An investigation of Hmong Livelihood Strategies in the face of Limited Land Access



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Word count: 10,974

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Date: March 8th 2016

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1. Abstract

Livelihoods strategies are embedded in a wider political-economic context, which frames who is able to access what. The Hmong in Khek Noi are an ethnic minority within the Thai society. Land access and rights play an important role in both their livelihoods and their marginalization. Within the community exist different livelihood strategies: ginger farming, non-farming and diversification. Limitations regarding land access interact with other factors and impact livelihood strategies through various channels. They limit the possibilities for diversification and agricultural intensification. Diversification correlates with higher income. Households with a higher income are more likely to invest in the education of their children. Diversification hence marks a way out of a cycle of poverty. Furthermore, Hmong have been constructed as destructive farmer in the past. The effect of different land access forms on soil quality has been investigated, in order to explore if this reputation is related to structural forces outside the control of the community. The results show no difference between land access forms.

2. Acknowledgements:

First of all, we would like to thank the villagers of Ban Khirirat, Moo 11 for opening their homes to us, taking their time to answer all of our questions and letting us do soil samples in their fields. We would further like to thank our interpreters Platoo Varinrumpai Wasinanont and Wilasinee Yimliang (Fern), we would not have been able to perform our research without their great assistance. Also we thank the Thung Salaeng Luang National Park for letting us stay in the park and for employers of the park for participating in interviews. We would also like to thank our two drivers for being at our constant availability, safely taking us anywhere we could possibly think of going and being at our general assistance. Finally, we would like to thank our supervisors and all of the SLUSE staff, both in Denmark and Thailand.

3. List of Abbreviations

NP: National Park RTA: Royal Thai Army TAO: Tambon (Sub-district) Administrative Organization POX-C: Permanganate Oxidizable Carbon

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5. Introduction

People in rural areas around the globe use a variety of activities and draw from a range of different resources in order to make their living. They employ a complex portfolio of livelihoods. What people are able to do is influenced by forces in a wider political and economic context and subject to power dynamics (Scoones 2015). This political-economic context frames who is able to gain and maintain access to different resources and therefore how households can utilize their resources and unfold their potential (Ribot and Peluso 2003; Bebbington 1999; Scoones 2015). This leaves some households more advantaged than others, because of their cast, social status, gender or ethnicity, and brings the risk to marginalize parts of the population. Access to resources is also crucial for adaptation processes (McDowell and Hess 2012). This becomes particularly important regarding the challenges many rural communities face today such as climate change and volatile markets, raising the question if existing inequalities will be further entrenched in the future.

Our research is conducted in northern Thailand, in Moo 11 which is part of the bigger village cluster Khek Noi. The villagers of Moo 11 are Hmong, an ethnic minority within the Thai nation. The origins of the Hmong people remain a matter of debate, but today there is an agreement that the Hmong originate from China (Tomforde 2006). The Hmong fled from conflicts with Chinese imperialists and crossed the borders to Southeast Asia, where they found arable land for cultivation. The Hmong were not much concerned with national borders, but paid greater attention to clan and affinal attachments (Geddes 1976 in Tomforde 2006). The Hmong culture has been characterized by a migrational pattern partly as result of their Chinese exile, and partly caused by the Hmong system of swidden agriculture (Tomforde 2006).

In the search for new areas of settlement, Hmong began to arrive in Thailand from Laos around the 1870's, in the search for regions suited to their swidden farming system (ibid.) The subsequent banning of swidden agriculture in Thailand, conversion to commercial agriculture, and establishment of forest preserves has made it more difficult for the Hmong to relocate their villages which has resulted in a process of sedentarisation (ibid.). As a result of

these historical processes, the Hmong were settled in the Khek Noi area, not by choice but more by a necessity imposed by land scarcity, outside pressure and state policy.

The Hmong are referred to as part of the hill tribes by the Thai government and have been marginalized within the Thai society. They have been seen as a particularly environmentally destructive ethnic minority due to their swidden agricultural practice and a more business minded approach. This distinguishes them from other ethnic groups that are seen as mere subsistence farmers (Hares 2009). In response to this, the Thai Royal Development projects of the 1970s and 1980s attempted to shift Hmong practices from opium and Swidden to fixed field and chemically intensive cash crop production (Latt and Roth 2015). The Hmong then gained a reputation for polluting water resources by the use of biocides causing environmental problems. Their marginalisation might be most evident in the lack of citizenships in some regions and the lack of land rights (Sutiwatananti 2015). As a community mostly engaged in agriculture, land availability and access play a vital role for their livelihoods.

Knowledge Gap

Reviewing the history of the livelihood framework, Scoones (2015) draws the prospect of an extended livelihood approach, which takes into account the complexity of rural communities at the local level and how the wider political-economic context shapes localities and livelihoods. This research aims to contribute to an enhanced understanding of such an extended livelihood approach. We intend to do this by situating the local case of the Hmong community in Khek Noi, Thailand in a wider structural process of social exclusion in form of limited access to land. Subsequently, we ask how the sustainability of their livelihoods regarding soil quality is affected by the results of this process.

Research objective

How do limitations regarding land access affect livelihood strategies and the quality of soil used by members of the Hmong community in Moo 11, Khek Noi, Petchabun, Thailand?

The research question is operationalized in three subquestions:

- 1. How do villagers of Moo 11 access land and what are the limitations?
- 2. What are the livelihood strategies in Moo 11 and how are they constrained by limitations regarding land access?
- 3. How do different forms of land access affect the quality of soil used by villagers of Moo 11?

6. Theoretical Framework

Three theoretical approaches are particularly relevant to frame our study. On the basis of the theory of access, we explain the obstacles the Hmong face in terms of land availability. By looking at livelihood strategies, we investigate the Hmong ways of making a living. In order to clarify how the Hmong and Thai people distinguish each other as culturally different, and the subsequent impact on Hmong livelihood opportunities, we refer to Bath's text on the subject of Ethnicity. These theories are described in the following sections.

Access

Ribot and Peluso (2003, 153ff) define access as "[...] the ability [of actors] to benefit from things [...]" in contrast to property, which is the "[...] the right to benefit from things [...]". This definition directs attention to a broader range of social relationships which enable or constrain the benefit people can gain from resources. "Access is about *all* possible means by which a person is able to benefit from things. Property generally evokes some kind of *socially acknowledged and supported* claims or rights—whether that acknowledgment is by law, custom, or convention" (ibid, 156). A person who has the *right* to benefit from something must not necessary be *able* to benefit from it. It might be the case, that this person lacks the necessary knowledge, capital or technology to utilize her property.

In this approach property becomes a subcategory of a wider set of access mechanisms. This mechanisms are embedded in web of power bundles and the wider political-economy, in which actors can gain and maintain access to various resources, institutions, streams of benefits and services. Usually access is controlled by people or institutions. Technology, capital, markets, labour, knowledge, authority, identity, and social relations are important categories shaping or influencing access. According to Ribot and Peluso, these categories are not distinct or complete. The different forms of access may enable, conflict with, or complement other access mechanisms and result in complex social patterns of benefit distribution (Ribot and Pelouso 2003).

Livelihood Strategies

For most scholars, the livelihood framework took off with the following definition by Chambers and Conway (1992, 6.):

A Livelihood comprises the capabilities, assets (stores, resources, claims, and access) and activities required for a means of living.

Ellis (2000, 10.) builds on this definition and directs attention towards the importance of access:

A livelihood comprises the assets (natural, human, financial, and social capital), the activities, and the access to these mediated by institutions and social relations that together determine the living gained by the individual or household.

Access is a central idea in our study, therefore we will make use of the Ellis (2000) definition in this study.

Rural households engage in a number of livelihood activities, constructing complex portfolios, which can be categorized into livelihood strategies. The process of rural Livelihood diversification can be defined as "the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and improve their standard to living" (Ellis 2000). Diversification can occur by either changing the nature of full time occupations, or an individual or households engaging in multiple occupations (Ellis 2000). In addition to diversification, Scoones (1998) adds two other general livelihood strategies: agricultural intensification/ extensification and migration. These strategies are embedded in a wider context of limitations and opportunities, which influences what options for strategies people have (2015).

In this report, the primary unit of analysis is the household. The household can be defined as "the resident social unit extended where applicable to include migrants and others who make intermittent or regular contributions to household welfare" (Ellis 2000). This definition includes members of the household engaged in seasonal migration, or living apart from the household contributing to the livelihood strategy through remittances.

Ethnic Understanding

As our research project addresses the Hmong people, an ethnic minority group within Thailand, we will also include an analytical approach bound in the understanding of ethnicity as a social process as argued by Barth (1998[1969]).

Barth criticizes the understanding of cultural diversity as something that persists due to geographical and social isolation. Instead, he argues that categorical ethnic distinctions do not depend on an absence of mobility, contact or information. Boundaries between ethnic groups persist despite flows of people, and should be seen as social processes of exclusion and incorporation. Barth focuses on the interaction between people and sees ethnicity as a dynamic aspect of a relation rather than a characteristic of a person or a group. Attention should be given to the ethnic boundaries as they define the group and not so much to the "cultural stuff" that lies within it. Ethnic groups only persist as significant units if they imply a difference in behaviour. He stresses that the relationship between ethnic units and cultural similarities cannot be seen as a one-to-one relationship; the differences regarded as significant by the actors are those to take into account, not sum of "objective differences".

Social relevant factors become the most important diagnostic for membership, and not overt objective differences, no matter how similar members are in the overt behaviour. "On the other hand, dichotomization of others as strangers, as members of another ethnic group, implies a recognition of limitations on shared understanding, differences in criteria for judgment of values and performance, and a restriction of interaction to sectors of assumed common understanding and mutual interest" (Barth 1998[1969], 15.). Despite the boundaries, interactions still exist between different groups and stable, persisting, and often vitally important social relations are maintained across boundaries, and are frequently based precisely on the dichotomized ethnic statuses (Barth 1998).

7. Study Site Description

The study site, Moo11(Ban Khirirat), is one of 12 villages in the Khek Noi (Thai: เป็กน้อย) tambon (sub-district). Most of the inhabitants of the village cluster are Hmong, with a total population of 13,739 people. This is the biggest Hmong community in Thailand. According to the assistance of the village headman, Moo 11 consists of 270 households.



Figure 1: Satellite Picture of Ban Khirirar, Khek Noi, Petchabun, Thailand (Google earth s.a.)

Khek Noi has a tropical climate with low rainfall during the winter months. This climate is classified as tropical wet (Aw) in the Köppen-Geiger system (Peel et al. 2007). The average annual temperature in Ban Khek Noi is 24.3 °C. The average annual rainfall is 1109 mm.



Figure 2: Climate Diagramm Ban Khek Noi (Climate-Data.org s.a.)

8. Methodology

Our study focused primarily on land access and livelihood strategies, therefore we chose to use more social science methods than natural science methods.We used our interdisciplinary backgrounds to create an integrated natural and social science approach in the majority of our research methods. In our questionnaires and interviews, we included questions regarding natural resources and agriculture as well as personal stories and opinions. Our PRA sessions allowed for an investigation of farming practices as well as social structures within the community.

8a. Description of Methods

Key Informant Interviews

Key informant interviews were conducted using a semi-structured interview guide. This guide served to address specific questions relevant to a particular key informant. The interviewers also allowed for flexible conversation, granting the opportunity to dig deeper into the unexpected (Mikkelsen 2005). Key informant interviews were conducted with the assistant village headman, the village headman, and prominent community members who explicated the village history, challenges faced, and issues regarding land access, tourism, and the national park. The sub-district head provided information about the history of Khek Noi and the nature of land access in the region. The sub-district extension officer provided information about support opportunities for farmers in Khek Noi. The National Park officer and Park Fire Rangers provided information about the relationship between the Hmong and the National Park, the history of the Park, and general Thai-Hmong relations.

Semi-Structured Interviews

Ten semi-structured interviews were conducted throughout our time in the field. The majority of these interviews occurred with in our first two days in the field. The interviews were used to collect general information about life and challenges in Khek Noi, and later served to redirect our research question. The same semi-structured interview guide was utilized in all interviews, addressing the following topics: background information and village history, livelihood activities, land access and agriculture, forest access, and tourism.

Village Walk

The assistant headman guided us on a village walk upon our arrival in the village. This walk established the borders of Moo 11 within the larger Khek Noi village cluster. The assistant headman highlighted important landmarks in the village such as the rice mill. Individual group members also took village walks with the purpose of observing life in the village.



Participatory Rural Appraisal

Two PRA sessions were carried out simultaneously. One session involved the headman and three other related men from the village. The other session included the headman's wife and four other female members of her family. We chose to divide the groups by gender because we believed the woman would be more likely to participate in a setting involving only

women. We were also interested in comparing the results between the two groups, since we assumed that women and men would have different everyday experiences and hence insights.

Both sessions consisted of seasonal cropping calendars, timelines, and participatory mapping approaches. We chose to do a cropping calendar in order to gain a better understanding of the labor requirements and time schedule necessary for ginger farming and other popular crops. We also hoped to learn about the inputs used in farming, and discover if any intensification was occurring. We chose to do a timeline to gain a better understanding of the complicated history of Ban Kirirat. The mapping exercises were intended to help clarify the land access situation, locate the fields, and identify other important features of the village cluster.



