# ROLLING THE DICE WITH SPICE: THE COMPLEXITY AND RISKS OF ETHNIC MINORITY LIVELIHOODS IN BÁT XÁT DISTRICT, NORTHERN VIETNAM

Patrick Slack

Department of Geography

McGill University, Montréal

December, 2019

A thesis submitted to McGill in partial fulfillment of the requirements

of a degree of a Master of Arts

# Abstract

Throughout the northern Vietnamese borderlands, upland minorities relying on semi-subsistence agriculture reside on the geographic, cultural, and economic margins of the Vietnamese state. In the Socialist Republic of Vietnam, policies aim to 'modernise' and integrate such semi-subsistence ethnic minority farmers into both the market economy and 'preferred' livelihood strategies. Such policies mean that upland farmers are increasingly engaging in trade and agricultural intensification rather than continuing to rely on subsistence crops of landrace varieties of rice, corn, and livestock, in addition to bartering. One specific program that influences ethnic minority livelihoods in these uplands has been encouraging farmers to rely on hybrid varieties of rice and corn, with seeds that must be bought yearly, along with agro-chemical inputs. Since the state began promoting these forms of agricultural intensification in the early 1990s, ethnic minority semi-subsistence farmers living near forests have turned to the propagation and cultivation of black cardamom (*Lanxangia tsaoko*, formerly classified as *Amomum tsao-ko*) as a preferred and lucrative income source. Black cardamom, specifically its dried fruit, is a non-timber forest product used in traditional medicine and is among the most expensive spices in the world.

This thesis, rooted in four months of ethnographic fieldwork completed in 2018, examines ethnic minority livelihoods centered around black cardamom in a northern district of Lào Cai province, Vietnam. Drawing conceptual ideas from political ecology, sustainable livelihoods, and food security literatures, my thesis aim is: To investigate the livelihood strategies of ethnic minority households in Bát Xát district, Lào Cai province, northern Vietnam, with a focus on the impacts of extreme weather events and government interventions, and the subsequent coping and adaptation strategies of local households. To investigate this aim, I collected data through semi-structured interviews, conversational interviews, walk-along interviews, group interviews, focus groups, oral histories, and overt participant observation. In my first results chapter, I examine the key elements that comprised ethnic minority livelihood portfolios and food security before 2008, before a series of shocks affected local livelihoods. I highlight the traditionally composite livelihoods that local farmers had, with limited trade, before noting the increasingly important role that black cardamom has played in funding hybrid rice and corn cultivation, greatly improving food availability. In my second analysis chapter, I focus on the shocks increasingly impacting upland ethnic minority livelihoods since 2008, specifically those in the shape of government forest-use regulations and extreme weather events that are restricting or devastating black cardamom crops. I then analyse the livelihood adaptation and diversification strategies that farmers have employed in response to these shocks, including shifts into wage labour, silviculture, the cultivation of medicinal crops, staple crop intensification, trading, fisheries, and increased participation in the tourism industry. I find that ethnic minority livelihoods and traditional notions of food security have remained resilient despite shocks limiting black cardamom as a livelihood strategy. However, how long this resiliency will last remains unclear, as there is no end in sight for extreme weather events and unhelpful government interventions.

# Résumé

À travers les régions frontalières du Nord du Vietnam, les minorités montagnardes subsistant grâce à une agriculture semi-vivrière résident dans les marges géographiques, culturelles et économiques de l'État vietnamien. Certaines politiques mises en place par la République socialiste du Vietnam visent à « moderniser » et intégrer ces paysans issus de minorités ethniques à la fois dans l'économie de marché et vers des stratégies de subsistance « préférées ». Ces politiques encouragent les paysans montagnards à délaisser le troc et les activités économiques traditionnels tels que la culture et l'élevage de bétail à des fins de subsistance, pour s'investir progressivement dans le commerce et l'agriculture intensive. Cette transition implique le remplacement des variétés de riz et de maïs traditionnels et adaptés localement par des variétés hybrides, dont les graines doivent être achetées annuellement, et l'ajout d'apports agro-chimiques. Depuis que l'État a débuté la promotion de l'intensification agricole dans le début des années 1990, les paysans issus de minorités ethniques vivant proche des forêts se sont tournés vers la propagation et la culture de la cardamome noire (*Lanxangia tsaoko*) en tant que source de revenue préférée. La cardamome noire, et plus spécifiquement son fruit séché, est un produit forestier non ligneux utilisé dans la médecine traditionnelle et fait partie des épices les plus chères au monde.

Cette thèse, basée sur quatre mois de terrain ethnographique complétés en 2018, examine les moyens de subsistance des minorités ethniques centrées autour de la cardamome noire dans le district de Bát Xát, au nord de la province de Lào Cai, au Vietnam. Tirant des concepts de l'écologie politique et des littératures concernant la sécurité alimentaire et les moyens de subsistance durables, ma thèse examine les stratégies de subsistance, de maintenance et d'adaptation employées par les foyers issus de minorités ethniques. J'ai recueilli des données à travers diverses méthodes : entretiens semi-structurés, conversationnels, en déplacement et groupés, ainsi qu'à travers des groupes de discussion, des histoires orales, et par l'observation ouverte des participants.

Dans mon premier chapitre analytique, j'examine les éléments-clés constituant les portfolios des moyens de subsistance ainsi que de la sécurité alimentaire chez les minorités ethniques avant 2008, année précédant l'arrivée d'une série de chocs qui ont affecté les moyens de subsistance locaux. Je dépeins les moyens de subsistance traditionnellement composites que les paysans ont utilisés dans un contexte d'accès au marché limité, avant de mettre en évidence l' importance particulière de la cardamome noire dans le financement des cultures hybrides de riz et de maïs, améliorant nettement la sécurité alimentaire des foyers. Dans mon second chapitre analytique, je me concentre sur les chocs dont l'impact sur les moyens de subsistance des minorités ethniques s'accroît depuis 2008, spécifiquement la venue de nouvelles réglementations gouvernementales contrôlant l'utilisation des ressources forestières ainsi que l'augmentation de la fréquence d'événements météorologiques extrêmes qui restreignent ou détruisent les cultures de cardamome noire. J'analyse ensuite l'adaptation et la diversification des stratégies déployées en réponse à ces chocs, tels que la transition vers des emplois rémunérés, la silviculture, la culture de plantes médicinales, l'intensification des cultures de base, le commerce, la pêcherie, et la participation accrue dans l'industrie du tourisme. Je découvre que les moyens de subsistance des minorités ethniques ainsi que les notions traditionnelles de sécurité alimentaire sont restés résilients, et ce malgré les chocs

limitant les apports de la cardamome noire. Toutefois, la durabilité de cette résilience demeure incertaine, puisqu'il n'y a pas de fin perceptible aux événements météorologiques extrêmes ni aux interventions gouvernementales peu serviables.

# Acknowledgements

Without the support of people within the department, my colleagues, friends, and family, this thesis would not have been possible. First and foremost, I would like to thank my supervisor, Sarah Turner, for the immense support of patience, finances, and countless hours of preparation prior to fieldwork, throughout fieldwork responding to e(ssay)-mails, and through the writing up of my research. Your efforts and time are so greatly appreciated, as you have provided me with invaluable feedback that has greatly improved me as a scholar. I would also like to thank Yann le Polain de Waroux and Jean Michaud for the support in developing and commenting on my ideas, approaches, and writing throughout this process. I would also like to thank Prof. Nguyen Thinh for your support, guidance, and introductions in Vietnam, all of which were key to my success during fieldwork. Additionally, I would like to thank my research assistant who was absolutely essential to my research, but I am unable to name due to confidentiality. I would also like to thank Chi Pham for the language lessons which made navigating life and fieldwork in Vietnam much easier. I also want to thank the great faculty in the Department of Geography who have helped me to develop myself as an academic and as a professional. My research was possible due to the generous support of the Rathlyn Fieldwork Fund, the Department of Geography, and the Institute for International Development (ISID). I would also like to thank the Department of Geography staff and ISID staff for making the navigation and completing of the necessary processes seamless.

I would also like to extend a large thank you to the great graduate student community within the Department of Geography which have assisted in traversing the various bureaucratic, financial, and academic processes, in addition to becoming dear friends. I would also like to thank the supportive scholars in the Southeast Asian Massif Research Lab for the collaboration, feedback, and friendship. Thank you to Antoine Garnier for translating my thesis abstract into French. Beyond the department, I would like to thank the many dear friends that have both encouraged me to complete this degree, but also to those that 'forced' me to stop working occasionally. I also want to thank my incredibly supportive, encouraging, and loving family who have made me who I am today. To those not mentioned, I want to thank you for every role that you have played in my life, as without your presence, I would not be who I am at this very point in time.

Lastly, but most importantly, I want to extend the most heart-felt thanks to the many research participants-turned-friends that treated me as their own grandson, son, or brother and made Bát Xát another home throughout my research. Without your incredibly open hearts, generous time, and plentiful hospitality, none of this would have been possible. I hope that I have and will be able to reciprocate the generosity, effort, and trust you have given me in one form or another.

# Table of Contents

CHAPTER 1. INTRODUCTION ..... 1
1.1. Aim and Research Questions ..... 3
1.2. Thesis Outline ..... 3
CHAPTER 2. CONCEPTUAL FRAMEWORK ..... 5
2.1. Political Ecology ..... 6
2.1.1. Defining Political Ecology ..... 6
2.1.2 Access ..... 7
2.1.3. Asymmetrical Power Relations and Agency ..... 8
2.1.4. Governmentality and Environmental Rule ..... 9
2.2. Sustainable Livelihoods Approach ..... 11
2.2.1. Defining Sustainable Livelihoods ..... 12
2.2.2. Five Assets/Capitals ..... 13
2.2.3. Access ..... 16
2.2.4. Livelihood Strategies, Activities, and Diversification. ..... 17
2.2.5. Vulnerability Context and Transforming Structures and Processes ..... 18
2.3. Food Security ..... 19
2.3.1. Conceptual development ..... 19
2.3.2. Four Dimensions of Food Security ..... 20
2.3.3. Food Sovereignty ..... 22
2.3.4. Cultural Appropriateness ..... 23
2.3.5. Integrating Food Security into Livelihood Studies ..... 23
2.4. Chapter Conclusion ..... 24
CHAPTER 3. CONTEXT – POLICY, PEOPLE, AND PLACE ..... 25
3.1. The Policy, Poverty, and Food Security Context ..... 25
3.1.1. Anti-Poverty Policies in the Uplands ..... 26
3.1.2. Market Integration and Forestry Policies ..... 27
3.2. National Land Use Reforms ..... 32
3.2.1. Resolution 10: The 1988 Land Law ..... 32
3.3. Lào Cai Province: Land and People ..... 34
3.3.1. Geography and Climate ..... 34
3.3.2. Ethnicity ..... 35
3.4. Ethnic Minority Livelihoods in Lào Cai Province ..... 38
3.4.1. Agriculture ..... 39
3.4.2. Livestock ..... 39
3.4.3. Non-Timber Forest Product Collection, Cultivation, and Trade ..... 40
3.4.4. Alcohol Distillation, Textile Production, and Tourism ..... 41
3.5. Land Use Changes ..... 42
3.6. Conclusion ..... 43
Chapter 4. Methodology ..... 44
4.1. Methods ..... 44
4.1.1. Interviews ..... 44
4.1.2. Overt Participant Observation ..... 51
4.2. Coding and Analysis ..... 52
4.3. Ethical Considerations ..... 52
4.3.1. Method-specific Ethical Considerations ..... 54
4.4. Positionality ..... 55
4.5. Conclusion ..... 57
CHAPTER 5. CORE LIVELIHOOD COMPONENTS IN BÁT XÁT DISTRICT ..... 58
5.1. Staple Crops ..... 58

5.1.1. Rice ..... 61
5.1.2. Corn ..... 66
5.1.3. Cassava ..... 67
5.1.4. Home Gardens ..... 68
5.2. Livestock ..... 68
5.2.1. Ruminants ..... 69
5.2.2. Pigs ..... 70
5.2.3. Poultry ..... 71
5.3. Non-Timber Forest Products Beyond Cardamom ..... 71
5.3.1. Honey ..... 72
5.3.2. Mushrooms ..... 73
5.3.3. Other NTFPs ..... 74
5.4. Black Cardamom ..... 75
5.4.1. Cardamom Plots ..... 75
5.4.2. Cardamom Labour ..... 76
5.4.3. Cashing in on Cardamom ..... 78
5.5. Food Security ..... 79
5.5.1. Food Availability ..... 79
5.5.2. Food Access ..... 80
5.5.3. Stability ..... 81
5.6. Conclusion ..... 82
CHAPTER 6. VULNERABILITY CONTEXT AND ADAPTATION ..... 83
6.1. Shocks and Trends ..... 83
6.1.1. Extreme Weather Events ..... 84
6.1.2. Government Interventions and Trends ..... 85
6.2. Livelihood Coping Strategies and Adaptations ..... 91
6.2.1. Black Cardamom ..... 91
6.2.2. Core Livelihood Changes – Extreme Weather Events and Coping and Adaptation Strategies 93
6.2.3. Wage Labour ..... 98
6.2.4. Silviculture – Adaptation and Diversification Strategy ..... 102
6.2.5. Medicinal Crops - Adaptation and Diversification Approach ..... 104
6.2.6. Trading ..... 111
6.2.7. Fisheries ..... 113
6.2.8. Tourism ..... 114
6.3. Chapter Conclusion ..... 115
CHAPTER 7. DISCUSSION AND CONCLUSION: LIVELIHOOD OUTCOMES AND ROLLING THE DICE ..... 116
7.1. More Income or Increased Uncertainties? ..... 117
7.2. More Sustainable Use of Natural Resource Bases? ..... 119
7.3. Improved Food Security? ..... 122
7.4. Sustainable Livelihoods and Resilience ..... 125
7.5. Thesis Conclusion ..... 127
REFERENCE LIST ..... 129

## List of Figures

Figure 1.1: Lào Cai province and respective districts……..…2
Figure 2.1: Conceptual framework diagram ……...……....5
Figure 2.2: The sustainable rural livelihoods framework developed by Scoones…….13
Figure 2.3: DfID's sustainable livelihoods framework…….14
Figure 2.4: Depiction of an asset pentagon, with the red arrow indicating higher quantities of capital towards the perimeter ……15
Figure 3.1: Local farmers selling excess produce during a market day ……...29
Figure 3.2: Total households included in the provincial survey: 109,346 households.……....36
Figure 3.3: Total households included in the district survey: 13,610 households ..…..……36
Figure 3.4: Transitions of land-cover types in the region between 2000 and 2009…….…….43
Figure 4.1: A map of Bát Xát district, noting Bát Xát town and markets ……47
Figure 5.1: Communes, elevations, and marketplaces in Bát Xát District ..……..…….59
Figure 5.2: Cascading rice paddies and a stream……....61
Figure 5.3: A water-powered rice husker, Nậm Pung commune ……64
Figure 5.4: A rice huller granted to a Hmong village in Y Tý commune ……64
Figure 5.5: Husked corn left to dry in the sun…….66
Figure 5.6: A Hmong man's honeybee hive ……72
Figure 5.7: Lingzhi traded to an intermediary cardamom and medicinal plant trader in Sa Pa District ……...74
Figure 5.8: A healthy cardamom crop in the Bát Xát Nature Reserve ……...77
Figure 5.9: Dried cardamom pods purchased by a Kinh intermediary trader in Sa Pa town……79
Figure 6.1: A trình tường home belonging to a Hani family, Nậm Pung commune….……...87
Figure 6.2: Ngan's trình tường wall from his home that burnt down next to his new home ….....87
Figure 6.3: Areas of KfW8 project implementation……...88
Figure 6.4: Black cardamom leaves (center) damaged from snow and extreme temperatures…...92
Figure 6.5: Green Cardamom pods in Bản Qua commune…….....105
Figure 6.6: A two-year-old crop of green cardamom, Bản Qua commune ..……105
Figure 6.7: Sorting dried đương quy seed from floral brackets with a farmer in Y Tý commune.. ……..108
Figure 6.8: A Hmong farmer picks some xuyên khung leaves for a meal, Y Tý commune….....110
Figure 6.9: A Hmong farmer and trader during a market day …….....112
Figure 6.10: Yao farmers loading up NTFPs to sell at Thiên Sinh bridge ……113
Figure 7.1: Land cover classification as of 2000 and 2009 with the Bát Xát Nature Reserve.....120

## List of Tables

Table 4.1: The number of methods conducted for target group of research participants, the location of the research participants, and totals of each method and area…….....45
Table 4.2: Ethnic minority farmer research participants divided by gender and ethnicity…..…..45
Table 5.1: Classification of different elevations by commune (in the majority of inhabited areas), road condition, nearest market and distance, and the number of farmers interviewed from each elevation…….60
Table 5.2.: Number of households interviewed, organised by ethnicity and elevations of the Commune…….....……..……60
Table 6.1: Wage labour by household, ethnicity, elevation, and location ……...98
Table 7.1: Farmer perceptions of impacts that black cardamom cultivation has on forests…....121

# Chapter 1. Introduction

Northern Vietnam is part of an extensive series of mountain ranges that connect Bangladesh, Burma, Cambodia, China, India, Lao PDR, Thailand, and Vietnam, referred to as the Southeast Asian Massif (Michaud *et al*., 2016). Nearly 200 million people reside in this Massif, including 100 million ethnic minorities residing mostly in rural areas at high elevations (Turner *et al*., 2015). More specifically, upland ethnic minorities in the northern Vietnamese borderlands tend to rely on semi-subsistence agriculture, residing at the geographic, cultural, and economic margins of the state (Scott, 2009). They also reside at the political margins, given that the vast majority of state officials (including those stationed in the uplands) are lowland majority Kinh, who frequently consider ethnic minorities as having wasteful and primitive cultural practices (such as shamanism and related animal sacrifice) and environmentally detrimental landscape management (Salemink, 2000; McElwee, 2016). The Vietnamese government is attempting to assimilate these upland communities into the economic and political state through socio-economic development policies, targeting agricultural intensification, market integration, and forest resource governance to encourage more 'favourable' livelihood strategies (Bonnin and Turner, 2014; McElwee, 2004b; Turner, 2012a; Turner *et al*., 2015).

In these uplands, it is therefore not surprising that the semi-subsistence livelihoods of ethnic minorities are becoming increasingly diversified, adapting to various political and climatic shocks (Turner *et al*., 2015; Delisle and Turner, 2016; Rousseau *et al*., 2019). Ethnic minority households now require cash more than ever before to purchase high-yielding varieties of rice and maize that have been strongly recommended and pushed by the state. These seeds are heavily dependent upon chemical fertilizers and pesticides and, along with the hybrid seeds themselves, require yearly cash outlays (Bonnin and Turner, 2011, 2012; Turner *et al*., 2015). In response to increasingly cash-reliant livelihoods, non-timber forest products (NTFPs), specifically black cardamom, have become an important source of income for ethnic minority communities settled near forests to which they have access (Bonnin and Turner, 2011; Tugault-Lafluer and Turner, 2009; Sowerwine, 2004b; Turner *et al*., 2015).[1]

It is within this context that this study focuses on ethnic minority cardamom cultivators in Bát Xát district Lào Cai province, in Vietnam's northern uplands, and on the border with China (Figure 1.1). I selected Bát Xát district for my study for the following three reasons: 1) while research on

[1] Authors suggest that opium served as a major cash crop for ethnic minority households in the highlands throughout the past century based off of oral histories and colonial archival records (Michaud *et al*., 2016; Lentz, 2017). At the time of my research, only a select few farmers discussed opium in their livelihoods, as it remains an illegal activity as of 1992. For this thesis, I do not focus on this cash crop.


*Figure 1.1: Lào Cai province and respective districts (Source: J. Michaud 2012, in Bonnin and Turner, 2014: 3).*

Hmong and Yao livelihoods has been completed in neighboring Sa Pa district for over twenty years (Michaud and Turner, 2000; Deslisle, 2016; Bonnin, 2011; Tugault-Lafleur, 2008; Sowerwine, 2004), with tourism being a key livelihood pathway (Turner *et al*., 2015; Michaud and Turner, 2006), Bát Xát district is far less researched. It serves as an interesting comparative case study examining ethnic minority livelihoods outside of the influence of tourism, with preliminary fieldwork prior to my thesis by my supervisor suggesting black cardamom might be a prevalent source of income; 2) land-use and land-cover change mapping has shown that Bát Xát district has had significant changes to its landscape in recent years, including shifting patterns from upland fields, shrubs, and open-canopy forests to closed-canopy forests (Turner and Pham, 2015; Trincsi *et al*., 2014). These changes could potentially be driven by black cardamom cultivation, forestry programs, and local forestry stewardship, but more research was needed to find out (Turner and Pham, 2015; see Section 3.5. and 7.2.3.); 3) Bát Xát district's northern border runs over 70 kilometers with China offering a compelling case study along this northern frontier.

## 1.1. Aim and Research Questions

Despite the rapid rate of change that the livelihoods of these upland semi-subsistence farmers are undergoing, there exist relatively few analyses of the processes involved and in-depth local studies in these borderlands are still comparatively rare compared to lowland Vietnam livelihoods (Sikor *et al*., 2011). The originality of this study is rooted in wanting to better understand: 1) the roles that black cardamom plays in local ethnic minority livelihoods in the Sino-Vietnamese borderlands; 2) the unexplored impacts that external factors are having on these livelihoods during a period of immense change; and 3) how government interventions and black cardamom are altering forest cover and perceptions of forest health.

The aim of my research is therefore: *To investigate the livelihood strategies of ethnic minority households cultivating black cardamom in Bát Xát district, Lào Cai province, northern Vietnam, with a focus on the impacts of extreme weather events and government interventions, and the resultant coping and adaptation strategies of local households.*

Focusing on Hani, Hmong, and Yao minority farmer livelihoods in Bát Xát district, Lào Cai province that include the cultivation of black cardamom, this study examines how livelihoods have changed since more frequent and extreme weather events began occurring since 2008 and increasing government interventions have been implemented in the uplands (Delisle and Turner, 2016; Rousseau *et al*., 2019). My aim is guided by three research questions:

1) *Over the past three generations what have been the main components of ethnic minority livelihoods, specifically black cardamom cultivators, in Bát Xát district?*
2) *What are the main driving forces or shocks that have changed black cardamom livelihoods in Bát Xát district since 2008 (including and beyond extreme weather events), and how are ethnic minority farmers coping and/or adapting?*
3) *What have been the most notable local livelihood outcomes due to the processes underway and household coping and adaptation strategies?*

## 1.2. Thesis Outline

I answer my aim and research questions in seven chapters. Following this introductory chapter, I introduce the conceptual framework underpinning my research in Chapter 2. This framework comprises key ideas from the political ecology, sustainable livelihoods, and food security literatures, which informs my data collection and analysis. In Chapter 3, I situate my case study of Bát Xát district by detailing state interventions in northern Vietnam, the physical and human geography of Lào Cai province, and ethnic minority livelihoods in Lào Cai province. This chapter provides essential context for transformations occurring in Lào Cai province and Bát Xát district.

In Chapter 4, I introduce the qualitative methods I used to complete my research: conversational interviews, semi-structured interviews, walk-along interviews, focus groups, oral histories, and overt participant observation. I also introduce my processes of analysis, ethical considerations while conducting this fieldwork, and my positionality, all of which are an attempt to critique the limitations of the methods I used and myself as a researcher.

Chapter 5 is the first of my two results chapter in which I examine the staples of livelihood portfolios and food security equations of ethnic minority households in Bát Xát district prior to the many shocks their livelihoods have faced since 2008. I answer my first research question by outlining local livelihood portfolios, including examining staple crops, livestock, and the role of forest products, especially black cardamom. I also focus on household food availability, food access, and stability to assess food security status prior to 2008.

Building upon this knowledge of livelihood staples from Chapter 5, in Chapter 6 I examine the impacts on local livelihoods of livelihood shocks including extreme weather events and government interventions. Answering my second research question, I analyze coping, adaptation, and diversification strategies that semi-subsistence ethnic minority households use in response to these numerous shocks and trends, as well as the roles and impacts of state interventions.

Lastly, in Chapter 7, my discussion chapter, I answer my third research question, which is broader in nature than my first two research questions. I interpret changes in forestry management and livelihood outcomes. Here I examine the interactions and impacts that forestry programs, community management, and black cardamom appear to be having on land cover change. I also question the possibility of black cardamom remaining a sustainable livelihood option given the recent and multiple shocks and diversification. I then analyze the food security ramifications of this diversification and recent shocks. I wrap up the thesis as a whole by reflecting upon the possible resilience of these livelihoods in a time of immense change and diversification.

# Chapter 2. Conceptual Framework

My conceptual framework, drawing from the interrelated concepts of political ecology, sustainable livelihoods, and food security, will allow me to engage my research aim and carefully analyse and interpret my data. Figure 2.1 visually depicts this conceptual framework, which includes key concepts from the overarching theme of political ecology, with a more specific focus thereafter on core ideas emerging from the sustainable livelihoods and food security literatures.

In this chapter, I start by briefly introducing political ecology (Section 2.1.1.), before focusing on key concepts that will underpin my thesis, including access (2.1.2.), asymmetrical power relations (2.1.3.), and governmentality and environmental rule (2.1.4.). This will provide me with a critical lens to examine the political, economic, and social structures impacting ethnic minority households in my case study. I also outline the sustainable livelihoods literature (Section 2.2.) to contextualize Hani, Hmong, Yao livelihoods. Drawing from this approach, I define sustainable livelihoods (Section 2.2.1.), the five capitals/assets (Section 2.2.2.), vulnerability contexts and transforming structures and processes (Section 2.2.3.), access (Section 2.2.4.), and livelihood activities (2.2.5.). Lastly, I explore the food security literature, from which I focus on shifts in global food security implementation (Section 2.3.1.), four dimensions considered as defining food security (Section 2.3.2.), food sovereignty (Section 2.3.3), the need to consider cultural appropriateness (Section

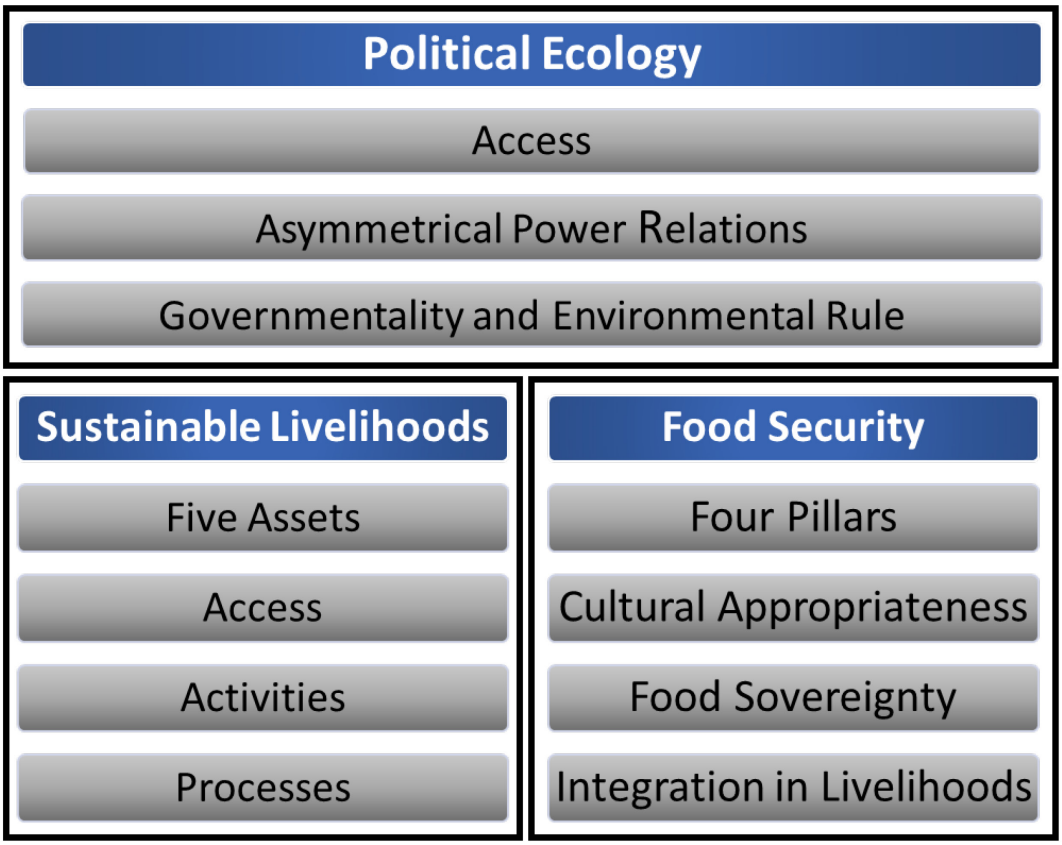


*Figure 2.1: Conceptual framework diagram (Author, 2019).*

2.3.4.), and food security's integration into the livelihoods framework (Section 2.3.5.). I will bring together the key elements of my conceptual framework as they relate to this study.

## 2.1. Political Ecology

This multidisciplinary field of study provides a variety of perspectives regarding human interactions with the environment (Blakie and Brookfield, 1987; Bryant, 1992). Political ecology allows for enhanced understandings regarding the relationships between actors, the environment, livelihood dynamics, and food security (Bryant, 1992). For my research, political ecology provides the critical perspective necessary to examine the political and social dynamics between ethnic minorities and the state.

### 2.1.1. Defining Political Ecology

Political ecology is considered to have begun as a discipline with a piece by Eric Wolf (1972), an anthropologist who studied ownership and inheritance of resources, connecting societal laws and norms to local ecosystem impacts. The field had little traction until the late 1970s, researchers working in the fields of geography, sociology, and political economy then began to utilize political ecology approaches to observe the linkages between socio-economic development, environmental degradation, and critiques of capitalism (Blakie, 2008; Bryant and Bailey, 1997). Emerging in part from the field of political economy, political ecology researchers examine the links between political and economic relationships, with a particular focus on the role the environment plays in these relationships and how humans use the environment (Bryant, 1992). Political ecologists highlight the examination of environmental concerns and inequalities that have arisen due to complex "political interests and struggles", since "politics and the environment are everywhere interconnected" (Bryant, 1997: 9). Furthermore, studies within the field aim to "understand the dynamics and properties of a 'politicized environment'" (Bryant, 1998: 83). Vaccaro *et al*. (2013: 255), referencing Bryant and Bailey (1997), defines the study of political ecology as examining "the environment as an arena where different social actors with asymmetrical political power are competing for access to and control of natural resources." Following Haan and Zoomers (2005) and Ribot and Peluso (2003), I would also argue that this definition should include social power as this also mediates access to resources (further discussed in Section 2.1.2 and 2.1.3).

Political ecology studies in the Global South (previously known as third world political ecology), attempt to "integrate environmental and political analysis to illustrate how these two activities, both helping to shape human destiny, are interrelated, and more importantly, how the one cannot be fully understood without the other" (Bryant, 1992: 28). Political ecology studies are not exclusive to the Global South however, with Bryant (1992) and Bryant and Bailey (1997) recognizing similar environmental concerns in Global North contexts. However, Bryant and Bailey

(1997) note that the scale of poverty and environmental degradation existent in the Global South poses a greater threat to livelihoods than similar crises in the Global North.

The first phase of Global South political ecology (late 1970s to mid-1980s) was underpinned by strong neo-Marxist sentiments, particularly an emphasis on macro-level inequalities. Ironically, this stage of political ecology often neglected the more politically and economically disadvantaged at a smaller scale of analysis, such as swidden cultivators or smallholder farmers (Bryant and Bailey, 1997). The second phase, beginning in the late 1980s, challenged this neo-Marxist foci on the global capitalist system, class relations, and reductionist views of actors (government, markets, farmers) (*ibid.).* Instead, this phase focused on dynamic relations and nested complexities that local actors' had within their own environment and institutions (Bryant and Bailey, 1997). The current phase of political ecology, initiated since the 1990s, draws upon post-structuralist (Escobar, 1999; Fairhead and Leach, 1995) and feminist arguments, giving rise to feminist political ecology (see Rocheleau *et al*., 1996) and critical political ecology (Forsyth, 2001). These literatures attempt to address structural inequality, (dis)empowerment, and marginalized voices within the field of political ecology (Forsyth, 2008).

Within the third wave of political ecology, Vayda and Walters (1999) argued for a more materialist rather than post-structuralist approach (c.f. Escobar, 1999). Vayda and Walters (1999) criticize political ecology for focusing too heavily on political and structuralist impacts on the environment, with the 'ecology' or 'environmental factors' being neglected. Despite the call for more 'science', environmental concerns, knowledge production of these concerns, and the science behind them are framed by political, economic, and social influences (Forsyth, 2003; McElwee, 2016). In addition, feminist political ecology also emerged, examining the intersection that gender has with other axes of power (Resurrecció and Nguyen, 2017). These influences are framed within an age of "hypermobile fluxes of capital, people, information, commodities, ideas, and energy" such that the globalized economy is affecting "social and ecological rural landscapes all over the world" (Vaccaro, 2010: 23). As such, political ecology will serve as a holistic framework for this study, that will allow me to link the other components of my conceptual framework: sustainable livelihoods approach and food security.

### 2.1.2 Access

At the heart of political ecology are the "power relations between different actors" (Tan-Mullins, 2007: 1). In Wolf's (1972: 201) foundational work on political ecology, he references anthropological papers that focus on "how important it is, for any one household at any one time, to achieve a balance between unimpeded access to an effective combination of resources" and

governing rules of who owns what. Bryant (1992) notes that complex conflicts regarding access are often due to tenurial systems, social institutions, and the control and use of natural resources.

More specifically, when focusing on defining access, rather than focusing on the *rights* associated with land use or resources, Ribot and Peluso (2003: 164; italics added for emphasis) have focused on "the *ability* to benefit from resources", focusing on the cultural, political, and economic constraints individuals may face. This focus on ability as opposed to rights, helps to emphasize the importance of individual social identity (ethnicity, place of birth, age, gender, religion) and relations (e.g. kinship, friendship, occupancy, or other relationships that demonstrate trust, obligation, or reciprocity) (Ribot and Peluso, 2003). Therefore, it becomes clearer that access to natural resources is mediated by "webs of power" that enable individuals to "gain, control, and maintain access" (Ribot and Peluso, 2003: 154-155).

Access to resources (natural and monetary) in rural areas plays a large role in determining if individuals or households may escape specific circumstances if they want or need to (Bryant and Bailey, 1997). Without delving into the ownership regime literature too far, formal or informal (customary practices or traditions) ownership regimes dictate the ability of individuals or households to access resources, potentially restricting or denying resource use (Bryant and Bailey, 1997; Ribot and Peluso, 2003). For example, being denied access to land due to an inter-family dispute may result in households resorting to cultivating marginal land with insufficient ecological properties to support a household's economic growth (Bryant and Bailey, 1997). Similarly, Hardin's (1968) 'tragedy of the commons' shows that open access to common cattle pasture can lead to overgrazing, resulting in degradation of the environment and livelihoods. Access, both restrictive and non-restrictive, therefore has the potential to serve as a constraint or an opportunity for environmental resource management and livelihoods themselves (Bryant and Bailey, 1997). Within my research, I examine the access to resources that ethnic minorities in Bàt Xàt district, Lào Cai province have, focusing on forest access and the cultivation and harvest of NTFPs, as well as access to land for rice cultivation, and access to forest land for payments for environmental services or plantation forestry. To do so, I unpack access along social identity lines, especially ethnic, gender, and socio-economic, as well as paying attention to social relations.

### 2.1.3. Asymmetrical Power Relations and Agency

Hornborg (2001: 1) defines power as "a social relation built on an asymmetrical distribution of resources and risk." Asymmetrical power relations are essential to understanding human-environment interactions and the global, regional, and national context of environmental concerns, especially with regards to access (Bryant, 1998; Bryant and Bailey, 1997; Neumann, 2009, 2010). As discussed in Section 2.1.2, access to natural resources is dictated by power relations between

actors, including the ability to access resources due to social identity and relations, as well as the roles of political institutions such as land tenure laws (Ribot and Peluso, 2003). Political, economic, and environmental consequences of natural resource exploitation impact individuals differently, for example, less politically or economically advantaged people often incur more environmental costs (Forsyth, 2003). As a result of asymmetrical power relations, increased vulnerability and marginalisation of poor communities may occur (Bryant, 1998). A focus on asymmetrical power relations within political ecology can provide an opportunity to expose and perhaps even balance these inequalities (Forsyth, 2003; Tan-Mullins, 2007), which requires unveiling conventional and alternative interpretations of social reality (Hornborg, 2001).

Many political ecologists examine the agency that actors have in controlling their own and others' interactions with the environment (Forsyth, 2003). Ortner (2006) defines agency as incorporating three components: 1) intentionality (cognitive, emotional, and conscious directions towards an end), 2) scales of agency an individual has within their positionality, and 3) the linkage between agency and power (including inequality). Bryant and Bailey (1997) suggest agency be examined through material and non-material power, how actors exert control over the environment or other actors, the manifestation of power relations in the physical landscape, and how or in what way actors are able to resist more powerful actors. The nested identities of individuals and households (i.e. the multiple, layered relationships that one has with others) must also be incorporated to understand asymmetrical power relations. For example, Rocheleau and Edmunds (1997) focus on the gendered access to space, gendered access to specific forest products, and the seasonality of access. Understandings of formal and informal norms are also essential to understanding localized contexts of asymmetrical power relations, resource access, and resource use (Vaccaro *et al*., 2014).

In sum, asymmetrical power relations are at the core of the inequalities many social 'others' —such as ethnic minorities in northern upland Vietnam—face. Through formal and informal institutions, asymmetrical power relations are manifested in individual and household access to resources and agency in everyday lives. These relations often present consequential outcomes for already exploited groups, resulting in increased marginalisation and inequality. Focusing on such power relations in the northern uplands of Vietnam with regards to access to black cardamom forests is a core focus of my research.

### 2.1.4. Governmentality and Environmental Rule

States are consistently trying to put an end to lawlessness in the margins of their geographical state boundaries. One way that some state operators attempt to do this is through governmentality (Das and Poole, 2004). Governmentality is a concept derived from Foucault's work (1991), which expands our understandings of governmental power which was traditionally thought of as

hierarchical state policies or state violence, and works to make more governerable citizens. Governmentality changes the scale of focus, including that of individual behaviour, and is implemented through more covert applications such as instances of knowledge production (see Section 2.1.4.1.) and control through social institutions, which in the end create more governerable subjects (Foucault, 1991).[2] For example, education as a social institution can influence senses of nationalism or 'proper' livelihoods that respect certain natural resources. Government projects and interventions are thus seen as tools to influence the activities of groups and individuals (Miller and Rose, 2008). One such application of governmentality is knowledge production, such as the mapping and completion of censuses of marginal areas, conducted to establish control over natural resources and populations (Vandergeest and Peluso, 1995). Governing through the 'conduct of conduct' thus aims to create a more governable society through the formation of ideal human subjects (Foucault, 1991). Governmentality aims to direct subjects to behave as the government desires, such as agreeing to be sedenterized for tax collection (Scott, 2009), settling in resource-rich areas for extraction and production (Braun, 2000), or obeying the prohibition of 'deforestation' to halt swiddening agriculture (McElwee, 2016). One example of governmentality is the recent creation of a natural reserve in Bát Xát district by the government, restricting access to NTFP cultivation.

McElwee (2016) notes that a focus on governmentality in relation to environmental institutions is not a common area of research (although see Yeh, 2005). Through extensive research in Vietnam, McElwee (2016: 5) coined the term 'environmental rule' which "occurs when states, organisation, or individuals use environmental or ecological reasons as justification for what is really a concern with social planning, and thereby intervene in such disparate areas as land ownership, population settlement, labour availability or markets". The state thus imposes an ideal vision of a particular landscape on its subjects (Peluso and Vandergeest, 2001; Scott, 1998). McElwee (2016) argues that this state-imposed vision of protecting or improving the environment is a façade, when such a vision is really to create 'ideal' societies and subjects. McElwee (*ibid*.) provides an example of the state arguing that it is combatting soil erosion and biodiversity loss by halting swidden agriculture. Many upland inhabitants have conducted swidden agriculture for generations and have continuously been bombarded by efforts to integrate them into desired state behaviour, by forced resettlement (including sedenterization and taxation) and the relinquishing of economically valuable forests (*ibid.*). This occurs despite evidence that when undertaken in low populated areas, swiddening is sustainable (Lam *et al*., 2005; De Rouw and Van Oers, 1988).

[2] Ellis (2000a) defines institutions as normal patterns of behavior shaped by rules in society, both formal and informally.

With hypermobility and consumption of capital and resources, comes a receding distance between the core and periphery, such that: “The environment and population of the rural area become a set of national resources ultimately managed (if not belonging) to the state” (Vaccaro, 2010: 25). Governmentality may thus transcend national borders and global economic powers, as: “Market integration often pushes peripheral rural areas into unilateral productive approaches” (Vaccaro, 2010: 26). In northern Vietnam’s uplands, an agrarian transition from subsistence or semi-subsistence agriculture towards increasingly monetized agriculture and the advent of wage work is increasing the state’s ‘gaze’, diminishing the distances between upland minority farmers and state institutions (Scott, 2009). Applying the concepts of environmental rule and governmentality to my research thus allows me to focus on the possible exploitative and marginalizing relations among the state, the upland minority farmers, and the environment (McElwee, 2016).

#### *2.1.4.1. Knowledge Production*

Specific forms of knowledge production may be used to impose governmentality (Foucault, 1991; McElwee, 2016). Under the guise of quantification of resources and proper managemne ot natural resources, state-led knowledge production commoditizes nature, opening the opportunity for assessment and intervention (McElwee, 2016). For instance, tools of calculation allow for the measurement of resources (including people), the territorialization of these resources, and the utilisation (or exploitation) of these resources (Dyson-Hudson and Smith, 1978). Such calculations and assessments may lead to state interventions, such as the displacement of people, the classification of a protected area, or taxation (McElwee, 2016). Access and asymmetrical power relations are applied in calculating such resources, as other forms of knowledge are made to be inferior and are over-shadowed without the consideration and consent of governed subjects (*ibid.*).

Drawing on these different elements from political ecology will allow me to examine the relationships between socially disadvantaged groups (ethnic minorities), state policies regarding agricultural intensification and forest protection, the role that environmental resources play in upland livelihoods, and how ethnic minorities interpret their role within the environment. Robbins (2012) calls for more research to be conducted on both the roles environmental resources play in rural livelihoods and the interpretation of these roles by rural populations. Given the complex interactions between state policies and subjects, the concepts that underpin political ecology are critical for this study.

## 2.2. Sustainable Livelihoods Approach

Chambers and Conway (1991) argue that the emergence of the sustainable rural livelihoods approach was due to an increasing demand on natural resources and food production alongside the rapidly growing world population and a world that is changing rapidly across all facets of human

life. With times of immense and rapid change, comes increased rural livelihoods complexity and inequality (*ibid.*). The sustainable livelihood approach creates a holistic framework by considering the needs and objectives of development interventions and academic research addressing changes in livelihoods and inequality (DfID, 1999). This framework allows for a context-specific investigation across places, groups, and socio-economic status (*ibid*.).

Department for International Development (DFID) (1999) researchers note that in order to employ an effective sustainable livelihood analysis, the following core ideas should be incorporated into the approach. First, there needs to be a focus on marginalized and excluded groups, as they tend to be the most vulnerable (*ibid.*). Second, a focus on what individuals have rather than what they need is central to a livelihoods approach, providing a more positive outlook on their circumstances (*ibid.*). Third a flexibility in methods is essential in specific contexts, as different purposes call for different methods (*ibid.*). DfID (*ibid.*) also argues for the disaggregation of a household unit, as this can provide a more nuanced understanding of the dynamics within a household. Hani, Hmong, and Yao livelihood decisions are made as a household unit, however, in interviews, individuals spoke about their own motivations and the actions behind them (Bonnin and Turner, 2014a).

I will utilize DfID's (1999) sustainable livelihood framework for my research in order to gain a nuanced understanding of changing livelihood strategies at the household level. As outlined next, I will examine the types of capitals/assets households have access to, how these are stored and utilized, and how households are responding to external shocks to their livelihoods, such as agricultural intensification, market integration, or increasing extreme weather events, in my case study site of upland northern Vietnam.

### 2.2.1. Defining Sustainable Livelihoods

A sustainable livelihoods analysis is a holistic and actor-oriented approach to understanding how one makes a living through their capabilities, assets (economic and non-economic), and activities (Chambers and Conway, 1991; DfID, 1999). Chambers and Conway (1991: i) define an environmentally sustainable livelihood as one that "maintains or enhances the local and global assets on which livelihoods depend and has net beneficial effects on other livelihoods". Further, they note that socially sustainable livelihoods provide for future generations and are resilient to shocks or stressors (*ibid.*). It is also noted that sustainable livelihoods do not deplete natural resource bases to the point of permanent decline of productive yields of products or services for livelihoods (DfID, 1999; Scones, 1998, 2009).

Building on earlier definitions, Scoones (1998) developed a diagram explaining sustainable rural livelihoods (Figure 2.2). In this framework, Scoones (*ibid.*) constructs different categories to help analyze livelihoods: contexts, trends, and conditions; livelihood resources; institutional processes

and organisational structures; livelihood strategies; and sustainable livelihood outcomes. Scoones' approach is to examine how these categories impact one another in a linear fashion, as listed previously and shown in Figure 2.2. A common criticism of Scoones' (*ibid.*) framework is that this is a linear approach and that he excludes vulnerability contexts, such as shocks, trends, and seasonality, all of which can drastically change the sustainability of a livelihood.

Compared to Scoones' (1998) framework, one year later, the DfID (1999) framework (Figure 2.3) incorporates more obvious feedback loops from transforming structures and processes to the vulnerability context, and by extension, access and livelihood assets. Further, livelihood outcomes have a feedback loop to livelihood capitals, enhanced food security may impact human capital (DfID, 1999). In my research I will use the DfID (1999) sustainable livelihoods framework to help me to assess how vulnerability contexts, processes, activities, and outcomes impact livelihood assets. This includes examining livelihood opportunities with respect to environmental resources, such as the role environmental resources play within rural livelihoods if these resources are being degraded, and how institutions and policies may play into this degradation (*ibid.*).

