emphasise that even small contributions can make a difference in empowering women. […] We do provide loans to women in need, however, last June and July, we faced difficulties because no one was educated enough to handle the accounting. At that time, we decided to distribute the collected funds equally among all members and restart fresh. Currently, we've collected over Rs. 25,000 in the group. When we redistributed the money earlier, each of our 27 members received about Rs. 14,000-15,000." (HH_RM_12_F, female farmer in 40's).

I followed up by asking why it was hard to find educated women in the village, and she responded. *"More educated women tend to move to cities, leaving fewer educated women here, some are even less [educated] than me."* (HH_RM_12_F, female farmer in 40's). The quote illustrates how spaces designed to empower women can face structural constraints when members lack technical skills. Although women's groups recognise the value and legitimacy of uneducated female farmers in collective decision-making, the growth of these groups are constrained by technical skills, such as accounting as well as the broader theme of educated

women migrating to urban areas. These constraints may impact ‘uneducated’ female farmers' ability to participate as equal peers in public spaces, such as community groups, where they can take collective action.

To sum up, as stated in section 5.1, engaging in public meetings and community groups was perceived as a form of adaptation strategy to respond to climatic and non-climatic changes. In community groups or public meetings, households could receive some resources to enhance adaptive capacities to the perceived stressors. For instance, women’s groups can provide loans to farmers so they can invest in a water tank when rainfall becomes erratic. When analysing the empirical findings through an intersectional lens, female farmers with the status ‘uneducated’ are disproportionately excluded from these spaces, which hinder them from accessing resources to enhance adaptive capacities.

5.2.3 Poverty and disability shape support from local governments

Lastly, one subgroup of farmers that stood out in the intersectional analysis was farmers with intersecting identities of poverty and disability. Unfortunately, no female farmers with these overlapping identities were found, thus the analysis is centred on male farmers with intersecting identities of poverty and disability. The sub-group often lacked ‘voices’ or independence to obtain the resources they need to adapt to stressors posed by climatic and non-climatic changes. This is illustrated in the following quote.

> If any project arrives in the village, they [the ward office] don’t provide it to us. They give them to the "big people" in the village. These are people who are more clever and well-connected to the ward office. They don’t care about us and don’t provide anything to us [the poor and disabled]. (HH_RM_05_M, disabled male farmer in 70’s).

The quote illustrates a common bearing across the interviewed poor disabled farmers, namely that despite being qualified to receive assistance from local ward offices, many never receive it. Instead, resources are distributed to households with connections to local elites. One representative statement made by a physically disabled male farmer is regarding issues of distribution.

> The ward members and hospital staff know that I am disabled, and the left side of my body does not function properly. There is a possibility of receiving assistance for disabled people in the village, and I have asked for help, but they provide assistance to those who are more capable than me. I have been left out and have not received anything so far. They listen to us but do not take any action, they only listen [laughs]. (HH_RM_09_M, disabled male farmer in 60’s).

In the same conversation, I also asked who typically receives resources or assistance, the same disabled farmer with low socioeconomic status replied: *"[...] they [the ward office] distribute things, but only to the 'big people', those with connections [laughs]. If you have connections, you get the help."* (HH_RM_09_M, disabled male farmer in 60's). The response reflects a recurring theme across interviews, namely that resource distribution is perceived as connection-based rather than needs-based. This leads to the exclusion of farmers who face double oppression of being poor and disabled. Local governments' lack of recognition for the needs of these farmers leads to barriers in obtaining adequate resources to adapt to the changing circumstances.

Interviewed farmers at the intersection of disability and poverty often lack the influence and connections that are needed to access resources. Governmental bodies do not recognise how their needs differ from farmers without disabilities, which consequently leads to this subgroup not obtaining adequate benefits to fulfil their needs. A representative quote was expressed by a disabled farmer as follows.

> I think people who are healthy and can work to earn are better off. I have been disabled since a young age and can't do any hard work to earn. My wish is that the ward should provide some benefits for disabled people and make some rules so that we don't have to suffer so much. (HH_RM_08_M, disabled male farmer in 70's).

