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Master's Thesis

**The cultural geography of economic inequality:
A mixed-methods study of livelihood and landscape
transitions in Luang Namtha Province, Lao PDR**

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Supervisor: Professor Tsuneaki Yoshida

Advisor: Professor Jin Sato

086826 Caroline Tien

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Acronyms

DAFO District Agriculture and Forestry Office

GTZ Gesellschaft für Technische Zusammenarbeit

LFA Land and Forest Allocation

LPRP Lao People's Revolutionary Party

MAF Ministry of Agriculture and Forestry

NAFRI National Agriculture and Forestry Research Institute

PAFO Province Agriculture and Forestry Office

RDMA Rural Development in Mountainous Areas

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For PL

*The cultural geography of economic inequality: A mixed-methods study of livelihood and landscape transitions
in Luang Namtha Province, Lao PDR*

Abstract

Background

As cash crop investments increase through the previously subsistence-level landscape of Lao People's Democratic Republic (PDR), farmers are forced to adapt by developing new farming practices and methods of food procurement. This thesis focuses on the current changes occurring in Luang Namtha, an agrarian northern province of Lao PDR and a region where ethnic minority groups often represent the largest populations of the poor. The promotion of foreign investments and increased cash crop cultivation are some of the ongoing approaches to bolster rural incomes. However, as can be seen in much of the market transition literature, previously hidden dimensions of poverty and inequality often emerge as a result of the transformation.

In the context of development studies, much focus has been placed on the inequalities between individuals or households across a broad scale. However, the study of inequalities between different groups is also crucial in understanding the determinants of poverty. Group affiliations and cultural identities have been shown to have a strong influence on the well-being of individuals and subsequently on their economic outcomes. Further, because different groups embody different ideologies, broad applications of development agendas may heighten existing income differences. Hence, it is potentially meaningful to examine what spatial variations emerge as a result of cultural processes and use this as a point with which to analyze income distributions among groups. The synthesis of these dimensions can be analyzed through the field of cultural geography, a field which explores how cultural outcomes vary (or remain constant) spatially. Earlier literature has focused on individual or household based determinants of poverty across a broad scale as well as group dynamics in an urban environment. However, the influence of ethnic group affiliations on spatial variations in a rural landscape and the subsequent economic outcomes that arise from these divergences have not been previously researched.

Objectives

This thesis seeks to explore the correlations between village-level geography and culture and how these variations influence income distribution through a cultural geography approach. Given the speed at which cash crops are diffusing throughout northern Laos, the central question that

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frames my research is: How does culture influence the geographic distribution of villagers' incomes from cash crops?

Methodology

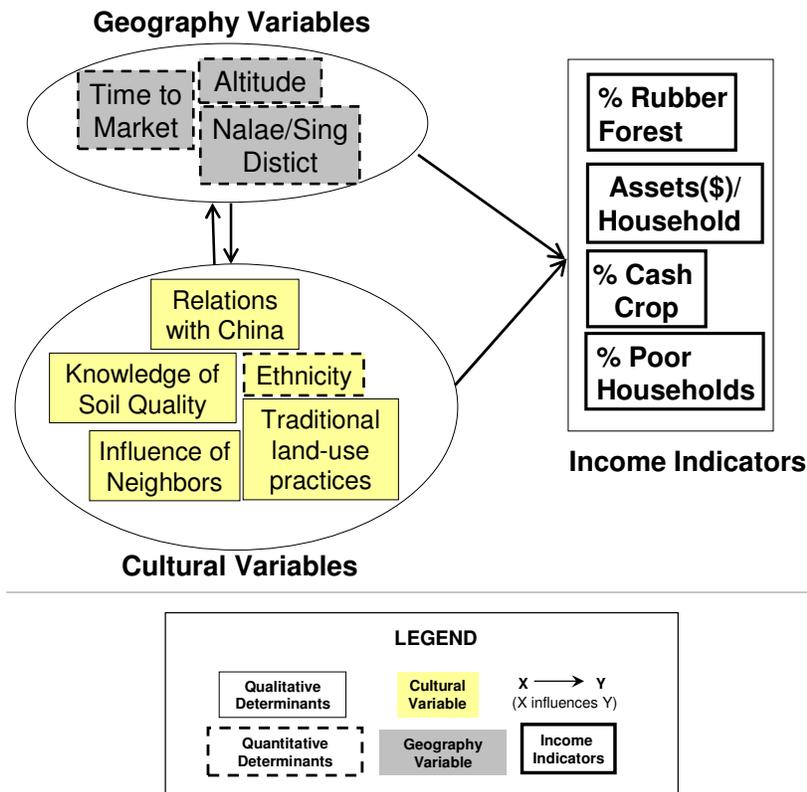
This study is based on a four week field visit to the Luang Namtha Province in November 2009. To assess the relations between geography, culture and income, I triangulated using data gathered from:

- *Ethnographical fieldwork*
The in situ research centered on semi-structured interviews with three main actors: Lao farmers, Lao government officials, and Chinese rubber companies.
- *Quantitative secondary data*
Statistical analysis was performed on secondary village-level raw data gathered from 127 villages to examine relations between culture, geography, and income. For the purpose of this study, the self-classified ethno-linguistic family that a village belonged to was used as the cultural indicator. Spatial indicators included: Time of Access to Market; Altitude; and District (Sing or Nalae). Income was interpreted as a measure of potential and real welfare and is determined based on % Rubber/Production Forest Area (potential); % Cash Crop/Total Land Area (potential); Assets (\$)/ Household (real); and % Households below Poverty line¹ (real).

Qualitative interview data was organized through the thematic clustering of the transcripts. The quantitative segment of the analysis was then aggregated with the themes that emerged from the interview analysis in order to substantiate the outcomes. A further analysis was conducted to assess the individual spatial differences between real income and potential income with regard to the cultural geography indicators.

¹ The poverty line was based on factors determined by the District Planning and Investment Office.

Results



In this study, I illustrate that many generations of the low-input practice of shifting cultivation have resulted in relatively undisturbed soil that is consequently very fertile. Along with policy and market reforms intended to conserve the nation's natural resources while at the same time improve local economies, the fertile environment has culminated in the recent influx of foreign investment in cash crops. From this point of departure, the findings indicate that there is an income distribution gap along the group-level that has arisen as a result of the spatial dynamics of culture. These cultural factors include the social influence of neighbors, relationships with China, and land-use traditions, all of which stem from the geographic variations of culture shown in the figure above. In turn, cultural factors influence geographic variables by affecting the locational decisions of village settlements and the subsequent changes to soil quality. Further, in an examination of cultural geography variables' influence on decoupled potential and real incomes, statistical analysis revealed that villages that require less time to access a market have higher potential incomes than real incomes. This can be attributed to the fact that companies are more likely to invest in locations that have convenient market access. Further, upland villages also tended to have slightly higher potential incomes than real incomes. This can be explained by

the fact that while highland regions have traditionally been associated with swidden agriculture, they are increasingly being converted to lands for permanent agriculture.

Conclusions

Policies that view determinants of poverty as solely quantifiable dimensions do not fully capture the interdependencies between the different cultural factors that shape villages' responses to the changing physical and economic environment. Hence, along with the incorporation of traditional quantitative frameworks, policies should identify underlying cultural identities and group values. Support measures that take these nuances into consideration can potentially reduce socioeconomic group inequalities while maintaining their values and traditions. Such strategies may include improved access to information and agricultural endowments that are better suited to a location and custom.

While this study was limited in its scope and data availability, it has pointed to some of the complex interrelations between culture, geography, and income in Luang Namtha Province. Cultural geography has strong explanatory potential regarding how agricultural practices with deep historical origins are linked with the spatial variations of the present. However, the study does not aim to exclude other approaches and variables in issues of culture and income inequality. Rather, it presupposes that examining a situation through different social and geographical contexts will help provide yet another angle with which to understand issues related to poverty and the environment.

Further Research

Based on this thesis, future studies can examine how potential incomes are converted into real incomes over a period of time. Rubber prices may be highly variable in the future, as the demand stems from one primary origin (i.e. China). Hence, it would be optimal to perform a time-series analysis to further explore this transformation. Additionally, in the future, rubber plantations will require much labor to tap and process the rubber. Because Laos' population is relatively low, the labor will be imported from elsewhere. This imported labor may result in cultural conflicts and further income disparities. Hence, it will be critical to assess the outcomes that arise from this transition.

Chapter 1 – Introduction

1.1. Background: Agricultural Transition and Economic Inequality

Agricultural transitions refer to changes in land-use and the types of crops that are farmed. These transitions can be relatively slow processes that emerge as the result of changing environments, climates, and agricultural technology; at other times they may occur more rapidly, stemming from policy reforms and the market incentives of increased agricultural production. Currently, most communist states have undertaken various strategies in an attempt to obtain a market-based agrarian economy. Because these states are inherently influenced by their long ties with state socialism, the strategies taken often include reversals of fiscal and land centralization (Nee 1996).

As a result of the reforms, farmers must find ways to adjust to new farming practices and methods of food production. To mitigate the adaptation, policy makers should be aware of the broad spectrum of potential inequality sources. Thus, this thesis focuses on the current transition occurring in Lao People's Democratic Republic (PDR), a highly multi-ethnic nation with a strong dependence on its natural resources. In this country, ethnic minority groups often represent the largest populations of the poor. The promotion of foreign investments and increased cash crop cultivation are some of the many ongoing approaches to bolster rural incomes and promote agricultural growth, particularly in the agrarian northern landscape. However, as can be seen in much of the market transition literature, previously hidden dimensions of poverty and inequality often emerge as a result of the transformation (Sikor 2001).

1.2. Thesis Objectives and Research Question

This thesis seeks to apply a cultural geography analysis to the study of economic inequality in Lao PDR. In particular, its objective is to identify the unquantifiable cultural dimensions related to the spatial variation of village-level welfare. Given the speed at which cash crops are diffusing throughout northern Laos, the central question that frames my research is:

- *How does culture influence the geographic distribution of villagers' incomes from cash crops?*

1.3. Research Contributions

Analyzing regional and spatial variations in economic distribution is important from both an academic and policy standpoint. From an academic point of view, this thesis contributes to existing studies on poverty by highlighting the importance of examining economic inequalities from a group perspective, rather than examining only individual measures of poverty. However, as the field of cultural geography is relatively new, critics claim that it lacks a methodological framework and boundaries with which to conduct rigorous research, particularly because the cultural variables are inherently subjective (Jackson 2002). Based on an assessment of the validity, reliability, and reflexivity of different research practices in the field of economic geography by Yeung (2003), I propose a mixed-methods approach that combines secondary quantitative data with in situ research that helps unravel the surface economic-determinant relations and unearth the underlying cultural and geographical interactions.

From a policy standpoint, I argue that strategies to address uneven economic distribution should be flexible in order to accommodate the variations in cultural norms and identities. Different policies might be created based on the identified cultural contributors to spatial economic inequality. Based on the subsequent analysis, this study provides policy recommendations for confronting the imbalances stemming from cultural geography in agricultural development at a time when the Lao agricultural sector is transitioning rapidly from subsistence to market economy.

1.4. Introducing Lao PDR as a Case Study

To examine the way that ethnic traditions are embedded in the physical landscape of a place, it was central to choose a region with a measurable and relatively distinct set of ethnic identities, recognized at both the national and local levels. Hence, Lao PDR was chosen as an optimal location for the study because of its diverse demographic consisting of a long history of polycultural agricultural practices. Furthermore, due to governmental efforts to eradicate poverty and increase GDP, there has been a rapid increase in foreign agricultural investments, investments which have particularly manifested themselves through the diffusion of rubber plantations in the northern provinces. These transformations make the nation potentially rich in information regarding the factors that influence the locational and cultural factors behind economic activity.

Lao PDR is currently ruled by a one-party socialist government headed by the Lao People's Revolutionary Party. As a land-locked nation, its economy is highly dependent on agricultural production, with 80% of the population engaged in subsistence agriculture. However, it has become increasingly involved in trade with many of the countries along its borders, namely China, Thailand, and Vietnam. These expanding markets are allowing for a greater diversity of economic activities within Laos, but are also likely to result in disparate increases in inequality.

What is known as modern day Lao PDR emerged during the post-Cold War period, a period of relative peace in the region. This phase marked a general trend of regional cooperation among the ASEAN-member nations, of which Lao PDR became a member in 1986. Also during this period came the initiation of the New Economic Mechanism (NEM) - a series of reforms intended to promote industry privatization, market pricing, and the removal of trade barriers. With the NEM, Lao PDR began witnessing increased foreign investments, particularly in rural regions of the country.

1.5. Thesis Structure

The material discussed in this chapter has outlined the foundation of my study. In response to the issues presented previously, the remainder of this thesis will explain my approach to the study of economic variation and determinants of poverty. Chapter 2 presents a brief discussion of the available literature on cultural geography; the study's methodology is delineated in Chapter 3, as well as the context of the study region; Chapter 4 reviews historical land-use practices and policy reforms in relation to cash crop investments in northern Lao PDR; the accumulated data is presented and analyzed in Chapter 5, and Chapter 6 concludes the paper with a discussion of implications for the understanding of emergent economic inequalities from agricultural transformations.

Chapter 2 - Literature Review and Research Framework

2.1. Cultural Geography

2.1.1. Background

"Economic geography" has been an often invoked concept over the past half century in its endeavor to overlap the studies of regional growth with those of societies, culture and politics (Scott 2004). From the time it initially emerged as a common construct, its focus has transformed repeatedly, to reflect the contemporary trends. A "cultural turn" in the field of economic geography emerged within the last two decades, as a result of the broadening realization of the intertwined relationship between culture and economics (James 2006). The aim of this new cultural economic geography is not to dismiss the economic concepts advanced thus far, but rather, to reveal the ways in which socio-cultural forces lead to and/or complementarily emerge from economic growth. Cultural geography is the study of how cultural outcomes vary (or remain constant) spatially. This perspective is significant when examining economic inequalities across groups. While there are many ways with which to categorize a group, such as by nation, race, religion, language, gender, among others, this research views groups from the perspective of ethno-linguistic self-classification.

2.1.2. Dominant Works on Cultural Geography

Author	Key Themes
	Development/Theorizing of Cultural Geography
Barnes 2001	<i>Historical development of cultural geography</i>
Thrift 2002	<i>Evolution of geography (physical, human, political, cultural)</i>
	Material Culture
Amin 2001	<i>Implications of globalization on spaces/places</i>
Jackson 2002	<i>Spatial variations of consumer culture</i>
Schoenberger 1997	<i>Corporate cultures, proximity, production</i>
	Ethnic Culture
Amin 2002	<i>Multiethnic urban neighborhoods and conflict/tolerance</i>
Yeung 2003	<i>Situating Asia in cultural/economic geography</i>
	Methodologies
James 2006	<i>Rigor and relevance in methodologies for cultural geography</i>

2.2. The Theory of Possibilism

As the study of human and cultural geographies evolved, it became increasingly apparent that humans, economic outcomes, and physical geography were inextricably linked. Refuting past theories of environmental determinism, scholars promoted the idea of human agency and the interactions between humans and their environment. This is the concept behind possibilism. Possibilism is based on the idea that a particular environment impose limits on human behavior in that location (i.e. agricultural activities on tundra), but that it does not entirely control human behavior; rather, humans can choose how they respond and adapt to the conditions (Gregory 1981). The consequent behavior in turn changes the physical and biological surroundings, which, again, alters the range of activities suited for the environment. In this theory, man and the environment are both passive and active agents in the culture-environment complex. This thesis contributes to this theory by arguing that these human behaviors can be highly influenced by the dynamics of group identity.

2.3. Why apply Cultural Geography to the Study of Economic Inequality?

In the context of development studies, much focus has been placed on the inequalities between individuals or households across a broad scale. For instance, the Millennium Development Goals refers to world-scale population targets that view each individual as a point of measure. However, the study of inequalities between different groups is also crucial in understanding the determinants of poverty. Group affiliations and cultural identities have been shown to have a strong influence on the well-being of individuals and subsequently on their economic outcomes (Coleman 1988). Further, because different groups embody different ideologies, broad applications of development agendas may serve to heighten existing economic differences. Hence, it is potentially meaningful to look at what groups emerge as a result of cultural processes and use this as a point with which to analyze economic distributions among the groups.

Much work has been done analyzing the determinants of poverty in the region through studies such as those conducted by Kakwani et al. (2002) and Warr (2005). However, there are few that examine the issues of poverty from the group perspective. Further, while studies such as Anderson (2005) have thoroughly assessed aggregate sets of data to examine poverty trends in Lao PDR, most have analyzed the issue through econometric dimensions. However, when inequalities are related to group determinants, it can become difficult to alter the course of the cultural forces. Individuals and households can become mired by the influence of group norms

and dynamics. Hence, inequalities stemming from cultural group forces can be attributed to persistent patterns of poverty.

Earlier literature has focused on individual or household based determinants of poverty across a broad scale as well as group dynamics in an urban environment. However, the influence of ethnic group affiliations on spatial variations in a rural landscape and the subsequent economic outcomes that arise from these divergences have not been previously researched.