In the women's group, the cropping calendar was drawn by our interpreter as she was directed by the group of women. We addressed ginger, rice, and cabbage. The women described the necessary work for each crop, periods of highest labor, dry season, holidays, and ceremonies. The same structure was used in the creation of the timeline: our interpreter wrote as the women directed her. The women struggled to create a timeline in the linear format suggested and recommended that we spoke to the men. The women were provided with a blank piece of paper and asked to draw a map, and they chose to draw a map of the whole Khek Noi village cluster. One woman took control, and illustrated a detailed map of the village with instruction from the other women (figure 3).



Figure 3: Map of Moo 11 and agricultural fields (created in Men's PRA)

In the men's group, everything was drawn by the participants. Although the process was very much dominated by the headman, other participants would add to the discussion and drawings. The men struggled also with the timeline because the starting point chosen was not far enough in the past. The map (see Fig. 3) focused on the wider area around Khek Noi and particularly the locations of the fields. This was guided by the facilitators, who also established points of references (the highway and the village cluster) at the beginning. The resulting crop calendars were largely similar between the groups.

Participant Observation

We participated in a breakfast after the ceremony commemorating the birth of the headman's son. We also partook in a lunch and dinner with the same family. This allowed us to ask understand some of the important ceremonies in the village and observe the nature of family relationships. It helped us to understand the nature of marriage, how and when spouses meet, and how new families are integrated.

Furthermore, we went to a field to do soil samplings where we also had the chance to try some of the farming practices ourselves. We also interviewed the workers in the field. This allowed us to get a hands on understanding of the work done to prepare fields for ginger. We felt that this was imperative to our research because ginger farming is such a large component of livelihood strategies in Ban Kirirat.



Questionnaire

Questionnaires were conducted to obtain information about household demographics, agricultural practices, forest use, and forms of land access. Twenty-eight households were selected based on a systematic sampling method in order to bypass resource people in the selection of respondents.

The assistant headman informed us that the village consisted of 270 households. We therefore decided to sample every ninth household on the left and right sides of the main road in order to achieve a sample of 30 homes. If a household was unavailable, the following household was sampled as a replacement. After beginning this process, it became clear that our method of counting was different than that of the village administrators. We counted approximately 150 houses in the village. In order to supplement the number of households in our questionnaire sample, a random sample consisting of 10 households was added. If a household was unavailable or had already answered the questionnaire, the next household on the list of randomly generated numbers served as the replacement

Statistical analysis was performed on the data upon return to Denmark. The data was processed using SPSS. Spearman and Pearson correlations were utilized in order to find significant trends in the data. Parametric Pearson correlations were utilized when possible. Non parametric spearman correlations were utilized with ordinal and nominal data. Regressions were then used to further analyze significant correlations.

Soil Sampling

Soil sampling was conducted in order to investigate the impact of varying forms of land access on soil quality. The sample of fields included three upland rice fields owned by Hmong Moo 11 villagers, and three upland rice fields rented by Hmong villagers from other Hmong villagers. Rice fields were chosen because rice was found to be a main food crop on all farms. All fields were located within the Moo 1 village. This village was chosen because none of the Moo 11 villagers had rice fields within the bounds of their own village, but several villagers mentioned using rice fields in Moo1.

Three samples were taken from each upland rice field in order to account for varying topography. The coordinates of each sample were recorded with a GPS device. The coordinates are listed in the appendix. Samples were taken at the slope top, slope, and depression characteristics of each field in 0-15 cm depth. Each sample consisted of 5 augerings which were thoroughly mixed prior to subsampling. A subsample of about 200 g (one cupful) was then stored. The following parameters were analyzed in laboratory : total carbon (C) content after Kjedahl (1883), pH after Black (1965) and permanganate oxidizable C (PoxC) after Blair et al. (1995). Soil color and texture testing in the fields were conducted using FAO's guidelines for soil description (2001).

All the statistical tests were conducted on the 5% significance level. The analysis of variance was conducted with the ANOVA and t-test for each parameter focusing on the form of land access as the distinctive variable.

8 b. Advantages and Shortcomings

Advantages

In all interviews and questionnaires [with the exception of the TAO officer and agricultural extension officer] one interviewer and at least one co-interviewer were present which allowed for triangulation.

Triangulation indicates that two or more methods are being used in a study in order to confirm the validity of the results (Mikkelsen, 2005). We attempted to use as many methods as possible to triangulate our data. For example, we collected information about land access through key informant interviews, questionnaires, and PRA sessions.

Shortcomings

In our soil analysis we faced great difficulty in finding fields that fit the criteria of being used by residents of Moo 11, being located in a similar geographic area, and being used to grow the same crop. These difficulties eventually led us to include two fields used by Hmong residents of Moo 1 for the sake of gaining a significant sample size of similar fields. Furthermore, some of the fields had recently been tilled, while other fields had layn fallow since the last harvest.

Since the questionnaire was carried out during the daytime (9am-5pm), a bias might have resulted regarding respondent groups, since many men worked in the fields during this time.

A language barrier was also an obstacle because all of the villagers spoke the Hmong language. For some interviews, Hmong had to be translated into Thai into English, inevitably losing meaning in the process. In other interviews, our interpreters struggled to understand what was said by our respondents who spoke imperfect Thai.

All of our informants from the key informant interviews and PRA sessions were gathered through snowballing through the village headman. This may have caused a bias in our data. We tried to meidiate this by using random sampling in our questionnaires.

Finally, we felt limited by only having two interpreters given the time constraints. This particularly impacted our participant observation. Due to the language barriers, participant observation was nearly impossible without an interpreter, however our interpreters were usually occupied with interviews and other activities, which were prioritized due to time restraints.

9. Results and Discussion

In the following section we present and discuss our results about land access in Khek Noi, prevailing livelihoods strategies, and how land access influences soil quality. Throughout these sections we also address how the Hmong are perceived by the Thai society.

9a. Land Access in the Khek Noi Area

Land ownership and land access in Khek Noi are fairly complex and highly interwoven with the status of the Hmong as an ethnic minority and their history in the area. Therefore it is important to inquire into the history in order to understand the present situation of land access, availability and ownership for villagers in Moo 11. The following results are synthesized from key-informant interviews including the sub-district head, the head of the national park and other village leaders. The most comprehensive and detailed information was obtained from an interview with the sub-district head. In addition most key-informants were Hmong, therefore the results are biased towards this perspective. To minimize this bias, a interview with the head of the National Park (NP) was conducted. We are aware that by synthesizing these different interpretations, we do at the same time combine different narratives telling the same story seen from different points of view. We have chosen to do so in the attempt to illuminate the situation seen from both perspectives, and have sought to emphasize the different interpretations in the following. Fig. 4 illustrates the history along a timeline ranging from 1922 to the present.

The History of the Hmong and Land Access in Khek Noi

In 1922 the first Hmong came from northern Thailand to the area, where Khek Noi is located today in the triangle of Petchabun, Phisanoluk and Loei provinces. In 1959 the Thung Salaeng Luang forest was proposed to be included in a national park (NP) (Thung Salaeng Luang National Park s.a.). According to the head of the NP the NP was established in 1963. The official homepage dates 1972 for the establishment (ibid.). 1963 is in accord with other interview partners, who stated that the NP claimed ownership over the land the Hmong settled on in 1963. The difference might be due to different formal acts during the politically

unstable period from the 60s to the 80s. In 1966 the Hilltribe Support Group was established by the governmental Department of Public Welfare in order to promote education and development of the Hmong community. According to the sub-district head "*The development* of the community led to conflicts. The government didn't understand the Hmongs' lifestyle. They forced Hmong people to live in one place. This contradicts the traditional lifestyle. (Hmong lived freely)". This resulted in a growing dissatisfaction with the Thai government among the Hmong. "Hmong did not receive justice from the government. We were treated unfairly", stated the sub-district head.

During the communist insurgency beginning in 1967, most of the Hmong were persuaded to join the Thai Communist Party because of this preexisting negative attitude of Hmong towards the Thai government. In the words of the sub-district head, "*it is very easy to convince you, if you received injustice*". The Hmong population of Khek Noi split into two groups during the communist insurgency. The majority (approx. 90%) joined the communists in the forest. The rest (approx. 10%) escaped to a town. During this period Hmong property was destroyed by the Royal Thai Army (RTA). According to the sub-district head, 29 villages were burned down. In 1970 the RTA made a "Gentleman's Agreement" with the Town Hmong¹in order to recruit them, since they were familiar with the area and the forest. The town Hmong were promised land, if they joined the army and won the war. Two years later, in 1972, the government under Prime Minister Thanom Kittikachorn withdrew the rights over 20.000 rai (3.200 ha) from the NP and gave it to the Hmong, who joined the RTA. However the Hmong were never granted a formal land certificate.

A similar deal was made between the Forest Hmong under prime minister Prem Tinsunalonda with the 66/23 Policy in 1980. The 66/23 policy is based on the idea of forgiveness and integrating the ,mistaken ones' back into the Thai society (Satha-Anand 2002). The government promised to the Forest Hmong to change their status from *,terrorist'* to *,developers of the country*' and to grant them land, if they left the forest and surrendered. During 1981-83 almost all the Forest Hmong surrendered and came to Khek Noi to register there with the government officials and get their land. They understood that they will get 20.000 rai, however The government did not provide an additional 20.000 rai to the land already given to the Town Hmong. This left the Forest Hmong only the land within this area which had not yet been claimed by the Town Hmong.

In 1982, the 20.000 rai were transferred to the treasury department without informing the Hmong. Three years later (1985) the government provided an additional 6.000 rai (960 ha) to the Hmong outside the Khek Noi area in order to make a living excluding commercial transactions. This area, called Ban Hui Sai, belongs to the Thung Salaeng Luang National Park and falls within Phisanoluk province. Fig. 5. illustrates the rather complicated land situation. The conflicts over both areas have been going on till today.

¹ Our Hmong respondents referred the Hmong who escaped to a town during the Communist war as "Town Hmong". We refer to these people in the same fashion as our respondents.



Figure 4: Timeline of Khek Noi History (own creation)



Figure 5: Land Disputes in Ban Huai Sai (own creation)

Villagers of Khek Noi started to sell with in this Ban Huai Sai area to people from southern Thailand in the late 90s, who established rubber plantations. This violated the conditions on which the land was granted. The head of the NP stated: "*I am arresting and I have been arresting people, who violate the rules. But the Hmong do not tell me the truth*". In 1998 the NP claimed the land back. From 2002 onwards, the Hmong began a long-term resistance.

Land Disputes in Khek Noi

In 2009 the Hmong TAO officer decided to put in an irrigation system in the area. When they attempted to get approval for this plan, the Hmong were not only prevented from carrying out the plan, but were also informed that they do not legally own the land in Khek Noi. It was then announced that the Hmong have to register their land with the treasury department and make an individual rental agreement. The Hmong refused to do so and founded a committee in 2010 to deal with the conflict. The committee took several legal steps, addressed different institutions, and achieved some small successes e.g. the permission to built permanent structures, like concrete buildings (Sutiwatananiti 2015). Nevertheless the conflict is still going on, leaving the villagers with a feeling of insecurity. A member of the TAO committee

put it in the nutshell when he said: "We are just living day by day and do not know, when the government will force us out".

At the same time, the community provides a sense of security and hope. Since it will be difficult to force all the Hmong out, the informant expressed the prospect that the Hmong will be eventually allowed to use the land they have been living on. The history and the limitations of land ownership in Khek Noi leave the Hmong with the feeling that they are not full Thai citizens, but treated differently. The sub-district head put it this way: *"There are many standards in Thailand. We are Hmong. We feel that. We are not the same as Thai people. The Thai people who fought with the communists got the license for their land".*

Land Access, Ownership and Availability in Khek Noi today

The events mentioned above led to a complex system of land access, which consists of two layers. Fig. 6. illustrates this, by using the distinction of property and access according to Ribot and Peluso (2003). On the level of property, all the land is owned by government agencies. Nevertheless, the Hmong have a trust based system of access rights among themselves, which forms the second layer. This results in a ownership system within the community, but without formal state granted land rights. To distinguish between these two forms of land access, we refer to the former as "formally owned" and to the later as "Hmong owned". In the trust based system, it is possible for Hmong to trade and rent land among themselves and there is even a way to sell land to outside investors (see Figure 7).



Figure 6: Graphic illustrating land access situation in Khek Noi (Own creation).

The initial distribution of the land was based on simple claims according to the sub-district Head. The Hmong, who arrived in the area could claim available land as their own. Usually the land one household claimed would range from 10 to 20 rai (1,6-3,2 ha). Since the amount of land in the area is limited to the 20.000 rai respectively the additional 6.000 rai, people, who arrived later in the area did not find land to claim anymore. This resulted in the fact that

some household own land and others do not. Landless households have to rent land either from other Hmongs or from Thai citizens outside Khek Noi.



Figure 7: Diagram depicting land selling tactics in Khek Noi (own construction).