### 2.2.2. Five Assets/Capitals

Livelihood assets (or capitals) compose an "asset pentagon", which showcases what individuals have, rather than what they lack (Carney *et al*., 1999: pp). The asset pentagon provides a

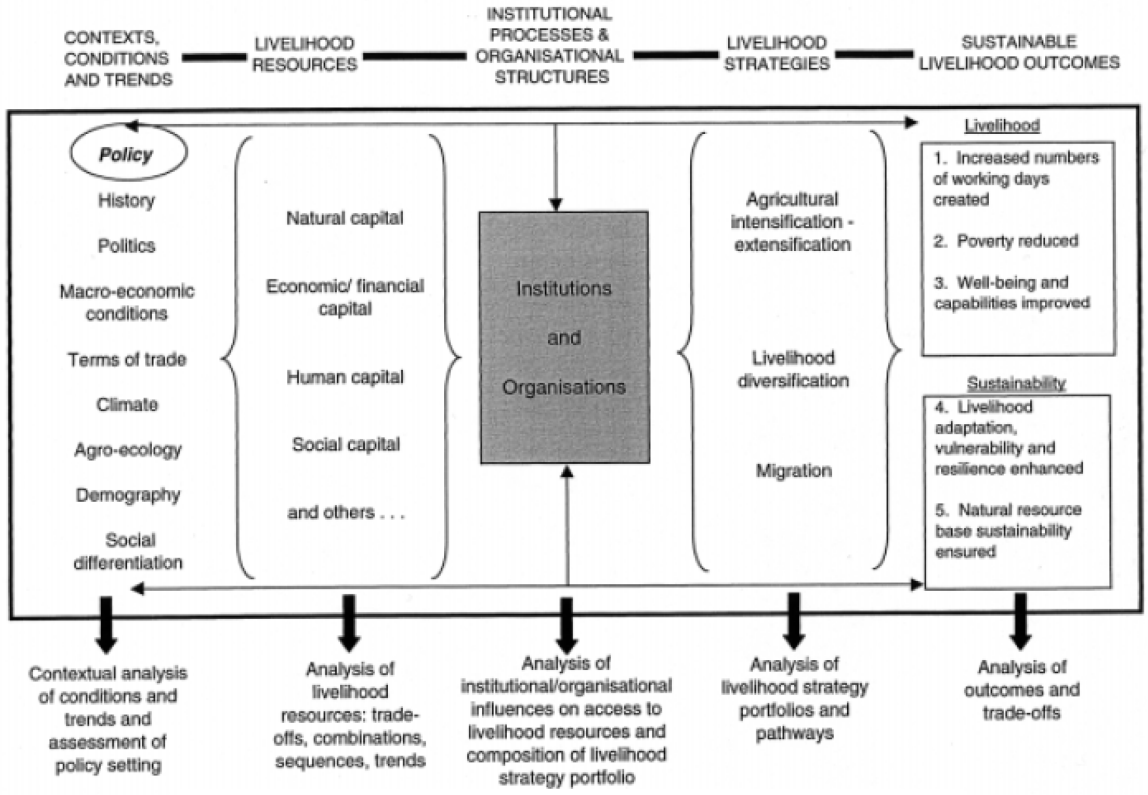


*Figure 2.2: Scoones's sustainable rural livelihoods framework (1998: 4).*

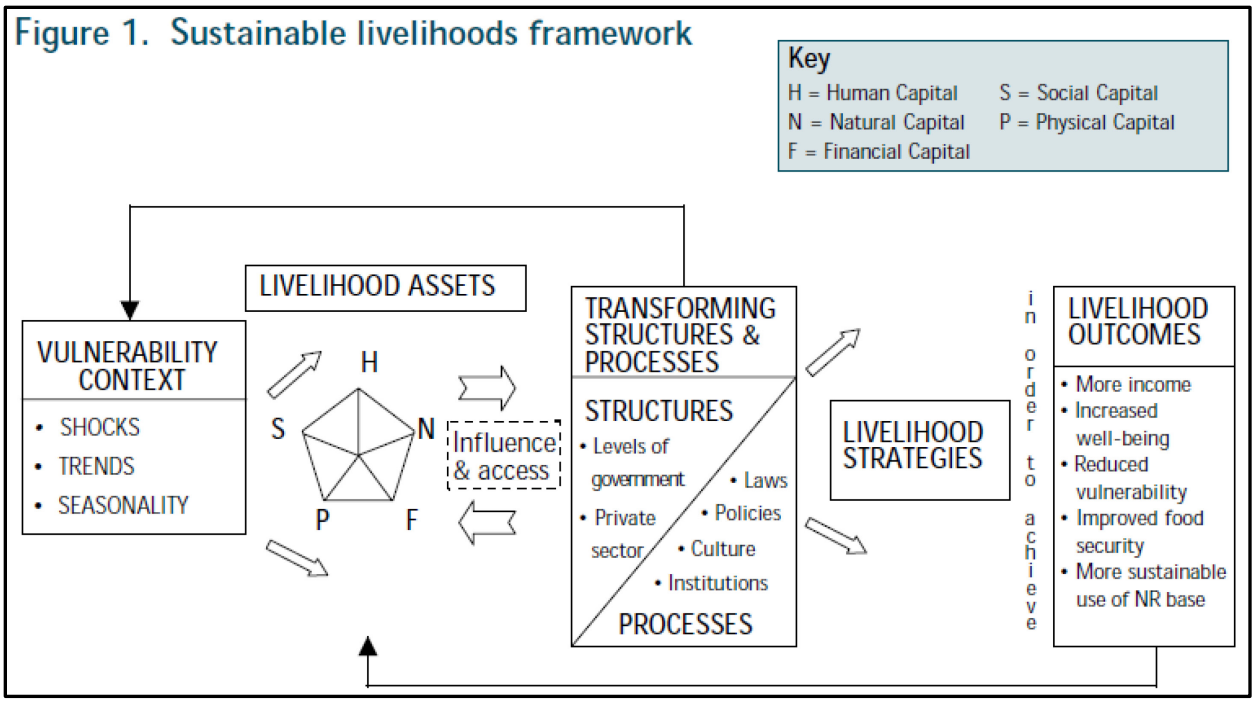


*Figure 2.3: DfID's sustainable livelihoods framework (1999: 1).*

transferable comparison of specific capitals, however analyzing relationships between capitals, specifically how one capital may enhance another, is also of importance (DfID, 1999). DfID (1999) explicitly notes that the term 'capital' is used throughout the livelihoods literature, derived from economics, and suggest that the five capitals should rather be viewed as 'livelihood building blocks.' The five capitals examined within this framework are natural, physical, financial, human, and social (DfID, 1999; Ellis, 2000a). Chambers and Conway (1991) divide these into two broad categories of assets: tangible assets, including stores and resources (typically financial, physical, and natural capitals), and intangible assets such as access and claims (typically social and human capitals).

These tangible and intangible assets are at the core of the livelihoods that individuals and households are able to construct for themselves. The asset pentagon (Figure 2.4) visually depicts an individual's/household's access to assets, so that comparisons and inter-relationships among assets and among different asset pentagons of individuals/households may be examined (DfID, 1999). The perimeter of the pentagon exemplifies the maximum assets, while the center point of the pentagon represents 'zero' assets, both of which are defined by the most (or least) assets found within the scale of study (DfID, 1999).

*Natural Capital* consists of environmental and ecological resources, both renewable (such as plants, wildlife, and water) and non-renewable (such as extractable metals or petroleum) (DfID, 1999; Ellis, 2000a). The physical environment can be used to either expand or enhance livelihoods (USAID, 2011). The ethnic minority households, like many semi-subsistence households, that I

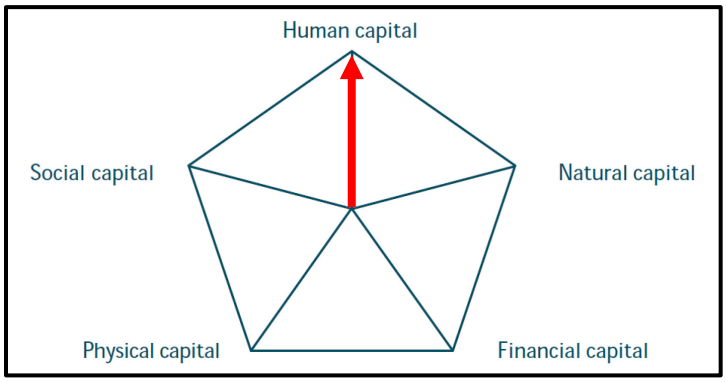


*Figure 2.4: Depiction of an asset pentagon, with the red arrow indicating higher quantities of capital towards the perimeter (Source: DfID, 1999; red arrow added by author).*

will be researching depend heavily on renewable resources in the forest and soil for semi-subsistence or subsistence needs, and hence I will be paying close attention to natural capital and access to natural capital.

*Physical capital* encompasses human-produced goods, mainly infrastructure (such as roadways, irrigation systems, and shelter) and technology (such as machines, tools, and hybrid seed) (DfID, 1999; Ellis, 2000a), that enable production and market exchanges (Carney *et al*., 1999). Physical infrastructure and a household's productive assets may be included as physical capital, as it creates "economic production processes", such as buildings, tools, machines, or draft animals (Ellis, 2000a: 32; USAID, 2011). The upland ethnic minority households I will be working with have increasingly faced state encouragement to adopt specific technologies such as hybrid seed and related agricultural inputs (Bonnin and Turner, 2011; Turner *et al*., 2015) and increased infrastructure development for markets and roads (Bonnin and Turner, 2014; Trinsci *et al*., 2014). As such, part of my aim in this thesis is to see how this has impacted local livelihoods.

*Financial capital* may consist of savings, loans, salaries, remittances, and/or government assistance (DfID, 1999; Ellis, 2000a). Financial capital is valued for its transferability among other forms of capital or consumptive goods (Turner, 2017). Financial capital contributes to the conventional notion of capital, with monetary investments producing enhanced returns over time.

*Human capital*, simply put, is how productive a person (or household) can be in both capacity of skills and number of household members (DfID, 1999; Ellis, 2000a; USAID, 2011). This asset is assessed through education levels (not specific to formal education), skills, access to nutritional food and clean water, and health (DfID, 1999; Ellis, 2000a; USAID, 2011). Human capital is essential to actualizing the other four capitals (DfID, 1999). Assessments of human capital can range from but are not limited to, life expectancy, education indicators, or traditional ecological knowledge (*ibid.*).

*Social capital* includes the social resource networks (family, ethnicity, community, union), trust, reciprocity, and norms that are embedded in social institutions and relationships (DfID, 1999; Ellis, 2000a; Turner, 2017; USAID, 2011). These relationships and institutions (formal and informal) allow for livelihood pathways to be realized, as they can actualize the attainment of resources and information. Social capital may be used to rally collective action movements or to gain/maintain social leverage (USAID, 2011). Social capital has been suggested to have three forms, which may have positive or negative outcomes: bonding, bridging, and linking. *Bonding* is a form of social capital that refers to bonds between individuals that have homogenous relationships (i.e. ethnic groups, business organisations, or families) (Policy Research Initiative, 2003). *Bridging* refers to social capital that is formed across heterogeneous networks (i.e. class) (PRI, 2003; Woolcock and Narayan, 2000). Lastly, *linking* connects groups or individuals across socio-economic groups, potentially linking individuals to those in positions of power (PRI, 2003; Woolcock, 2001). Compared to the more horizontal connections that bonding and bridging facilitate across groups, linking serves as a more vertical relationship (PRI, 2003; Turner, 2007; Woolcock, 2001).

All capitals affect one another, as one capital may increase or decrease through the utilisation of another (Turner, 2017).[3] It is possible for some assets to be shared across more than one capital definition (Turner, 2017; USAID, 2011). Acting as a store of financial capital, wealth may be bound into assets such as livestock, while also being used as a draft animal (physical capital), a common occurrence in northern upland Vietnam (Turner *et al.*, 2015).

There are two types of relationships that generate positive livelihood outcomes: sequencing and substitution (DfID, 1999). Sequencing is the micro-scale examination of how other households have transformed their assets into outcomes and the sequence of assets they utilized to achieve them (*ibid.*; Scoones, 1998.). Substitution of one capital for another allows for a broader variety of livelihood support, which can assist actors to diversify their portfolio if they so choose (*ibid.*).

### 2.2.3. Access

While the asset pentagon provides an initial step for livelihood assessments, the livelihoods framework as a whole examines structures and processes beyond these assets, that together transform assets into outcomes (DfID, 1999; Ellis, 2000a). Transforming structures and processes

[3] Some authors also include the categories of political and cultural capital in livelihood analyses. Political capital is the ability for a unit to further their political or economic standings (USAID, 2011). Although some livelihood definitions subsume political capital into the livelihood framework category of 'social relations and institutions', "it can also be argued to be a capital asset which people accumulate or draw on in pursuing livelihood options" (Turner, 2017: 7). Similarly, cultural capital has also been included in definitions of social capital, which embodies the "knowledge, education, and possible social advantages a person has that can give them benefits in society" (Turner, 2017: 3; Bebbington, 1999). Given my research context, both political and cultural capital appeared to fit within a broad social capital framework.

directly impact access to assets in three ways: creating assets (such creating physical assets through road construction), determining access to assets (such as land tenure rights altering natural capital), or impacting the accumulation of capital (such as subsidization or taxation of livelihood strategies) (DfID, 1999).

Current livelihoods and the adaptivity of livelihoods are largely determined by households' degree of access to any of the five capitals (Ellis, 2000a; Turner, 2017). Access is facilitated by social relations, institutions, and organisations that determine the capacity to meet an individual's or household's necessary consumption (De Haan and Zoomers 2005; Ellis, 2000a; Turner, 2017). *Social relations* are the many different facets of one's identity (such as caste, kin, gender). As mentioned earlier, *Institutions* are formal and informal norms that regulate behaviour and human interaction (Ellis, 2000a; Turner, 2017). Organisations convene for collective action around a shared set of objectives such as non-governmental organisations, cooperatives, or unions, which may also mediate the access of individuals and these or other groups (*ibid.;* USAID, 2011).

### 2.2.4. Livelihood Strategies, Activities, and Diversification.

Livelihood activities are commonly determined by the assets a household owns, the household's location, local cultural or social traditions, individual household members' ages and gender, and broader political, economic, or environmental contexts (USAID, 2011). In turn, livelihood strategies are the potential avenues (including activities) for individuals or households to utilize, convert, or regenerate their assets (Turner, 2017). Many rural households have multiple livelihood strategies, some of which may be income sources, such as wage labour, non-farm activities, self-employment through non-farm activities, or remittances from other areas (Ellis, 2000a, 200b).

The *diversification* of livelihood strategies is the *process* of "both pressure and opportunity that cause families to adopt increasingly intricate and diverse livelihood strategies" (Ellis, 2000b: 14; Scoones, 1998). As such, diversification is a strategy that concerns the multiplying of activities. This might be due to a negative push factor, such as a decline of access to land meaning that off-farm wage work is needed but was not being actively sought by choice. Diversification can also be due to positive pull factors such as a desire to try new innovative technologies, seeds or wage labour options (Rigg, 2008). Additionally, Turner (2007) notes that *selective diversification* can occur when farmers take up an extra opportunity that suits their labour calendars and other commitments but might drop it again when it no longer seems appropriate or relevant.

By diversifying livelihoods through multiple activities, individuals reduce specialisation (Turner, 2007; Rigg, 2008). However, diversification and specialisation may be practiced in the same household through individuals specializing in a specific occupation strategy, while also spreading risk through allocating different household members to different strategies (Ellis, 2000b; USAID,

2011). To date, it is usual that household-level diversity and occupational speciality are often practiced by households that may be 'better off' (Ellis, 2000a, 2000b). In my study of ethnic minority farmers in Bát Xát district, I wish to examine whether farmers are diversifying their livelihood portfolios and if so, in what ways and in response to what factors.

### 2.2.5. Vulnerability Context and Transforming Structures and Processes

All livelihoods are pursued in a vulnerability context (DFID, 1999). A household's vulnerability context influences how effectively a household can draw upon its assets and the capacity for livelihood and food security to be maintained (USAID, 2011). External factors may alter the stability of specific livelihood strategies, causing livelihood vulnerability, which is classified into three groups: shocks, trends, and seasonality (Ellis, 2000a; Turner, 2017).

*Shocks* may be human-induced or 'natural' stressors, such as natural disasters, extreme weather events (such as sudden snowfall in the northern Vietnam uplands), "conflicts, crop or animal disease, and death" all of which directly harm assets (Turner, 2017: 5; DFID, 1999). In some instances, shocks may force households to abandon or dispose of their assets (DFID, 1999). *Trends* are more predictable and include shifts in everyday life, such as population, economic, governance, or technological shifts (i.e. volatile commodity prices or shifts in technology or government) (DFID, 1999; Turner, 2017). Although *seasonality* is predictable, it is still cyclical and can cause shifts in employment, migration, food availability, and commodity prices (DFID, 1999; USAID, 2011).

Little may be done about exogenous vulnerability context factors. However, there are two approaches that may help households in vulnerability contexts: through transforming structures and processes, and by adaptive strategies and coping mechanisms. Formal and informal institutions implement processes, such as policies, legislation, cultural norms, and power relations (DFID, 1999; USAID, 2011). Processes dictate how structures interact with individuals (DFID, 1999). Processes may be able to assuage the impacts of trends and seasonality directly and even reduce the severity that shocks may have on assets (DFID, 1999). Processes may also play an important role in providing incentives for particular livelihood strategies, determining access to assets, enabling the transformation of one asset into another, and influencing relationships between groups and individuals (*ibid.*). Particular processes that may be important for me to focus upon in my study include how development interventions are influencing livelihood portfolios. Coping strategies are ways that individuals or households respond to shocks in the short term, whereas adaptive strategies are those that households deploy over time in response to trends. In Bát Xát district, many households cope with black cardamom losses by trading or selling animals in in

response to their cardamom crop dying. Nearly all farmers took up the adaptive strategy of growing hybrid rice and corn in response to cyclical hunger.

Drawing on the sustainable livelihoods literature and its key concepts will help me to analyse and understand Hani, Hmong, and Yao livelihoods, the vulnerability contexts, and the variety of opportunities and challenges they face in Bát Xát district. I will use DFID's (1999) sustainable livelihoods framework to conceptualize the different impacts that components have on one another, on an individual and household level. With a focus on access and vulnerability, I will examine how external forces are enabling or hindering certain livelihood strategies and how these contribute to farmer households' overall livelihood outcomes, including food security.

## 2.3. Food Security

Food security is my final conceptual body of literature underpinning this thesis. After discussing the conceptual development of this term, I detail the definition of food security and its four core dimensions: availability, access, utilisation, and stability (Section 2.3.2). In response to critiques of macro policies regarding food security, I then introduce a brief history and definition of food sovereignty (Section 2.3.3). Linking food sovereignty and food security together, I then describe the importance of cultural appropriateness for interventions (Section 2.3.4). Lastly, I outline how food security is integrated into a sustainable livelihoods approach and how I will draw on this concept (Section 2.3.5).

### 2.3.1. Conceptual Development

Since the World Food Conference of 1974, 'food security' has evolved into a diverse term used across many disciplines (Maxwell, 1996). Maxwell (1996) identifies three main shifts in work concerning food security, that took place between the 1974 World Food Conference until 1994. The first shift regards the scale of food security: from global and national, to household and individuals. Much of this shift in focus was initiated by Sen's (1981) work that highlighted the challenge of access to food as a key issue. With a focus at a smaller scale, intra-household dynamics can be examined, such as a focus on the health of women and children, along with individual food security (Maxwell, 1996). Such a focus highlighted how access to food within a household is dependent upon the control individuals have over household resources (*ibid*.).

The second shift in food security conceptualisation was to link food security to livelihood security (Maxwell, 1996). Hopkins (1986) argued that access to food is a basic human need, but such access requires a static social order. Rather than food as a singular priority, Hopkins (1986) argued that access to nutritious food is also of priority. Maxwell (1996) argues that it is not only the short-term needs of food security that people pursue, but in many cases, people aim to preserve their future livelihoods by going hungry in the short term. This shift can also be seen in sustainable livelihoods

thinking, moving from short-term, survival responses towards long-term, sustainable, and secure livelihoods (Chambers and Conway, 1991). Further, Maxwell (1996) emphasizes the need for livelihood security as adequate conditions for food security.

The final shift in food security conceptualisation stems from arguments that food insecurity was an objective assessment to a more subjective perception of food insecurity (Maxwell, 1996). Estimating these caloric and nutritional needs are value judgements, without the considerations and complications that comes in times of stress and adaptation (Payton and Lipton, 1994). Maxwell (1996) also highlights the common omission of qualitative aspects of objective assessments, such as food quality, food habits, cultural appropriateness, and autonomy. Due to these omissions and shifts in food security applications, nutritional adequacy or access to food does not signify adequate food security (*ibid.*). Maxwell's (1988) food security definition emphasizes that food security occurs with the assurance of sufficient food for all communities, especially the poor, vulnerable, and those living in remote areas.

These three shifts within food security applications resulted in a departure from studies focusing predominantly on global food production and supply, to focusing more on localized contexts. This change in scale also encouraged more studies examining livelihood responses to vulnerability contexts and unpredictable environments (Maxwell, 1996). These shifts were influenced by post-modern critiques, resulting in more subjective and endogenous assessments of food insecurity (Maxwell, 1996). Maxwell and Smith (1992: 4) highlight these shifts by stating that "the identification and weighting of objectives can only be decided by the food insecure themselves."

### 2.3.2. Four Dimensions of Food Security

The World Food Summit of 1996 established the most widely-accepted definition of food security that remains widely used in conceptual and applied work today; namely that food security "exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996: online). The Food and Agricultural Organization (FAO) of the United Nations identifies four dimensions of food security: 1) food availability, 2) food access, 3) utilisation, and 4) stability (FAO, 2006). Populations are *food insecure* when one of these four conditions are not met.

Focusing on these dimensions in turn, *availability* refers to sufficient quantity and quality of food, regardless of origin, to meet biological needs (FAO, 2006). The feature of 'regardless of origin' is important to note as I will elaborate on the importance of food sovereignty in Section 2.3.3. Availability is typically considered with regards to the production of food, with a strong focus on yield and land use (Maxwell, 1996; Sonnino *et al.*, 2014). Additionally, this dimension incorporates the availability of adequate energy and nutrient supplies (FAO, 2016). Specific

nutritional requirements are context dependent, as many individual caloric and nutrient needs vary due to health, age, activity, behaviour and environmental considerations (Maxwell, 1996).

Within this dimension, the availability of the means needed to produce food are also considered. This means that agro-climatic, and therefore agro-ecological conditions, may alter the availability of certain cash crops or livestock (Schmidhuber and Tubiello, 2007). With this in mind, climatic variability will significantly alter food availability due to extreme weather events, which may increase the frequency and severity of pests and diseases, impact the suitability of land and climate for certain crops and livestock, and reduce yields (*ibid.*). In the northern uplands of Vietnam, food availability for ethnic minority communities typically depends on semi-subsistence agriculture, now increasingly tested by extreme weather events and concerns over hybrid seed. This determining factor for food availability is an element I will focus upon in my study.

*Access* refers to maintaining adequate resources (economic capacity) and physical means (distance in relation to food sources or infrastructure) to acquire nutritious and appropriate foods across individual, household, or even national scales (FAO, 2006, 2016; Maxwell, 1996; Maxwell and Smith, 1992). Adequate resources (or entitlements) mean the economic capacity to purchase food or related inputs (*ibid.*) Sen's (1981) seminal work on food entitlements noted that these entitlements are directly related to an individual's assets, including the ways one attains these assets (trade, ownership, inheritance, or transfer)[4]. Physical access is related to the distance between an individual and the location of food sources or other agricultural inputs for food production (*ibid*.). Physical access is also determined by access to physical infrastructure, such as roads or railways (*ibid.*).

Similar to considerations in the sustainable livelihoods framework (DfID, 1999), access to food is dependent upon political, social, economic, and legal constructs of a community and intrahousehold dynamics (FAO, 2006). Access is also extended to the ability to attain agricultural inputs required for food production (Maxwell and Smith, 1992). As defined in Section 2.2.3., broader societal structures may dictate access. Some resource access is controlled by individuals and institutions, while those without control aim to gain or maintain access through individuals and institutions in power (Ribot and Peluso, 2003). For example, a recent change over the last twenty years in Bát Xát district is the recent development of roads and motorbikes, making physical transportation to markets more accessible.

*Utilisation* is the ability to achieve nutritional well-being through a sufficient diet of safe and nutritious food, with adequate healthcare and sanitation schemes (FAO, 2006). In other words, it

[4] Prior to Sen's (1981) bookwork, access was typically thought of as the ability (through economic means or cultivation) to attain the quantity and quality of a household or individual unit (Sonnino *et al.*, 2014).

is “the capacity to consume and benefit from food, which depends on its safety and nutritional value as well as on socio-cultural aspects of consumption” (Sonnino *et al*., 2014: 174). I will not examine food safety, quality, nutritional adequacy, or the healthcare and sanitation scheme of upland ethnic minority households because this does not intersect with the aim and core objectives of this study, but I will briefly focus on household perceptions of food safety in my research.

*Stability* refers to consistent food availability, access, and utilisation across spatial and temporal scales (FAO, 2006). Destabilisation may occur due to political, climatic, or economic shocks, making individuals, households, communities, countries, or even regions vulnerable to food insecurity (FAO, 2006). Political instability may cause violence or terrorism, resulting in the displacement of families and access to their assets (FAO, 2016). Climatic factors such as drought, floods, hail, landslides, and cold spells may drastically reduce crop or livestock productivity (*ibid.*; Schmidhuber and Tubiello, 2007). Lastly, economic shocks, such as economic collapse or variability of crop or input prices may harm a household’s ability to purchase or exchange commodities for food products (Schmidhuber and Tubiello, 2007).

Stability is in many ways directly linked to the term security. Since the term food security came about in the 1970s, risk and risk avoidances have been endemic to the term (Maxwell and Smith, 1992). Food insecurity measures are assessed by temporal dimensions: chronic, transitory, and cyclical (FAO, 2006). *Chronic food insecurity* is the prolonged lack of availability or access to food or required inputs, linked to significant and embedded structural issues including poverty (FAO, 2006). *Transitory food insecurity* is classified as abrupt and unpredictable periods of pressures or events, such as a natural disaster, political conflict, or economic shock (FAO, 2006). *Cyclical, or seasonal food insecurity*, is an often-predictable period of food shortage caused by the timing of harvests and food stocks (FAO, 2006; Lovendal and Knowles, 2007). Chronic food security was a common occurrence for many ethnic minority households in Bát Xát district before the arrival of hybrid rice and corn seed in addition to inputs to boost yields.

### 2.3.3. Food Sovereignty

La Via Campesina (2018), an international movement of peasants, was created in 1993. In La Via Campesina’s (1996: 1) statement, *Food Sovereignty: A Future without Hunger*, they declared that food security cannot be obtained without the consideration of the people that produce food as “Food sovereignty is a precondition to genuine food security.” La Via Campesina (*ibid.*: 1) defined food sovereignty as “the right of each nation to maintain and develop its own capacity to produce its basic food respecting cultural and productive diversity.” However, national contexts may not be conducive to local or marginalized communities. With this in mind, Windfuhr and Jonsen (2005: 11) note that: “For many groups the right to produce and the right to food are mutually

linked, since most of the hungry and malnourished in the world are smallholders and landless farmers." Since 1996, a commonly shared definition of food sovereignty is the right of people to regulate how and what food to produce, consume, and distribute (Windfuhr and Jonsen, 2005). This movement emerged as a result of exclusive macro policies from international non-governmental organisations and increasing inequality within the corporate and capitalist system (Via Campesina, 1996).

Another definition of food sovereignty that encapsulates notions of livelihood and food security frameworks was created in 2002 during the second Forum for Food Sovereignty in Rome. Food sovereignty was defined as the "right of peoples, communities, and countries to define their own agricultural, labour, fishing, food and land policies, which are ecologically, socially, economically and culturally appropriate to their unique circumstances" (Windfuhr and Jonsen, 2005: 12, as cited in NGO/CSO Forum for Food Sovereignty, 2002). Within the context of northern upland Vietnam, the state push for hybrid seed across Lào Cai province (discussed in Chapter 3) could be considered a shift away from food sovereignty for many ethnic minority communities.

### 2.3.4. Cultural Appropriateness

One's food preferences are culturally constructed; therefore, it is imperative that perceptions of food be incorporated into food security initiatives (Maxwell, 1996). High levels of food security require cultural acceptability and adequate nutritional content, in addition to the four dimension of food security above (Maxwell and Smith, 1992). Further, Maxwell and Smith (*ibid.*) emphasize the importance food security and cultural appropriateness amongst the poor and vulnerable, especially women and children. An example of cultural appropriateness in Lào Cai province might be how many ethnic minority households value the taste of traditional rice varieties over new hybrid varieties (Turner *et al*., 2015), and this is something I will investigate in my study. I will use this criteria of cultural appropriateness to critique food security status of ethnic minority households in Bát Xát district. Although availability requirements are more sufficient than in the past, culturally-appropriate foods (e.g. traditional rice and livestock) are not always present.

### 2.3.5. Integrating Food Security into Livelihood Studies

Food security is one of the key outcomes of successful livelihood pathways, as shown clearly in the DFID diagram in the far-right column (see Figure 2.3) (DFID, 1999; USAID, 2011). "The relationship between livelihoods and food security is complex and is influenced by a wide variety of factors that vary in importance across contexts and over time" (USAID, 2011: 3). Maxwell (1991: 22) notes that "food security will be achieved when equitable growth ensures that the poor and vulnerable have sustainable livelihoods." Given that food production is a fundamental component of rural livelihoods, food production plays a massive role in food access and

availability (USAID, 2011). In times when food is scarce, rural households still rely on cash for purchasing food, therefore, both food security and livelihood security are inextricably linked. Households with reduced financial capital, may lead to poor access to food and/or utilisation, meaning that their human capital could be harmed (*ibid.*).

## 2.4. Chapter Conclusion

As seen in Figure 2.1, I will collect and analyze my data while drawing on key conceptual ideas from relevant literature in the field of political ecology (Section 2.1.), with a more specific focus on sustainable livelihoods (Section 2.2.) and food security (Section 2.3.) approaches. From the political ecology literature, I focus on access (Section 2.2.2.), asymmetrical power relations (Section 2.2.3.), and governmentality and environmental rule (Section 2.2.4.). I will use these components to investigate how ethnic minority farmers in Bàt Xàt district, Lào Cai province, build or modify their livelihoods while accessing and trading certain non-timber forest products or relating to specific payment structures for forest protection and enhancement. Given that I will be researching in a socialist state, and one where Kinh officials may have fairly negative opinions of ethnic minority knowledge and livelihoods (see Section 3.1.), it will be especially important for me to examine how Vietnamese government policies are aiming to integrate and redirect ethnic upland minorities into mainstream lowland cultural, economic, and national development approaches.

With a more specific focus on household livelihoods of these farmers, I will use the DFID (1999) framework (Figure 2.3) to explore the assets/capitals households have (Section 2.2.2.), how they access these assets/capitals (Section 2.2.3.), the activities (Section 2.2.4.) employed by households to utilize these assets in their favor, and the vulnerability context in which they operate. I will also examine the transforming structures and processes (Section 2.2.5.) that affect household livelihoods and choices as a whole. Livelihoods are in a constant state of flux, with a variety of factors (discussed in Section 2.2.) altering household decisions and livelihood outcomes.

From the literature of food security, I will focus on examining the shifts in food security implementation (Section 2.3.1.), the four dimensions that define food security (Section 2.3.2.), and food sovereignty (Section 2.3.3.) in these ethnic minority upland households. Furthermore, I will focus on the role that cultural appropriateness plays in food security (Section 2.3.4.) and examine the inextricable connections between food security and livelihood approaches (Section 2.3.5.). All three areas of literature are thus central to my investigation of contemporary ethnic minority livelihoods, the external factors that influence these livelihoods, and the roles that NTFPs serve within livelihood portfolios in Bát Xát district, Lào Cai province.

# Chapter 3. Context – Policy, People, and Place

In this chapter I lay the contextual foundation for understanding Hmong (H'mông), Yao (Dao, Đao, Dzao), and Hani (Hà Nhì)[5] livelihoods in Lào Cai province, northern Vietnam, and the variety of state policies that are forcing agricultural intensification and increasing market integration in this region. First, I introduce the contemporary political, poverty, and food security context in Vietnam, while paying particular attention to policies concerning market integration and forestry in Section 3.1. Then, in Section 3.2., I detail the national land use laws introduced after de-collectivization and specific land use changes in Lào Cai province since that time. In Section 3.3., I outline the physical aspects of Lào Cai province and introduce the ethnic minorities residing there. Finally, in Section 3.4., I detail the information available to date on the semi-subsistence livelihood portfolios that many Hani, Hmong, and Yao households employ in Lào Cai province. In essence, this chapter provides a platform for examining the current livelihood strategies of Hani, Hmong, and Yao households in the borderlands and how external forces may shape their livelihood decision-making.

## 3.1. The Policy, Poverty, and Food Security Context

At the inception of the socialist regime nationwide following reunification in 1975, Vietnamese ethnologists determined that ethnic minorities were in dire need of economic development, while the Kinh (ethnic majority lowlanders) remained the 'enlightened' social majority. "The least 'socialist man' could do for 'traditional man'… was to help him relinquish his simplicity and reach the superior levels of lowland civilization as quickly as possible" (Michaud, 2009: 29). In 1979, the Vietnamese state more specifically recognised a total of 54 'nationalities' including the ethnic majority, Kinh, leaving 53 groups deemed 'minorities'. Of these, 49 groups mostly dwell in the uplands (Michaud *et al*., 2016; Turner *et al*., 2015). Ethnic minorities in Vietnam have been the target of numerous state development interventions, being viewed as needing economic 'development'. Many Kinh, including government officials working in the uplands, believe upland minorities to be 'backwards' or 'lazy' considering their livelihoods (McKinnon and Michaud, 2000; World Bank, 2007), cultural practices (Baulch, 2007), and no written history (Turner, 2010). As such, the Socialist Republic of Vietnam has persistently attempted to integrate ethnic minorities into the nation state through market integration, sedenterization, and development policies. As a result, many state policies in Vietnam have continually disregarded farmers' locally appropriate and culturally-sensitive approaches to sustainable livelihoods and food security (Bonnin and Turner, 2012; Kyeyune and Turner, 2015).

[5] See Michaud *et al*. 2016 for a disambiguation of ethnonyms.

In James C. Scott's book, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (2009), the author theorizes that ethnic minority populations evaded state and colonial economic, political, and social control up until World War Two, by residing in the uplands of the Southeast Asian massif, away from central, lowland governments. Scott (2009: 5) adds that state efforts to develop, educate, or alleviate poverty have not been designed to increase the well-being of upland populations, but to monitor economic activity so that it is "legible, taxable, assessable, and confiscatable or, failing that, to replace it with forms of production that [are]." Scott's (2009) theory of state attempts to monitor and control activities in these uplands remains relevant to this day.

Nonetheless, Vietnam is regarded as a development success story by intergovernmental organisations, with the national poverty rate (people living under $1.90 USD per day[6]) having decreased from 58 percent in 1993 to three percent in 2015 (World Bank, 2017). However, the northern uplands, where many ethnic minorities reside, are often not included in this 'success', with the Northern Midland Mountains[7] region having the highest rate of poverty in the country at 29.4 percent, and ethnic minority Hmong households in particular at a poverty rate of 48.7 percent (GSO, 2010b).

With regards to nutritional well-being, the population of undernourished individuals in Vietnam has decreased from 46.9 percent in 1992 to nine percent in 2012, a 37.9 percent decline over the course of 20 years (FAO, 2013). Despite this significant decrease in undernourished individuals, 2.4 million Vietnamese are still severely food insecure (FAO, 2017). The Vietnamese government has stated that it aims to address food insecurity through ramping up rice production, specifically the promotion of hybrid seeds and the subsidization of production (*ibid*.).

### 3.1.1. Anti-Poverty Policies in the Uplands

There are numerous anti-poverty and food security policies which have been implemented in Vietnam's northern uplands. Two of the most relevant ones for this study are Programs 143 and 135. Program 143, was named as the Hunger Eradication and Poverty Reduction and Job Creation (HEPR-JC) Program, aimed to reduce the poverty rate by installing basic infrastructure (small-scale irrigation, roads, markets, electricity, schools), creating jobs, and reducing unemployment (Nguyen and Baulch, 2007).[8] Other program objectives consisted of agricultural extension, credit services, resettlement and sedenterization, and improving employment service centers (*ibid*.).

[6] This threshold is defined by both the Government Statistics Office of Vietnam and the World Bank poverty line (World Bank, 2017).
[7] Including Hà Giang, Cao Bằng, Bắc Kạn, Tuyên Quang, Lào Cai, and Yên Bái province (GSO, 2010b).
[8] The first phase of Program 143 operated from 2001-2006, by merging Program 133 (which began in 1998) and Program 120 (a job creation and vocational training program) (Nguyen and Baulch, 2007).

Program 143 was part of a national effort to address poverty and hunger in mountainous upland regions, which began during the Vietnamese Communist Party's 7th Congress in 1998 (*ibid*.; Oxfam, 2001). The second phase of Program 143 spanned from 2006 to 2010, called the National Targeted Program on Poverty Reduction (NTPPR) specifically addressing poverty (*ibid*.).

A separate anti-poverty program implemented was Program 135 (Program for Socio-economic Development of Extremely Difficult Communes in Ethnic, Mountainous, Boundary and Remote Areas), initiated in 1998 and implemented by the Committee for Ethnic Minorities and Mountainous Areas (Bonnin, 2011; Nguyen and Baulch, 2007). Program 135 aimed to reduce the number of poor households in extremely difficult communes, increase access to clean water, increase school enrollment, vocational training, disease reduction, road construction, and enhance rural markets (Nguyen and Baulch, 2007). These objectives were addressed using five components "infrastructure, the development of communal centers, resettlement, production support, and training" (Nguyen and Baulch, 2007: 8). Both programs have aimed to alleviate poverty through market integration, targeting northern, mountainous regions of northern Vietnam, including Lào Cai province. Since then, the government has implemented Resolution N0. 80NQ-CP in 2011 on Sustainable Poverty reduction Orientation in the 2011-2020 period and National Targeted Program for Sustainable Poverty Reduction in 2012-2015 (Do *et al*., 2015).

### 3.1.2. Market Integration and Forestry Policies

A wide range of policies have been implemented that impact directly on ethnic minority livelihoods in Lào Cai province. Here I focus on those relevant policies concerning agricultural intensification, marketplace development, poverty alleviation polices, and reforestation programs.

#### *3.1.2.1 Agricultural Intensification in the Northern Uplands*

Rice remains a key element for Vietnam's food security, reinforced by government policies that strive to ensure adequate profit margins for rice farmers, increasing exports, secure incomes for rural producers, and rural food security (Bonnin and Turner, 2012). One of the ways the government is attempting to reach these goals is through the expanded use and subsidization of hybrid rice seeds, introduced to the northern Vietnam uplands in the early 1990s (*ibid*.). Hybrid maize has also been incentivized by government subsidies for lowland pig fodder (Kyeyune and Turner, 2016).

These state initiatives aim to improve the potential for higher yields, entrepreneurship through selling surplus grain, and to produce 'high-quality rice' and maize (Bonnin and Turner, 2011; Kyeyune and Turner, 2016). Yet, such policies that aim at agricultural intensification through subsidizing hybrid seed varieties of rice and maize create uncertainty for upland farmers given a new reliance on chemical fertilizers and pesticides to support these varieties, the inability to save

seeds from year to year (hybrid yields dwindle past one generation), in addition to the need for cash or to attain credit to purchase these inputs (Bonnin and Turner, 2011; Turner *et al*., 2015).

The government has promoted high-yielding varieties of rice and maize at free or highly subsidized rates in the northern uplands (Bonnin and Turner, 2012). With respect to rice, the government aims to control consistency through promoting 'high quality' rice (i.e. rice for international export), despite traditional practices of cultivating a diversity of varieties, mitigating crop failure risks (*ibid*.; Turner *et al*., 2015).

Government Decree 20/1998/ND-CP, issued in 1988, subsidized hybrid rice and maize seeds and fertilizers, specifically for communes in upland ethnic minority areas, (otherwise known as 'Zone 3' communes), in order to equalize costs in comparison to lowland prices (Oxfam, 2001; Turner, 2012a). In Lào Cai province, the majority of upland, and by extension ethnic minority, communes fall under this Zone 3 classification, although distribution appears to have started only in the late 1990s (Bonnin and Turner, 2011; Turner, 2012a; Turner *et al*., 2015). As a national government decree, the Ministry of Trade and Commerce coordinates implementation, enlisting provincial agricultural input companies to distribute subsidized inputs from their distribution centers to districts or communes (*ibid*.). Nonetheless, farmers in many districts and communes have been unable to attain these inputs easily due to poor infrastructure and long distances from distributions centers (Oxfam, 2001).

Although Hmong farmers recognize hybrid seeds as an attractive option for increasing rice production, the inferior taste in comparison to their traditional or landrace varieties, the requirement for cash or credit to purchase these inputs, and an overreliance on government distributed inputs has increased their risk and vulnerability (Bonnin and Turner, 2012; Turner *et al*., 2015). Ethnic minority farmers claim that hybrid seed cultivation is finicky compared to traditional Hmong varieties: new seeds must be bought for each planting to maintain high yields; they require consistent application of fertilizers and pesticides, as well as careful irrigation; and due to being bred in a different environment, hybrid varieties are not acclimated to local pests, diseases, and climates which often impact seed harvests negatively (Bonnin and Turner, 2012; Turner *et al*., 2015). In sum, this widespread agricultural policy has had notable impacts on upland ethnic minority livelihoods, but not necessarily as the state expected. The links between farmers' increasing need for cash due to this program and increasing interest in cardamom cultivation is further explored in Chapter 5.

#### *3.1.2.2. Marketplaces in the Uplands*

Beginning in 2000, a variety of policies in the northern uplands have aimed to enhance marketplace networks, renovate existing marketplaces, and build new marketplaces. Policies have also

attempted to facilitate market integration through greater formal exchanges of goods and services, and to improve the management of official marketplaces, especially in rural, remote, and mountainous areas (Bonnin, 2011). With these enhanced marketplaces, the government has boasted that it has enhanced socioeconomic development, food security, and poverty alleviation. Moreover, the government reasons that modernizing marketplaces will improve the professional management and organisation of trade, while increasing rural transportation infrastructure will help reduce the distance to markets and provide opportunities for local residents to sell agricultural surplus or other goods for a cash income (Figure 3.1; Bonnin, 2011; Trincsi *et al*., 2014). These modernized markets are typically concrete block marketplaces with concrete floors and corrugated iron roofs. In the past, marketplaces were often informal, flexible, had little organisation, and rotated through a series of locations based on the lunar calendar (Bonnin, 2011). However, since 2000, fixed locations for marketplaces, set marketplace days, and fixed stalls within them have radically changed trader routines. Moreover, they must now pay a fixed fee to trade at the markets (either non-existent or far less in the past)—these are all new circumstances that are often harmful to ethnic minority traders who rely on marketplace trade for the cash portion of their livelihoods (*ibid*.). Follow Scott's (2009) thesis, it can be argued that such 'enhanced' marketplaces result in

*Figure 3.1: Local farmers selling excess produce during a market day in Y Tý (Author, 2018).*

greater state governance and monitoring of economic activity (*ibid*.), while it has been demonstrated that these marketplaces end up favoring lowland Kinh traders who can both afford market taxes and fees and maintain stronger social capital with officials (Bonnin, 2011; Trincsi *et al*., 2014).

#### *3.1.2.3. Program 327: "Greening The Barren Hills"*

Vietnam has been regarded as "the 'poster child' for perceptions of what is wrong with forest management in Asia" (McElwee, 2004a: 98), with explanations ranging from illegal logging, war, natural disasters, poor populations, agricultural expansion, and swidden agriculture. Swidden agriculture, also referred to as slash-and-burn, is a farming method by which farmers burn vegetation on a tract of land to create a field with a nutrient-dense layer of soil (Castella *et al*., 2006; Do, 1994). During several years when the land is then farmed, soil quality then depletes due to less regeneration of organic matter. Land is then left fallow and the household uses a new tract of land (Husson *et al*., 2001; Roder, 2000). There are two types of swidden agriculture in Vietnam: 1) pioneer swiddening, when households move and settle in a new tract of forest, or 2) rotational swiddening, which is shifting from tract to tract, allowing for a fallow period of 10-15 years (Do, 1994). These days, little pioneer swiddening occurs in Vietnam's uplands and farmers have instead shifted to a composite swiddening agro-ecosystem, integrating permanent maize and rice fields, rotating swidden plots (albeit illegal as of 1993), and home gardens (De Koninck, 1999; Vien *et al*., 2006; Turner, 2012a; Turner *et al*., 2015). Halting swiddening agriculture would also sedenterize households and force them to engage in more legible livelihood activities that engage in the market economy, a form of governmentality.

For numerous reasons including illegal logging, natural disasters, and the expansion of agricultural frontiers, what is formally recognized as Vietnam's forest cover dropped from 14.3 million hectares (43 percent of forest cover) in 1943 to 9.3 million hectares (28 percent of forest cover) in 1990, a 15 percent drop in the total forest cover over the course of 50 years (McElwee, 2004a, 2009; Ohlsson *et al.*, 2005; World Bank, 1998). In 1992, the Vietnamese government introduced Program 327, also known as the "Greening the Barren Hills Program" (McElwee, 2009; World Bank, 1998). The main objectives of this program were to increase the area of protected forests, define and protect special-use forests, and reforest 'unused' land (Ohlsson *et al*., 2005; World Bank, 1998). However, Program 327 failed to improve environmental and economic conditions (Chipeta and Joshi, 2001), yet Program 327 acted as an entry point for many upland ethnic minority farmers gaining silvicultural land and growing timber trees and cinnamon, which I discuss in Section 6.2.3.

Upland agrarian households were not consulted or even considered in Program 327 implementation (McElwee, 2004a; Ohlsson *et al*., 2005; World Bank, 1998). Many trees had poor seedling survival due to the allowance of grazing on forested land and harvesting trees before optimal harvest (*ibid*.). At the time of the World Bank's (1998: xv) report, they cautioned that a new initiative for expanding protected areas up to 2 million hectares was bound to be problematic as "most of these areas are occupied and ways for poor people and protected areas to coexist have yet to be found." Nonetheless, Program 327 was replaced by Program 661 (the Five Million Hectare Reforestation Program) in 1998, with more ambitious goals and significant funding, as outlined next (Clement and Amezaga, 2008; McElwee, 2009; Meyfroidt and Lambin, 2008).

#### *3.1.2.4. Program 661: The Five Million Hectare Reforestation Program (5MHRP)*

The Five Million Hectare Reforestation Plan (5MHRP) aimed to increase Vietnam's total forest cover from 9.3 million hectares (ha) (28 percent of Vietnam's land area) to 14.3 million hectares (43 percent of Vietnam's land area) by 2010 (Castella *et al*., 2006; Huong *et al*., 2014; McElwee, 2004a, 2009; Ohlsson *et al.*, 2005; World Bank, 1998). The 5MHRP was touted as a rural development effort, with objectives targeting poverty reduction, hunger eradication, employment opportunities, raw resource production, and environmental and biodiversity conservation (Government of Vietnam, 1998; McElwee, 2009; Ohlsson *et al*., 2005). The estimated $2 billion USD investment of international and national funds devoted to the 5MHRP were allocated to protect 9.3 million hectares of already existing forests and to establish five million hectares of new forest (Huong *et al*., 2014; McElwee, 2009). [9] Of these five million hectares of new forest, two million hectares were to be newly protected and special-use forests, while three million hectares were to be of new, productive use forests (Huong *et al*., 2014; McElwee, 2009; Ohlsson *et al*., 2005).

