

Master of Science in Geography

Well-being and land use changes in northern Laos

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Abstract

Mountainous regions of northern Laos are faced with high deforestation rates which are attributed mainly to agricultural expansion of local smallholders. The expansion of cash crop cultivations, such as sugarcane, banana, rubber and cardamom has, over the past 20 years, considerably influenced the socio-economic development of small-scale farmers and their relations to their local environment. Based on the qualitative data resulting from interviews with sixty Laotian villagers and six focus groups in four villages in northern Laos, this master's thesis explores the evolution of the villagers' well-being in light of those rapid land use changes. More precisely, this research seeks to figure out what capabilities and opportunities the villagers have to live a life they value and how it changed over the past 20 years. This study demonstrates that the cash crops have considerably improved the quality of life and the well-being of the villagers in the assessed villages over the past 20 years. The increase in income and in leisure time from the new agricultural activities, in addition to government investments in public services have been a crucial factor of improvement of the villagers' well-being. These changes are however accompanied by considerable environmental degradations and the loss of numerous ecosystem services.

Key words

Well-being; Capabilities; Cash crops; Ecosystem services; Laos; Land use; Land use changes

Résumé

Les régions montagneuses du nord du Laos sont confrontées à des niveaux de déforestation élevés, attribués principalement à l'expansion agricole des petits exploitants locaux. L'expansion des cultures de rente, telles que la canne à sucre, la banane, le caoutchouc et la cardamome, a considérablement influencé le développement socio-économique des petits agriculteurs et leurs relations avec l'environnement au cours des 20 dernières années. Sur la base des données qualitatives résultant d'entretiens avec soixante villageois laotiens et six groupes de discussion dans quatre villages du nord du Laos, cette thèse de master explore l'évolution du bien-être des villageois compte tenu de ces changements rapides d'utilisation des terres. Plus précisément, cette recherche cherche à déterminer les « capacités » et les opportunités que les villageois ont pour vivre une vie qu'ils valorisent et comment cela a évolué au cours des 20 dernières années. Cette étude démontre que les cultures de rente ont considérablement amélioré la qualité de vie et le bien-être des villageois dans les villages d'étude, au cours des 20 dernières années. L'augmentation des revenus et du temps de loisir des nouvelles activités agricoles, en plus des investissements publics dans les services publics, ont été un facteur crucial d'amélioration du bien-être des villageois. Ces changements s'accompagnent toutefois de dégradations considérables de l'environnement et de la perte de nombreux services écosystémiques.

Mots clés

Bien-être ; Capacités ; Cultures de rente ; Services écosystémiques ; Laos ; Utilisation du sol ; Changements d'utilisation du sol

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Table of contents

1. INTRODUCTION	2
2. RESEARCH QUESTIONS	5
3. CONCEPTUAL FRAMEWORK	7
3.1. HUMAN WELL-BEING	7
3.2. THE CAPABILITY APPROACH	9
3.3. ECOSYSTEM SERVICES	17
4. CASE STUDY LANDSCAPES	19
4.1. STUDY AREA.....	21
4.1.1. <i>Sing Case Study Area</i>	23
4.1.2. <i>Ban Prang</i>	27
5. METHODOLOGY	29
5.1. FOCUS GROUPS.....	30
5.2. SEMI-STRUCTURED INTERVIEWS	35
6. WEAKNESSES AND LIMITATIONS	37
7. FACTORS OF WELL-BEING IN THE STUDY VILLAGES	39
7.1. WHAT IS NEEDED FOR WELL-BEING?	45
8. ECOSYSTEM SERVICES AND WELL-BEING	48
8.1. BODILY HEALTH	50
8.2. BODILY INTEGRITY	56
8.3. CONTROL OVER ONE'S ENVIRONMENT.....	56
8.4. LINKS BETWEEN ECOSYSTEM SERVICES AND WELL-BEING	57
9. CHANGES IN WELL-BEING	59
9.1. LAND USE CHANGES	59
9.1.1. <i>Main land uses and land use changes in the Sing CSA over the past 20 years</i>	60
9.1.1. <i>Main land uses and land use changes in Prang over the past 20 years</i>	63

9.2. PUBLIC SERVICES CHANGES	65
9.3. CHANGES IN WELL-BEING	67
10. CAPABILITIES TO ACHIEVE WELL-BEING.....	72
10.1. CAPABILITIES REGARDING BODILY HEALTH.....	72
10.2. CAPABILITIES REGARDING BODILY INTEGRITY	75
10.3. CAPABILITIES REGARDING SENSES, IMAGINATION, AND THOUGHT	76
10.4. CAPABILITIES REGARDING EMOTION.....	77
10.5. CAPABILITIES REGARDING PRACTICAL REASON	78
10.6. CAPABILITIES REGARDING AFFILIATION	78
10.7. CAPABILITIES REGARDING OTHER SPECIES	79
10.8. CAPABILITIES REGARDING PLAY	80
10.9. CAPABILITIES REGARDING CONTROL'S OVER ONE'S ENVIRONMENT.....	81
10.10. SYNTHESIS OF THE CAPABILITIES.....	83
11. DISCUSSION.....	86
11.1. KEY FINDINGS.....	89
12. CONCLUSION	92
13. BIBLIOGRAPHY.....	96
14. ANNEX	106

Table of tables

Table 1: Central human capabilities (Nussbaum, 2007, pp. 23–24)	12
Table 2: Central human capabilities adapted to the context of northern Laos.....	16
Table 3: Summary table of the focus groups conducted in Nam Mai, Oudomsin and Prang.....	31
Table 4: Summary table of the interviewees in Nam Mai, Oudomsin, Pakha and Prang	36

Table 5: Complete list of well-being factors resulting from the focus groups, by order of importance according to the participants41

Table 6: Importance of each of Nussbaum’s dimension and money for the well-being of the villagers. Each participant of the focus groups had five votes of importance.....46

Table 7: Ecosystem services and providers of ecosystem services in the study villages, according to the villagers48

Table 8: Land use changes in the Sing CSA over the past 20 years60

Table 9: Land use changes in Ban Prang over the past 20 year64

Table 10: impacts of the shift to cash crops on the dimensions of well-being for the assessed villagers69

Table of figures

Figure 1: representation of a person's capability set and her social and personal context (Robeyns, 2005: 98)..... 11

Figure 2: Importance of each aspects of well-being. The yellow cards are the aspects the participants gave themselves and the orange cards are the remaining aspects of Nussbaum’s list that were probed. © 2018 Nicolas Stenger..... 33

Figure 3: Final matrix of the focus group with every question answered for the most important aspects and the aspects of Land and Taking care of the environment. © 2018 Nicolas Stenger..... 34

Figure 4: Traditional house made from bamboo walls and grass roof, in the back (Ban Nam Mai) © 2018 Nicolas Stenger 55

Figure 5: Traditional bamboo house next to more modern houses made of solid materials (Ban Prang). © 2018 Nicolas Stenger 55

Figure 6: Entire mountains covered by rubber trees, near Oudomsin © 2018 Nicolas Stenger..... 61

Figure 7: Harvest of sugarcane crops near the village of Pakha. Many villagers work together to harvest the production © 2018 Nicolas Stenger 63

Introductory section

1. Introduction

Well-being is a concept commonly discussed in relation to developed countries, where policies and legislations promote and advance the well-being of the people. When discussing about developing countries, the concern is commonly on economic factors and conventional approaches try to understand development by focusing on economic growth. However, it is important to recognize that people in poor countries are not simply defined by their poverty or their lack of material wealth (Gough & McGregor, 2007).

Material wealth has historically been the main concern of international development studies. People were defined by their poverty and the concern was on their suffering induced by that poverty such as the lack of access to food and other basic needs and services (Camfield & McGregor, 2005; Gough & McGregor, 2007). Using the per capita income, the gross domestic product or any other economic indicator to evaluate development does not reveal how people survive, struggle or thrive in their respective context. There is a "gap" in those studies between people's observed (objective and quantifiable) condition and their personal (subjective and qualitative) vision of it. Indeed, even people going through extreme material hardships and deprivations in the poorest countries can experience happiness and satisfaction (Camfield & McGregor, 2005). In other words, they can "be well" even in those conditions. Peoples' well-being cannot be reduced to simple material wealth, or lack of.

In this research, I seek to understand what constitutes human well-being for small-scale farmers' in four case study villages in the province of Luang Namtha, in northern Laos. Subsistence and small-scale farmers in rural areas in low-income countries are commonly part of the global poor

populations and are considered as especially vulnerable (Gautam & Andersen, 2016). Laos is considered as one of the poorest country in the world (World Bank, 2018a), where 60% of the population lives in rural areas and the majority of them rely on subsistence agriculture (FAO, 2018). However, since the 1990s and the opening of the country to international trade, the livelihoods of those people dependent on land has considerably evolved, especially in the north of the country, close to the Chinese border. Over the past 20 years, the farmers' livelihood has experienced a major shift from subsistence agriculture to market-oriented agriculture with the introduction of cash crops such as sugarcane, banana, cardamom and rubber. Empirical studies all over the world have shown that diversification in agricultural activities have consistently enable households to improve their income and food security and to lower their vulnerabilities (Gautam & Andersen, 2016). These land use changes have however been accompanied with considerable degradation to the environment, especially due to uncontrolled deforestation. This has led to a decrease in the provision of ecosystem services, which are crucial to the well-being of people (McMichael et al., 2005).