In addition to the situation regarding access and property rights, the overall land availability is a problem for the villagers. In total the Hmong community of 3.034 households has only 26.000 rai (4.160 ha) available. Many of the interviewees mentioned overall land availability as a major constraint for agriculture in the area.

The land situation for villagers of Ban Khirirat (Moo 11)

Most of the villagers access land via rental agreements with other Hmongs within the Khek Noi area or with Thais outside the sub-district. Fig. 8. shows in which ways Moo 11 households access land. Most of the respondents (19 out of 28) rent the land they use for farming, 3 respondents Hmong own and rent land, none formally owns land or uses only Hmong owned land. During a PRA session, the headman mentioned that the land around the village belongs administratively to Moo 11, but no villager actually owns land there. The owners live in other parts of the village cluster.



Figure 8: Bar graph depicting types of land access in Moo 11

9b. Livelihood strategies

On the basis of our interviews and questionnaires, we found that our informants could be grouped into three different categories according to their livelihood strategies. By looking at their different livelihood activities, we have found some patterns which we will illustrate by describing three different cases which we have decided to name as follows; *the ginger farmer, the non-farmer,* and *the diversifying farmer*. We will describe each strategy below in general, followed by an in-depth exemplification and a comparison of the three categories.

The ginger farmer

60 % of the respondents in our questionnaire grow ginger and most of them have ginger as the main income source for the household. Some households had a high income from ginger cultivation, others had been less successful, but most agreed that it is hard to estimate the income because of varying prices from harvest to harvest. The group of farmers who gained a high income from ginger were also the ones who were less likely to wish for other income sources.

One of the farmers we interviewed had an income between 700.000-1.000.000 Baht per year from ginger farming. The household had 10 people where 6 lived in the house. His oldest son, who temporarily lived in Bangkok working as an accountant, would come home during

the rainy season to help his parents with their farming. This farmer had his fields located relatively close to the village this year, but many of the farmers we interviewed rented land for ginger up to 400 kilometers from their home. Often some family members had to locate themselves far from the village in the most labour-intensive times of the year in order to take care of the fields.

Striking for us was also the importance of family in the production of ginger. The farmers had their knowledge on how to grow ginger from their parents, and the families often help each other across generations or live in the same household working in the same fields. When we asked why they grow ginger, our informants often mentioned the lack of landownership and that "ginger is what we know". This was often followed by a comment suggesting that they do it very well and therefore there is no reason to grow something else.

Another group of our ginger farmers were characterized by a lower income and a greater wish to diversify their agricultural practices. These farmers often lacked money to invest in other ways of farming, and because of the lack of land availability, they would have to look for land just as they do for ginger.

The non-farmer

18 % of our respondents in the questionnaire do not perform any farming activities. One of the households we interviewed had construction work in a resort as the main income source supplemented by sale of salad on a weekend market in the area. The household had a relatively big home garden compared to our other informants. This household grew some fruit and vegetables, but everything else apart from chickens they buy at the market or in the shops. Both the husband and wife were born in Moo 11, and they described how they collect firewood at the farm of the parents of the wife. The household of six people had a relatively low yearly income around 40.000 Baht, but had managed to send their oldest son to boarding school.

Other respondents in our questionnaire who did not perform any farming activities had income activities such as sewing clothes for sale, making jewellery, hired labour work or sale of different kinds of goods. The wish to do farming varied a lot in between our non-farming respondents, but most had no desire to, either because of their age, too much work to do already or the lack of money for investment.

The diversifying farmer

In both our interviews and questionnaires we came across people who were farmers but at the same had at least one other activity generating a source of income (46% of the questionnaire respondents). We looked at both income generating activities and the ranking of these within each household. If we compare these, it is interesting to see how farming for the most people

still is the primary source of income, although 46 % had other activities as well. The comparison between total livelihood activities and primary livelihood activities is illustrated in figures 9 and 10. Even though relatively many have other sources of income than farming, it is a very limited number of people for whom is constitutes the main income activity.



Figure 9: Bar graph depicting livelihood activities of Moo 11 residents (own creation) **Primary Livelihood Activity**





From analyzing our questionnaire data, a significant trend was revealed by a positive Pearson correlation between the number of livelihood activities and the income level (r=0.494, p<0.05). Based on this data, a linear regression was performed. Income could be predicted from the number of livelihood activities by the following formula:

Income = 56881.720(number of livelihood activities) - 1000, r²=0.244 We found this result particularly interesting because it suggests that diversification is an effective livelihood strategy in Moo11 for increasing household income.

In one of the household we interviewed both the husband and wife work at the local TAO office. These jobs provide the household with a steady monthly income, but at the same time they still had different farming activities as income sources. The household has been cultivating ginger for many years and started growing coffee 4 years ago, just as they grow rice for their own consumption. The husband explained how the cultivation of these crops is

very different as ginger is a one-year crop where coffee is a long-term investment that will provide a bigger outcome as the years go. He further explained that he had chosen to grow coffee, as it does not require as much work as ginger, and explained how everyone drinks coffee and therefore the demand for coffee is high. The household rents the land used for rice farming from the husband's grandmother and the wife's brother owns the land used for coffee.

An interesting point that we can draw from our data is that those of our informants who diversified their farming practices by cultivating rubber, coffee, strawberries etc. in addition to more traditional crops such as ginger, rice and cabbage, were also the people who had another main income generating activity apart from farming. This could be a small convenience shop in the village or a job with monthly payment, which made them not depend solely on farming and maybe therefore more willing to take investment risk.

Comparable parameters in the three cases:

When we looked at our three different categories from an educational point of view, we discovered via our questionnaires that there is a difference in the level of education within the different categories. 0 %, of the non-farmer households had members with college education, whereas 41 % of the ginger farmers, and 33 % of the diversifiers did have a household member with a college education. Furthermore, we found a significant pearson correlation between highest education level in the household and household income, r=0.469, p<0.05. A regression was then performed. Years of education could be predicted from the household income by the following formula:

Years of Education= 1.596E-5(income) + 8.757, $r^2=0.220$ This trend is illustrated in figure 11. In this case, the education level was the dependant variable. We chose to look at the years of education of the most educated person in the household. In nearly all cases, the most educated household member was the son or daughter of the household head. Therefore, it was hypothesized that households with higher income were more likely to have members with higher levels of education. We found this result interesting because it suggested that higher household income allowed for increased levels of education. This suggests that investment in human capital is a trend within Moo 11.



Figure 11: Scatter plot of income and highest number of years of education in household (own creation)

9c. Factors Influencing Livelihood Strategies

In course of the interviews and questionnaires, we identified several factors which constrain possible livelihood strategies for villagers in Moo 11. Most of them are centered on farming, since it is the most important livelihood activity. Starting off from there, the majority of farmers in the questionnaire expressed the wish to introduce new crops on their farm and hence diversify their farming system (Fig. 12). In a follow up question, the farmers were asked, what prevents them from doing so. Fig. 13 summarizes the results. The most important factors are namely: access to financial capital, knowledge, land, time and labour constraints. In the following sub-section, we will explore a variety of factors more in depth using data mainly from semi-structured interviews with villagers and key-informants. The factors vary from household to household, but the following ones were the most prevailing.



Fig. 12: Number of Household responding on the wish to diversify crops (own creation)



Fig. 13: Constraints to diversification of crops (own creation)

Land Availability

As described in Section X above, the overall availability of land for farming and husbandry is quite limited. Most of the households in Moo 11, we talked to, do not own animals beside chicken. This might be due to a lack of land as one villager explains: "I used to own chicken and pigs but no longer because many people owned the same kinds of animals and there was not enough land to support them all".

The most important cash crop in Moo 11 is ginger. It is a quite land intensive crop, since it is necessary to leave a gap between cultivating ginger on the same plot in order to avoid bacterial wilt. The length of the gap varied among farmers from at least 4 up to 10 years. This means that ginger farmers need to find new land every season for a couple of years before they come back to an old plot and this in an area with a shortage of land. The farmer we interviewed responded in two ways to this limitation: 1. The shortened the gap (intensification) or 2. They moved their fields further away (relocation). The first option brings with it a higher risk of harvest failure, the latter is more time intensive, since it means travelling back and forward, leaving less time available for other activities. A shop owner in Moo 11 for instance stopped to farm ginger and explained his reasoning: "*People, who want to cultivate the ginger need to find land far away (in Naan or Chiang Mai). Since I own the shop I cannot move so far away*".

Lack of Land Rights

The lack of formal land rights affects the livelihood strategies in different ways, particularly in regard to utilizing land for the tourism industry and access to financial capital. Without formal land rights, people are not able to take out mortgages, which limits their possibility to invest into a livelihood. In addition, the sub-district Head stated that the absence of formal land rights means that farmers in Khek Noi do not get governmental support that farmers in other sub-districts get. These supports include financial assistance during the dry season and subsidies to grow rubber.

One of our key informants, a villager of Moo 11 and TAO committee member, expressed, that the lack of land rights keeps the villagers from benefiting from the growing tourism industry. *"The village will develop, if we have the* [land] *license. People can move from agriculture to tourism. Then they can earn more income* [...]". This resonates with the story of another villager, who built a resort himself, because the fertility of his land declined. He said: *"I built the building for this already but then I was accused of breaking the law.*" These two statements indicate that the lack of land rights constrains people to shift from farming to tourism or diversify their livelihood portfolio in this direction.

Regarding the farming practice formal land rights seem to play a minor role. According to the TAO committee member, people won't change their farming practice if they get the land rights and also the extension officer said: *"Farming practice won't change, if people get the land rights*". In regard to this livelihood activity the possibility to access land is probably more important than formal ownership.

Access to Knowledge

Most of our respondents, who are farmers, mentioned, that they learned how to grow the crops they grow from their families. According to the extension officer: *"These crops* [ginger, cabbage, rice] *are the most important. People know how to grow them and have grown them for a long time"*. As Fig.13 indicates 4 households in the questionnaire sample stated, that a lack of knowledge prevents them from introducing new crops on their farm.

The TAO hired an extension officer in order to support farmers in Khek Noi. In the interview he said: *"Villagers can come to my office hours to consult me about crops, livestock and animals.* [...] *There are not only villagers from Ban Khirirat, who consult me. I am in charge of whole Khek Noi. I am also the link between the association and the farmers*". This offers the possibility to access another channel of agricultural knowledge beside the family. During the semistructured interviews we conducted with villagers in Moo 11, we asked, from where they get information regarding farming. None of our interview partners mentioned the existence of the extension officer. It seems like there is a lack of awareness regarding his work and the possibility to access knowledge through him.

In the case of the coffee farmer described above, the possibility to access knowledge on the internet and contact successful coffee farmers in Moo 7 was important in order to diversify the livelihood portfolio. In this case access to knowledge even played a role in becoming aware of a livelihood opportunity. Asked about his initial idea he answered: "I got the idea from watching a documentary on TV about coffee farmers in another province. I thought it might be better to cultivate it here".

Access to Education

Beside the more general access to knowledge formal educations is also important for the livelihood opportunities people have, e.g. employment opportunities. The sub-district head put it this way: *"People can be separated into two groups: educated people can go to the public and private sector to work, uneducated people can work as temporary workers or own their own shops. The traditional lifestyle (agriculture has been very important) and lack of education are factors for the importance of agriculture"*. In addition the ability to speak and write Thai is important in accessing institutions beyond the sub-district level. One villager for instance said: *"Because I lack education, I cannot write formal letters to ask for the license*

for my land". Also the extension officers, said that he functions as a link to higher level institutions since many villagers cannot address them directly because of language barriers.

Lack of State Support

Lack of state support shows up in different forms and we have already touched upon it regarding knowledge, agricultural subsidies and assistance. Many interview partners related it to agricultural practice. One farmer stated: "[...] the government never provide information for the local farmers" and another: "There is no governmental support or information provided by organisations in terms of farming and agriculture".

Markets

Markets play an important role, in why people grow certain crops and favour ginger. According to the sub-district head: "*Farmer grow their crops because of the climate and the market*". Although the ginger price is fluctuating and losses resulting from a bad price need sometimes to be buffered by financial capital. One farmer stated: "*The price of ginger this year is 3 Baht per kilo, needs 20 Baht per kilo to make a profit*". Another farmer explained, that the ginger price varies in a 2 ½ year circle and that for the last season, he was not able to cover his costs and needed to spent savings.

Personal Attitude and Cultural Aspects

There are other factors, which play out more individually. Like the personal psychological disposition for e.g. regarding risk aversion. The coffee farmer said, that people "[...] want to cultivate ginger and other crops, which bring a lot of money at ones" and therefore prefer ginger. The cultural significance of ginger and upland rice for the Hmong are other factors which might influence the livelihood choices people make.

9d. Effects of Land Access forms on Soil Quality

Chambers and Conway (1992) add to their definition of livelihoods the aspect of sustainability. "A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base" (Chambers and Conway 1992, 5). In order to understand the role different forms of land access play in the sustainability of livelihoods in Moo 11, we carried out a soil analysis for fields with different access forms. The rationale behind this was to investigate if different forms of ownership encourage different or more destructive farming practises, which may in turn undermine the natural resource base. We saw this as particularly relevant, since the Hmong have a reputation for destructive farming practice in Thailand.