Despite the intentions of the 5MHRP, reforestation efforts largely focused on the privatization for smallholder plantations of land considered "bare hills", "wastelands", or areas that were "degraded, valueless, ownerless, and in need of environmental rehabilitation" (McElwee, 2009: 325, 2016; Huong *et al*., 2014). Much monocrop plantation forestry has been implemented on the "often degraded" (McElwee, 2009: 325) diverse land that was actively tended to, and while some ethnic minority households received incentives to implement reforestation efforts, many others missed out (McElwee, 2009, 2016; Turner *et al*., 2015).

[9] Of these five million hectares of new forest, two million hectares were to be newly protected and special-use forests, while three million hectares were to be of new, productive use forests (Huong *et al*., 2014; McElwee, 2009; Ohlsson *et al*., 2005). Out of the three million hectares of established forests, two million hectares were intended to be production forests for pulp, timber, and NTFPs, with the remaining one million hectares allocated for other perennial crops and fruit trees (Huong *et al*., 2014).

The establishment of monocrop plantations or the expansion of protected forest areas, targeted by the 5MHRP, has been highly problematic for many upland ethnic minority livelihoods (McElwee, 2009; Huong *et al*., 2014; Ohlsson *et al*., 2005). 'Bare hills' or 'wastelands', are still areas that upland ethnic minorities cultivate for food and non-food crops (for fuelwood, medicine, construction material, and fodder) in addition to pasture (McElwee, 2009). When these areas are privatized and planted or 'fenced off' into protected areas—with little community input into decision making— upland ethnic minorities lose access to important livelihoods and are forced to find other means to feed themselves (*ibid*.).

## 3.2. National Land Use Reforms

During the implementation of *đổi mới* (economic renovation) from the mid-1980s, the agricultural sector was restructured as part of Resolution 10 in 1988 entitled "Renovation in Agricultural Management" (Henin, 2002: 4). Resolution 10 was the end of the collective farming system, allocating land to Vietnamese households based on family size (Saint-Macary *et al*., 2010). In 1993, the Land Law provided more thorough details as to how this process was to take place (Castella *et al*., 2006). I briefly discuss each here because these state interventions aimed to sedenterize ethnic minority shifting cultivators, achieve national food security, and ultimately established the current land tenure system.

### 3.2.1. Resolution 10: The 1988 Land Law

Resolution 10 was intended to address the agricultural crisis in the country, through defining private property rights. More broadly, it was argued that there was a need "for each region to design a development model suited to its own natural, economic and social environment" (Castella *et al*., 2006: 147). With dwindling agricultural productivity and food scarcities, Resolution 10 aimed to dismantle the failing cooperative system and establish land use rights to individuals, including the sedenterization of shifting cultivators (*ibid.;* Kerkvliet and Porter, 1995).

Resolution 10 aimed to fix nomadic populations to 'end deforestation' (in the State's eyes caused by swidden agriculture) and to implement the envisioned large-scale regional production scheme, consisting of mass rice production in lowland deltas and rivers, complimented by animal husbandry and silviculture in the uplands, both of which require a sedentary labour force (Castella *et al*., 2006). By allocating land to individuals, the State aimed to transfer responsibility and incentivize 'rational' use (non-swidden techniques) of land, leading to enhanced forest land and plantations (*ibid.*)

Through Resolution 10, households began receiving forestland in 1992, while some communities were still processing their allocations in 2002 (Castella *et al*., 2006). Since the beginning of forest land allocation, overall forest cover has increased (Castella *et al*., 2006; Sikor, 2001). However,

land allocation policies severely destabilized swidden agriculture households, providing them with both insufficient crop yields and little land to practice swidden agriculture, if any land at all (Castella *et al*., 2006; Clement and Amezaga, 2009). Households whose food needs were not met, including households that owned paddy fields, were "significantly and severely affected by the changes in forestland use and protection policy" (Castella *et al*., 2006: 157; Clement and Amezaga, 2013). For households that did not have paddy fields, food shortages and restricted access to forest resources forced farmers to participate in small-scale "income generating activities, for example, the development of terraces, small animal husbandry and off-farm activities" (Castella *et al*., 2006: 157). These diversification efforts for off-farm income activities intensify as times go on and ethnic minority farmers are exposed to shocks that I explore in Section 6.1.

#### *3.2.1.2. The 1993 Land Law (and Revisions)*

The Land Law of 1993 furthered decollectivization policies: designating households as autonomous units of agricultural production, privatization of land rights ("20-year rights to land, with farmers granted 20-year rights to land used for rice and other annual crops, and 50-year rights to land used for perennial crops"), and the "Liberalization of farm decision making with respect to purchase of inputs and sale of outputs" (World Bank, 1998: 9; Hare, 2008). Vietnam, as of 1998, responded to these reforms predominantly through intensification (not extensification), doubling rice outputs since 1980 (Sikor and Dao, 2002; World Bank, 1998). Unfortunately, land allocations made during decollectivization have resulted in land fragmentation, reducing efficiency through capital, labour, and time (World Bank, 1998).

The 1993 land law "grant[ed] five rights to land users: the right to exchange, transfer, mortgage, inherit, and lease out the land" (Saint-Macary *et al*., 2010: 618; Corlin, 2004). Although households were granted use rights via land use certificates (commonly known as Red Books), land in Vietnam is still owned by the state (*ibid.*) The 1993 Land Law also defined forest land by its proposed use, rather than its contemporary use, ranging from "silviculture, natural forest regeneration, reforestation, timber, nurseries, forestry research and experimentation" (Castella *et al*., 2006, as in Article 43 – the 1993 Land Law). Three types of forests were defined: 1) protected forest for the preservation of resources, 2) special-use forests for research and biodiversity, historical, and cultural preservation, and 3) production forests for timber and NTFP production, in addition to partial environmental/resource protection (Castella *et al*., 2006; Huong *et al*., 2014).

The 1993 Land Law was revised in 2003 and once again in 2013, increasing restrictions for farmers' tenure rights (Dang *et al*., 2016). These revisions embody the common socialist principle of the state owning and managing the land, while distributing the land use rights (*ibid*.). The 2003 Land Law granted authority to the government to seize land, regardless of whether it was being

appropriately used with regards to a land use certificate for a variety of political or economic endeavors (e.g. national defense, economic development for private investors, infrastructure development) (*ibid*.; Hirsch *et al*., 2015). The 2013 Land Law extended the use of land use rights to 50 years for annual crop land, as the 20-year allocation that began in 1993 expired in 2013 (Hirsch *et al*., 2015). The 2013 law also introduced a provincial body that regulates land prices and appropriation (*ibid*.). In sum, government interventions in land allocation and land use rights have transformed land use and livelihoods in the uplands. As a result, ethnic minority livelihoods have had restrictions placed on natural capital that did not exist before, sedenterizing farmers and making them more legible.

## 3.3. Lào Cai Province: Land and People

The rugged topography of Lào Cai province, as in much of upland northern Vietnam, strongly influences human activities (Roche and Michaud, 2000). Almost 10 million ethnic minority individuals reside across Vietnam's uplands, making up 11.6 percent of the national population at the time of the last census in 2009 (Michaud *et al*., 2016). Six million ethnic minority individuals reside in the northern uplands alone, with just over one million of them being Hmong, roughly 750,000 being Yao (Dao), and around 22,000 being Hani (*ibid.*). As mentioned in Section 3.1, state attitudes and development initiatives targeting ethnic minority households are fairly often derogatory and inconsiderate of culture and preferred livelihoods.

### 3.3.1. Geography and Climate

Upland northern Vietnam contains uneven agricultural potential, with fertile river valleys, large basins, and plateaus, compared to mountain ranges comprised of granite and limestone with soil and water limitations throughout the uplands (Rambo, 1996; World Bank, 1998). Sitting on the border with the province of Yunnan (Yün Nan, 云南), China, Lào Cai province in northern Vietnam, has one municipal city (Lào Cai City), and contains eight rural districts: Bắc Hà, Bảo Thắng, Bảo Yên, Bát Xát, Mường Khương, Sa Pa, Si Ma Cai, and Văn Bàn (GSO, 2010a). Lào Cai province covers 6,364 kilometers squared (GSO, 2015). Elevation in Lào Cai province varies greatly, from 100 meters (m) above sea level in the Red River valley to the tallest mountain in Vietnam, *Phan Xi Păng*, at 3,143 meters (Rambo *et al*., 1997). *Phan Xi Păng* mountain is part of the Hoàng Liên mountain range which lies along the western border of the province. This range remains humid, cool, and prone to clouds and fog (Roche and Michaud, 2000). Bát Xát district is a total of 1,057 km squared (GSO, 2015).

#### *3.3.1.2. Extreme Weather Events*

Although two Lào Cai provincial weather stations in Sa Pa and Bắc Hà show nominal shifts in precipitation and no substantial variability in temperature over a 40-year period (1967 – 2007),

isolated and extreme anomalies have occurred in the northern mountainous region (Delisle and Turner, 2016). For example, flash floods appear to be an increasing problem in the northern mountainous region, likely linked to deforestation and an increase in intense rainfall events (World Bank, 2010). Previous research has found that these anomalies are of concern to many Hmong and Yao ethnic minority farmers in the province, as their food security is already tenuous, and such events drastically reduce yields of maize and corn, prolong periods of food shortage, and decrease income from cash crops (Delisle and Turner, 2016). Erratic variability in weather events has been an increasing phenomenon since 2000, from prolonged drought and floods, previously unseen forms of precipitation (hail and snow), to long stints of irregular temperatures (heat waves or cold spells) (*ibid*.). These extreme weather events have led to landslides, severe forest fires, livestock losses, and even human deaths and injuries (*ibid*.).

According to Delisle and Turner (2016), nearly 65 percent of all households involved in their study of the impacts of extreme weather events on Hmong and Yao farmers in Sa Pa District, Lào Cai province, noted adverse effects of drought on maize and rice production, and cardamom cultivation. Additionally, cold spells have resulted in water buffalo deaths (Bonnin, 2011; Turner *et al*., 2015) and the killing of grasses used for buffalo grazing and feed (Delisle and Turner, 2016). The World Bank (2010) conducted a report on social dimensions of climate change adaptation and vulnerabilities in Vietnam, examining particular demographics of households, regions, and particular occupations. Specifically, the World Bank (2010) identifies Vietnam's northern uplands, with an emphasis on ethnic minorities, as having low exposure, yet high sensitivity to climate change due to a high dependency on agrarian livelihoods, poor infrastructure, high illiteracy, and high rates of poverty.

### 3.3.2. Ethnicity

Lào Cai province has a population of 665,152 as of 2014 (GSO, 2014), while, Bát Xát district had a population of 75,757 people as of 2015 (GSO, 2015). The province is home to a diversity of ethnicities (see Figure 3.2), with households predominantly being Kinh (30,386 households) in the lower lands and along the Red River valley, followed further upland by the Hmong (26,426 households), Tày (19,877 households), Yao (17,746 households), Hani (640 households), and others (GSO, 2011). I focus on Hmong, Yao, and Hani livelihoods as they make up 40 percent of households in Lào Cai province, 60 percent in Bát Xát district (GSO, 2011; see Figure 3.2 and 3.3), and are skilled black cardamom cultivators across the Sino-Vietnamese borderlands (Turner, 2018; Michaud *et al*., 2016).

### *3.3.2.1. Hmong (Hmông)*

Over four million Hmong individuals live within the Southeast Asian Massif, with one million Hmong living in Vietnam, typically residing in mountainous areas above 1,000 meters in elevation (Michaud *et al*., 2016; Turner *et al*., 2015). The Hmong are among one of the ethnic minority groups that settled in the Sino-Vietnamese borderlands, migrating in the late eighteenth century, fleeing a series of rebellions and suppression by Chinese state-making endeavors (Culas and Michaud, 2004). Scattered throughout China, Vietnam, Laos, Thailand, Burma, and possibly Cambodia, the Hmong are one of the more recent ethnic groups to migrate to upland northern Vietnam from China, settling in Lào Cai province and other provinces along the Sino-Vietnamese border (Michaud *et al*., 2014; Culas and Michaud, 2004). Out of the 54 official ethnic groups in Vietnam, the Hmong are the fifth largest group (GSO, 2009). The Hmong make up nearly a quarter of the households in Lào Cai province and also in Bát Xát district, with totals of 26,426 and 4,209 households, respectively (GSO, 2011).

Michaud *et al*. (2016) note that linguistic data tracks the Hmong from Southwest China, belonging to the Miao-Yao (Hmong-Mien) language family. Hmong that reside in the Sino-Vietnamese borderlands practice semi-subsistence agriculture which I discuss further in Section 3.4. (Turner

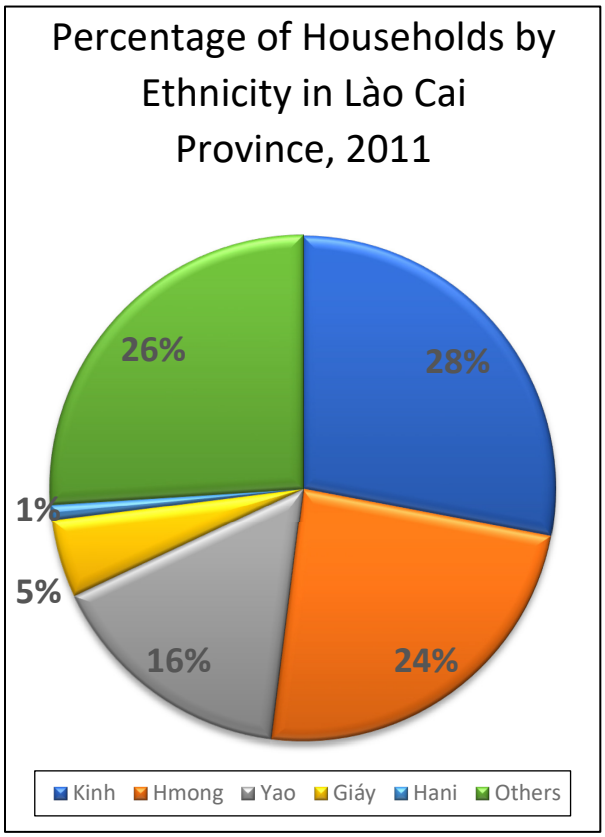


*Figure 3.2: Total households included in the provincial survey: 109,346 households. Source: GSO, 2011. Graph created by author.*

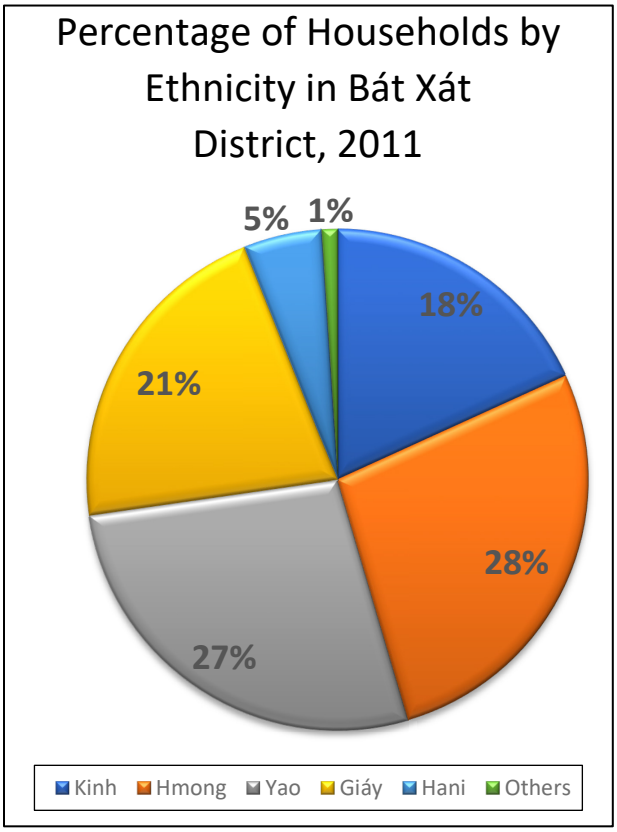


*Figure 3.3: Total households included in the district survey: 13,610 households. Source: GSO, 2011. Graph created by author.*

*et al*., 2015). Hmong customarily practice animism, the belief that natural and inanimate objects have spirits, including humans (Lee and Tapp, 2010), although Christian conversion is on the rise. Social connections are strong across villages and borders because Hmong are clanic exogamous, meaning that they marry outside of their respective clans (the patronymic group), and virilocal, meaning that the married couple will live in the husband's house, most often in the village of the husband's parents (Michaud, *et al*., 2016; Michaud, 2006; Culas, 2004). Additionally, Hmong households are also patrilineal, meaning that land parcels are typically inherited by sons once they are married (Turner *et al*., 2015). Due to these diverse, and sometimes distant connections, particularly clanic connections, trade relations remain strong in addition to information on trade or livelihood strategies are prolific (Michaud, 2006; Culas, 2004). Labour exchange through harvesting rice, tending to cardamom plots, plowing fields and land rental agreements (*ibid*.). Large households are the basic social, economic and ritual unit, housing multiple generations and eldest, or other, sons in the same house (Michaud *et al*., 2016).

#### *3.3.2.2. Yao (Dao)*

The Yao[10] originate from Southwest China, migrating (due to similar state-making pressures as the Hmong), over the last four centuries to northern Vietnam, followed by Laos, Burma, and Thailand (Michaud *et al*., 2016). Amounting to a total population of 3.6 million in Asia (*ibid*.), the Yao make up the seventh largest ethnic group in Vietnam, with a population of 750,000 (GSO, 2009). The Yao live throughout the northern uplands of Vietnam, primarily in Hà Giang province (east of Lào Cai province) (*ibid.*).

The Yao language is a part of the Miao-Yao (Hmong-Mien) language group (Michaud *et al*., 2016), arriving in Lào Cai province in the late 18th century (Sowerwine, 2004a). There are a variety of different subgroups within the Yao ethnic 'nationality', although much of this is mistakenly based on clothing style and colour, rather than ethno-linguistic differentiation (*ibid.*). In Vietnam, Yao practice a syncretism of animism blended with elements of Daoism and ancestors worship (*ibid.*; Michaud *et al*., 2016). Large households also serve as the economic, social, and ritual unit, including multi-generational households for sons (Sowerwine, 2004a). Yao marriages are exogamous and patrilocal, with the eldest son living with his parents after marriage (*ibid.*). Households are also patrilineal upon marriage, which is increasingly creating reduced land availability (Bonnin and Turner, 2012). Yao are perceived to have an adaptable culture,

[10] Confusion regarding the classification of Dao as 'Yao' is traced back to a discrepancy between the Roman alphabet and the adaptation of the Vietnamese language by French missionaries back in the 17th century. Adding to further confusion, the letter 'D' is pronounced as a 'Z' in the north (Zao), unlike in the south where it is pronounced as a 'Y' (Yao). Dao is the officially recognized spelling in Vietnam, known elsewhere "as Yao, Mun or Mien in neighboring countries" (Michaud *et al*., 2016: 122). Similar to Michaud *et al*. (2016) I use Yao here following the most common ethnonym outside of Vietnam, with most Yao living in China – nearly 3 million (*ibid.*).

incorporating various economic activities and political cooperation, "systematically [being] vassalized by midaltitude Tai-speaking groups" (Michaud *et al*., 2016: 428). My own time in the field showed that in Lào Cai province, Yao farmers were typically more integrated into the Vietnamese culture in terms of social, economic, and linguistic capabilities.

#### *3.3.2.3. Hani (Hà Nhì)*

Hani (Hà Nhì in Vietnam, Hani in China, and Akha in Thailand and Laos) migrated to northern Vietnam from Southwest China over the past three centuries due to "numerous revolts and rebellions that disrupted their ability to earn a livelihood" (Michaud *et al*., 2016: 170). Although there are some linguistic differences between the Hani and the Akha and, at times, the Akha self differentiate, although authors tend to note that they are closely related (McKinnon, 2011; Tooker, 2012; Kammerer 1998).[11] Hani and Akha amount to a total of 2,000,000 people, over 1.6 million of them residing in China (Tooker, 2012). In Vietnam, 21,725 Hani individuals live along the border with China, making up the 30$^{th}$ largest ethnic group (GSO, 2009).

The Hani language falls within the Tibeto-Burman language group (McKinnon, 2011; Michaud *et al*., 2016). Hani tend to be animists with a strong focus on ancestral worship (Michaud *et al*., 2016; Tooker, 2012). Similar to Hmong and Yao, Hani are patrilineal and patrilocal (Kammerer, 1998). Additionally, Hani are principally exogamous (Pitchayakan, 1982). Multi-generational households with sons and their wives act as the economic unit, although they arguably operate more as a ritual unit (Kammerer, 1998).[12] There are similarities among household structure, marriage arrangements, and reasons for migration, among Hmong, Yao, and Hani households, in addition to similar livelihood staples in this district (rice, corn, livestock, NTFPs), although there are differences in coping and adaptation strategies, which I will explore in Chapter 6.

## 3.4. Ethnic Minority Livelihoods in Lào Cai Province

In Vietnam's northern uplands, in tandem with a growing market economy, increasing market integration, and expanding infrastructure, there is a significant push by the state for upland farmers to focus on the agricultural intensification of rice and maize for domestic consumption and for export (Turner *et al.*, 2015). A shift towards agricultural intensification means an increase in the need for cash for farming households to be able to afford newly introduced agricultural inputs, such as hybrid seeds, fertilizer, and pesticides (*ibid*.; Bonnin and Turner, 2014). As a result, many ethnic minority households are turning to cash-generating livelihood strategies, such as the

[11]Hani research participants I spoke to referred to themselves as Hani. I will follow Michaud *et al*.'s (2016: 170) classification of Hani, as "those dwelling outside of China are generically known as Akha." Given this classification and other authors' confirmation of similarities, I am pulling from literature that refers to "Hani" and "Akha".
[12]Xa, a 29-year-old Hani farmer and head of the household noted that he could not leave his household to do wage labour in China because he needed to be able to stay in worship, solely a male practice.

cultivation and trade of NTFPs, alcohol distillation, and textile production (Tugault-Lafluer and Turner, 2011; Turner *et al*., 2015). Although the Hmong, Yao, and Hani are distinct ethnicities, they both maintain similar livelihood pathways that are tailored to the conditions of high elevation (Bonnin, 2011; Delisle and Turner, 2016). In this section, I outline the variety of livelihood strategies that Hmong, Yao, and Hani households are employing in the uplands.

### 3.4.1. Agriculture

Dictated by access to land, along with suitable soil and topography, Hmong and Yao households in Lào Cai province predominantly base their livelihoods off of wet and dry rice and maize crops as their staple foods (Culas and Michaud, 2004; Turner *et al*., 2015). Where challenging soil and slope conditions occur, non-terraced dry rice cultivation takes place (Turner *et al*., 2015); elsewhere, and uncharacteristically for Hmong and Yao in Laos, Thailand, and even parts of China, rice grown in paddy fields is prevalent. Maize, which is also grown in difficult soil and slope conditions, typically acts as insurance for shortages of rice (*ibid*.). West of the Red River, which dissects Lào Cai province, rice remains the preferred crop for human consumption, as the climate and soils allow for wet rice cultivation in the majority of the province (Bonnin, 2011). East of the Red River, terracing or dryland rice is less feasible (Kyeyune and Turner, 2016; Turner *et al*., 2015). Here, maize dominates the daily diet of upland communities, grown in small patches of arable land in sheer, rocky limestone karsts (*ibid.)*.

Given the high elevation, topography, and climatic conditions of Bát Xát and Sa Pa districts, in Lào Cai province, farmers typically cultivate and harvest one rice or maize crop every year (Bonnin and Turner, 2011; Kyeyune, 2013; Tugault-Lafleur, 2007; Turner *et al*., 2015). These households often integrate "composite swiddening agro-ecosystem[s] that integrate permanent maize or wet rice fields and rotate swidden plots" around a fixed home (Turner *et al*., 2015: 44; Vien *et al*., 2006). Past research in these areas show that Hmong and Yao households usually complement this staple diet of rice and maize with cassava, beans, vegetables, products collected in the forest such as mushrooms, honey and medicinal plants, and animal proteins from hunting and livestock (Turner, 2012b; Turner *et al*., 2015: 44; Vuong Xuan Tinh, 2002).

### 3.4.2. Livestock

Livestock, specifically water buffalo, have consistently played an important role in upland ethnic minority livelihoods in Lào Cai province as a form of capital and insurance in times of food shortages and as a social indicator of status and wealth (Tugault-Lafleur and Turner, 2011; Turner, 2012b; Turner *et al*., 2015). Water buffalo are often more cost-effective and maneuverable than small tractors given low maintenance costs, the rugged terrain, including narrow, steep paddy

fields (Turner *et al*., 2015). Water buffalo meat also serves as a source of protein in Hmong and Yao households for special celebrations, in fresh or dried forms (*ibid.*; Bonnin, 2011).

In Lào Cai province, water buffalo comprise 79 percent of the total large livestock population by head (including water buffalo, cattle, and horses) (as cited in Turner *et al*., 2015). Water buffalo "form a core part of Hmong livelihoods" (Turner *et al*., 2015: 64) in Lào Cai province, acting as "physical, natural, financial, social, and cultural capital" (*ibid*.). Householders here have suggested that it would take roughly five years to recover from the death of large livestock (World Bank, 2000), which has been more common in recent years due to longer and more intense cold spells (Turner *et al*., 2015; World Bank, 2010).

### 3.4.3. Non-Timber Forest Product (NTFP) Collection, Cultivation, and Trade

Forests serve as important resources for upland ethnic minority livelihoods for supporting households at any time but also in times of food shortages, crop failures, or other hardships, serving as a source for food or NTFPs for income (Poffenberger and Nguyen Huy Phong, 1998). NTFPs such as medicinal herbs, black cardamom, game, and honey, can be used by the household, and when needed for cash income (Bonnin, 2011; Delang, 2005; Tugault-Lafleur and Turner, 2012).

Having relied upon a subsistence–oriented economy (Michaud *et al*., 2016), cash is increasingly required by upland minority farmers to integrate into the national market and to purchase hybrid seeds and related inputs. To provide this increasingly needed cash income, some ethnic minority households, predominantly Hani, Hmong, and Yao, have gradually increased the cultivation and trade of NTFPs, particularly black cardamom[13] (Tugault-Lafleur and Turner, 2009; Turner *et al*., 2015; Michaud *et al.,* 2016). Income generated from the cultivation and trade of black cardamom, aside from purchasing hybrid seed and inputs, is also used as a buffer for purchasing goods when food is scarce (*ibid.*; Bonnin and Turner, 2011). While households cultivate and trade a variety of NTFPs throughout the northern Vietnamese uplands, black cardamom has become most popular as a trade item due to the high demand it is the object of and to its increasing market price over the past two decades (Tugault-Lafleur and Turner, 2009; Turner *et al*., 2015).

Black cardamom (*Amomum aromaticum*) is a perennial, herbaceous plant in the ginger family (*Zingiberaceae*) that begins to fruit after three to five years (Aubertin, 2004). Healthy specimens of black cardamom are most commonly found in secondary forests close to watercourses, in areas with consistent rainfall, a highly humid environment, and in elevations between 700 and 1,400 meters throughout upland Southeast Asia (*ibid*.). For cultivation, cardamom requires relatively little labour input, can aid forest conservation, and can provide a substantial cash income for minority cultivators, an attractive sustainable livelihood strategy for ethnic minorities who have

[13] In 1992, opium cultivation was outlawed in Vietnam, a common income source for ethnic minorities in the region.

access to forest plots in upland areas of Lào Cai province (Aubertin, 2004). Seeds of black cardamom fruit are highly valued in both Chinese medicine, as an alleviant for stomach pains and digestive disorders, and for culinary uses throughout the world (*ibid*.). Black cardamom is commonly known as the 'Queen of Spices' and is one of the most-valued spice in the world by dry fruit weight, behind saffron and vanilla (Omankutty and Joy, 2007).

As production has become more popular in Vietnam's uplands, rather than harvesting wild cardamom, households have begun planting cardamom trees under forest cover (Aubertin, 2004; Turner *et al*., 2015). In October of each year, cardamom fruit are harvested and then dried for two to three days over a wood fire before being carried back to the village and to traders (*ibid.*; Turner *et al*., 2015). Given the high profits cardamom can generate, theft has become more common and male household members will sleep overnight with their crop as harvest time nears (Turner *et al*., 2015). Cardamom cultivation "essentially relies upon reciprocal family work and labor arrangements differing depending on household and harvest size" (*ibid*.: 113).

As well as cardamom, other NTFPs growing in popularity for its livelihood potential include orchids, collected from humid patches of forest, "moist stream banks and limestone outcrops" (Siep Littoy *et al*., 1995: 9). Kinh tourists visiting northern Vietnam view orchids, ornamental and medicinal, to be a luxury and a highly sought-after gift for Vietnamese new year (Bonnin, 2011; Tugault-Lafleur, 2007). Many Hmong men and boys sell orchids along the road or to Kinh private traders (Turner *et al*., 2015). In border districts, orchids are purchased by small-scale traders and exported to Yunnan, where orchids have become rare (*ibid*.; Novellino, 2000; Littoy *et al*., 1995). During my fieldwork, I observed farmers in Bát Xát district selling wild orchids to households and tourists in Sa Pa for extra income. Getting rarer but with a long local history is also the capture of live snakes and other small animals for alcohol maceration by Kinh consumers, the entrapment of song birds for enjoyment and trade, and the gathering of honey, bamboo shoots and wild mushrooms both for household consumption and trade (Michaud *et al.,* 2016; Turner *et al.,* 2015).

### 3.4.4. Alcohol Distillation, Textile Production, and Tourism

Rice and maize spirits are essential to Hani, Hmong, and Yao livelihoods, rituals, and society, and have been distilled for centuries (Bonnin, 2011; Turner *et al*., 2015). Households typically rely on surpluses of rice and maize for alcohol production, predominantly hybrid varieties, as traditional seed varieties are more highly valued for taste and thus are kept for eating and rituals (Bonnin and Turner, 2011; Turner, 2012b). Although spirits are typically reserved for ceremonies such as weddings, funerals, or Lunar New Year celebrations, they are also consumed "when entertaining guests, at market fairs, during communal labour, and at a variety of other festivities" (Turner *et al*., 2015: 84). Distillation typically takes place in upland households, and distribution and demand

are “expanding both across the border and toward the Vietnam lowlands” as Kinh tourists begin to see upland alcohols as an innovative souvenir (Turner *et al*., 2015: 86; Bonnin, 2011).

In Vietnam’s northern uplands, every market has a textile section “catering to local everyday needs and supplying materials for making garments for special occasions” (Turner *et al*., 2015: 125). Hmong and Yao textiles have persisted as a “cultural and dynamic phenomenon” (*ibid*.) and are being commoditized for tourism, networks across the border, and new production and consumption modes (Tapp, 2002; Turner, 2012b). These textiles, in particular, hemp fabric, are dyed with indigo for Hmong communities, and cotton embroidered clothing for Yao and Hani, play an important role in identity markers and remain significant in life and other annual events (Turner *et al*., 2015).

Tourism has expanded dramatically in the uplands since 1993 when international tourism was permitted again after the subsidy era (Turner *et al*., 2015). More recently, domestic tourism of Kinh lowlanders has increased, most noticeably in Sa Pa District, which lowland Kinh visit for the cooler climate, mountain views, and since 2016, a cable car to the top of Mount *Phan Xi Păng* (Michaud and Turner, 2017). For international tourists, Sa Pa District is known for its ethnic minority villages and trekking with local guides. Hmong and Yao women have been working as trekking guides, leading backpackers to marketplaces, through rice paddies, and to ethnic minority village homestays since the mid-1990s (Turner, 2012b; Michaud and Turner, 2006). Income from trekking is predominantly spent on living costs in Sa Pa, however, in times of emergency, cash is given to family for medical visits, agricultural inputs, or food shortages (Turner, 2012b).

### 3.5. Land Use Changes

As discussed in previous sections, there are a variety of policies driving forestation, agricultural intensification, and market integration in the northern Vietnamese uplands, greatly changing ethnic minority livelihoods and the environment. The most significant change relevant to this research, that has been able to be mapped in land-use and land-cover change (LULCC) analyses, is an increase of 413 percent of closed canopy forest from 2000 to 2009, a significant amount of which took place in Bát Xát district (Pham *et al*., 2015). As noted in Section 3.4.3., black cardamom requires closed-canopy forest cover. This shift in LULCC in Bát Xát district might be a result of agricultural intensification, reforestation, and an increase in cardamom cultivation, all occurring due to an increasing need for cash to purchase agricultural inputs (Turner and Pham, 2015). The transition to closed canopy forest came from initially open canopy forest (357 $km^2$) and shrubs (310 $km^2$) (Trincsi *et al*., 2014). Looking more closely at northern Lào Cai province, Figure 3.4 dramatically displays the change to closed-canopy forest cover from 1999 to 2009.

Authors conducting extensive research in the province have highlighted the possible link between closed-canopy forest conservation and cardamom cultivation (Turner *et al*., 2015; Sowerwine,

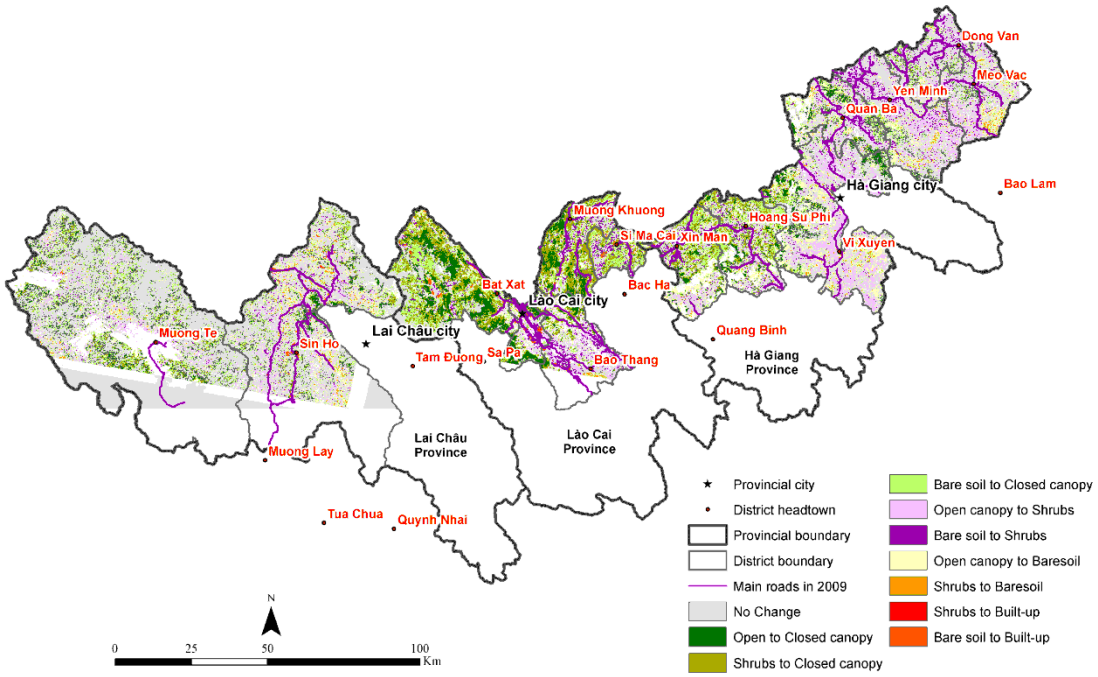


*Figure 3.4: Transitions of land-cover types in the region between 2000 and 2009 (Source: Turner and Pham, 2015: 1041).*

2004b). Sowerwine (2004a: 118) contributes this cultivation to the conservation of old forests "largely due to poor road conditions (inhibiting large-scale illegal logging operations), the rocky nature of the soil (inhibiting swidden cultivation) and cardamom cultivation (encouraging local protection)." As demand for cash increases, mainly due to needing to purchase hybrid varieties of rice and corn in addition to agrochemical inputs, cardamom cultivation has become an increasingly popular livelihood strategy – hinting at the potential for agricultural intensification fueling cardamom cultivation, and therefore forest conservation and regeneration (Turner *et al.*, 2015). The high proportion of ethnic minorities known for cardamom cultivation, significant land use changes towards close canopy forests, and the increase in cardamom cultivation are the main reasons for my fieldwork in Bát Xát district, to better understand these interactions.

## 3.6. Conclusion

In this chapter, I have illustrated how state policies are aiming to push agricultural intensification, marketplace development, poverty reduction, forest reforestation and afforestation in Lào Cai province, and land tenure, broadly, all of which are either pushing ethnic minority livelihoods to integrate into the market economy or constraining traditional and preferred livelihood strategies through interventions. Examining a specific geography, I outlined the physical and human features of Lào Cai province and common ethnic minority livelihood portfolios. Lastly, I detailed important land-use and land-cover changes in northern Vietnam. Altogether, national and local policies, land use change, physical and human geographies of Lào Cai province, and the embedded livelihoods compose a complex and interconnected picture that I will explore further in my research.

# Chapter 4. Methodology

To gain an understanding of livelihood strategies in a time of immense change, I undertook 10 weeks of ethnographic fieldwork in rural and small-town settings in Bát Xát district, Lào Cai province over a total of four months. Over the course of my fieldwork, I conducted 178 interviews with 163 different research participants. In Section 4.1. I lay out the qualitative methods and sampling approach that I utilized in my research, which consisted of conversational interviews, semi-structured interviews, walk-along interviews, focus groups/group interviews, oral histories, and overt participant observation. To analyse my data, I used thematic coding to elicit key themes of my research, described in Section 4.2. I then define ethical considerations regarding my research and how I worked to remedy them in Section 4.3. Lastly, I conclude the chapter by describing what I view as my own positionality and my perceived positionality of my research assistant in Section 4.4.

## 4.1. Methods

The majority of my research with ethnic minority farmers took place in Bát Xát district in three main towns: Bát Xát, Y Tý, and Mường Hum. I also conducted interviews with ethnic minority farmers and black cardamom traders in the bordering district of Sa Pa. I interacted with Kinh, Hani, Hmong, and Yao people in Bát Xát district; Kinh, Hmong, and Yao individuals in Sa Pa; and a Kinh individual in Hanoi. I also conducted semi-structured and conversational interviews Lào Cai city, and Bát Xát district with officials in the Ministry of Agriculture and Rural Development, as well as Lào Cai province and Bát Xát district levels of the Department of Agriculture and Rural Development. Overall, I conducted 160 interviews with 139 ethnic minority farmers (122 households), 3 Kinh cardamom farmers, and 18 interviews, some of them being group interviews, with 25 local officials (compiled in Table 4.1 by method, target group, and location). I also detail the gender and ethnicity of research participants that were ethnic minority famers in Table 4.2. I attempted to meet with research participants multiple times in order to build trust, confirm information, and follow up with other themes, allowing me to have a more well-rounded and accurate set of data. I interviewed some people multiple times for clarification, more details, interest in specific livelihood strategies, all of which lead the number of interviews conducted to be greater than the amount of research participants.

### 4.1.1. Interviews

An interview is defined as a "spoken exchange of information" (Dunn, 2010: 101) that is typically conducted in person, although this is quickly becoming only one of the many mediums since the advent of the internet. Interviews can range from rigid, structured interviews containing a predetermined set of questions, similar to an in-person questionnaire, to unstructured interviews

*Table 4.1: The number of methods conducted for target group of research participants, the location of the research participants, and totals of each method and area.*

| | Bát Xát District | Sa Pa District | Lào Cai City | Hanoi | **Total** |
|---|---|---|---|---|---|
| **Ethnic Minority Farmer Interviews** | ***152*** | ***8*** | ***0*** | ***0*** | **160** |
| Conversational Interviews | 104 | 6 | --- | --- | 110 |
| Semi-structured Interviews | 33 | --- | --- | --- | 33 |
| Group Interview | 6 | --- | --- | --- | 6 |
| Walk along Interviews | 5 | 2 | --- | --- | 7 |
| Oral Histories | 4 | --- | --- | --- | 4 |
| | | | | | |
| **Ethnic Majority Farmer (Kinh) Interviews** | **3** | 0 | 0 | 0 | **3** |
| Conversational Interviews | 2 | -- | -- | -- | 2 |
| Semi-structured Interviews | 1 | --- | --- | --- | 1 |
| | | | | | |
| **Government Official Interviews** | ***12*** | ***0*** | ***2*** | ***1*** | **15** |
| Conversational Interviews | 6 | --- | --- | --- | 6 |
| Semi-structured Interviews | 6 | --- | 2 | 1 | 9 |
| | | | | | |
| **Total** | **167** | **8** | **2** | **1** | **178** |

*Table 4.2: Ethnic minority farmer research participants divided by gender and ethnicity.*

| | |
|---|---|
| ***Female*** | ***50*** |
| Hà Nhì | 7 |
| Hmong | 5 |
| Yao | 38 |
| ***Male*** | ***89*** |
| Hà Nhì | 8 |
| Hmong | 41 |
| Kinh | 3 |
| Yao | 37 |
| **Total** | **139** |

which may only consist of a single prompt (Dunn, 2010; Longhurst, 2010). I used conversational, semi-structured, walk-along interviews, group interviews, and oral histories, each of which fit different contexts (as I describe in Section 4.1.1.1. – 4.1.1.5.). In some oral histories and both conversational and semi-structured interviews, I used pictures of plants to confirm what farmers were growing or in other instances asked farmers to show me their land in order to prompt questions of land management and crops. Some single-participant interviews inadvertently turned into focus groups or group interviews as other people joined our discussion, in addition to others dropping out of the conversation completely. I also conducted oral histories with individuals who were older and with whom I had built a rapport with.

Sampling for my interviews was not random. For interviews with ethnic minority cardamom cultivators, I used a combination of first purposive sampling—selecting respondents due to specific characteristics (Dunn, 2010)—usually followed by convenience sampling due to accessibility (Berg, 2012). The aim of these sampling strategies is not to be objective, but rather to select participants who understand a common experience from a variety of perspectives (Longhurst, 2010; Berg 2012). Specifically, I sampled for ethnicity and livelihoods, focusing on visible characteristics that equated with ethnic group (e.g. clothes), language spoken, and also livelihoods (e.g. trading or farming), and finally, if they were accessible to me/available for an interview in Bát Xát and Sa Pa districts. I would typically attend market days in town centers where many ethnic minority household members came to socialize and purchase goods for their everyday needs, as a starting point for interviews. I attended market days in Trịnh Tường, Bản Vược, Mường Hum, Y Tý, and Bát Xát town for interviews, with more of a focus on the latter three. In Figure 4.1, I label all markets that farmers whom I interviewed attended to illustrate market connectivity.

Additionally, I utilised snowball sampling, in which I asked for the research participants to refer me to other participants that they thought could contribute to the study (Cameron, 2010). In other instances, my research assistant and I traveled to ethnic minority villages and utilized convenience sampling, speaking to people could find along the road or at a store on the side of the road (Berg, 2012).

#### *4.1.1.1. Conversational Interviews*

To explore common themes and make contacts, I conducted conversational interviews (with ethnic minority farmers), in which I began the interview with a limited number of questions and let research participants guide the flow of the interview, to focus on the concerns and topics that were most important to them (Kitchin and Tate, 2000). Conversational interviews give the interaction during the interview a relaxed feel, which is important when working with mostly illiterate farmers who might be wary of outsiders (*ibid.*). I conducted 104 conversational interviews with 86 ethnic minority farmers and two conversational interviews with two Kinh men that recently purchase cardamom plots. Themes included household demographics, livelihood approaches and diversification, agricultural practices, food security concerns, extreme weather events, impacts of state policies, forest change, and cardamom cultivation and trade.

The flexibility and unstructured format of these interviews allowed the research participants to discuss what they think to be more important rather than an ‘interrogation’, an adjective Riley and Harvey (2007a) use to describe semi-structured interviews. I also conducted eight conversational interviews with six local officials in agricultural extension, tourism, and national and provincial

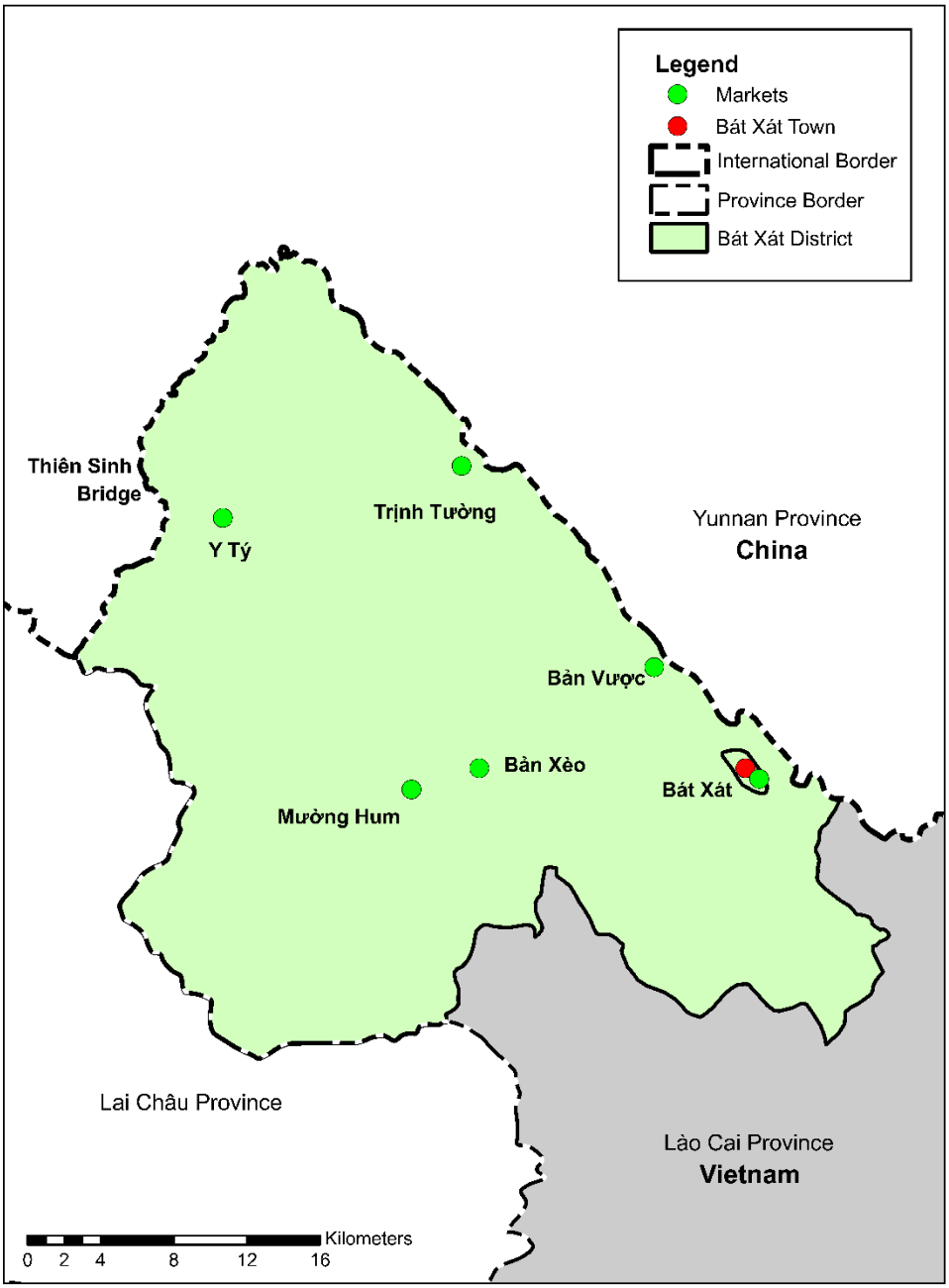


*Figure 4.1: A map of Bát Xát district, noting Bát Xát town and markets (Author, 2018).*

officials from the Ministry of Agriculture and Development. Similar to what Galletta (2013) suggests for semi-structured interviews, I typically used conversational interviews to consider if cardamom cultivators were willing to participate, to locate and inquire about diverse perspectives and experiences my research was missing, and to set up a more opportune time for a more in-depth interview.