There have been numerous studies on agrarian development and land use changes in most of the countries of southeast Asia and especially in the five major agricultural countries that are Indonesia, Thailand, Malaysia, Vietnam and the Philippines (See for e.g. Do, 1994; Verburg & Bouma, 1999; van Noordwijk et al., 2002; Castella et al., 2005; De Koninck, 2006; Castella & Verburg, 2007; Castella et al. 2007; Villamor et al., 2013; Bernard & Bissonnette, 2014; Donald et al., 2015). However, as Laos opened itself to international trade in the 1990s, later than most of its neighbors, it only recently experienced major land use changes induced by international markets and, as such, there is still a lack of studies on the topic. With this thesis, I attempt to fill part of this gap.

This case study is perfect to develop on the causal link between human development, ecosystem services and well-being. Being well is not only influenced by material conditions, but also by people's own perception of their situation. In this research, the people are considered as agents involved in the construction of their well-being, both social and material, which is based on the reflections, perceptions and priorities of the assessed people on their own situation rather than on an imposed "developed conception" of well-being. They have constraints limiting their abilities to achieve what they value as important, but they also have opportunities to improve their lives. In other words, these constraints and abilities are the villagers' capabilities to achieve what they consider as well-being. In taking this approach, I provide a better understanding of what well-being means in the local context.

To guide this research, I developed a series of specific research questions, which are presented in the next chapter.

2. Research questions

The common thread guiding this work is to bring the notions of human well-being, ecosystem services and capabilities together. This master's thesis intends to address and answer the following general research question: **How has human well-being evolved in a situation of rapid land use change dynamics in the villages of Nam Mai, Oudomsin, Pakha and Prang in the province of Luang Namtha, in northern Laos?**

It is widely recognized that land use changes (LUC) and human land use management can alter the environment in which they occur and can therefore affect the services provided by ecosystems (Deng et al., 2013; Quintas-Soriano et al., 2016). Those services are the benefits people obtain from ecosystems and they are fundamental for the well-being of all people in all places (McMichael et al., 2005). Accordingly, the degradation and loss of ecosystem services negatively affect human well-being (Deng et al., 2013). In Laos, rural citizens are very dependent on services provided by the forest and small-scale agriculture for their livelihood. However, the expansion of commercial cash crop farming diminished the small-scale subsistence agriculture and lead to deforestation over the past 20 years, especially in northern Laos (Vongvisouk, 2009). As a result, one could presume that the loss of ecosystem services that the land use changes have caused in the study region should negatively impact the well-being of the local people.

In order to more precisely address the matter, the above-mentioned research question will be divided in four more precise research questions that will guide the second part of this thesis.

- 1. What is considered as important and needed for the villagers' well-being?** The aim is here to understand the villagers' perception of well-being. In other words, the objective is to find out what are the main factors of well-being for the villagers. Their definition of well-being and what is needed to reach it will be used throughout the next parts of this work.
- 2. What part of the villagers' well-being is linked to ecosystem services and how has it changed?** The aim is here to establish what factors of the villagers' well-being is linked to the services provided by ecosystems. The second step of this question is then to understand how the changes in agricultural activities have influenced the villagers' dependence on ecosystem services for some factors of well-being. This chapter will only focus on well-being aspects that are directly linked to the provision of ES.
- 3. What are key changes that have impacted the villagers' well-being in the past 20 years and how has it changed?** The aim is here to identify the key changes that have impacted the livelihood of the villagers in the study region over the past 20 years and to determine which factor of well-being have been influenced by those changes and how. This question is necessary in order to have a bigger picture of the situation in the villages. By only focusing on LUC, some other factors important for the villagers' well-being, that are not linked to the environment, may be overlooked. It also allows to have an overview of the changes to all factors of well-being, and not only the ones linked to ES, as with the previous research question.
- 4. Do the villagers have the capabilities to achieve what they consider as well-being and how has it changed in the past 20 years?** Once it has been established what well-being is and how it changed over time, the last step is to determine if the villagers actually have the capabilities to achieve what they value as important.

3. Conceptual framework

This chapter provides the conceptual framework for this thesis, which is built upon the notions of human well-being, capabilities and ecosystem services together. This multidisciplinary approach is appropriate to address the issue of well-being in northern Laos for various reasons, as I will explain at the end of the chapter, after defining the different concepts and theories that will be used in this work.

3.1. Human well-being

It is helpful to start with a further exploration of this term that is central to this thesis. The concept of human well-being is complex and constantly evolving. It finds its roots in the older English term "welfare" that emerged in the fourteenth century, when it meant to journey well and could signify prosperity and happiness (Williams, 1983). Over time, it evolved to become affiliated with the assessment of and the provision for needs in the welfare state. Towards the end of the century its meaning evolved again to be linked to discourses on multidimensional views of poverty, agency and participation, with roots going back to Aristotle and the Buddha (Gough & McGregor, 2007). This shows how the nature of well-being remains unclear and it is still a widely-discussed topic.

Well-being is often associated to the broad meaning of the terms happiness and quality of life, and doing well or feeling good are common interpretation of well-being. However, depending on the field of study, the meaning of these terms may vary. For example, for economists, happiness has in the recent decades referred to variables of life satisfaction, whereas psychologists consider the nature of happiness as an emotional state (Anand et al., 2005; White, 2009).

In development studies, human well-being can commonly be defined as the freedom and choices that people have to live a life they value. It is a central concept for the ecosystem services approach and for sustainable development (Duraiappah, 2004; Griggs et al., 2013; IISD, 2011). Indeed, the objective of sustainable development is the balance of socio-economic development through the exploitation of natural resources and conservation of ES critical for human well-being (Falkenmark et al., 2007). In *Voices of the Poor*, Narayan et al. (2000) defined both well-being and poverty as a multidimensional phenomenon and considered the latter as the lack of what is needed to achieve the former. In the past decades, both the literature and practices of development have increasingly shifted from a focus on income and basic needs to a broader conception of capabilities and human well-being (Alkire, 2002; Robeyns, 2005). Assessed people's perceptions of their own situation have also progressively been taken into account in poverty and well-being studies (Narayan et al., 2000).

Nevertheless, some lists of universal well-being dimensions, meant to be relevant across diverse countries, context and populations, have been developed (Alkire, 2002). For example, the pioneering World Bank study *Voices of the Poor*, conducted by Narayan et al. (2000) was a participatory poverty assessment across 50 countries involving over 60,000 people. It clustered poor people's ideas of well-being in six categories: Material well-being, Bodily well-being, Social well-being, Psychological well-being, Security and freedom of choice and Action, based on peoples' own words and perceptions of the concept (Chambers, 2013). Another list was developed by Martha Nussbaum and is based on Amartya Sen's capability approach. She names ten central human capabilities covering the dimensions of (1) life, (2) bodily health, (3) bodily integrity, (4) senses, imagination and thought, (5) emotions, (6) practical reason, (7) affiliation, (8) other species, (9) play and (10) control over one's environment (Nussbaum, 2007). The dimensions are further developed in

Table 1 and explained in the next chapter. Although these lists can be criticized for various reasons, they can be used as a framework to assess human well-being and if needed be adapted to a specific context (Alkire, 2002). In this work, it will be interpreted as a list of ten human well-being dimensions, as we will see further below.

In this thesis, the well-being of the villagers will be evaluated through Martha Nussbaum's capabilities framework, which will be described in the next section.

3.2. The capability approach

The capability approach, developed by Amartya Sen, is a broad normative framework used in a variety of fields, such as development studies or social policy, as an alternative to evaluate individual well-being, inequality and poverty or to design policies based on income and monetary variables. It is more of a flexible multi-purpose framework rather than a theory of well-being. It focuses on people's being and doings, and their opportunities to achieve those function(ing)s, that is, their capabilities. Sen argues that the freedom to achieve well-being is crucial. In other words, it is of primary importance for people to live the life they want to live and be the person they want to be. It is what makes a life valuable (Sugden, 1986; Robeyns, 2005).

At the core of Sen's capability approach are functionings and capabilities. The former are various states of human being, such as being well-nourished, being educated or being healthy, and activities that a person can undertake, such as traveling, working or resting. Capabilities are a person's freedom or real opportunities to achieve those functionings. This approach is based on the fact that personal, social, and environmental factors – called conversion factors – will determine how far a person can utilize her/his available resources (goods and services) to achieve certain

functionings. As such, even with the same set of resources, different people will achieve different outcomes (achieved functionings), depending on their specific set of capabilities. The outcomes are also dependent of individual preferences and social and locational factors as well as broader social arrangements (Sugden, 1986; Robeyns, 2005; Comim et al., 2008).