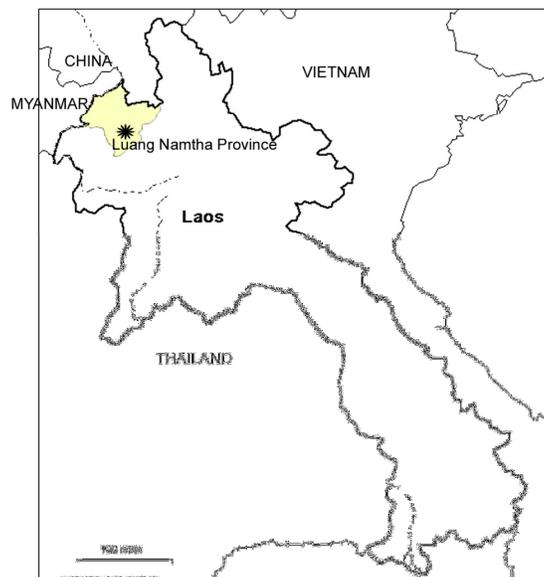
Chapter 3 - Research Design

3.1. Study Region - Geographic, Demographic, and Economic Context

3.1.1. Lao PDR Overview

Lao PDR is a land-locked country in Southeast Asia with a total area of 236,800 square kilometers. It is bordered by China and Myanmar to the north and northwest, Thailand to the west, Cambodia to the south, and Vietnam to the east. It has a high abundance of forested mountains, with 75% of the nation's total land area covered in mountains or plateau, and some low plain regions, though most lowlands are confined to the areas along the Mekong River and the Vientiane valley. Administratively, it is headed by the Lao People's Revolutionary Party (LPRP) which rules over the country's 17 provinces. Each of these provinces is further divided into districts. Lao PDR has the lowest population density in Asia, with an overall average of 21 people per square kilometer and 149 people per square kilometer in Vientiane Capital (Lao PDR, 2010)

Figure 1 Map of Lao PDR



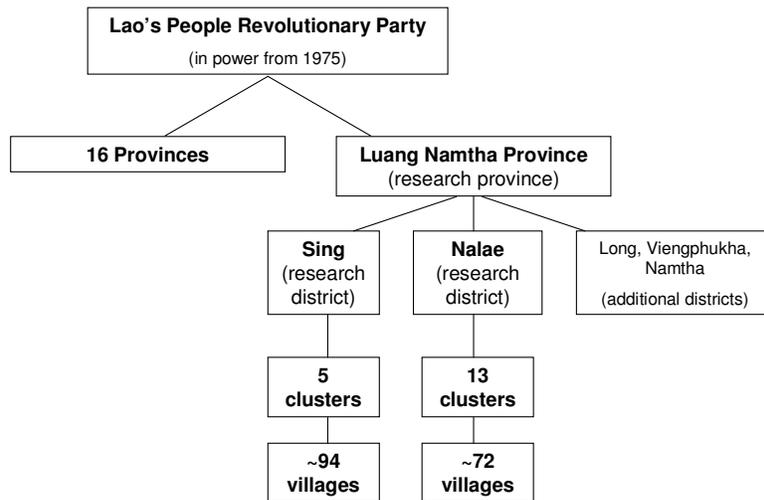
Source: <http://www.enchantedlearning.com/asia/laos/outlinemap/map.GIF>

3.1.2. Luang Namtha Province: Geographic Context

Luang Namtha Province, where this study takes place, is located in the north of Lao PDR, surrounded by Bokeo Province (south-west), Myanmar (north-west), China (north-east) and Oudomxai Province (south-east). It consists of 5 districts: Nalae, Sing, Long, Viengphukha, and Namtha. Due in part to the region's close proximity to Yunnan, China, there has been much Chinese investment within the past two decades.

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Figure 2 Lao PDR Administrative Context



Luang Namtha was chosen as the research province for several reasons: 1) because of its proximity to the Chinese border, the development of rubber as a new agricultural avenue has been largely concentrated in this province 2) due to its mountainous terrain and relative distance from the capital city of Vientiane, many of its ethnic groups still or, until recently, had been practicing traditional forms of agriculture 3) Deutsche Gesellschaft für Technische Zusammenarbeit – Rural Development in Mountainous Areas (GTZ-RDMA), which hosted my research, is based in Luang Namtha and has many connections in the province.

3.1.3. Luang Namtha Province: Economic Context

Over the past decade, the northern Laos economic landscape has been changing rapidly, coinciding with large-scale transitions occurring in its physical landscape. Numerous policy reforms intended to eliminate shifting cultivation and bolster rural livelihoods have led to the establishment of new farming systems that center around cash crop production. Arising from this shift, the production of more permanent forms of agriculture such as rain fed and irrigated rice has increased in Luang Namtha over the past decade while the production of the upland rice commonly associated with swidden cultivation has decreased. In addition to increased rice production, the production of crops such as maize, sugar cane, and watermelon has also increased, much of which is exported to neighboring countries. Another crop whose cultivation has been significantly expanding over recent years is rubber, largely due to market forces as well as the Lao government’s promotional measures, which will be discussed further in Chapter 5.

Rubber development in Lao PDR has been a major source of contention both within the country and in the international area due to the vast extent of plantation areas, its environmental repercussions, and its transboundary political nature.

3.1.4. Luang Namtha Province: Demographic Context

Lao PDR is a highly multi-ethnic country with officially 49 self-identified ethnic groups, though up to 230 groups have been identified in other studies (ADB 2001). The government classifies the groups under three categories, based on the altitudinal environments in which they traditionally live: *Lao Loum* (lowlanders), *Lao Theung* (midlanders), and *Lao Soung* (highlanders). In Luang Namtha, the predominant groups are the Akha, Hmong, Kamet, Lamet, Leu, Tai, and Yao. They are categorized as follows:

Table 1 Luang Namtha Ethnic Composition

Ethnic Group	Lao PDR Classification
Akha	Lao Soung
Hmong	Lao Soung
Khammu	Lao Theung
Lamet	Lao Theung
Leu	Lao Loum
Tai	Lao Loum
Yao	Lao Soung

Source: Lao National Front for Construction, 2005.

3.2. Methodology

This study is based on a four week field visit to the Luang Namtha Province in November 2009. I was hosted by the GTZ-RDMA office in Luang Namtha with the permission of the National University of Laos. To assess a potential correlation between geography, culture and economics, I triangulated using data from:

- *quantitative secondary data*

Raw data regarding cultural geography variables and economic indicators are analyzed.

For the purpose of this study, cultural geography variables are those related to a village's ethnic group and spatial characteristics; economic indicators include potential income sources and real income measurements.

- *ethnographical fieldwork*

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The in situ research centered on semi-structured interviews with three main actors: Lao farmers, Lao government officials, and Chinese rubber companies.

- *a review of policies and relevant literature.*

To verify and complement the compiled data, literature on the main themes that emerged is reviewed.

3.2.1. Statistical Data

To examine the correlations between culture geography variables and economics, data regarding the ethnic villages' geography and economic resources were obtained from the District Development Plans of the studied districts. Additional sources of secondary data concerning village characteristics including current infrastructure, poverty levels, livelihood, and demographic makeup were assembled from a database developed through the German-Lao Cooperation effort. By exploring potential determinants of poverty in this manner, I was better able to specifically distinguish how each variable impacts economic factors. The following variables were identified:

Economic Resources

Because of the current subsistence lifestyles of many villagers, utilizing a single monetary dimension of income would present only a partial view of village-level capital. However, as the purpose of this study is to analyze various determinants of economic inequality, it is of course necessary to establish some potential explanatory variables. This study incorporates economic measures based on production capacity, or potential income, and actual fiscal capital, or real income. While the consumption potential of villages would also be a useful factor of analysis, such data was unobtainable given the small scale of the field survey.

% of Rubber hectares in Production/Use Forest Zone: In accordance with the Government of Laos' land classification policies, rubber plantations are considered to be "Production (or Use) Forest". While international standards exclude tree crops and plantations from being classified as forest, for the purpose of this report, rubber is part of the Production/Use Forest zone. Generally, rubber trees require 7 to 8 years to mature, before they can be tapped. Most rubber plantations in the region have been undergoing cultivation for fewer than 7 years, less than the time required. Thus, assuming that rubber demand continues along the same trajectory, the planted rubber represents potential income, rather than real income.

% of Cash crops (excluding rubber) in Total Land Area: Cash crops, apart from rubber, are an important agricultural asset associated with income generation. While rice is the staple food crop for most farming villages, often, the yields are not sufficient to sustain the villagers. Hence, farmers must often rely on economic activities to fulfill the rice deficit. In the context of the studied region, cash crops consist of sugarcane, maize, sesame, tobacco, and cotton plants. As this variable is measured by the area of plants currently under cultivation, this variable is also considered a source of potential income.

Assets(\$)/Household: Non-farm physical assets represent a household's current resources and savings. These items may have been obtained through trade or purchase and can be sold, and hence converted into income.

% of Households below established Poverty line: For the purpose of this study (and based on factors determined by the District Planning and Investment Office), being *above* the poverty line entailed that a household had to make either >180,000 Lao Kip/person/month or meet all of the following 5 criteria: 1) have at least 16 kg of rice available per month per person 2) have adequate clothes to last for two seasons for each member of the household 3) be able to afford any necessary medical treatments for a year 4) have permanent housing (defined by a concrete/tile/tin roof, concrete/brick walls, and hardwood/concrete posts) 5) have access to primary education. This variable is one indicator of real income.

Geography

Time of Access to Market: For this study, access to village infrastructure was based on road access and time to market during the rainy season. Generally, it can be assumed that villages with readily accessible roads have more opportunities for agricultural employment activities and generally lower transaction costs required for the sales and purchase of goods.

Altitude: Related to the *Time of Access to Market* variable, villages that are located far from a market because of altitudinal distance are negatively affected. However, many crops, like rubber, do not grow well at altitudes above a certain limit. This potentially minimizes the agricultural activities possible at a given elevation.

District (Sing / Nalae): While located in the same province, the two districts are economically, geographically, and ethnically diverse. Most of the ethnic populations that inhabit a district have

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been settled there for a long period of time. Because of the districts' dissimilarities, the location of settlement with regard to a district may have significant effects on the potential income earning activities available to a village.

Culture

Ethnic Group: This study includes ethnic variables to explore the spatial or geographical aspects of ethnicity that are related to poverty and differences in access to potential income generating activities. As mentioned earlier, Lao PDR is composed of 49 distinct ethnic groups. This study includes the 7 predominant ethnicities located within the 2 provinces.

3.2.2. Qualitative Methods

The ethnographic fieldwork was centered on three main actors: Lao farmers, Lao government officials, and Chinese rubber companies. Interviews with Chinese companies were conducted in Chinese, with the aid of a Chinese-English interpreter. Lao-English translation took place when the dominant language was Laos and Khammu-Laos-English translation occurred in Khammu villages.

Lao farmers

To gather in-depth data from villagers, I chose to situate this facet of the study in three villages in the Nalae district. The villages were selected with the following conditions: 1) road accessible, with rubber 2) road accessible, with no rubber and 3) remote, with rubber. Further, I wanted to study at least two distinct ethnic groups. Based on these factors, the Nalae District Agricultural and Forestry Office (DAFO), with assistance from the Provincial Department of Planning and Investment (DPI), determined that the appropriate villages were: 1) Ban (Lao for village) Hardlom 2) Ban Pheung 3) Ban Phouchalae.

The goal was to explore local relationships between farmers and the land. To do this, I relied on participant observation and semi-structured interviews. For all three villages, a focus group interview was conducted with the *naiban* and 10-15 selected household heads as well as some of their wives. The heads of households were selected by the *naiban* and are villagers who are involved in village decisions. In Ban Phouchalae, it was also possible to interview a selection of farmers (men and women) early in the morning before they left for the rice fields. However, because of harvest season time constraints, only the focus group interviews were possible in Ban Hardlom and Ban Pheung.

Figure 3 Ban Phouchalae: Author during morning interviews with villagers



Source: Author's Photograph

Random sampling was initially considered when conceptualizing the research design. However, once I arrived in the field, it was apparent that random sampling would not be an optimal way to approach the villagers. For one, because of the heavy workloads during the harvest season, making time for the interviews would have been very difficult for some farmers and their families. Secondly, during the entirety of my village fieldwork, I was accompanied by a government official. The *naibans* also were a sort of governmental figure head with respect to the village. Hence, the *naibans* felt that they would be best suited to select the heads of households with whom I would speak. Finally, as a visitor, I did not want participants to feel as if they had no choice if they were randomly selected to be part of the sample set. Rather, I chose to rely on the voluntary participation of villagers as well as the preferences of the *naibans*.

The first section of the interviews focused on background information regarding the village. Data was obtained about the ethnic composition of the village, initial reasons for village settlement, and sources of income. The second section focused on past and present farming practices, the sorts of crops and animals raised in the village, and methods of food procurement. An inventory was created that included livestock, vegetables and NTFPs. The final section

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centered on attitudes toward soil quality. Perceptions were elicited regarding soil quality change over generations, indicators used to measure the quality of soil, and techniques implemented to improve the yield of soil.

Table 2 Selected villager interview questions.

1. What is the predominant ethnic composition of your village?
 2. How long have you lived here? Where did your village live before?
 3. Why did your village move here?
 4. What crops do you grow? What grew here 15 years ago?
 5. How much of your crops do you eat? How much do you sell?
 6. Do you prefer to buy your food or grow your own food?
 7. If rubber: Are you happy with growing rubber?
 8. How did you decide where to plant the rubber?
 9. Have your other farming practices changed since you started planting rubber?
 10. (*I present 5 sheets of paper with a line on it, dividing each sheet into two parts. See Figure 4.*) Which of these most represents how much of what you ate before beginning rubber cultivation consisted of NTFPs and how much consisted of crops you grew? Which of these papers most represents how much of what you eat now consists of NTFPs and how much consists of what you grow yourself?
 11. If no rubber: Do you want rubber? Why?
 12. Why do you think your village does not have rubber?
 13. Both: How has the soil in your village changed over time?
 14. Do you do anything to try to improve the soil quality?
 15. If yes: How did you learn to do this?
 16. How can you tell whether a plot of soil is good or bad?
-

Figure 4 Ratio of Food Consumption - NTFPs : Crops Grown



Source: Photograph by Author

Lao government officials

I interviewed representatives from the Provincial Department of Planning and Investment (DPI), the Nalae District Agricultural and Forestry Office (DAFO), and the National Agriculture and Forestry Research Institute (NAFRI). The focus of the semi-structured interviews was on policy reforms related to rubber, land allocation, and shifting cultivation. Unstructured interviews were implemented to discuss the nature of Chinese rubber investments.

Chinese rubber companies

Interviews were conducted with Jiachuang, a private company operating in Nalae, and Yunnan Rubber Company, a state-owned company operating in Namtha and Long districts.

As of 2008, Jiachuang was in possession of 2000 hectares of contracted area all of which was under a contract farming agreement. Yunnan Rubber Company was in possession of 166,667 hectares of contracted area, with 214 hectares under a concession agreement and the remaining under a contract farming agreement (Shi, 2008). My primary intent in interviewing the rubber companies was to understand the factors that determine the location of their investment decisions.

3.2.3. Methods of Analysis

Qualitative interview data was organized by the thematic clustering of the transcripts. During an analysis of the available transcriptions, key themes emerged: the relationship between cash crops and money, the physical proximity to markets, and the social influence of neighbors and/or other villagers.

The quantitative facet of the study sought to identify how each of the cultural geography variables affected the economic indicators through correlation analysis. This segment of the analysis was then aggregated with the themes emerging from the interview analysis in order to substantiate the outcomes. A further analysis was conducted to assess the individual spatial differences between real income and potential income with regard to the cultural geography variables.

3.2.4. Data Limitations

One limitation of this study was the lack of resources (i.e. time, finances, and personnel were limited.) As a result, only three villages could be qualitatively studied. However, the comparatively small scale of the study enabled a more in-depth conception of the selected villages, a conception that revealed the multidimensional intricacies of actor and non-actor relationships.

Another limitation was the absence of official data verifying soil quality. Because of the aforementioned resource limitation, soil chemical analyses could not be undertaken. Furthermore, due to limitations in availability of data from government officials and the withholding of such data on the side of the rubber investors, related secondary data could not be obtained.

Additionally, according to village hierarchy, the *naiban* generally served as the representative for the village. Because it was the final week of the rice harvest season, often the *naiban* would take the most time for the interviews, while the other members of the focus group would have to return to the field. Efforts were taken to speak with a gender- and socially- sensitive sampling of the population individually, but in future research, more allowance for harvest season constraints should be made.

Lastly, while the data collected by GTZ-RDMA is the most thorough set currently available, it is still far from perfect. The data collection process used a participatory approach in which village

heads served as the primary data collectors; while they were given intensive training prior to data collection, the capacity and knowledge of the data collector may not be consistent.

3.2.5. Village Context

Table 3: Interviewed Village Characteristics

Village, District	Road Access	Rubber?	Interviewees	Ethnic Group
Hardlom, Nalae	Yes (40 min. to market)	Yes	Focus group: 14 heads of households Individual: Head <i>naiban</i>	Leu
Phouchalae, Nalae	Dry-Season only (4 hrs. to market)	Yes	Focus group: 16 heads of households Individual: 9 farmers	Khammu
Pheung, Nalae	Yes (3 hrs. to market)	No	Focus group: 4 heads of household, head <i>naiban</i>	Khammu

Source: Author

Ban Hardlom

Hardlom is a Leu village in the Lao cluster of the Nalae district. It is 1 of 11 Leu villages in the province. The village has a population of 296 people in 52 households and is located 9 km from the district capital town of Nalae. The total village area consists of 753 hectares. 36% of the village lives below the poverty line. Relatively Hardlom village does not rely as much on NTFP's as surrounding villages in the province: approximately 0.2 tons of Tieng tree bark, cardamom and mushrooms are collected per year. It also has a relatively substantial amount of livestock: 180 buffaloes, 140 pigs, 790 poultry, and 9 goats, which the villagers both sell and consume. 30 households have rubber planted through company investment, totaling 22 hectares, and 4 households have rubber planted through household investment, totaling 2.4 hectares.

Figure 5 Ban Hardlom: Translator +Focus group interview



Source: Photograph by Author

Ban Phouchalae

Phouchalae is a Khammu village located in the Phouchalae cluster of the Nalae district. 59% of the village lives below the poverty line. The village has 67 households. Of these, 25 have planted rubber, all through company investment. The village owns 75 buffaloes 56 cows 200 pigs and 400 poultry. The village area comprises of 1324 hectares of land.

Figure 6 Ban Phouchalae: Naiban and wife



Source: Photograph by Author

Ban Pheung

Pheung is a Khammu village also located in the Phouchalae cluster of the Nalae district. In 2007, the government instituted a policy encouraging increased animal husbandry in Pheung, with a focus on large animals such as cattle and buffaloes. According to the village head, Pheung does not grow rubber due to its high altitude (985 m). As the local government ordained the prohibition of rubber cultivation, even if some villagers wish to grow rubber, they should not. Pheung has 455 people distributed among 65 households. 74% of the village lives below the poverty line. The village area consists of 2440 hectares of land. NTFP's collected are primarily tree bark, followed by mushrooms, cardamom, and galangal fruit. The village has 90 buffaloes, 100 cows, 120 pigs, 2100 poultry, and 100 goats.

Figure 7 Ban Pheung



Source: Photograph by Author

Chapter 4 - The Evolution of Agricultural Practices and Policy in Lao PDR

History

4.1. Historical Patterns of Agricultural Practices

4.1.1. Current Soil Fertility: Effects of Shifting Cultivation

Prior to the civil wars of the 60's and 70's, the physical environment in Lao PDR was predominantly characterized by a system of interdependence between humans and the landscape. Shifting cultivation and slash-and-burn practices have been the predominant forms of agricultural practices through the course of Lao PDR history (Fox 2005). Slashing and burning has been proven to produce a consequent ash that is rich in potassium, calcium, and phosphorus as well as neutralize acidic soils. With a proper amount of fallow time, slash-and-burn agriculture, along with shifting cultivation, can thus improve soil fertility and mitigate insect and weed issues. "The practice of slash-and-burn agriculture is not only economically sensible, but is also ecologically sound The intercropped fields of swidden horticulturalists are an imitation of the natural ecosystem; generalized and diverse, multistoried, and providing good soil protection from both solar radiation and precipitation" (Moran 1979).