The reasoning in the quote reflects that exclusion leads to a widespread perception of neglect and marginalisation affecting the well-being of farmers who face the double exclusion of being poor and disabled. Another theme that permeates the testimonies is that exclusion goes beyond the denial of resources and extends to a lack of information about when and how resources are distributed. In this sense, the empirical material may not only relates to a lack of recognition in resource accessing processes, but also a lack of recognition in decision-making processes. A low caste physically disabled farmer expressed this issue.

> Nowadays, the position holders make the decisions. There is a new system for decision-making where the position holders and ward members decide for the village. […] now, only selected people are called via phone. They call people they are connected with, and disabled people like us don't get informed. (HH_RM_08_M, disabled male farmer in 70's).

In the conversation, farmers acknowledge the issue of local elites while he also described how disability restricts participation and influence within local governance structures. His reasoning reflected a broader theme of how decision-making processes favoured the well-connected, which further marginalised the disabled farmers with low socio-economic status from participation in public spaces. These findings imply that social inequalities, especially related to disability

and socioeconomic status, impact access to resources which could enhance adaptive support.

6 Discussion

The empirical findings illustrate that farmers in rural Nepal are experiencing and perceiving a variety of stressors posed by climatic and non-climatic changes, and have developed adaptation strategies to respond to these. Through the intersectional analysis, however, findings reveal that farmers' ability to adapt is determined by different factors such as social hierarchy, gender, ability, access to resources, social networks and many other intersectional factors. In this section, I delve deeper into how intersectionality shapes key dimensions of climate justice i.e. procedural dimensions in section 6.1, distributive dimensions in 6.2. and recognitional dimensions in 6.3. and its implications for adaptation.

6.1 Procedural dimensions

The findings illustrate that adaptation is about being able to make decisions, but who you are as a farmer has a direct impact on the chances of influencing households' as well as institutional decision-making processes.

According to Newell et al (2021) procedural justice dimensions concern the process of making fair decisions about the impacts of and responses to climate change. Similarly, as seen in sections 4.2.1 and 4.2.2, female farmers I interviewed discussed their decision-making powers in relation to adapting to stressors posed by climatic and non-climatic changes. Procedural injustices seem to reinforce for female farmers when these changes occur, as women generally have less influence in deciding on adequate adaptation strategies compared to their male peers. These findings align with the literature on gendered decision-making capacities in adaptation literature (Onta & Resurreccion 2011; Ravera et al. 2016; Erwin et al. 2021) and how climate change can reinforce gender issues (Ravera et al. 2016). However, the findings go further by highlighting that age and educational levels are equally critical in shaping power dynamics.

The intersectional lens helps illuminate how household dynamics are not about gender in isolation. Through the intersectional lens, the empirical material could reveal that when factors such as age or educational levels intersect with gender, it reduces the capacity to make decisions about how to adapt. These findings challenge traditional literature on gender and climate change, which often presents women in the global south as a homogenous group (Arora-Jonsson 2011; Djoudi et al. 2016). In her writings on gender and climate change, Arora-Jonsson (2011) notes that much climate justice literature continues to present women in the developing world as universally vulnerable because of their social position vis-à-vis men.

Women's relation to climatic events is often presented in a static manner that tends to overlook how social relations of power are produced (ibid). In this study, the climatic and non-climatic change related stressors seem to fuel gender inequalities for old female farmers, whereas young female farmers are more likely to have empowered decision-making capacities on a household level, as male outmigration leads to higher agency for female farmers. Thus, the case of rural Nepal showcases that climate change and other rural transformations can both reinforce and diminish household gender inequalities in the decision-making process over adaptation strategies. Showing that procedural justice dimensions are differentiated amongst women.

Overall, findings from the case study align with previous adaptation research, showing increased vulnerability among women in the global south (Albertyn et al. 2023; Udo et al. 2024). Nevertheless, the intersectional lens enriches the climate justice debate by asking 'Justice for whom?' (Hellin et al. 2022). I argue that the implications of asking such questions result in a sharper understanding of procedural justice dimensions among female farmers. These findings are important as there are similar studies like mine highlighting that females who face intersectional injustices of climate change generally have fewer adaptation options than men, yet many adaptation plans remain designed for men (Erwin et al. 2021). Even in the cases when adaptation efforts target women specifically, these efforts often lack to fully incorporate other factors such as differences in age or other identity categories (Thompson-Hall et al. 2016). Thus, I argue that an intersectional climate justice approach can make policies more effective.