Hmong as destructive farmers:

Prior to leaving for the field we did a literature study on the farming practices of Hmong people, and frequently came across critique of their use of swiddening shifting cultivation as it ultimately leads to deforestation. Delang (2002) describes how the negative view of swiddeners as destroyers of the forest is mostly present in the countries where they are ethnic minorities. He explains how the ethnic groups in the mountain areas often have little in common with the lowland populations which often cause mutual misunderstandings and dislike (Delang 2002).

Latt & Roth (2015) describes how the Hmong are presented as non-Thai in the public discourse, and associated with what is wrong with upland people and their livelihoods. He explains how the contemporary view upon the Hmong people is shaped by historical factors such as military conflicts causing questions regarding their loyalty to the state, their former opium cultivation and their association to pioneer shifting cultivation. Further he explains how cultural differences such as not accepting wealth and income to influence interaction have made Hmong people come off as rude and proud to the Thai population.

We experienced that some of the villagers felt a need to explain themselves and their choice of farming ginger, as in the case of a ginger farmer we interviewed and cited below:

"The National Park forest department says that ginger cultivation is damaging forest, which I do not believe to be true. I only cultivate ginger in old land, that was not used for other things" (Villager)

The villagers explained how the Hmong have a reputation of destroying the quality of soil. As they often rent land for just one year and then move on the following, they are seen as farmers who do not care or invest in the long-term quality of the soil.

Even though the Hmong do not perform shifting cultivation in the same way anymore, as it has been banned, they are still met with scepticism and criticism from people who work with forest reforestation and conservation. We experienced this ourselves in a casual conversation following a more formal interview where officials working in the National Park after some amounts of alcohol presented their own personal views on Hmong people, describing them as "lazy" "greedy" and stating "They [the Hmong] do not accept any law".

Some of the villagers we talked to were critical themselves towards ginger production and the impact it has on the soil quality. One of the villagers who grew both ginger and coffee himself explained his choice to grow coffee by "*The ones who grow coffee are the ones who love nature*. *Ginger cultivation is not good for the soil*". Thereby he placed himself in the same critical frame as many of the officials, implying that those who choose to grow ginger are those who do not know better. Hares (2009) explains how the ethnic minority groups in the highland in general are looked upon as wild and uncivilized and referred to as Hill tribes,

as a way to distance them from the Thai society. Furthermore the coffee farmer stated how Hmong people put financial interests higher than the wellbeing of the environment, as he said that Hmong people grow ginger as they only care about the money, and as ginger gives a big outcome at once it suits the Hmong way of living very well according to him.

Land Access Forms and their effects on Soil Quality

Physical and chemical soil conditions are some of the most important factors influencing farming practice and soil fertility. But soil parameters are also influenced by the farming practice in the longterm, like applying manure or fertilizer, crop residues, tillage and other methods. We investigated the effect of different land access forms on soil quality in plots which have been used for upland rice cultivation. In the following section we will look into some pH, permanganate oxidizable C and the C/N ratio. Fig. 14. shows the location of the sampled fields, most of them are in the area of Moo 1.



Figure 14: GPS locations of sampled fields (Google Earth)

pН

The pH range of the soil in both rented and owned land in our sample varies from 4.8 to 5.7. Most upland soils have a pH of 4.5 to 6.5, which is quite suitable for upland rice production (Gupta, 1986) According to Gupta (1986) is a pH range between 4.5 and 6.5 suitable for upland rice production. A t-test comparing rented and Hmong owned fields did not show a

significant difference. The same holds true for a two-way ANOVA regarding land access form and location in the field. As seen in figure 15, this data indicates that the form of land access does not influence the pH.

The lower pH values in the sample could be due to high rainfall conditions during the rainy season or because of the native vegetation under which the soil was formed. This affects the pH of the soil, soils formed under forest vegetation tend to be more acidic.(Schuhmann, 2009). The higher pH values in the sample might be due to the use of ash, since there are no other indicators of liming, which could explain the high pH. The farmers did not mention any practices that could serve as an explanation, but using chicken manure could be a reason for it.





The Permanganate Oxidizable Carbon- POX-C

Permanganate (KMnO4) oxidizable C (POXC) based on Weil et al (2003), was evaluated to identify soils that may respond positively to soil organic matter (SOM) Management.

Size classes of permanganate oxidizable C in our samples varied between 144 to $360\mu m$, which are in the range of 53 to $250\mu m$ (smaller size) and 250 to $1000\mu m$ (Medium size) POC fractions (Figure ...X). Low level of POX-C could have different reasons such as depth, tillage or long-term continuous rice cultivation (W.Culman,2012). This range is typical in upland rice cultivation, but it could reduce water-holding capacity, nutrient supplies and crops yield in long-term. T-test and ANOVA analysing did not give us any

significant difference between the soil POX-C level in these two kind of land ownership. Figure 16 depicts this data.



Figure 16: BoxPlot variation of POX-C regarding land access and location

C/N ratio

The C/N ratio for the six fields was calculated. The C/N values for all the plots varies in a range from 7.162 to 10.914 in rented lands and 8.465 to 10.360 in owned land. Fig. 17 shows the C/N grouped according to land access form and location in the field. Carrying out a two-way ANOVA shows that only the location as a significant factor. Literature shows that varying C:N ratios between slope topographies is common, with the highest C:N ratios typically being found on the slopes, followed by the slope top, and then the slope bottoms (Zhang, 2016). The form of land access did not have an influence on C:N ratios.



Figure 17: Box Plot variation of C:N regarding land access and location

Soil Texture

According to our respondents, the soil texture is used to evaluate soil suitability for upland rice. Loamy and sandy soils are typical for the slightly elevated areas of Thailand's foothills and flatlands, but most upland rice in the hills is cultivated on clayey and clay loam soils (International rice research institute,1975). We found that the tested soil textures were mostly clay, but some plots have clay loam and fine sandy clay loam textures. Thus, these results are fitting with the norm of the region and the rice crops.

Summary of Soil Results

From the results of our soil testing, we can conclude that forms of land access (referring to Hmong ownership, and Hmong renting from Hmong) have no effect on pH, POC, or C:N ratio. According to the literature, all of the above values were found to be in a normal range for region, and normal ranges for upland rice.

9e. In-Depth Discussion

The limitations regarding land access (lack of ownership + land availability) are embedded in a wider context of limitations and opportunities, which influence what people are able to do. In order to understand their influence, it is important to inquire into how they relate to the other limiting factors described in Section 11c. The lack of formal land rights and the overall land availability impact livelihood strategies in different ways. Looking at Fig. 18, which illustrates this web of interrelated factors, we can see that there are various channels of impacts which constrain households in their strategies.



Figure 18: Impact of Land Access on Livelihood Activities

Ginger farmers respond to limited land availability in two ways: they rent fields further away (up to 400 km) and they shorten the gap between two ginger crops on the same plot. The distance to the fields limits the possibility of close management and the time spent travelling is not available for other activities. Although the shortening of the gap between ginger cycles is a form of agricultural intensification, it leads to deceased ginger harvests and productivity, as well as the risk of harvest failure due to a disease. A lack of land availability also prevents villagers who rent land from diversifying their agricultural practices by growing perennials such as rubber because they are forced to look for new fields to cultivate nearly every year. In

addition, limited land availability decreases the opportunity to incorporate farming or husbandry into the livelihood portfolio of people not involved in it already.

Lack of formal ownership of land also puts limits on the ability to diversify livelihood portfolios. Villagers of Moo 11 are unable to insure their land, or take out mortgages because they do not possess formal titles. Therefore land titles play a crucial role in accessing financial capital, which might be needed for investments in diversification or intensification. Due to the lack of titles and security, Hmong people do not engage in activities that require an investment in the land. Villagers cannot branch out to invest in the growing tourism industry by building resorts because of their lack of land titles. A lack of land rights prevents farmers also from investing in their agricultural production, such as building irrigation systems. Furthermore, farmers can not count on state support, such as subsidies and assistance, which is experienced by other Thai villages, as most of them are connected to land rights. Therefore, it is apparently that the livelihood strategies of diversification and intensification, suggested by Scoones (1998), are less accessible in Moo 11 due to limited land availability and lack of land rights.

This inability to freely pursue certain livelihood strategies is a significant barrier to residents of Moo 11. Our data shows that people in Moo 11 with more diversified livelihoods have higher incomes. However, the opportunities for diversification are limited, as described above. This situation has the potential to trap residents of Moo 11 in a cycle of poverty (Fig. 19), since diversification is a way to improve the wealth of the household. Households with lower incomes are also less likely to invest in higher education (Fig. 11), leaving the next generation in a similar position. Having a lower income also leaves people more vulnerable in the case of catastrophic events. A catastrophic event such as drought or job loss could leave a household with even less financial capital. Additionally the lack of insurances and the ability of taking a mortgage hit people even harder in situation such as these. This results in decreased future investment possibilities.


Figure 19: Poverty Trap

As we have shown in the result section, the limitations forming this poverty trap for villagers in Moo 11 are strongly related to their status as an ethnic minority. This points towards a issue of structural violence. Structural violence describes "social structures-economic, political, legal, religious, and cultural-that stop individuals, groups, and societies from reaching their full potential" (Farmer, 2006). In this case, it is clear that political and legal structures have constrained the opportunities open to the Hmong community. The Thai government has constructed specific policies based on the ethnic identity of the Hmong. These policies, such as the Hill Tribe Support Groups, the RTA Gentleman's Agreement, and 66/23 Policy, have had a variety of intentions. To repeat the words of Kun Suwiet, the subdistrict head of Khek Noi: "There are many standard in Thailand. We are Hmong. We feel that. We are not the same as Thai people". The ultimate results however, have created the complicated and constraining situation regarding land access in Moo 11: this situation prevents this group from reaching its full potential. The Hmong however are not passive in the process happening around them. The Hmong of Khek Noi have formed a committee to fight the issues surrounding their lack of land rights, and taken the issue before the departments military and treasury, with limited results as of yet.

Although the Hmong may be constrained by structural factors in their ability to invest in their land, other avenues of investment remain open and some household manage to successfully diversify their livelihood portfolio. Our data shows a trend in which households with high income are likely to have high levels of education, including bachelor's degrees (figure 11). Initially, we searched for a trend in the level of education of the household head and the income of the household, but no such correlation existed. However, when we took into account the descendants of the household head, a trend came into focus: higher income households were investing in the education of their children. Many of these university graduates did not live at home in the household, but had migrated to cities to work in fields such as computer science, engineering, or marketing. We also met a questionnaire respondent who had earned a bachelor's degree in economics, and returned to Moo 11 with this new knowledge, and had established a successful and diversified livelihood portfolio. The Hmong in Khek Noi district have never fit into the same patterns of life as the rest of the Thai population. The traditional swidden agricultural practices of the Hmong have been curtailed in Thailand. Today, land access remains an important obstacle to the Hmong. But this migratory ethnic group shows signs of once again adapting to a new environment: the university. Higher levels of education may lead the Hmong to migrate increasingly towards cities, or create new opportunities in agriculture.

10. Conclusion

Due to the history and legislation centering around their ethnic background, the Hmong people in Moo11 are limited in their access to land. During our research we found that regulations on land access imposed by the Thai state has influenced the way of living for the Hmong people by settling them in one place, limiting the land of which they have access and denying them state granted land rights. An additional factor resulting in increased land pressure it the growing number of people within the community. These limitations have restrained the opportunities for possible livelihood strategies through various channels. They are not able to own land, make long-term investments in their agricultural practices freely around as needed for shifting cultivation and face barriers in accessing financial capital. This has the potential to trap people in a cycle of poverty, as they are not able to diversify their income sources and people with low income seem to invest less in education.

Subsequently, we investigated whether the circumstances of this unique land access situation played a role in explaining the Hmong reputation as "destructive farmers" by constantly pushing farmers to find new fields to rent. We compared soil quality of rented and Hmong owned fields and found no significant difference in soil pH, POC, or C:N ratios: all values were within a normal range. Different forms of land access have no impact on soil quality in our study.

There was a trend for the villagers to work their way out of the land scarcity situation by investing in the education of their children by sending them to college and thereby adapting

to the Thai society. This provides them with opportunities that are not related to the issue of land access. At the same time the Hmong people in Khek Noi have gathered together in interest groups to fight against the violence towards the structure of their society as an ethnic minority group. These activities are still in progress and it can not be predicted if it will end in favour to the Hmong interests.