4.1.2. Current Soil Fertility: Other Contributing Factors

While shifting cultivation has been criticized for altering soil nutrient compositions and leading to erosion, the agricultural sector in northern Lao has consisted of relatively low-input practices, particularly when compared with neighboring countries such as Vietnam and Thailand; the use of pesticides and fertilizers, as well as technology-oriented activities, has been minimal. Lao PDR has a low human population-density. Even though the current annual population growth rate is 1.84%, the population density is 27/sq. km (Lao 2010). Thus, the population pressures on the Lao natural environment are relatively low compared to the pressures in Vietnam and Thailand, which have population-densities of 253/sq. km and 125/sq. km. Further, because of the country's polycultural composition of people, the input has not been homogeneous. A combination of the earlier patterns of migration with the large swaths of available plots has enabled much land area to be left fallow for long periods of time (Rasul 2003). While fallow time has reduced considerably in recent decades, in the past, land was kept fallow for up to 25 years (Hansen 1998). The low levels of land modification through history that arose in part from the cultural make-up of the country's population has contributed to a natural environment that is favorable for agricultural productivity. According to the UNDP, "in national percentage terms,

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the Lao PDR remains one of the most heavily forested countries of Asia and one of the region's richest countries in terms of biodiversity" (UNDP 2001).

Figure 8 Cleared agricultural land adjacent to natural forests



Source: Photograph by Author

4.2. The Chronology of Policy Reforms and Market Liberalization in Lao PDR

Lao PDR has a per capita income of \$701 (2007 est.) (Lao PDR, 2010). The country has a Human Development Index of 0.619, giving it a ranking of 133rd out of 182 countries. (UNDP 2009) Because of these factors, the goal of eradicating poverty is currently one of the nation's top policy priorities (Lao PDR 2003). Due to its high concentration of agricultural activities, many of the policies have centered on land reform and rural development. These policies have served not only to bolster the national GDP and reduce poverty, but also to promote forest conservation and replace opium as an income provider.

4.2.1. Foreign Direct Investment in Cash Crops

Enacted in 1986, the New Economic Mechanism (NEM) marked the point in which Lao PDR opened up to international markets. This program was designed to gradually integrate the country into the regional economy by decentralizing facets of the economy, particularly those facets that concerned the administration and promotion of development initiatives and giving

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more responsibility to the provinces. Additionally, the plan removed many existing trade regulations and hence created an opening for foreign investments.

The economic shift created by the NEM was followed upon by the 6th National Economic-Social Development Plan. Established in 2006, the plan states that “private initiatives including those by foreign investors and traders from neighboring countries to promote contract farming, especially in horticulture and tree crops are being encouraged”. The promotion of market integration with regional economies resulted in increased trade relationships. With the increased trade came increased cash crop investments.

Contributing to this agricultural shift was the Land and Forest Allocation Program (LFAP), enacted in 1993, that aimed to decentralize "the management and the use of forest and forest land" and reduce illegal logging and shifting cultivation practices. Furthermore, the policy attempted to classify the land into its constituent use categories: agricultural land, forest, and degraded forest.

Lao PDR National Forest Strategy to the Year 2020

The goal of the National Forest Strategy was to increase "forest" cover from 40% to 70% by the Year 2020. The stated "forest" could include cash crop plantations. To promote the forest cover increase, the Lao government offered land tax exemptions and property rights over the planted trees to plantation companies.

From *Chapters 4.1. Historical Patterns of Agricultural Practices* and *4.2. The Chronology of Policy Reforms and Market Liberalization in Lao PDR*, it appears that the historically fertile environment of Lao PDR have coincided with recent government initiatives encouraging rural development and the reduction of shifting cultivation, resulting in a rapid influx of foreign investment in cash crops. Furthermore, China has been one of the world's largest consumers and importers of natural rubber (Shi 2008). This demand is expected to increase primarily because of the country's automobile sector. However, as China's area of cultivatable land has decreased due to the social and physical pressures of increasing industrialization, it is heavily dependent on import sources from abroad. Because of this shift and the aforementioned factors, from the mid 1990's, China has begun to invest more heavily into rubber plantations in Lao PDR, among other cash crops and industries (ibid).

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Chapter 5 - Evaluating the Impacts of Cultural Geography on Economic Distribution

In the two previous chapters, I illustrated how generations of low-input traditional land-use patterns have resulted in an abundance of fertile soil in Lao PDR and how this environment, coupled with a series of policy reforms and land allocation strategies have transformed the agricultural sector and the rural economy. Additionally, I embedded the Lao agrarian economy in a larger context, and highlighted the increasing interrelationships with its neighboring investors. By doing this, I established the context in which rubber cultivation began to diffuse through the northern Lao landscape and provided an overview of the social and economic outcomes of the transition.

While this broad assessment of history and policy reform is valuable, an in-depth examination of the micro level can shine light on how the subsequent transition is affecting small farmer communities in the region. Thus, this chapter's goal is to incorporate the outcomes of historical land-use and reforms with data aggregated from the village-level. I attempt to show the diversity of uneven outcomes that transpire as a result of the spatial differences of culture intersecting with the market transition.

The analysis focuses on villages from two distinct districts: Nalae and Sing. In general, Sing is more economically developed, has more foreign and development-aid investment, and a longer history of cash crop cultivation. Nalae, on the other hand, is one of the poorest districts in the nation, is the recipient of less investment, and depends more on subsistence-level agriculture for sustenance.

Despite these differences, there has been little research examining the determinants behind the disparities. Hence, this chapter aims to examine the regional differences from a cultural geography perspective. For the village-level comparisons, survey data collected by GTZ-RDMA from 2007 is analyzed. The data provides information on 127 villages across Nalae and Sing districts in Luang Namtha Province. The subsequent analysis presented in this chapter incorporates the correlated data with information garnered from the ethnographic fieldwork performed in 2009.

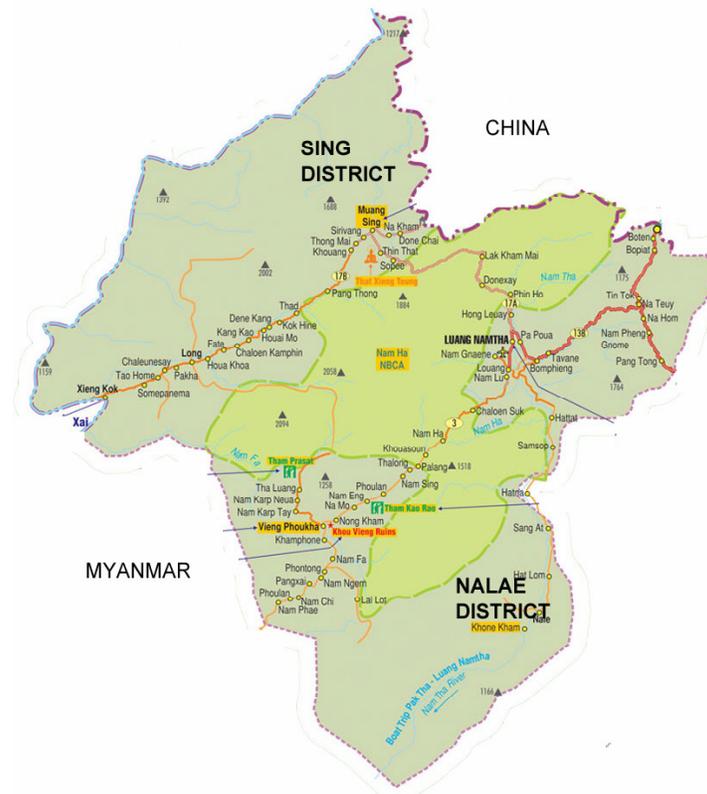
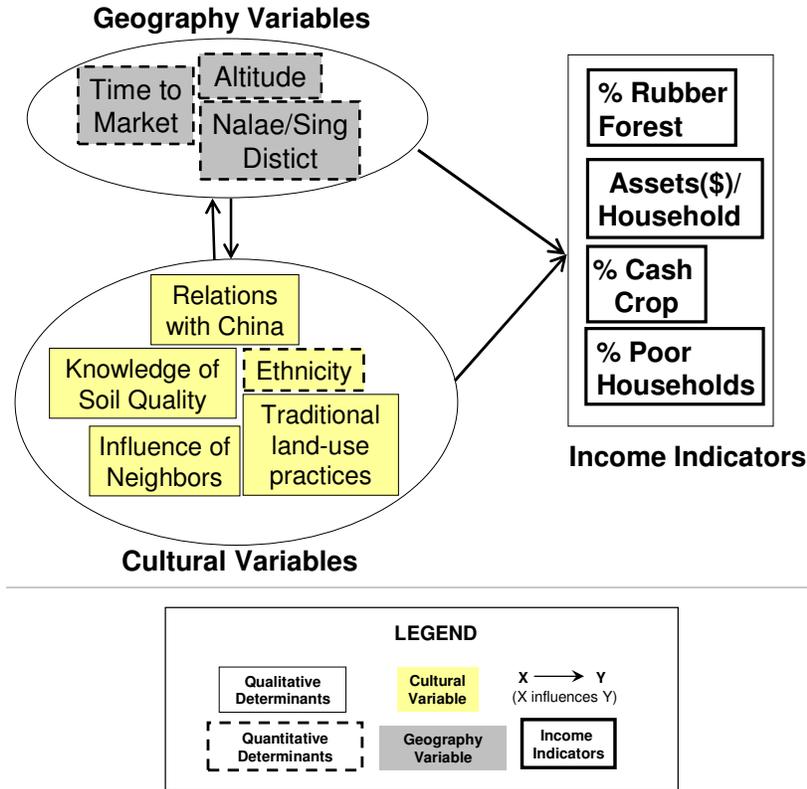


Figure 9 Map of Luang Namtha Province
 Source: www.luang-namtha.org/maps/luangnamtha_map.jpg

Below is a schematic model depicting the framework of the analysis. There are four economic indicators: *Assets (\$)/Household (HH)*, *% Rubber Forest/Production Forest*, *% Cash Crop/Total Land Area*, *% Poor Households*. Each indicator is measured from the village-level and has been defined in Chapter 3. These economic indicators are hypothesized to be influenced by several cultural geography variables. Of these, *Soil Quality*, *the Influence of Neighbors*, *the Proximity (Social and Physical) of China*, and *Traditional Land Patterns* are used as descriptive units for analysis. Data for these variables were gathered through ethnographic fieldwork and policy/literature review and are thought to be influenced by the variables *District*, *Altitude*, *Time to Market*, and *Ethnicity*. These latter four variables are the primary determinants used to analyze the quantitative relationships between culture, geography, and economics.

Figure 10 Model of Determinants of Economic Distribution



Source: Developed by Author

Rather than an assessment of the actual levels of economic variance and distribution, the primary focus of this study’s analysis are the cultural and geographic factors that affect villagers’ access to income-generating activities. In the following sections, measures of income or poverty are related to various geographic/physical and cultural/social characteristics through an empirical framework.

5.1. Physical Environment

5.1.1. Two Districts

The range of this study was situated in the Sing and Nalae districts of Luang Namtha Province. Though belonging to the same province, these two regions have markedly different landscapes and dissimilar ethnic populations. The dissimilarities extend into the economic spectrum as well. The distribution of rubber investment, cash crop cultivation, and poverty is also markedly uneven between and within the two districts. This section will introduce the extent of the imbalance and provide an explanatory analysis from a cultural geography approach.

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District Background

Sing, located near the Chinese border, is marked by a diverse terrain, with both high (>1000 m) mountains and a large expanse of low paddy land. As it is close to the border, it was the first district in the province to experience the influx of rubber investment. Nalae, located south of Namtha district, is noted for its mountainous terrain that covers 98% of the district, with few areas of lowland. As depicted in the table below, Nalae has significantly less available paddy land and more upland rice fields as compared with Sing. Broadly, paddy land is used for market crop production and permanent agriculture while upland areas suggest swidden agricultural activities. According to a UNDP report in 2002, households which engage in upland agriculture are generally rice insecure for 3-4 months per year; households which engage in lowland farming are rice insecure for 1-4 months of the year.

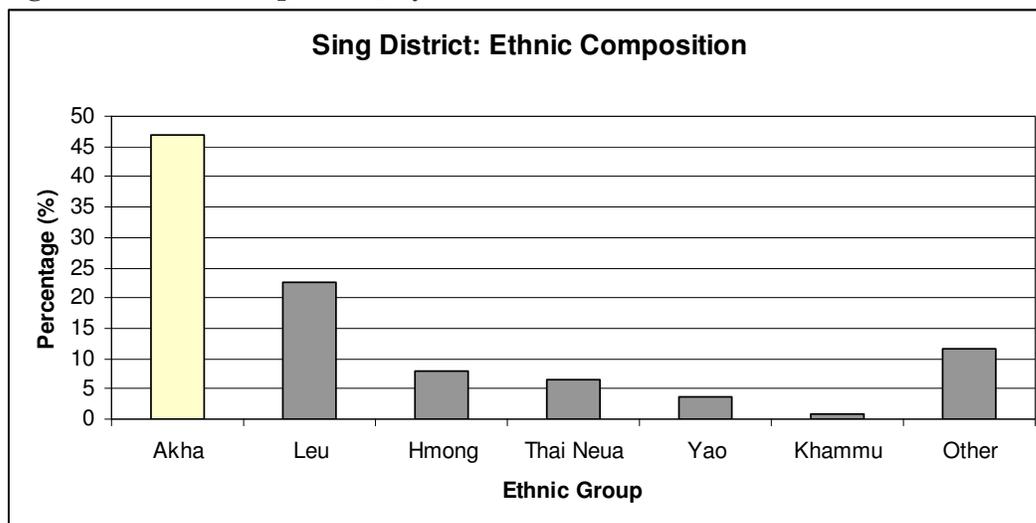
Table 4 Agricultural Land Areas in Sing and Nalae, 2003

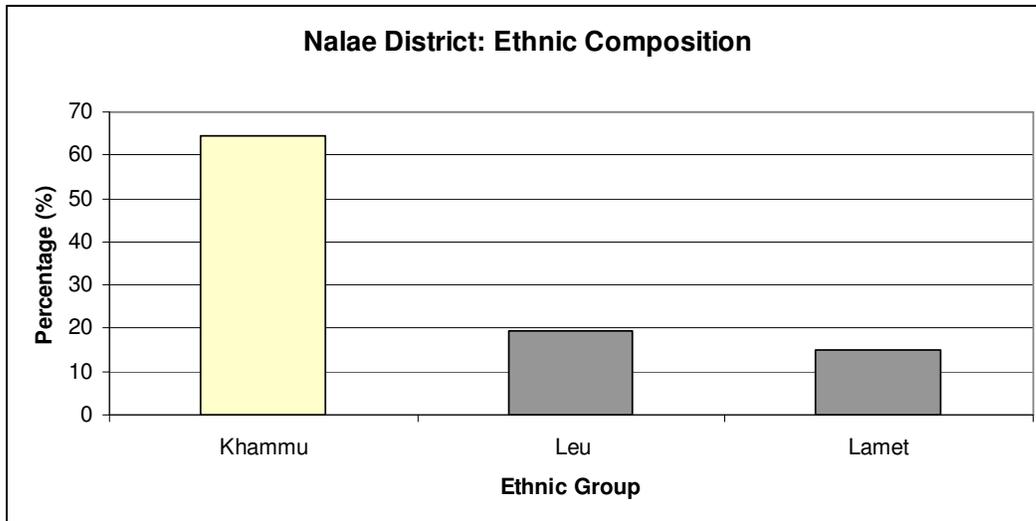
District	Agriculture land (ha)	Paddy land (ha)	Upland Rice (ha)
Sing	5,666	3,296	1,416
Nalae	4,480	141	3,953

Source: Fujita 2007

Nalae is one of the poorest districts in the nation and has been relatively isolated from rubber investment until recently. Culturally, the two districts are composed of rather dissimilar ethnic groups. The charts below show the ethnic compositions of the districts. Sing consists largely of Akha (46.8%) while Nalae is predominantly composed of Khammu (64.3%) (GTZ 2007).

Figure 11 Ethnic Composition, by District





Source: Calculated by Author based on GTZ raw data

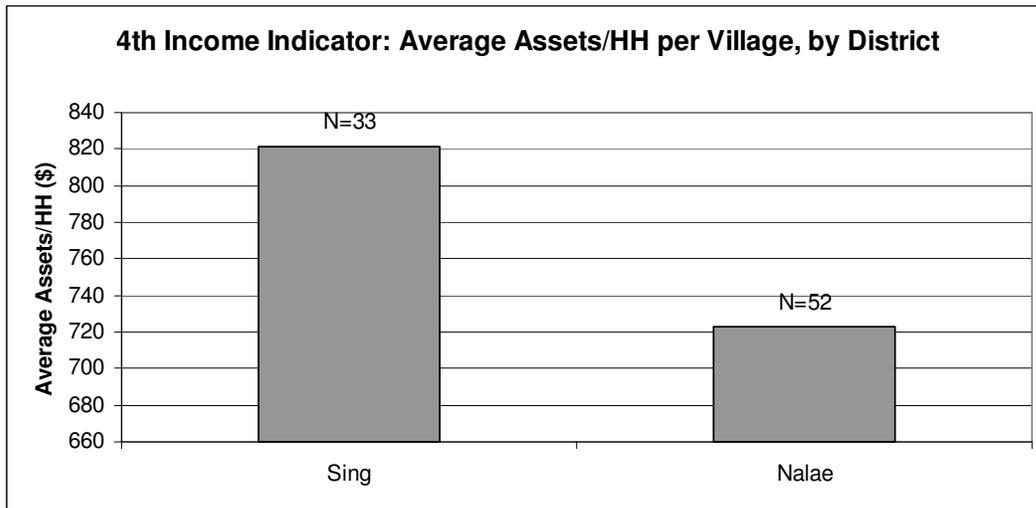
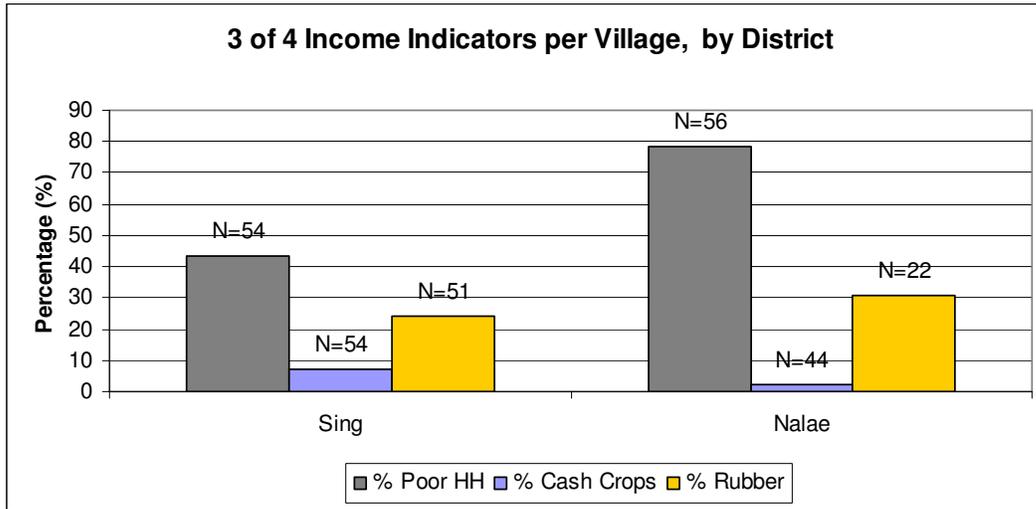
Because of Laos' long history of internal migrations, both forced and voluntary, data was unobtainable regarding why villages and groups have settled in particular districts. However, in the case of the Akha people, literature indicates that they originated in Tibet originally, from where they slowly migrated down to the Szechuan and Yunnan regions of China. From there, they have recently settled in areas of Myanmar, and northern Thailand and Laos. This accounts for the large concentration of the Akha in Sing district (Cohen 2008). The implications of the influence Chinese cultural factors on economic distribution are explored more thoroughly in *Chapter 5.2.4. Linkages with China*.