#### *4.1.1.2. Semi-structured Interviews*

I used semi-structured interviews to gain a more in-depth understanding of research themes from ethnic minority farmers, local officials, and cardamom traders. Semi-structured interviews have "some degree of predetermined order but [maintain] flexibility in the way issues are addressed by the informant" (Dunn, 2010: 102). In my semi-structured interviews, I began with a broad overview in what I was studying and began with easy, straight-forward questions indicating the general topics of my study. Burgess (1982) suggests utilizing an interview guide with general ideas that the interviewer should cover, including keywords, concepts, or topics, which allow for interview flexibility and a 'natural' feeling conversation. During my initial interviews with ethnic minority farmers and cardamom traders, I kept my interview guide on hand to make sure I was covering all the topics and questions I had preplanned. As the study continued on, I referred to it less often but kept it on hand. For semi-structured interviews with officials, I used an interview guide to uphold a professional image and to remain consistent with my questions (Sowerwine, 2013). Dunn (2010) suggests asking easier and more simple questions during the beginning of the interview to establish rapport, and then later addressing the more abstract questions that might include more sensitive topics. When formulating and communicating the questions, it is imperative that the researcher use uncomplicated, non-offensive, and unambiguous language and concepts (*ibid.*; Kitchin and Tate, 2000).

With regards to the use of semi-structured interviews, there appears to be some conflicting ideologies pertaining to its use as a solitary method or as one of many in a study. Galletta (2016) notes that the interviewer should use multiple methods of data collection before undertaking semi-structured interviews. Dunn (2010: 102) also argues that interviews can be used "to fill a gap in knowledge that other methods, such as observation or the use of census data, are unable to bridge efficaciously." Contrarily, Longhurst (2010) asserts that semi-structured interviews can be utilized as the sole method but also argues that they can be used for supplementation of another method or for triangulation. Although there is not a consensus, it appears that semi-structured interviews are strongest when used in tandem with other methods as they provide an opportunity to "address specific dimensions of your research question while also leaving space for study participants to offer new meanings to the topic of study" (Gillham, 2005). I used semi-structured interviews as a way to explore themes I was interested in, while also learning about pressing issues that the farmers faced, such as new crops, educational loans, or why some felt abandoned by the government. I also used semi-structured interviews to corroborate data from overt participant observation and other interview methods.

I conducted 33 semi-structured interviews with 29 ethnic minority farmers and one Kinh farmer, asking the same questions aiming to understand their livelihood portfolios, experiences of food

security, perceptions of forest change and extreme weather events, and commentaries on their everyday lives. I used semi-structured interviews in triangulation (so to speak) with participant observation, conversational interviews, walk-along interviews, oral histories, and group interviews so as to cross-check and corroborate my findings related to specific themes. I also conducted semi-structured interviews with 21 local officials from the Department of Forestry, Department of Natural Resources and Environment, and the Ministry of Agriculture and Rural Development to gain an understanding of government perspectives of ethnic minority livelihoods, opinions on black cardamom cultivation, current and past government programs and policies, and the implementation of a new natural reserve.

#### *4.1.1.3. Walk-along Interviews*

I also conducted eight walk-along interviews with ethnic minority farmer participants in Bát Xát and Sa Pa districts. The walk along interview is a method in which the research participant typically leads the researcher (on foot, by bike, or by car) on a certain journey or trail, providing information in response to questions or to stimuli from the environment, such as noting important places, people, or things (Carpiano, 2009; Jones *et al*., 2008). Walk-along interviews provide more of an insight into a 'lived' experience than stationary interviews (Jones *et al*., 2008). Instead, it allows research participants to show the researchers, people, places, or things that they deem as important and relevant, assisting in the prompting of questions from the interviewer (*ibid.*). This method also helps to disrupt the traditional interviewing process and embedded power relations by actively engaging in an interview while having them lead the discussion (Brown and Durrheim, 2009). Coupled with participant observation, the researcher can observe how the research participant interacts with the environment (and others) in addition to how others react to them (Jones *et al*., 2008; Kusenbach, 2003). I used walk-along interviews as a method to view farmers' fields, understand the patterns of land use change, and to verify other livelihood strategies that research participants might have omitted in their other interviews. This served as a useful method for verifying particular trees and crops (e.g. cinnamon or green cardamom) and to have research participants describe changes or events that they deemed significant.

#### *4.1.1.4. Group Interviews and Focus Groups*

I include these two methods in the same section because some single-participant interviews turned into group interviews, which in some cases evolved into more of a focus group but would often fluctuate between the two. Group interviews consist of the researcher asking the group a questions with individual participant responses, leaving little or no interaction between respondents (unlike a focus group) (Barbour, 2007). In some instances, group interviews began spontaneously, with other farmers entering the conversation and answering my questions but not engaging with other

participants. Authors across different disciplines define focus groups as "in-depth group interviews", "group discussions," or even "an informal discussion" (Smithson, 2000: 104). Focus groups are unique in that both group dynamics and individual responses are the main data forms, in addition to respective attitudes, frameworks of understanding, priorities, themes regarding the discussed topics (Kitzinger, 1994; Goss and Leinbach, 1996). Inevitably, some research participants did begin to engage with each other, eliciting both similar and contrasting perspectives, thus becoming a focus group.

For both focus groups and group interviews, the individual leading questions should begin with an overview of the research and ask easy, open-ended questions to build rapport amongst group members and researchers (Cameron, 2010; Longhurst, 2010). I would begin conversations by explaining that I was a student researching cardamom then proceeding to introduce the main themes, attaining verbal consent, and beginning with broad questions. Follow-up, clarifying, and probing questions meant for more detail, in addition to directive questions to get the group back on topic can also be used (*ibid.*). Different reactions to questions and other participant responses provided pertinent opportunities for probing questions and clarity in common experiences or conflicting perceptions.

I conducted six group interviews/focus groups with a total of 16 ethnic minority farmers, with groups being as small as two and as large as six. For example, I began in a conversational interview with one individual, who took us to his house for a meal. When I arrived, the interview grew to a group of four people, with an addition two or three people contributing throughout. Every time a new individual arrived, I obtained verbal consent to record their discussion. The interview would fluctuate between individual responses, similar to a group interview, to having an outbreak of reactions from farmers and cardamom growers, becoming more like a focus group.

#### *4.1.1.5. Oral histories*

Oral histories are a specific type of interview that is typically "conducted in an informal question and answer format with a person who has first-hand knowledge of a subject of interest" (George and Stratford, 2010: 140). I used oral histories as a method to attain a temporal perspective on livelihoods, food security, modernisation, and forest change. For most of my research participants, I met them a few times before undertaking an oral history to build rapport and gain understanding of their background. I conducted four oral histories with four cardamom cultivators, three in their homes, and one in their small shop.

Oral histories can focus on specific subjects, a specific time in the past, over an entire lifespan, or how an issue may unfold over time (George and Stratford, 2010; Riley and Harvey, 2007a). In my case, I focused on changes on livelihoods, forest change, and extreme weather events within their

lifetime. Open-ended questions are vital for conducting a successful oral history, as they aim to provide a space for hidden histories of marginalized groups that are often ignored to emerge (Berg, 2012; George and Stratford, 2010; Riley and Harvey, 2007b). I found this especially important for my study, as Hmong, Yao, and Hani minorities in Vietnam are typically not literate. Oral histories helped to prompt a discussion of change in landscape and farming practices but also the process of change, as it provides the opportunity for reflection of what happened (Riley and Harvey, 2007a, 2007b). This was specifically relevant to changes in agricultural intensification, market integration, and extreme weather events. As such, oral histories may provide alternative narratives of land use change, opening up a space for critical discourse for agricultural development or conservation policies that may conflict or intersect with farmers livelihoods (*ibid.*).

### 4.1.2. Overt Participant Observation

Overt participant observation is openly observing the world around us by "spending time being, living or working with people or communities to better understand them" (Laurier, 2010: 116). Participant observation enabled me to observe crops and livestock raised, labour calendars, and indications of physical and financial capital. Kluckhorn (1940: 331) defines it as "conscious systematic sharing, in so far as circumstances permit, in the life-activities and, on occasion, in the interests and affects of a group of persons." Zelditch (1962) argues that it is not just one technique, but a combination of three: participant observation[14], informant interviewing, and surveys or countable examples. Ethnography and participant observation are used interchangeably throughout the literature. Some authors propose that participant observation is not subjective, while others refer to ethnography as active subjectivity or as a study "on an entire culture-sharing group" (Cresswell, 2013: 90; Kitchin and Tate, 2000). In my case, I address my positionality (Section 4.4.) to understand the shortcomings that my own subjectivity may produce or overlook. The use of participant observation ranges from "obtain[ing] data about behaviour" (Kluckhorn, 1940: 331), to "transferring the approach of [rural societies] to urban society" (Jackson, 1983: 40), or, as Laurier (2010) simply puts it, to provide commentary. Throughout my fieldwork, I engaged in active participation in daily life and direct observation at other times. I used this method to observe behaviours, provide commentary on data collected from other methods, and make note of my interpretations and implications of my own subjectivity. I also used overt participant observation to take note of appearance and wealth, interactions with myself and others, and to understand daily life (Dewalt, 2014).

[14] Another form of participant observation is 'participant intoxication,' which is a method that enhances the understanding of the "dynamics of social ethnicity" through alcohol consumption (Fiskejö, 2010: 111).

## 4.2. Coding and Analysis

Coding is a tool of analysis used to identify "potentially interesting events, features, phrases, behaviours, or stages of a process and distinguishing them through labels" (Benaquisto, 2008: 85). Thematic coding is when the researcher defines labels through identifying and arranging ideas and/or themes in the qualitative data (*ibid.*; Cameron, 2010). Before collecting data, I created a list of *a priori* codes based off of my research guides and my conceptual framework (Cope, 2016). I conducted preliminary coding in the field, while also developing a list of *a posteriori* codes, highlighting recurring ideas and themes that I saw (Cope, 2016). I also developed a list of *a posteriori* codes which evolved out of coding and conducting research, while I also highlighted other recurring ideas and themes from the data (Cope, 2016). I would transcribe interviews and notes daily, providing a chance to do some brief primary coding, which is when the initial impressions of a word, phrase, or paragraph, are condensed into a word or phrase (Saldaña, 2016).

After collecting my data, I continued to analyse my data through thematic coding, selecting livelihood portfolio components (such as rice, corn, cardamom, and livestock) to be my initial themes. After coding specific livelihood components, I began using axial coding, using first cycle codes that contribute to broader themes such as market integration, environmental rule, and modernisation (Saldaña, 2009). Coding is a continuous process, in which there can be multiple cycles. Secondary cycles of coding and onwards can look at the original transcripts or even code the previous cycles of coding, or work to build even broader themes, concepts, or even theories (Saldaña, 2016). These codes are analysed through "number of categories, relationships, and patterns so as to tell a story or communicate conclusions drawn from the data" (Benaquisto, 2008: 85). In collecting, analyzing, and writing up my research, I also aligned myself and my interpreter with a set of general ethical considerations.

## 4.3. Ethical Considerations

The essential consideration that must be made when conducting any research, especially in human geography, is the complete avoidance of "doing any harm to research participants" (Bradshaw, 2001: 204). Dowling (2010) notes that harm to both participants and researchers can be physical, as well as social, and psychological. Additionally, "informants are extremely busy with their livelihoods" (MacKenzie *et al*., 2015: 117) which means that there could also be financial harm done by a researcher interrupting activities or livelihoods. In order to mitigate this potential financial harm, I always asked potential interviewees if there was a better time for me to interview them and would compensate my research participants after interviews that were more in-depth.

In following the principle of do no harm, another important consideration is the power structures at play during fieldwork. Power relationships exist between researcher and participants, and if one

is using an interpreter, power relations between the researcher and the interpreter, in addition to the interpreter and the participant, also exist (Dowling, 2010; MacKenzie, 2016). Dowling (2010) references three different power relationships between research participants, interpreters (if any), and the researcher: reciprocal (comparable social positions and equal benefit/cost research participation), asymmetrical (significantly different social positions and benefits/costs from research participation), and potentially exploitative (the research participant has greater power than the researcher). Given that my research was conducted by a researcher from the Global North in the Global South, in addition to the national and ethnic power relations between my research assistant from the nation's capital with ethnic minority farmers in the Sino-Vietnamese borderlands, the relationships that we had with research participants were asymmetrical. To remedy these power relations, I attempted to use methods that lessened power relations, trained my interpreter to be cognisant of cultural considerations and our own positionality, and compensation in the form of food or money for those that took a significant amount of time to speak with us.

Another component of 'do no harm' is ensuring that interviewees are willing to speak to us by explaining who we are, what we are doing, and gaining consent from the research participants. Informed consent is when participants choose to participate in research without any manipulation or deceit (Berg, 2016). Informed consent is usually granted through a written statement or, when justifiable, through oral consent (*ibid.*). Given that many of my research participants were ethnic minorities that were illiterate, verbal consent was the sole form of consent used. Obtaining informed consent also includes promising confidentiality and anonymity.

Confidentiality is the active attempt to remove any research data that might disclose research participant identities, compared to anonymity where the participant remains nameless from the beginning (Berg, 2016). We maintained confidentiality with every research participant in order to 'do no harm' within their own society. I maintained anonymity by creating pseudonyms of villages and farmers. By employing these techniques, I secured the safety of the research participants and their families, local research partners, my interpreter, and myself. If I had chosen not to, it may have hindered any future research in my lab or among local partners.

The nature of some research, opinions, actions, or histories may make governing bodies or other parties unhappy, putting research participants in jeopardy. Safeguarding confidentiality can be done by securely storing data (field notes, pictures, tapes, transcripts) (Dowling, 2010). Despite our best efforts, pseudonyms, characteristics, and locations can still threaten anonymity in research documents (Jackson, 1983; Dowling, 2010). Along the same lines of confidentiality, self-censorship may be needed to protect research participants and communities (MacKenzie *et al*., 2015). I employed self-censorships on topics and positions that may have left myself, my research

assistant, or research participants in a vulnerable position. Confidentiality, anonymity, and self-censorship are all techniques that I utilized during my research in the Socialist Republic of Vietnam, a governing body that actively tries to marginalize the voices that are in opposition to any government initiatives.

Jackson (1983: 42) states that in most research, the research participants are usually "relatively powerless, poor people of low status or members of ethnic minorities." Most geographic research is conducted with the powerless communities that Jackson (1983) is referring to, which means that by Dowling's (2010) definition, asymmetrical power relationships exist within most contexts. Dowling (2010: 32) further notes that "power cannot be eliminated from your research, since it exists in all social relations." My research assistant and I aimed to overcome these power relations through more research participant-led methods (conversational interviews, oral histories, walk along interviews) in order for them to direct our research. We are not able to completely remove the power structures embedded in our identities, I discuss how they may manifest in this study (Section 4.4.), as my own and my research assistant's interaction with research participants is a subjective reflection of my own positionality.

### 4.3.1. Method-specific Ethical Considerations

Ethical considerations for focus groups are complex given the inclusion of multiple participants. Focus group participants must treat all discussions and information as confidential, so that others may freely express their opinions and that no harm is done (Longhurst, 2010). Discriminatory or offensive views that are brought up in focus groups provide a complicated challenge, as the researcher must remain unbiased, while not legitimizing the discrimination (Krueger and Casey, 2000).

During more in-depth interviews, we attempted to make sure that we created space for any other thoughts, questions or concerns. We did this by asking three questions at the end of each in-depth interview: 1) Is there anything else that you think we should know? 2) Is there anything that you think we should be focusing on in our research? And 3) Do you have any questions for us? By asking these questions we wanted to make sure they had the freedom to express any other thoughts that arose, creating an opportunity for them to add a component to our interview guide that was not included, and to give them the chance to ask us their own questions.

Overt participant observation has ethical considerations revolving around the power of the researcher. As I briefly touched on these considerations, a critically reflexive approach to how the researcher is involved throughout the research process and the 'writing-in' of this bias when representing qualitative research can help to overcome these shortcomings (Mansvelt and Berg, 2016). The act of writing-in a more reflexive approach aims at a more collaborative approach to

participant observation (Dewalt, 2014). Unlike the two methods discussed above, overt participant observation does not involve member checking, nor does it require intensive participant interaction. The frame in which the researcher is conducting their observation is strictly limited to their lens and life experiences, rendering it a completely subjective method, which is dependent upon my own positionality.

## 4.4. Positionality

As a young, white, heterosexual, formally educated, American, English-speaking male; I am at the apex of privilege within many socio-cultural hierarchies. I have economic privilege through my upbringing: growing up in a middle-class family, with parents who are still married, within a suburb of Washington D.C. Additionally, I have also received a bachelor's degree, not only defining a part of my economic privilege but also my social privilege. Defining my social privilege, I am of European descent, cis-gendered, I am English speaking, and I have no mental or physical disabilities. Finally, my American citizenship allows me the privilege to move relatively freely around the world and return to a country that has enshrined constitutional rights. These are only the major aspects of my privilege that I am conscious of but without fail, there are endless macro and micro-interactions where I will not be aware of my privilege.

Another consideration is the positionality of my research assistant. Tuan[15] was aged 20 years old during this fieldwork, entering the fourth year of his undergraduate degree. By Vietnamese standards, he was an upper-middle class male. He has a parent who is a high-ranking official in the government and another who is a tradesperson, which in my observations, led him to have a very ethical, yet practical approach to our work. Many of our participants asked where he was from and what he was studying and at times, what his parents did, which I expect skewed data among other existing power dynamics. Nonetheless, in many of the interactions we had with our research participants, many explicitly said that they viewed us as their own children and acted accordingly, acknowledging that we were two young men on their own, far away from their families and homes. With their heart-felt gestures and generosity in how they behaved towards two relatively foreign strangers, we tried to reciprocate with the same generosity. We assisted with cooking, harvesting vegetables from their gardens, weeding or planting rice, or helping to plant beans along hillsides; all of which gave us an opportunity to not overly disturb with their daily lives, observe their everyday lives, and make connections with our research participants.

With regards to the methods that I utilized, I see several potential instances in which my positionality might have interfered with data collection. None of the native languages that respondents spoke were my mother tongue, nor my interpreter's, nor was I near fluency in

[15] This is a pseudonym used for my research assistant in order to keep their identity confidential.

Vietnamese during my fieldwork. As a result, I relied on my research assistant who spoke Vietnamese. Even then, Vietnamese was not the first language of many of my research participants, and ideas or concepts could have been misunderstood or not understood at all. When my research assistant/interpreter and I was able to recognise this had occurred, we would resort to more simple questions. Interpretation and translation can be problematic, as words could be misrepresented, metaphors may be misunderstood, and different emotions may not be able to be fully communicated. Along those lines, my questions or participant answers may not be translated well; however when at all possible, I used forward-backward translation through my research assistant Tuan, to clarify both questions and answers (MacKenzie, 2016).

As discussed above, power dynamics determined how people spoke to my research assistant and I, in addition to what they chose to disclose. Given my positionality and depending upon the power dynamics in the communities, different genders, classes, professions, or ages, some people chose not to speak with us, or they appeared to be were guarded with what they told us. Despite this, we met with many open and welcoming people who appeared not to hold back their thoughts and experiences, revealing sensitive stories and struggles they had endured. Knowing that I would not be able to view these power dynamics with full clarity, I aimed to be critically reflexive throughout the processes of data collection, analysis, and I continue to write-in this reflexivity as I present the research in the following results chapters.

Throughout the entire, and ongoing, research process—question selection, site location, selection of participants, analysis of data, and presentation of data – my privilege and my positionality remains, consciously or not (Rose, 1997). Despite this truth, I intend to be critically reflexive: "a process of constant, self-conscious, scrutiny of the self as researcher and of the research process" (Dowling, 2010: 31). Despite the acknowledgment of my positionality and my attempts at critical reflexivity, I attempt to wield my subjectivity for what it is. Dowling (2010: 35) defines subjectivity as "the insertion of personal opinions and characteristics into research practice." I must recognize that my qualitative research is based on social interactions, as many of my interviews were conducted over tea or meals, leaving objectivity to be unattainable (Dowling, 2010). Further, Kitchin and Tate (2000: 253) acknowledge the main criticism of qualitative analysis being entirely subjective, "relying on the ability of the researcher to make subjective judgements concerning categorisations, to place value on and interpret data." Even if I were completely aware of my subjectivity, through perfect critical reflexivity, if there is such a thing, I "cannot know everything, nor can [I] survey power as if [I] fully understand, control or redistribute it" (Rose, 1997: 319). According to Rose (1997), reflexivity is not so much a process of self-discovery but one of self-construction. My attempts to be reflexive only showcase my perspective and what I make of my reality but will certainly not represent reality itself. I intend to reflect on how my positionality may

impact my research design and how I may alter it to mitigate any shortcomings it may create (Dowling, 2010).

## 4.5. Conclusion

In this chapter, I have aimed to outline the methods of data collection and analysis, ethical considerations, and my positionality. With a focus on varying types of interviews and overt participant observation, I explored the methods I used for data collection and sampling strategies. I then detailed my approach to analyzing the data acquired from the methods I undertook. I introduced the ethical considerations that I tried account for throughout my fieldwork, in addition to how I attempted to lessen asymmetrical power relationships in my research. Lastly, I outlined the impact that me and my research assistant's positionality may have had on this research. With this awareness of positionality and my own rigor regarding data collection, I now delve into my results.

# Chapter 5. Core Livelihood Components in Bát Xát District

Drawing from my 155 interviews with 139 ethnic minority farmers from a total of 122 households, in this chapter (Sections 5.1 to 5.4), I explore the underlying and core components of livelihood portfolios of ethnic minority households in Bát Xát district. I also examine food security status before 2008, when significant external stressors begin impacting upland ethnic minority households (Section 5.5.). I define a household as a group of people that reside under the same roof, including individuals who are conducting migrant labour elsewhere but still contributing to a household's total income, and other members that may use income from the household such as students studying at a distance. In this chapter, with a focus on pre-shock circumstances, I attempt to answer my first research question: "*Over the past three generations what have been the main components of ethnic minority livelihoods, specifically black cardamom cultivators, in Bát Xát district?"* In laying out common livelihood strategies in this chapter, I will build upon this foundation in Chapter 6, where I introduce the shocks and new strategies farmers have resorted to or been encouraged to adopt by government officials.

Throughout Chapter 5 and 6, I refer to low-elevation, middle-elevation, and high-elevation farmers or households.[16] I distinguish these differences in Figure 5.1 and Table 5.1. There are 23 communes in Bát Xát district: Bản Qua, Trịnh Tường, Phìn Ngan, Tòng Sành, Quang Kim, Nậm Chạc, A Mú Sung, Cốc Mỳ, Bản Vược, Mường Hum, Trung Lèng Hồ, A Lù, Dền Thàng, Sàng Ma Sáo, Dền Sáng, Mường Vi, Bản Xèo, Nậm Pung, Y Tý, Pa Cheo, Ngải Thầu, Cốc San, and Bát Xát town. The latter two communes do not have any cardamom-cultivating households (LCPC and DARD, 2016). Additionally, Table 5.1. details specific commune elevations, road conditions, and proximity to the closest markets. Lastly, Table 5.2. outlines the number of households I spoke to, separated by ethnicity and elevation of the household.

## 5.1. Staple Crops

All of the research participants my assistant and I spoke to indicated that rice have been the preferred staple crop for households in Bát Xát district for generations.[17] However, corn and cassava have also played and continue to play a significant role in upland livelihoods. Upland households traditionally grew corn for human consumption, typically traditional varieties, while hybrid corn has also been cultivated for livestock fodder in more recent decades. Cassava serves as the least preferred staple crop in terms of taste preference, most likely to be served to pigs for

[16] I designate this separation based off of my own findings, however, upon returning from the field I found that it is similar to Michaud *et al.*'s (2016) description of lowland, midland, and highland livelihood differentiation.
[17] Drawing on oral histories as well as the elderly age of some other interviewees, the information provided here goes back three generations (with a generation roughly calculated at 20 years in this region) hence revealing core livelihood approaches between 1960s until today.

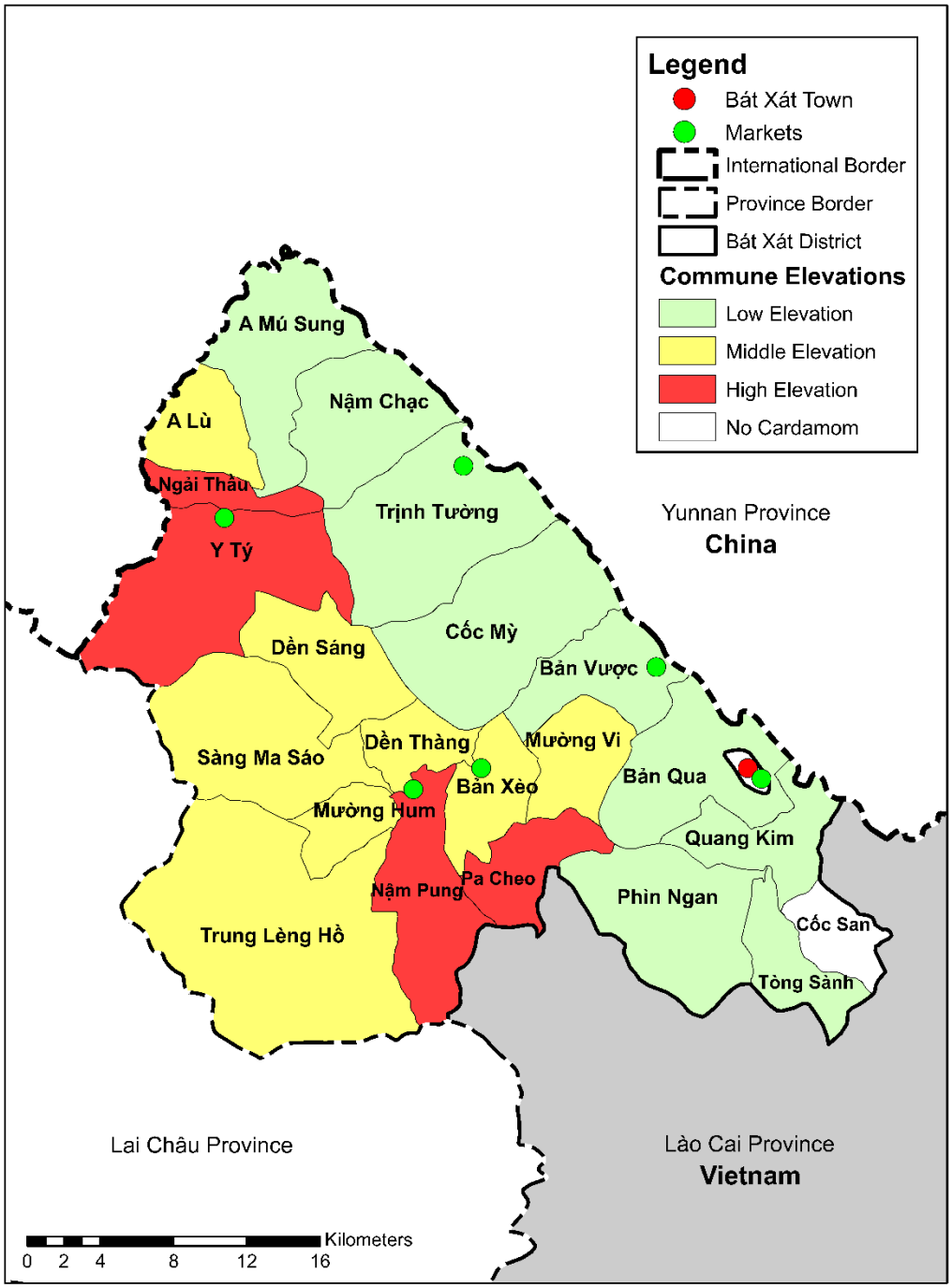


*Figure 5.1: Communes, elevations, and marketplaces in Bát Xát District. Source: author, GPS points.*

fodder. Households also continue to cultivate horticultural crops for household consumption and trade in times of excess, including onions, bitter gourd, and chayote (*quả su su*). In times of food insecurity, households have turned to corn and cassava in the past to supplement their caloric needs when rice was not available. Agricultural intensification of hybrid rice and corn has risen dramatically over the past twenty years, with many farmers now producing a surplus of both crops for fodder and for sale.

*Table 5.1: Classification of different elevations by commune (in the majority of inhabited areas), road condition, nearest market and distance. Six farmers are not included in this table from Sa Pa district (Author, GPS points).*

| Bát Xát District | Location by Commune | Elevation (M) | Road condition | Nearest Market, Distance |
|---|---|---|---|---|
| Low-elevation | Bản Qua | 0-500 | Semi-rugged terrain | Bát Xát, 5 km |
| | Trịnh Tường | | Paved road | Trịnh Tường |
| | Phìn Ngan | | Semi-rugged terrain | Bát Xát, 16 km |
| | Tòng Sành | | Semi-rugged terrain | Lào Cai City, 11 km |
| | Quang Kim | | Semi-rugged terrain | Bát Xát, 3 km |
| | Nậm Chạc | | Semi-rugged terrain | Trịnh Tường, 5 km |
| | A Mú Sung | | Semi-rugged terrain | Y Tý, 9 km; |
| | Cốc Mỳ | | Semi-rugged terrain | Bản Vược, 4km; Trịnh Tường, 6 km |
| | Bản Vược | | Paved road | Bản Vược, 5 km; Bản Xèo, 4 km |
| Mid-elevation | Mường Hum | 500-1,000 | Semi-rugged terrain | Mường Hum |
| | Trung Lèng Hồ | | Rugged terrain | Mường Hum, 10 km |
| | A Lù | | Semi-rugged terrain | Y Tý |
| | Dền Thàng | | Paved road | Mường Hum, 8 km |
| | Sàng Ma Sáo | | Rugged terrain | Mường Hum, 14 |
| | Dền Sáng | | Rugged Terrain | Mường Hum, 11 km; Y Tý, 16 km |
| | Mường Vi | | Semi-rugged | Bản Vược, 5 km; Bản Xèo, 4 km |
| | Bản Xèo | | Paved road | Bản Xèo |
| High-elevation | Nậm Pung | 1,000 + | Rugged terrain | Mường Hum, 7 km |
| | Y Tý | | Rugged terrain | Y Tý |
| | Pa Cheo | | Semi-rugged | Bản Xèo, 7 km |
| | Ngải Thầu | | Rugged | Y Tý, 2 km |

*Table 5.2.: Number of households interviewed, organised by ethnicity and elevations of the commune, as noted in Table 5.1.*

| **Elevation** | **Households by Ethnicity** | | **Total Number of Households** |
|---|---|---|---|
| *Bát Xát District* | | | |
| **Low Elevation** | Hani | -- | 41 |
| | Hmong | 2 | |
| | Yao | 39 | |
| **Middle Elevation** | Hani | -- | 34 |
| | Hmong | 26 | |
| | Yao | 10 | |
| **High Elevation** | Hani | 13 | 39 |
| | Hmong | 15 | |
| | Yao | 11 | |
| *Sa Pa District* | | | |
| **Not Specified** | Hmong | 6 | 8 |
| | Yao | 2 | |
| **Total Households** | | | 122 |

### 5.1.1. Rice

Among upland households, rice has continually been the preferred staple crop in Bát Xát district since the 1960s, consisting of paddy and upland rice. Paddy rice is cultivated in terraces that are crafted by carving out rice fields that are then inundated with water (Figure 5.2). In middle to higher elevations, there is only one annual paddy rice season, while in lower elevations there are two; this has continued regardless of whether rice is traditional (landraces) or hybrids. In higher areas with one rice season, farmers cast rice seed in plowed and inundated terraces serve as nurseries in early to mid-April. In May, rice is then transplanted by hand into plowed terraces. Fertilizer application typically occurs directly after transplanting the rice, followed by one month and three months after transplant. Harvest typically occurs in mid-September. Farmers who reside in lower elevations raise two rice crops, planting nurseries in February and June, transplanting in March and July, and harvesting in June and October. Transplanting and harvesting rice are labour intensive and require households to utilize their social capital for labour exchange with immediate and extended families, in addition to neighbours. In rare circumstances, two Yao farmers (both in low-elevation communes) indicated that they used financial capital to hire workers for cash or in bags of rice before 2008.

*Figure 5.2: Mountains and cascading rice paddies, and a stream (Author, 2018).*

Hybrid rice had become popular among ethnic minority farmers whom we interviewed due to government programs promoting subsidized or free hybrid rice seed for government-defined 'poverty households' (see Section 3.1.1.).[18] Forty percent of our interviewed farmers began growing hybrid rice from 1988-1998, 44 percent between 1998-2008, and the remaining 16 percent had begun since 2008 as discussed in Section 3.1.2.1. Over the past five years, 23 farmers (19%) have received free or subsidized rice, almost half of them residing in high-elevation communes (equally split between Hani and Hmong farmers), almost a third being low-elevation Yao farmers, and roughly a fifth being mid-elevation Hmong farmers. In addition to free or subsidised seeds, agricultural extension has been adamantly promoting hybrid varieties, despite any discounted seed.

In 2018 hybrid rice seed ranged in cost from 60,000 to 125,000 VND ($2.58 – 5.37 USD) per kilogram depending on the type of seed, and these prices have risen over the past two decades.[19] During this study, we found that over a quarter of the households we interviewed purchased seed from private traders, the rest purchasing hybrid seed from agricultural extension or receiving free or subsidised seed from the government. Over half of the Hmong and Hani farmers I spoke to in Y Tý commune purchased hybrid rice seed in China for roughly 50-70 Chinese Yuan ($7.25-10.15 USD) per kilogram, claiming it is more appropriate for the local climate compared to Vietnamese hybrid seed since many of them began purchasing hybrid seed around 2008 or later. Farmers see the cost of seed as reasonable given enhanced output. As Muas[20], a 31-year-old Hmong male farmer in Y Tý commune explained: "In the beginning I thought that hybrid rice seed was so expensive, but after I planted it, I saw so much productivity. I spent more money on the seed and got a lot back, so I don't think it's very expensive" (7/1/2018). Farmers typically perceived the return on investment to be worthwhile.

Farmers typically use five to twenty kilograms of hybrid seed annually depending on household size and use (e.g. fodder, sale, alcohol). Regarding these crops, the largest expense for farmers is fertilizer, ranging from roughly three million VND ($129 USD) to over six million VND ($258 USD) for each season of rice, whereas farmers never had to purchase fertilizer for traditional seed. Herbicide and pesticide are also used, ranging from 25,000 VND to 75,000 VND ($1.07 to $3.22 USD) per season depending on frequency of application and amount of land. Households of five produce an average of two and a half metric tonnes of unhusked rice. Ngan, a 38-year-old Yao farmer from Nậm Pung commune, grew the largest amount of rice from among our interviewees, a total of seven tonnes of unhusked hybrid rice for a household of seven. Ngan intensified his rice

[18] Originally designated by Program 135 (World Bank, 2009).
[19] Prices of hybrid seed are on the rise, with seeds ranging from 40,000-80,000 in 2009 (Bonnin and Turner, 2012).
[20] All names used in this thesis are pseudonyms.

cultivation in 2015 after his cardamom died (See Section 6.2.1.), selling over three tonnes of unhusked rice in 2017.

When asking about traditional varieties of rice, nine farmers (nearly half being mid-elevation Hmong farmers and the other half being mid and low-elevation Yao farmers) responded with variations of "nobody grows traditional rice anymore." Yet, 24 percent of households do continue to grow traditional rice, almost a third being low-elevation Yao households, seven Hmong households in mid- and high elevations, six Hani famers in high elevations, and five Yao farmers in mid- and high elevations. Of these, four farmers grew traditional rice solely for their own consumption or for sale, as traditional rice fetches a higher price of 150,000-170,000 VND ($6.45 to $7.31 USD) per kilogram compared to 100,000 VND ($4.30 USD) per kilogram of hybrid rice (Sun, 6/17/2018; Che, 7/2/2018). Six farmers (one high-elevation Hani farmer, two middle-elevation Yao farmers, and three low-elevation Yao farmers) grew 10-50 percent of traditional rice for their total output, primarily for cultural ceremonies or to distill sticky rice alcohol (Sun, 6/17/2018; Phu, 7/12/2018; Song and Ta, 7/15/2018). The remaining 14 farmers (five Hani farmers, four Hmong farmers in high-elevation communes, two Hmong farmers in mid-elevation communes, and three low-land Yao farmers) cultivate small areas[21] of upland rice solely to preserve seeds from their ancestors or maintained coloured rice for their beauty (Chu and Muh, 7/1/2018; Hoa, 7/20/2018; Gu 7/9/2018).

These small plots of traditional landrace seeds were typically in areas that households deemed as having poor-quality soil. In these small plots, after hill rice/dry rice (for which there is no hybrid being developed) has been cultivated for two to three years, with a possible rotation of traditional corn, land was left fallow for three to five years, followed by the cutting and burning of vegetation. Once the land is cleared and soil is bare, households cast hill rice seed by hand. Upland dry rice only has one season across all elevations. In lower elevation areas, dry rice is grown in a rotation with corn and cassava.

Although our research participants still cultivate traces of traditional varieties in Bát Xát district, hybrid rice varieties now dominate the landscape. Hani, Hmong, and Yao cultures are all patrilineal, as is the inheritance of land (Michaud *et al*., 2016). This, in tandem with policies restricting swiddening or the expansion of crop land, results in "no more land" as plots are divided for sons (Muas, 7/6/2018). Seeds and agro-chemical inputs require financial capital up-front, and farmers sometimes turn to loans (Turner *et al*., 2015). As a result, households are forced to muster more cash than ever before, many relying on cardamom to supply the cash until extreme weather

[21] One-kilogram worth of seed. Sizes of rice and corn plots are typically referred to by how much seed one uses.

events devastated the crops. Now, the food security of many ethnic minority farmers depend on hybrid seed and agro-chemical inputs, both of which have been funded by black cardamom.

Unhusked rice of both wet rice or dry rice cultivation methods is typically stored in 50-kilogram bags until it is prepared for consumption, with households with higher financial capital owning their own rice huller, while in more remote villages, rice was hulled by a water-powered mortar and pestle (Figure 5.3). One commune granted a Hmong village a large diesel rice huller to "support upland people" and "poverty households" (Khoa, 6/29/2018). Khoa, a 61-year-old Hmong farmer and the father of the village leader, was selected by the village to maintain and house the machine in 2007, which serves as shared physical capital for the village (Figure 5.4). For his efforts, he is repaid by collecting one tenth of the total rice that is hulled. He reported that in a good year, he receives 20 50-kilogram bags of the other villagers' rice. Farmers commonly stated that without hybrid rice, they would still be hungry and poor, yet a third of the farmers I spoke to prefer the taste of traditional rice (see Section 7.2.2. for more on food sovereignty and culturally-appropriate food).

#### *5.1.1.1 Rice Alcohol*

Alcohol distillation is a common component of livelihoods in upland Hmong and Yao households, mostly used for household consumption (Culas and Michaud, 2004; Turner *et al*., 2015). Alcohol in Bát Xát district is predominantly distilled from rice, as has been the case for generations. Since the arrival of hybrid rice, alcohol is typically distilled from this rice that is considered hard, as opposed to softer landrace/traditional varieties that are preferred for eating. Households have

*Figure 5.3: A water-powered rice husker, Nậm Pung commune (Author, 2018).*


*Figure 5.4: A rice huller granted to a Hmong village in Y Tý commune (Author, 2018).*

different philosophies regarding the best ratio of rice to alcohol, fluctuating from half a kilogram to one kilogram of rice to one liter of alcohol. In the case of unhusked rice alcohol, a well-known Yao specialty, the ratio ranges from 1.5 kilograms to two kilograms for one liter of alcohol. Households concoct a 'mash' by cooking the rice with water in a large pot. Once it is cooled, yeast is added for fermentation for five to ten days in warmer climates, to as long as two weeks in colder climates and higher elevations. Depending on the preference of the distiller, they may also choose a longer fermentation time resulting in a higher alcohol content. Three consistent components of alcohol distillation were the heating of the mash, a metal container with cold water which captured the alcohol condensate, and a cloth filter to capture impurities before the alcohol enters a plastic receptacle for storage.

The quantity of alcohol distilled depends on how much the household consumes, but interviewees reported that they usually produce 20 to 30 liters, three to four times a year, with an average household size for ethnic minority interviewees being five to six people. Household members noted that it was important to ensure to have ample supply for lunar New Year celebrations. For households that have limited rice production, alcohol distillation is correspondingly also limited. As Shu, a 59-year-old Yao participant noted, when his parents were still alive "they only made [alcohol] when they had enough rice to get through the year" (8/21/2018).

Fermented "Hani Beer" (VN: Bia Hà Nhì) was commonly made in Hani households – fermented, non-distilled alcoholic beverages being generally common among Tibeto-Burmese speakers across the Peninsula, partly for ritual purposes, while Miao-Yao speakers do not partake in it. Phu, a 28-year-old Hani male farmer, noted that they only call it Bia Hani for Kinh people, while in Hani their term translates to "sticky rice wine". The ratio of sticky rice to water used to make this depends on the desired alcoholic strength with one kilogram of sticky rice, to one to two liters of water being the usual. Most batches are made with 100 kilograms of sticky rice. The process begins with steaming sticky rice. Once the rice is cooled, about half of the desired amount of purified and cool water is added and mixed with yeast in a large plastic tub. After two weeks of fermenting, the other half of desired water is added into the container, or more depending on how weak the individual wants to make the alcohol. Phu noted that he prefers to let his Hani beer mature longer to make a less-sweet and more subtle version. One 26-year-old Hani woman, named Gu, stated that her household did not make Hani beer often as "just elders and children like it, because it's sweet and easy to drink" (7/9/2018). Given that rice wine is essentially a fermented mash that is stored for a long period of time, in the event that a batch of Hani beer spoils, Phu explained that they can distill it: "If it is sour… then we take it and cook it and make it into liquor" (7/12/18).

In sum, different versions of alcohol have long played a part on Hmong, Yao, and Hani households and there has been little change in the processes involved or its demand in recent years. This is an

interesting contrast with villages just over the Chinese border where most alcohol in Hani and Hmong villages is now purchased (Turner *et al*., 2015).

### 5.1.2. Corn

Minority households commonly grow maize throughout Bát Xát district. Maize in higher elevation areas is planted in February, with households in the lowlands planting a second crop in July. Fertilizer is mixed with manure and applied at planting and once more in April, and then again in September for the second crop in lower elevations. Households reported using herbicides and pesticides on both traditional and hybrid seed corn crops. These applications are dependent upon household preferences, some farmers indicating solely the use of pesticides or herbicides, or both. Maize is harvested in August in upland elevations, and once again in December in lowland elevations. When corn is harvested, it is thoroughly dried by the sun on tarpaulins or by tying the husks along a beam underneath a house roof (Figure 5.5). Once dried, the corn will either be kept on the cob or shelled and stored in 50-kilogram bags. Farmers typically began growing hybrid corn around the same time as hybrid rice. Thirty-eight percent of farmers began cultivating rice before 1998, 43 percent began between 1998 and 2008, and 19 percent began cultivating it after 2008. Similar to hybrid rice, hybrid corn is cash intensive, ranging from 70,000 to 180,000 VND ($3.01 - $7.74 USD) per kilogram of seed. Farmers spend roughly 200,000 to 1,000,000 VND ($8.60 to $43.00 USD) on fertilizer per season for hybrid corn depending on the amount grown. Farmers

*Figure 5.5: Husked corn left to dry in the sun (Author, 2018).*

typically grow two to four types of hybrid corn to test productivity and diversity in case of seed failures. Only six farmers whom I interviewed received free seed from the government (one Yao and two farmers in high-elevation communes and three Hmong households in mid-elevation communes). In 2017, Thanh, a 37-year-old Hmong male farmer and his entire village in Sàng Ma Sáo commune received free corn from the government but, as he put it "the crop barely rose out of the ground and produced nothing" (7/21/2018). Out of the farmers I spoke to, only seven farmers (one Hmong and three Hani households residing in high-elevation districts, three mid-elevation Hmong households, and two high-elevation Yao households) cultivate traditional corn, two of which only grow traditional corn because they perceived their soil to be poor quality, while the remaining five mostly grow it to keep the variety alive. All of the seven farmers who cultivate traditional corn for household consumption or fodder for livestock, with one farmer who sells purple corn for sale at the market (Ying, 7/19/2018).

Hmong, Yao, and Hani farmers whom I spoke with chose to plant hybrid and traditional varieties of corn primarily due to soil conditions. Traditional maize is predominantly planted on steep hills in poorer quality soil, as higher quality soil with more nutrients makes stalks too tall and susceptible to wind damage (Mu, 7/3/2018). Traditional maize varieties are typically used for household consumption, boiled on the cob as a snack or kept as insurance in times of rice shortages by mashing up soaked corn kernels and either steaming them in banana leaves or frying them. Households reported that hybrid varieties of maize are planted in higher-quality soil with additional fertilizer applied for enhanced productivity. Hybrid varieties are seldom for human consumption, being used primarily as fodder for livestock. Before the major shocks that I focus on in Chapter 6, participants noted that both traditional or hybrid corn was rarely, if ever sold, given that they themselves might then have to purchase traditional corn to feed themselves or hybrid corn to feed their animals.

### 5.1.3. Cassava

Cassava cultivation consists of composite swiddening on steep hills with poorer quality soil than for corn. Crop rotations on such hills consist of cutting down and burning vegetation on the selected plot, plowing the area, followed by planting a combination of corn, traditional rice, and cassava, ending with a three to five-year fallow period. Nowadays, cassava is more common in low elevation areas due to climate, however, some households I spoke to in middle-elevation communes also cultivated it. Cassava is the least preferred staple crop after rice and corn given taste preference, selling price, required labour, and climatic limitations. Additionally, planting cassava has been discouraged by forestry officials, who instead have been encouraging farmers to plant trees through Program 327: "Greening the Barren Hills" (Sahn, 6/14/2018; Ngan 8/23/2018; see Section 3.1.2.3. and 3.1.2.4.).