11. References

Barth, F. (1969). Introduction. In Ethnic Groups and Boundaries: The Social Organization of Culture Difference. ed. Barth, F., 9–38. London: Allen & Unwin <u>http://www.sciencedirect.com/science/article/pii/S0305750X99001047 - BIB9</u>

Bebington, A. (1999) Capitals and Capabilities: A Framework for Analyzing Peasant Viability, Rural Livelihoods and Poverty. World Development 27 (12), 2021-2044

Black, C.A., (1965). Methods of Soil Analysis. Part 1. Physical and Mineralogical Properties, Including Statistics of Measurement and Sampling. Agronomy Monograph 9.1. Madison, WI:American Society of Agronomy, Soil Science Society of America

Blair, G. J., Lefroy, R. D. B., and Lisle, L. (1995). Soil carbon fractions based on their degree of oxidation, and the development of a Carbon Management Index for agricultural systems. Australian Journal of Agricultural Research 46, 1459–66

Chambers, R. and Conway, G.R. (1992). Sustainable Rural Livelihoods: Practical Concepts for the 21st Century, IDS Discussion Paper 296. Brighton, UK: Institute of Development Studies.

Climate-Data.org, (2016). Climate Ban Khek Noi. Accessed under: http://en.climatedata.org/location/563986/ [08.04.2016]

Culman, S.W., Snapp, S.S., Freeman, M.A., Schipanski, M.E., Beniston, J., Lal, R., Drinkwater, L.E., Franzluebbers, A.J., Glover, J.D., Grandy, A.S., Lee, J., Six, J., Maul, J.E, Mirksy, S.B., Spargo, J.T. and Wander, M.M., (2012). Permanganate Oxidizable Carbon Reflects a Processed Soil Fraction that is Sensitive to Management. Soil Sci. Soc. Am. J. 76, 494.

Delang, C.D. (2002). Deforestation in Northern Thailand: The Result of Hmong Farming Practices of Thai Development Strategies. Society & Natural Resources: An International Journal 15 (6), 483-501

Ellis, F. (2000). Rural livelihoods and diversity in developing countries. London: Overseas Development Institute

Farmer P. E., Nizeye, B., Stulac, S., Keshavjee, S. (2006). Structural Violence and Clinical Medicine. PLoS Med 3(10)

FAO (2001). Lecture notes on the major soil of the world. World soil resources reports. Rome: FAO

Gupta, P.C. and O'Toole, J.C. (1986). Upland Rice: A Global Perspective. Manila: International Rice Research Institute, 66-70

Hares, M. (2009). Forest Conflict in Thailand: Northern Minorities. Environmental Management 43, 381-395

http://dx.doi.org/10.1007/s00267-008-9239-7

Kjedahl, J. (1883). Neue Methoden zur Bestimmung des Stickstoffs in organischen Körpern.-Zeitschrift für Analytische Chemie 22, 366-382

Latt, S. and Roth, R. (2015). Agrarian Change and Ethnic Politics:Restructuring of Hmong and Shan Labourand Agricultural Production in Northern Thailand, Journal of Agrarian Change 15(2), 220-238

McDowell, J. Z. and Hess, J. J. (2012). Accessing adaptation: Multiple stressors on livelihoods in the Bolivian highlands under a changing climate. Global Environmental Change 22(2): 342-352

Mikkelsen, B. (2005). Methods for Development Work and Research: A New Guide for Practitioners. ed. / Britha Mikkelsen. 2.ed. New Delhi, Thousand Oaks, London : Sage Publications, Incorporated

Peel, M. C., Finlayson, B. L. and Mcmahon, T. A. (2007). Updated world map of the Köppen-Geiger climate classification. Hydrol. Earth Syst, Sci. 11, 1633–1644

Ribot, J.C. and Peluso, N.L. (2003). Theory of access. Rural sociology 68 (2), 153-181,

Satha-anand, C. (2002). Forgiveness as a Nonviolent Security Policy : An Analysis of Thai Prime Ministerial Order 66 / 23. Social Alternatives, 21(2), 29–37

Schuhmann, B. (2009). The causes of soil acidity. New South Wales Acid Soil Action Program. Leafled No. 5, s.l.: Leafled.

Scoones, I. (1998). Sustainable Rural Livelihoods: a Framework for Analysis. IDS Working Paper 72, Brighton: IDS, Institute of Development Studies

Scoones, I. (2015). Sustainable Livelihoods and Rural Development (Agrarian Change and Peasant Studies Series). Rugby, UK: Practical Action Publishing

Thung Salaeng Luang National Park (s.a). Thung Salaeng Luang National Park. Accessed under: http://www.dnp.go.th/parkreserve/forprint.asp?npid=20&lg=2 [08.04.2016]

Sutiwatananaiti, M. (2015). The Land Without The Concept Of A Title Deed, Khek Noi, Catalyst Asia. Accessed under: https://catalystasia.wordpress.com/2015/02/04/khek-noi-the-land-without-the-concept-of-a-title-deed/ [08.04.2016]

Tomforde, M. (2006). The Hmong Mountains: Cultural Spatiality of the Hmong in NorthernThailand.Hamburg:LitVerlag.

Weil, R.R., Islam, K.R., Stine, M.A., Gruver, J.B. and Samson-Liebig, S. E., (2003). Estimating active carbon for soil quality assessment: A simplified method for laboratory and field use. Am. J. Altern. Agric. 18, 3–17

Zhang, S., Yan, L., Huang, J., Mu, L., Huang, Y., Zhang, X. and Sun, Y. (2016). Spatial Heterogeneity of Soil C:N Ratio in a Mollisol Watershed of Northeast China. Land Degrad. Develop 27, 295–304..

12. Appendix

Appendix:

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1. Table of Authors

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| Abstract | Patrick |
| Acknowledgements | Maria |
| Introduction | Patrick, Elyse, Maria |
| Theory | Marten, Maria, Patrick, Elyse |
| Methodology | Elyse, Sara |
| Results and Discussion: Access | Patrick |
| Results and Discussion: Livelihood | Maria, Patrick, Elyse |
| Results and Discussion: Soil | Sara, Patrick, Maria |
| In depth Discussion | Marten, Elyse, Patrick |
| Conclusion | Maria, Patrick, Marten |

2. Overview of applied methods

| Method | Data collected | Number of activities |
|----------------------------|--|-------------------------|
| | Overview of locations within the village, observations of | |
| Village Walk | daily life | 3 |
| | Information about livelihood activities of the households, | 10 |
| Semi-structured interviews | background information and | 10 |

| | village history, land access and agriculture, forest | |
|---------------------------------|--|----|
| | access, and tourism. | |
| Key informant interviews | The story of the village and the establishment of the National Park, | 7 |
| Community forest visit | Knowledge of location and uses of the forest | 1 |
| Soil samples | 18 samples to test for relation between status of ownership and soil quality | 6 |
| | Knowledge of social relations, ceremonies, farming practices in ginger | |
| Participant observation | fields | 4 |
| Visit to rice mill and pig farm | Knowledge of farming practices and the use of rice mill | 1 |
| PRA-sessions | Timeline, community map, cropping calendar | 2 |
| Pilot questionnaires | Livelihood activities, other income activities, land ownership, tourism, agricultural practices | 4 |
| Questionnaires | Livelihood activities, other income activities, land ownership, tourism, agricultural practices | 28 |
| Visit to fields | Knowledge of farming practices in different kinds of fields | 2 |
| | Location of fields and | |
| GPS | distance to village | 6 |

3. Questionnaire Guideline

- - Introduction of Researchers and translator
- Explanation of study objective and reasoning behind these questionnaire
- - Informed consent
- - Space for questions from the respondent

Name:

Questionnaire ID:

Household ID:

Date:

Time:

Name of Interviewers:

1. General Information on Household

1.0 When did your household settle here?

1.1 How many people live currently in the Household? What is the Age? Education? Occupation?

| Member | Age | Gender | Education | Occupation |
|--------|-----|--------|-----------|------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

1.2 Are there any other sources of income for the household?

Does anyone work in the tourism industry, shop, or as hired labor on a farm?

- 1.3 Are there any members of the household who do not live at home? Do they send home money?
- 1.4 Can you rank the importance of the difference sources of income for your household?
- 1.5 Is it ok to ask about your income? (what is your yearly income?
- 1.6 Have you had any other kinds of income or jobs in the past? (What and when?)

2. Agriculture

2.1 What crops do you grow?

If grows ginger: How long is the gap between growing ginger on the same plot? Has this changed at all?

2.2 Have you introduced any new crops in the last 10 years? If yes, what crops?

2.3 Would you like to grow new crops? (What keeps you from doing this?)

2.4 Which crops do you eat and which do you sell?

2.5 Do you grow fruit or vegetables at home?

2.6 Do you own any animals? (How many? What are they?)

3. Forest Use

- 3.1 How often do you go to the forest?
- 3.2 What do you collect from the forest?
- 3.3 Which forest do you use?
- 3.4 Do you hunt or fish in the forest?

4. Short SSI on land access

4.1 Do you own or rent your land?

Own land, did you inherit it? Do you have a license?

If you rent land, from whom?

4.2 Have you sold or lost land in the past?(what did was this land used for in the past/ who did you sell to?)

If Own Land?

Where is your land?

If you own land, what has been grown in the last 10 years?

Have you rented out your land in the past ten years?

Can we take samples?

If rent land?

Where is this land?

For how long have you rented this piece of land?

Do you rent the land for one year at a time or several years? Why?

Do you know the history of the land (what has been grown in the last several years?

Can we take samples?

4. SSI Guides

a. Explorative interview with Headman:

| Subjects: | Questions: |
|--------------|---|
| Introduction | Thank you for taking the time to participate in this interview. We really appreciate your help for our research project. |
| | Present interviewer, co-interviewer, and translator The co-interviewer will mainly write down notes and maybe ask some additional questions during and after the interview. |
| | Introduction to the project: We are five students from Denmark carrying out research about how people live in Ban Khirirat (Moo 11) |

| | We would like to know more about the village in general, and we hope you will be able to answer our questions regarding this There are no wrong or right answers. We are just interested in you telling us about how you see it. Recording: We would like to record the interview to be able to listen to it afterwards. Is that okay with you? Do give your consent to participate in this research? Do your have any questions before we begin the interview? Household ID Main Occupation? |
|-----------------------------------|--|
| Village history | Can you describe the history of the village shortly? When was it established? Why was it separated from Moo 12? What characterizes Moo 11 in particular? Is there anything special about the village we should know? Does the village differ from ethnic Thai villages? If so, how? Is there something that characterizes Hmong villages in general? What are the problems/ challenges faced by people living in Ban Khiriat? |
| Land access and agriculture | Do you have any comments on how agriculture is practiced in this villages? Do the villagers own their own land? Do any of the villagers rent land? Where? Does anyone else cultivate land surrounding the village? Who? What are the main crops that the villagers grow? Which are for subsidence and which are sold at the market? Has there been any recent change in the choice of crops? Why? Is there a big difference in how different people cultivate land? What are some of the differences? On which basis do people decide which crops to grow? (soil quality, market prices, cash crops, sustenance farming, etc) From where do farmers in the village get their agricultural knowledge? (Royal Development project?) Do people in the village experiment with new crops and agricultural techniques? If so, who? |

| | What is the largest problem faced by farmers? |
|------------------|---|
| Forest access | Do people form the village use the forest, and if so how? When was the Natural Park established? On which basis? Do the people of the village have access to the natural park? If yes, what do they use it for? Has the establishment of the natural park reduced the collection of forest products? How do the villagers in general feel about the natural park? Constraint, an opportunity, or source of conflict? Do the villagers have access to other forest areas? What is the law on collection of forest products? Who regulates the law? Are you aware of any illegal activities related to the forest? Is the communication between he park authorities and the villagers? Do people |
| Tourism | When was the first tourist resort established? Why do you think the tourists come to stay here? How did the resorts get access to the land on which they are built? Have any of the villagers sold land to the resorts? How has the tourist resorts influenced the life of the people in Moo 11? Do many of the villagers work in the resorts? Do the villagers have any interaction with the tourists? If yes, how? Do you think the villagers see the resorts as something mainly negative or positive? And why? What do the villagers think about the establishment of the |
| Debriefing | Is there anything we should be particularly aware of? Can you think of anyone who you think we should talk to? Do you have any further information that could be relevant to us? Does the co-interviewer have any questions? Do have any comments or questions? Ranges of income (for the questionnaire) |

b. General SSI Interview:

Hello.

Thank you for agreeing on participating in this interview. We really appreciate you taking your time to participate.

Present interviewer, co-interviewer, and translator

The co-interviewer will mainly write down notes and maybe ask some additional questions during and after the interview.

Introduction to the project: We are five students from Denmark carrying out research about how people live in Ban Khirirat (Moo 11)

We will be asking several questions about your daily life and hear your perspective on some of the things we are looking into. There are no wrong or right answers. We are just interested in you telling us about your way of living and daily activities.

Recording:

We would like to record the interview to be able to listen to it afterwards. Is that okay with you?

Anonymity:

We will change your name in our report so all your answers will be anonymous. Information you give us may be used to wirte a report about rural livelihoods, which will be submitted to the university.

Do give your consent to participate in this research?

Do your have any questions before we begin the interview?

Name of Subject Date: Time:

Name of Interviewers: What is your position in the household, and relation to the head of house?