Impacts of District on Economics

Looking at the economic indicator breakdown in the figures below, it can be seen that Sing District has a significantly lower percentage of households below the poverty line than Nalae District (43% as compared with 78% respectively). Further, in Sing, an average of 7% of each village's available land is utilized for cash crops while in Nalae, an average of 2% is similarly utilized. Sing's villages possess an average of \$821 worth of assets per household while Nalae's villages possess an average of \$722 worth of assets. One notable exception in terms of Sing's economic advantages over Nalae is that it has a marginally lower percentage of production forest land under rubber cultivation. This result is noteworthy because currently, rubber trees in the province cannot be monetized, since they are not yet ready to be tapped. Thus, they can be viewed from the perspective of their income-generating potential, rather than actual realized income.

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Figure 12 Economic Indicators per Village, by District



Source: Calculated by Author based on GTZ raw data

The striking differences between the two districts may be attributed to:

- **The physical nature of each district:** As mentioned earlier in this section, Nalae’s terrain is composed of mostly mountainous land. This inherently prohibits the lowland agricultural practices that are characteristic of comparably richer regions. Further, soils on steeper slopes are often thinner and are more vulnerable to erosion.
- **Sing’s physical proximity to China:** Because of border trade, Sing is exposed to higher amounts of income-generating activities. Further, cross-border migration

throughout history has created stronger social and cultural ties, leading to economic linkages. This topic is further discussed in *Chapter 5.2.4. Linkages with China*.

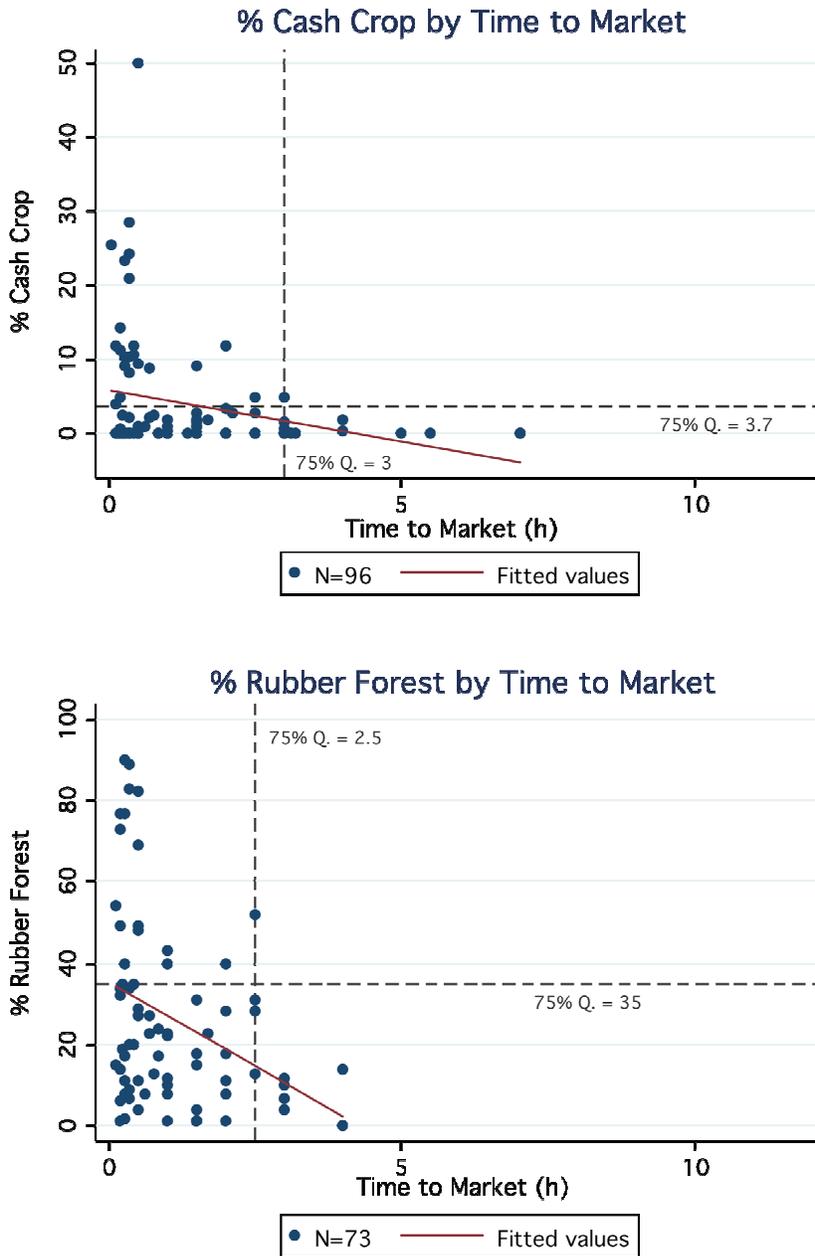
- **Sing's comparably longer history of cash crop cultivation.**
- **The differing road infrastructure development levels in each district:** Currently, Sing has a greater percentage of villages with access to all-season roads than Nalae. This results in weaker market access and hence lower income generating potential. This is discussed further in *Chapter 5.1.2. Time to Market*.

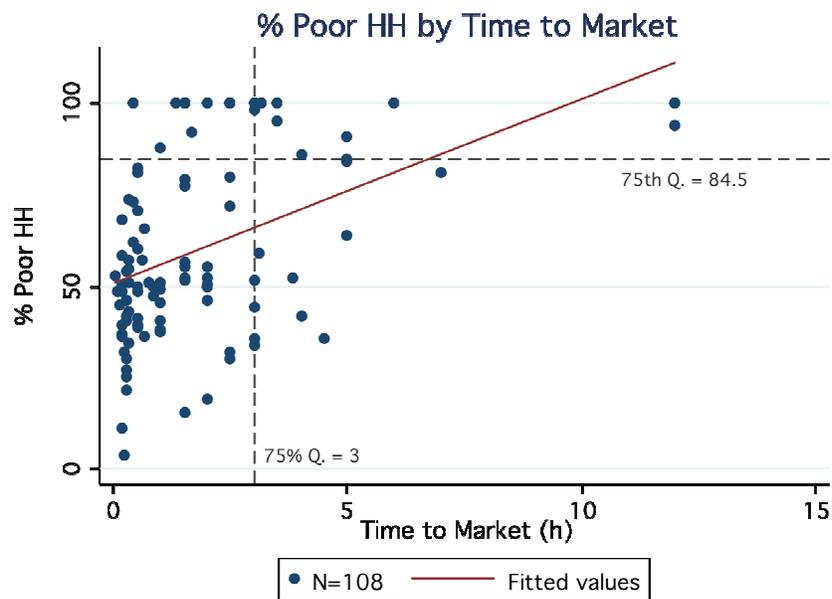
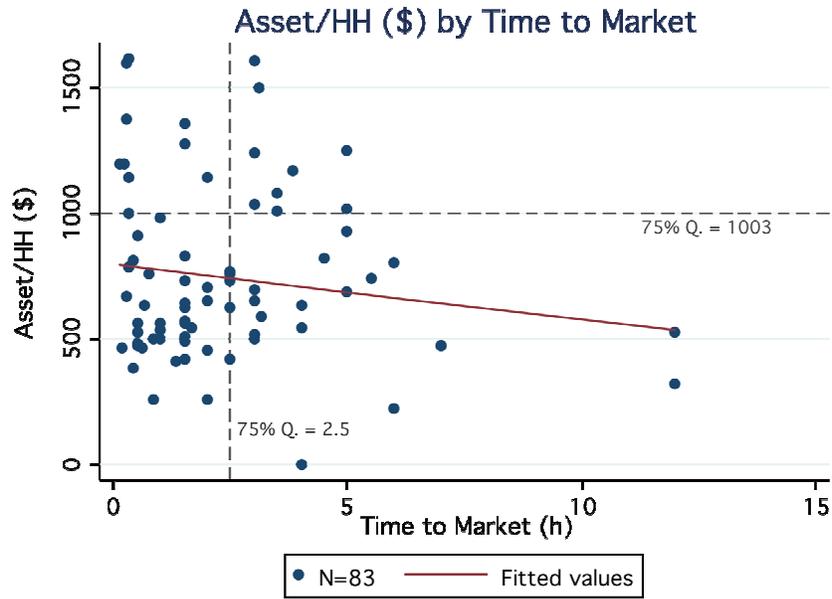
Further analysis needs to be completed to determine the exact explanatory weights of the above factors.

5.1.2. Time to Market

In each of the figures below, the time required to access the nearest market is negatively correlated with a village's income earning potential and positively correlated with the percentage of poor households within a village. Another observation is that in the plots of % Cash Crops by Time to Market and % Rubber Forest by Time to Market, the upper right quartiles have no points, while the lower left quartiles have the highest concentration of points. This indicates that while Time to Market may not be the only variable associated with cash crop and rubber cultivation, it is a *necessary* one.

Figure 13 Economic Indicators per Village, by Time to Market





Source: Calculated by Author based on GTZ raw data

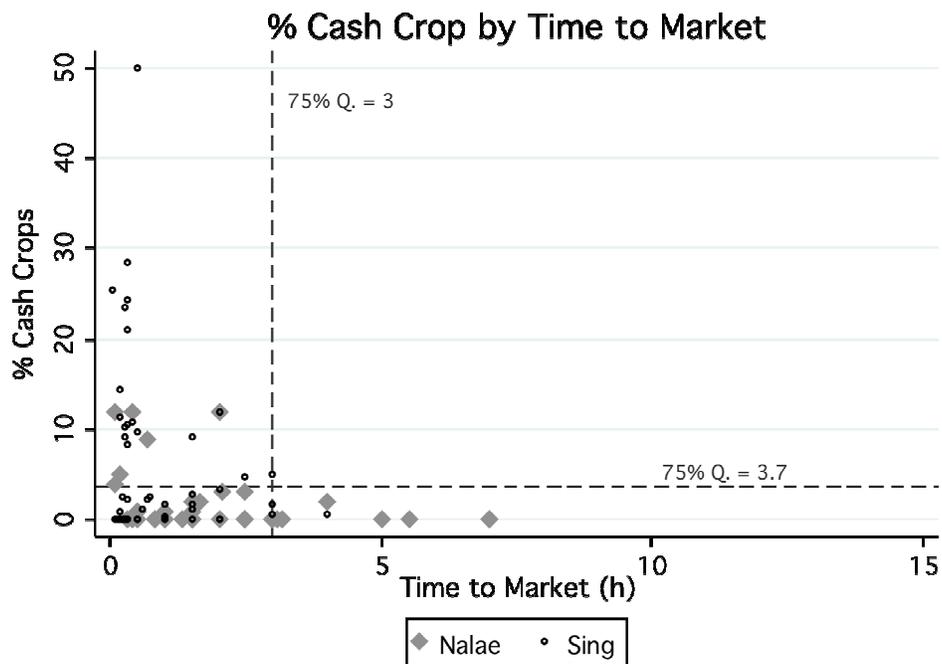
Variation by District

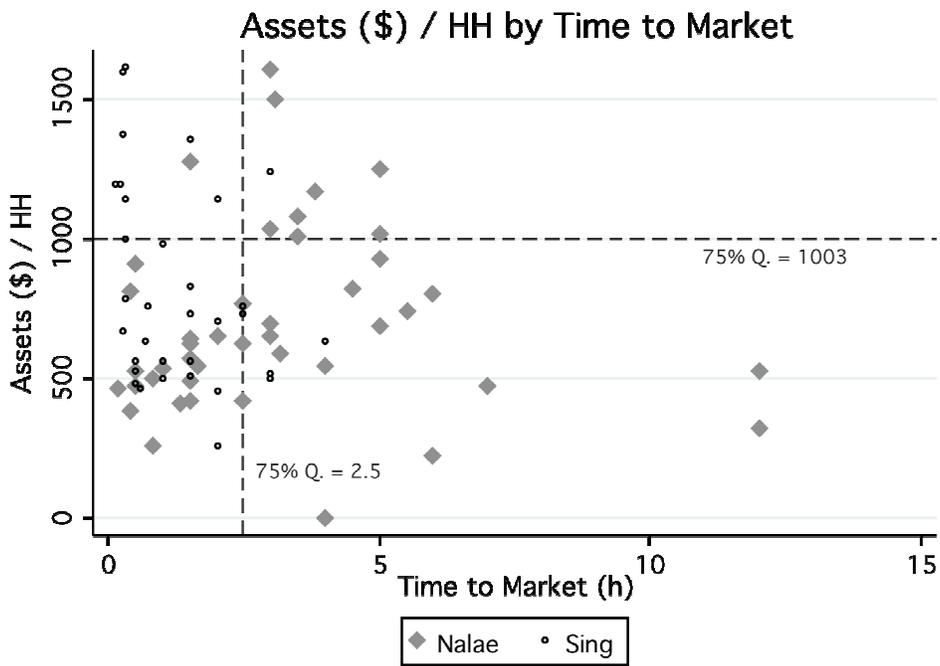
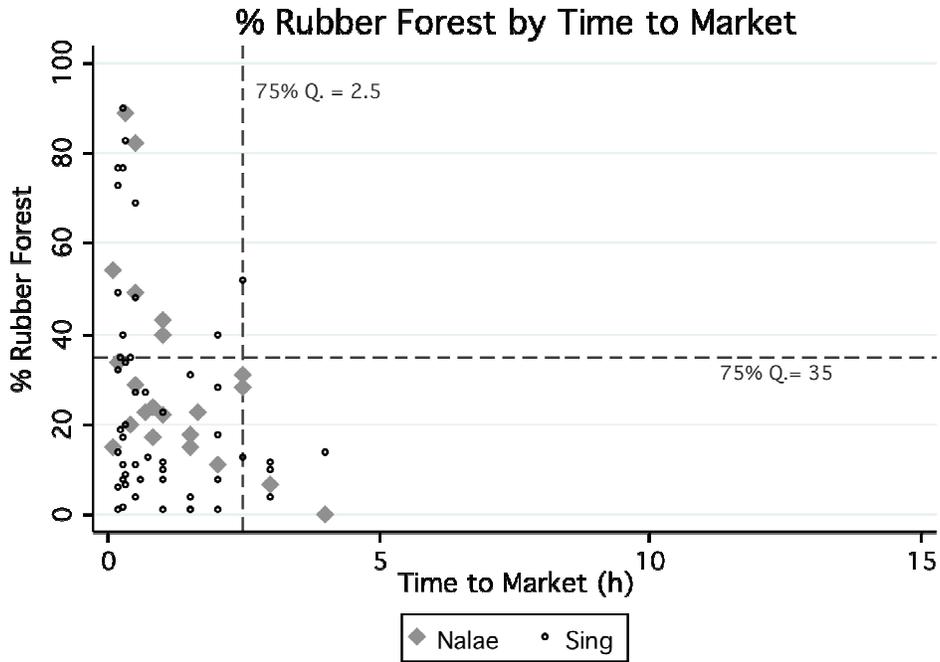
The road between Namtha District, the provincial capital, and Nalae District is undeveloped still and only suitable for dry season access. During the rainy season, transport to Nalae requires the use of the Namtha River. On the other hand, the road connecting Namtha District with Sing district is well developed and can be accessed in all seasons. Because the ethnic composition of

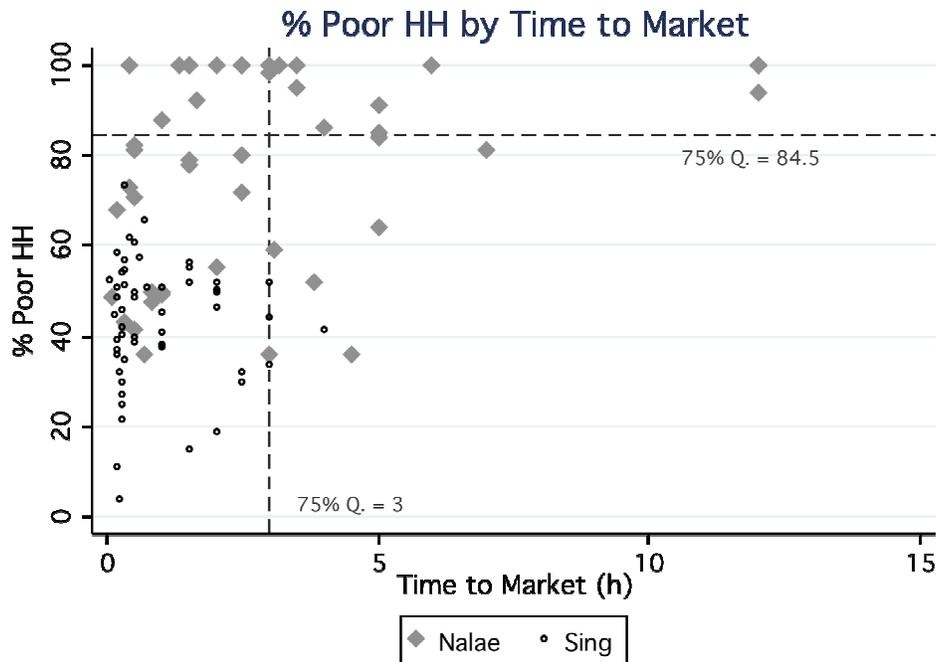
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the Nalae and Sing districts are quite distinct from one another, this provincial-level infrastructural disparity in itself leaves some ethnic groups with less access to agricultural investment opportunities and subsequently buffers them from the potential outcomes of rapidly induced market transition. A closer examination of the graphs discussed previously in Figure _ indicates that the Time to Market points and consequent effects on Economic Indicators is biased by District, as highlighted in the figures below.