6.2 Distributive dimensions

The findings illustrate that adaptation is also about what resources farmers receive to be able to adapt, but who you are as a farmer has a direct impact on the chances of receiving adequate goods. This resonates with distributive justice, a dimension that concerns the distribution of goods based on factors like status, needs, merits, rights, or social identities (Newell et al. 2021). Similarly, as seen in sections 5.2.3 and 5.2.4., the farmers I interviewed discussed their access to resources from community groups or local governments.

Continuing the topic of social differentiation in adaptation, resource access is linked to dynamic power relations. Osborne (2015) writes that scholars often portray men as uniformly privileged and women as universally vulnerable. The author critiques this binary framing of gender, arguing that gender is a flexible term in which individuals can belong to both privileged and marginalised groups simultaneously. Similarly, farmers I interviewed in section 5.2.4, are at the intersection of poverty

and disability. This sub-group presents an example of belonging to both privileged and marginalised groups simultaneously. As 'males', they hold privileges, but the overlapping identities of poverty and disability caused significant injustice in accessing adequate resources to adapt to stressors related to climate change as well as wider rural transformations.

Furthermore, mainstream literature on climate change often fails to see social differentiation as a set of complex and intersecting power relations (Arora-Jonsson 2011). In this study, not seeing social differentiation as a complex and dynamic set of power relations risks overlooking how subgroups of farmers, such as uneducated females, face difficulties in accessing resources. As stated in section 5.2.2, this group also face difficulties in accessing resources due to their overlapping identities, as their lack of education, together with constraining gender norms, causes a specific form of exclusion. In line with Arora-Johnson (2011), this study shows that to understand the root causes of climate change vulnerability, marginality needs to be viewed through power relations. Different situations hold different power relations, and class, gender, ethnicity or nationality depend on the context, and the specific vulnerabilities may differ (Arora-Jonsson 2011).

This part of the thesis has set out to explore how farmers' intersecting identities shape distribution dimensions of just adaptation. The case shows that power and oppression is constantly produced and is highly contextual. If careful consideration to intragroup differences is not taken (Osborne 2015), it is difficult to understand how vulnerability to climate change is produced in the first place (Arora-Jonsson 2011). Overlooking intragroup differences also risks classifying some groups as equally privileged and others as equally vulnerable. By asking 'Justice for whom' (Newell et al. 2021), the intersectional lens can sharpen distributional dimensions of justice by illustrating that intersectional identities create complex power dynamics beyond the dichotomies of gender. The study is not without limitations, however. 'Disability' was not purposively sampled for but rather appeared significant by random. No disabled female farmers from low socioeconomic backgrounds participated in this study, thus limiting the understanding of how disability intersects with other social differentiations. This gap raises the question of how gender, disability, and poverty shape equitable adaptation in rural Nepal?

6.3 Recognitional dimensions

Lastly, the empirical findings emphasise that recognition of social identities, needs, values, and beliefs is pivotal for accessing adequate resources and influencing decision-making processes about adaptation. The finding also illustrates that who you are as a farmer has a direct impact on being recognised.

Recognitional justice is closely linked to both distributive and procedural justice, but is particularly focused on subaltern, indigenous or other forms of marginalised groups who face discrimination or oppression (Fraser 2000; Newell et al. 2021). It emphasises equal rights for everyone and includes an understanding of social differences (ibid). Similarly, as described in section 5.2.4, interviews with farmers at the intersection of disabilities and low socioeconomic status described a form of marginalisation from local governments. The poor and physically disabled farmers, whose needs were not recognised by local authorities, faced a form of lack of recognition. This lack of recognition led to these farmers needing to compete for resources as farmers without disabilities. Leading to not being provided with adequate resources to enhance their adaptation capacities.

A lack of recognition permeated many stories from farmers in the case of rural Nepal, and another example was provided in section 5.2.3. Female farmers with low education were also constrained from gaining resources to adapt due to a lack of recognition as legitimised civic group members. This example, together with the example of disabled and poor farmers, aligns with previous justice scholars (Fraser 1998; 2000; Newell et al. 2021; Hellin et al. 2022), who emphasise that justice is a reciprocal process of being recognised, having influence, and gaining economic resources.