Freedom is another important aspect of Sen's capability approach. "*The capability approach captures the intuitively attractive idea that people should be equal with respect to effective freedom*" (Cohen, 1993, p. 7). He introduced it with the concept of agency, which is the freedom people have to pursue their goals or values. It depicts peoples as agents who make their own choices, even if they are not beneficial for them, and have their own goals. Agency is however different from the capabilities people have (Robeyns, 2005; Gasper, 2007). For example, if someone chooses to speak up for their personal beliefs, they might face social sanctions. Although this action may have lower their achieved well-being in some dimensions, they made use of their agency freedom by making a commitment for a cause they value as important (Robeyns, 2005). The capability approach with all its component and their relations has been schematized by Robeyns (2005), as shown in Figure 1.

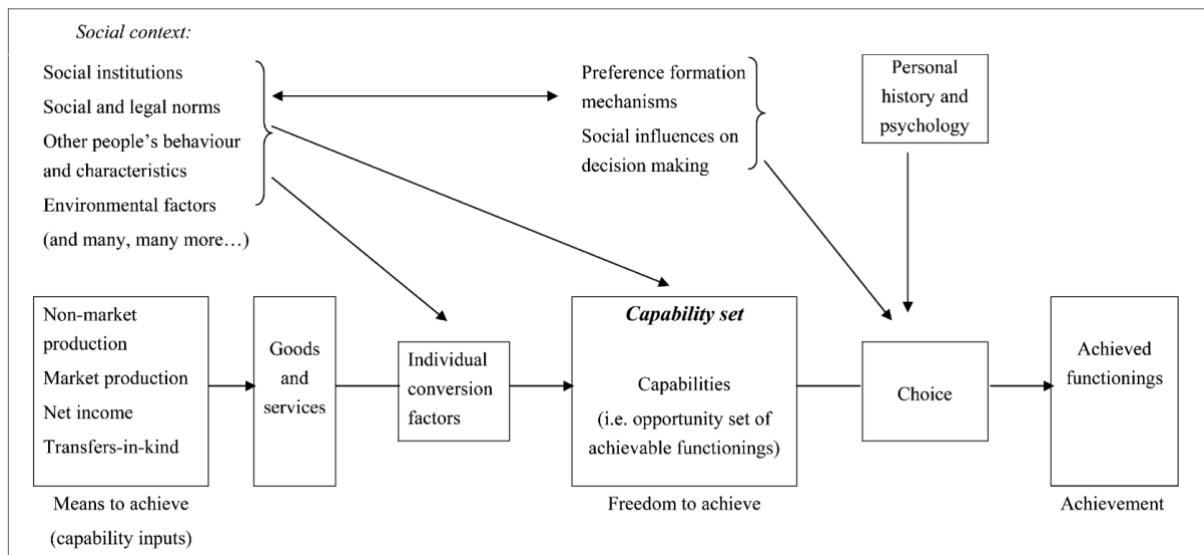


Figure 1: representation of a person's capability set and her social and personal context (Robeyns, 2005: 98)

A key characteristic of the capability approach is that it distances itself from income-led evaluations and rather focus on the abilities the people have to achieve what they value. It takes a multi-dimensional approach to evaluating, and therefore, measuring well-being in terms of people's freedom and choices rather than monetary resources or primary goods, which can be misleading (Alkire, 2002; Robeyns, 2005; Comim et al., 2008).

While the capability approach remains most closely associated with Amartya Sen, a number of other scholars have further developed it in recent years (See for e.g. Alkire, 2002, 2005; Kuklys, 2005; Robeyns, 2000, 2005; Robeyns & Kuklys, 2004). It has however been more substantially further developed by the philosopher Martha Nussbaum (Nussbaum, 1987, 1992, 1995, 2001, 2003, 2004) in a somewhat different *capabilities* approach that she calls *central human capabilities*. Although both approaches are very closely related – particularly in the critique of theories such as utilitarianism – they differ on some issues (Robeyns, 2005; Gasper, 2007).

Firstly, Nussbaum and Sen have different visions on how the capability approach can be used and in what context. Sen's work is closer to economic reasoning than Nussbaum's and is better adapted to quantitative empirical use. Nussbaum's work is closer to humanities and aims to better understand people's perceptions and visions with more narrative approaches. Furthermore, her aim is to develop a theory of justice, arguing that every government should include capabilities in its constitution. Her aim is then a direct political use of the approach. She elaborated a list of universal *central human capabilities* that a just society should guarantee to all of its citizen. Sen did not have such a clearly defined objective in his approach and was against the elaboration of such a list, which he was often criticized for (Alkire, 2002; Robeyns, 2005).

Her list of capabilities includes: (1) life; (2) bodily health; (3) bodily integrity; (4) senses, imagination and thought; (5) emotions; (6) practical reason; (7) affiliation; (8) other species; (9) play and (10) control over one's environment. This list has been revised several times and the most recent version is shown in Table 1. She highlights that her set of central human capabilities can always be revised and further developed (Nussbaum, 2007). However, she argues that each of these capabilities is needed for a human life to be "*not so impoverished that it is not worthy of the dignity of a human being*" (Nussbaum, 2001, p. 72).

Table 1: Central human capabilities (Nussbaum, 2007, pp. 23–24)

Life	Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
Bodily Health	Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
Bodily Integrity	Being able to move freely from place to place; to be

	secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction
Senses, Imagination, and Thought.	Being able to use the senses, to imagine, think and reason and to do these things in a "truly human" way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing works and events of one's own choice, religious, literary, musical and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid non-beneficial pain.
Emotion	Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.
Practical Reason	Being able to form a conception of the good and to engage in critical reflection about the planning of one's life.
Affiliation	A. Being able to live with and toward others, to recognize and show concern for other human beings, to engage various forms of social interaction; to be able to imagine the situation of another. Protecting this

	<p>capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedoms of assembly and political speech.</p> <p>B. Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of non-discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin.</p>
Other species	Being able to live with concern for and in relation to animals, plants, and the world of nature.
Play	Being able to laugh, to play, to enjoy recreational activities.
Control over one's environment	<p>A. Political. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association.</p> <p>B. Material. Being able to hold property (both land and moveable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human being, exercising practical reason, and entering into meaningful relationships of mutual recognition with other workers.</p>

It is important to note that, for Nussbaum, the ten dimensions of capabilities on her list cannot be traded off against one another (Claassen, 2009). The question of trade-off and weighting of different capabilities remains a major discussion topic around Nussbaum's capabilities list. Some have argued, like her, that each capability is an entitlement (Burchardt, 2006, 2009; Burchardt & Vizard, 2011; Ravallion, 2011) and

that the lack of one capability could not be replaced or compensated by an increase in another one or any monetary value (Nussbaum, 2001). *“If people are below the threshold on any one of the capabilities, that is a failure of basic justice, no matter how high up they are on all the others”* (Nussbaum, 2009, p. 167). Others have however argued for a system of weighting of the different capabilities, which would allow compensations and trade-off for and between capabilities (Robeyns, 2005). This thesis will however not advocate for one or the other argument.

There are several reasons that justify the use of Nussbaum's capability approach in this master's thesis. The first one is that, as stated above, this work aims to determine people's perception of well-being in northern Laos and if they have the capabilities to achieve it. As such, Nussbaum's approach, which relies on people's perceptions and on narratives, is best suited, as the first aim of this study is to have the villagers define what they consider as well-being themselves, rather than use a “developed country's” definition of it. The second reason is that my fieldwork took place under the auspices a r4d research project conducted by scholars from the University of Bern and from the National University of Laos. This project, entitled *“Managing telecoupled landscapes for the sustainable provision of ecosystem services and poverty alleviation”*, uses Nussbaum's capability approach as a research framework within its first work package, in which the fieldwork for this thesis was embedded. Finally, the list of capabilities has been central to the elaboration of the focus groups guidelines and the interview questions for the fieldwork in the three countries where the first work package of the project is conducted. It has however been adapted to the local context as shown in Table 2. This was necessary to operationalize a concept that is very abstract and that cannot be directly applied in a specific setting. For each dimension, one or more aspect of well-being has been defined.