Figure 14 Economic Indicators per Village, by District and Time to Market







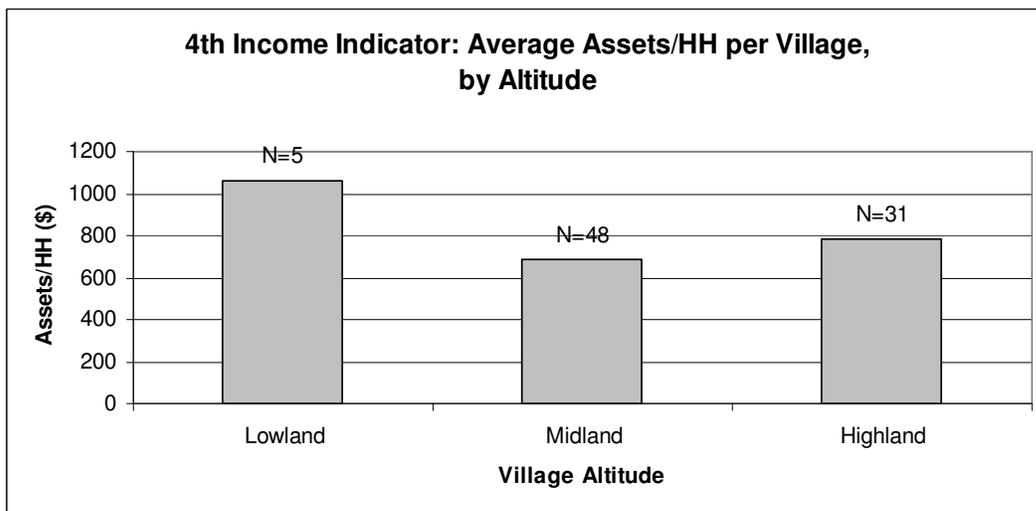
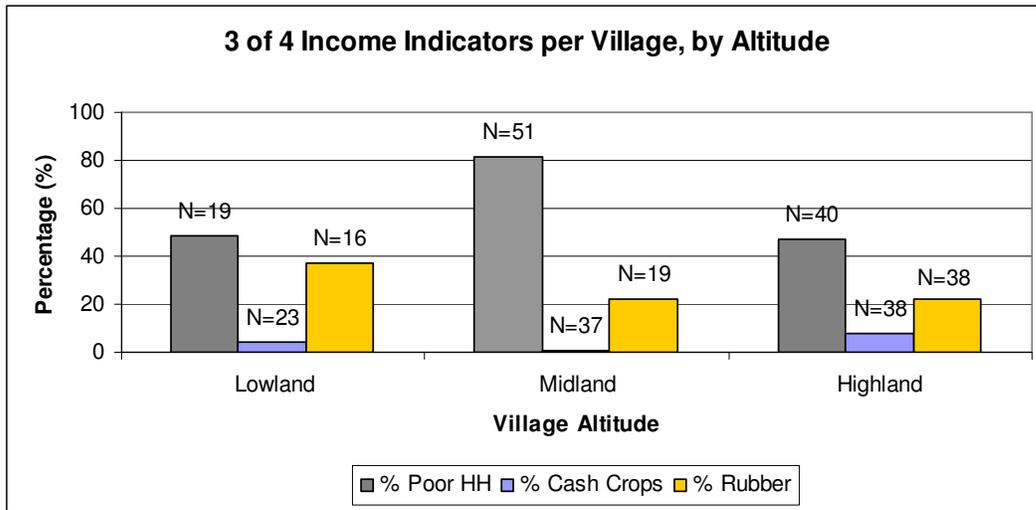
Source: Calculated by Author based on GTZ raw data

In the plots depicting % Cash Crop and % of Poor Households, by Time to Market, the Nalae clusters exhibit a generally longer time to market, and also a correlation with higher village poverty levels and fewer cash crops per total village area. On the other hand, the variation is not so pronounced in the % Rubber Forest and Assets/HH graphs.

5.1.3. Altitude

Three categories of ethnic groups in Lao PDR have been officially classified: the *Lao Loum* (lowlander), *Lao Thoeng* (midlander), and *Lao Soeng* (highlander). While this labeling is an oversimplification of the very diverse characteristics of the make up the 46 ethnic groups that are classified under these three categories, there are distinct patterns of land practices and habitat location among the groups.

Figure 15 Economic Indicators per Village, by Altitude



Source: Calculated by Author based on GTZ raw data

As expected, lowland regions have relatively higher levels of rubber forest and assets as compared with highland regions. However, the difference is marginal. Midland altitudes exhibited unexpected results, with high levels of poor households, and proportionately low levels of assets, cash crops, and rubber. This may be attributed to faulty data recording or an unrealized external variable. Further research will need to be done to examine this correlation.

From an empirical viewpoint, altitude is predicted to negatively correlate with economic activity and positively correlate with poverty levels. When asked what characteristics of land are optimal for rubber planting, farmers consistently responded that rubber grows best at up to 600 meters in elevation. One of the surveyed villages, Ban Pheung, is located at an altitude of 985 meters.

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Typically, rubber does not grow well at this elevation, and so the district government has prohibited the villagers to sign any rubber contracts. In the focus group interviews, respondents agreed that they wanted to plant rubber, but because of government's restrictions, they cannot. The village has been in the location for over 200 years. However, because of its elevation and because it is not near any water source, the village has a plan to move down the mountain. The *naiban* said that he plans to move the village down "a little" every two to five years.

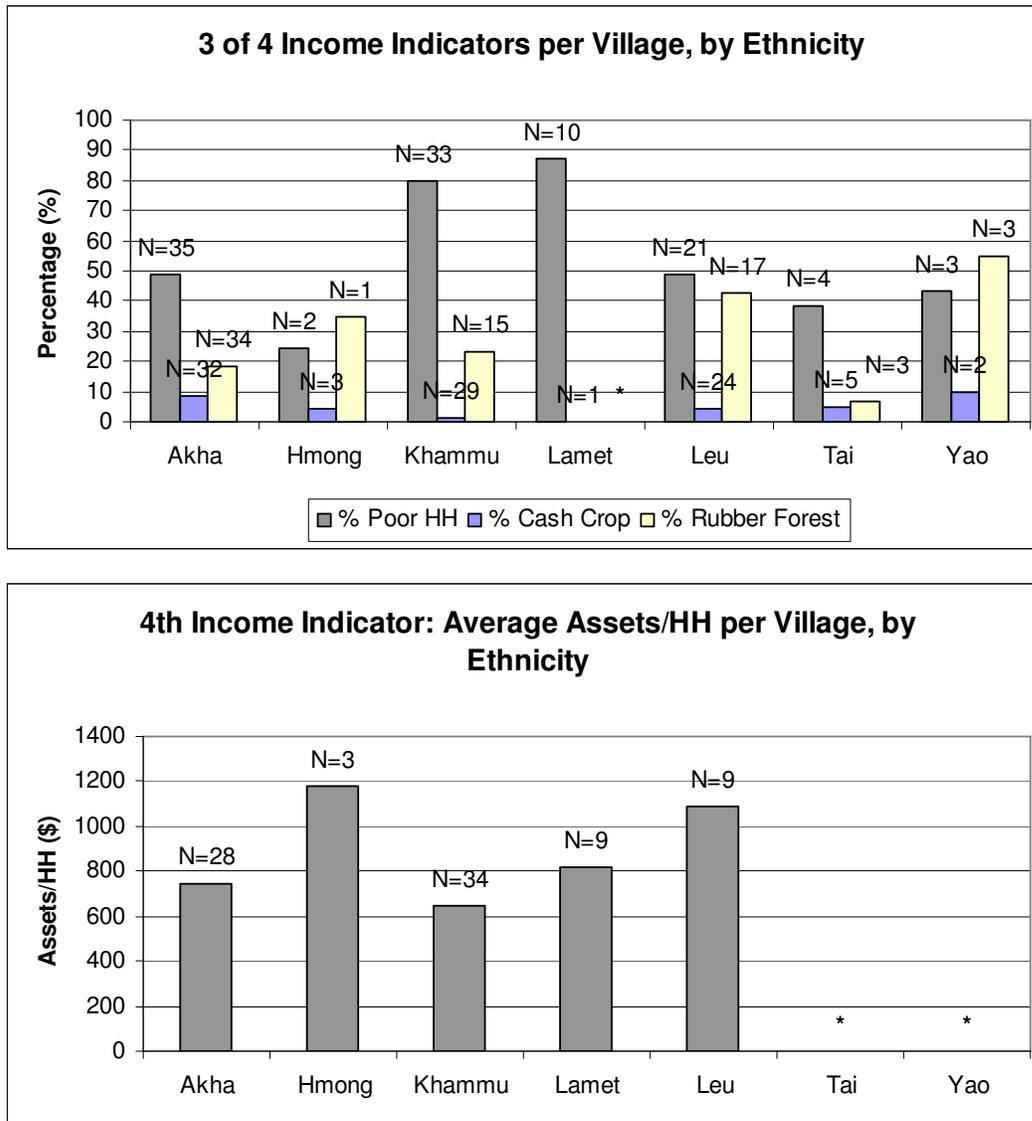
From a theoretical viewpoint, it is also expected that an increase in altitude would correspond with decreased income-generating activities and hence higher levels of poverty. Studies have indicated that the soil fertility of upland regions is poor and characterized by marked acidity and low water-holding capacities (Roder 2001). This, coupled with gradually decreasing amounts of rain-water in the region will greatly reduce the production capabilities of upland regions. Furthermore, due to the relative level of geographic isolation, it would be difficult and costly to bring in the required amounts of fertilizer to the high altitude areas.

Access to road infrastructure, and hence, the Time to Market, is intrinsically linked with the District and Altitude, at least at the current moment. Because of Sing's already established trade history, it generally has a more diffuse and reliable (i.e. all-season) road network than Nalae. Thus, the probability that a villager in Sing is readily able to access a market is higher than a villager in Nalae. Furthermore, Nalae has fewer low paddy lands than Sing. Rather, its mountainous terrain makes infrastructural development in the district more costly and with lower returns to scale. Thus, the populations that inhabit Nalae currently have fewer opportunities to engage in economic trade at markets.

5.2. Social Environment

5.2.1. Ethnic Group Implications on Economic Distribution

Figure 16 Economic Indicators per Village, by Ethnicity



Source: Calculated by Author based on GTZ raw data

As can be inferred from the graphs above, there is an imbalance among the ethnic groups' economic variables. For instance, the Lamet people have the highest rate of percentage of poor households per village, as well as the lowest proportions of land under cash crop cultivation while the Leu have much lower poverty levels and relatively higher proportions of land under cash crop and rubber forest cultivation. While it is unclear to what extent external variables differ between ethnic groups, it is reasonable to note that agricultural practices and livelihoods vary

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between the groups and can be both reflected in disparities in geography and income-generating processes.

5.2.2. Land-use Patterns and Ethnic Group

In this section, I describe the cultural land-use patterns that are common among various ethnic groups in the region and examine how the nuances that differ between them manifest themselves in terms of income generation. The patterns that emerged from my fieldwork observations that seemed to have significant implications on current and future economic distribution are differences in the actual practice of shifting cultivation, and knowledge of soil quality.

Practice of Shifting Cultivation

While the practice of shifting cultivation described in Chapter 4 is prevalent across most of agricultural landscape of Lao PDR, the actual dynamics of cultivation often varies according to the ethnic group involved. Some of these practices vary depending on the cultural aspects of elevation, which is discussed in *Chapter 5.1.3. Altitude* while others are based on the actual cultural practices of a group.

Some groups are accustomed to farming over large areas of land, while others tend to stay near their villages and regularly cultivate crops on a set area of land. These practices have implications on the varying degrees of adjustment required to adapt to the sudden influx of rubber along with the reallocation of land. For instance, before, the Hmong group relied on shifting cultivation over a widespread region, often far from their village. Hence, as a result of the land allocation procedures and enforced stabilization of shifting cultivation, they were required to adjust their traditions and seek alternative farming strategies (Kallabinski 2004). On the other hand, Khammu people also relied on shifting cultivation, but they tended to practice a sort of rotational cultivation where they repeatedly farm on the same land, and allow areas to remain fallow. This is in line with the recent land reforms enacted and thus the Khammu did not have to alter their farming practices dramatically. However, this also has led to lower levels of soil regeneration, particularly as the population has been increasing over the past decade. In Ban Phouchalae, a Khammu village, participants at the focus group interview indicated that over time, they have noticed the rice yields decreasing as they have decreased the time between plantings. The villagers agreed that ideally, they would leave an area of land fallow for five to seven years. Currently, they allow three years of fallow time, and there have been instances when they have left only one year in between plantings.

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Knowledge of Soil Quality

Because of the inherently close relationship that farmers have with their land, the body of knowledge that they possess regarding soil quality and fertility improvement strategies is not insignificant. However, the degree and gradients by which perceptions differ across ethnic groups has the potential to lead to differences in what crops can be cultivated in the respective soil condition as well as to the maintenance of the planting.

Throughout the villages interviewed, farmers consistently took a holistic view of indicators of soil fertility. While factors such as crop yield and weed growth were taken into consideration, the two predominant criteria were soil color and texture. Farmers believed that soil that was black (*din dam*) was high quality while soil that was red (*din deng*) was poor quality. Further, if the texture of the soil was of a clay-like consistency (*din dak*), it was also high quality, while soil that was sandy (*din sai*) was poor quality. When asked how the farmers came to this association, most said that they had always known and that everyone knew.

Figure 17 “Bad” Soil



Source: Photograph by Author

Figure 18 "Good" Soil



Source: Photograph by Author

However, the perceptions elicited regarding why there were different levels of soil fertility varied among the villages. In Ban Hardlom, the farmers attributed the increased levels of erosion in certain areas of their land to their past practices of shifting cultivation. In Ban Phouchalae, a farmer explained that in the past, there was very good soil in the village; now however, it is not so good. However, he said that he had “never thought” about what caused the current soil conditions.

Further, between the focus groups, there were varying assessments of how to improve the soil conditions. In Ban Phouchalae, a Khammu village, a farmer who has been growing rubber since 2003 says that the soil where he is growing the rubber is “very hard” and so the rubber does not grow well. However, he does not know how to make it better and while there is high quality soil in the village, the other villagers are not sure what they can do to ameliorate (or likewise, worsen) the current conditions. On the other hand, in Ban Hardlom, a Leu village, the farmers indicated that they implement non-intensive slash-and-burn practices in areas where they want to improve the soil quality. They also practice an integrated or intercropped agriculture where they plant rice with various other crops such as beans. Further, a survey done by NAFRI in 1999 describes how the Hmong “are very careful in choosing the site to be cultivated, considering the characteristics of the site, the type of soil and its vegetation.” This idea ties back with the prior chapter: *4.1.1. Current Soil Fertility: Effects of Shifting Cultivation*. Because the Hmong rely heavily on far-reaching shifting cultivation, they inherently possess intimate knowledge of the land and soil’s capabilities. On the other hand, ethnic groups or particular villages that tend to repeatedly farm the same site may not need to possess this sort of knowledge.

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Because of the large amount of land allotted for rubber cultivation, most rubber companies do not take the time to help fertilize or instruct the farmers about fertilizing. A farmer from Ban Phouchalae said that he has asked the Jiachuang Rubber Company, which has a contract with the village, for help with his land. He felt that his rubber trees were not growing as well as the others in the village. However, he said that the company told him they did not have the time or finances to help with fertilization. Furthermore, the subsidies received from the Opium Eradication Policy give rubber companies a disincentive to place large amounts of resources into their rubber investments, as they have more of an advantage by planting in as large an area as possible.

Throughout the interviews, the farmers indicated that what they knew of planting had been passed down to them by their parents and other villagers. This diffusion of information through intimate personal networks is powerful in reinforcing traditional knowledge and creating a diverse landscape of knowledge patterns. However, the homogenizing forces of land allocation reforms and wide-spread foreign agricultural investments potentially have negative economic implications on the villages or groups that 1) are not accustomed to repeatedly farming the same land 2) are not familiar with traditional methods to enhance soil fertility. The local governments can intervene by ensuring that when a rubber company makes a contract with a village, the company is obligated to provide educational opportunities for the villagers to learn techniques or technologies with which they could improve their land's fertility. This would enable villagers to avoid food shortages by ensuring that their land is optimally productive and would provide a buffer in the event that the companies cease their investments and the farmers are left with the remnants of the plantations.

5.2.3. The Influence of Neighbors

Rubber offers the prospect of income generation. When asked why farmers decided to start planting rubber, most responded that they wanted to earn money. When asked how they knew they would make money from growing rubber, some said that they had been taken to Ban Hat Ngao, one of the first villages to plant rubber and a so-called successful case, and saw what could be bought with the income generated from the planting. Others said that they had decided to plant rubber because other farmers from their village had already done so. Further, according to a technical assistant from DAFO, villagers who had friends or relatives that had already begun

cultivating rubber were also more likely to inquire at the district office about beginning rubber planting.

As rubber cultivation diffuses further throughout the province, social pressures (or encouragement, depending on how one views it), will also increase, hence drawing in more adapters of rubber. At this point is potentially where the social aspects of rubber adoption intersect with the physical aspect of market and road access. Those villages that remain relatively isolated from the main markets due to lack of infrastructure and geographic location will not be able to encounter the social forces that propel other villages to begin planting rubber.

Figure 19 Left-Maize Crops; Right-Rubber Trees



Source: Photograph by Author

5.2.4. Linkages with China

The social pressures extend beyond the border of Lao PDR. Rubber first appeared in Lao PDR in the early 1990s through the encouragement of the Luang Namtha government. Coinciding with the first official push for rubber cultivation was the introduction of rubber planting in several Akha and Leu villages in the Sing district through neighboring Chinese villages. Through interviews with District Planning officials in Namtha and GTZ staff, it seems that beyond the physical proximity of Lao PDR and China, the strong socio-cultural have a sizeable degree of

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influence on the influx of rubber investment. These ties were developed through historical waves of migration and continue through to the present.