How many people currently live in your the Household?

| Member | Age | Gender | Education | Occupation |
|--------|-----|--------|-----------|------------|
| | | | | |

| Background information | Were you born in Ban Khirirat (Moo 11)? If not, when did you settle here and for what reason? Are there members of the family, who currently do not live in the household? If yes, where do they live and what do they do there? Is there anything special about the village that we should know? What are the problems/ challenges faced by people living in Ban Khiriat? |
|-----------------------------|---|
| Livelihood acitivities | What is your main Occupation? What activities provide income to your house hold? Rank them in order of importance How do you get your food? Where do you get your firewood? Can you give us a rough estimate of your income on a yearly basis? |
| Land Access and Agriculture | Do you own your own land? Do you rent land? Where are your fields located? What crops do you grow? Which are sold at the market, and which market? What crops do you grow for consumption? Do you have garden at your home and what do you grow? |

| | How do you decide which crops to grow? Have you introduced any new crops on your farm in the last 10 years? What inputs do you use? Where do you get info about farming practice? Is there any government agency that puts limitations on choices of crops? Have you changed your cropping pattern in the last ten years? Do you have livestock and what do you use them for? Do you use the rice mill and what do you use the product for? Do you pay to use the mill? |
|---------------|---|
| Forest access | How often do you go into the forest? Which forest do you use? What products do you get out of the forest? How do you feel about the National Park? (Constraint, an opportunity, or source of conflict) How are decisions made regarding the community forest? What are the rules on collection of forest products (community forest/ national park)? |
| Tourism | When was the first tourist resort built? Why do you think the tourists come to stay here? Have you sold land to the resorts? How has the tourist resorts influenced your life? How did the resorts get access to the land on which they are built? Do you or anyone in your household work in the resorts? Do you have any interaction with the |

| | tourists? If yes, how? How do you feel about the resorts? |
|------------|---|
| Debriefing | Is there anything we should be particularly aware of? Can you think of anyone who you think we should talk to? Do you have any further information that could be relevant to us? Does the co-interviewer have any questions? Do have any comments or questions? Ranges of income (for the questionnaire) |

5. PRA Results

| | NY AND NY | | 1 |
|---|--|--|---|
| | J.J. J.J. Ginger | t and a start and a start a st | |
| | 173 | Allowing and the second of the | |
| 4 | Rice | Automotion of the second of th | |
| | Cablege ผักกาดบาว (สุ้ย) และ กษณ | | |





6. Statistical Results



Figure X: Scatter plot of income and number of livelihood activities in household. $R^2 = 0.244$

7. Soil Results

a. Field Codes

| Field Code | Descriptions |
|------------|------------------------------|
| F1T-R | Rice Field 1- Top-Rented |
| F1M-R | Rice Field 1- Middle- Rented |
| F1B-R | Rice Field 1-Slope-Rented |
| F5T-R | Rice Field 5-Top- Rented |
| F5M-R | Rice Field 5- Middle- Rented |
| F5B-R | Rice Field 5- Bottom- Rented |
| F6T-R | Rice Field 6- Top- Rented |
| F6M-R | Rice Field 6- Middle- Rented |
| F6B-R | Rice Field 6- Bottom- Rented |
| F2T-O | Rice Field 2-Top- Owned |
| F2M-O | Rice Field2- Middle-Owned |
| F2B-O | Rice Field 2 - Bottom- Owned |
| F3T-O | Rice Field 3- Top-Owned |
| F3M-O | Rice Field 3- Middle- Owned |
| F3B-O | Rice Field 3- Bottom- Owned |
| F4ST-O | Rice Field 4-Top- Owned |
| F4M-O | Rice Field4- Middle- Owned |
| F4SB-O | Rice Field 4- Bottom- Owned |

b. pH Results

| Field | pH |
|-------|----|
|-------|----|

| F1T-R | 5.12 |
|--------|------|
| F1M-R | 5.27 |
| F1B-R | 5.08 |
| F5T-R | 5.2 |
| F5M-R | 4.87 |
| F5B-R | 5.3 |
| F6ST-R | 5.27 |
| F6M-R | 5.74 |
| F6B-R | 5.71 |

| Field | рН |
|--------|------|
| F2ST-O | 5.35 |
| F2M-O | 5.11 |
| F2B-O | 5.24 |
| F3T-O | 4.95 |
| F3M-O | 5.05 |
| F3B-O | 5.01 |
| F4ST-O | 4.82 |
| F4M-O | 5.41 |
| F4SB-O | 5.04 |

c. Permanganate Oxidizable Carbon

| Field Type | Measured values by colorimeter | Concentrate of POX- C (mg/kg of soil) | Percentage (mg/kg of soil) |
|------------|--------------------------------|--|-------------------------------|
| F1T-R | 0.016 | 288 | 28.8 % |
| F1M-R | 0.016 | 288 | 28.8 % |
| F1B-R | 0.016 | 288 | 28.8 % |

| F5T-R | 0.018 | 144 | 14.4 % |
|--------|-------|-----|--------|
| F5M-R | 0.016 | 288 | 28.8 % |
| F5B-R | 0.017 | 216 | 21.6% |
| F6ST-R | 0.017 | 216 | 21.6 % |
| F6M-R | 0.015 | 360 | 36 % |
| F6B-R | 0.017 | 216 | 21.6 % |
| F2ST-O | 0.016 | 288 | 28.8 % |
| F2M-O | 0.016 | 288 | 28.8 % |
| F2B-O | 0.016 | 288 | 28.8 % |
| F3T-O | 0.018 | 144 | 14.4 % |
| F3M-O | 0.018 | 144 | 14.4 % |
| F3B-O | 0.018 | 144 | 14.4% |
| F4ST-O | 0.018 | 144 | 14.4 % |
| F4M-O | 0.015 | 360 | 36 % |
| F4SB-O | 0.016 | 288 | 28.8 % |

d. C/N

| Field | Total Carbon | Total Nitrogen | C/N Ratio |
|-------|--------------|-------------------|-----------|
| F1T-R | 0.18 | 1.62 | 8.9647 |
| F1M-R | 0.18 | 1.6 | 9.1102 |
| F1B-R | 0.17 | 1.41 | 8.4801 |
| F5T-R | 0.13 | 1.05 | 7.9719 |
| F5M-R | 0.15 | 1.55 | 10.4834 |
| F5B-R | 0.15 | 1.34 | 9.2359 |

| F6ST-R | 0.17 | 1.57 | 9.224 |
|--------|------|------|---------|
| F6M-R | 0.13 | 1.38 | 10.9149 |
| F6B-R | 0.09 | 0.67 | 7.162 |
| F2ST-O | 0.2 | 2.04 | 103602 |
| F2M-O | 0.19 | 1.93 | 10.2589 |
| F2B-O | 0.19 | 1.6 | 8.6607 |
| F3T-O | 0.12 | 1.15 | 9.3877 |
| F3M-O | 0.14 | 1.2 | 8.6956 |
| F3B-O | 0.13 | 1.13 | 8.465 |
| F4ST-O | 0.18 | 1.62 | 8.9175 |
| F4M-O | 0.17 | 1.66 | 9.8763 |
| F4SB-O | 0.2 | 1.71 | 8.5418 |

E. Soil Texture

| Field | Soil texture | Clay percentage |
|--------|--------------|-----------------|
| F1T-R | Clay Loam | 25-40% |
| F1M-R | Silty Clay | 40-60% |
| F1B-R | Clay loam | 25-40% |
| F5T-R | Clay | 40-60% |
| F5M-R | Clay Loam | 25-40% |
| F5B-R | Silty Clay | 40-60% |
| F6ST-R | Loam | 8-27% |
| F6M-R | Loam | 8-27% |
| F6B-R | Fine Sand | < 5% |

| F2ST-O | Clay Loam | 25-40% |
|--------|------------|--------|
| F2M-O | Clay Loam | 25-40% |
| F2B-O | Silty Loam | 40-60% |
| F3T-O | Silty Loam | 40-60% |
| F3M-O | Clay Loam | 25-40% |
| F3B-O | Clay loam | 25-40% |
| F4ST-O | Clay Loam | 25-40% |
| F4M-O | Clay | 40-60% |
| F4SB-O | Clay | 40-60% |

8. GPS

| Marks | Field Locations | latitude | Longitude |
|----------------|--------------------|--------------|---------------|
| SSR1- F1-Top | Hui Nam Khao | 16° 50.288'N | 101° 0.895'E |
| SSR2-F1-Middle | Hui Nam Khao | 16° 50.293'N | 101° 0.903'E |
| SSR3-F1-Bottom | Hui Nam Khao | 16° 50.287'N | 101° 0.920'E |
| SSR4-F2-Top | Hui Nam Khao | 16° 50.438'N | 101° 0.905'E |
| SSR5-F2-Middle | Hui Nam Khao | 16° 50.444'N | 101° 0.917'E |
| SSR6-F2_Bottom | Hui Nam Khao | 16° 50.444'N | 101° 0.940'E |
| SSR7-F3-Top | Hui Nam Khao | 16° 49.682'N | 100° 59.229'E |
| SSR8-F3-Middle | Hui Nam Khao | 16° 49.680'N | 100° 59.243'E |

| SSR9-F3-Bottom | Hui Nam Khao | 16° 49.676'N | 100° 59.259'E |
|-------------------------------|-----------------|--------------|---------------|
| SSR10-F4-Top | Hui Nam Khao | 16°51.388'N | 101°00.564'E |
| SSR11-F4-Middle | Hui Nam Khao | 16°51.290'N | 101 °00.683'E |
| SSR12-F4-Bottom | Hui Nam Khao | 16 °51.287'N | 101 °00.676'E |
| SSR13-F5-Top | Hui Nam Khao | 16°50.702'N | 100 °59.587'E |
| SSR14-F5-Middle-F5- Bottom | Hui Nam Khao | 16°50.716'N | 100°59.591'E |
| SSR15-F5-Bottom | Hui Nam Khao | 16° 50.728'N | 100° 59.598'E |
| SSR16- F6-Top | Hui Nam Khao | 16° 51.159'N | 101° 0.752'E |
| SSR17-F6-Middle | Hui Nam Khao | 16° 51.154'N | 101° 0.736'E |
| SSR18-F6-Bottom | Hui Nam Khao | 16° 51.133'N | 101° 0.758'E |

9. Synopsis

SLUSE - Sustainable Land Use and Natural Resource Management



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Exploring the Dynamics of Livelihood Strategies in Khek Noi, Thailand

Synopsis Draft (19.02.2016) Elyse Katz, qrn922 Maria Cederskjold Pedersen, tkm706 Marten Ove Kühl, zdk219 Sara Dastoum, xgl861 Patrick Smytzek, xcn785

Supervision: Thilde Bech Bruun and Søren Brofeldt

Word Count: 2.620

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1. Introduction

The livelihoods of rural populations around the world hangs in the delicate balance of a rapidly changing global landscape. According to the Ellis' (2000) Livelihood Framework, livelihoods rely upon assets including the physical, social, financial, human, and natural resources available. Social

relations, institutions, and organizations modify access to these essential resources (Ellis 2000). Access to resources is a fundamental concept of the livelihood framework. Access is understood as the "[...] ability to derive benefits from things [...]" in contrast to property - "[...] the right to benefit from things [...]" (Ribot and Peluso 2003). Therefore, the focus on access includes a wider set of mechanisms that people use in order to derive benefits from resources (Ribot and Peluso 2003). A livelihood strategy can be defined as the manner in which people access and use these assets, within the social, economic, political and environmental contexts, in order to achieve their objectives (Department for International Development, 1999). One of the major critic points on livelihood analysis in the past has been, that they lack the consideration of systemic transformation due to long term changes in the context and miss to capture the whole dynamic within the livelihood systems of rural households (Scoones 2009).

Our study will investigate into these dynamics of livelihood strategies at the village level, exploring the case of Ban Khirirat (Moo 11) in the Khek Noi sub-district of northern Thailand. Moo 11 has experienced long term systemic changes in access to resources due to several factors, including the Hmong ethnicity, past livelihood transformations away from swidden and opium cultivation, increasing domestic tourism and the presence of the Thung Salaeng Luang National Park. Therefore, we seek to investigate how the livelihood strategies of households in Moo 11 are transformed in response to the dynamics in the wider context. We will investigate a range of possible responses on a continuum from intensification, to diversification, to migration, to expansion. Fig. 1 illustrates the overall research framework which is employed in the case study.



Fig. 1: Research Framework (own illustration)

The majority of the households in Ban Khirirat (Moo 11) are of Hmong ethnicity. This ethnic group has been historically targeted by Thai government development projects due to their constructed identity as 'non-Thai' immigrants, 'hill tribes', 'opium growers' and "environmental destroyers" (Latt and Roth 2015). Before the 1955 ban on opium, the Hmong were notorious for the production of opium and as practitioners of Swidden agriculture (Latt and Roth 2015). In 1964, Swidden techniques were deemed destructive, and indirectly banned by the National Reserve Forest Act (Rerkasem and Rerkasem 1994). As a result of this reputation, Royal Development projects of the 1970s and 1980s attempted to shift Hmong practices from opium and Swidden to fixed field, chemically intensive, cash crop production(Latt and Roth 2015). The Hmong thus earned their reputation for being environmentally destructive. This research aims to investigate how the Hmong ethnic identity, livelihood transformations away from swidden and opium cultivation, as well as negative propaganda influence access to resources and livelihood strategies in Moo 11.