Table 2: Central human capabilities adapted to the context of northern Laos

Bodily Health	To have a good health and to live a long life To be sufficiently nourished To have shelter
Bodily Integrity	To be safe
Senses, Imagination, and Thought.	To experience new things To get education and training
Emotion	To express your emotion without fear
Practical Reason	To be able to plan your own life
Affiliation	To have good social relations with others in the village To spend time with family and friends To be respected by others
Other species	To take care of the environment
Play	To play, laugh, enjoy
Control over one's environment	To participate in decision-making at the village level To participate in decision-making at the household level To have land and cultivate it To have the possibility of employment

This modified list is the result of preliminary research and discussions I had with Laotian people before the field work. It was again slightly adapted after the first series of focus groups to best represent the local context. The dimension of Life disappeared in this context and was combined with Bodily Health as, for the villagers, "To have a good health" and "To live a long life" are the same thing. In the dimension of Bodily Integrity, it was not directly asked if they have the capability "to move freely from place to place" in the focus group or in the interviews. It was left out based on the knowledge of these local case study sites where everybody is free to go where they want. It was however asked during the interviews if it was easier or harder to travel nowadays. In Senses, Imagination, and Thought, the "freedom of religious activity" has been left out as the constitution provides citizens religious freedom. This fact was

also acknowledged by Laotian members of the team. Finally, in Control's over one's environment, "Being able to hold property" has been translated to "To have land and cultivate it".

3.3. Ecosystem services

The idea that the human society benefits from the environment is several millennia old, but the modern concept of "environmental services" emerged in the late 1970s. It was renamed "ecosystem services" (ES) in the mid-1980s and started becoming a mainstream concept in the literature in the 1990s (Gómez-Baggethun et al., 2010; Lele et al., 2013). It quickly shifted from a pedagogical aspect to raise awareness and interest for biodiversity conservation to an economical aspect, valuing ecosystem services in monetary terms and as commodities on potential markets. The use of the concept of ES went beyond the academic world and attained governmental, private, non-profit and financial sectors (Gómez-Baggethun et al., 2010; Peterson et al., 2010). The concept is however also criticized as it often serves the interests of the people using it. It can simultaneously be "a technical, pedagogic, heuristic, policy, and political notion" (Kull et al., 2015, p. 131) and it can justify different views and opinions, even if they are opposed (Kull et al., 2015).

Ecosystem services are commonly defined as the benefits people derive from ecosystems that support directly or indirectly peoples' survival and quality of life. They are divided in four types: Provisioning, regulating, supporting and cultural, each one of them supplying a range of services such as climate regulation, water purification or biological control (MEA, 2005; BISE, n.d.). The concept has been increasingly used in studies on land use changes to understand ES benefits and trade-offs and to inform on the societal dependence of those support systems (Gómez-Baggethun et al., 2010).

The relationship between human well-being and the environment is dynamic and depending on many factors. It is a subject that gained an increased recognition in studies and research on sustainability, but that has not yet been amply investigated (Butler & Oluoch-Kosura, 2006; Carpenter et al., 2009; IISD, 2011; Abunge et al., 2013). The most widely recognized publication is the Ecosystem Millennium Assessment (2005), which assesses the consequences of ecosystem changes to human well-being. It marked a shift from evaluating development on basic needs and wealth and demonstrated how the loss of ecosystem services impacts communities unevenly and affects those depending the most on the environment for their livelihood.

Studies on ecosystem services have commonly attempted to give a monetary value to nature, in the belief that it would lead to natural resources conservation (Gómez-Baggethun et al., 2010). This has however been criticized as it fails to recognize that people may value a similar ES differently, depending on how it contributes to their well-being. A change in the provision of that service would impact differently each individual (Dawson & Martin, 2015). This research does not value ecosystem services in monetary values and it only focuses on people's perception of the importance of each service. By focusing on the local land users, the ES framework shows the broader benefits that come from ecosystems, and how they might change in the future. It also highlights the possible marginalization and inequalities of groups of people depending directly on the ecosystem for their livelihood (Malinga et al., 2013; Wells et al., 2018).

This concept will be used in this thesis to analyze the links between well-being and land, to reveal which part of the villagers' well-being is dependent on the environment and the services it provides.

4. Case study landscapes

The People's Democratic Republic of Lao (hereafter simply referred to as Lao PDR or Laos) is situated in the center of the South East Asian peninsula and is enclosed by Vietnam, Thailand, Myanmar, China and Cambodia. The country covers an area of 236,800 km² and is essentially mountainous, with almost 80% of the land surface elevated.

Laos is composed of 16 provinces, has a population of 6.9 million, with only 29 persons per km², which makes it the least populated country of the Lower Mekong and least densely populated of Asia. It is also one of the most ethnically diverse country in the world, with 49 recognized ethnic groups, comprising around 200 ethnic subgroups, that can be classified in four broad ethno-linguistic categories: Lao-Tai, Mon Khmer, Hmong-Iu Mien and Chine-Tibet, from the biggest to the smallest. Note that since 1991, the Lao PDR constitution recognize the multi-ethnicity of the society and gives all citizens, regardless of their ethnicity, the same rights. (Richter et al., 2006; Nhoibouakong, 2012; UNFPA, 2017; World Bank, 2018b). It is one of the poorest country in the world, with a GDP per capita in 2016 of US\$2338, a ranking of 138 out of 188 countries in UNDP's Human Development's Index (HDI) and 23% of the population thought to be living in poverty (in 2012). However, both the GDP and the HDI rank have continuously improved over the past few years (ADB, 2012; UNDP, 2017; World Bank, 2018a). With approximately 60% of the population living in rural areas, of whom around 80% rely on subsistence agriculture and the collection of NTFPs, Laos is a predominantly rural country (FAO, 2018; World Bank, 2018c). The national economy relies strongly on agriculture, which accounts for around 30% of the GDP and employs over 65% of the work force (SDC, 2017).

Forests are an essential part of Lao's economy, culture and environment. The Lao government estimated in 2012 that forests, defined by a minimum of 20% canopy cover, occupied approximately 40% of the country (Nhoybouakong, 2012). However, the FAO, defining the forest with a canopy cover of minimum 10%, estimated the forests to cover around 70% of the country in 2002 and over 80% in 2015 (FAO, 2015, 2017). Although the quantity of land covered by forests has increased since 2000, the quality decreased over the past few decades, which can be seen by the considerable decline of primary forest areas (Ian Lloyd, 2015).

In Laos, deforestation is caused by many different drivers, but illegal logging and agricultural expansion probably have had the biggest impact and will presumably continue to pressure the country's forests and lead the fast deforestation (Stibig et al., 2007; Ian Lloyd, 2015).

Over 70% of rural citizens are dependent of forestry and small-scale agriculture for their livelihood. In some communities, an important part of a household's income comes from NTFPs. (FAO, 2010; Dwyer & Ingalls, 2015).

There are three government categories of forests in Laos: production, conservation and protection forests. They were legally defined and established in the Forest Law (2007). The conservation forests were implemented in 1993 as National Biodiversity Conservation Areas to preserve the biodiversity. The National Protected Areas (NPAs) now cover 14% of the country. Production forests were established to regulate and formalize the management of logging to try and tackle the high rates of deforestations and to improve sustainability. Protection forests were developed to protect Laotian national resources, such as important watershed, soil quality, river ecosystems, etc. (Tong, 2009; Dwyer &

Ingalls, 2015; Ian Lloyd, 2015; Kenney-Lazar, 2016). However, in reality, these categories are little respected (Fujita & Phengsopha, 2008).

Different laws such as the Property Law (1990) and the Land Law (2003) have allowed, at the village level, to establish agricultural and forestry zones for specific uses. They follow the same forest categorizations as at the national level (Ironsides, 2017). Even though this does not mean the villagers have ownership of those lands, assigning specific land use categories provides a certain degree of tenure security (Ling & Scurrah, 2017).

4.1. Study area

I investigated well-being in the context of rapid land use changes in four villages of northern Laos. This region is interesting because it experienced particularly rapid land use changes since the 1990s. This can, in part, be explained by the proximity to China, from where most of the investors promoting cash crops come from. I will present in this chapter the four villages where the interviews and workshops were conducted. The fieldwork was conducted in two separate areas in the province of Luang Namtha. (see Map 1). The province is a mountainous area located in the northwest of the country, bordered by Myanmar and China. It is divided in five districts, Namtha, Sing, Long, Viengpoukha and Nalee. The first one is the Sing Case Study Area (CSA), which comprises three villages located in the Sing district: Nam Mai, Oudomsin and Pakha (see Map 2). The second area is the fourth village, Prang, which is in the district of Vieng Poukha (see Map 3). Apart from the location difference, the Sing CSA differentiates itself from Prang in terms of land use changes, both in time and space. Most of the background information on the villages and the Land Use Planning and Land Allocation (LUP or LUPLA) presented in this chapter is based on an unpublished 2018 field mission report by Victoria Junquera, a member of the r4d project on telecoupled landscapes.

Map 1: Study area



Source: Original map from d-maps.com

4.1.1. Sing Case Study Area

The three Sing villages are very close to the Chinese border and this proximity greatly influences land use changes in the studied villages. Indeed, most of the villagers from Nam Mai and Oudomsin have relatives in China, from whom they learned about the advantages of cash crops cultivation and could acquire some experience about their exploitation. The economic success of cash crops from relatives in China and the various investors travelling to the villages can explain how the cash crops cultivations expanded so fast in the region. Government policies promoting market-oriented agriculture to replace the shifting cultivation also played its part.