During the Civil Wars and Cultural Revolution in China during the mid 1900's, many Chinese immigrants settled in Lao PDR to escape the political unrest and established distinct communities within northern Laos, as well as regions in Myanmar and Thailand. After this initial stream of immigrants, new waves came over, primarily for economic opportunities, including many Chinese Leu and Akha populations from Yunnan and other southern Chinese provinces. As investment opportunities increased, Chinese businessmen or individual investors began to arrive, further strengthening the transboundary overlaps between the two countries. According to a Chinese agriculture researcher for GTZ, the alliances within the Chinese networks are used for labor recruitment, the creation of new contracts, and communicating between Lao villagers and Chinese companies. Thus, villages that have Akha or Leu populations are more able to influence whether the village gets rubber. Additionally, as China began planting rubber much before Laos, the farmers there have already incurred the financial gains from the crop cultivation. The stories of increased income and consumption potential are then often passed on to friends and relatives across the border in Laos, encouraging them to begin cultivation as well.

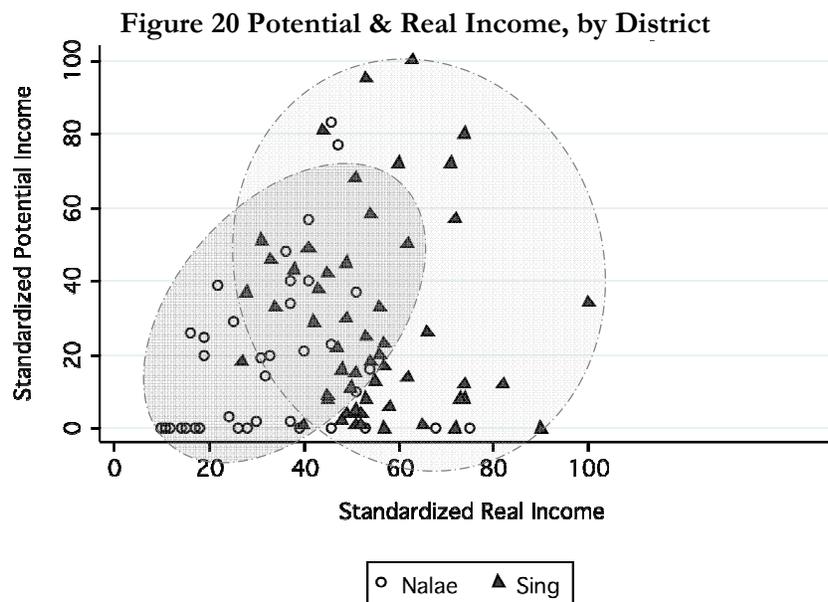
5.3. Cross Analysis

The previous sections highlighted the empirical effects of the cultural geographical variables on economic indicators. In this section, a statistical breakdown of the relationships will be more thoroughly presented and discussed. To understand another dimension of the cultural geography variables' influence on income, it was deemed valuable to look at income from a "potential" and "realized" perspective. To do this, the two determinants of potential income, % Rubber/Production Forest Area and % Cash Crop/Total Land Area, were standardized on a scale of 0-100. The standardized variables were summed and then standardized again along the same scale. The same approach was applied to the two determinants of real income: Assets (\$)/Household and % Households *above* the Poverty Line. (Note: To analyze the income indicators cumulatively, measures of households above the poverty line were used, rather than the measures of households below the line, contrary to what has been used in the earlier sections of the study.)

. Four factors were explored:

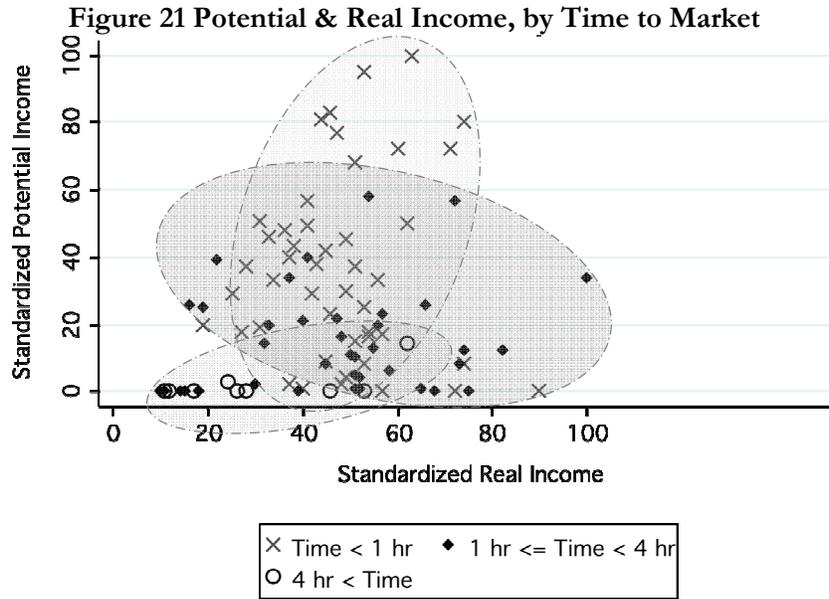
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1. The differences between a standardized scale of potential income and a standardized scale of real income are examined by their distribution among ethnic groups.
2. The differences between a standardized scale of potential income and a standardized scale of real income are examined by their distribution according to altitude.
3. The differences between a standardized scale of potential income and a standardized scale of real income are examined by their distribution according to district.
4. The differences between a standardized scale of potential income and a standardized scale of real income are examined by their distribution based on time to market.



Source: Calculated by Author based on GTZ raw data

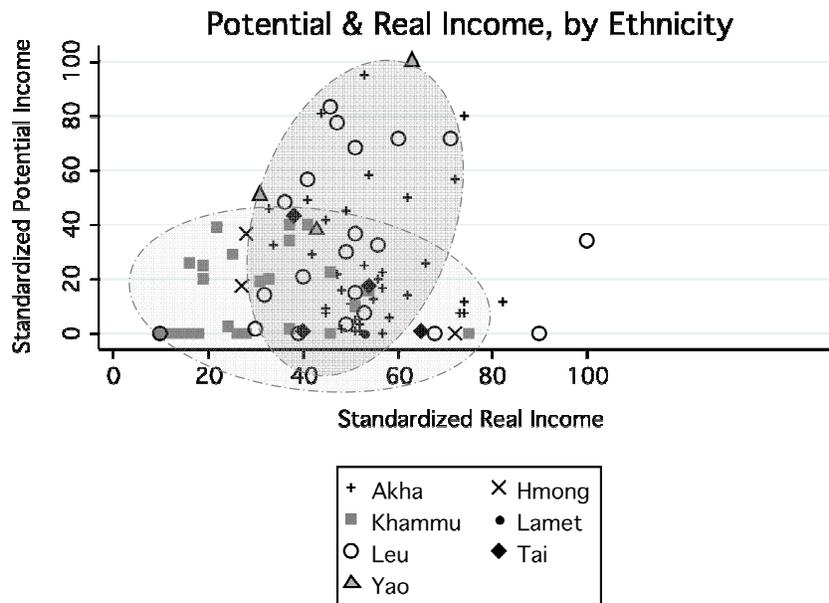
Villagers living in Sing District are more likely to have higher real income levels as well as potential income levels than those living in Nalae District. Further, from the plots above, it seems that Sing inhabitants also tend to have slightly higher potential income levels as compared with real income levels.



Source: Calculated by Author based on GTZ raw data

Broadly, villages that can more readily access a market, either because of physical proximity to a market or a reliable road, have overall higher incomes, as expected. However, it is noteworthy that they also seem to have higher potential incomes than real incomes. Perhaps this can be attributed to the fact that companies are likelier to invest in locations that have convenient market access.

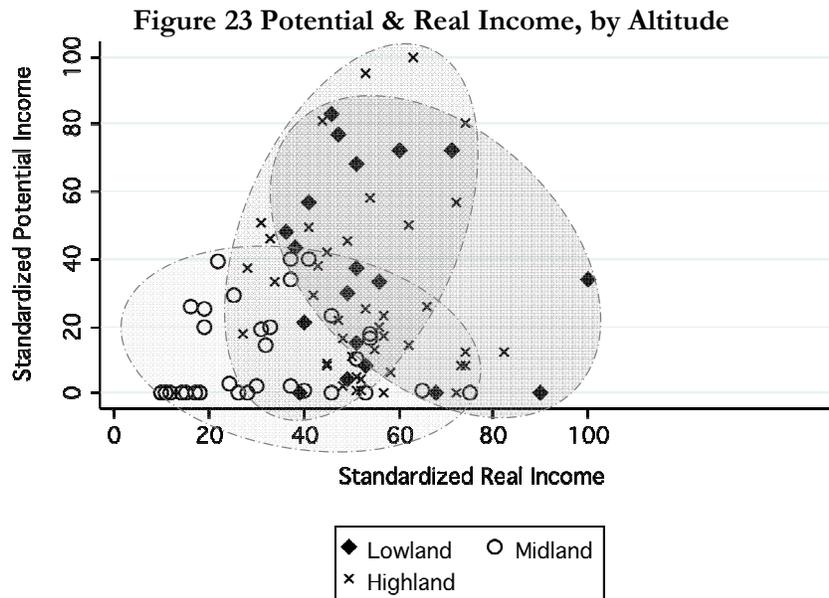
Figure 22 Potential & Real Income, by Altitude



Source: Calculated by Author based on GTZ raw data

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The distribution of income by ethnicity between potential and real levels is generally similar. As can be determined from the patterns in the graph above, the Akha and Leu villages have higher levels of both sorts of incomes and the Khammu village has the lowest.



Source: Calculated by Author based on GTZ raw data

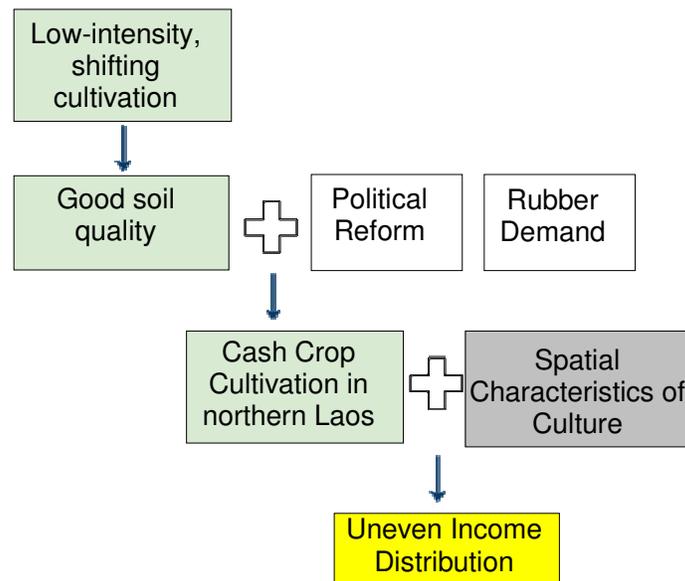
Corresponding with the earlier analysis of altitude, lowlanders have similar levels of both potential income and real income. The distribution of income among highlanders though seems to veer more in the direction of potential income rather than real income. This is potentially because government restrictions against shifting cultivation coupled with increased crop investments have begun to alter upland environments and livelihoods. That is, while upland regions have been generally associated with swidden agriculture and lowland regions have been associated with permanent agriculture and market crops, upland areas are now being converted to lands for permanent agriculture and in particular, rubber (Fujita 2006).

Chapter 6 – Conclusions

Although this study's scope and availability of data was limited, the narrative that has emerged introduced several points about the poverty impacts of spatial and geographical variation. From the correlation analysis, the economic determinants of infrastructure access, district, and altitudinal location appear to shape the dynamics of economic differentiation. However, by incorporating in situ research that allowed for conversations with local farmers, the research further indicated that cultural traits and the influence of group identity help explain how groups originally came to inhabit certain areas. Given the highly ethnic population of Lao PDR and the degree to which groups and villages differ with relation to settlement location, land-use, and information access, cultural geography should be considered as a method for studying emerging inequities. This analysis of the cultural geographic dimensions of poverty can provide some implications for policy as well as highlight the need for continued research. It is clear that regional disparities contribute to poverty; however, among deprived groups, the disparities are similar in that they reduce farmers' access to resources that would enable them to have greater economic opportunities.

6.1. Research Findings

Figure 24 Empirical Model of Findings



Source: Developed by Author

In this study, I illustrate that many generations of the low-input and low-intensity practice of shifting cultivation have resulted in relatively undisturbed soil that is consequently, very fertile, as compared with soil fertilities of neighboring Vietnam and Thailand. The fertile natural environment, coupled with policy and market reforms intended to “protect” the nation’s natural resources while at the same time improving local economies, have led to a recent influx of foreign investment in cash crops.

From this point of departure, the findings indicate that there is an economic distribution gap along the group-level that has arisen as a result of the spatial dynamics of culture. These cultural factors include the social influence of neighbors, relationships with China, and land-use traditions, all of which stem from the geographic variations of culture shown in the figure above. In turn, cultural factors influence geographic variables by affecting the locational decisions of village settlements and the subsequent changes to soil quality.

6.2. Policy Implications

In Luang Namtha Province, there are policies currently in place that attempt to address poverty and environmental issues. However, this study suggests that traditional policy approaches may be irrelevant or even harmful when regional disparities are, directly or indirectly, corresponding with cultural identities and values. Hence, regional development policies must be flexible and at the same time, specific. Targeting a deprived group directly would be less effective than focusing on the underlying situations contributing to the poverty.

Altitude: Because of policy reforms that have aimed to halt the practice of shifting cultivation, many upland farmers who had been previously engaged in the practice are having difficulty maintaining their subsistence level of living. Broadly, the government promotes economic activity in the lowland regions and environmental preservation (i.e. ending shifting cultivation) in the uplands. For example, in 1993, the Land and Forest Allocation Program (LFAP) was introduced as a way to conserve forests and eradicate poverty through the promotion of permanent agriculture. However, as conceptualized by the program, permanent agriculture was defined by lowland constructs. This limited definition discounted the multiple dimensions of agricultural techniques common among upland regions. While these efforts were meant to encourage environmental sustainability and economic growth, they did not address the multi-dimensional nuances of cultural geographical characteristics. Instead, this and other such

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strategies often run counter to the livelihoods and cultural inclinations of the villagers. The indigenous knowledge which farmers have accumulated may not be applicable in their new altitude, as their physical and social surroundings have been dramatically altered. Additionally, in the event that a large number of upland farmers move down to lower altitudes, there will be increased population pressures on the lowland fields and competition for land.

Hence, more effective approaches might try to adjust resource endowments in accordance with the particular needs and livelihoods of a particular village. Policies could be implemented to ensure that those areas are furnished with other substitute endowments (i.e. land, livestock, technology) to ensure that village welfare is not negatively affected by their altitudinal location. International aid agencies or NGOs could create targeted programs to introduce different groups to particular tree crops or other sources of agricultural activity that are most suited to their geographic context.

Relative Geographical Isolation: As expected, inconvenient market access and relative geographical/social isolation have a negative influence on access to rural development initiatives and opportunities for income generating activities. As with most rural development initiatives, heavy investment in rural infrastructure should continue to be carried out. Optimally, all villages would have comparable levels of access to wet season roads. However, because all-encompassing road access is neither feasible nor environmentally desirable, it may be even more important to understand why certain groups choose to remain in their particular locations, rather than move to a locale with better market access. For instance, a village might prefer a region because of its proximity to forests and a water source; alternatively, a village might have inhabited an area for centuries and have deep-rooted relationships with the surrounding environment; or, a village might simply not know where they can move to or that they can move. It is from this understanding that development aid and policy makers can most appropriately approach the issue.

Relative Social Isolation: From the fieldwork, it can be seen that surrounding villagers and even neighboring villages influence whether a household decides to cultivate rubber. It can be thus inferred that villages that are socially isolated are more buffered from the changes occurring around them. Thus, as with the previous policy measure on geographical isolation, an understanding of why groups choose where to live can help reduce the imbalances in social

connectivity between villages. Further, aid organizations or local governmental staff could work to bring together several villages or minority groups for seminars and informational sessions. This would encourage increased information dissemination and knowledge sharing. Additional investment could be made in the setting up of schools. Optimally, most schools would be located within a particular radius of at least two neighboring villages. Through this approach, even if the schools are not multi-ethnic, introducing children to people from outside of their village would increase knowledge flow and provide them with alternative perspectives.

Information Access: The fieldwork revealed that access to information was uneven across villages and ethnic groups. Because of the recent land allocation strategies, many villages have been required to adjust their traditional land-use patterns to the specific plot allotted to them. This shift in land-use, coupled with the influx of rubber plantations, will potentially alter the soil's fertility. Soil fertility is and will remain a large constraint to food security and agricultural productivity. Furthermore, erosion and decreasing levels of soil nutrients are harmful to native grasslands and forests, and the outcomes subsequently affect the local ecosystem. As soil quality decreases, more inputs will be required to maintain productivity, leading again to further soil deterioration. Because of this, initiatives should be taken based on local soil conditions and existing practices to introduce practical soil management and fertilizing strategies to villages. Possible approaches might include: the utilization of livestock waste for fertilizer; the introduction of intercropping methods and cover crops to protect the soil; and improved animal husbandry to prevent livestock from overgrazing.

As presented above, there is a wide range of policy potential to help mitigate the economic and spatial imbalances in the province and to promote more environmentally sustainable agricultural practices. However, in order to ensure that the policies are effective and can endure over time, it is essential that the outcomes are continually monitored. Rather than focusing entirely on the income-enhancing effects of the policies, it is also necessary to examine the resulting environmental and social consequences, with particular regard to their distributional impacts.

6.3. Areas for Future Research

This study was far from exhaustive. One of the main constraints was lack of complete data. To fully understand the patterns of economic distribution with relation to cultural and geographical variables, it would be optimal to garner data that extended over a length of time, both statistically

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and ethnographically. This would enable a time-series analysis to be implemented, rather than the current snapshot analysis across villages.

Additionally, there are still some questions that remain with regard to the long-term sustainability of the livelihood changes and actual income realization. It is assumed that future income from rubber will be used to purchase rice and meet other requirements for household sustenance. However, rubber prices may be highly variable in the future, as the demand stems from one primary origin (i.e. China). Furthermore, as the current plantations are composed of first generation rubber crops, it is uncertain what impacts this large expanse of monoculture will have on the future fertility of the soil. Thus, while short-term income may be actualized, the long-term implications on agricultural development, food security, and hence, effective market transition, are difficult to foresee.