While cassava was previously used as a food for humans across these uplands (Scott, 2009), in more recent decades in Bát Xát district it is predominantly used for animal fodder, and only in rare instances for human consumption or to make alcohol. During the *Bao Cấp* period (1975-1986), one 68-year-old Yao couple recalled it was a very difficult time when they had no rice (cf. Tugault-Lafleur, 2007). Instead, "everyday we needed to gather cassava or something and other roots like potatoes to eat" (6/15/2018). May, a 46-year-old Yao woman recalled that when she did not have enough food, "we mixed corn and cassava with a little amount of rice along with fern, but we had no fat to cook it. We had to boil it with some salt, no MSG. After that time the rice tax reduced, so we were able to survive" (8/17/2018).

As reforestation and afforestation programs, such as programs 327 and 661, have been implemented, land once planted with cassava has now been increasingly replaced by more profitable tree crops. For example, five Yao (four low-elevation and one mid-elevation) farmers have converted some of their cassava land to mahogany and cinnamon since 2010, while still maintaining small cassava crops for animal feed. Compared to rice and corn, it is clear that cassava has never played a very central role in local minority livelihoods, except for the fact that it has been an emergency crop that farmers would fall back on in times of food security distress.

### 5.1.4. Home Gardens

Across all climates and ethnicities in Bát Xát district, there are common home garden crops cultivated for household consumption. The most common vegetables cultivated were onions, chayote (*quả su su*), peppers, tomatoes, long beans, garlic, pumpkins, cucumbers, morning glory, and various types of squash. Long beans, along with pumpkins, and their young leaves and vines, are commonly either boiled and served with the broth, or were cut and fried with garlic. Produce that are less prevalent in household gardens, but common in middle and high elevations are Dutch peas (*Pisum sativum*, or VN: *Đậu Hà Lan*), pears, traditional corn, cabbage, and *Chi Dâu da*, which is in the *Baccaurea* genus. At lower elevations, bananas, yams, peanuts, and fruit crops such as passionfruit, guava, lychee, and jack fruit are also common in small quantities in household gardens. Household gardens played a vital role in everyday meals for individuals to gain essential vitamins and minerals are/were typically tended to by women.

## 5.2. Livestock

Livestock serve as a vital food (protein, minerals [blood], and fat) source in addition to financial and physical capital for ethnic minority households, depending on the animal. Farmers predominantly raise water buffalo, local black pot-bellied pigs, and chickens, often having cats and dogs. There are fewer instances of ducks, geese, pigeon, horses, cattle, and goats. Water buffalos still serve as important physical capital although, similar to horses in relation to

motorbikes, are increasingly being traded out for tilling machines – 'motor buffalos' (Section 6.2.2.). Since hybrid varieties of corn and rice have been increasingly prevalent since early 1990s, increased fodder for raising more pigs and poultry for household consumption and income generation. Livestock are predominantly used for draft work, household consumption, and ritualistic sacrifice. In times of emergency, farmers cope by selling or bartering their animals for cash, medicine, or food.

### 5.2.1. Ruminants

Historically and in contemporary livelihoods water buffalo are seen as a symbol of wealth amongst households in the district and along the Sino-Vietnamese borderlands (Turner *et al*., 2015). Water buffalo served as a vital asset for households where I completed interviews in many respects. Farmers primarily view water buffalos as financial and physical capital for plowing rice terraces, and sometimes also corn fields preceding planting. In funerals and other ceremonies, such as *Khô Già Già*[22] or sometimes during *rằm* (middle of the month ceremony), water buffalos are purchased or selected to sacrifice and consume by observers. Farmers reported having three to four buffalos on average in 2018, with a range between one and nine per household before 2008.

Despite the increase in extreme weather events in the Vietnamese uplands since 2008 to be analysed in Chapter 6, farmers still use water buffalo for plowing, in addition to being a source of financial capital to pay for medical expenses (Ta 6/8/2018), weddings (Sun, 6/17/2018; May, 6/6/2018), motorbikes, or tilling machines (Sun, 6/17/2018; Shu, 7/25/2018). Water buffalos sell for 20,000,000 to 30,000,000 VND ($860-1,290 USD) per head, higher prices being for larger, healthy, and mature buffalo. Before the extreme winters began in 2008, households on average kept three to four buffalo, trading buffalos to other farmers or gifting buffalo offspring to family members. Participants also utilised water buffalos as a source of cash, although it was rare, such as the case of the household needing to make a large purchase like a motorbike or as a part of a dowry (Ming, 6/7/2018).

Interviewees explained that horses were common livestock for households until the late 2000s. Prioritised mainly as a means for physical capital (transportation), followed by a source of meat, and then financial capital if needed, horses were used to accelerate travel time, especially to trade in district capitals and Lào Cai City. Horses served as an indicator of wealth: Sahn, a 64-year-old Yao woman residing in Bản Qua commune noted that during the *Bao Cấp* era, the richest household in the area "had three buffalo and one horse, but my household was so poor. Some were so rich!" (Sahn, 6/14/2018). Today, only three farmers (one high-elevation Hmong farmer, mid-

[22] *Khô Già Già* is a Hani ceremony asking spirits for a good harvest and asking for the forgiveness of any wrongdoing from spirits and other households in the village. Each village collectively purchases a water buffalo for sacrifice and consumption of all parts: meat, skin, bones, tripe, blood, and stomach contents.

elevation Hmong farmer, and one low-elevation Yao farmer) whom I interviewed keep horses to sell the meat, receiving anywhere from 15,000,000 to 18,000,000 VND ($645-774 USD) per horse depending on the size. I discuss the shift from horses to machines in livelihoods in Chapter 6.

While more common in the past, goats are now rarely raised, with only three farmer interviewees raising them. Huan, a 52-year-old Hmong farmer in Dền Thàng commune explained that he sold his goats because they ate too much (8/25/2018). In sum, water buffalo serve as the most common and important ruminant, providing important physical capital and storing financial capital.

### 5.2.2. Pigs

Consistently over the past three generations, pigs, specifically local black pot-bellied pigs, serve as an important food and income source for many upland households. Households typically have anywhere from one to 25 pigs, including piglets. When consuming fresh pig meat, households consume their own recently butchered pigs, or that of their extended family, their neighbours (bought or bartered), or meat that they have purchased in the market. In Y Tý, some Hmong and Hani households preserve pork by boiling it in a large wok with heavily salted water until the water evaporates. The cuts of meat are then submerged in the fat renderings and are kept in the rafters of their houses in large plastic tubs. Given the higher elevation and cooler climate, this cured pork can be kept for one to three years and serves as a key source of calories, protein, and fat that can be consumed on-demand. In addition to household consumption, live pigs also serve as a source of cash in times of need for food and ceremonies (funding weddings and funerals). Aside from income and consumption, pigs are also often killed for household and shamanistic rituals.

Black local pigs are preferred for their taste and disease resistance compared to pink or white 'industrial' pigs, which have been imported from the lowlands and China in recent years. Khoa, a 65-year-old Hmong man, explained that "the fat of white pigs is watery and not delicious, I prefer black pigs because the fat is more dense and they just eat grass and vegetables, so it is cleaner and more delicious" (7/2/2018). Farmers also prefer black over white pigs as they do not have to purchase industrial feed, although making the food mash for black pigs can be arduous. Black pigs require a mixture of ferns, chopped banana tree trunks, grasses from the forest, cultivated bulbs and potatoes, and hybrid corn for this mash, along with any leftover food or organic matter prepared for human consumption. As Phu, a 26-year-old Hani male put it, the vegetables make up "half, so we make a mash of it and we just put about two or three kilograms of corn. The rest is vegetables" (7/8/2018). Although cured pork can feed farmers year-round, farmers typically prefer fresh chicken meat.

### 5.2.3. Poultry

For nearly every household, chicken meat and eggs have been an important source of protein for generations. Chickens have also served as an important income source, in addition to being used for a variety of rituals including shamanistic (Tapp, 1989; Lee and Tapp, 2010). Chickens also continue to be a common dish for group meals served after any labour exchange, especially work in rice fields. Omelettes remain a staple in most meals, serving as a valuable protein source. Before 2008, farmers indicated that they grew less chickens, ranging from three to fifteen chickens for a household of five, rarely, if ever, selling them. Farmers whom I interviewed typically raise five to 30 chickens per household, with eight farmers raising more than 50 chickens for sale, six of which are Yao farmers in Phìn Ngan commune and two being Yao farmers residing in Nậm Pung commune. Although hybrid breeds of chickens are present in Bát Xát district, arriving after 2010, ethnic minority farmers often viewed them as unfavorable. Khoa, a 61-year-old Hmong farmer in Y Tý commune explained: "Hybrid chickens don't know how to eat well, they only like industrial food. Their meat is too soft and lean, so I don't like it" (7/19/2018).

Although not as common as chickens, ducks are raised for their meat and eggs, serving as a food source for special occasions. Eighteen farmers (15% of households) raise ducks across ethnicities and elevations, with farmers keeping seven to 20 ducks for household consumption. Eighteen farmers (15% of households) raise geese, again across ethnicities and elevations, averaging about 10 per household. Half of these farmers received the geese free from the government, including all Hani households. Ngan, a 43-year-old Yao farmer from Nậm Pung commune was the only farmer to sell ducks and geese, gaining a total of 2,000,000 VND ($86 USD) for 15 geese and 1,250,000 VND ($53.75 USD) for five ducks, claiming that he got tired of the labour and sold them "because they are so expensive to feed and they need to have a fresh water source" (Ngan, 8/24/2018). Lastly, three farmers (one Hani and one Hmong farmer from high-elevation communes, plus one Yao low-elevation farmers) raised pigeons for consumption, with the two high-elevation farmers keeping 10-15, and one low-elevation farmer keeping over 100 for sale.

## 5.3. Non-Timber Forest Products Beyond Cardamom

Forests resources are vital for ethnic minority households in Bát Xát district, ranging from construction material, fuel, food, medicine, to possible sources of income. Silviculture activities, although present and encouraged through programs discussed in Section 3.1. in the early 1990s, were highly adapted after 2008. As such, I detail silvicultural activities in Section 6.3.7.1. Here, I detail how farmers use non-timber forest products (NTFPs), followed by a section specifically focused on black cardamom (Section 5.4.), as it is prominent throughout most upland ethnic minority households in Bát Xát district, has been for a number of years, and is the focus of this

study. No single NTFP occupied the same significance and prevalence as black cardamom had across households where I interviewed, although NTFPs as a whole still play an important role in upland livelihoods.

### 5.3.1. Honey

Farmers collect honey from any forest that had natural bee hives, including cardamom forests. Eleven farmers regularly collect honey from the forest, while only three farmers keep hives (Figure 5.6). Honey is kept primarily for household medicinal use with excess sold at the local market. Depending on the season, farmers can collect five to thirty liters a season from forest hives, mostly from July to October. Two farmers who collect honey from the forest note that harvests have been poor since 2013 due to extreme weather.

Muh, a 21-year-old Hani farmer who tended to her own hives, explained that she captured broods by "throwing sand or water onto them so they fall down. Then I made a hive for them and shoved them in there" (7/2/2018). Other farmers noted that bees can be precarious depending on where you live. Khoa, a 61-year-old Hmong farmer who lives in Y Tý commune noted that "it's too cold here… I feed them sugar cane or they will die… the bees don't like to live here. If I bring them here, they don't stay. The bees don't like the new hive" (7/2/2018).

Honey is primarily sold in used 650 milliliter beer bottles for 110,000-250,000 VND ($4.73-10.75 USD) or in one-liter bottles for 180,000-300,000 VND ($7.74-12.90 USD) depending on who is

*Figure 5.6: A Hmong man's honeybee hive (Author, 2018).*

selling it and at what elevation (the lower the elevation, the higher the price). Nonetheless, farmers, with the exception of those who had their own hives, did not view honey collection reliable nor a substantial portion of their livelihood portfolios.

### 5.3.2. Mushrooms

Interviewees noted that they used to collect as many mushrooms as they wanted, especially shiitake mushrooms, *Lentinula edodes* (VN: *Nấm Hương*). However, due to limited availability and community management of forests, farmers are not always allowed to collect mushrooms. Edible mushrooms were predominantly collected for household consumption, and excess would be given to extended family or sold in local markets. Five farmers whom I interviewed sold mushrooms at local markets for 120,000 VND ($5.16 USD) per dry kilogram and 60,000 – 70,000 VND ($2.58-3.01 USD) per fresh kilogram. Depending on the year, farmers collect roughly four to twenty-five kilograms. May, a Yao farmer from Bản Qua commune, was concerned that the mushrooms were over harvested and before they were mature enough to reproduce in 2017, which led to no mushrooms in her nearby forests in 2018. Lingzhi, or *Ganoderma lucidum* (VN: *Linh Chi*), is a mushroom found in old-growth forests on decaying logs, notably in the same forests as black cardamom. To preserve lingzhi, it is dried over a fire until the stalk and cap looks similar to obsidian (Figure 5.7). Ngan, a 43-year-old Yao man said that he used to collect 10 kilograms of lingzhi per year in the 2000s, selling it for 1,500,000 VND ($64.47 USD) per kilogram to Chinese

*Figure 5.7: Lingzhi traded to an intermediary cardamom and medicinal plant trader in Sa Pa district (Author, 2018).*

traders who would visit local markets in Bát Xát looking for for traditional medicine inputs (8/24/2018). Since then, overharvesting of medicinal lingzhi mushrooms has become a growing concern and two farmers (one Hmong and one Hani from high-elevation communes) went as far as to say that no lingzhi grows in the forest anymore. Five farmers who collect lingzhi noted that there are fewer decaying trees that lingzhi can grow on than in the past, thus reducing harvests to a roughly a third of what they used to be. Strangely however, Lingzhi has maintained a stable price over the past 10 to 15 years of 1,400,000 to 1,500,000 VND ($60.20-64.50 USD) per dry kilogram, yet farmers now collect only three to four kilograms per year.

### 5.3.3. Other NTFPs

Ethnic minority farmers also collect other plants from the forest for household consumption and for sale at local markets depending on the plant and its abundance. Fresh bamboo shoots, mostly for household consumption, are commonly collected from March to July, and as early as January in lower elevation areas. Only five interviewed farmers sold bamboo shoots, amounting to roughly 10-20 kilograms of bamboo shoots per year at local markets. One Hmong farmer in Mường Hum did not have any black cardamom fields and was upset that her parents had not created cardamom fields in the past, as suitable forest land that she could access was now limited. She noted that to make ends meet, she sells bamboo shoots and her husband goes to China for wage labour. She said she sells 100-150 kg of bamboo shoots per year, with prices ranging from 10,000 to 20,000 VND ($0.43-0.86 USD) per kilogram depending on the time in the season. Ying, a Hani farmer who viewed her household as impoverished noted that in times of financial insecurity, “I sell the top of the bamboo shoot and I eat the rest”, indicating that the household eats the more fibrous part that will not gain a higher price at the market (7/8/2018). In recent years, changes in community forest management in Bát Xát district have restricted the harvesting of bamboo shoots so as to allow for bamboo forest regeneration and harvests now require a permit in some locales (see Section 6.1.2.).

For monetary income, some interviewees also collect ornamental orchids to sell at local markets, including in Sa Pa district. Forests also supply households with medicinal plants that are collected in times of illness. Most participants indicated that there were too many medicinal plants to list, but many listed the most common medicinal plants collected as *Paris polyphylla* (VN: *Củ Rắn Cắn*), wild white bananas, and a species within the *Anoectochilus* genus of the orchid family (VN: C*ây Kim Tuyến*). Farmers also collect firewood (predominantly dead and already dried wood) from community-managed forests. Overall, the forest acts as a significant source of food and income sources – especially during times of food insecurity (Tugault-Lafleur, 2009) – as well as providing resources for household use.

## 5.4. Black Cardamom

Black cardamom (most commonly known as *Amomum tsao-ko* or, due to a new taxonomic study, as *Lanxangia tsaoko*; de Boer *et al.*, 2018) is endemic to the high-elevation forests of the Sino-Vietnamese borderlands. Under a thick forest canopy, many ethnic minority households, predominantly Hani, Hmong, and Yao, have been collecting small quantities of black cardamom for generations for household medicinal use. Interviewees explained that in Bát Xát district, selective clearing of the forest understory for large-scale black cardamom cultivation began in the last 20 to 30 years due to increasing demand and value, increasing market integration through agricultural intensification programs, and the lack of alternative income sources. Ngan, a 43-year-old Yao man explained: "We like hybrid seed and need fertilizer, so we all made cardamom [plots] to pay for it. So, we work to sell cardamom, so we have good rice" (8/24/2018). This linkage between black cardamom cultivation and agricultural intensification was consistent throughout interviews with research participants of all ethnicities and elevations.

According to the International Union for Conservation of Nature (IUCN), *Lanxangia tsaoko* is a near-threatened species as of 2012 (Leong-Skornickova *et al*., 2018). Cultivation of black cardamom takes place in high-elevation and old-growth forests with a closed forest canopy. Ideal growing conditions for cardamom includes wet soil with high organic matter near a water source or in a valley. Research participants noted that the ideal climate for black cardamom is humid and cool, in addition to being sensitive to extreme sunlight and heat when the flowers are in bloom and extreme cold at any point in time.

### 5.4.1. Cardamom Plots

Households typically hold one to five separate cardamom fields in different areas, a significant store of natural capital. Access to cardamom land is obtained by households clearing the understory themselves, inheriting plots from kin, receiving an allocation from the government, or purchasing the land, the latter two being rare. Clearing land consists of cutting down younger trees and significant weeding. In order to establish a dense understory of cardamom, farmers plant seeds or transplant young cardamom plants, followed by weeding for three to five years. It is sons who predominantly receive cardamom fields upon marriage, similar to other patrilineal land transfers in the family. However, some Yao farmers have allocated cardamom land to their daughters when they and their husbands have lower financial and natural capital than their siblings (Sowerwine, 2004). For example, Sahn, a 64-year-old Yao woman and her husband granted their daughter some of their cardamom land because she did not have a lot of access to land (from her new husband) and their only other daughter was studying medicine, so she did not have any time and is expecting to make a good salary (6/14/2018). A few research participants noted that the government had

allocated plots of black cardamom forest back in the early 1990s through agricultural cooperative groups. While purchasing or selling cardamom plots has remained extremely rare, I will discuss the increased occurrence and consideration of this in Section 7.2.

Travelling distance to cardamom plots range from one to twelve hours, with farmers needing to drive motorbikes and hike, depending on the proximity of the field to the house and the conditions of the roads or forest with often dense forest terrain. Cardamom plots are mostly delineated by knowing the neighboring plot's cultivator and respecting mutually agreed upon boundaries. As a 33-year-old male Hmong cardamom cultivator from Y Tý commune, Muas, put it, "we know each other in the village, so when somebody goes to my field, they say where are you, where is your field from? Where to where? Is it this to this?" (7/1/2018). Other households demarcate their land by building rock walls, which also serve a dual purpose of protecting their crop from buffalo. Some interviewees indicated that they had incidents of grazing buffalo devastating their cardamom crops. For example, Thinh, a 50-year-old Hmong cardamom cultivator had had his entire cardamom crop eaten and destroyed by another villager's buffalo. His plot had had an average production of 60-70 kilograms of cardamom, which he could not harvest for the past three years as it recovered. In three villages, farmers whose buffalo grazed in cardamom fields have been subjected to warnings, followed by fines for the second (300,000 VND ($12.93 USD)) and third occurrence (500,000 VND ($21.55 USD)). These village communities had agreed to enforce such fines if one of their buffalo entered cardamom fields, with some villages having a "buffalo patrol" during the day.

### 5.4.2. Cardamom Labour

Cardamom seeds and transplanted rhizomes are planted just after harvest or in January when cultivators return to their plots to weed. It is less common for households to propagate portions of rhizomes from larger cardamom plants. Depending on how long a household's cardamom plot has been cultivated and the availability of household labour, plots will typically be weeded and cleared two times a year. Women and men predominantly weed in late October or November after their cardamom harvest to prevent damaging developing fruit while weeding (Figure 5.8) or flowers and because of limited labour demands at the time. The second most common time to weed is around May or June to clear debris away from the plants so rats are less likely to eat the fruit (Song 6/4/2018; Muh, 7/1/2018). Households also make bamboo rat traps to prevent any losses to vermin.

Due to increased prices for cardamom and an increased demand for cash, many household members have begun to protect their cardamom plots since the mid-2000s in order to prevent theft of fruit. Men typically go to their cardamom plots for a month before harvest in August or September, depending on their preferred harvest time. Some farmers build basic tents at their plots with tarps and poles, while others build more permanent structures out of logs and planks, both of

*Figure 5.8: A healthy cardamom crop in the Bát Xát Nature Reserve (Author, 2018).*

which are an attempt to deter cardamom thieves. Other farmers indicated that they placed bear traps around their cardamom fields, acknowledging that it was illegal. Local commune and village governments have also attempted to thwart theft by organising a set day for cardamom harvesting. Depending on the village or commune, that day is anywhere from 10 September to 15 October in the Gregorian calendar year (or even as late as November, see also Turner, 2018). If individuals are caught going to their cardamom between when their fruit is nearly ripe enough to harvest and the specified harvest day, they are fined and publicly announced.

If there is not enough male labour to harvest and dry all the household's cardamom, women will also help. Alternatively, if labour is not short, women typically stay home to tend to livestock and look after children. Many families and villagers exchange labour to assist each other with their harvesting and drying, with many having neighbouring plots. Some households indicated that this was also important for safety, as there may be thieves and they are in a rugged forest environment.[23] Harvesting and drying takes one to two weeks depending on the yield for that year. Households dry cardamom by digging a hole in the ground, about one to one and a half meters deep, to house a fire. A structure made out of fresh wood or a type of green bamboo (*Bambusa nutans or* Vầu) is set up around the hole, one meter off of the ground (May, 6/5/2018; Lam,

[23] Hmong farmers had multiple stories of people who went alone to old forests to collect cardamom getting attacked by ghosts or spirits, resulting in memory loss or mental illness, followed by severe health issues or even death.

6/11/2018). This structure holds either a rack made out of fresh wood, *Vầu*, or a metal net to hold freshly harvested cardamom pods above the fire. Once the fire is hot enough for drying, cardamom pods are placed on the rack or metal net, and cardamom leaves are placed on top of the pods to recirculate heat inside. Batches are stirred occasionally to dry the cardamom pods evenly, taking from 24 hours up to one week for larger harvests.

### 5.4.3. Cashing in on Cardamom

Over 60 percent of interviewees indicated that they sell their dried cardamom (Figure 5.9) to lowland traders that come to their village or to their house just after harvest time.[24] Farmers often noted that the traders who come to their house sell their cardamom in Lào Cai City, from where the cardamom is then sold to companies in China. However, over half of the farmers I spoke to in Y Tý town and Y Tý commune sell their cardamom in China themselves. Farmers prefer selling in China for two reasons: they typically get a better price, which they immediately exchange from Chinese Yuan to VND or, more commonly, this allows them to gain Chinese Yuan for specific items only available in China such as $P_2O_5$ fertilizer,[25] Chinese hybrid rice seeds,[26] or traditional

*Figure 5.9: Dried cardamom pods purchased by a Kinh intermediary trader in Sa Pa town.*

[24] Only one Yao farmer from Sa Pa district, heavily involved in other cash-making activities linked to tourism, indicated that she sold her fresh cardamom without drying it.
[25]Participants called this 'powder fertilizer' given its appearance. The fertilizer's chemical name is phosphorus pentoxide and is not available for purchase in Bát Xát district according to our research participants.
[26] Participants in the surrounding areas of Y Tý noted that this seed was more suitable for the climate compared to Vietnamese hybrid rice seed.

Hani clothing.[27] Prices for black cardamom are largely determined by the Chinese market, as that is the end point for the commodity, where it is used for traditional pharmaceutical production.

In sum, black cardamom has played a vital role in ethnic minority livelihoods within Bát Xát district. Serving as a key source of natural capital, black cardamom plots and the fruit that black cardamom plants bear provide a vital income source that farmers have used to invest in physical capital such as machines, hybrid corn and rice seed, and agricultural inputs. Due to this increase, food security in Bát Xát district has changed dramatically.

## 5.5. Food Security

Moving on from the components of household livelihoods, in this section, I focus on food security and specifically food availability, food access, and stability vis-à-vis availability and access to food. These are the core elements from the conceptualisation of food security that directly impacted my respondents. Other elements of food security are then discussed in Chapter 7. The major changes in food security prior to 2008 revolve around the introduction of hybrid varieties of rice and corn, in addition to accompanying agrochemical inputs. I also discuss the succession of food preferences in times of food insecurity; broadly, hybrid rice and corn have contributed significantly to food availability and conventional notions of food security.

### 5.5.1. Food Availability

Food availability was a large concern during collectivization (in the north of Vietnam from 1954 until 1988 with Resolution 10, which ended most of the collective farm system processes), and during the Sino-Vietnamese border war in 1979 (Kerkvliet and Porter, 1995). Those residing in lower elevations, and therefore, closer to Kinh governance, were incorporated into these collectives. Farmers in high and middle-elevation areas were not forced into collectives. Many farmers reported that they did not have enough food to eat for the year until they began growing hybrid rice. As noted earlier (Section 5.1.1.), hybrid rice cultivation began in the late 1980s-1990s in Bát Xát district depending on the location. Hybrid seed cultivation also depended on the 'poverty status' of the household, which dictated the amount of free or subsidized hybrid rice seed allocated by the government. Before hybrid rice, many participants indicated that they were often hungry during normal harvest years, especially from June to August before the rice harvest.

As noted in Section 5.2.1., when households did not have enough rice, they ate corn. Yet farmers preferred rice over corn, as it was often said that if they had no rice, it was not a meal. As Shu put it, "I ate a lot of corn before, so I don't want to eat it… Now we have fertilizer, hybrid rice, and

[27] Hani households reported that there is nobody who makes Hani clothes in Vietnam.

enough rice to eat, so now we don't have to eat corn anymore. We give it to pigs now, it's good for pigs" (8/21/2018).

Similar to Tugault-Lafleur's (2009) research findings in Sa Pa district, when Hmong and Yao households often did not have enough rice or corn to eat in the past, farmers in Bát Xát district also noted that they previously went to the forest to forage for edible bulbs and leaves. Some plants collected from the forest were relatively easy to consume, while others required several steps of preparation to consume it. Khoa, a 61-year-old Hmong farmer from Y Tý commune recalled:

> When I was a child until about 15 years old, a lot of people didn't have enough food to eat after harvesting our crops, so we needed to go harvest food in the forest, to find one type of bulb… So after we peel it, we shredded it, shocked it in hot water, and then we washed it a few times, so after that we could eat it (7/19/2018).

Khoa also listed other bulbs, shrubs, and seeds that were collected from the forest for him and his parents to eat when there was not enough food. This lack of availability was fairly common in his village, as he remembered other households were also foraging. Phu, a 28-year-old Hani farmer from Y Tý commune, remembered a time when he was a child "around 2000, we didn't have enough rice… so we needed to find yams. Once we started to use hybrid seed, we were never hungry anymore" (7/12/2018). Participants concurred that since the introduction of hybrid seeds they have increased availability and productivity of staple rice and maize crops.

### 5.5.2. Food Access

Before the arrival of hybrid seeds, farmers did not have access to the financial capital needed to purchase food either. They also lacked the physical capital (agricultural inputs) or natural capital at times (land) to produce sufficient rice or corn. For example, May, a 46-year-old Yao woman recalled her difficulties with financial and physical access to food:

> Twenty years ago… that was a hard time... I had a family with my husband, but he had no parents, so we needed to do our own farm work and expand some land to grow things… Everyone at that time needed money to live, but nobody at that time could help each other. So even if I had one to two pigs or chickens, I needed to carry them to the market to sell them to buy rice (8/17/2018).

May also mentioned that her family had no rice in 1992 because of a hybrid rice total crop failure. She took a pig to sell at Bát Xát market and walked all the way back to her village in Bản Qua commune with a 50-kilogram bag of rice, over an 8-kilometer trek on rugged roads at that time. This points to the lack of food stability, even from hybrid seeds, discussed shortly.

Hybrid seed and accompanying agricultural inputs became available for trade at marketplaces in the late 1980s and 1990s. However, travel conditions from villages to marketplaces were referred to as very rugged, reflecting limited physical capital with regards to infrastructure in the district at

that time. For farmers who received free or subsidized seed, village leaders typically received the seed and brought it back to the village by horse, thereby trying to mitigate this limited physical access people had to the lowland or marketplaces. As mentioned above in Section 5.3.4., from Y Tý to Bát Xát town, the only way to travel was by foot or horse in the 1990s. Thus, even if inputs or food were available at marketplaces, access from villages to marketplaces, and vice-versa, was often rugged and difficult.

### 5.5.3. Stability

Prior to 2008, farmers reported experiencing instability with regards to food availability and access. As noted earlier, political and economic shocks harmed food security, especially during the collectivization period and even more acutely during the Sino-Vietnamese border war. People noted significant food instability and insecurity during collectivization, complaining that rice taxes paid to the government had been far too high (May, 8/17/2018). Older research participants who resided in lower elevation areas recalled that after economic renovation policies began in the mid-1980s, conditions improved and have continued to improve with regards to income generation opportunities (May, 6/5/2018; Sahn, 6/14/2014; Kiem and Hung, 6/15/2018). During the border war of 1979, farmers did not generally need to leave their homes as the fighting was focused elsewhere, yet three said that they relocated to the forest temporarily for a few days due to fears that conflict was getting near, and thus needed to forage for food.

Cyclical or seasonal food insecurity was commonplace for households until they had access to appropriate hybrid rice seed for the agro-ecological conditions of their land. Research participants predominantly reported annual cyclical hunger being the most pressing issue when asked about a time when they were hungry, which occurred during collectivization and the years up to suitable hybrid varieties of rice. Muas, a 33-year-old Hmong man spoke of his cyclical food insecurity before hybrid rice until 2009:

> When I got married, I had no rice, so I just ate corn and vegetables from July to late August, and in September I harvested rice again… at that time I had six siblings and one sister. And my father used opium and my mother couldn't handle it all. There was no hybrid rice at that time and not so much food in the market… I started to raise hybrid rice over 10 years ago. I had to change to hybrid rice because it's more productive. Before, I raised a lot of traditional rice… before the yield was not good so I didn't have enough food to eat (7/1/2018).

Farmers also indicated that there were uncommon extreme weather events in the past, such as droughts, which threatened yields and left households hungry. However, from 2008, extreme weather events began to increase in frequency and intensity, hence my focus on these impacts in Chapter 6.

## 5.6. Conclusion

In this chapter I have shown that over the past three generations, despite shocks such as the shift to collectivisation, the removal of this policy, changing forest access, and the Sino-Vietnamese border war, the livelihoods of semi-subsistent upland minority Hmong, Yao, and Hani in Bát Xát district have tended to remain fairly consistent. These farmers have maintained rice and corn as their core food staples, with livestock, garden produce, and non-timber forest products all contributing to food security. The small-scale trade of livestock, cardamom, and other NTFPs created the cash needed for goods such as kerosene, medicines and metal farming implements in the past, while more recently it has also paid for medicines and school fees. But then came hybrid seeds…

Ethnic minority interviewees in Bát Xát district were adamant that hybrid rice and corn seed have been vital to food security since the government began providing them with free or subsidized seed since the late 1980s and early 1990s, in addition to improved access to agrochemical inputs. Despite some failures of hybrid seed, and less satisfaction with taste, farmers in Bát Xát continue to purchase hybrid rice and corn seeds but have adapted to purchasing multiple varieties in case of 'bad seed'. This finding contrasts somewhat with that of Bonnin and Turner (2012) in Sa Pa district, Lào Cai province and Kyeyune and Turner (2015) in Hà Giang province, where they found farmers concerned with hybrids seed delivery issues, pest concerns, and their reliance on cash. In Bát Xát district, many farmers I spoke with acknowledged that hybrid seeds and related agricultural inputs had increased their need for cash but also noted that due to the intensification of cardamom cultivation they were able to afford these, and in turn, had increased their food security. Nonetheless, the livelihood portfolios analysed in this chapter have diversified quickly and fairly dramatically in the face of shocks from 2008 to 2018, exposing farmers to a more vulnerable livelihood context.

# Chapter 6. Vulnerability Context and Adaptation

A number of human-induced and natural shocks and trends have occurred in Bát Xát district since 2008, altering livelihood portfolios and food security equations for upland ethnic minority semi-subsistence farmers. In this chapter, I address my second research question: *What are the main driving forces or shocks that have changed black cardamom livelihoods in Bát Xát district since 2008 (including and beyond extreme weather events), and how are ethnic minority farmers coping and/or adapting?* First, I outline the most prominent shocks and trends (Section 6.1.), focusing on extreme weather events (Section 6.1.1.) and government interventions (Section 6.1.2.). In Section 6.2., I detail how shocks have impacted the use of black cardamom as a livelihood strategy, in addition to the strategies that they employed, including coping, adaptation and diversification strategies, all of which have drastically diversified livelihood portfolios since 2008. In addition to the staple crops discussed in Chapter 5, portfolios have also diversified to include (in order by prevalence) wage labour (6.2.3.), silviculture (Section 6.2.4.), medicinal crops (Section 6.2.5.), trading (6.2.6.), fisheries (Section 6.2.7.), and tourism (Section 6.2.8.).

Before a series of extreme weather events impacted black cardamom cultivation, intensifying modernisation and anti-poverty interventions, the semi-subsistence aspects of local livelihoods portfolios were somewhat diverse as seen in Chapter 5, while the cash creating side of local livelihoods (financial capital) was not, predominantly revolving around black cardamom cultivation. These trends and shocks have resulted in farmers needing to find new avenues to gain cash inflow to purchase hybrid seed and agro-chemical inputs (c.f. Bonnin and Turner, 2012), as well as for emergency funds and school fees. In turn, this has set the stage for increasing market integration. As cardamom cultivation was the most important source of financial capital for local livelihoods before 2008, here I primarily focus on how cardamom-dependent households have adapted to reduced black cardamom production. The most dramatic finding with regards to financial capital sources was that nearly half the farmers that I interviewed (45%) who had cultivated cardamom had a complete cardamom crop failure in 2017.

## 6.1. Shocks and Trends

Consistent with Scoones's (1998) sustainable rural livelihoods framework, I refer to shocks as sporadic events that directly harm assets, while trends are predictable and gradual shifts in everyday life (DFID, 1999). Extreme weather events are shocks that are now occurring in increasing frequency in Lào Cai province, including Bát Xát district, ranging from significant snowfall events and extreme temperatures, to heavy rains causing floods and landslides. Trends that have emerged from 1986 (economic renovation) and more intensely from the mid-1990s include social, economic, and environmental changes including infrastructure development as well

as increased market integration. As a result, upland livelihood portfolios have changed considerably in a short amount of time. Additionally, natural resources are being increasingly regulated as part of a regional forest and biodiversity protection project, resulting in the establishment of the Bát Xát Nature Reserve in 2017, which could also be considered a shock for farmers living nearby with regards to their ability to access natural resources. In short, these shocks and trends, analysed below, are greatly impacting upland ethnic minority farmers and their livelihood portfolios.

### 6.1.1. Extreme Weather Events

Extreme temperatures and changes in precipitation have occurred in Bát Xát district and elsewhere across the Vietnamese borderlands, and have become more frequent and intense since 2008 (Delisle and Turner, 2016). Beginning that year, unusually heavy rains caused major floods and triggered large landslides in both high and low elevation areas within the northern borderlands and interviewees remain fearful of the consequences of these extreme weather events along with potential reoccurrences. Landslides occurred in different areas of Bát Xát district in 2008, 2009, 2013, 2014, and 2016 and remain fresh in residents' minds. Farmers reported that important frost and snowfall events have occurred since 2013, increasing in frequency and intensity since then.[28] The district as a whole now experiences intense periods of low temperatures and precipitation in various forms of freezing rain, snow, or hail. The frequency of these events is highly dependent on the location and elevation of farmers but can be sporadic or recur annually.

Extreme temperatures and precipitation are occurring at both ends of the spectrum. Of the farmers whom I interviewed, 2016 was the most severe winter they had seen in their lifetime, with the lowest temperatures and most substantial snowfall that they have ever experienced. Tuc[29], a Kinh Bát Xát forestry official, noted that over of 2,000 hectares were underneath snow (5/20/2018). Sahn, a 65-year-old female Yao farmer explained:

> The snow and the frost has become regular. Two years ago [2016] was the most terrible snow of all time… In the years before, there was never such a terrible snow storm like this, even in my parents' time… As a child, there was snow, but not as terrible as this (6/14/2018).

Not only is frost and snow becoming increasingly common, but farmers also claimed that hotter temperatures are more prevalent. Sahn detailed her own perceptions of hotter and more prolonged periods of heat, adding: "Before, when we worked in the fields at noon, we didn't feel so hot like we do now. Even when you're in the house and are not doing work, you feel too hot" (6/14/2018).

[28] The year 2013 was the earliest year interviewees said extreme cold and cold-weather precipitation took place, as compared to Rosseau *et al*. (2019) who note 2008 for other parts of these borderlands.
[29] All names used in this thesis are pseudonyms.

Drought has also become an increasing occurrence since 2008 in specific locales, with one-sixth of farmers whom I interviewed (12% of households) identifying droughts as having harmed their staple crops.

Farmers indicate that floods have become a yearly concern since 2008 and expressed their fear for the safety of their homes, villages, and productive land. Floods in the district have triggered landslides, killed people, and destroyed homes in both high-elevation (Muas, 7/2/2018; Vang, 7/20/2018; Khoa, 7/19) and low-elevation areas (Sun, 6/17/2018; Sahn, 6/14/2018). Additionally, landslides have devastated productive land in high-elevation areas (Phu, 7/18/2018; Vang, 7/21/2019) and low-elevation areas (Sahn, 6/14/2018; May, 6/5/2018; Vay, 6/8/2018). Yao farmers, Song and Ta (7/15/2018) residing in lower-elevation Nậm Chạc commune explained: "In 2008, there was a terrible flood… we had never seen a flood like 2008 before." Huang, a female Yao farmer from Sa Pa district added, "when I hear heavy rain, I get so scared… I will wake my children up when the rain is heavy in case we need to escape the house before a landslide happens" (6/30/2018). Extreme weather events have also had drastic impacts on black cardamom crops, exposing upland ethnic minority livelihood portfolios to immense shocks, which I analyse more in Section 6.2.1. In addition, upland households have also been exposed to government interventions and trends, which I discuss next.

### 6.1.2. Government Interventions and Trends

Government interventions are driving numerous trends and transforming processes in Bát Xát district. Market integration remains a key government intervention in the uplands, with infrastructure projects enhancing physical connectivity through new and upgraded roads and a new highway from Hanoi to Lào Cai city. Marketplaces have also been upgraded and market days fixed instead of the previous rotating market day approach (Bonnin, 2011). Yet one of the most costly and impactful interventions for upland minority farmers has been the promotion and adoption of hybrid rice and corn. This has driven farmers to cultivate cardamom to fund the purchase of seed and agro-chemical inputs.

In 2014, a new highway connecting Hanoi to the provincial capital, Lào Cai city, was completed, which halved travel time from about nine to five hours (Michaud and Turner, 2017). Moreover, smaller roads linking Lào Cai city to Sa Pa town have been recently upgraded or completed. In the north of Sa Pa district, one road is currently under construction from Tả Giàng Phình commune to Y Tý town in Bát Xát district. Additionally, construction for a provincial highway connecting the Bản Vược, Trịnh Tường, A Mú Sung, Ý Tý, and Dền Sáng communes began in 2010, and is meant to serve border patrol purposes (Bonnin, 2011). Over the past 20 years, horse paths and walking paths have also been converted to roads throughout Bát Xát district.

With this shift in physical capital, and due to farmers having increased financial capital from cardamom yields, an increase in motorbikes has occurred. Households now have at least one motorbike depending on wealth and household size. Vang, a 43-year-old Hmong man in Y Tý commune described the difficulty of getting household goods from the lowlands in the past: "In 1999, I had to go to Bát Xát town to buy salt, seasoning, and commodities… at that time there were no roads for cars, no modern roads for motorbikes, so I traveled by horse" (7/8/2018). The switch to motorized transport has been rather recent. Shu, a 61-year-old Yao farmer from Dền Sáng commune, explained his logic for selling his horse: "In 2008, I sold my horse. We have roads now, so I bought a motorbike and I don't need to raise my horse anymore… I had the money to buy a motorbike and horses take so much work to feed like buffalos. Machines are easier and faster than animals" (7/25/2018). In addition to improvements in road infrastructure, every farmer I spoke to had electricity in their house, a recent development occurring over the past 20 years, with the assistance of Programs 143 and 135 (see Section 3.1.). With the exception of a few elderly farmers, everyone I interviewed had cell phones, most of them being smart phones. As a result of these major developments in transport and telecommunications, trade and livelihood diversification have intensified, especially with the provincial government constructing permanent marketplace structures throughout Lào Cai province (Bonnin and Turner, 2014b).

Over a quarter of our research participants cited house building materials as a large part of their cash needs, leading to more dependence on the cash economy. Farmers claimed they had little to no restrictions on harvesting wood before 2008. However, community forest management and the creation of the Bát Xát Nature Reserve (see Section 6.1.2.4. and Section 6.1.2.5.) have prevented locals from harvesting trees for timber in recent years. As a result, farmers have had to purchase housing materials. Free cement has been allocated to 'poor households'[30] to build modern bathrooms as a part of the "Restructuring the Agricultural and Forestry Economy in Lào Cai Province in 2016-2020". Yet this means that farmers must purchase items such as cinder blocks and hire labour on their own. In Y Tý, Ngải Thầu, and Nậm Pung communes, many Hani, Hmong, and Yao houses are built out of clay soil (VN: *nhà trình tường*) (Figure 6.1 and 6.2). Ngan, a 43-year-old farmer from Nậm Pung commune has been saving money from wage labour to build a new house for his family after his *trình tường* house burnt down. Ngan likes the look of *trình tường* houses but explained the difficulty in building a new one. He remarked, "there is no money to build a *trình tường* house, but it needs so much work. To make a *trình tường* house, you need 1,000 labour days, one person for one day" (8/24/2018). To make matters worse, timber harvesting in

[30] As designated by Program 143.

*Figure 6.1: A trình tường home belonging to a Hani family, Nậm Pung commune (Author, 2018).*

*Figure 6.2: Ngan's trình tường wall from his home that burnt down next to his new home (Author, 2018)*

the new Bát Xát Natural Reserve is restricted (Section 6.1.1.3.) and given that *trình tường* houses are labour intensive, he is forced to purchase materials for his new house, which Ngan deems as the most expensive cost his household incurs (*ibid.*).

Upland farmers also told us that healthcare is becoming increasingly expensive, and while a visit to a hospital should be free for those in Program 135 'poor' villages, there are always a number of other costs such as food while in hospital and certain drugs. It can also be time-consuming and complicated to gain the correct paperwork to access free healthcare (Turner *et al*., 2015). Although western medicine is more common, shamans are still relied upon and respected in the uplands to help cure various illnesses, to ward off ghosts, and to gain clarity and solutions in times of hardship.

Higher education is also seen as a cash-demanding element of modern life, with schools requiring fees for a number of different items. Four farmers reporting that their household is supporting a family member to attend university in Hanoi. As Ying, a Hani female farmer noted:

> Before our cardamom died, we were a richer household, but we are not rich anymore. My brother-in-law studied law in Hanoi and my family borrowed 30 million VND [$1,300 USD] for his studies… Now he cannot study anymore because we don't have enough money to pay fees… it's like you are carrying a big rock, so it is very uncomfortable (7/9/2019).

While housing costs, health costs, and school fees have all increased, as well as farmers wanting better transportation options, the greatest impact on farmer financial capital needs has been the introduction of hybrid rice, as noted next.

#### *6.1.2.1. Black Cardamom Policies*

In 2013, the Lào Cai Province People's Committee (LCPC) of passed a Decision (Quyết Định Số 12/QĐ-UBND Ngày 03 Tháng 01 Năm 2013) that aimed to curb the cultivation and trade of black cardamom in Lào Cai province (LPCP, 2013). Using the environmental justification of improving

sustainable forest management, the decision problematizes black cardamom cultivation as halting forest regeneration through the weeding of young trees in cardamom plots and the collection of dead wood for drying cardamom (LCPC and DARD, 2016). As part of this Decision, a survey of all black cardamom households in Bát Xát, Sa Pa, and Văn Bàn, in addition to their harvest sizes, where their plots are, and how long they have been cultivating their plots, was collected as part of the "Spice of Life" project led by the Stichting Nederlandse Vrijwilligers (SNV, Netherlands Development Organisation). From 2013 to 2016, SNV implemented the "Spice of Life" project across Lào Cai, Hà Giang, and Yên Bái provinces focusing on supporting cardamom value chains in Lào Cai province, plus other spices in other provinces. From interviews with local officials, the decisions and laws against cardamom regulation are established for informing future development interventions and economic plans at provincial and district levels. While the government and certain NGOs problematize black cardamom cultivation, farmer perceptions of cardamom's impact on the forest are rather different, as I outline in Section 7.2.3.

In addition to the implementation of this decree, the KfW8 or "Sustainable Forest Management and Biodiversity as a Measure to Decrease CO2 Emissions" program is being implemented in Lào Cai, Yên Bái, Lai Châu, Hà Giang, and Bắc Kạn provinces (Figure 6.3; MBFP, 2015a). Funded by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) through the Kreditanstalt für Wiederaufbau (KfW, a development bank owned by the German government), a total of $28.7 million USD (26.07 million Euros) in official development assistance was granted to the Management Board of Forestry Projects (MBFP) in 2015 (*ibid.*). The MBFP manages the project and allocates the funds throughout all five provinces. The project aims to preserve biodiversity,


*Figure 6.3: Areas of KfW8 project implementation are pink and green areas denoting conservation areas (MBFP, 2015b: online).*

increase carbon sinks, enhance economic development, and maintain and improve water quality and quantity (*ibid.*).

#### *6.1.2.2. Bát Xát Nature Reserve*

As part of Lào Cai's provincial KfW8 project, Bát Xát district was granted its own organisational team of the KfW8 project, with a key component being the establishment of the Bát Xát Nature Reserve in 2017 (Bang, 7/4/2018). This Reserve covers an area of 18,637 hectares (almost 20% of the district) and spans across five communes: Y Tý, Dền Sáng, Sàng Ma Sáo, Trung Lèng Hồ, and Nậm Pung (*ibid*.; Phan, 8/17/2018). Within the core zone of the Bát Xát Nature Reserve, people are no longer allowed to harvest timber or non-timber forest products (NTFPs) (other than cardamom). Farmers are also not allowed to expand black cardamom plots or use dead wood within the Reserve to dry their cardamom.