Ban Nam Mai

Nam Mai (lat/long: 21.1803925, 101.228141) is a Yao¹ village in Sing district formerly part of a cluster of four villages, called the Phoudonethan group ("Kep Phoudonethan"). Originally from Vieng Poukha district, due to the war, the villagers were first relocated in 1977 north of what is now Oudomsin and in 1980 in their current location with the three other villages (Jongka, Hoidam and Saile) of the group. Nam Mai retained its name in 2011 when the three other villages were renamed Phoudonethan.

It has 90 households and about 426 people. It is situated 9 km away from Muang Sing, the district capital. After their establishment, villagers opened agricultural upland fields and paddies themselves as there was

¹ The Yao, also known as Mien, are one of the forty-nine ethnic group recognized in Laos that migrated in the 19th century. They are part of the Hmong-Iu Mien broad ethno-linguistic category, the second smallest group in Laos, representing 8% of the population (Richter et al., 2006).

plenty of land available at that time and the current LUP was not yet introduced.

Ban Oudomsin

Oudomsin (lat/long: 21.1859917, 101.219458) is a Yao village in Sing district. Villagers who had emigrated to Thailand to escape the war, returned to Laos and established themselves in their current location in 1992-93.

It has 51 households and about 220 people. It is situated 8 km away from the district capital and is the last village before the Chinese border. When the villagers first got settled, they were provided about 40 ha of flatland by the government near the village of Pakha. At the same time, new agricultural land (upland and paddies) were opened by the villagers themselves, following the village's traditional land use allocations.

Ban Pakha

Pakha (lat/long: 21.16246, 101.2096288) is an Akha² village in Sing district that was resettled in 1998 from Old Pakha, which was 2 km upland from the current location. The villagers were resettled as part of the government program to gather small villages close to the main roads, where it is easier to provide for basic utilities (electricity, water, etc.). In the upland area, life was also harder and the availability of flat or flatter land to cultivate was attractive. Additional people were resettled in the

² The Akha are a mountain tribe who migrated to Laos in the 19th century. They mainly live in poorly-connected upland areas in the north of the country. They are part of the Chine-Tibet, the smallest broad ethno-linguistic category, representing 3% of the population (Richter et al., 2006).

village in 2002, from Ban Nammat Mai, another Akha village of the province. Ban Pakha is located directly at the border of what is now the Nam Ha National Protected Area (NPA).

It has 46 households and about 270 people. It is situated 8.5 km from the district capital. The road to the village is however a lot less accessible than the other two villages. Some households, especially from the second wave of 2002, opened agricultural land inside the limits of the Nam Ha NPA and were fined in 2012 by DAFO, for a total of 28 Mio KIP. It is however often more profitable to cultivate rubber trees and pay the fine. Out of the three villages of the CSA, Pakha is the further away from the main road, has the less land (especially flat land) and is considered the poorest.

Land use planning and land use allocation took place for the first time between 1997 and 2002 in most of the villages in the Sing district. The government assigned different forest categories to the villages: conservation, protection, use, and fallow improvement forests. It was however conducted with limited means of monitoring and enforcement. There was a second round of planning from 2002 to 2007 with the help of GIZ³, with better equipment and more subsequent results. In the years of 2012 to 2014, DAFO fined some of the villages for their use of the forest that did not follow the LUPLA. The fines were assessed at approximately 1 Mio KIP/ha (depending on the land). Although the fine seems minimal compared to the possible income from 1 ha of rubber plantation (around 5 to 7 Mio KIP, and much higher when prices are high), all interviewees agreed on the fact that there was no more land available for conversion.

³ The GIZ – Deutsche Gesellschaft für Internationale Zusammenarbeit – is the German international cooperation agency for the development.

Map 2: Sing CSA



Source: Google maps. 2018

4.1.2. Ban Prang

Ban Prang (lat/long 20.7820, 101.2367) is a Khmu Kwaen⁴ village in Vieng Poukha district that experienced various resettlements before it was established in its current location in 1994. The original Prang village was located about 12 km upland in Phouphan mountains and is now inhabited. They first moved to Vieng Mai, near Vieng Poukha, in 1969 because of the war and were then resettled by the government in 1975 to the current location. They were not used to the more humid climate (their rice production was not adapted) and moved to a more elevated location (Ban Nam Korn Pe). In 1994 however, the government consolidated the village with another Khmu village, Ban Talong, in their current location.

Ban Prang has 53 households and about 253 people. It is situated 22 km away from Vieng Poukha, the district capital and it is the only studied village that is connected to a public transport bus system. The village is situated in the middle of the Nam Ham National Bio-Diversity Conservation area, established in 1993 and extended in 1999.

Land use planning and land allocation took place in 2008 and consisted in the allocation of three upland plots per household, or five if the household did not have paddy. However, during the 2018 field mission of Victoria Junquera, a member of the r4d project, various villagers claimed to have never received any plots at the time. Different types of forest were also assigned at that time: Use, cemetery, protection, and fallow improvement forests, village National Protected Area, National Protected Area inside the

⁴ The Khmu is the largest and most diverse ethnic group in Laos. They were the first ethnic minority to inhabit large areas of the country. They are part of the second most important ethno-linguistic category, the Mon-Khmer, representing 24% of the population (Richter et al., 2006).

village boundary and agricultural land. The difference between the two types of NPA was however not clearly stated by the villagers (Junquera, 2018).

Map 3: Prang CSA



Source: Google Maps, 2018

5. Methodology

I will conclude this introductory section of the thesis by providing details on the methods used in this work. This thesis changed quite a lot since I first starting working on it. During the first year of my master degree, I was working on an entirely different subject. After the opportunity presented itself, I joined the r4d project in November 2017 and restarted gathering secondary data, i.e., literature and scientific articles, to become more familiar with the land use changes issues in northern Laos and with well-being studies.

In February and March of 2018, I went to Laos to gather primary data with Phokham Latthachack, a PhD student from the University of Bern and member of the project and Souliyaphon Kommadam, my interpreter. The fieldwork in the province of Luang Namtha lasted one month during which we conducted six focus groups and sixty semi-structured interviews in four villages of the province, that were chosen before I joined the project. In each village, we conducted one focus group for women and one for men and fifteen household interviews. We designed the focus groups and interviews questionnaires and guidelines before the start of the fieldwork. After the first round of focus groups, the interview questionnaire was slightly modified.

The village of Pakha was treated slightly differently. Interviews were conducted, but not focus groups. This was for several reasons. First, it is difficult to communicate with the villagers, especially the women, due to the language difference, as the Akha people have their own language. Conducting a focus group with the help of two interpreters would not be convenient. Second, the villagers are quite busy at that time of the year with the harvest of sugarcane, which is mostly cultivated by villagers from Pakha and less from other villages. Finally, in a preliminary stage, other

members of the r4d project already tried to conduct a focus group the year before in the village, with inconclusive results, due to a lack of participation from the villagers. As such, we decided to skip the focus group in Pakha.

After the fieldwork, I systematically digitized all the interview transcripts, questionnaires, focus group flipcharts and other notes into excel sheets for comparative analysis. I will use this data in the following chapters to answer the different research questions. Some complementary information was sourced from as yet unpublished reports from other members of the research project. In those cases, the specific source is mentioned.

5.1. Focus Groups

The first method used in this research is the Focus group. This is defined by Powell et al (1996) as *"a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research"* (1996: 499). It is a form of group interviewing relying on communications and interactions between the participants to collect data on topics defined by the researcher (Kitzinger, 1995). Focus groups can be used in the early stages of a research to explore or generate hypotheses or to generate questions for an interview (Lankshear, 1993; Powell & Single, 1996; Krueger & Casey, 2014). The use of the focus group is especially suitable to push the research participants to expand on important issues to them, in their own words and on their own with open ended questions (Kitzinger, 1995). They are however limited in terms of their ability to generalize findings to a whole population, mainly because of the small numbers of people participating and the likelihood that the participants are not a representative sample. The day before each focus group, my team and I met with each village's chief to introduce ourselves and to ask for volunteers for the focus groups.

The participants were not selected and villagers joined us if they wanted to be part of the study. There were six participants in both focus groups in Nam Mai, the womens' focus group in Oudomsin and Prang, but only three men in Oudomsin and five in Prang (see Table 3). In this research however, the focus groups were used as a first exploratory tool to get a general overview of the study case and to answer the research question on what constitutes well-being locally, to then focus the interviews on individual capabilities.