Moo 11 is located on the border of the Thung Salaeng Luang National Park. Established in 1975 (Ghimire 1991), this park places limitations on access to forest resources in Moo 11. The conservation policy of the Thai government tends to emphasize preservation and increase in tree cover, with an exclusion of all human impact. In contrast, local peoples promote biodiversity and restricted use of forest resource (Hares 2009). This study will examine the impact of the national conservation policy on livelihood strategies.

The final factor we aim to investigate is the impact of the growing domestic tourism industry. After the completion of Highway 12 and the Wat Pha Sorn Kaew Buddhist Monastery in 2004, the number of resorts in the region has increased in number. Extensive land selling in Ban Khirirat (Moo 11) has occurred in the past 10 years, driven by resort investors from other parts of Thailand. Domestic tourism can negatively impact land access, provide opportunities for alternative forms of employment, or even perpetuate an internal colonialism towards non-thai populations (Ervard 2009).

2. Objective

The objective of this study is to investigate how the national park's conservation policy and the recent changes in tourism affect the livelihoods of the local Hmong population in Ban Khirirat (Moo 11), Khek Moi, Thailand. We will subsequently investigate the impact of the resulting changes in livelihood strategy on the environment. In doing so the study aims to contribute to an advanced understanding of livelihood system dynamics in a rural development context and to agrarian change in general.

Four research questions are derived from this overall objective:

- 1. What are the past and current livelihood activities of the local population in Moo 11?
- 2. How has the domestic tourism industry affected the livelihoods of the local population?
- 3. How does the national park conservation policy affect the livelihoods of the local population?
- 4. How do the changes in the livelihood strategies impact the environment?

3. Study Site Description

Ban Khirirat is one of 12 villages in the Khek Noi (Thai: เข็กนอย) tambon (sub-district) of the Khao Kor district, in Phetchabun province, Northern Thailand. The Village Committee and/or Tambon (sub-district) Administrative Organization (TAO) organized the development of the local village structure (Mouret 1994). The village was separated in 1997 from Moo 3. Fig. 2 shows a satellite image of the village located on the border of the Thung Salaeng Luang National Park and highway, route 12.



Fig. 2.: Satellite Picture of Ban Khirirar, Khek Noi, Petchabun, Thailand (Google Maps s.a.)

Khek Noi has a tropical climate. During the winter months there is much less rainfall in Ban Khek Noi than during the rest of the year (see Fig. 3). This climate is classified as tropical wet (Aw) in the Köppen-Geiger system (Peel et al. 2007). The average annual temperature in Ban Khek Noi is 24.3 °C. The average annual rainfall is 1109 mm. During the year, the average temperatures vary by $6.7 \degree C$ (see Fig. 3).



Fig. 3.: Climate Diagramm Ban Khek Noi (Climate-Data.org s.a.)

The total population of Khek Noi in 2015, was 13,739 people. This area is famous for its unique cultural offerings, intricate handicrafts and rich history. It is home to Thailand's largest

community of Hmong people (Latt and Roth 2015). Ban Khirirat has 251 households with 1141 inhabitants (579 male,562 female) (Khek Noi Tao 2014). The dominant population is Hmong with a few Thai, who come from other areas. Rural people cultivate upland rice both for consumption and selling. They grow different varieties of upland rice (Hom Mali and Berry rice). Ginger as a cash crop and some perennials such as eucalyptus, para rubber, bamboo are grown in homegardens and fields. The agricultural fields are not located inside the village, but far away from the residential area. The use of forest resources has been a source of conflicts with national park authorities.

Some villagers work as hired labor in resorts. Seasonal migration occurs during the dry season, especially February and March, before the land preparation period. Many young people go to work in cities. The domestic tourism in the area has recently see a rise. Exact numbers on this are lacking.

4. Methodology

In order to answer the research question a range of natural and social science methods will be employed to investigate the case of Moo 11. The collected data is both quantitative and qualitative in nature (for specification see Appendix I). Triangulation is assured by the use of different methods, different respondence groups, different researchers applying the methods and the investigation of the study object from different disciplines. Each method has been evaluated in regard to its reliability, validity, practicability and ethical appropriateness. The following list is preliminary and might be adjusted in the field to allow for flexibility in response to the specific local context.

4.1 Interviews

Various interview methods are used to obtain information. We plan to begin by conducting an explorative semi-structured interview of the village headman. Based on this information, semi-structured interviews will be conducted with several village members using snowball-sampling methods. This information will then be used to modify our questionnaire to focus on important issues within the village. Questionnaires will then be distributed. Finally, more specific interviews shall be conducted on the topics of agricultural practices, the tourism industry, and the impact of the national park.

4.1.1 Semi-structured Interviews

To go into depth of a specific topic we conduct semi-structured interviews. The interviews are based on written checklists. The open-ended character provides the opportunity to dig deeper into unexpected, relevant issues (Mikkelsen 2005). The question will be tailored to the specific subject we would like to cover. The people in the village and in the national park are the sample group, depending on the topic. In case of the questions concerning the livelihoods, the people in the village are the main source of information. The same is true for the impacts of tourism and the establishment of the national park. Furthermore, interviews with key informants are used to get information from these persons as the particular insight into or opinions about a specific topic is anticipated to them (Mikkelsen 2005). The persons to interview have to be identified in the field, but as a starting point, the village head, national park responsibles and resort managers were identified as key-informant. Neutral places to conduct the interviews have to be found. Interview guides have been constructed in a manner in which they can be easily combined. For example, a general semi-structured interview guide has been written, which will be used in all interviews. This guide will be used to obtain basic background, demographic, and kinship related information. Other more specific interview guides have also been written on the subjects of agricultural practices, the tourism industry, and the national park. These questions will be added on the basic interview guide at the discretion of the interviewer based on the relevance to the given informant. There is also a separate interview guide specifically written for the village headman.

4.1.2 Life Story Interviews

Life story interviews can give insight to the lived experience of people. By asking a person to describe its' life story the interviewer can gain knowledge of how the person interviewed sees her or his own story. By conducting narrative interviews, important aspects of a person's life can be drawn into attention. If the subject of the interview goes beyond the story of the person and covers a shared story it can serve as a remembrance of a particular place or event (Kvale 2009; Bernard 2011).

4.1.3 Questionnaire based Interviews

Questionnaire based Interviews are more structured compared to semi-structured interviews. The difference is to ask only the specific questions concerning the objective of the case. The advantage is that a questionnaire requires less time and more samples can be taken.

4.1.4 Focus Groups

Focus groups are group-based interviews with 6-8 participants. They are particularly suitable to explore group behavior, interactions and norms (Desai and Potter 2006). In course of this study, focus groups with villagers will be used to generate qualitative data on the use of forest resources and the interaction with the national park. The moderator keeps the discussion focused, while allowing participants at the same time to express their viewpoints and what is important to them. The focus group discussion will be recorded in agreement with the participants and key sections will be described. A focus group will be conducted specifically with elderly village members in order to assess changes in land use within the village.

4.2 Participatory Rural Appraisal

Rather than a specific method, PRA is more a family of approaches using a variety of methods, which aim to enable rural people to analyze and share their knowledge about the context they life in and in further steps to plan and to act upon the arising knowledge (Chambers 1994). The core element here is the active involvement of the study subject in a co-creation process and the assumption that the enhanced understanding of their life conditions will lead to empowerment. Pretty (1995) distinguishes different levels of participation in a rural development context. For this study the level of participation is rather low (participation by consultation) due to various constraints, mainly the available time. Various methods attributed to the PRA family are used in order to explore the realities local people live in and generate qualitative data about interactions among them and between them and the environment. The following PRA methods can be used individually during interviews or in groups. They aim to facilitate the exchange of information between the researcher and the respondents as well as among them, thereby stimulating a conversation.

4.2.1 Participatory Mapping

Participatory mapping can be used to provide distributional information related to a defined space (Mikkelsen 2005). In this study we use participatory mapping to obtain qualitative data on the distribution of and access to natural resources as well as places of cultural and social significance.

4.2.2 Seasonal Calendar

A seasonal calendar visualizes information about annual variations and annual patterns (Mikkelsen 2005). Seasonal calendar are used in this study to gain a more indepth understanding about the farming systems.

4.2.3 Timeline

Timelines provide an overview about events of importance for the respondents (Mikkelsen 2005). They are used by us to generate qualitative data on the changes in livelihood strategies and to understand the history of the system.

4.2.4 (Matrix)Ranking

This study uses ranking in order to gain information about the importance of different livelihoods.

4.2.5 Stakeholder Mapping

Stakeholder mapping illustrates the social relation within a system and the importance of different stakeholders. It is used to gather information about the social dynamics particularly in regard to natural resource governance and decision making.

4.2.6 Forest, Field and Transect Walks

Guided and unguided walks can help to understand the surrounding (Mikkelsen 2005). Especially walks guided by villagers can help to understand the use of agricultural land and the practices and the use of forest resources. Furthermore, it can be help to understand how the villagers and the national park responsibles understand conservation.

4.3 Participant Observation

Despite the very limited amount of time, which we can spend on the field site, participant observation will make it possible for us to empathise and with the people we are studying and their way of experiencing and interpreting their world. Participant observation takes place along a continuum between complete participation and complete observation. By participating and observing at the same time, attention is given to aspects of people's lives which might not else be noticed as significant, as they are taken to be obvious for informants or researchers.

4.4 Geo Information System

Satellite images are used to calculate the extent of different landcover types and their changes over time. The images are analysed using ARC GIS. Different land cover types are identified on the images and a preliminary identification key is designed. The identification key is checked against the actual land cover in the field and adjusted.

4.5 Soil Sampling

Soil sampling is used to investigate if the assumed intensification of agricultural production can be seen in the soil properties, just as pH, soil organic matter content, water holding capacity, texture and conductivity. Samples will be taken from fields where agriculture intensified in the past and fields still managed traditionally. The samples will be taken from the upper soil layers.

4.6 Forest Resource Assessment

With forest resource assessment methods we want to investigate the difference between national park forest and forest managed by the village inhabitant. The main focus here is the biodiversity and biomass calculation and comparison between the two forest types. Community Assisted Stratification is one of the methods we will use to identify different land use and their history in the area.

5. References

Bernard, H.R. (2011). Research Methods in Anthropology. Plymouth: AltaMira Press.

- Chambers, R (1994). The Origins and Practice of Participatory Rural Appraisal. *World Devlopment*, 22(7), 953-69.
- Climate-Data.org (s.a.). Climate: Ban Khek Noi. Accessed via: http://en.climate-data.org/ location/563986/ [19.02.2016].
- Desai, V. and Potter, R.B. (2006). Focus Groups. In: Desai, V. and Potter, R.B. (Eds.). Doing Development Research. London: Sage Publications.

Ellis, F. (2000). Rural Livelihoods and Diversity in Developing Countries. Oxford: Oxford University Press.

^{Evrard, O., Leepreecha, P., 2009. Monks, Monarchs and Mountain Folks Domestic} Tourism and Internal Colonialism in Northern Thailand. Critique of Anthropology, 29 (3), 300–23.

Ghimire. B.K. (1991). Parks and people, livelihood issues in national parks management in Thailandand Madagascar. Geneva: United Nations Research Institute forSocialDevelopment.Social

Google Maps (s.a.). Google Maps: Bhan Khirirat. Accessed via: https://www.google.at/ maps/@16.8086081,100.9778214,4693m/data=!3m1!1e3 [19.02.2016]

Hares, M. (2009). Forest Conflict in Thailand: Northern Minorities in Focus. *Environmental Management*, 43(3), 381–95.

Kvale, S. (2009). Interview, introduktion til et håndværk. København: Hans Reitzel

Latt, S. and Roth, R., 2015. Agrarian Change and Ethnic Politics: Restructuring of Hmong and Shan Labour and Agricultural Production in Northern Thailand. *Journal of Agrarian Change*, 15, 220–38.

- Mikkelsen, B. (2005). Methods for development work and research: a new guide for practitioners. New Delhi: Sage Publications.
- Mouret, C. (1994). Geological history of northeastern Thailand since the Carboniferous.
 Relations with Indochina and Carboniferous to Early Cenozoic evolution model.
 Proceedings of the International Symposium on Stratigraphic Correlation of
 Southeast Asia. Dept. Miner. Resour Bangkok, 1994, 132-58.

Peel, M.C., Finlayson, B.L. and Mcmahon, T.A. (2007). Updated world map of the
Geiger climateclassification. Hydrology and Earth System SciencesKöppen-
European
EuropeanGeosciences Union, 2007, 4 (2), 439-73.European

Perkasem, K. and Perkasem, B. (1994). Shifting Cultivation in Thailand: Its current
 Situation and Dynamics in the Context of Highland Development. IIED Forestry and land use
 series no. 4. London: International Institute for Environment and
 Development.

Pretty, J. (1995). Participatory Learning For Sustainable Agriculture. World Development, 23 (8), 1247-1263.

Ribot, J. C., & Peluso, N. L. (2003). A theory of access. Rural Sociology, 68(2), 153-81.