To get local households to respect the formation of the new Reserve, propaganda (such as meetings and performances) have been promoted throughout the five communes affected by the Reserve, as well as forestry patrols being implemented at a village level in the same five communes. Phan, a 34-year-old Kinh KfW8 official I interviewed in Bát Xát district, claimed that they chose local people to patrol the forest "to expand their income, they are the closest people to the forest and have experience managing it, and they know who villagers are, making it easy for them to identify illegal activity and report it to forestry officials" (8/17/2018).

In total, 204 villagers patrolled the reserve in 2018, excluding KfW8 officials (Phan, 8/17/2018). For communes that have larger proportions of the buffer zone in their boundaries, more individuals are paid to patrol. Two Yao farmers from Dền Sáng commune whom I spoke with conducted forest patrols three to four times a week within the Bát Xát Nature Reserve getting paid 150,000 VND ($6.45 USD) per day (roughly 50,000 VND [$2.15 USD] less than the local daily wage labour rate) (Vay, 7/25/2018; Cha, 7/14/2018). As part of their patrol, they needed to verify that no trees 10 centimeters in diameter (or larger) and wildlife were being harvested within the reserve (*ibid.*). Villagers are not allowed to collect fresh wood, bamboo, or bamboo shoots. If villagers are caught harvesting any of the aforementioned forest products, they are fined 10 million VND ($430 USD) and forced to provide 36 kilograms of pork, 20 liters of alcohol, and 65 kilograms of unhusked rice for a public acknowledgement of wrongdoing (Phu, 7/18/2018; Khoa, 7/19/2018). In the 'wrongdoer's' village, a member of each household is then required to attend a gathering and consume these food and beverages, while "the thief has to make a speech and say, 'I am wrong, I will not do it again'" (Khoa, 7/2/2018). Our informant continued to explain that: "They need to do that because a lot of people like to eat bamboo shoots, so they need to stop them" (Khoa, 7/2/2018).

Thirteen farmers across all ethnicities in mid and high-elevation communes believed that local management of forests by farmers and forestry officials was preferred to any other type of management (or lack thereof). Shu, a 60-year-old Yao male farmer residing in Dền Sáng commune said:

> Local management is good because it prevents people from cutting down trees and hunting so that we can keep the forest for the future generations. If you deforest now, there will be no forest or clean water for future generations… For example, around here there were lots of treeless hills, but we protected it and developed it, it's very green now (7/25/2018).

However, this was not a universal sentiment. Phu, a 28-year-old Hani farmer residing in Y Tý commune, agreed that that "Good forest protection is good management by local people" (7/18/2018). However, he also criticized the establishment of the Bát Xát Nature Reserve, as local farmers had already stewarded the land through previous forestry programs:

> My father and other villagers planted and worked to protect those forests along the treeless hills next to the base of Nhìu Cồ San mountain [in Y Tý commune]. For years, they worked to make this forest and use it for their lives, but now KfW8 won't let us use it the way we want. Why would we do this and then have it protected? Now we can't use what we have grown (7/18/2018).

People are also restricted from expanding any of their existing cardamom plots by cutting down trees. The 100 meters surrounding the Bát Xát Nature Reserve acts as a buffer zone that farmers "can do anything in, *unless* it harms the forest" (Bang, 7/4/2018). Decision 12, the establishment of the Bát Xát Nature Reserve, and extreme weather events have disrupted this profitable, culturally-appropriate, long-standing livelihood strategy that is complimentary to local labour calendars (I discuss the future of black cardamom in Section 7.2.1.).

To encourage alternative income sources, KfW8 allocates small loans, with a maximum of one loan per household of 7 million VND ($300 USD). These loans are granted and managed by a village-run community bank and are intended to help households establish alternative income sources, such as medicinal crops, fisheries, and tourism. Village leaders also appoint villagers to patrol the Bát Xát Nature Reserve increase income and deter the harvest of forbidden timber and NTFPs (see Section 7.1.).

Both Decision 12 and the KfW8 aim to provide alternative income sources for ethnic minority farmers who have black cardamom plots in the Bát Xát Nature Reserve. The government has most strongly promoted the allocation of free pear tree saplings (Section 6.2.4.) or seed for medicinal crops (*sâm đất*, *Talinum paniculatum* and *đương quy*, *Angelica sinensis;* see Section 6.2.5.). In addition, cold-water trout fisheries and animal husbandry are also being promoted. Local officials are also targeting eco-tourism investment for Y Tý commune in tandem with other tourism

endeavors in the district (Section 6.2.8.). In sum, due to a combination of extreme weather events and government interventions, cardamom cultivators are being deterred from continuing to cultivate a previously reliant and vital income source in a time when cash is in more demand than ever before. As a result, livelihood portfolios are rapidly diversifying.

## 6.2. Livelihood Coping Strategies and Adaptations

In response to the shocks and trends outlined above, livelihood portfolios have changed dramatically compared to the staples of Bát Xát livelihoods detailed in Chapter 5. In this section, I examine the new coping and adaptation strategies that farmers are engaging with, many of the latter in turn diversifying farmer livelihoods as they become more established. These strategies include farmers increasingly engaging with wage labour, (Section 6.2.3.), silviculture (Section 6.2.4.), medicinal crops (Section 6.2.5.), trading (Section 6.2.6.), fisheries (Section 6.2.7.), and tourism (Section 6.2.8.). These strategies have emerged primarily due to the challenges of growing black cardamom and raising livestock, which I discuss in the next two sub-sections.

### 6.2.1. Black Cardamom

As mentioned in Section 6.1., there are drastic changes in how farmers livelihood portfolios have changed in response to extreme weather events. I detail a series of new interventions the government implemented and adaptation strategies that households have employed.

#### *6.2.1.1. Extreme Weather Impacts*

As noted earlier, over the past 25-30 years, black cardamom has been one of the main and only sources of income across Bát Xát district and other upland areas along the mountainous northern Vietnamese borderlands. According to the LCPC and DARD (2016), 3,174 households in Bát Xát district cultivate black cardamom. In total, there are 3,103 hectares of cultivated cardamom plots in the district, with the total anticipated harvest for 2015 expected at 458,219 kg. Extreme temperatures and precipitation events have drastically damaged black cardamom plots since 2008. Most notably, significant snowfall events have been the most consequential weather event impacting black cardamom cultivators. Cold weather and snow kill cardamom plants from the stalks up, rendering plants fruitless for two to three years - depending on the severity of the weather event (Figure 6.4). Farmers recall the winter of 2016 as being the worst winter in their lifetime. Sahn, a 64-year-old Yao female farmer residing in Bản Qua recalls: "About two years ago [2016]… it was the most terrible winter… the most terrible snow ever. Before, when I was a kid, there was some white stuff on the top of the trees some winters, but not on cardamom. Now, the snow kills all of the cardamom" (Sahn, 6/14/2018). According to Vang, a 40-year-old Hmong farmer in the high-elevation commune of Y Tý, 2016 had the "most snow damage… 80 centimeters over there [in the cardamom fields]… and just 10 or 20 centimeters here [in Y Tý]" (Vang,

*Figure 6.4: Black cardamom leaves (center) damaged from snow and extreme temperatures (Author, 2018).*

7/8/2018). Every ethnic minority household that cultivated cardamom (122) where I conducted interviews reported a reduction of at least a two-thirds in their cardamom yields in 2015 and 2016 or, more commonly, a complete crop failure. Nearly two-thirds of farmers (76 farmers, 62%) claimed that they had no cardamom in 2017. These numbers had increased steadily over time from 2013 (10% in 2013, 24% in 2014, 46% in 2015, and 58% in 2016). Twenty-six (21%) farmers reported consecutive losses of two-thirds or more of their harvests since 2014, in addition to eight farmers (7%) since 2013. Farmers attributed crop losses to extreme and prolonged periods of cold temperatures and snow. Reduced black cardamom harvests were also attributed by some to increased periods of heat and "too much sunlight" or not enough clouds while cardamom plants are flowering (May, 6/6/2018; Huang, 6/30/2018; Che, 7/3/2018).

In 2008, floods devastated villages in Y Tý commune. In one Hmong village, three people were killed, two lost their homes, and one village lost most of their black cardamom fields. Muas, a 31-year-old Hmong farmer from Y Tý commune recalled that "before, when I was a child, there were no floods and no landslides, but now they are worse than before… and in my cardamom field I lost about 400 groups of shrubs" (7/1/2018).

#### *6.2.1.2. Government Responses*

In response to the 2008 extreme weather events, the Y Tý commune government allocated forest near to the 64 households in the village in 2012. Thus rather than promoting adaptation strategies that could lead to livelihood diversification, local state officials promoted the ongoing cultivation of cardamom. The commune government and agricultural extension officers mapped 64 plots in

green books and assigned each household a plot by lottery, with larger plots having poor quality soil. Households were given cardamom plants and fertilizer. In exchange for harvesting cardamom in these plots, cultivators were required to protect forests from fires and animal grazing. At this time, the commune government envisioned this as a model for eco-tourism, with farmers leading tourists to the cardamom forest and explaining forest protection. Although the allocation of cardamom land was completed, the tourism model never launched, as the following year Decision 12 (discouraging black cardamom cultivation in Lào Cai province) was promulgated.

#### *6.2.1.3. Selling Cardamom Plots as an Adaptation Strategy*

While black cardamom has been a livelihood strategy explicitly undertaken by ethnic minorities in the past, with few, if any, Kinh farmers growing it, this has begun to change. The last ten years of extreme weather events have discouraged ethnic minority farmers from exerting effort on what may produce very low or no cash return at all. This, coupled with a high demand for cash, has resulted in ethnic minority cultivators deciding to sell their black cardamom plots to upland Kinh residents.[31] For example, I interviewed two Kinh men in Y Tý commune who purchased black cardamom fields from Hmong farmers in 2018. These Kinh men are receiving guidance on how to tend to their cardamom fields from their ethnic minority friends and are hiring day labourers to tend to the fields for 200,000 VND ($8.60 USD) per day.[32] Another Kinh man in Bát Xát town bought three plots from a black Hmong man roughly 10 years ago, claiming that the farmer he bought the plot from was addicted to opium and needed the money (Anh, 8/17/2018).[33] Such an adaptation approach raises a number of questions regarding the sustainability of this livelihood choice for minority farmers since it removes minority farmers' access to natural capital, namely land, on which they could potentially decide to grow and harvest other NTFP crops in the future. A range of other adaptation, as well as coping strategies are analysed next.

### 6.2.2. Core Livelihood Changes – Extreme Weather Events and Coping and Adaptation Strategies

Extreme weather events have greatly impacted water buffalo and pigs, while over half of the farmers we interviewed attempted to intensify livestock rearing of water buffalos, pigs, and chickens as an adaptation strategy in response to black cardamom dying. Extreme temperatures in 2015, 2016, and 2017 caused many water buffalo deaths. Since 2015, 20 farmers across elevations

[31] Although there are rare cases of tenure of black cardamom plots (e.g. green books in the lottery system), plots tend to be informally are sold and traded, as other farmers respect informal boundaries.
[32]The ethnic minority farmers helping out Kinh cardamom cultivators called them 'friends', however, I observed to be more of an attempt to gain linking social capital with wealthier and politically-connected Kinh.
[33] During our fieldwork, I came across roughly five opium addicts that I was aware of. Out of the three Kinh cardamom cultivators I spoke to, they all cited opium addiction as being a main reason addicts needed cash and were willing to sell their cardamom fields for. In Mường Hum, there is an opium addiction treatment center.

and ethnicities (six Hani, four Hmong, and one Yao farmer in high-elevation communes; five Hmong farmers and one Yao household in mid-elevation communes; and three Yao farmers in low-elevation communes) reported losing at least one of their water buffalos due to the extremely cold winters, the majority of them losing their water buffalos in 2015.

Left with few options and a large loss of physical and financial capital, farmers resorted to coping with these shocks by either inviting relatives over to help consume the fresh buffalo meat, drying the meat over the fire, or more often than not, selling their buffalo for a reduced price. Two Hmong farmers explained how they began purchasing dead buffalos beginning in 2013, purchasing more in the winters to follow, for nearly one tenth (for smaller buffalo) to one third (for larger buffalo) of the price of live buffalo. These farmers were among a subset that resided in mid-elevation ranges, one of them a highland-lowland trader and the other selling the meat at commune markets (see Section 6.2.6.). Both farmers stated that they began trading whole dead buffalos, in addition to live ones, as an adaptation strategy to supplement their lack of cardamom income. Moreover, thirteen Hmong and Yao farmers from mid-elevation communes have begun raising more buffalo and trading them for cash since their black cardamom crops were impacted, attempting to supply the market demand given recent weather events.

In Y Tý commune, a different coping strategy for high elevation farmers is to take their buffalos down to lower elevation areas where they have crop land and second homes with stables for buffalos. Khoa, a 61-year-old Hmong farmer in Y Tý commune elaborated, saying that:

> I stay there for three to four months. When I use all of my rice there, I will come back to my village and get more rice. We have a lot of grass fields over there, so many people from the village bring their buffalo down there from November to February (7/19/2019).

For those unable to move water buffalo down to lower elevations, farmers have invested in longer term adaptation strategies such as constructing new shelters and enhancing old shelters by enclosing them to reduce climatic exposure and increasing insulation with dry biomass underneath the buffalo. Other farmers fed water buffalo a mixture of warm rice porridge and vegetation.

As farmers are adapting to these extreme weather events, they are also searching for more convenient, lucrative, and modernised livelihood strategies. One such investment is the intensification of rice cultivation, and therefore, a greater investment in physical capital in the form of tilling machines, which seventeen households had invested in at the time of this study. As extreme winters have killed buffalos, more households have begun purchasing tilling machines, since buffalos are expensive, require a lot of effort, and are vulnerable to extreme weather events. The first year that one of our research participants bought a tilling machine was in 2008. That year Shu, a 59-year-old Yao male sold his buffalo to buy a tilling machine because:

> There are no grass fields to feed the buffalo here, I need to cut and gather vegetables… if you raise buffalo you need to feed it all year. The machine plows very fast, we transplant in the same day we plow (8/21/2018).

Other farmers viewed buffalos as too expensive in terms of cash, but also in terms of time. Fai and Ho, a Yao couple in their forties residing in Bản Qua, were one of the richer households I spoke with (the only household I spoke to that owned a car) and bought a tilling machine in 2013. Fifteen other households (two Hmong and six Yao farmers residing in mid and high elevation communes, plus seven low-elevation Yao households) purchased tilling machines after their water buffalos died as an adaptation strategy.

Farmers preferred tilling machines to water buffalo because buffalo (if not killed by the cold) take longer to plow and farmers must collect fodder or take water buffalos to grazing areas. Tilling machines also allow farmers to plow sooner and on their own schedules, not needing to wait for their paddies to be flooded in order to plow. Tilling machines cost roughly 10 to 13 million VND ($430 - $560 USD), also requiring gas and maintenance as needed, a significant amount of cash that farmers must save up for (Sun, 6/17/2018; Song and Ta, 7/15/2018). Water buffalo are also seen as being expensive to purchase and due to vulnerability during extreme weather events an increasing gamble. Nonetheless, it is important to note that farmers explained that they still prefer buffalo because they plow deeper than tilling machines. Accessibility to fields also influences the type of physical capital used and whether farmers can take up this adaptation strategy, as more steep and rugged terraced fields make it nearly impossible to carry tilling machines up and down fields, making buffalo the preferred form of physical capital. However, as farmers face more extreme weather events, have reduced time and resources, and become more integrated into the market economy through livelihood diversification strategies, it appears that tilling machines are slowly becoming increasingly common.

In addition to mechanisation, as of 2008, roughly 10 percent of farmers we interviewed pay for other villagers to help them rebuild their paddy land, weed, or harvest rice. [34] Although the majority of farmers still exchange labour for rice harvests, farmers that pay for labour have cited that they are too old (Bao, 6/19/2018) or too lazy (Xing, 7/22/2018). From my observations, households that pay for labour are highly diversified, conducting wage labour in China, trading NTFPs at Thiên Sinh bridge, and/or are among the richer farmers in their village.

Regarding other ruminants, cows are far less common than water buffalos in Bát Xát district, with only four farmers (one Hani farmer in the Y Tý commune, two Hmong farmers in mid-elevation communes, and one Yao farmer in Sa Pa district) raising cattle. Separate from a long-term strategy,

[34] Including regular repair of paddy land destroyed by floods beginning in 2008.

as a coping strategy, three Hmong farmers residing in mid-elevation communes sold all of their cattle once their black cardamom crops failed to fruit after the extreme winters of 2015 and 2016. Other adaptation strategies to cardamom crop losses, one low-elevation Yao farmer and one high-elevation Hmong farmer begun raising 50-head herds of goats to supplement the loss of cardamom income in 2015. Hoa, a Hmong farmer in Y Tý commune, noted: "I expanded my herd size by helping my neighbours with breeding. When my neighbours had offspring, I would receive some" (7/20/2018), utilizing both human and social capital.

Selling local black pot-bellied pigs has become a fairly common coping strategy in response to recent shocks when undertaken in the immediate aftermath and has also become a long-term adaptation strategy. As a coping strategy, nearly one-sixth of farmers (17 farmers or 14%; two Hani, two Hmong, and three Yao farmers in high-elevation communes; one Yao and five Hmong farmers in mid-elevation communes; and four Yao farmers in low-elevation communes) turned to selling black pigs to cover urgent costs that cardamom used to cover, such as agricultural inputs, clothes, medical expenses, and weddings. Farmers have also started to raise black pigs as an adaptation strategy since cardamom harvests dwindled, with over a quarter (35 farmers or 28%; four Hani, five Hmong, and five Yao farmers in high-elevation communes; one Yao and eight Hmong farmers in mid-elevation communes; and seven Yao farmers in low-elevation communes) starting to sell pigs for an income. Farmers that raise black pigs for income kept eight to 30 pigs, selling three to 19 per year. Larger black pigs, ranging from 30 – 100 kilograms, are sold for 90,000 VND ($3.87 USD) per kilogram while piglets are sold for 100,000 VND ($4.30 USD).

In addition to the increased trade in local, pot-bellied, black pigs, agricultural extension agents in the district have been promoting white pigs as of late, touting that they "pay off in the end" and produce three litters per year, as opposed black pigs that produce one litter of piglets per year (Chang, 8/28/2018). Nonetheless, during my fieldwork, I only encountered one farmer who had decided to raise white pigs. Nhay, a low-elevation Yao farmer (6/7/2019) has been raising white pigs for sale to animal traders from Hanoi since 2010.[35]

Although raising (mostly black) pigs has become a common coping and adaptation mechanism for farmers in the face of extreme winters devastating black cardamom crops, pigs have also been affected by extreme weather events. Twelve farmers in mid and high-elevation communes have lost black pigs to extreme cold or from diseases that farmers attribute to extended and extreme fluctuations in temperature. Ying, a 26-year-old Hani farmer with a household of six had a particularly difficult time with pig disease explaining: "We cannot raise pigs anymore… after

[35] Nhay sells about 30 pigs per year for roughly 10,000,000 VND ($430 USD) per head.

2014, I don't know why we can't raise them… When the pigs are nearly big enough to eat or sell, they immediately die from disease" (7/9/2018).[36] Nonetheless, the majority of farmers I spoke to still want to raise more black pigs despite increasing climatic variability and diseases, hoping to gain more financial capital and a preferred source of protein.

Nearly a third of farmer interviewees across ethnicities and elevations now raise chickens for an income as an adaptation strategy, selling each mature chicken for roughly 200,000-250,000 VND ($8.60-10.75 USD) for each. Out of these 37, 11 (two Hmong and four Yao mid-elevation households, plus five low-elevation Yao households) explicitly said they were raising more chickens to supplement lost black cardamom income.

The government has distributed ducks, chickens, and geese to farmers for poverty alleviation and food security since 2013. However, these efforts within the past five years have often resulted in more harm than good. Of the six farmers that received free chickens, ducks, or geese, only one farmer received poultry that was not diseased, while the other five lost many, if not all, of their poultry. Not only were many of the animals given by the government already ill, but their disease spread to farmers' other poultry, infecting and killing over 175 chickens that belonged to our research participants in four separate villages. Gu, a 26-year-old female Hani farmer who lives in Y Tý commune recalled that 60-70% of chickens, ducks, and geese died in her village from the disease that came with free poultry from the government (Gu, 7/17/2018). Nhay, a 55-year-old Yao farmer residing in Bản Qua commune was frustrated and commented on the ordeal:

> Government officials have been embezzling money. After the bad snow and our cardamom died in 2016, the government gave us chickens. They were supposed to support us through giving us chickens, but when they got here, they were all dead, and then transferred the disease to other households so everyone's chickens got sick… The government bought sick chickens and kept the rest of the money (6/7/2018).

These failed interventions cost farmers significant food, financial capital, and labour, further worsening their circumstances after black cardamom crops were devastated. Although the selling of animals has become a common coping and adaptation strategy, this livelihood strategy remains unstable. Farmers are forced, yet again, to gamble with another set of livelihood pathways, as government interventions, extreme weather events, and changes in climate are exposing animals to more disease, leaving farmers more vulnerable.

[36] While Vietnam is in the middle of an African swine fever epidemic as of 2019, when I completed fieldwork in summer 2018 this particular epidemic had not reached upland northern Vietnam.

### 6.2.3. Wage Labour

Wage labour has become an increasingly prevalent livelihood strategy since black cardamom crops have died or been severely reduced. The first accounts of wage labour began in 2008, and by 2018, at the time of our interviews, just over half the farmers I interviewed (72; 52%) reported that they began wage labour in the last five years, some of them in the same households (45% households reported this strategy) (Table 6.1).

Extreme weather events began to have drastic impacts on cardamom harvests at the same time that households began wage labour. Over the course of four years, four households conducting wage labour had risen to nine in 2008 (16% of total households conducting wage labour) indicating that one or more of their household members began wage labour in 2013, six in 2014 (11%), 21 (38%) in 2015 when there was the first snow-ridden winter, five (9%) in 2016 which farmers described as the worst winter in recent history, four in 2017, and one household in 2018 (see Table 6.1). For five of the households, I was not able to attain specific years. These wage workers were spread across all elevations.[37] From our interviews, those who conducted wage labour were

*Table 6.1: Wage labour by household, ethnicity, elevation, and location (Author, 2018).*

| **Year Began Wage Labour** | | 2008-2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Unspecified Year | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number of Households** | | 4 | 9 | 6 | 21 | 5 | 4 | 1 | 5 | 55 |
| **Gender of Labourers** | Male | 4 | 10 | 8 | 22 | 4 | 6 | 1 | 5 | 61 |
| | Female | -- | 3 | -- | 5 | 1 | 1 | -- | 1 | 11 |
| **Ethnicity by Household** | Hmong | 1 | 3 | 5 | 8 | 3 | 3 | 1 | 2 | 24 |
| | Hani | -- | 1 | -- | 5 | -- | 1 | -- | 1 | 8 |
| | Yao | 3 | 5 | 1 | 8 | 3 | -- | -- | 2 | 23 |
| **Elevation of Households** | Low | -- | 1 | -- | -- | 3 | -- | -- | 1 | 5 |
| | Mid | 4 | 5 | 5 | 4 | -- | 1 | 1 | 2 | 22 |
| | High | -- | 3 | 2 | 15 | 2 | 3 | -- | 2 | 27 |
| | Sa Pa District | -- | -- | -- | 2 | -- | -- | -- | -- | 2 |
| **Location of Wage labour by Household** | Vietnam | 1 | 5 | 1 | 6 | 2 | -- | 1 | 3 | 18 |
| | China | 1 | 3 | 3 | 7 | 3 | 2 | -- | 3 | 22 |
| | Both | 2 | 2 | 2 | 6 | -- | 2 | -- | -- | 14 |

[37] Across all time periods, 22 mid-elevation households out of the 35 (63%) that I interviewed conducted wage labour. Similarly, 27 out of 39 (69%) high-elevation households that I interviewed conducted wage labour. Lastly, five households that resided in low-elevation areas out of the 41 I interviewed also conduct wage labour (12%). Specifically in 2015, 15 out of the 21 households that began wage labour due to cardamom deaths resided in high-elevation communes, followed by four households in mid-elevation households, and two from Sa Pa district. In 2016, three farmers in low-elevation communes and two farmers in high-elevation communes began doing wage

predominantly young men between 20-30 years of age. Middle-aged men are the next largest group, many of whom have adult children who stay behind to tend to the family farm. Ten women stated that they participated in wage labour, four Yao wommen who went with their spouse to China, two Yao women who conducted wage labour in Vietnam, and two Hani women who went to China independently for wage labour who went with Hani neighbours or a close relative.

Out of the 55 households that reported that at least one household member conducted wage labour, 21 (38%) indicated that they worked in China, 19 (35%) indicated that they only worked in Vietnam, and 14 (25%) indicated that they worked in both China and Vietnam. One farmer reported that they did wage labour but did not specify the location. Out of the 33 households that indicated they worked in China, 18 claimed that they did so illegally, three said that they did so legally with a permit and within regulations, and 11 did not specify.

Looking more specifically at the exact causes of this shift to wage labour. The vast majority, 46 households (84%) reportedly began to do wage labour to supplement black cardamom income once their crops were decimated by extreme weather events. Three households had members who began doing wage labour and cultivating cardamom once they began cultivating hybrid rice seeds. Another farmer began wage labour once their cardamom crop was eaten by another villager's buffalo, while one household had no cardamom land and began doing wage labour to fund hybrid rice cultivation. I was unable to ascertain the justification of four farmers.

Regarding ethnicity, 72 percent of Hani households I interviewed conduct wage labour, followed by 51 percent of Hmong households, and 37 percent of Yao households. Interestingly, in mid and high-elevations 90 percent of Yao and 60 percent of Hmong households conducted wage labour. This could be directly tied to a lack of other livelihood diversification options at these altitudes.

In Vietnam, people predominantly work on construction projects for roadways or building in Bát Xát, Bản Vược, or in Sa Pa town. Other farmers work for local hydroelectric dam corporations, as porters in border towns (Bát Xát and Bản Vược), and farm labour for rice and corn, but also as labourers for other farmers' black cardamom harvests. In Vietnam, wages typically ranged from 150,000 to 250,000 VND ($6.45-10.75 USD) per day. The lowest pay cited was 100,000 VND ($4.30 USD) per day for hydroelectric dam workers, while the highest was 500,000 VND ($21.50 USD) per day for skilled labourers working on housing and construction projects.

For the farmers who travel to China for wage labour, respondents from 12 households reported working on banana farms, which involved digging holes for trees, spraying pesticides, and harvesting. Others who pursued farm labour in China reported tending to crops (such as black

labour. In 2017, one Hani farmer from a mid-elevation commune and three high-elevation Hmong farmers began conducting wage labour.

cardamom, corn, rice, ginger, and potatoes) or working at construction sites, fisheries, and wood processing facilities. The average daily wage for work in China is 70¥ ($10.15 USD), with the lowest being 50¥ ($7.25 USD) per day, and the highest being 80¥ (11.60 USD) per day.

As of January 2017, the Vietnamese government began distributing permits for Vietnamese nationals to go to China as labourers. One of the regulations is that citizens must have their permits stamped at least every 10 days or every month at a Chinese-Vietnamese border crossing, depending on the type of permit. The law forbids Vietnamese labourers to work or travel beyond 10 kilometers away of the border in China, although this is generally not respected. Permits cost 80,000 VND ($3.44 USD) and required a piece of government identification.[38]

Despite permits being required, many individuals still go to China to do wage labour illegally. While some travel 10 kilometers beyond the border, there are many that travel 30 kilometers or more. There had been countless stories circulating in local communities of Chinese border patrol agents and police beating, imprisoning, fining, and threatening illegal Vietnam-based labourers. As a result, people were fearful of working illegally in China, despite still doing so. Shu, a 55-year-old Yao farmer explained:

> When I go [to China] I'm very worried and afraid. Workers from Vietnam go there and just work. The Chinese don't care, they don't care where you are from and how you get here… I heard about someone that got caught, I don't know him, but many people get beaten up, too. But not me. Not me. (7/25/2018).

Xa, a 29-year-old Hani farmer said that he worked with and for Hani-Chinese people in China's bordering Yunnan province, and was very concerned about the trafficking that he had heard about:

> A lot of Hani women, even if they have a family in Vietnam, Hani people over [in China] can trick them and some are forced to marry… Some are already married, some not, but even some women are the same age as my mother… A lot of people get fooled by blackmail and promise of more payment, but it's a trap (8/27/2018).

He added that, since 2015, more people have become savvier as to how to obtain labouring jobs in China and avoid trafficking. He continued:

> Before [3-4 years ago] they didn't know where to go and how to [get a labouring job] in China, but now it's so popular, so now hard workers tell other people where to go, so everybody has a network… but many women have gone to China for wage labour because they lost their cardamom (Xa, 8/27/2018).

Nonetheless, many ethnic minority farmers remain fearful for their safety and the safety of their family working in China. Almost every interviewee knew of someone who had been caught and beaten by Chinese border police or spoke of someone they had not seen for two or three years.

[38] I saw Y Tý commune police giving out permits in the Y Tý market, where predominantly Hani women were applying for the permits.

Some were fearful of disobeying the 10-kilometer restriction and they stay: “Just near the border, maybe two, three, or four kilometers away from the border. If you go further, maybe you cannot come back...” (Ngan, 8/24/2018). While in the eyes of the Chinese government, Vietnam-sourced labourers without permits are illegal, oddly enough Vietnamese border patrol officials do not consider this as an illegal status (perhaps because of the positive remittances returned to Vietnam).

Although illegal wage labour in China may be dangerous, others expressed a preference for working in China, noting that the wages were slightly higher, that employers were more accountable with better working conditions, and some prefer to buy Chinese goods and bring them back to Vietnam. Chinese employers communicate with each other if they require more labourers, and in some cases, are protective of Vietnam-based labourers. Ngan, a 43-year-old Yao farmer said:

> If one boss sends you to another boss and the other boss is not good to you, you can come back and tell the first boss that they were not good to work with, and the first boss can [scold] them by saying ‘why did you do this, if you aren’t good to them there will be no more Vietnamese workers and they will not work for you anymore’ (8/24/2018)!

Ngan had also worked in construction in Vietnam for a few months and reported being unpaid two years after the fact: “Last year me and my wife went to China for nearly one month and brought back 20,000,000 VND [$860 USD]. They are so fair. If I want to go back home to do farm work at home, they will pay you immediately. Not like the Vietnamese” (8/24/2018).

Shu and his wife, Chin, explained that once you start working for a boss, you need to find a replacement for whenever you decide to return home. Before going to work in China for two years on a banana farm with his wife, Shu went four times for a few weeks to check conditions and accrue some cash. He recalled that the “Chinese over there have a tougher life. The boss hires people to work like 30 days per month, with no rest days (7/25/2018).” Where Shu and his wife worked, each person was paid 8¥ ($1.16 USD) per tree that they tended to at the end of the harvest. They were also paid 500¥ ($72.50 USD) per person, per month in advance, which is deducted after the harvest. Both of them in total ended up tending to 5,000 banana trees, totalling to 40,000¥ ($5,800 USD), minus the 12,000¥ ($1,740 USD) that was paid to them in advance, leaving them with 28,000¥ ($4,060 USD) for one year’s work. If they did not purchase and cook their own food, that would also be deducted from their wage.

Most farmers with permits crossed through Thiên Sinh bridge close to Y Tý. Other farmers that crossed illegally had the cell phone numbers of boat operators who are approved by the Vietnamese border patrol to take passengers across the Red River. Most labourers cross near Trịnh Tường or

Bản Vược by boat. When farmers wish to return to Vietnam, they call the same number to pick them up. Individual one-way fares are 80,000 VND ($3.44 USD).

For their security, most farmers travelled with relatives or neighbours of the same ethnicity for their first trip to China. Our participants told us that in China, some of their employers are Han, while others are Hmong and Hani. For Vietnam-origin labourers who did not speak the Yunnan-dialect of Mandarin, they would either use their mother tongue to speak with other labourers or rely on their relatives and neighbors who spoke the local Yunnan dialect. All Yao farmers who went over to work illegally in China spoke Chinese or came with a spouse that spoke Chinese, relying on human and social capital. Wage labour has served as a vital source of income for ethnic minority households, especially for those in high and mid-elevation communes who had few diversification options at the time.

### 6.2.4. Silviculture – Adaptation and Diversification Strategy

Tree cultivation has gradually become an important livelihood strategy with 32 percent of farmers planting trees for an income, with much influence from Programs 327 and 661 (see Section 3.1.2.3. and 3.1.2.4.), both of which encourage ethnic minority farmers to diversify their livelihoods by planting trees as well as promoting forest protection initiatives. Although ethnic minority farmers in Bát Xát district have planted trees since the early 1990s, they have increasingly planted trees for silvicultural purposes since 2008, replacing upland rice, corn, and cassava plots with the tree species discussed below. As such, silviculture appears to be an adaptation strategy with regards to decreased income from cardamom, as well as a broader livelihood diversification strategy due to government programs.

The species of trees chosen for plantations are based on economic considerations, although in four cases, farmers I interviewed also expressed their desire to improve the environment. Low-elevation Yao farmers, and one Yao mid-elevation farmer that I spoke to had ‘productive forests’ before 2008. I use the term ‘productive forests’ as one of the three recognized types of forests within Vietnam (Huong *et al*., 2014). In this context, productive forests are forests solely for production timber or tree materials.

Five low-elevation Yao farmers have been managing cinnamon (*Cinnamomum cassia*) forests since 2008, while two more have cultivated cinnamon for over 20 years (Ming, 6/7/2018; Ta, 6/20/2018). Sahn, a 64-year-old Yao woman who is also a member of the district’s People’s Committee and is familiar with government programs, began planting cinnamon and magnolia

trees through Program 327[39] "because of the treeless hills. The government gave us some money and land, so we planted trees to raise them on the hills… the natural treeless hills. And the government encouraged us to plant it" (6/14/2018)." Thun, a 41-year-old Yao farmer from Bản Qua, described how she began cinnamon plantations "around 20-30 years ago" because the agricultural cooperative raised cinnamon saplings and distributed them to households to cultivate (6/14/2018). Although trees have been planted since the late 1990s, more farmers reported planting trees since 2008.

During the time of my fieldwork, 16 farmers planted cinnamon, all of them being Yao. Most farmers had received at least 500 and up to 5,000 saplings from the government, while four farmers had decided to plant cinnamon without any government assistance. Those who purchased their own saplings (from Yên Bái province to the south) paid 800 – 1,000 VND ($0.03 to 0.04 USD) per sapling, depending on the size. Three farmers began planting cinnamon before 2008, while half of them had began planting cinnamon since 2015 due to their cardamom dying. Song and Ta, a 54-year-old Yao couple residing in Nậm Chạc commune, exclaimed: "We like cinnamon the most. You can collect everything! You can gather the leaves and bark, not just the wood" (Song and Ta, 7/15/2018; Sahn, 6/14/2018). Three farmers indicated that they intercrop their younger cinnamon saplings with upland rice, corn, or cassava.

Several species of trees are also cultivated for construction and furniture. Of the trees used for construction, *Cây Mỡ* (*Magnolia conifera*) is the most commonly cultivated tree reported by the farmers I spoke with. Eighteen farmers cultivate *Cây Mỡ*, two-thirds of them began planting these trees after receiving 500 to 1,500 trees from the government in 2008. The other six farmers are cultivating 30-200 trees on their own. *Cây Mỡ* is also intercropped with two other species: *Cây Xoan (Melia azedarach)* and *Cây Sưa (Dalbergia tonkinensis).*

Ten farmers cultivate *Cây Xoan*, with nine beginning since 2008, typically cultivating 2,000 to 4,000 trees. *Cây Xoan* is used for construction and furniture by lowland Kinh. Seven farmers cultivate *Cây Sưa*, with four farmers beginning cultivation after 2008. Both *Cây Sưa* and *Cây Xoan* are typically cultivated for 10 years, however, farmers can expect to set higher prices for larger trees. Lastly, seven farmers grow *Cây Sa Mộc* (*Cunninghamia lanceolata*) or "Chinese Fir", a tree also used for construction of houses. Farmers typically raise 40 to 1,000 trees, with five of the six farmers planting them after 2008 as an adaptation strategy to extreme weather events. Compared

[39] This refers to Program 327: "Regreening the Barren Hills". McElwee (2016) notes that although the government designated these hills as "treeless" or "barren" they were actually used for fuel wood and NTFP harvesting. They were not necessarily deforested but were managed by farmers.

to the other species, *Cây Sa Mộc* can only grow in high and mid-elevation areas, while *Cây Mỡ, Cây Xoan*, and *Cây Sưa* can be cultivated at any elevation.

Pear trees, "*cây lê Tai Nung*" or "French pear trees", have been an economic model the government has also been promoting.[40] Ten farmers (8%) I spoke to cultivated pear trees (seven Hani farmers from Nậm Pung and Y Tý communes and three Yao farmers from Nậm Pung). Of these, nine received free pear trees from the government in Y Tý and Nậm Pung commune. Three farmers in Nậm Pung commune first received pear trees in 2009 along with fertilizer. Additionally, these three farmers in Nậm Pung commune and six farmers in Y Tý commune were granted pear saplings and fertilizer in 2015, which they claimed were granted because their cardamom crops were destroyed. Pears are harvested in July for around 30,000 VND ($1.29 USD) per kilogram.

However, the free saplings that the government promised to farmers were not always provided in good health. One farmer received five dead saplings (out of a total of 15) and another received only three live saplings out of the thirty she was promised. Aside from these two farmers, seven farmers have 20-30 healthy pear trees out of the promised 30, with each tree producing about six kilos of fruit per year. Ngan a 43-year-old Yao farmer from Nậm Pung commune was an outlier, owning 300 pear trees and gaining 60 million in revenue in 2017. Ngan had not been able to harvest any black cardamom since 2014 and viewed pears as a viable substitution for the income he had previously received from cardamom, and hence as an adaptation strategy. He recalled that "before we grew a lot of cardamom, but for the past two years we began to change to pears." (Ngan, 8/24/2018). During my fieldwork in Y Tý commune, the district held a pear-harvesting festival during which provincial government officials and television crews used the opportunity to promote pear production in high-elevation communes of Y Tý and Nậm Pung.[41]

### 6.2.5. Medicinal Crops - Adaptation and Diversification Approach

In high and low-elevation areas, farmers have increasingly turned to medicinal crops that favour their respective climates, whereas no medicinal cash crops are currently being cultivated in mid-elevation areas, with 30 percent of households cultivating these medicinal crops. In low-elevation areas of Bát Xát district, green cardamom (Section 6.2.3.1.) has been a common diversification strategy for those that began cultivating it before the extreme winters in 2015 and 2016. After these weather events, more farmers have wielded it as an adaptation strategy, one that the government sees as a positive income source compared to black cardamom. Conversely, in high-elevation

[40] I am unsure of the exact species name.
[41] In July, the Undersecretary of MARD and his entourage came to Y Tý commune to examine the development models that were being experimented with there. When I spoke with some of the officials he brought along, they were interested in reviving the 'one commune one product program'. This program aimed to focus on one commune to cultivate one consumable good and promote it for trade throughout the country and region.

areas, the government has begun introducing *đương quy* (Section 6.2.5.2.) and *sâm đất* (6.2.5.3.) with intentions to shift ethnic minority farmers away from cultivating black cardamom in the Bát Xát Nature Reserve as a diversification strategy, and farmers investing in it as an adaptation strategy. Additionally, farmers in high-elevation areas have increasingly grown *xuyên khung (Ligusticum striatum)* as an alternative source of cash as a diversification strategy before the government began promoting *đương quy* and *sâm đất* after extreme weather events.

### *6.2.5.1.Green Cardamom (Amomum longiligulare)*

Green cardamom, *Amomum longilgulare* (VN: *sa nhân*) is a perennial herb in the ginger family, *Zingiberaceae* (Kim, 2012). Green cardamom fruits (Figure 6.5) from Vietnam are traded directly to China for herbal medicines used to treat indigestion, dysentery, and tooth aches (*ibid*.). According to our interviewees, only low-elevation Yao households cultivated green cardamom, while one mid-elevation Hmong farmer and three mid-elevation farmers are testing the crop to see if it would grow.[42] Yao farmers also indicated that green cardamom leaves are an ingredient for traditional Yao medicinal baths. Yao farmers cultivating green cardamom noted that the plants require some shade and can tolerate poor, rocky soil (Figure 6.6). Farmers often cultivate green cardamom fields in lightly-forested areas, intercropping it with young stands of *Cây Mỡ* and *Cây Xoan* (Sahn, 6/14/2018; Kim, 2012). Other farmers indicated that they produced sufficient staple crops of corn and rice to cover their household food security and hence decided to convert extra

*Figure 6.5: Green cardamom pods in Bản Qua commune (Author, 2018).*

*Figure 6.6: A two-year-old crop of green cardamom, Bản Qua commune (Author, 2018).*

[42] However, four farmers from high-elevation communes noted that green cardamom only grows in lower elevations.

paddy rice fields, upland corn, and upland rice fields within close proximity to their homes, to green cardamom plots as a livelihood diversification strategy. Some farmers began converting food crops into land for green cardamom. Two indicated that they had sufficient rice, while one other said that "corn is not as profitable. If my corn crop is bad this year, I will just plant green cardamom and buy corn" (May, 8/17/2018).

All farmers acknowledged that green cardamom originates from China, however, multiple farmers recount two separate stories regarding how it came to Vietnam: Yao farmers saw how profitable it was in China and decided to grow it in Vietnam, or, Chinese wholesalers told Vietnamese farmers that they would purchase it if they grew it. Either way, cultivating green cardamom has become a common diversification strategy for Yao farmers that reside in low-elevation areas of Bát Xát district. Almost all green cardamom farmers say they bought seeds, seedlings, or heard about green cardamom from Yao farmers in Phìn Ngan commune, south of Bát Xát town. All green cardamom produced is sold to Chinese traders or intermediate Vietnamese traders, including some Yao farmers, who then sell it to China. Due to the profit and the success that green cardamom farmers have had in low-elevation communes, mid-range elevation farmers have planted green cardamom to test climatic conditions for productivity. Notably, in higher elevation areas of the district and bordering Sa Pa district, farmers reported being unable to grow green cardamom, and some Hmong and Hani farmers expressed jealousy because of these climatic restrictions.

Green cardamom does not fruit until the second year if young plants are transplanted, or three years if it is planted by seed. Seeds and transplants are planted in February and July. Research participants told us that green cardamom requires intensive weeding up to three times per year in March, July, and November or "anytime they have free time", especially during the first year (May, 6/5/2018). Green cardamom produces fruit twice per year in July and November. Farmers typically cut down green cardamom plots after three to four years of maximum fruit production, which is seven years after seeds or plants were planted.

After 2008, 16 farmers began growing green cardamom as an adaptation strategy, all being Yao farmers residing in low-elevation communes. Seven of the sixteen farmers began growing cardamom in 2016. One Yao farmer indicated that she began growing green cardamom because all of her black cardamom fields were destroyed by a landslide (Muy, 6/8/2018). When I asked why they began growing green cardamom, eight farmers indicated that it was because their black cardamom crops were not doing well. Five farmers noted that they started growing green cardamom when they saw others gaining significant profit from it.

The farmers I spoke with tended to an average green cardamom plot size of three hectares and grew between 30 to 300 kilograms per year depending on the maturity and land size of their crop.

Five farmers said they had fields of one hectare or less, while three indicated that they had greater than one hectare. Green cardamom seedlings typically cost 1,500 – 2,000 VND ($0.06 – $0.09 USD) per plant. Prices for wet green cardamom pods stay close to 200,000 VND ($8.60 USD) per kilogram, the highest being 230,000 VND ($9.89 USD) per kilogram in 2018. 'Chinese standard quality' green cardamom can sell for 1,500,000 VND ($64.50 USD) per dry kilogram. Pao, a 36-year-old Yao man, was the only one farmer I spoke to who reported selling Chinese standard quality cardamom. He claimed that it "needs a lot of work to clean it, then dry it" with an electric dryer, as: "The Chinese don't like fire-dried green cardamom, it is easier to determine the quality of the seed when it is sun dried and it is not smoky" (6/6/2018).

#### *6.2.5.2. Đương Quy (Angelica sinensis)*

Y Tý commune is one of two location in the district that are piloting the cultivation of medicinal plants as an alternative income source as opposed to black cardamom. One of the main plants of interest is *đương quy* (*Angelica sinesis*; female ginseng). *Đương quy*, specifically its roots and seeds, is valued for its medicinal qualities that are thought to benefit cardiovascular health, as well as women's reproductive health. It is often consumed in tea, or in alcohol as a tincture. *Đương quy* is sold in a variety of ways: dried *đương quy* seed (Figure 6.7) is purchased for 1,000,000 VND ($43.00 USD) per kilogram, the dried root ranges from 60,000 to 80,000 VND ($2.58-3.44 USD)

*Figure 6.7: Sorting dried đương quy seed from floral brackets with a farmer in Y Tý commune (Author, 2018).*

per kilogram, and the price of wet roots range from 15,000 to 25,000 VND ($0.65-1.08 USD) per kilogram.

*Đương quy* has been promoted as an alternative crop works in conjunction with the KfW8 program, aiming to curb the cultivation of cardamom in the Bát Xát Nature Reserve. When I spoke with KfW8 officers, they noted that they were piloting *đương quy* in Y Tý commune as a model for a new income source, with hopes to scale-up their efforts to encourage *đương quy* cultivation along with additional medicinal plants in other high-elevation communes (Bang, 7/4/2018; Phan, 8/17/2018). These officials claimed that because it is a pilot project, they do not yet know the value, feasibility, or impact that *đương quy* might have on livelihoods, despite their intervention.

Some Hani villages in Y Tý commune were given *đương quy* seeds for free from the commune's Communist Party. Farmers cited this was because their black cardamom crops had failed. Of the farmers I spoke to, ten cultivated *đương quy*, nine Hani and one Yao. All ten had been granted 100 grams of free seed in 2014 and 400-500 grams in 2015. Farmers who chose to plant *đương quy* converted home garden plots or corn plots formerly used for pig fodder. *Đương quy* only begins to produce significant flowers, and therefore, seeds, during the second year of cultivation. *Đương quy* is planted in March, followed by transplanting healthy plants in freshly-plowed soil in April. Seeds are harvested in July and roots are harvested on a continuous basis from June onwards, until the final harvest occurs in September and October. If a lot of *đương quy* is grown, farmers will apply one 50-kilogram bag of DAP (diammonium phosphate) fertilizer, incurring more cost. Smaller *đương quy* roots with less water and more medicinal qualities are favoured by traders over larger roots (Muh, 7/1/2018). In 2017, one farmer reported growing and selling 500 – 600 kilograms of wet roots, two reported growing and selling around 15 kilograms of seed and 200 kilograms of wet *đương quy* roots, while the last three sold 10-15 kilograms of seed. Three farmers had very limited Vietnamese language skills, so I was unable to gain details of the quantities of their production.