Table 3: Summary table of the focus groups conducted in Nam Mai, Oudomsin and Prang

	Nam Mai		Oudomsin		Prang	
Gender	Women	Men	Women	Men	Women	Men
Number of participants	6	6	6	3	6	5
Ages of the participants	16, 16, 17, 19, 21, 25	20, 30, 40, 44, 49, 50	29, 33, 35, 35, 37, 50	39, 44, 45	27, 35, 45, 56, 60, 66	37, 50, 55, 68, unknown

The focus groups were conducted the same way in each village. First, we introduced ourselves to the participants, described the r4d project and explained how we were going to proceed during the focus groups. Phokham Lathachack was the facilitator, asking the questions, leading the discussion and making sure that every participant was heard. Souliyaphon Kommadam was the assistant, noting the answers of the participants on the board and translating them to me. I was keeping track of the well-being aspects given by the participants and cross-checking them with the list of Nussbaum. The guidelines for the focus groups can be found in Annex 1.

The first step of the focus group was to identify what do people consider as being important for their well-being by asking the participants "*what is needed to have a good life?*". The participants gave several different

aspects that they considered as being important for their well-being, such as having money and land, being healthy or having good social relations. The resulting list of well-being aspects was then cross-checked with the modified list of well-being aspects of Nussbaum. The participants were asked if any of the remaining aspects of the list that they had not suggested were considered important for their well-being or not. The outcome of this first step was an exhaustive list of everything that is important for the villagers' well-being, whether it was given by the participants or it came from the Nussbaum list of universal human capabilities.

The next step of the focus groups was to rank these aspects to identify the most important ones. To do so, each participant was given five stickers to put, the way they wanted, onto the aspects they consider as being the most important (see Figure 2). The number of stickers was tallied, giving an indication of the ranked importance of different well-being categories. As it would have taken too much time to go over every aspect in the next steps of the focus group, this ranking also allowed us to prioritize the ensuing discussion and to at least get detailed results for the main aspects. In addition to this prioritization, given the focus of the research on land use and land use changes relevant to human well-being, we also systematically investigate the aspects of "Land" and "taking care of the environment" further in the next steps. The outcome of this step is a list of importance of the well-being aspects as well as a list of the aspects that would be discussed in the next steps.



Figure 2: Importance of each aspects of well-being. The yellow cards are the aspects the participants gave themselves and the orange cards are the remaining aspects of Nussbaum's list that were probed.

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For each of the priority aspects of well-being, the following questions were asked:

- Why is this aspect important for your well-being? Is there another reason for the importance of this aspect?
- Could you explain to us what you need to achieve this well-being aspect?
- When you think of around 20 years ago (or imagine your parents or grand-parents, or people you know), has it become easier or more difficult to accomplish this aspect?

- When you think of around 20 years ago (or imagine your parents or grand-parents, or people you know), what has changed/what is not the same anymore?

The answers of these questions were written on the matrix (see Figure 3) for each aspects of the list.

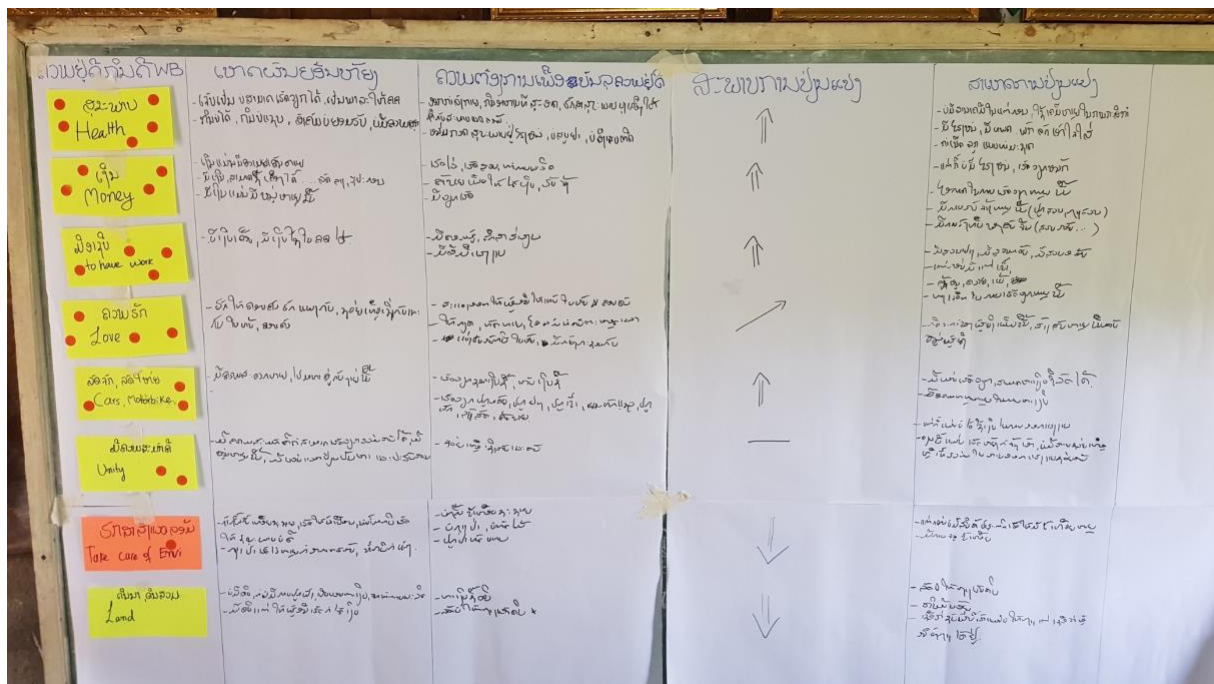


Figure 3: Final matrix of the focus group with every question answered for the most important aspects and the aspects of Land and Taking care of the environment.

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Finally, the last step of the focus groups was to identify those aspects of well-being that are most challenging to accomplish and those which are most commonly achieved. The participants were given three red stickers (for the most challenging) and three green stickers (for the most achieved) and were asked to put their stickers according to their own judgment next to the well-being aspects. For this exercise, they could choose from every aspect, whether they were considered as important or not. The outcome of this step is a “cloud” of stickers representing the

most challenging and the most accomplished well-being aspects of the focus group participants.

5.2. Semi-structured interviews

Semi-structured interviews with Lao villagers were the main method used in this thesis. Such interviews are conducted following a prepared guideline but include open questions that do not limit the interviewee in his or her answers. This method provides the opportunity to the interviewees to elaborate upon their opinions and perceptions of the subject (Bertrand et al., 2006; Flick, 2014), which is the main objective of this thesis.

The discussions with the villagers were guided by an interview guide (see Annex 2). I developed this guide following the list of Nussbaum's capabilities in order to obtain information about each of them and to answer the different specific research questions. I also drew from the interview guide used by the r4d project in Madagascar and adapted it to the local context of the case study according to the results from the focus groups. Fifteen interviews were conducted in each of the four case study villages. The tables detailing the interviewees and their household composition can be found in Annex 3. The following table (Table 4) displays a summary of those information for each village.

The interview grid was composed of nine main parts. The first part sought general information on personal characteristics of the interviewee and his/her household. The second part concerned the household's activities to make a living and focus mainly on land use changes. The third part aimed to understand the role of the forest in the interviewee's life. The fourth part sought information on health care access and subsistence products, that is, about the household's access to water and food. The fifth part aimed to determine the level of and the access to education and the

possibilities to learn and access new knowledge. The sixth part sought information on shelter and safety. The seventh part concerned the social relations in the household and the village. The eighth part aimed to determine the participation and governance in the decision making at the household, village and government level. The ninth part, finally, concerned the free time of the interviewee.

Table 4: Summary table of the interviewees in Nam Mai, Oudomsin, Pakha and Prang

	Nam Mai	Oudomsin	Pakha	Prang
Number of men	11	7	13	9
Number of women	4	8	2	6
Mean Age	44	45	39	47
Youngest	25	32	18	24
Oldest	62	64	65	68
Mean HH members	7,9	5,8	5,9	5
Mean Children/HH	2,3	2,0	1,9	1,4
Mean Elders/HH	0,8	0,5	1,3	1,5
Mean Workers/HH	4,3	2,9	2,5	2,1

The results obtained through the focus groups and the interviews are presented in the second part of the thesis, following the specific research questions that lead this study. In each of the following chapters I answer one of the specific research question, in order to, in the end, be able to answer the main one.

6. Weaknesses and limitations

The methods I used in this thesis are limited by some of their weaknesses. As with most research in a foreign country, language differences can bring their share of problems. All the interviews and focus groups were conducted in Lao, except in Pakha, where most of the interviews were conducted in Akha, which required a second interpreter. Despite the qualities of my interpreter, it is very possible that some information has been poorly translated or understood. In addition, it was complicated for me to intervene and ask for more details as the interviewee was asked a series of questions before it was translated to me. Furthermore, the answers to some questions did not vary much between interviews and I assume he took some shortcuts during the interviews when the answers seemed similar. Moreover, the objective was to interview the same number of women and men to have a balanced sample of the population. However, it ended up being challenging to do so and mainly men were interviewed. When we asked in a household if we could conduct an interview with one of the adult members, most of the time it would be a man who would accept to answer to our questions. The research questions focusing on the household level, this is not a major problem. Despite these limitations, I managed to gather relevant data regarding the impacts of land use changes to well-being in the province of Luang Namtha.