Findings from this case study align with previous literature on recognition within climate change (Hellin et al. 2022; Petesch et al. 2024) and reflect a broader theme of climate change exacerbating injustices for some of the most vulnerable groups. While the case of rural communities in Nepal is not unique in excluding marginalised groups, the intersectional lens may acknowledge intra-groups that are often neglected in mainstream literature. In the example of poor and disabled farmers, the finding can help create new knowledge about recognition by challenging mainstream literature that tends to discuss disability as a discrete identity separate from racial or other forms of identity (Barager 2009).

7 Conclusions

This study has set out to investigate and develop an understanding of how farmers' intersecting identities shape equitable adaptation. To accomplish this, the thesis employed an intersectional lens within a climate justice framework rooted in the notion of participatory parity, which includes distributive, procedural, and recognitional dimensions of justice.

I have identified five prominent stressors posed by climatic and non-climatic changes that were perceived and experienced by the interviewed farmers in Ramechhap and Dolakha districts. The climatic and non-climate change related stressors perceived and experienced by farmers were erratic rainfalls, changes in temperatures, increased pest invasions, increased prevalence of migration, and increased work burdens. To respond to these stressors, farmers often adopted three types of adaptation strategies, namely adjustments in livestock management, collective actions, and support from local governments. Although these strategies were perceived as important according to most farmers I interviewed, the intersectional analysis indicates that there are significant differences in who has decision-making powers, who has access to resources, and who is recognised to undertake such strategies.

The thesis has discussed that inequities are intersectional, and in turn, these inequities nurture unequal adaptation for some groups of farmers. Factors like gender, age, education, disability, and economic status intersect to shape unique experiences of (in)equitable adaptation. By addressing intra-group differences, the thesis has shown that, for instance, gender and age intersect to exclude old female farmers from influencing households' decision-making on adjustments in livestock management. The thesis also shows that social differentiation at the intersection of gender and education leads to the exclusion of uneducated female farmers from community groups through which resources are distributed. For male farmers, intra-group differences also appeared to shape adaptive capacities, most specifically at the intersection of disability and socioeconomic status, leading to an exclusion of disabled poor farmers from receiving adequate adaptation resources from the local government.

Together, these findings contribute to the theoretical understanding of climate justice debates by challenging the traditional view that portrays farmers as a homogenous group, particularly in the context of rural Himalayan communities. While similar studies like mine (Erwin et al. 2021; Petesch et al. 2024; Udo et al. 2024) have started using an intersectional lens to explore adaptation, these studies

remain limited. Integrating the theory of intersectionality theory into climate justice framework (Hellin et al. 2022; Petesch et al. 2024) may sharpen the climate justice framework by highlighting the specific and compound challenges that farmers with intersecting identities face. The findings furthermore imply that a dual framework approach not only enriches the analytical strength of the role of identity in adaptation, but it also assists adaptation practitioners and policy makers to design effective and inclusive climate policies and programmes (Erwin et al. 2021; Udo et al. 2024).

However, the study is not without its limitations. Lack of language and cultural knowledge might affect the depth of data collection, leading to a limited understanding of the complexity of the issues presented. Future research should consider these challenges and preferably conduct extended ethnographic engagement, particularly to gain insights into the severity of stressors posed by climatic changes and how they reinforce justice amongst farmers in exposed areas in the Himalayas. Future studies should also consider careful sampling of respondents. This study did not purposively sample for 'disability', but it appeared to be of significance. I call for future research to sample respondents from gender, disability and socioeconomic status, to gain insights into how these factors intersect to shape equitable adaptation in rural Nepal.

Lastly, this study underscores the importance of recognising and addressing the intersectional nature of inequalities in discussions on adaptation to climate change. By centring the analysis on farmers with intersecting identities in communities that are affected by wider rural transformations, it highlights how systems of power and oppressions operate in unique ways to create impediments for adaptation. This brings light to the importance of careful consideration of the intersectional nature of climate change impacts to ensure adaptation is equitable to the lived realities of those impacted the most.

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