As part of the pilot program, the DARD (already attempting to implement the model before KfW8) promised to purchase all wet *đương quy* from farmers who were initially provided seed at a price of 18,000 VND ($0.77 USD) per kilogram. However, farmers explained that officials did not follow through on this promise. Instead, officials purchased the wet *đương quy* during the first year in 2015 at a lower price of 15,000 VND ($0.65 USD), frustrating many farmers. After 2015, instead of selling to the government, all farmers I spoke to had sold their dried *đương quy* seed and roots at Y Tý market to intermediary traders who sell it in Sa Pa. Chinese traders do not purchase *đương quy*, for reasons our interviewees did not know, further limiting market opportunities.

Similar to Y Tý commune's failure to follow through with the purchase *đương quy*, controversy has also arisen in Nậm Pung commune, which lies in the southern part of Bát Xát district. In May of 2018, agricultural extension, an arm of DARD, in conjunction with a medicinal plant processing company from Lào Cai city, rented land from farmers as part of the pilot program. Two to three hectares of paddy fields were rented from Yao farmers at 25 million VND ($1,075 USD) per hectare to cultivate *đương quy*. Agricultural extension failed to successfully cultivate *đương quy* and, at the time of my fieldwork, had also failed to pay farmers for the land that they rented. Understandably, this transgression frustrated farmers due to the financial capital lost, but also from seeing their fields go to waste in somewhat tenuous food security circumstances.

#### *6.2.5.3. Sâm Đất (Talinum paniculatum)*

Farmers in Y Tý commune have cultivated another medicinal plant called *sâm đất* (*Talinum paniculatum*; fame flower) beginning in 2017. As part of KfW8 efforts to provide profitable alternatives to black cardamom cultivation, farmers began using *sâm đất* as an adaptation strategy in response to reduced cardamom harvests. Farmers converted land that was previously utilised for food crops (e.g. beans, squash, and corn) and fodder crops (e.g. corn and grasses for buffalo) to cultivate *sâm đất*. Similar to *đương quy* and *xuyên khung*, *sâm đất* requires high-elevation land, which predominantly belongs to Hani and Hmong farmers. *Sâm đất* roots are a reliable source of income for ethnic minority households, averaging about 20,000 VND ($0.86 USD) per kilogram. Farmers cultivate *sâm đất* for small-scale household consumption, for tinctures, or for trade, with farmers noting its digestive, urinary, and anti-inflammatory properties. The leaves are traded for 5,000 VND ($0.22 USD) per kilogram and are boiled for tea and used as medicine. The seeds are sold for 10,000 VND ($0.43 USD) per kilogram to those who want to begin cultivating it. Many sell the roots and leaves at the Y Tý market, while some Hani farmers sell their *sâm đất* to Chinese traders at Thiên Sinh bridge, a cross-border trading area in China about seven kilometers away from Y Tý market.

*Sâm đất* has a labour calendar that is compatible with growing other crops. Planting occurs in February and March. Healthy plants are transplanted to hillslopes in May and transplanted once more in June. Finally, it is harvested and sold in September and October. One 20-year-old female Hani farmer, Che (7/3/2018), remarked, "It's easier to raise *sâm đất* than *đương quy*. When we weed it's easier… and we sell it fresh… *Sâm đất* has a lot of water, so it's heavier. It's just like I'm selling water!" Compared to other crops that are sold, including black cardamom, selling *sâm đất* roots fresh is preferable for many farmers. *Sâm đất* roots are the main component of the plant sold, averaging about 20,000 VND ($0.86 USD) per kilogram. Like *đương quy*, the leaves of *sâm đất* may also be boiled and consumed, selling for 5,000 VND ($0.22 USD) per kilogram. Seven farmers reported cultivating *sâm đất* for root production. *Sâm đất* harvests varied greatly among

those I interviewed. Four farmers reported harvesting about 20 kilograms per year, while one grew around 500 in 2017. Two farmers only produced enough for household consumption. One farmer, who also runs a homestay, stopped growing *sâm đất* since he was too busy with his tourism endeavors, returning that parcel of land back to corn cultivation for his pigs (Muas, 7/2/2018).

#### *6.2.5.4. Xuyên Khung (Ligusticum striatum)*

*Xuyên khung* (*Ligusticum striatum*) is a member of the carrot family that is sold for the leaves (Figure 6.8) and roots. It requires the same high elevation as black cardamom but does not require shade. *Xuyên khung* plots must be plowed before planting in November, with three to four times of intensive weeding throughout the year. *Xuyên khung* is then harvested in November and either sold wet or dry. Twelve farmers reported growing *xuyên khung,* six Hmong and five Hani farmers from high-elevation communes, plus one Yao farmer from Sa Pa district. Given language constraints, I was only able to get detailed information from four farmers.

Two farmers had been cultivating *xuyên khung* from the same time that they began growing hybrid rice around 2010, while the other two began once their cardamom died in 2015 as an adaptation strategy. Ying, a Hani farmer from Y Tý commune noted that her household began growing *xuyên khung* three years ago after their black cardamom died, also claiming that it is one of the most important income sources for her household – second to the black cardamom that had regrown (7/9/2018). Two farmers sold their *xuyên khung* root wet at Y Tý market, selling 200 kilograms to

*Figure 6.8: A Hmong farmer picks some xuyên khung leaves for a meal, Y Tý commune (Author, 2018).*

1,600 kilograms at a price of 15,000 to 20,000 VND ($0.65-0.86 USD) per kilogram in the past three years. Two Hani farmers cultivated 200 – 600 dried kilograms of *xuyên khung*, selling it in Y Tý market and a small amount to traders in China for roughly 50,000 – 60,000 VND ($2.15-2.58 USD) per kilogram in both locations.

In sum, as farmers search for income options to replace black cardamom, a range of medicinal crops have become new income sources and adaptation strategies. However, it is unclear how long farmers will continue to grow the crops, whether the government will follow through with promises of purchasing these crops, or how long the government will continue to encourage the diversification of cash crops through free seeds. Although these medicinal crops cannot compete with the profitability of black cardamom, they are becoming increasingly common as farmers continue to consider the possible negative impacts of future extreme weather events.

### 6.2.6. Trading

With black cardamom crops failing and upland ethnic minority farmers becoming more cash dependent, 13 percent of the households I interviewed have turned to trading for a supplemental income, drawing them further into the market economy. Separate from farmers who sold produce or NTFPs such as bamboo shoots, honey, or mushrooms, I identified four profiles of ethnic minority farmers-turned-traders in Bát Xát district:

1. highland-lowland long-distance traders,
2. everyday item traders selling at commune markets,
3. intermediary traders selling commodities to market traders in Vietnam, and
4. intermediary traders selling commodities to market traders in China.

I met two highland-lowland, long-distance traders, both from Y Tý commune. Cu, a 29-year-old Hani farmer purchased a 400,000,000 VND ($17,200 USD) truck in 2018 to transport highland goods such as pears, various NTFPs, and other seasonal items to Lào Cai city and returned with goods transported to Lào Cai from the lowlands and Lào Cai city to Y Tý commune, such as clothes, electronics, fresh noodles, fresh sweet bread, and other food items. The other highland trader was hired to procure *sâm đất* in 2017 for a company in Hanoi. He noted that many other people had turned down this particular job due to the high amount of financial capital required to purchase g *sâm đất* from farmers, other farmers were too weary. Nonetheless, he traded 40 tonnes for 3,000 VND ($0.13 USD) per kilogram, turning a profit of 120,000,000 VND ($5,160 USD) in 2017.

Twelve farmers (10%) I spoke to traded everyday items at local commune markets of Mường Hum and Y Tý. Eleven out of these 12 farmers began trading once their cardamom died. One Hani woman in her fifties from Y Tý commune traded medicine, hygiene products, coloured yarn for

wigs, and fermented soy blocks since her cardamom died in 2015. Five Hmong men who resided in mid-elevation areas traded Hmong DVDs and CDs, medicine, agricultural inputs, agricultural tools, and synthetic Hmong textiles from China, purchased in Mường Khương district, Lào Cai province (Figure 6.9). Lastly, six Yao women residing in low-level elevations, traded modern clothing, ethnic minority clothing, fabric, cosmetics, perfume, and jewelry. These three groups were surprisingly homogenous, but consistently trading at every Mường Hum and Y Tý market day we attended.

Three traders whom I spoke to are intermediary traders selling commodities within Bát Xát district and Lào Cai province to marketplace traders. One was a low-elevation Yao male farmer who collected and sold green cardamom, black cardamom, and cinnamon bark. The other two traders were Hmong men from the same mid-elevation commune, selling black cardamom, various NTFPs, live buffalos (to people in Bát Xát, Sa Pa, and to people in China), and dead buffalos that had died due to extreme winters. One of the Hmong intermediary traders at the time of my fieldwork was working to get certification as a C-level licence to drive trucks in order to enhance his trading endeavors for the future.

Lastly, there was a group of three Yao men and one Hmong man in Y Tý commune who acted as intermediary traders for surrounding ethnic minority farmers, collecting various NTFPs and, in one trader's case, wildlife. These four traders collected a variety of insects, vines, roots, dried

*Figure 6.9: A Hmong farmer and trader during a market day (Author, 2018).*

*Figure 6.10: Yao farmers loading up NTFPs to sell at Thiên Sinh bridge (Author, 2018).*

leaves, black cardamom, and lingzhi, all for sale to Chinese traders at Thiên Sinh bridge, a border crossing and trading point close to Y Tý (Figure 6.10). Two of the four who were the most comfortable speaking with us explained that they began trading items for the Chinese in 2014 when their cardamom died. All four claimed that black cardamom was the most profitable commodity to trade, providing them with 15,000 to 20,000 VND ($0.65-0.86 USD) per kilogram in profits in contrast to 10,000 VND ($0.43 USD) per kilogram for every other NTFP they traded. One farmer traded a civet during our fieldwork and made approximately 50,000 VND ($2.15 USD) for the transaction. Civets are small nocturnal mammals that are illegal to trade, but he said he trades roughly twelve specimens a year.

### 6.2.7. Fisheries

A small number of farmers have also been incentivized by DARD and KfW8 to invest in establishing fisheries, both for their household consumption and for sale. Fish ponds are being encouraged in high-elevation communes which have an ideal climate for cold-water trout. Five farmers (4% of total households interviewed) have fish ponds. Two of these farmers lived in high-elevation areas of Bát Xát district and created fish ponds in the past six years. One Yao farmer in his early 40s, residing in Dền Sáng commune, created a fishery for production, while Muas, a 31-year-old Hmong farmer and homestay owner opened up a fishery with a new, separate homestay endeavor near the Bát Xát Nature Reserve. Three low-elevation Yao farmers in Phìn Ngan commune have fish ponds for their own household consumption. Additionally, there are three large-scale fisheries that I was told were created in 2015 in Dền Sáng, although was unable to speak with the operators. Although fisheries are less common that other possible livelihood diversification options I was told about, four high-elevation Hmong, Yao, and Hani farmers

expressed interest in saving up enough money from black cardamom or wage labour to begin their own fisheries for consumption and sale as an additional income source or an alterative one.

### 6.2.8. Tourism

Given extensive increases in investment and mass tourist numbers in bordering Sa Pa district (Michaud and Turner, 2017), local officials in Y Tý, Bát Xát district, and Lào Cai province are hoping to draw similar investment and interest in Y Tý town. Local officials and ethnic minority farmers agree that Sa Pa town and district has too many tall, modern buildings, and that the environment there is littered with too much construction and waste (Ly, 8/2/2018; Lum, 7/11/2018; Phu, 7/18/2019; Muas, 7/12/2018). As part of the Bát Xát Nature Reserve, eco-tourism is one of the many livelihood strategies that is being promoted.

Poor road infrastructure has been one of the main hindrances to tourism development in Y Tý. However, as mentioned in Section 6.1.2.1., new roads have been paved from the most northern part of Sa Pa district (Tả Giàng Phình commune) to Dền Sáng and then Y Tý, making it a more accessible destination. In Y Tý, the government is promoting the Black Hani (*Hà Nhì Đen*) ethnic minority as a tourist attraction, an 'exotic' and 'authentic' sight compared to Yao and Hmong ethnic minorities in bordering Sa Pa district. During my fieldwork, Hani farmers were the focus of most tourist events: a pear collecting event, a 'traditional' rice harvest using only hand tools, and a Hani harvest ceremony and festival (*Khô già già*), many being government funded and with officials present. In addition, adventure sporting events are being strongly promoted including a hiking competition to the top of Lảo Thẩn mountain and a bicycle race from Lào Cai city to A Lù commune, just outside of Y Tý. In Mường Hum town, paragliding is being set up as well as craft-based tourism options such as silver jewellery-making demonstrations and tea picking.

In Y Tý town, the first ethnic minority homestay opened in 2013, belonging to Muas, a 31-year-old Hmong farmer, who viewed it as an advantageous diversification strategy. Observing the success that Muas had and to compensate for black cardamom incomes, four more homestays opened in 2018 in the fall, three of them Hani-operated and one being a Hmong homestays (4% of total households interviewed). Ranging from 50,000 to 100,000 VND ($2.15-4.30 USD) per bed for one night, homestays are aiming at attracting foreign tourists on motorbike trips and young Vietnamese tourists interested in "Instagrammable" experiences.

Y Tý town officials also have plans to rezone the market and make it an "International Market" by 2020 for both Vietnamese and Chinese traders (Vang, 7/14/2018; 7/12/2018; Pho, 7/19/2018). This shift will likely benefit Kinh traders, town residents, and homestays attracting domestic tourists (Muas, 7/6/2018). Despite local desires to develop tourism in Y Tý, the Vietnamese Border Defence Force (*Bộ đội Biên phòng Việt Nam*) is resistant to the idea because of its position on the

border with China. Thus, although provincial, district, and commune levels hope to develop Y Tý into a new eco-tourism destination, the Y Tý Border Defence Force is resistant for security measures. As tourism is a costly livelihood strategy, it is limited to those with access to financial capital. Hence only five respondents to whom I spoke had become directly involved in tourism as a livelihood strategy through the opening up of their own homestays.

## 6.3. Chapter Conclusion

From the early 1990s until extreme weather events began to increase in severity and frequency from 2008 onwards, black cardamom was the most important source of cash income for households across the district, if not the only income source. Younger and middle-aged ethnic minority farmers recall that their parents and grandparents' livelihood portfolios consisted of rice, corn, livestock, NTFPs, and black cardamom. However, as rural development programs (e.g. Program 135, 327, and 661), agricultural intensification program, and modernisation programs upgrading road infrastructure and promoting modern housing have been introduced, the demand for cash has increased. In tandem with extreme weather events devastating cardamom crops, farmers are diversifying their livelihood portfolios in this time of immense change.

The most immediate and profound impact on farmer livelihoods, namely the destruction or reduction of their cardamom crops due to extreme weather events, led to a wide range of adaptation strategies. The most widespread of these strategies was livestock intensification and wage labour. I found 45 percent of households where I conducted interviews had members who had turned to wage labour, of whom 91% resided in mid and high-elevation communes. The third most frequent adaptation strategy I found was turning to silviculture, followed by the cultivation of medicinal plants. While households in high-elevation and low-elevation communes were able to pursue different tree options (high-elevation communes cultivating pears and low-elevation communes producing cinnamon trees), as well as medicinal crops, mid-elevation farmers lack suitable conditions for medicinal crops. Mid-elevation households have therefore more frequently turned to trading animals and everyday goods at markets in Mường Hum and Y Tý in addition to wage labour. As farmers continue to pursue these different cash income options, predominantly implemented as adaptation strategies to their cardamom declines, they are creating more diversified livelihood portfolios. In the next chapter, I look at how these phenomena act as major transforming processes, how they mould sustainable livelihood outcomes, and discussing the sustainability and resilience in response to these shocks and trends.

# Chapter 7. Discussion and Conclusion: Livelihood Outcomes and Rolling the Dice

Since the early 1990s, the Vietnamese government has implemented large-scale afforestation and reforestation projects throughout the northern uplands including Lào Cai province. Following Resolution 10 (1988 Land Law), state officials began designating large areas of land as 'forest land' which disrupted and limited farmers' swiddening areas (Castella *et al*., 2006; Clement and Amezaga, 2013). In Bát Xát district, minority farmers explained to me that they have been strongly encouraged to reduce their swidden agriculture to small patches for upland rice, corn, and cassava plots. Additionally, the government has increasingly been promoting a variety of trees for silvicultural cultivation, and farmers have been encouraged to take up these opportunities or have seen the possible benefits and have done so without government assistance.

The newly established Bát Xát Nature Reserve now limits the use of forests that were initially planted by local farmers with cardamom plots and promotes more 'preferred' methods of income generation (other medicinal crops, tourism, animal husbandry, and fisheries). The main project supporting this reserve is the "Sustainable Forest Management and Biodiversity as a Measure to Decrease CO2 Emissions" (KfW8), sponsored by the German Reconstruction Bank (KfW). The restriction of cardamom plot expansion within the reserve is limiting access of natural resources, leaving some households excluded from black cardamom as a livelihood strategy.

On top of these interventions, farmers are being encouraged to switch from landrace seeds for rice and maize to hybrids, increasing their need for cash income, as well as being increasingly exposed to other opportunities through improved infrastructure (roads, marketplaces, cellphone access). Concurrently, farmers find themselves exposed to increasing numbers and severity of extreme weather events ranging from extreme cold spells with snow, increasing heavy rain and hail, and longer periods of drought.

In this final chapter I answer my third research question: *What have been the most notable local livelihood outcomes due to the processes underway and household coping and adaptation strategies?* I return to the DFID sustainable livelihoods framework to focus on livelihood outcomes and draw directly from my results in Chapters 5 and 6. First I focus on the tensions that have risen between possible increased cash incomes versus greater livelihood uncertainties (Section 7.1). Then I turn to investigate the impacts on the natural resource base (Section 7.2.) and then focus on food security (Section 7.3). Finally, I debate the resilience of contemporary ethnic minority livelihoods in Bát Xát district. I conclude by returning to my research questions and highlighting key points from each chapter.

### 7.1. More Income or Increased Uncertainties?

In response to the increasing frequency and severity of extreme weather events, over half of the farmers (residing in 45% of households) I spoke to are now conducting wage labour in response to their cardamom deaths. Of these, 70 percent noted that if they have a good cardamom harvest, they will stop doing wage labour, using it as a short-term coping or longer-term adaptation strategy, but not necessarily seeing it as an ongoing long-term, positive livelihood diversification approach. Alternatively, 20 percent stated they will continue to conduct wage labour if they have regular cardamom harvests again, highlighting that wage labour has become a livelihood diversification approach for these households. Another 10 percent of those doing wage labour are unsure if they will continue labouring if they harvest a healthy cardamom crop in the future.

The farmers using wage labour as an adaptive strategy are predominantly middle-aged Yao in high and mid-elevation communes (14 out of 20 farmers); the rest being two low-elevation Yao and two mid-elevation Hmong farmers. Middle-aged Yao farmers travel to China for work with their spouse, while their eldest son and daughter-in-law tend to staple crops. Additionally, these Yao families have strong human capital, being able to speak the local Yunnan dialect of Mandarin. The middle-aged Yao farmers all viewed wage labour as a valuable investment for their future, be it for future health care, building a modern house, or funding higher education for their children.

Nonetheless, wage labouring was not risk free. New Vietnamese laws requiring work permits to work in China, strict policing on the Chinese side of the border regarding illegal workers, and instances of human trafficking, mean that wage labour in China's borderlands is not considered particularly safe. Wage labour in Vietnam also has its own concerns, with wages sometimes not being paid or the occurrence of bodily injury.

Aside from wage labour, other livelihood diversification and income sources were being adopted in low-elevation communes, including a preference for green cardamom over black cardamom for those who could grow the former. Almost one-third of farmers who grew green cardamom (five out of sixteen) indicated that they now preferred green cardamom over black cardamom. A quarter of the farmers who grow green cardamom indicated that it was their most important income source, all being low-elevation Yao households. Compared to black cardamom, farmers prefer green cardamom because the fruit do not have to be dried, plots are typically closer to their homes, reducing distance, prices are more stable, crops provide optimal fruit faster (as opposed to seven years for black cardamom), and plants are not as susceptible to extreme weather events. However, farmers also complained that the weeding needed for green cardamom is too labour-intensive and some farmers noted that they have no subsistence use for green cardamom and can only sell it; whereas black cardamom can be consumed when fresh and unripe or used for traditional medicine

after it has been dried. Thus, although wage labour (45% of all households) and cultivating green cardamom for sale (39% of low-elevation households) are becoming increasingly common and preferred income sources in some households, difficulties remain.

Aside from green cardamom, other medicinal cash crops have been successfully promoted by the Y Tý and Nậm Pung commune governments by distributing free medicinal crop seeds and promising to purchase the resulting crops at a set price. However, the government failed to purchase the crops at the guaranteed price if at all, hence failing to follow through and leaving farmers with lesser-value cash crops that they planted instead of other food crops. On that same note, many animals that were granted to households by local governments were diseased, spreading illnesses to other village livestock. Other livelihood strategies the government is promoting such as fisheries, animal husbandry, and tourism are all capital intensive, requiring that households find financial capital without guaranteed returns. As such, as the government promotes alternative income sources to black cardamom, farmers incur significant risks embedded in every option being promoted.

Although farmers have been diversifying their incomes beyond cardamom cultivation, the majority of farmers continue to view black cardamom as a valued income source. Lu, a 30-year-old female Yao farmer from Phìn Ngan, said "black cardamom is forever" when we were speaking about differences and preferences in black cardamom and green cardamom (6/9/2018). At first, I thought Lu was speaking about the longevity of the plant. However, the longer we spoke, I understood that Lu, like others, viewed black cardamom as a reliable and trusted crop that supplied her and her family's household needs, even in the face of extreme weather events. As Ngan put it, "many people grow cardamom for rice. Without it, we cannot develop or have enough food to eat" (8/24/2018). Although the future is unclear for black cardamom, farmers still value the commodity and acknowledge the role it has played in their livelihood portfolios, also noting that there must be a substitution of income for future food security if cardamom cultivation were to be banned completely, either in the new Reserve, or following Decision 12, more widely across the district. Only 16 percent of cardamom cultivators expressed frustration with this livelihood strategy *per se*, noting the risk of not gaining a return on their labour investment, with four percent of farmers saying they would consider selling their cardamom plots. Kaw, a 29-year-old male Hani farmer from Nậm Pung commune voiced his frustration with cardamom:

> I'm so sick of cardamom. It's so difficult to get to [access] and it takes so much work. We're there for weeks, weeding and making sure the plants are good. The bad snow and cold [temperatures] killed all of the cardamom since 2014. If I do wage labour, at least I know that I'll get paid everyday that I work (8/27/2018).

In sum, across elevation and ethnicity, livelihood adaptation strategies have been taken on board in the wake of increasing extreme weather events and their impacts on cardamom plots. Yet, farmers with cardamom remain hopeful that their cardamom will continue to be a main cash component of their livelihoods, arguably too much so. While this might be being a little too optimistic, given both government wishes to restrict cardamom and extreme weather events, the adaptation strategies and diversification that has occurred to date, do appear to have provided farmers with the much-needed cash for their hybrid seeds for the grand majority of farmers.

### 7.2. More Sustainable Use of Natural Resource Bases?

Given the forestry projects introduced in Chapter 3 (Sections 3.1.2.3. and 3.1.2.4.), the forest conditions that black cardamom requires (Section 5.4.), the recent establishment of the Bát Xát Nature Reserve (Section 6.1.2.3.), and recent shifts in community forest management (Section 7.1.2.), many different forces are affecting forest cover change in the district. As one of the possible livelihood outcomes of the sustainable livelihoods framework is a more sustainable natural resource base (DfID, 1999), I focus here on farmer perceptions of the changes they see occurring around them regarding forest cover.

As discussed in Section 3.5., drastic changes in upland fields, shrubs, and open canopy forests to closed-canopy forest cover were found in land-use and land-cover change (LULCC) analyses from 2000 to 2009. Although it is unclear what proportion can be attributed to each driver, over 80 percent of farmers I asked about changes in forest cover indicated an increase in community and

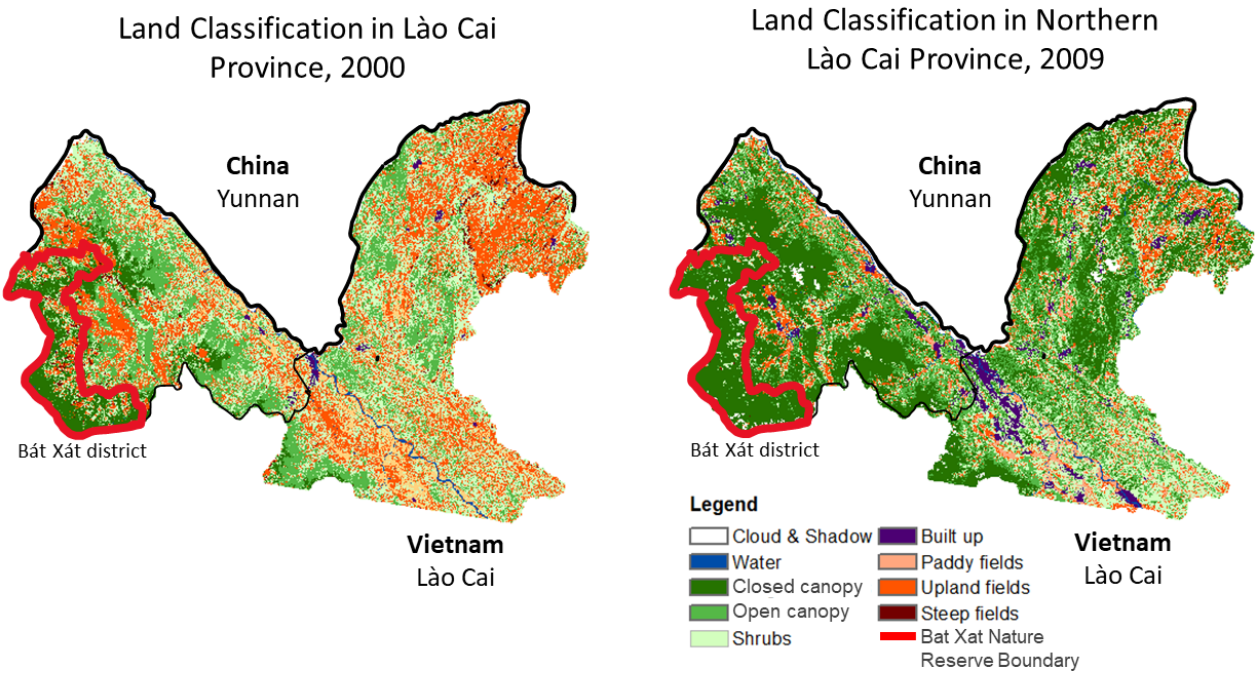


*Figure 7.1: Land cover classification as of 2000 and 2009 with the Bát Xát Nature Reserve (Source: Turner and Pham, 2015; Bát Xát Nature Reserve boundary added by author).*

old-growth forests (over 75% of these respondents were mid-elevation and high-elevation farmers, across all ethnicities). Perhaps government officials also recognized this important shift, when they decided to demarcate the Bát Xát Nature Reserve on a newly-forming area of closed-canopy forest cover in 2017 (Figure 7.1). Officials, thus, have less work to maintain the Nature Reserve given that the closed canopy forest was already rejuvenating. The fact that some of this rejuvenation was caused by farmers wishing to maintain the forest for a range of NTFPs including black cardamom, appears to have been deemed somewhat irrelevant to officials given that the harvesting of these products has now been made illegal.

Farmer perceptions of cardamom cultivation impacts on forests were mixed, yet two-thirds of farmers thought that cardamom cultivation has positive impacts or positive impacts if specific management techniques were used (Table 7.1). Of the farmers who noted that management was needed, they emphasized the importance of forest regeneration (ironically the very justification the government uses to problematize cardamom cultivation). Sixty-four percent of the farmers that saw cardamom cultivation as positive or specific management as positive noted the direct incentive that cardamom cultivation provided for old-growth and closed-canopy forest areas, noting that people will "do anything to protect the forest" (Ngan, 8/24/2018). Xa, a 26-year-old male Hani farmer summed up what most cardamom cultivators acknowledged as the proper way to manage their cardamom plots:

> So the bad part of growing cardamom is that some people cut down immature trees, so [the forest] will not regenerate, but the big old trees make the canopy. If they're too old, they will fall down and there will not be any middle-aged trees to grow in their place. You need to make a balance between immature and old trees so that it's suitable for cardamom and good for the forest (7/9/2018).

Nearly two-thirds of farmers (predominantly mid-elevation and high-elevation Hmong and Hani) cultivate their cardamom fields as described in the quote. Roughly one-fifth (predominantly low-elevation Yao farmers) described their management process as weeding anything that was not an old tree or cardamom. Lastly, the remaining 13 percent noted that they weed small plants and no trees. Interestingly enough, farmers that noted that black cardamom management systems needed both immature and older trees closely paralleled those who thought cardamom cultivation was

*Table 7.1: Farmer perceptions of impacts that black cardamom cultivation has on forests.*

| **Ethnicity** | **Yao** | | | **Hmong** | | **Hani** | **Total** |
|---|---|---|---|---|---|---|---|
| **Elevation** | Low | Mid | High | Mid | High | High | |
| **Positive** | 4 | -- | -- | 1 | 1 | 5 | 11 |
| **Specific management is positive** | 2 | 4 | 1 | 1 | 3 | 4 | 15 |
| **Neutral** | 3 | -- | -- | -- | -- | -- | 3 |
| **Negative** | 11 | -- | 1 | -- | -- | -- | 12 |
| **Total** | 26 | | | 6 | | 9 | 41 |

positive for forests.

Seven percent of farmers (two female and one male Yao farmer) view cardamom cultivation as having no effect on forests. Out of the 12 cardamom cultivators that viewed cardamom as a negative impact on the forest, all resided in low-land elevation communes. Just under one-third of cardamom cultivators view black cardamom as a negative impact on the forest, all of them being low-elevation Yao farmers, with the exception of Huang, a female Yao farmer in her 40s from Sa Pa district. Additionally, 11 out of these 12 farmers were women. In total, twenty percent (eight farmers, all of whom were low-elevation female Yao farmers in their 20s-40s) viewed cardamom cultivation as having a negative impact on the forest, linking increased cardamom cultivation and reduced forest quality to the recent floods (beginning in 2008) that triggered severe landslides mentioned in Section 6.1.1. Many of these severe floods occurred in low-elevation communes of Phìn Ngan, Bản Qua, and Trịnh Tường, the same communes that Yao women with negative perceptions of cardamom cultivation resided in, with the exception of the one Yao farmer in Sa Pa. However, Huang, the Yao farmer in her 40s residing in Sa Pa district, noted that her in-laws lived in Phìn Ngan and that she was aware of the terrible floods that had occurred in 2016. However, Hmong and Hani farmers who were exposed to significant flood and landslide events in Y Tý and Ngải Thầu communes did not believe that black cardamom was the cause of flood events and that cardamom could benefit the quality of the forest if done correctly. Although this may be strongly linked to exposure of extreme weather events, I also believe that this may have to do with assimilation and the adoption of propaganda surrounding forest protection.

Propaganda appeared to be front and center for many Yao households in low elevation communes, perhaps contributing to their negative perspective cardamom cultivation impacts on forests. Seven of the eleven Yao farmers recounted that cardamom cultivation does not "protect the water source" (all of them residing in low-elevation communes in Bát Xát district), a common propaganda phrase used by forestry officials (Houm, 8/20/2018). This propaganda is perhaps more accepted here because there are more alternative income sources for ethnic minority farmers in low-elevation areas across the Sino-Vietnamese borderlands (Rousseau *et al*., 2019).

While propaganda regarding "protecting the water source" is more commonly cited in low-elevation communes, middle and high-elevation farmers still view cardamom cultivation as a positive practice. Phong, a 52-year-old farmer and former secretary of the youth union for Trung Lèng Hồ (mid-elevation) commune back in the early 2000s propagandized the importance of "protecting the water source", yet he believes that cardamom cultivation is good for the forest if managed correctly (8/23/2018). Similar to Phong and others, Ngan (a 38-year-old Yao farmer from Nậm Pung commune) believes that cardamom actively protects the water source:

> I think that cardamom protects the water source. Before, we used to have treeless hills and no water. Now there are forests and more water. The government said, 'grow cardamom, that means you are protecting the forest.' Now the government says don't grow it anymore because of KfW8 (Ngan, 8/24/2018).

Given that government decisions attempting to halt cardamom cultivation have been relatively recent (beginning in 2013), perhaps it is just a matter of time before 'cardamom affecting the water source' becomes internalized in the discourses of middle and higher elevation farmers. In the Bát Xát Nature Reserve, the expansion of black cardamom plots and harvesting of NTFPs other than black cardamom is now restricted, which may lead this structural change to alter perceptions of beneficial forest practices. Nonetheless, the differentiation between low-elevation and high-elevation farmer perceptions of cardamom appears linked to specific cultivation practices, assimilation (propaganda internalisation), and exposure to multiple and severe extreme weather events.

## 7.3. Improved Food Security?

With the high adoption rates of hybrid varieties of rice and corn, in addition to the access that farmers have to both hybrid seed and other agrochemical inputs, food security status appears to have improved in Bát Xát district, with much assistance coming from the increased amount of cash black cardamom has provided to fund these inputs. Yet, despite these apparent improvements, cultural requirements for traditional varieties of rice and animals on ceremony days or life events are not always being met. Additionally, given climatic and financial capital constraints, farmers are not always able to raise as much livestock as they want.

### *7.3.2.1. Food Security Indicators*

Since the introduction and adoption of hybrid rice and corn, food *availability* has largely improved. Focusing solely on availability, none of the farmers that I spoke to indicated that they had gone hungry or that they had to forage for leaves and tubers out of necessity within the last five years (mentioned in Section 5.5.1.). Twelve percent of households (12 Yao farmers across all elevations, one Hmong farmer in Trung Lèng Hồ commune, and two Hani farmers in Nậm Pung commune) regularly cultivated more rice than needed for their households, selling their surplus as a source of income. Of those selling rice, 60 percent (eight Yao farmers and one Hani farmer) have intensified rice cultivation since their cardamom died. An additional eight percent of farmers (four Hani farmers in high elevation areas, three Hmong farmers in mid and high-elevation areas, and three Yao in mid-elevation communes) have needed to buy or borrow rice within the past three years, indicating a lack of food availability from their own on-farm sources. Nine percent of farmers (eight Yao and four Hmong from mid-elevation communes) said they do not have to buy or sell rice at all, being fully self-sufficient for this staple crop.

Although rice has been relatively unaffected by extreme weather events, 12 percent of households reported droughts that have affected corn yields since 2015 (four Hani farmers from three Hmong farmers from high-elevation communes, eight Yao farmers in low-elevation communes). As an adaptive strategy, 13 percent of households sell corn for income (ten Yao farmers in low elevations, six Hmong farmers in mid-elevation communes, and one Hani farmer in a high-elevation commune). Five farmers (four low-elevation Yao farmers and one Hmong, mid-elevation farmer) explicitly supplemented their lost cardamom income by selling corn as a coping strategy. Seven percent of farmers never buy or sell corn (two lowland Yao farmers, four Hmong households in mid-elevation communes, and three Hani households in high-elevation communes). Interestingly, six Yao farmers (15% of low-elevation households) in low elevation areas are increasingly planting cash crops (green cardamom and cinnamon) to purchase corn, noting that cash crops have proven to be less laborious, capital-intensive, and more profitable than corn.

Over time, physical and financial *access* to agricultural inputs and food products has increased. Both transportation infrastructure and permanent marketplace structures have been constructed. Ethnic minority farmers also have increased physical access to hybrid seeds, agrochemicals, other agricultural inputs, and consumer items. Financial access, largely through the cultivation of black cardamom, and/or adaptation strategies, has also improved, enabling ethnic minority farmers to purchase hybrid seeds and agrochemical inputs. Increases in physical and financial access are not causal, although they have both occurred during this time of immense change. Although more than 80 percent of farmers view hybrid seeds and their associated inputs as expensive, they also view them as necessary for sufficient food production and 'worth it' for the most part, regarding food security.

Every farmer whom I asked about meal preferences wanted fresh meat with their meals, preferably from their own livestock or the ability to purchase fresh meat at a local market. Farmers viewed purchasing meat at marketplaces as expensive, with pork being 90,000 – 100,000 VND ($3.87-4.30 USD) per kilogram.

Food *utilisation* was not a focus of this study. However, a relevant theme that nonetheless emerged was food safety. Farmers are very concerned about parasites found in white pigs from television news reports, refusing to purchase any pork from people they do not know or avoiding consuming pork at all (VietNam News, 2019). One upland farmer also noted that a person in Y Tý town and her family were made sick due to "…the fruit or vegetable in the lowlands because of too many pesticides" (Khoa, 7/19/2018).

*Stability* of food availability and food access have greatly improved compared to times of hunger prior to 2008. When asked about times of hunger after 2008, farmers claimed that they never

experience cyclical food insecurity compared to the degree they did in the past as they now at least have the cash to purchase rice or social capital to borrow rice in dire circumstances. Nevertheless, in the face of progressively frequent and more extreme weather events and encroaching government interventions discouraging preferred livelihood strategies like cardamom, the stability of food access and availability is potentially threatened. Many of the alternative livelihood options promoted by the government have unknown implications, making farmers experiment with their livelihood decisions. With large fluctuations in cardamom harvests and prices, restrictions on cardamom cultivation, government interventions that fail (without compensation), and potential tightening up of laws regarding illegal wage labour in China, stability of food security remains compromised, with serious vulnerability and a series of livelihood risks that upland ethnic minority farmers must choose from.

#### *7.3.2.2. Food Sovereignty and Culturally-Appropriate Food*

Although at first glance farmers responded that they like growing hybrid rice because of the enhanced productivity, taste is the second highest priority amongst farmers selection of hybrid or traditional rice seed. Of the research participants I asked, nearly half prefer the taste of hybrid rice (nine low-elevation Yao farmers, one Hmong and four Yao mid-elevation farmers, plus three Yao and two Hmong farmers in high-elevation communes), 40 percent of farmers prefer the taste of traditional rice (five Hani and two Hmong farmers in high-elevation communes, three Hmong and two Yao farmers mid-elevation communes, and four Yao farmers in low-elevation communes), and the remainder think they taste equally delicious (one high-elevation Hmong farmer and three low-elevation Yao farmers). Two Hmong farmers also mentioned that they prefer traditional rice because it expands more in water giving you more rice and it keeps you full for longer compared to hybrid rice (Muas, 7/6/2018; Khoa, 7/19/2018; Bonnin and Turner, 2012). Rice seed selection for the most part remains a male decision, contrasting seed selection practices in neighboring Sa Pa district, with couples making joint decisions regarding seed selection (Bonnin and Turner, 2014b). Over 80 percent of farmers that I asked indicated that the eldest male of the house selected the type of rice seed and amount to be planted that year, most of them being Hmong farmers in high and mid-elevation communes and Hani farmers in high-elevation communes. About a fifth of those I asked collectively decided with their eldest son and daughter-in-law, almost all of them being over 45 years old and Yao farmers in low and mid-elevation communes, one of whom was widowed.

Farmers are not completely food sovereign, unable to produce or purchase all of the food that they prefer. When asked if farmers ate everything that they wanted daily, farmers typically said “not every meal, but we have sufficient nutrients and if we want anything, we can go to the market” (Chu and Muh, 7/1/2018). Over 65 percent of farmers I spoke to consumed meat once a day, with

six Yao farmers (six percent of respondents) eating meat with every meal, commonly noted as an indicator of wealth by other farmers. Forty percent of households said that they wish they had more fresh meat (pork, chicken, and fish) across all elevations and households.[43] Traditional black pigs and chickens remain the favourite source of protein. Similarly, over twenty farmers (across all ethnicities and elevations) wish that they could raise more water buffalo, chickens, and pigs for their own consumption and for sale, but are unable to due to financial, physical, and climatic limitations. The preferences for both quantity and self-sufficiency are not possible, which indicate that farmers are not food sovereign.

Regarding cultural appropriateness, two thirds of households stated that they had access to the specific food they wanted or needed for specific ceremonies and life events. Out of the farmers I discussed this with, 14 percent grow the traditional rice needed for these events (six low-elevation female Yao farmers, one male Hmong mid-elevation Hmong farmer, two Hmong farmers and four Hani farmers from high-elevation communes). Similarly, 13 percent of farmers had the chickens and pigs desired for these events (eight Yao farmers residing in middle and high-elevation communes, four Hani farmers, and two Hmong farmers in mid-elevation communes). Eight households (five Hani households, two high-elevation Hmong households, and one mid-elevation Yao household) did not have the meat or enough money to purchase meat that they wanted for these special events. Due to the diminishing quantities of traditional rice being planted because of hybrid productivity and state interventions limiting swiddening, plus increased climatic variability (impacting both livestock and available cash), culturally-appropriate food is not fully available for all households. Kaw, a 29-year-old Hani man from Nậm Pung commune, noted that once he lost his black cardamom in 2015, he went to China for wage labour. He stopped growing traditional rice because he needed more productivity and income if he was able to produce enough to eat and still have excess for sale (8/27/2018). Rice cultivation has largely shifted to hybrid varieties in this time of immense change, although some households still continue to cultivate traditional rice for their own consumption, their taste preference, and their culture (cf. Bonnin and Turner, 2012). In sum, food security has improved over the past 10 years, but the question of "at what cost?" remains. Increasing dependency on cash, markets, and being subjected to policies that limit access to natural resources place upland ethnic minority households in a vulnerable vicissitude, leaving farmers food secure, not completely food sovereign, and left to gamble with uncertain livelihood strategies.

## 7.4. Sustainable Livelihoods and Resilience

A sustainable, and therefore, *resilient*, livelihood is one that "can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood

[43] Sixty-one percent of Hani households that I interviewed said that they did not eat as much meat as they wanted, noting a large shortcoming in food sovereignty and potentially insufficient protein intake.

opportunities for the next generation" (Chambers and Conway, 1991). In the face of many severe shocks, ethnic minority livelihoods in Bát Xát district have been flexible and resilient in maintaining most livelihood outcomes: income, sustainable use of the natural resource base, and food security. However, I would not argue that vulnerability has been reduced, as many transforming processes have reduced previously trusted livelihood strategies (rice, corn, livestock, and black cardamom) and instead have led farmers to invest in more risk-intensive strategies (newly-introduced medicinal crops, tourism, trading, and wage labour.) Similar to findings in Rousseau *et al*. (2019), who found that farmers residing in lower elevation areas in neighbouring Sa Pa district, Vietnam (Hmong and Yao) and Yunnan province, China (Yi and Hani) have more livelihood strategies available through trade and cash cropping, I also find that farmers in low-elevation communes of Bát Xát district that cultivate green cardamom, timber, wage labour, and trading, are diversifying their livelihoods more than middle and high elevation households given greater market opportunities in the lower elevations.

This study focuses on a short and intense period of change and vulnerability, whereas a sustainable livelihood is one that is resilient in the face of shocks and trends. Scoones (2009: 189) argues that much of sustainable livelihood literature has focused on coping and short-term adaptation instead of "systemic transformation". As such, coping is often a disposal of assets rather than an adaptive strategy that shifts or upgrades capitals in response to vulnerability contexts (Cannon and Müller-Mahn, 2010). Livelihoods in Bát Xát district appear resilient for the time being. However, sustainable and resilient livelihoods cannot be measured through adaptation to times of extreme vulnerability, but in response to long-term change. Given that stresses and shocks have been very recent, long-term resiliency is uncertain at this point.

When I asked Phu, a 28-year-old farmer, cardamom cultivator, and homestay owner what he will do if his cardamom dies this year, at first, he responded with laughter at what he thought was a bizarre question, followed by "cardamom is just one part of my income, we will keep living. We will continue to do rice, corn, cardamom, wage labour, animal breeding, anything. Life will go on… but, *nobody* can depend just on cardamom" (7/18/2018). Black cardamom is deeply embedded in livelihoods throughout Bát Xát district and farmers are well aware of the need for livelihood diversification, as opposed to other upland ethnic minority farmers across the Chinese-Vietnamese border in Yunnan province that invest in a single cash crop (Zhang *et al.,* 2014). For instance, this understanding of diversification contrasts with ethnic minority livelihood decisions across the Chinese-Vietnamese border, where the Hmong, in Wenshan Prefecture in Yunnan, often cultivate singular cash crops of tobacco, bananas, and coffee (Zhang *et al*., 2014; Champalle, 2012). Meanwhile, the Hani, in Xishuangbanna Dai Autonomous prefecture in Yunnan province, singularly cultivate rubber trees (Sturgeon, 2010). This awareness and resilience among Bát Xát

district farming households will hopefully continue despite the many extreme and frequent external shocks and trends they are exposed to, with no clear end in sight.

## 7.5. Thesis Conclusion

In this thesis, I have drawn on conceptual ideas from political ecology, livelihood studies, and food security debates, and data gained from ethnographic fieldwork, to focus on the aim of my study: *to investigate the livelihood strategies of ethnic minority households cultivating black cardamom in Bát Xát district, Lào Cai province, northern Vietnam, with a focus on the impacts of extreme weather events and government interventions, and the resultant coping and adaptation strategies of local households.*

In my first results chapter, Chapter 5, I answered my first research question: *Over the past three generations what have been the main components of ethnic minority livelihoods, specifically black cardamom cultivators, in Bát Xát district?* I highlighted the importance of rice and corn cultivation in upland livelihood portfolios, including the changes in these livelihood strategies since the introduction of hybrid rice and agrochemical inputs. I also highlighted how different livestock have served as physical and financial capital, in addition to being important for household food security. I also detailed the importance of the cultivation of black cardamom for funding hybrid corn and rice seed cultivation, which in turn have been responsible for the rise in food availability. Because of this intervention and subsequent trends, instances of cyclical food insecurity have mostly disappeared.

Chapter 6 built on Chapter 5, highlighting the shocks and trends that have impacted Bát Xát district and the diversification of livelihood portfolios. In this chapter, I answered my second research question: *What are the main driving forces or shocks that have changed black cardamom livelihoods in Bát Xát district since 2008 (including and beyond extreme weather events), and how are ethnic minority farmers coping and/or adapting?* Regarding shocks and trends, I focused on extreme weather events, hybrid rice and corn intensification, market integration, and the recent establishment of the Bát Xát Nature Reserve. In response to these external shocks, I then detailed the impact these shocks have had on black cardamom, causing drastic and rapid diversification of ethnic minority livelihood portfolios. In particular I found that livestock intensification, wage labour, silviculture, and medicinal crop cultivation has been the most common adaptation strategies to black cardamom deaths. Farmers, to a lesser extent, have engaged in trading, fisheries, and tourism to compensate for black cardamom crop loses, largely, but also as a diversification strategy.

I answered my third research question in this chapter: *What have been the most notable local livelihood outcomes due to the processes underway and household coping and adaptation*

*strategies?* I detailed the shifts in options regarding income generation, arguing that the future remains uncertain for these newly-acquired livelihood strategies. Specifically, I found that most farmers in high and middle-elevation communes viewed black cardamom as a positive impact on forests, leading to forest conservation. Additionally, given forest protection, afforestation, and reforestation efforts, closed-canopy forest cover has also increased. I also argued that although farmers are more food secure now than in the past, farmers are not food sovereign. Lastly, I reasoned that livelihoods have remained fairly resilient in the face of extreme weather events and government interventions to date, but this resiliency remains uncertain as farmers are continually subjected to extreme weather events that may make black cardamom an unreliable and fruitless livelihood strategy, from which to gain cash income.