Results section

7. Factors of well-being in the study villages

This chapter is intended to answer the first specific research question: **What is considered as important and needed for the villagers' well-being?** The aim is to understand the villagers' perception of their own well-being. In other words, the objective is to find out what are the main factors of well-being for the case study villagers and to link them to the Nussbaum list of capabilities to further analyze them in the following chapters. For this section, I consider only the results from the different focus groups discussions. I specifically analyze the answers to the first and second questions that led the discussions in the focus groups, which were 1) *Why is this aspect important for your well-being? Is there another reason for the importance of this aspect?* and 2) *Could you explain to us what you need to achieve this well-being aspect?* respectively.

The results are presented by order of importance according to the answers collected in the focus groups. As explained in the chapter 5.1, not all aspects given by the participants were further developed in the focus groups. This means that some aspects may be considered by the participants as important for their well-being, but they were not discussed any further. As such, I will here only present the aspects that were developed in depth by the villagers. However, a complete list with all aspects in order of importance for each village can be found in the annex 4.

During the focus group discussions held in Nam Mai, Oudomsin and Prang, the participants were given five stickers each to put on the factors of well-being they considered as the most important. As such, although they mentioned numerous factors that are needed for their well-being, they considered some of these factors more important than others. Note that Nussbaum argued that these factors cannot be traded-off against each

other. The only reason this ranking was made during the focus groups was to select which factors to discuss in depth, due to time reasons. The following table (Table 5) displays the order of importance of all the factors of well-being mentioned in all six focus groups. It is important to note that a factor with zero vote do not mean that it is not important for their well-being. It did just not get any points in the ranking because the participants only had five stickers and considered it less vital than other factors like health or money. The total number of votes amount to 160, with 30 from each focus group in Nam Mai, 15 from the men and 30 from the women in Oudomsin, 25 from the men and 30 from the women in Prang. A first observation shows that most of the time, the participants voted for factors they mentioned spontaneously in the first part of the focus group rather than for factors that were probed from Nussbaum's list. However, most of the factors with the most votes are on Nussbaum's list. They were just mentioned spontaneously by the participants.

Table 5: Complete list of well-being factors resulting from the focus groups, by order of importance according to the participants

Aspects of well-being	Votes of importance (n=160)	Aspects of well-being	Votes of importance (n=160)
Health	27	Spend time with family and friends	1
Money	21	Express your emotions without fear	1
Family	20	Plan your own life	1
Education	12	Take care of the environment	1
Land	11	Husband and wife helping each other's	0
House	9	Decision making at the village level	0
Food	8	To travel	0
Private transportation	8	Play, laugh, enjoy	0
To have work	6	Roads and access	0
Decision making at the HH level	5	Livestock	0
Experience new things	5	Agricultural activities	0
To be married	4	Agricultural equipment	0
To be safe	4	HH equipment	0
Village unity	3	Communication	0
Livestock	3	To be active	0
To be respected	2	To be patient	0
High price of agricultural products	2	Clothes	0
Electricity	2	Sanitation	0
Water	2	Money management	0
Jewelry/Gold	1		
Private business	1		

The following factors were mentioned in the focus groups in every villages as some of the most important and were, as such, discussed in depth by the participants.

According to the participants in the focus groups in Nam Mai, Oudomsin and Prang, the most important factor of well-being is health (combined with being able to live a long life), especially for the women in Prang. They answered that by being healthy, they can go to work, find money for the family and see the grandkids in the future. To stay healthy, they need to be sufficiently nourished with good food, drink clean water, sleep enough with good dreams, stay clean, live in a pollution-free environment, have access to good sanitation and to a medical staff for check-ups and in case of problems. One participant also added that there should be no conflicts in the family because "if you're mad you cannot enjoy the food".

Money came as the second most important factor of well-being. It is necessary for everything: to buy consumption products, household equipment, motorbikes and cars, for education and healthcare or for a good house, to cite only a few examples. One villager even noted that if you have more money, you have more friends. To get money, the villagers need to be active and find work, have land or a private business, sell NTFPs or handicrafts. They also added that being aware of the latest trend in cash crops (rubber, cardamom, etc.) is necessary for better income.

The third most important factor of well-being is to have love and unity in the family. The main argument was that it motivates people to go to work and support the family and if there is no conflict it is easier to work together. It is also important to plan for the future of the family. For that, they need to respect each other, discuss and resolve issues together and find time to spend with the family.

The next important factor is education. It is mainly in Nam Mai and Prang that the men considered it as a very important factor of well-being. It is essential to get a better job, to earn money and it helps to learn about new things in the world. For their children to have access to a good education, they need to have and save money and of course, for the children to go to school and learn from those with experience.

The next valuable factor of well-being in the villages is to have land. In the region, the main source of income is from agricultural production. As such, the participants agreed on the fact that having land is critical in order to support the family. It is a place where you can get money, either from agricultural production or by renting it. They noted that more land means more income. It is also a source of food, as mentioned by the men in Oudomsin and a place to build a house, for the men of Nam Mai. In the Sing CSA, the only way to obtain new land is to buy it. It is very expensive and a lot of money is needed. The participants in Prang noted that there are still some productive forest areas that can be cleared for agriculture.

The next factor of well-being is the house. It is considered as a place for the family to stay and materials are needed to build it, or money to buy them.

Food is the following important factor that the participants mentioned as needed for their well-being. They consider it a crucial factor of survival. They also noted that to be healthy and have strength to work, they need to be sufficiently nourished. To get food, they need paddies to cultivate rice, vegetables garden, to raise livestock and have access to the forest to collect edible NTFPs. They also noted that money is essential to buy food at the market.

The results and the order of importance of the factors vary between the villages and even between the genders. As such, other factors, that were not mentioned above, were also further discussed during some of the focus groups and are displayed below. Examples are given in the following paragraphs.

In Oudomsin, the women considered decision-making at the household level as the second most important factor for well-being. They said that every decision should be taken together between husband and wife, for example before large expenses. For that, free time to spend with the family and discussions between family members are needed. Respect between villagers is also another important factor of well-being for them. It leads to good social relation, which leads to better work between villagers. The men considered the safety to be the second most important factor of well-being. They recognized safety as essential in life and that without it, life could be more complicated. They believe the government to be responsible for their safety and added that police clusters and villager's cooperation are also needed. Both men and women also agreed on the fact that experiencing new things is also important. They noted that it is important to learn about new technologies and agricultural activities that can increase their income. They gave the rubber as example of new knowledge they learned from relatives in China and which is now the main source of income. Internet, mobile phones, YouTube or the television were other ways of accessing new knowledge given by the participants.

In Nam Mai, the men considered marriage as one of the main factors of well-being. They admitted that, with the start of a family, they concentrate more on finding ways to make money and to support its members. It also helps to save money and problems can be resolved if they discuss about them together. They also added that more children mean more labor in the fields. When getting married, the new family get

some financial support from the parents to start their life (plots of land for example).

Finally, only one woman participant in Nam Mai considered taking care of the environment as an important factor of well-being. This aspect was however discussed in every focus group, as mentioned earlier. They answered that keeping the environment healthy is important for the life and the health of the villagers. If they do something bad to the environment, like throwing the trash away, it can pollute the water, which could affect their health. Hotter weather, droughts and unregulated raining seasons were also mentioned as impacts of an unhealthy environment. To take care of the environment they need to not cut the forest down and plant trees to replace the ones that were cut, to not throw the trash away in nature and to keep the villages clean.

7.1. What is needed for well-being?

Well-being is a complex and multidimensional concept, as shown in this chapter. Factors of well-being are numerous and vary between people, even though the lists of factors are quite similar between villages. This can be explained by the way the focus groups were conducted. Indeed, when asked about each aspect of the predetermined list (see Table 2), the participants agreed almost every time that that aspect is a factor of well-being. As such, the lists of answers resulting from the focus groups are quite similar between villages. Nevertheless, the weight and order of importance of each of these aspects for their well-being varied between villages.

These results support the argument that Nussbaum's capabilities dimensions appear to be indeed universal, with one exception. It shows that, in the local context of northern Laos, apart from aspects related to money or income, each factors of well-being given by the villagers can be

classified in a dimension developed by Nussbaum, as displayed in Table 6. As such, these dimensions can be used in the following chapters to further analyze the well-being of the villagers, with the addition of a dimension of Money/Income, as we will see below.

Table 6: Importance of each of Nussbaum's dimension and money for the well-being of the villagers. Each participant of the focus groups had five votes of importance.