Another area for future research is related to the impacts of the market transition on local social and environmental systems. Even if external demand for rubber remains constant, there is a strong possibility that the environmental pressures on the villagers' soil will decrease the available factors of production and harm future food security.

6.4. Concluding Remarks

Policies that view determinants of poverty as solely quantifiable dimensions do not fully capture the interdependencies between the different cultural factors that shape villages' responses to the changing physical and economic environment. Hence, along with the incorporation of traditional quantitative frameworks, policies should identify underlying cultural identities and group values. Support measures that take these nuances into consideration can potentially reduce socioeconomic group inequalities while maintaining the values and traditions of a group. Such measures may include improved access to information and agricultural endowments that are better suited to a location and custom.

High geographic inequalities as a result of cultural forces can have deleterious effects on rural development efforts. While this study was limited in its scope and data availability, it has pointed to some of the complex interrelations and contradictions between culture, geography, and economics in Luang Namtha Province, an area that is highly dependent on natural resources. The thesis has attempted to demonstrate that a cultural geography perspective allows for a more

complete perception of inequality and group identities. Cultural geography has strong explanatory potential regarding how agricultural practices with deep historical origins are linked with the spatial variations of the present. However, the study does not aim to exclude other approaches and variables in issues of culture and economic inequality. Rather, it presupposes that examining a situation through different social and geographical contexts will help provide yet another angle with which to understand issues related to poverty and the environment.

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Appendix 1 Village Data

	Village Name	District	Eth.	Alt.	Time to Market (h)	% Forest/ Production Forest	% Cash Crop/ Total Forest	Assets (\$)/ HH	% Poor HH
1	Bouakyaxai kao	Sing	Akha	Highland	1.500	1	2	737	56.3
2	Bouakyaxai mai	Sing	Akha	Highland	3.000	10	2	1243	33.9
3	Buakkhou	Sing	Akha	Highland	2.500	52	5	732	32.2
4	Chaoup-Pangthong	Sing	Akha	Highland	0.583	8	1	471	57.4
5	Chapoukeun	Sing	Akha	Highland	2.000	40	12	457	46.4
6	Chavang mai	Sing	Akha	Highland	2.000	8		265	52.0
7	Chomsee	Nalae	Lamet	Midland	5.000			929	91.0
8	Donejai	Sing	Leu	Lowland	0.333	83	2		
9	Donexai	Nalae	Khammu	Midland	0.083	15	12		
10	Donmai	Sing	Hmong	Highland	0.200	35	3	1197	3.8
11	Dornthip	Nalae	Leu	Lowland	3.083		0	1502	59.0
12	Eula	Sing	Akha	Highland	0.333	7	21	1003	73.6
13	Hardchalar	Nalae	Khammu	Midland	0.417		12	812	100.0
14	Hardchone	Nalae	Khammu	Midland	0.167	34	5	468	68.0
15	Harddao	Nalae	Khammu	Midland	3.000		0	1034	36.0
16	Hardlom	Nalae	Leu	Lowland	0.667	23	9		36.2
17	Hardloy	Nalae	Khammu	Midland	0.833	24	0	266	50.0
18	Hardnalaeng	Nalae	Khammu	Midland	1.500	18	2	647	77.6
19	Hardtaeh	Nalae	Leu	Midland	1.500	15	0	632	79.0
20	Hardtor	Nalae	Khammu	Midland	0.500	29	1	478	82.4
21	Homchaleune	Nalae	Leu	Midland	1.330		0	410	100.0
22	Homxai	Sing	Akha	Highland	0.333		0	785	51.2
23	Houaykheuang	Nalae	Khammu	Midland	3.000	7			
24	Houaykoth	Sing	Leu	Lowland	0.500	4	0		38.9
25	Houayla	Sing	Akha	Highland	1.000	10	2	503	45.5
26	Houaylong kao	Sing	Akha	Highland	1.000	8	0	982	37.9
27	Houaylong mai	Sing	Akha	Highland	0.667	27	2	635	65.6
28	Hounh	Nalae	Leu	Lowland	2.083		3		
29	Huakhua	Sing	Tai	Lowland	0.083		0		
30	Huayhoy	Sing	Akha	Highland	1.500	4	1	830	51.9
31	Huaylao	Nalae	Khammu	Midland	0.500		1	914	81.0
32	Huayna kang	Sing	Akha	Highland	1.500	1	9	516	55.1
33	Huaytard	Sing	Akha	Highland	1.500	1	0	562	52.2
34	Jongka	Sing	Yao	Highland	0.250	40			45.9
35	Ka yey	Nalae	Lamet	Midland					
36	Kangphonsing	Sing	Hmong	Highland	0.133		0	1199	44.9
37	Kanhar	Nalae	Khammu	Midland	3.000			697	100.0
38	Khonekham	Nalae	Leu	Lowland	4.000			0	
39	Khuang	Sing	Leu	Lowland	0.167	6	14		39.1
40	Kokmuang	Sing	Hmong	Highland	0.330		10	1142	
41	Konelang	Nalae	Khammu	Midland	2.500		0	772	100.0
42	La ang	Nalae	Lamet	Midland	3.833			1168	52.0
43	Lakkham mai	Sing	Akha	Highland	0.250	2	0		40.5
44	Lao	Nalae	Leu	Lowland	0.500	82	0		41.5

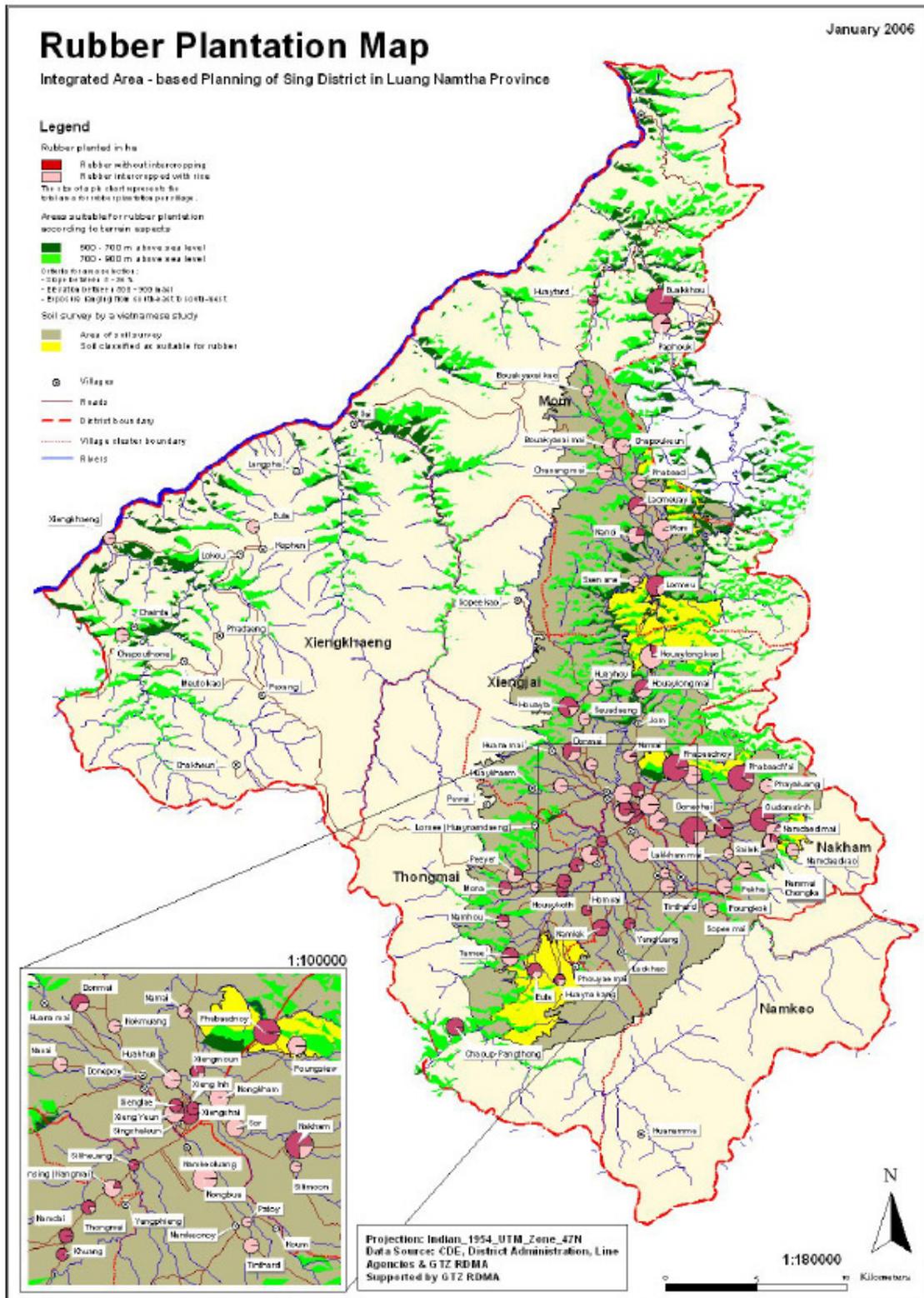
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45	Laomeuay	Sing	Akha	Highland	4.000	14	1	636	41.7
46	Longmoon Chomekeo	Nalae	Khammu	Midland	7.000		0	479	
47	Longmoon Singxai	Nalae	Khammu	Midland	7.000		0	479	81.0
48	Lormeue	Sing	Akha	Highland	3.000	4	1	524	51.9
49	Mokchord	Nalae	Khammu	Midland	1.500		0	493	100.0
50	Mokkoud	Nalae	Khammu	Midland	3.000				
51	Mokphard	Nalae	Khammu	Midland			0	515	100.0
52	Mokyom	Nalae	Khammu	Midland				485	100.0
53	Mom	Sing	Leu	Lowland	1.500	31	3	1356	15.3
54	Mona	Sing	Akha	Highland	0.250	11	24	676	41.8
55	Mongkho	Nalae	Lamet	Midland	6.000			224	100.0
56	Nakham	Sing	Leu	Lowland	0.250	77	0		25.0
57	Nalae	Nalae	Leu	Lowland	2.000		12		
58	Namai	Sing	Leu	Lowland	0.330		24		
59	Namdaed mai	Sing	Akha	Highland	0.330	20	8		57.1
60	Namdai	Sing	Leu	Lowland	0.330	9	0		34.6
61	Namhaeng	Nalae	Leu	Lowland	0.330	89	0		42.9
62	Namlek	Sing	Akha	Highland	0.330	34	28	1621	54.5
63	Namling	Nalae	Lamet	Midland	3.500			1009	100.0
64	Nanoi	Sing	Akha	Highland	3.000	12	5	504	44.3
65	Nguane	Nalae	Leu	Lowland	3.000		0	1609	98.0
66	Nongbua	Sing	Tai	Lowland	0.017		26		52.7
67	Nongkham	Nalae	Leu	Midland	1.500		1	1281	100.0
68	Nongkham	Sing	Leu	Lowland	0.167	73	0		36.1
69	Nongpasaed	Nalae	Khammu	Midland	3.167		0	594	100.0
70	Ome	Nalae	Leu	Lowland	0.083	54	4		48.6
71	Oudomsinh	Sing	Yao	Highland	0.250	90	9		21.9
72	Pakha	Sing	Akha	Highland	1.000	12	0		37.8
73	Paphouk	Sing	Akha	Highland	2.500	13		766	30.0
74	Patoy	Sing	Tai	Midland	2.000	1	0		19.0
75	Peeyer	Sing	Akha	Highland	2.000	28	0	1148	50.5
76	Peuane	Nalae	Leu	Lowland	2.000				
77	Phabaad	Sing	Akha	Highland	2.000	18	3	710	50.0
78	Phabadnoy	Sing	Akha	Highland	0.167	32	11		48.6
79	PhabadYai	Sing	Akha	Highland	0.167	49	0		58.4
80	Phahou	Nalae	Khammu	Midland	4.500			820	36.0
81	Phangbok	Nalae	Khammu	Midland	6.000			803	
82	Phavee	Nalae	Leu	Lowland	0.500	49	1	527	70.6
83	Phayaluang	Sing	Akha	Highland	0.500	48	0		39.6
84	Pheung	Nalae	Khammu	Midland			0	1192	
85	Phouchalae	Nalae	Khammu	Midland	4.000	0	2	551	86.0
86	Phouhon	Nalae	Khammu	Midland	2.500	28	0		80.0
87	Phouhong	Nalae	Khammu	Midland	2.500		0	769	100.0
88	Phoukhang	Nalae	Khammu	Midland	3.000		0	651	100.0
89	Phoulom	Nalae	Khammu	Midland	2.500			418	100.0
90	Phouluang	Nalae	Khammu	Midland	1.667	23	2	543	92.0
91	Phoutang	Nalae	Khammu	Midland	5.500		0	741	
92	Phouteen	Nalae	Khammu	Midland	2.000	11	0	654	55.0
93	Phouthon	Nalae	Khammu	Midland	1.500		0	423	100.0
94	Phouvieng	Nalae	Khammu	Midland	0.417	20	0	385	73.0
95	Poungkok	Sing	Akha	Highland	1.000	23			40.9

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96	Poungluang	Nalae	Lamet	Midland				405	84.0
97	Poungsiew	Sing	Akha	Highland	0.500	69	10	532	60.5
98	Saen ane	Sing	Akha	Highland	1.000	1	0	567	51.1
99	Sailek	Sing	Yao	Highland	0.417	35	11		61.9
100	Sakaene	Nalae	Khammu	Midland	5.000			687	85.0
101	Sakup	Nalae	Khammu	Midland	2.000				100.0
102	Saleuang	Nalae	Lamet	Midland	5.000		0	1019	64.0
103	Saloi	Nalae	Khammu	Midland	0.833	17	0	500	47.5
104	Sang ark	Nalae	Khammu	Midland	1.000	40	1	538	88.0
105	Sanghaene	Nalae	Khammu	Midland	12.000			529	94.0
106	Saphim	Nalae	Lamet	Midland	12.000			321	100.0
107	Seuadaeng	Sing	Akha	Highland	0.500	11	50	488	48.5
108	Siliheuang	Sing	Tai	Midland	0.167	1	0		50.6
109	Silimoon	Sing	Leu	Lowland	0.250	17	10		30.0
110	Sopee mai	Sing	Akha	Highland	0.500	27	0	562	50.0
111	Sor	Sing	Leu	Lowland	0.167	77			11.4
112	Takheung	Nalae	Lamet	Midland	5.000			1253	84.0
113	Takou	Nalae	Lamet	Midland					
114	Talang	Nalae	Lamet	Midland	3.500			1083	95.0
115	Taloue yai	Nalae	Lamet	Midland	12.000				100.0
116	Tamee	Sing	Akha	Highland	0.750	13	3	760	50.8
117	Tavanh	Nalae	Khammu	Midland			0	1211	78.0
118	Thongmai	Sing	Tai	Midland	0.200	19	0		32.2
119	Thongthone	Nalae	Khammu	Midland	1.000	43	0		49.3
120	Tinthard	Sing	Leu	Lowland	0.167	14	1		37.1
121	Tongkatang	Nalae	Khammu	Midland					
122	Tonglahang	Nalae	Khammu	Midland	1.500			571	100.0
123	Vaene	Nalae	Khammu	Midland	2.500	31	3	626	72.0
124	Vard	Nalae	Leu	Lowland	1.000	22	0		50.0
125	Xiengkhaeng	Sing	Leu	Lowland	0.267		0	1376	27.3
126	Yangluang	Sing	Akha	Highland	0.250	8	0	1602	54.3

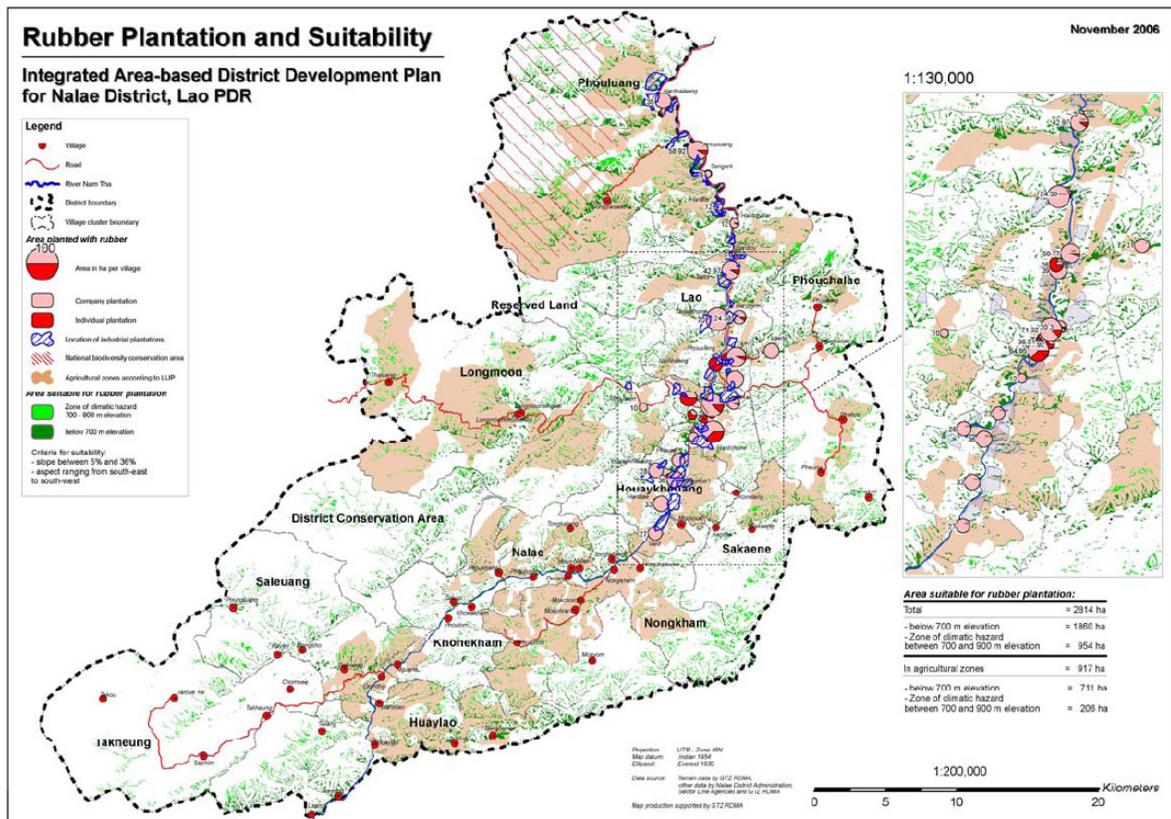
Appendix 2 Sing District, Rubber Plantation Map