In addition to black cardamom remaining an unreliable livelihood strategy given the recent shocks, every adaptation strategy forces farmers to gamble with income security in each livelihood adaptation strategy. Farmers are investing in livestock intensification despite severe winters killing animals through extreme temperatures and an increase in diseases due to fluctuations in temperature. Every farmer conducting wage labour is afraid to do so, noting that someone they knew had been caught, beaten, or fined by Chinese border patrol officials, or the outright disappearance of friends or family due to human trafficking. Some farmers receiving assistance for silvicultural activities have received free or subsidised saplings that are nearly all or completely dead. In instances of government intervention and new medicinal crops, local government officials failed to purchase one of these medicinal crops at the fixed price they promised, frustrating farmers and leading them to sell their crops elsewhere, not to mention that they are currently testing the feasibility of these economic models on farmers with unknown outcomes. Farmers looking for supplemental income through trading, fisheries, and tourism all of which require increased financial capital, most of which they are getting through loans without a guarantee of being able to pay them back. Black cardamom and every adaptation strategy has a degree of risk from forces of nature and/or government intervention.

In sum, this study examines the vast changes that are impacting the livelihoods of Hmong, Hani, and Yao farmers in a district on the margins of the Vietnamese state. Although farmers have been subjected to frequent and extreme shocks, they remain fairly resilient in maintaining livelihood outcomes, diversifying their livelihood portfolios to make ends meet. While farmers remain determined and optimistic in these vicissitudes and ever-changing times, with ongoing government interventions and unpredictable extreme weather events, ethnic minority farmer resiliency will continue to be tested.

# Reference List


Abel, T., & Stepp, J.R. (2003). A new ecosystems ecology for anthropology. *Conservation Ecology*, *7*(3), 12.

Agrawal, A. (1995). Dismantling the divide between indigenous and scientific knowledge. *Development and Change*, *26*(3), 413-439.

Aswani, S., & Lauer, M. (2006). Incorporating fishermen's local knowledge and behavior into geographical information systems (GIS) for designing marine protected areas in Oceania. *Human Organization*, *65*(1), 81-102.

Aubertin, C. (2004). Cardamom (*amomum spp*) in Laos PDR: The hazardous future of an agroforest system product. In K. Kusters & B. Belcher (Eds.), *Forest products, livelihoods, and conservation: Case-studies of non-timber forest products systems,* (pp. 43– 60). Bogor, Indonesia: CIFOR.

Barbour, R. (2008). *Doing focus groups*. Sage: London.

Baulch, B., Truong Thi Kim Chuyen, Haughton, D., & Haughton, J. (2007). Ethnic minority development in Vietnam. *Journal of Development Studies 43*(7), 1151-1176.

Bebbington, A. (1999). Capitals and capabilities: A framework for analyzing peasant viability, rural livelihoods and poverty. *World Development*, *27*(12), 2021-2044.

Bebbington, A. (2011). *Social conflict, economic development and the extractive industry: evidence from South America*. London: Routledge.

Belcher, B. (2003). What isn't an NTFP? *International Forestry Review, 5*(2), 161-168.

Benaquisto, L. (2008). Coding. In *The SAGE Encyclopedia of Qualitative Research Methods.* (Vol. 1, 85-88). Thousand Oaks: Sage Publications.

Beresford, M. (2008). Doi Moi in review: The challenges of building market socialism in Vietnam. *Journal of Contemporary Asia*, *38*(2), 221-243.

Berg, B.L. (2012). *Qualitative research methods for the social sciences*. (7th ed.). Boston, MA: Pearson Education.

Berg, B.L. (2016). *Qualitative Research Methods for the Social Sciences*. (9th ed.). Boston, MA: Pearson Education.

Beuchelt, T.D., & Virchow, D. (2012). Food sovereignty or the human right to adequate food: which concept serves better as international development policy for global hunger and poverty reduction? *Agriculture and Human Values*, *29*(2), 259-273.

Blaikie, P. (2008). Epilogue: Towards a future for political ecology that works. *Geoforum*, *39*(2), 765-772.

Blaikie, P., & Brookfield, H. (1987). *Land degradation and society*. London: Methuen.

Bonnin, C. (2012). *Markets in the Mountains: Upland Trade-scapes, Trader Livelihoods, and State Development Agendas in Northern Vietnam* (Doctoral dissertation). McGill University: Montréal.

Bonnin, C., & Turner, S. (2011). Livelihood vulnerability and food security among upland ethnic minorities in Northern Vietnam. *Kasarinlan: Philippine Journal of Third World Studies*, *26*(1-2), 324-340.

Bonnin, C., & Turner, S. (2012). At what price rice? Food security, livelihood vulnerability, and state interventions in upland northern Vietnam. *Geoforum*, *43*(1), 95-105.

Bonnin, C., & Turner, S. (2014a). 'A good wife stays home'. Gendered negotiations over state agricultural Programs and food security, upland Vietnam. *Gender, Place and Culture, 21*(10), 1302-1320.

Bonnin, C., & Turner, S. (2014b). Remaking markets in the mountains: integration, trader agency and resistance in upland northern Vietnam. *Journal of Peasant Studies*, *41*(3), 321-342.
Bradshaw, M. (2001). Contracts and member checks in qualitative research in human geography: reason for caution? *Area, 33*, 202-211.
Brown, L., & Durrheim, K. (2009). Different kinds of knowing: Generating qualitative data through mobile interviewing. *Qualitative Inquiry*, *15*(5), 911-930.
Bryant, R.L. (1992). Political ecology: An emerging research agenda in third-world studies. *Political Geography*, *11*(1), 12-36.
Bryant, R.L. (1997). Beyond the impasse: the power of political ecology in Third World environmental research. *Area*, *29*(1), 5-19.
Bryant, R.L. (1998). Power, knowledge and political ecology in the third world: a review. *Progress in Physical Geography*, *22*(1), 79-94.
Bryant, R.L., & Bailey, S. (1997). *Third World Political Ecology*. London: Routledge.
Burgess, R.G. (1982). The unstructured interview as a conversation. *Field Research: A Sourcebook and Field Manual.* London: Taylor & Francis e-Library.
Cameron, J. (2010). Focusing on the Focus Group. In I. Hay (Ed.), *Qualitative Research Methods in Human Geography* (3rd ed.), (pp. 152-172). Canada: Oxford University Press.
Cannon, T., & Müller-Mahn, D. (2010). Vulnerability, resilience and development discourses in context of climate change. *Natural Hazards*, *55*(3), 621-635.
Carney, D., Drinkwater, M., Rusinow, T., Neefjes, K., Wanmali, S., & Singh, N. (1999). *Livelihood approaches compared: A brief comparison of the livelihoods approaches of the UK Department for International Development (DfID), CARE, Oxfam, and the United Nations Development Programme (UNDP).* Department for International Development.
Carpiano, R.M. (2009). Come take a walk with me: The "Go-Along" interview as a novel method for studying the implications of place for health and well-being. *Health & Place*, *15*(1), 263-272.
Castella, J.C., Boissau, S., Thanh, N.H., & Novosad, P. (2006). Impact of forestland allocation on land use in a mountainous province of Vietnam. *Land Use Policy*, *23*(2), 147-160.
Chambers, R., & Conway, G. (1991). *Sustainable rural livelihoods: Practical concepts for the 21st century.* IDS Discussion Paper 296, Brighton: IDS.
Chipeta, M.E., & Joshi, M. (Eds.). (2001). *Financing Sustainable Forest Management.* Report of the International Workshop of Experts. Bogor, Indonesia: Center for International Forestry Research.
Clement, F., & Amezaga, J.M. (2008). Linking reforestation policies with land use change in northern Vietnam: Why local factors matter. *Geoforum*, *39*(1), 265-277.
Clement, F., & Amezaga, J.M. (2009). Afforestation and forestry land allocation in northern Vietnam: analysing the gap between policy intentions and outcomes. *Land Use Policy*, *26*(2), 458-470.
Clement, F., & Amezaga, J.M. (2013). Conceptualising context in institutional reforms of land and natural resource management: the case of Vietnam. *International Journal of the Commons*, *7*(1), 140-163.
Cope, M. (2016). Coding Qualitative Data. In: I. Hay (Ed.), *Qualitative Research Methods in Human Geography* (4th ed.), (pp. 223-33). South Melbourne and New York: Oxford University Press.
Corlin, C. (2004). Hmong and the Land Question in Vietnam. In N. Tapp, J. Michaud, C. Culas, & G. Y. Lee (Eds.), *Hmong/Miao in Asia,* (pp. 295-320). Chiang Mai, Thailand: Silkworm Books.

Creswell, J.W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oakes: Sage Publications.
Creswell, J.W., & Clark, V.L. (2007). *Designing and conducting mixed methods research,* Thousand Oaks, CA: Sage Publications.
Culas, C., & J. Michaud. (2004). A Contribution to the Study of Hmong (Miao) Migrations and History. In N. Tapp, J. Michaud, C. Culas, & G. Y. Lee (Eds.), *Hmong /Miao in Asia,* (pp. 61-96). Chiang Mai, Thailand: Silkworm Books.
Cumming, G.S. (2014). Theoretical frameworks for the analysis of social-ecological systems. In: Sakai, S. & Umetsu, C. (Eds.), *Social-ecological systems in transition,* (pp. 3-26). Tokyo: Springer.
Dang, A.W., Tu, P.Q., & Burke, A. (2016). Conversion of Land Use in Vietnam through a Political Economy Lens. *VNU Journal of Social Sciences and Humanities*, *2*(2).
Das, V., & Poole, D. (2004). State and its margins: Comparative ethnographies. In V. Das & D. Poole (Eds.), *Anthropology in the Margins* (3-33). Santa Fe, NM: SAR Press.
de Boer, H., Newman, M., Poulsen, A.D., Droop, A.J., Fér, T., Hiên, L.T.T., ... & Leong-Škorničková, J. (2018). Convergent morphology in Alpinieae (Zingiberaceae): Recircumscribing Amomum as a monophyletic genus. *Taxon*, *67*(1), 6-36.
De Haan, L., & Zoomers, A. (2005). Exploring the frontier of livelihoods research. *Development and Change*, *36*(1), 27-47.
De Koninck, R. (1999). *Deforestation in Vietnam*. Ottawa, Canada: International Development Research Centre.
De Rouw, A., & Van Oers, C. (1988). Seeds in a rainforest soil and their relation to shifting cultivation in the Ivory Coast. *Weed Research, 28*(5), 373-381.
Delang, C.O. (2005). The market for medicinal plants in Sapa and Hanoi, Vietnam. *Economic Botany, 59*(4), 377-385.
Delisle, S. (2014). "The weather is like the game we play" Hmong and Yao food security and emerging livelihood vulnerabilities in the northern uplands of Vietnam (Unpublished master's thesis). McGill University: Montréal.
Delisle, S., & Turner, S. (2016). 'The weather is like the game we play': Coping and adaptation strategies for extreme weather events among ethnic minority groups in upland northern Vietnam. *Asia Pacific Viewpoint*, *57*(3), 351-364.
Démurger, S., Sachs, J.D., Woo, W.T., Bao, S., Chang, G., & Mellinger, A. (2002). Geography, economic policy, and regional development in China. *Asian Economic Papers*, *1*(1), 146-197.
Department for International Development (DFID). (1999). *Sustainable livelihoods guidance sheets*. 1-4.
Dewalt, K.M. (2014). Participant observation. In Bernard, H.R., & Gravlee, C.C. (Eds.), *Handbook of methods in cultural anthropology,* (pp. 238-276). Lanham, MD: Rowman & Littlefield.
Do, D.S. (1994). *Shifting Cultivation in Vietnam: Its Social, Economic and Environmental Values Relative to Alternative Land Use*. London, UK: International Institute for Environment and Development.
Do, K.C, Nguyen, P.L., & Luu, V.D. (2015). Implementation of Poverty Reduction Policies: An Analysis of National Targeted Program for Poverty Reduction in the Northwest Region of Vietnam. *International Journal of Business and Social Science*, *6*(9), 76-86.

Dowling, R. (2010). Power, Subjectivity, and Ethics in Qualitative Research. In I. Hay (Ed.), *Qualitative Research Methods in Human Geography* (3rd ed.), (pp. 26-39). Canada: Oxford University Press.
Ducourtieux, O., Visonnavong, P, & Rossard, J. (2006). Introducing Cash Crops in Shifting Cultivation Regions: The Experience with Cardamom in Laos. *Agroforestry Systems 66,* 65-76.
Dunn, K. (2010). Interviewing. In I. Hay (Ed.), *Qualitative research methods in human geography* (3rd ed.), (pp. 101-137). Canada: Oxford University Press.
Dyson-Hudson, R., & Smith, E.A. (1978). Human territoriality: an ecological reassessment. *American Anthropologist*, *80*(1), 21-41.
Ellis, F. (1998). Household strategies and rural livelihood diversification. *The Journal of Development Studies, 35*(1), 1-38.
Ellis, F. (2000a). *Rural livelihoods and diversity in developing countries*. Oxford: Oxford University Press.
Ellis, F. (2000b). The determinants of rural livelihood diversification in developing countries. *Journal of Agricultural Economics*, *51*(2), 289-302.
Escobar, A. (1999). After nature: Steps to an antiessentialist political ecology. *Current Anthropology*, *40*(1), 1-30.
Fairhead, J., & Leach, M. (1995). False forest history, complicit social analysis: rethinking some West African environmental narratives. *World Development*, *23*(6), 1023-1035.
Food and Agricultural Organisation of the United Nations (FAO). (1996). *Declaration on world food security.* World Food Summit, FAO, Rome.
FAO. (2004). *The State of Food Insecurity in the World 2015*. Meeting the 2015 international hunger targets: taking stock of uneven progress. Food and Agriculture Organization Publications, Rome.
FAO. (2006). Policy Brief: Food Security. *Issue 2. Agriculture and Development Economics Division (ESA).* Food and Agriculture Organization Publications, Rome.
FAO. (2013). *World Food Summit 13-17 November 1996 Rome Italy: Rome Declaration on World Food Security*. FAO 1996 [cited 2013]. Available from http://www.fao.org/docrep/003/w3613e/w3613e00.htm.
FAO. (2016). *The State of Food Insecurity in the World 2015*. Meeting the 2015 international hunger targets: taking stock of uneven progress. Food and Agriculture Organization Publications, Rome.
FAO. (2017). *Population Undernourished*. Retrieved from http://www.foodsecurityportal.org/api/population-undernourished
Fiskesjö, M. (2010). Participant intoxication and self–other dynamics in the Wa context. *The Asia Pacific Journal of Anthropology*, *11*(2), 111-127.
Forsyth, T. (2001). Critical realism and political ecology. In A. Stainer, A. & G. Lopez, G. (Eds.), *After Postmodernism: Critical Realism?* (146-154). London: Athlone Press.
Forsyth, T. (2003). *Critical Political Ecology: The Politics of Environmental Science.* London, UK: Routledge.
Forsyth, T. (2008). Political ecology and the epistemology of social justice. *Geoforum*, *39*(2), 756-764.
Foucault, M. (1991). *The Foucault effect: Studies in governmentality*. Chicago: University of Chicago Press.
Galletta, A. (2013). *Mastering the semi-structured interview and beyond: From research design to analysis and publication*. New York: NYU Press.

George, K., & Stratford, E. (2010). Oral history and human geography. In I. Hay (Ed.), *Qualitative research methods in human geography* (3rd ed.), (pp. 139-151). Oxford: Oxford University Press.
Gillham, B. (2005). *Research interviewing: The range of techniques*. New York: Open University Press.
Goss, J.D., & Leinbach, T.R. (1996). Focus groups as alternative research practice: experience with transmigrants in Indonesia. *Area, 28*(2), 115-123.
Gottowik, V. (2010). Transnational, translocal, transcultural: Some remarks on the relations between Hindu-Balinese and Ethnic Chinese in Bali. *Sojourn: Journal of Social Issues in Southeast Asia*, *25*(2), 178-212.
Government Statistics Office (GSO). (2009). *The 2009 Vietnam Population and Housing Census: Completed results*. Hanoi, Vietnam: Central Population and Housing Census Steering Committee.
GSO. (2010a). *Result of the Vietnam Household Living Standards Survey 2010, ed.* Hanoi, Vietnam: Central Population and Housing Census Steering Committee.
GSO. (2010b). *Result of the Vietnam Household Living Standards Survey 2010, ed.* Hanoi, Vietnam: Central Population and Housing Census Steering Committee.
GSO. (2011). *Results of the 2011 Rural, Agricultural and Fishery Census.* Hanoi, Vietnam: General Statistics office of Vietnam.
GSO. (2014). *The 2014 Vietnam Population and Housing Census: Completed results.* Hanoi, Vietnam: Central Population and Housing Census Steering Committee.
Hardin, G. (1968). The tragedy of the commons. *Science*, *162*(3859), 1243-1248.
Hare, D. (2008). The origins and influence of land property rights in Vietnam. *Development Policy Review*, *26*(3), 339-363.
Henin, B. (2002). Agrarian change in Vietnam's northern upland region. *Journal of Contemporary Asia*, *32*(1), 3-28.
Hirsch, P., Mellac, M., & Scurrah, N. (2015). The Political Economy of Land Governance in Vietnam. *Mekong Region Land Governance Project*.
Hopkins, P.E. (2007). Thinking critically and creatively about focus groups. *Area*, *39*(4), 528-535.
Hopkins, R.F. (1986). Food security, policy options and the evolution of state responsibility. In F.L. Tullis and W.L. Hollist, (Eds.), *Food, the State and International Political Economy: Dilemmas of Developing Countries*. University of Nebraska Press, Lincoln and London.
Hornborg, A. (2001). *The power of the machine: Global inequalities of economy, technology, and environment*. Lanham, MD: Rowman Altamira.
Huong, T.T.T., Zeller, M., & Hoanh, C.T. (2014). The 'Five Million Hectare Reforestation Program' in Vietnam: An Analysis of its Implementation and Transaction Costs a Case Study in Hoa Binh Province. *Quarterly Journal of International Agriculture*, *53*(4), 341-375.
Hussein, K. (2002). Livelihoods approaches compared. *London, Department for International Development*.
Husson, O., Ha Dinh T., Lienhard, P., Le, Q.D., Seguy, L. (2001). *Agronomic diagnosis and development of direct sowing techniques. Upland rice-based cropping systems in mountainous areas of northern Vietnam. Contribution to the First World Congress on Conservation Agriculture* [PDF document]. Retrieved from http://www.knowledgebank.irri.org/sam/sam/pdf/2001_PosterMadrid_E.pdf
Jackson, P. (1983). Principles and problems of participant observation. *Geografiska Annale. Series B, Human Geography*, *65*(1), 39-46.

Jones, P., Bunce, G., Evans, J., Gibbs, H., & Hein, J.R. (2008). Exploring Space and Place With Walking Interviews. *Journal of Research Practice*, *4*(2), D2.
Kerkvliet, B.J., & Porter, D.J. (1995). Vi*etnam's Rural Transformation.* Boulder, CO: Westview Press & Mui Keng Terrace, Singapore: Institute of Southeast Asian Studies.
Kitchin, R., & Tate, N.J. (2000). *Conducting research in human geography: Theory, methodology, and practice*. Harlow: Pearson Education Limited.
Kitzinger, J. (1994) The Methodology of Focus Groups: The Importance of Interaction Between Research Participants, *Sociology of Health and Illness*, *16*, 103-121.
Kluckhohn, F.R. (1940). The participant-observer technique in small communities. *American Journal of Sociology*, *46*(3), 331-343.
Krueger, R.A., & Casey, M.A. (2000). *Focus Groups. A Practical Guide for Applied Research*. Thousand Oaks: Sage Publications.
Kusenbach, M. (2003). Street phenomenology: The go-along as ethnographic research tool. *Ethnography*, *4*(3), 455-485.
Kyeyune, V. (2015). *Yielding to high yields: hybrid maize and Hmong food security in Hà Giang Province, Northern Vietnam* (Unpublished master's thesis). McGill University: Montréal.
Kyeyune, V., & Turner, S. (2016). Yielding to high yields? Critiquing food security definitions and policy implications for ethnic minority livelihoods in upland Vietnam. *Geoforum*, *71*, 33-43.
Lam, N.T., Patanothai, A., Limpinuntana, V., & Vityakon, P. (2005). Land-use sustainability of composite swiddening in the uplands of Northern Vietnam: nutrient balances of swidden fields during the cropping period and changes of soil nutrients over the swidden cycle. *International Journal of Agricultural Sustainability*, *3*(1), 57-68.
Lào Cai Department of Agriculture and Rural Development (DARD). (2011, August 1). *"Phát triển chăn nuôi bền vững ở Lào Cai" [Sustainable farming development in Lào Cai]*. Retrieved from http://laocai.gov.vn/sites/sonnptnt/Tintucsukien/Trang/20110801101448.aspx
La-Orngplew, W. (2012). *Living under the rubber boom: market integration and agrarian transformations in the Lao uplands* Doctoral Dissertation, Durham University, Durham.
Laurier, E. (2010). Participant Observation. In N. Clifford, S. French, and G. Valentine (Eds.), *Key Methods in Geography* (2nd ed.), (pp.116-130). London: Sage Publications.
LCPC (Lào Cai Province People's Committee) and DARD (Department of Agriculture and Rural Development). (2016). "Báo cáo: Hoạt động điều tra, đánh giá cây trồng thảo quả tỉnh Lào Cai, thuộc dự án "Thúc đẩy ngàng gia vị nhằm hỗ trợ giảm nghèo cho cộng đồng các dân tộc thiểu số tỉnh Lào Cai giai đoạn 2013-2015", do Tổ chức Phát triển Hà Lan tài trợ. [Report: Investigation and estimation of activities for black cardamom in Lào Cai province, in the project "Promote the spice industry to support poverty reduction for ethnic minority communities in Lào Cai province 2013-2015", Sponsored by Netherlands Development Organization]. Lào Cai, Vietnam: LCPC and DARD.
Lee, G. Y., & Tapp, N. (2010). *Culture and Customs of the Hmong*. Santa Barbara, CA: Greenwood Publishing Group.
Lentz, C. (2017). Cultivating Subjects: Opium and rule in post-colonial Vietnam. *Cambridge University Press, 51*(4), 879-918.
Leong-Skornickova, J., Tran, H.D., Newman, M., Lamxay, V., & Bouamanivong, S. (2018). *Lanxangia tsaoko* (amended version of 2012 assessment). *The IUCN Red List of Threatened Species 2018*.

Li, G., Chen, A.J., Chen, X.Y., Li, X.L., Gao, W.W., Branch, Y., & Union, P. (2010). First report of *Amomum villosum* (cardamom) leaf lesion caused by Pyricularia costina in China. *New Disease Reports*, *22*(2), 2.
Lim, T.K. (2013) *Edible Medicinal and Non-Medicinal Plants*. Dordrecht: Springer.
Lim, J.E.A. (2017). *Living with carnivores: Human-carnivore conflict in Lao PDR and amur leopard restoration in South Korea* (Doctoral dissertation). University of Wisconsin, Madison.
Littoy, S., Van Viet, P., Chieu, L.Q., Hue, N.N., & Khanh, L. (1995). Natural Resources Management of H'mong Communities in Tua Chua District, Lai Chau Province. *Consultancy Report, Hanoi*.
Longhurst, R. (2010). Semi-structured Interview and Focus Groups. In N. Clifford, S. French, and G. Valentine (Eds.), *Key Methods in Geography* (2nd ed.), (pp. 103-115). London: Sage Publications.
Lovendal, C.R., & Knowles, M. (2007). Tomorrow's hunger: A framework for analysing vulnerability to food security. In B. Guha-Khasnobis, S.S. Acharya, and B. Davis (Eds.), *Food Security: Indicators, Measurements, and the Impacts of Trade Openness* (62-94). Oxford, UKL Oxford University Press.
MacKenzie, C., Christensen, J., & Turner, S. (2015). Advocating Beyond the Academy: Dilemmas of Communicating Relevant Research Results. *Qualitative Research, 15*(1), 105-121.
MacKenzie, C.A. (2016). Filtered meaning: Appreciating linguistic skill, social position and subjectivity of interpreters in cross-language research. *Qualitative Research, 16*(2), 167-182.
Management Board for Forestry Projects (MBFP). (2015a). *Launching Project on "Sustainable Forest Management and Biodiversity as a Measure to Decrease CO2 emissions (KfW8) Project in northwest Vietnam.* Retrieved online March 25, 2019 at: https://m.daln.gov.vn/en/ac129a763/launching-project-on-quot-sustainable-forest-management-and-biodiversity-as-a-measure-to-decrease-co2-emissions-quot-kfw8-project-in-northwest-vietnam.html. Hanoi: MBFP.
MBFP. (2015b*). Project of Sustainable Forest Management and Biodiversity to Reduce CO2 Emissions - KfW8.* Retrieved online August 9, 2019 at: https://daln.gov.vn/vi/ac191a804/du-an-quan-ly-rung-ben-vung-va-da-dang-sinh-hoc-nham-giam-phat-thai-co2-kfw8.html. Hanoi: MBFP.
Mansvelt, J., & Berg, L.D. (2016). Writing Qualitative Geographies, Constructing Meaningful Geographical Knowledges. In I. Hay (Ed.), *Qualitative Research Methods in Human Geography* (4th ed.), (pp. 394-421). Oxford: Oxford University Press.
Maxwell, S. (1988). *National food security planning: first thoughts from Sudan, paper presented to workshop on food security in the Sudan*. IDS, University of Sussex, Brighton.
Maxwell, S. (1991). To Cure all Hunger: Food Policy and Food Security in Sudan. Intermediate Technology Publications, London. Maxwell, S. (1996). Food Security: A Post-Modern Perspective. *Food Policy, 21*(1), 155-70.
Maxwell, S., & Smith, M. (1992). Household food security: a conceptual review. In S. Maxwell & T. Frankenberger (Eds.), *Houshold food security: Concepts Indicators and Measurements, A Technical Review* (4-72). Rome and New York: IFAD and UNICEF.
McElwee, P. (2004a). You say illegal, I say legal: the relationship between 'illegal' logging and land tenure, poverty, and forest use rights in Vietnam. *Journal of Sustainable Forestry*, *19*(1-3), 97-135.
McElwee, P. (2004b). Becoming Socialist or Becoming Kinh? Government Policies for Ethnic Minorities in the Socialist Republic of Viet Nam. In C. R. Duncan (Ed.), *Civilizing the*

*Margins: Southeast Asian Government Policies for the Development of Minorities,* (pp. 182-213). Ithaca, NY: Cornell University Press.
McElwee, P. (2009). Reforesting "bare hills" in Vietnam: social and environmental consequences of the 5 million hectare reforestation program. *Ambio: A Journal of the Human Environment*, *38*(6), 325-333.
McElwee, P. (2016). *Forests are gold: trees, people, and environmental rule in Vietnam*. Seattle, WA: University of Washington Press.
McKinnon, J. (2011). Hani Agency and Ways of Seeing Environmental Change. In J. Michaud and T. Forsyth (Eds.), *Moving Mountains: Ethnicity and Livelihoods in Highland China, Vietnam, and Laos*, (pp. 123-145). Vancouver: UBC Press.
Meyfroidt, P., & Lambin, E.F. (2008). The causes of the reforestation in Vietnam. *Land Use Policy*, *25*(2), 182-197.
Michaud, J. (2009). Handling mountain minorities in China, Vietnam and Laos: from history to current concerns. *Asian Ethnicity*, *10*(1), 25-49.
Michaud, J. (2013). Comrades of Minority Policy in China, Vietnam, and Laos. In S. Turner (Ed.), *Red stamps and gold stars: Fieldwork dilemmas in upland socialist Asia*, (pp. 22-42). Vancouver: UBC Press.
Michaud, J., & Turner, S. (2000). The Sa Pa marketplace, Lào Cai Province, Vietnam. *Asia Pacific Viewpoint*, *41*(1), 85-100.
Michaud, J., & Turner, S. (2006). Contending visions of a hill-station in Vietnam. *Annals of Tourism Research*, *33*(3), 785-808.
Michaud, J., & Turner, S. (2017). Reaching new heights. State legibility in Sa Pa, a Vietnam hill station. *Annals of Tourism Research*, *66*, 37-48.
Michaud, J., Turner, S., & Roche, Y. (2002). Mapping ethnic diversity in highland Northern Vietnam. *GeoJournal*, *57*(4), 305-323.
Michaud, J., Swain, M.B., & Barkataki-Ruscheweyh, M. (2016). *Historical dictionary of the peoples of the Southeast Asian Massif* (2nd ed.). Lanham, MD: Rowman & Littlefield.
Miller, P., & Rose, N. (2008). *Governing the Present: Administering Economic. Social and Personal Life*. Cambridge: Polity.
Moore, S.F. (2001). Certainties undone: Fifty turbulent years of legal anthropology, 1949-1999. *Journal of the Royal Anthropological Institute*, *7*(1), 95-116.
Morehouse, B.J. (2004) Theoretical Approaches to Border Spaces and Identities. In V. Pavlakovich-Kochi, B.J. Morehouse, & D. Wastl-Walter (Eds.), *Challenged Borderlands: Transcending Political and Cultural Boundaries*, (pp. 19–39). Aldershot: Ashgate.
Neumann, R.P. (2009). Political ecology: theorizing scale. *Progress in Human Geography*, *33*(3), 398-406.
Neumann, R.P. (2010). Political ecology II: theorizing region. *Progress in Human Geography*, *34*(3), 368-374.
Nguyen, P., & Baulch, B. (2007). *A review of ethnic minority programmes and policies in Vietnam.* Ha Noi, Vietnam: VASS and University of Sussex Institute of Development Studies.
Novellino, D. (2000). Indigenous highlands in transition: the case of Ha Giang province in northern Viet Nam. *Land Reform: Land Settlement and Cooperatives Bulletin*, *2*, 94-107.
Ohlsson, B., Sandewall, M., Sandewall, R.K., & Phon, N.H. (2005). Government plans and farmers intentions: A study on forest land use planning in Vietnam. *AMBIO: A Journal of the Human Environment*, *34*(3), 248-255.

Omanakutty, M., & Joy, B. (2007). A study on the retention of fresh flavour of cardamom oil by cold grinding. *Journal of Essential Oil Bearing Plants, 10*(6), 490– 93.
Ortner, S. (2006). *Anthropology and social theory: culture, power, and the acting subject*. Durham, NC: Duke University Press
Oxfam. (2001). *Rice for the poor and trade liberalisation*. Oxfam GB and Oxfam UK.
Payne, P. & Lipton, M. (1994). *How Third World rural households adapt to dietary energy stress: the evidence and the issues. Food policy review 2*. Washington, D.C.: International Food Policy Research Institute (IFPRI).
Peet, R., Robbins, P., & Watts, M. (Eds.). (2010). *Global political ecology.* London: Routledge.
Peluso, N.L., & Vandergeest, P. (2001). Genealogies of the political forest and customary rights in Indonesia, Malaysia, and Thailand. *The Journal of Asian Studies*, *60*(3), 761-812.
Pitchayakan, P. (1982). Inter-relationship of subsistence economy and population problem: a study of the Akha case in Thailand. *SEAPRAP research report; no. 89*.
Poffenberger, M., & Nguyen, H.P. (1998). The national forest sector. In M. Poffenberger (Ed.), *Stewards of Vietnam's Upland Forests,* (pp. 1-15). Berkeley, CA: Asia Forest Network Center for Southeast Asia Studies, University of California, Berkeley.
Policy Research Initiative (PRI). (2003). *International Conference: The opportunity and challenge of diversity: A role for social capital?* Conference Issue Paper, Ottawa, CA.
Raffles, H. (1999). "Local Theory": Nature and the Making of an Amazonian Place. *Cultural Anthropology, 14*(3), 323-360.
Rambo, A.T. (1997). Development trends in Vietnam's northern mountain region. In D. Donovan, A.T. Rambo, J. Fox, L. T. Cuc, & T. D. Vien (Eds.), *Development Trends in Vietnam's Northern Mountain Region: An Overview and Analysis,* (pp. 5-52). Hanoi, Vietnam: National Political Publishing House.
Redman, C.L., Grove, J.M., & Kuby, L.H. (2004). Integrating social science into the long-term ecological research (LTER) network: Social dimensions of ecological change and ecological dimensions of social change. *Ecosystems*, *7*(2), 161-171.
Resurrección, B.P., & Nguyen, H. (2017). A feminist political ecology prism on development and change in Southeast Asia. In *Routledge Handbook of Southeast Asian Development,* (pp. 261-270). London: Routledge.
Ribot, J.C., & Peluso, N.L. (2003). A theory of access. *Rural Sociology*, *68*(2), 153-181.
Rigg, J. (2006). Forests, marketization, livelihoods and the poor in the Lao PDR. *Land Degradation & Development, 17*(2), 123-133.
Riley, M., & Harvey, D. (2007a). Oral histories, farm practice and uncovering meaning in the countryside. *Social & Cultural Geography*, *8*(3), 391-415.
Riley, M., & Harvey, D. (2007b). Talking geography: on oral history and the practice of geography. *Social & Cultural Geography, 8(*3), 345-351.
Robbins, P. (2012). *Political ecology: A critical introduction* (2nd ed.). Hoboken, N.J.: John Wiley & Sons.
Roche, Y., & Michaud, J. (2000). Mapping ethnic groups in Lào Cai Province, Vietnam. *Asia Pacific Viewpoint, 41*(1), 101-110.
Rocheleau, D., & Edmunds, D. (1997). Women, men and trees: Gender, power and property in forest and agrarian landscapes. *World Development*, *25*(8), 1351-1371.
Rocheleau, D., Thomas-Slayter, B., & Wangari, E. (Eds.). (2013). *Feminist political ecology: Global issues and local experience*. London, UK: Routledge.

Roder, W. (2000). *Slash-and-Burn Rice Systems in the Hills of Northern Lao PDR: Description, Challenges, and Opportunities*. Los Banos, Philippines: International Rice Research Institute.
Rose, G. (1997). Situating Knowledges: positionality, reflexivity and other tactics. *Progress in Human Geography, 21*, 305-320.
Rousseau, J.F., & Turner, S. (2018). Not at All Costs: Frontier Modernization Schemes and Ethnic Minority Livelihood Debates in the Sino-Vietnamese Borderlands. *Verge: Studies in Global Asias*, *4*(1), 133-159.
Rousseau, J., Turner, S., & Xu, Y. (2019). Cardamom casualties: extreme weather events and ethnic minority livelihood vulnerability In the Sino-Vietnamese borderlands. *Climate, 7*(0), 1-15.
Saint-Macary, C., Keil, A., Zeller, M., Heidhues, F., & Dung, P.T.M. (2010). Land titling policy and soil conservation in the northern uplands of Vietnam. *Land Use Policy*, *27*(2), 617-627.
Saldaña, J. (2009). *The Coding Manual for Qualitative Researchers.* London: SAGE.
Saldaña, J. (2016). An introduction to codes and coding. *The Coding Manual for Qualitative Researchers,* (pp. 1-40). London: Sage Publications.
Salemink, O. (2000). Sedentarization and Selective Agriculture. In J. Michaud (Ed.), *Turbulent Times and Enduring Peoples: Mountain Minorities in the Southeast Asian Massif*. Surrey, UK: Curzon Press.
Schmidhuber, J., & Tubiello, F.N. (2007). Global food security under climate change. *Proceedings of the National Academy of Sciences*, *104*(50), 19703-19708.
Schoenberger, L., & Turner, S. (2008). Negotiating remote borderland access: small-scale trade on the Vietnam–China border. *Development and Change*, *39*(4), 667-696.
Scoones, I. (1998). *Sustainable rural livelihoods: a framework for analysis*. IDS working paper, 72. Brighton: IDS.
Scoones, I. (2009). Livelihoods perspectives and rural development. *Journal of Peasant Studies*, *36*(1), 171-196.
Scott, J.C. (1998). *Seeing like a state: How certain schemes to improve the human condition have failed*. New Haven, CT: Yale University Press.
Scott, J.C. (2009). *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia*. New Haven, CT: Yale University Press.
Sen, A. (1981). *Poverty and Famines: an essay on entitlement and deprivation*. Oxford, UK: Clarendon Press.
Sikor, T. (2001). The allocation of forestry land in Vietnam: did it cause the expansion of forests in the northwest? *Forest Policy and Economics*, *2*(1), 1-11.
Sikor, T., & Truong, D.M. (2002). Agricultural policy and land use changes in a Black Thai commune of northern Vietnam, 1952–1997. *Mountain Research and Development*, *22*(3), 248-256.
Sikor, T., & Tuong Vi, P.T. (2005). The dynamics of commoditization in a Vietnamese uplands village, 1980–2000. *Journal of Agrarian Change*, *5*(3), 405-428.
Sikor, T., Tuyen, N.P., Sowerwine, J., & Romm, J. (Eds.). (2011). *Upland Transformations in Vietnam*. Singapore: NUS Press Pte Ltd.
Smithson, J. (2000). Using and analysing focus groups: limitations and possibilities. *International journal of social research methodology*, *3*(2), 103-119.
Solberg, C.A. (2018). *Exploring livelihood change in a rural upland Hmong village in Yunnan, China* (Unpublished master's thesis). McGill University: Montréal.

Sonnino, R., Moragues Faus, A., & Maggio, A. (2014). Sustainable food security: an emerging research and policy agenda. *International journal of sociology of agriculture and food*, *21*(1), 173-188.

Sowerwine, J.C. (2004a). *The political ecology of Yao (Dzao) landscape transformations: Territory, gender and livelihood politics in highland Vietnam* (Doctoral dissertation). University of California, Berkeley.

Sowerwine, J.C. (2004b). Territorialisation and the politics of highland landscapes in Vietnam: negotiating property relations in policy, meaning and practice. *Conservation and Society*, *2*(1), 97-136.

Sowerwine, J.C. (2011). The politics of highland landscapes in Vietnamese statecraft: (Re)framing the dominant environmental imaginary. In T. Sikor, N. P. Tuyen, J. Sowerwine, and J. Romm (Eds.), *Upland transformations in Vietnam,* (pp. 51-72). Singapore: NUS Press Pte Ltd.

Sowerwine, J.C. (2013). Socialist Rules and Postwar Politics: Reflections on Nationality and Fieldwork among the Yao in Northern Vietnam. In S. Turner (Ed.), *Red stamps and gold stars: Fieldwork dilemmas in upland socialist Asia*, (pp. 100-120). Vancouver: UBC Press.

Sturgeon, J.C. (2005). *Border Landscapes: The Politics of Akha Land Use in China and Thailand*. Seattle: University of Washington Press.

Sturgeon, J.C. (2010). Governing minorities and development in Xishuangbanna, China: Akha and Dai rubber farmers as entrepreneurs. *Geoforum*, *41*(2), 318-328.

Tan-Mullins, M. (2007). The state and its agencies in coastal resources management: the political ecology of fisheries management in Pattani, southern Thailand. *Singapore Journal of Tropical Geography*, *28*(3), 348-361.

Tapp, N. (1989). Hmong Religion. *Asian Folklore Studies, 48*(1), 59-94.

Tapp, N. (2002). Cultural accommodations in Southwest China: The "Han Miao" and problems in the ethnography of the Hmong. *Asian Folklore Studies*, *61*(1), 77-104.

Tinh, V.X. (2002). Looking for food: The difficult journey of the Hmong in Vietnam. *Land Tenure Center, Wisconsin-Madison University, USA*.

Tooker, D.E. (2012). *Space and the production of cultural difference among the Akha prior to globalization: Channeling the flow of life*. Amsterdam: Amsterdam University Press.

Trincsi, K., Pham, H., & Turner, S. (2014) Mapping mountain diversity: Ethnic minorities and land use land cover change in Vietnam's borderlands. *Land Use Policy*, *41*, 484-497.

Tugault-Lafleur, C. (2007). *Diversifying livelihoods: Hmong use and trade of forest products in northern Vietnam* (Unpublished master's thesis). McGill University: Montréal.

Tugault-Lafleur, C., & Turner, S. (2009). The price of spice: Ethnic minority livelihoods and cardamom commodity chains in upland northern Vietnam. *Singapore Journal of Tropical Geography, 30*, 388-403.

Turner, S. (2007). Trading old textiles: The selective diversification of highland livelihoods in Northern Vietnam. *Human Organization, 66*(4), 389-404.

Turner, S. (2010). Borderlands and border narratives: a longitudinal study of challenges and opportunities for local traders shaped by the Sino-Vietnamese border. *Journal of Global History, 5*(2), 265-287.

Turner, S. (2012a). "Forever Hmong": Ethnic minority livelihoods and agrarian transition in upland northern Vietnam. *The Professional Geographer*, *64*(4), 540-553.

Turner, S. (2012b). Making a living the Hmong way: An actor-oriented livelihoods approach to everyday politics and resistance in upland Vietnam. *Annals of the Association of American Geographers*, *102*(2), 403-422.

Turner, S. (2017). Livelihoods. In D. Richardson, N. Castree, M.F. Goodchild, A. Kobayashi, W. Liu, & R.A. Marston (Eds.), *The International Encyclopedia of Geography.*
Turner, S. (2018). A fortuitous frontier opportunity: Cardamom livelihoods in the Sino Vietnamese borderlands. In D. S. Yü & J. Michaud (Eds.), *Trans-Himalayan Borderlands: Livelihoods, Territorialities, Modernities*. Amsterdam, Netherlands: Amsterdam University Press.
Turner, S., & Michaud, J. (2008). Imaginative and adaptive economic strategies for Hmong livelihoods in Lào Cai Province, northern Vietnam. *Journal of Vietnamese Studies*, *3*(3), 158-190.
Turner, S., Monnerat, M., & Slack, P. (2019). Spice Trade 3.0: Exploring the Modern Spice Trade in Vietnam's Northern Frontier. *Gastronomica, 19*(4), 99-107.
Turner, S., & Pham, T.T.H. (2015). "Nothing is like it was before": The dynamics between land-use and land-cover, and livelihood strategies in the northern Vietnam borderlands. *Land*, *4*(4), 1030-1059.
Turner, S., Bonnin, C., & Michaud, J. (2015). *Frontier livelihoods: Hmong in the Sino-Vietnamese borderlands.* Seattle, WA: University of Washington Press.
United Nations Vietnam. 2008. "Food Prices, Vulnerability, and Food Security in Vietnam: A UN Perspective." Hanoi: UN. Accessed January 15, 2018. www.un.org.vn/images/stories/news/unvn_food_security_paper_eng.doc.
United States Agency of International Development (USAID). (2011). *Livelihood and Conceptual Framework*. From http://theliftproject.org/wp-content/uploads/2013/03/Livelihood-and-Food-Security-Conceptual-Framework.pdf. Viewed March 12, 2018.
Vaccaro, I. (2010). Theorizing impending peripheries: Postindustrial landscapes at the edge of hyper- modernity's collapse. *Journal of International and Global Studies*, *1*(2), 22-44.
Vaccaro, I., Beltran, O., & Paquet, P. A. (2013). Political ecology and conservation policies: some theoretical genealogies. *Journal of Political Ecology, 20*(1), 255-272.
Vaccaro, I., Dawson, A.C., & Zanotti, L. (2014). Introduction. In A.C. Dawson, L. Zanotti, & I. Vaccaro (Eds.), *Negotiating territoriality: Spatial dialogues between state and tradition,* (pp. 1-19). New York, NY: Routledge.
Vandergeest, P., & Peluso, N.L. (1995). Territoralization and state power in Thailand. *Theory and Society*, *24*, 385-426.
Vayda, A., & Walters, B. (1999). Against political ecology. *Human Ecology*, *27*(1), 167-179.
Via Campesina. (1996). The right to produce and access to land. *Roma: Via Campesina*.
Via Campesina. (2018). *Who are we?* Retrieved Mar 25, 2018, from https://viacampesina.org/en/international-peasants-voice/
Vien, T.D., Leisz, S.J., Lam, N.T., & Rambo, A.T. (2006). Using traditional swidden agriculture to enhance rural livelihoods in Vietnam's uplands. *Mountain Research and Development*, *26*(3), 192-196.
VietNam News. (2019, March 18). As many as 124 children test positive for pork tapeworms. Last accessed 8 August 2019. *VietNam News,* Retrieved from http://vietnamnews.vn/society/507248/as-many-as-124-children-test-positive-for-pork-tapeworms.html#XFwXdKkWtcUx0dyB.99
Wang, C., & Burris, M.A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessments. *Health, Education, & Behavior, 24*(3), 369-387.
Windfuhr, M., & Jonsén, J. (2005). *Food sovereignty*. *Towards democracy in localized food systems.* Chippenham, UK: ITDG Publishing.
Wolf, E. (1972). Ownership and political ecology. *Anthropological Quarterly*, *45*(3), 201-205.

Woolcock, M. (2001). The place of social capital in understanding social and economic outcomes. *Canadian Journal of Policy Research*, *2*(1), 11-17.
Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *World Bank Research Observer, 15*(2).
World Bank. (2010). *The Social Dimensions of Adaptation to Climate Change in Vietnam*. Economics of Adaptation to Climate Change series. Washington: International Bank for Reconstruction, World Bank.
World Bank. (1998). *Vietnam: Advancing Rural Development - From Vision To Action*. World Bank Vietnam.
World Bank. (2000). World Development Report 2000: A Synthesis of Participatory Poverty Assessments from Four Sites in Viet Nam: Lao Cai, Ha Tinh, Tra Vinh & Ho Chi Minh City.
World Bank. (2007). Vietnam Development Report 2008: Social Protection. Joint Donor Report to the Vietnam Consultative Group Meeting, December 6 - 7, Hanoi, Vietnam.
World Bank. (2009). Country social analysis: Ethnicity and development in Vietnam. Washington, DC: World Bank.
World Bank. (2017). Vietnam. Overview. Retrieved December 5, 2017, from http://www.worldbank.org/en/country/vietnam/overview.
Xu Zaifu. (1991). 'From Shifting Cultivation to Agroforestry in the Mountainous Areas of Yunnan Tropics.' In Zhu Zhaohua, C. Mantang, Wang Shji, and Jiang Youxu (Eds.), *Agroforestry Systems in China*, (pp. 190-194). Beijing: Chinese Academy of Forestry.
Yeh, E.T. (2005). Green governmentality and pastoralism in western China: 'Converting pastures to grasslands'. *Nomadic Peoples*, *9*(1-2), 9-30.
Zelditch, M. (1962). Some Methodological Problems of Field Studies. *American Journal of Sociology, 67*(5), 566-576.
Zhang, J., Pham, T. T. H., Kalacska, M., & Turner, S. (2014). Using Landsat Thematic Mapper records to map land cover change and the impacts of reforestation programmes in the borderlands of southeast Yunnan, China: 1990-2010. *International Journal of Applied Earth Observations and Geoinformation, 31*, 25-36.