Scoones, I. (2009). Livelihood perspectives and rural development. *Journal of Peasant Studies*, 36(1), 171-96.

6. Appendix

- 1. Questionnaire
- 2. Semi-Structured Interview Guides
 - a. Headman
 - b. General Guide
 - c. Agricultural Practices
 - d. Tourism Industry
 - e. National Parks and Conservation
- 3. Crop Diversity Assessment
- 4. Data Matrix
- 5. Timeline
1. Questionnaire

- Introduction of Researchers and translator
- Explanation of study objective and reasoning behind these questionnaire
- Informed consent
- (recording)?
- Space for questions from the respondent

Questionnaire ID:

Date:

Time:

Name of Interviewers:

1. General Information on Household

1.1 How many people live currently in the Household?

Age? Gender? Education? Occupation?

| Member | Age | Gender | Education | Occupation |
|--------|-----|--------|-----------|------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

1.2 When did your household settle here?

1.3 Are there members of the family, who currently do not live in the household?

If yes, where do they live and what do they do there?

1.4 Does your household own animals?

If yes, what animals and how many and what are they used for?

1.5 Does your household own a car or motorcycle?

If yes, what is it used for?

1.6 Does your household own land?

If yes, how much and what is it used for?

2. Livelihood Activities

**** Range of Income ***

2.1 What are your sources of income and can you rank them?

2.2 Does your household receive any remittances from relatives?

2.3 What food do you grow or collect and what food do you buy?

3. Agricultural Practices

3.1 What crops do you grow and what are they used for?

| Subsistence | Market |
|-------------|--------|
| | |

3.2 What inputs do you use for producing your crops? (Fertilizer, Pesticides, Herbicides)3.3 Did you sell or lost land in the past?

If yes, what was this land used for and to whom?

3.4 Did the use of inputs changed during the last X years?

If yes, how did it change?

3.5 Did you introduce new crops during the last X years?

If yes, what crops did you introduce?

3.6 Did you buy land in another village during the last 10 years?

If yes, what were the reasons for this decision?

3.7 Did you change your cropping pattern by introducing an additional crop into the cropping cycle during the last 10 years?

4. Forest Use

4.1 How often do you go to the forest?

4.2 What do you collect from the forest?

| Fruits | |
|----------------|--|
| Medical Plants | |
| Fire Wood | |
| Vegetables | |
| Other: | |

4.3 How frequently do you collect them and where?

4.4 What do you do with the collected products?

4.5 Do you hunt in the forest?

5. Impact of Tourism Industry

5.1 Does one of the household members work in the tourism sector?

If yes, What is s/he doing and how high is the salary?

ranges

5.2 Do you, in any way, provide services or products to tourist and what kind?

- No
- Yes, namely
 - Accommodation
 - Guide
 - Shop
 - Restaurant
 - Traditional Performance
 - Cooking
 - Transport
 - Others

6. Changes in livelihood strategy

6.1 Did you introduce one new income generating activity your household?

If yes, which activity and what were reasons for the decision?

6.2 Did you stop one income generating activity completely during the last 10 years? If yes, which activity and what were reasons for the decision?

Fare well:

- Thank you very much for your participation
- Room for questions by the respondents
- Informal Talk

2.SSI Guides

2a. Explorative interview with Headman:

| Subjects: | Questions: |
|--------------------|--|
| Introduction | Thank you for taking the time to participate in this interview. We really appreciate your help for our research project. |
| | Present interviewer, co-interviewer, and translator The co-interviewer will mainly write down notes and maybe ask some additional questions during and after the interview. |
| | Introduction to the project: We are five students from Denmark carrying out research about how people live in Ban Khirirat (Moo 11) |
| | We would like to know more about the village in general, and we hope you will be able to answer our questions regarding this There are no wrong or right answers. We are just interested in you telling us about how you see it. |
| | Recording: We would like to record the interview to be able to listen to it afterwards. Is that okay with you? |
| | Do give your consent to participate in this research? Do your have any questions before we begin the interview? Household ID What is your name? Age? Position in the household, and relation to the head of house? |
| | Main Occupation? |
| Village history | Can you describe the history of the village shortly? When was it established? Why was it separated from Moo 12? What characterizes Moo 11 in particular? Is there anything special about the village we should know? Does the village differ from ethnic Thai villages? If so, how? Is there something that characterizes Hmong villages in general? |

| Land access and agriculture | Do the villagers own their own land? Do any of the villagers rent land? Where? Does anyone else cultivate land surrounding the village? Who? What are the main crops that the villagers grow? Which are for subsidence and which are sold at the market? Has there been any recent change in the choice of crops? Why? Is there a big difference in how people cultivate land? What are some of the differences? On which basis do people decide which crops to grow? (soil quality, market prices etc) |
|-----------------------------------|---|
| Forest access | When was the Natural Park established? On which basis? Do the people of the village have access to the natural park? If yes, what do they use it for? Have the establishment of the natural park reduced the collection of forest products? How do the villagers in general feel about the natural park? Constraint, an opportunity? Do the villagers have access to other forest areas? What is the law on collection of forest products? Who regulates the law? Are you aware of any illegal activities? |
| | When was the first tourist resort established? Why do you think the tourists come to stay here? How did they get access to the land on which they are built? Have any of the villagers sold land to the resorts? How has the tourist resorts influenced the life of the people in Moo 11? Do many of the villagers work in the resorts? Do the villagers have any interaction with the tourists? If yes, how? Do you think the villagers see the resorts as something mainly negative or positive? And why? What do the villagers think about the establishment of the temple? |
| Debriefing | Is there anything we should be particularly aware of? Can you think of anyone who you think we should talk to? Do you have any further information that could be relevant to us? Does the co-interviewer have any questions? Do have any comments or questions? • Ranges of income (for the questionnaire) |

2b. General interview:

Hello.

Thank you for agreeing on participating in this interview. We really appreciate you taking your time to participate.

Present interviewer, co-interviewer, and translator The co-interviewer will mainly write down notes and maybe ask some additional questions during and after the interview.

Introduction to the project: We are five students from Denmark carrying out research about how people live in Ban Khirirat (Moo 11)

We will be asking several questions about your daily life and hear your perspective on some of the things we are looking into. There are no wrong or right answers. We are just interested in you telling us about your way of living and daily activities.

Recording:

We would like to record the interview to be able to listen to it afterwards. Is that okay with you?

Anonymity: We will change your name in our report so all your answers will be anonymous.

Do give your consent to participate in this research?

Do your have any questions before we begin the interview?

Household ID: Date: Time:

Name of Interviewers: What is your position in the household, and relation to the head of house?

What is your main Occupation? How many people currently live in your the Household?

| Member | Age | Gender | Education | Occupation |
|--------|-----|--------|-----------|------------|
| | | | | |

| Background information | Were you born in Ban Khirirat (Moo 11)? If not, when did you settle here and for what reason? |
|------------------------|---|
| | Are there members of the family, who currently do not live in the household? |
| | If yes, where do they live and what do they do there? |

2c. Interview with villagers: Agricultural practices

| | Begin with general interview guide |
|-------------------|--|
| General Questions | Do you practice agriculture? |
| | If no why not? |
| | Is agriculture your main income source? |
| | Since when do you practice agriculture? |
| | What crops are you growing and what do you use them for? Ranking for area, income and labor |
| | How big is the area you are cultivating? |
| | Do you own the land? |

| What is the outcome? | If products are sold: Where do you sell your products? Or to whom? |
|--|---|
| | Who is setting the price? |
| | Do you have to buy food and how much? Ranking |
| | Does it vary? Seasonal? |
| How did the agricultural production changed over time? | What was the biggest impact in your agricultural production you remember? |
| | Did you extend your agricultural production? |
| | When was the last time you started cultivating on new land? |
| | Where? |
| | Did you introduce new crops in the past? |
| | How do you use chemical inputs? (fertilizer or pesticides) |
| | Did your yields increase, decrease or stayed the same over the last years? |
| Livestock at the farm? | Do you have animals? |
| | What kind and how many of each? |
| | What are they used for? |
| Effects of resorts and National park | How have your land holdings changed last years? For what reasons? (gained/ lost/ sold land) |
| | Did you receive compensation? |
| | how does the presence of the resorts affects your access to resources and land? |
| | How does the National Park affects your access to resources and land? |

| Debriefing | Does the co-interviewer have any questions? |
|------------|--|
| | The interview is now done. Do you have any comments? Questions? Further information that you think might be relevant for us? |

| Introduction, Demographic and Background Questions | Begin with general interview guide |
|--|---|
| General Tourism Questions: | Do you feel that the tourism Industry impacts your daily life? If yes, how so? Do you have regular contact with tourists or the resorts? How do you perceive (what do you think) about the tourism industry and the resorts? What opportunities are brought about by the tourism industry for people in your village? |
| Tourism and Employment | Do you or anyone in your household find work through the Tourism industry? (work for resorts, provide services to tourists, sell souvenirs?) Is this your only source of income? How much money do you get from? *** ranges*** How long have you been working there? |

| | How many hours a day/days a week do you work there? | | | |
|--|---|--|--|--|
| | Is this work available all year round or does it vary by season? | | | |
| | (Llow did you got this job?) | | | |
| | (How did you get this job?) | | | |
| Tourism and Resources | Have you sold any land in the past X years? To whom? | | | |
| | Do the resorts buy land from people in the village? | | | |
| | How do you feel that the presence of the resorts affects your access to land? | | | |
| | How do you feel that the resort impact your access to other resources? (Water, forest resources, power) | | | |
| Debriefing | Does the co-interviewer have any questions? | | | |
| | The interview is now done. Do you have any comments? Questions? Further information that you think might be relevant for us? | | | |
| Interviews With Resort Managers/ Representatives | | | | |
| Introduction | Thank you for agreeing to participate in this interview. | | | |
| | We are students from the University of Copenhagen. We are conducting research about how people live in the near by village Ban Khirirat (Moo 11). Your resort is located so close to the village. | | | |

Therefore we will be asking questions about any interactions the resort may have with the village and local people.

Recording: We will record the interview to be able to listen to it afterwards.

Anonymity: We will change your name, and the name of your resort in our report so all your answers will be anonymous.

Do give your consent to participate in this research?

 Do your have any questions before we begin the interview?

 Interaction Between
 What type of interactions does your resort have with people from the village of

Ban Khirirat (or other surrounding villages?)

Resorts and Village

| | Where do your employees come from? How many of them are locals? What types of jobs do employees from the local villages have at your resorts (ie gardening, janitorial, reception, ect)? | | | |
|---|---|--|--|--|
| | What opportunities for promotion exist? And what qualifications would be needs? | | | |
| | When was your resort built? Who did you purchase the land from? (At what cost? | | | |
| | Do you plan on expanding your resort in the near future? | | | |
| | How do the tourists who stay at your resort interact with the local people (if at all)? | | | |
| Debriefing | Does the co-interviewer have any questions? | | | |
| | The interview is now done. Do you have any comments? Questions? Further information that you think might be relevant for us? | | | |
| 2e.Interview with national nark/forest management | | | | |

| e.Interview v | vith n | ational 1 | oark/forest | management |
|--|--------|---------------|-------------|------------|
| Connect and a state of the stat | | actoriated by | | management |

| | Describe what kind of crises can occur in national park. How the crises are prevented What kind of tools / policies you have for handling the crises How are you prepared for possible crises What kinds of crises have occurred in national park what recommendations for future improvement can you make to improve the current situation? | | |
|----------------------|--|--|--|
| | What strategies would work the best? | | |
| Locals contributions | How do different stakeholders affect the conservation area? Do they have any knowledge about the national resources conservation? Do local people support national park conservation? if yes, how? if no, why? | | |
| Debriefing | Is there anything we should be particularly aware of? Can you think of anyone who you think we should talk to? Do you have any further information that could be relevant to us? Does the co-interviewer have any questions? Do have any comments or questions? | | |

Interview With Villagers: National Park Related Questions

| Begin with general interview gudie |
|--|
| How often do you go into the forest, and why do you do there? |
| Which forests do you use? (map) |
| What products does your household collect from the forest? (Kindling, mushrooms, medicinal plants, ect) ? Who collects these things? |
| Has the way your family uses the forest changed at all in the past X years? |
| |
| What do you think about the Thung Salaeng Luang National Park? |
| How does the presence of the park affect the way you use the forest? |
| |

| | What restrictions and rules exist around the park? | | |
|--------------|---|--|--|
| | Do people from your village have any input on how the park is operated? | | |
| Conservation | How do you see the topic of conservation? | | |
| | Do you think that the conservation policies of the park are effective? Do you think they are fair? Would you change anything? | | |
| Debriefing | Is there anything we should be particularly aware of? Can you think of anyone who you think we should talk to? Do you have any further information that could be relevant to us? Does the co-interviewer have any questions? | | |
| | Do have any comments or questions? | | |

3. Crop Diversity Assessment

Location of Assessment:

Household Number:

Date of Assessment:

Location of the plot:

Plot size:

| Picture | Common Name | Botanical Name | Presence in the plot | Comments |
|---------|-------------|----------------|----------------------|----------|
| | | | | |
| | | | | |