Source: GTZ-RDMA Integrated Area-based Development Plan, 2006

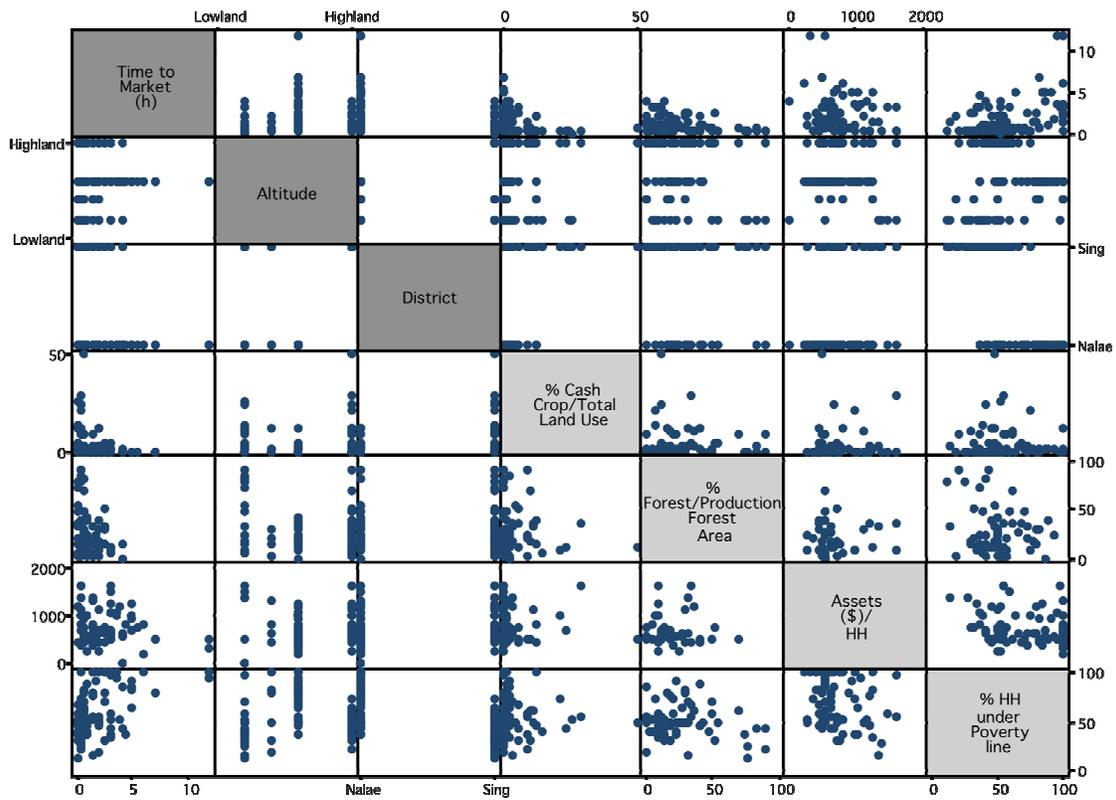
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Appendix 3 Nalae District, Rubber Plantation Map



Source: GTZ-RDMA Integrated Area-based Development Plan, 2006

Appendix 4 Scatter Matrix of Variable Correlations



Source: Developed by Author

Appendix 5 Field Survey Permission Letter



**Lao – German Cooperation
Integrated Rural Development
In Mountainous Areas of Lao PDR (RDMA)**
P.O. Box 42, Namtha District, Luang Namtha Province, Lao PDR
Tel/Fax: +856-(0)86 211676



15.10.2009

To
Deputy Director
Mr. Sommay Kosada
Department of Planning and Investment (DPI)
Luang Namtha Province
Lao PDR

Subject: Research in Rubber

Dear Mr. Sommay,
This is to officially notify you about the request we received from the Head of Section for Environmental Engineering, Professor Dr. Bounsouk Souksavath, of the National University of Laos in Vientiane Capital.

Prof. Bounsouk was requesting if Ms. Caroline Tien – one of the sections scientist - could be supported by RDMA Luang Namtha while conducting field research in Luang Namtha Province regarding the changes of farming while developing rubber as an income source. Please find Professor Bounsouk's Email attached.

Ms Tien is member of the Sustainability Department of the University of Tokio, Japan and officially affiliated to the above mentioned Section of the National University of Laos. Please kindly refer for more details to her curriculum vitae and her research outline attached.

As you know RDMA currently makes efforts to support the establishment of information systems based in Laos regarding the technical knowledge of rubber cultivation. The programme is therefore prepared to support the National University of Laos in conducting the field work for this joint study of the Universities of Laos and Tokio.

It is currently proposed that Ms. Tien would arrive at the end of October in Luang Namtha and would be carrying official Letter by the National University of Laos. I would of cause inform you in due course on the particular day of her arrival in Luang Namtha and organize an official introduction to the DPI.

If you have any question or query regarding the above please do not hesitate to get in contact with me. If I can be of any further support of helping to facilitate this planned activity please also kindly refer back to me.

Yours Sincerely

Dr. Adrian Schuhbeck
Team Leader
RDMA Luang Namtha

Appendix 6 Lao-English Interview Structure

ໂຄງຮ່າງບົດສອບຖາມ (ເມືອງນາແລ,ແຂວງຫຼວງນໍ້າທາ)

ຂໍ້ມູນຂັ້ນເມືອງ:

ຂໍ້ມູນກ່ຽວກັບບັນຊີການເງິນຂອງຫ້ອງການ
ສະຖິຕິພະນັກງານໃນປັດຈຸບັນ(ການເພີ່ມຂຶ້ນຂອງແຕ່ລະປີ)
ຂໍ້ມູນ GPS ທີ່ຕັ້ງຂອງບ້ານ
ຂໍ້ມູນປະຊາກອນບ້ານ

For the district office:

*Do you have the budget information for the office?
Have you hired more people recently?
if yes:How many? Over what time period?
Where is this village located? (GPS coordinates are helpful if possible)
How many people live in _____ village?*

ຂໍ້ມູນຂັ້ນບ້ານ

ການສຶກສາ(ຂັ້ນໂຮງຮຽນຊັ້ນໃດຫາຊັ້ນໃດ,ເມື່ອໃດທີ່ນັກຮຽນຢຸດໃນການເຂົ້າໂຮງຮຽນ)
ສຸຂະພາບ (ສະຖິຕິຜູ້ເສຍຊີວິດ, ອາຍຸສະເລ່ຍເທົ່າໃດ ແລະ ສາເຫດຍ້ອນຫຍັງ)
ສະກຸນເງິນທີ່ໃຊ້ (ກີບ, ບາດ, ໂດລາ ແລະ ອື່ນໆ)
ພາສາທີ່ໃຊ້(ກຸ່ມເຜົ່າໃດແຕ່ໃນເຂດນັ້ນ, ແຫຼ່ງລາຍຮັບໄດ້ມາຈາກໃສ?

For each village:

*Education (how many schools, when do people stop going to school?)
Health care (life expectancy, main cause of death)
Currency
Languages spoken
What ethnic subgroups are here?
Village economy (how do they generate income? before rubber)*

ຂໍ້ມູນສອບຖາມນາຍບ້ານ

ຊື່ ແລະ ນາມສະກຸນ
ເປັນນາຍບ້ານໄດ້ດົນປານໃດແລ້ວ
ເຈົ້າໄດ້ຄັດເລືອກມາເປັນນາຍບ້ານໄດ້ແນວໃດ
ນາຍບ້ານແມ່ນຊົນເຜົ່າໃດ
ອາໄສຢູ່ໃນບ້ານນີ້ໄດ້ດົນປານໃດ
ໂດຍທົ່ວໄປແລ້ວ ປະຊາຊົນສ່ວນຫຼາຍແມ່ນມາຈາກໃສ
ສິ່ງທີ່ເຈົ້າຄິດວ່າການດຳລົງຊີວິດໃນບ້ານນີ້ດີແນວໃດ ? ມີຄວາມພາກພູມໃຈແນວໃດ

Village head

The cultural geography of economic inequality: A mixed-methods study of livelihood and landscape transitions in Luang Namtha Province, Lao PDR

What is your name?
How long have you been the village head?
How did you become a village head?
What ethnic group do you belong to?
How long has ____ lived here?
In general, where do people from _____ live in Laos?
What makes you proud of being _____ ?

ຂໍ້ມູນສອບຖາມຊາວບ້ານ (ຜູ້ທີ່ເປັນຫຼັກໃນການເຮັດກະສິກໍາໃນແຕ່ລະຄົວເຮືອນ)

ຊື່ ແລະ ນາມສະກຸນ

ອາໄສຢູ່ໃນບ້ານນີ້ໄດ້ດົນປານໃດແລ້ວ

ເຈົ້າມີເນື້ອທີ່ດິນຫຼາຍປານໃດ

ເຈົ້າແມ່ນຊົນເຜົ່າໃດ

ເຈົ້າໄດ້ມີການພົວພັນຕະຫຼອດກັບປະຊາຊົນໃນເຂດອື່ນບໍ່ ?

ສິ່ງທີ່ເຈົ້າຄິດວ່າການດຳລົງຊີວິດໃນບ້ານນີ້ດີແນວໃດ ? ມີຄວາມພາກພູມໃຈແນວໃດ

ສິ່ງທີ່ເຈົ້າຄິດວ່າການດຳລົງຊີວິດໃນບ້ານນີ້ຍັງມີຈຸດທີ່ບໍ່ດີແນວໃດ ?

Villagers (I want to speak with the person in charge of the farming of each household)

What is your name?

How long have you lived here?

How much land do you own?

What ethnic group do you belong to?

Do you communicate very often with other _____ who live in different areas?

What makes your proud of being _____?

ຂໍ້ມູນສອບຖາມຊາວໄຮ່ນາ, ຊາວສວນ ຜູ້ທີ່ເຮັດຕົວຈິງ.

ຖ້າມີການປູກຢາງພາລາ

ຜ່ານມາເຈົ້າໄດ້ມີການເຮັດຫຍັງມາກ່ອນ, ກ່ອນທີ່ຈະມາປູກຢາງພາລາ

ເຈົ້າໄດ້ປູກຫຍັງ

ປູກແນວໃດ

ເຈົ້າມີວິທີການປູກແບບໃດ ແລະ ຮຽນຮູ້ມາບ່ອນໃດ

ເຈົ້າປູກພືດຊະນິດນີ້ມາແຕ່ລຸ້ນປູ່, ລຸ້ນພໍ່ຂອງເຈົ້າແມ່ນບໍ່? ຖ້າບໍ່ ແຕ່ກ່ອນແມ່ນປູກພືດແບບໃດ?

ຖ້າບໍ່ມີການປູກຢາງພາລາ

ຜ່ານມາເຈົ້າໄດ້ມີການເຮັດຫຍັງມາກ່ອນ, ກ່ອນທີ່ຈະມາປູກຢາງພາລາ

ເຈົ້າໄດ້ປູກຫຍັງ

ປູກແນວໃດ

ເຈົ້າມີວິທີການປູກແບບໃດ ແລະ ຮຽນຮູ້ມາບ່ອນໃດ

ເຈົ້າປູກພືດຊະນິດນີ້ມາແຕ່ລຸ້ນປູ່, ລຸ້ນພໍ່ຂອງເຈົ້າແມ່ນບໍ່?

ຖ້າບໍ່, ແຕ່ກ່ອນແມ່ນປູກພືດແບບໃດ?

Farming Practices

The cultural geography of economic inequality: A mixed-methods study of livelihood and landscape transitions in Luang Namtha Province, Lao PDR

If rubber:

What sort of farming did you do before rubber?

What did you grow?

How did you grow it?

How did you learn how to grow it?

Did your father grow the same thing as you? What about your grandfather?

If no rubber:

What sort of farming do you do?

What do you grow?

How do you grow it?

How did you learn how to grow it?

Did your father grow the same thing as you? What about your grandfather?

ຂໍ້ມູນຄຸນນະພາບດິນ

ຖ້າມີການປູກຢາງພາລາ

ເຈົ້າໄດ້ເອົາໃຈໃສ່ກ່ຽວກັບຄຸນນະພາບຂອງດິນບໍ່? ຖ້າແມ່ນ, ເຈົ້າໄດ້ເອົາໃຈໃສ່ແບບໃດ?

ເຈົ້າຮູ້ໄດ້ແນວໃດວ່າຄຸນນະພາບດິນມີສະພາບດີ?

ເຈົ້າຮູ້ໄດ້ແນວໃດວ່າຄຸນນະພາບດິນມີສະພາບບໍ່ດີ?

(ເບິ່ງທາງດ້ານສີ, ດິນຜຸຜຸຍ, ມີພືດເກີດຂຶ້ນ ຫຼື ແບບໃດ?)

ເຈົ້າໄດ້ຮຽນຮູ້ມາຈາກໃສ?

ໄດ້ມີເລື່ອງເລົ່າກ່ຽວກັບການປ່ຽນແປງຂອງດິນຈາກລຸ້ນບັນພະບູລຸດມາເຖິງລຸ້ນ ເຈົ້າບໍ່?

ເຈົ້າຈະມີການປັບປຸງດິນແນວໃດໃນປັດຈຸບັນ?

(ຈະສະແດງພາບພື້ນທີ່ໃຫ້ຊາວບ້ານ ແລ້ວໃຫ້ຊາວບ້ານທາສີໃສ່ເຂດພື້ນທີ່ດິນຂອງຕົນເຫັນວ່າເປັນພື້ນທີ່ ທີ່
ເໝາະສົມສຳລັບການປູກພືດ ແລະ ກະສິກຳໄດ້ດີ)

Soil Quality

If rubber:

Did you care about the quality of the soil?

How did you care about the quality of the soil

How did you know if the soil was good?

How did you know if the soil was bad?

(I mean, do you look at the color to tell if its good or bad? or does something else tell you? like softness? weed growth?)

How did you learn to do this?

Are there any stories about how the soil is changing from your grandfather to your father to you?

If you could go back in time, would you change anything about your farming techniques?

(If this is your land before (I will show a big square) what percentage was fertile? What percentage was infertile?)

ຖ້າບໍ່ມີການປູກຢາງພາລາ

ເຈົ້າໄດ້ເອົາໃຈໃສ່ກ່ຽວກັບຄຸນນະພາບຂອງດິນບໍ່? ຖ້າແມ່ນ, ເຈົ້າໄດ້ເອົາໃຈໃສ່ແບບໃດ?

ເຈົ້າຮູ້ໄດ້ແນວໃດວ່າຄຸນນະພາບດິນມີສະພາບດີ?

ເຈົ້າຮູ້ໄດ້ແນວໃດວ່າຄຸນນະພາບດິນມີສະພາບບໍ່ດີ?

(ເບິ່ງທາງດ້ານສີ, ດິນຜຸຜຸຍ, ມີພືດເກີດຂຶ້ນ ຫຼື ແບບໃດ?)

The cultural geography of economic inequality: A mixed-methods study of livelihood and landscape transitions in Luang Namtha Province, Lao PDR

ເຈົ້າໄດ້ຮຽນຮູ້ມາຈາກໃສ?

ໄດ້ມີເລື່ອງເລົ່າກ່ຽວກັບການປ່ຽນແປງຂອງດິນຈາກລຸ້ນບັນພະບູລຸດມາເຖິງລຸ້ນ ເຈົ້າບໍ່?

ເຈົ້າຈະມີການປັບປຸງດິນແນວໃດໃນປັດຈຸບັນ?

(ຈະສະແດງພາບພື້ນທີ່ໃຫ້ຊາວບ້ານ ແລ້ວໃຫ້ຊາວບ້ານທາສີໃສ່ເຂດພື້ນທີ່ດິນຂອງຕົນເຫັນວ່າເປັນພື້ນທີ່ ທີ່ບໍ່

ເໝາະສົມສຳລັບການປູກພືດ ແລະ ກະສິກຳໄດ້ດີ)

If no rubber:

Do you take care of the quality of the soil?

How do you take care of the quality of the soil

How do you know if the soil is good?

How do you know if the soil is bad?

(I mean, do you look at the color to tell if its good or bad? or does something else tell you? like softness? weed growth?)

How did you learn to do this?

Are there any stories about how the soil is changing from your grandfather to your father to you?

How do you want to improve the soil from now?

If this is your land now (I will show a big square) what percentage was fertile? What percentage was infertile?

ຂໍ້ມູນການປູກຢາງພາລາ

ຖ້າມີການປູກຢາງພາລາ

ເຈົ້າປູກຢາງພາລາບໍ່ໃນເຂດນີ້? (ມັນດຳເນີນໄປເປັນຄືແນວໃດ)

ເຈົ້າຄິດວ່າຍ້ອນຫຍັງບ້ານຂອງເຈົ້າຈຶ່ງເລືອກທີ່ຈະປູກຢາງພາລາ ?

ເຈົ້າດີໃຈບໍ່ກັບການປູກຢາງພາລາ ?

ແມ່ນຫຍັງທີ່ເຈົ້າຕ້ອງການປ່ຽນແປງແດ່ ?

ເຈົ້າຍັງຄົງມີພື້ນທີ່ກະສິກຳໃນເຂດອື່ນອີກບໍ່ ? (ປູກຢາງພາລາບໍ່ໃນເຂດນັ້ນ)

ເຈົ້າມີໝູ່ ຫຼື ຍາດພີ່ນ້ອງຢູ່ຈີນບໍ່ ?

(ເຈົ້າເຄີຍໄດ້ໃຫ້ເຂົາເຈົ້າມາຊ່ວຍໃນການປູກຢາງພາລາບໍ່ ?)

Rubber:

You have rubber here. How is it going?

Why was your village chosen for rubber?

Are you happy with the rubber?

Do you still farm a little for yourself?

Do you have any friends in China?

Do you ever ask them for help with rubber?

ຖ້າບໍ່ມີການປູກຢາງພາລາ

ຢູ່ໃນບໍລິເວນອັມຮອບບ້ານຂອງເຈົ້ານີ້ແມ່ນມີການປູກຢາງພາລາ, ເຈົ້າບໍ່ສົນໃຈທີ່ຈະປູກບໍ່?

ເມື່ອໃດເຈົ້າຄິດວ່າ ຫຼື ຈົນຕະນາການວ່າເຈົ້າຈະປູກມັນ?

ແມ່ນໃຜຈະເປັນຜູ້ຕັດສິນເມື່ອເຈົ້າຈະປູກຢາງພາລາ?

No-rubber:

A lot of people around you have rubber now. Do you want it?

When do you think you will have rubber?

Who decides this?