Well-being dimensions	Nam Mai (n=60)	Oudomsin (n=45)	Prang (n=55)	Total (n=160)
Bodily Health	19	7	25	51
Bodily Integrity	0	3	1	4
Senses, Imagination and Thought	6	6	5	17
Emotion	1	0	0	1
Practical Reason	0	1	0	1
Affiliation	13	12	5	30
Other Species	1	0	0	1
Play	0	0	0	0
Control over one's environment	11	9	11	31
Money/Income	9	7	8	24

Table 6 displays that, according to the results of the focus groups discussions, the well-being dimensions are not equally important for the villager's well-being. It also demonstrates that the villagers in each village do not give the same order of importance to the same dimensions. Indeed, factors of Bodily Health are considered as the most important for the villagers in Nam Mai and Prang, whereas factors of Affiliation are considered as a priority in Oudomsin. The least important dimensions of well-being from the list of Nussbaum appear to be the dimensions of Play, Other Species, Practical Reason, Emotion and Bodily Integrity. The rest of

the dimensions (Senses, Imagination and Thought, Affiliation and Control over one's environment) are considered more or less equally as important in each village.

The focus groups participants have identified money as factor of well-being, that do not belong, on purpose, in any of Martha Nussbaum's dimensions. The capability approach distances itself from any economic form of evaluation of human well-being. Indeed, knowing someone's income does not show what that person is able to access with that income, such as education or healthcare. It does not offer an insight on the capabilities a person has to really use that money to improve its well-being. However, during the focus groups, the participants have ranked it as the second most important factor of well-being, right after health, and have mentioned how it is necessary for everything. Furthermore, many factors of well-being in other dimensions, such as access to education or healthcare or being well-fed are closely linked to income. It is important to note that Nussbaum's list is purely theoretical and, although money is deliberately left out of her approach to evaluate well-being, it appears to be an essential aspect to consider. The empirical results presented here show that, with respect to her list, money is a factor of well-being in this context and it need to be taken into account further in this thesis. Indeed, I will show throughout this thesis how the income, and its increase over time, played a significant role in the evolution of the villagers' well-being.

With this we know what land users in the assessed villages consider as important for their well-being, and in what order. However, we further want to understand which part of their well-being is dependent on land. Therefore, in the next chapter I will analyze the links between well-being and land through an ecosystem service lens.

8. Ecosystem services and well-being

This chapter is intended to answer the second specific research question: **What part of the villagers' well-being is linked to ecosystem services and how has it changed?** The aim is, first, to understand which factors of well-being are dependent on ecosystem services and second, how this dependence changed over the past 20 years. The focus will only be on well-being factors that are directly linked to the provision of ecosystem services. The results presented in this chapter come from answers obtained during the interviews and the focus group discussions.

The following table (Table 7) presents how each of the services are provided in the study region, according to the villagers only. The second column of the table only presents the providers of the services that were mentioned by the villagers in the focus groups or the interviews and that they know about. They were not asked directly about ES and providers of ES and the results presented here are derived from the answers from the interviews and the focus groups. As such, some services were not mentioned and the ecosystem providing them were not specified. This table only serves as an overview of the different ES provided in the study region, according to the villagers.

Table 7: Ecosystem services and providers of ecosystem services in the study villages, according to the villagers

	Services provided	Providers of services in the local context
Provisioning services	Food	By agricultural land uses, rivers, forests, and livestock
	Raw materials	By forests, fallows and agricultural lands

	Fresh water	By rivers and water sources in the forests
	Medicinal resources	By the forests
Regulating services	Local climate and air quality	By trees and forests
	Carbon sequestration and storage	By trees and forests
	Moderation of extreme events	Not specified
	Waste-water treatment	Not specified
	Erosion prevention and maintenance of soil fertility	By forests, fallows and vegetation covers
	Pollination	Not specified
	Biological control	Not specified
Supporting services	Habitat for species	Not specified
	Maintenance of genetic diversity	Not specified
Cultural services	Recreation and mental and physical health	Not specified
	Tourism	Not specified
	Aesthetic appreciation and inspiration for culture, art and design	Not specified
	Spiritual experience and sense of place	By cemetery and spiritual forests

As mentioned above, only the services specified by the villagers were presented in this table. It does not mean that the other services are not provided in this region. Nevertheless, as we will see in the following sections of this chapter, villagers' well-being does not rely solely on ecosystem services. Indeed, only factors from Nussbaum's dimensions of Bodily Health, Bodily Integrity and Control over one's environment appear to be dependent, in part, on ES. However, the villagers' main source of

income is agricultural production, which is considerably dependent on the provisioning services of the environment.

8.1. Bodily health

Human health highly depends on ecosystem products and services, which are paramount for good health, a major factor of well-being. This fact was confirmed by the villagers interviewed. There are many ES that can directly or indirectly influence human health. As explained in chapter 3.3, nature can have positive effects on many health factors, physical and mental. Sufficient and diverse nourishment and access to clean water are examples of direct factors on good health. Medicinal plants provided by the forest have been used in traditional medicine practices for generations. The villagers themselves noted that clean and natural food and a pollution-free environment are important for good health. Some admitted that, in the past, the food was cleaner, that there was less pollution (they did not burn plastic) and more forest and forest products. However, before the government developed their access to water, the quantity and quality was lower.

Over time, use of chemicals and pesticides that pollute soil, water and food has increased, negatively impacting the health of the people, especially in the Sing CSA. The villagers can also be directly impacted by using chemicals without protection in the fields.

The use of traditional medicine, relying on diverse plants found in the forest, has decreased in the villages. When they need health care, the interviewees stated that they go to the healthcare center or the hospital. As such, they rely less on services provided by the environment than in the past. Furthermore, the loss of forest leads to a loss of biodiversity and as such, the medicinal plants are decreasing, as stated by some villagers.

Overall, the links between ecosystem services and health appear to have decreased over the past 20 years. The different forest products that were used for consumption or medicine have decreased. There are less forest areas to regulate air quality and to remove pollutants from the atmosphere. Nevertheless, the health level in the study region has considerably increased over the past 20 years, as stated by the interviewees. The decrease of ES to health has been compensated by various other factors increasing the general health of the villagers.

To be sufficiently nourished is another aspect of well-being in Nussbaum's dimension of Bodily Health. This aspect can only be fulfilled by the services provided by the ecosystem, as it provides the conditions to grow food. It comes primarily from human agriculture production but the environment also provides wild food, from forests or water systems, for human consumption. In Laos, and in most rural areas in Asia, rice is the main food of the villager's diet and is most of the time cultivated for personal consumption. In the Sing CSA, only a third of the interviewees do not cultivate rice, whereas there is only one in Prang. The villagers also grow vegetables, raise livestock and collect edible NTFPs from the forest. The environment can provide all the necessary products for the villagers to achieve the well-being aspect of being sufficiently nourished or, at least, local ecosystems provide the conditions to grow or collect food for the villagers to be sufficiently nourished. However, they are depending less on the immediate environment to procure food and more on external sources, such as the market. Furthermore, the food is most of the time not organic anymore, enhanced by diverse chemicals and pesticides to increase the productivity and decrease the vulnerability to natural elements.

All interviewees converted over the past 20 years all or part of their upland rice production to cash crops, reducing their subsistence production. However, thanks to pesticides and other chemicals and

modern agricultural methods, the productivity has increased. As such, less land is needed now to produce rice for a household to be sufficiently nourished. However, some villagers stated that the quality of the food produced has decreased, due to use of chemicals, especially in the Sing CSA. In Prang, the villagers said to use less or no chemicals and as such, only a few complained about the quality of their food. Furthermore, the increased income and a better access to markets allow the villagers to buy the necessary food to be sufficiently nourished. As mentioned earlier, a third of the interviewees in the Sing CSA and one in Prang sacrificed their entire food production for an increased income and most of them agreed on the fact that it is easier to be sufficiently nourished.

The second main ecosystem provider of food in the region is the forest. Bamboo shoots, tree leaves, mushrooms, insects, plants or wild animals are important components of the rural Lao people diet that are often undervalued. When upland shifting cultivation was the main agricultural activity, these products were easily collected when the forest or fallows were cleared. Forests have always provided food year-round to the villagers and contributed to household food security. Some villagers noted that, when the rice production was not sufficient for the household, forest food was a crucial component of their diet. The clear majority of the interviewees in Oudomsin, Pakha and Prang and just over half in Nam Mai said that they collect NTFPs, for personal consumption mainly. Except for one villager in Pakha, all mentioned that it is harder to access the forest and collect NTFPs compared to 20 years ago. This is because most of the forests near the villages have been turned to cash crop cultures and most of the remaining forest is protected, which makes it illegal to collect products from.

"There are less products in the forest now. In the past, there were bamboos, mushrooms in the forest that is near the village and in other areas of forest. After the land and

forest allocation, the villagers have to collect in their own area. But in the past, no land and forest allocations. Villagers can go to find products anywhere they wanted” (Interview N03).

Regarding the aspect of nourishment, it has become easier for the villagers to be sufficiently nourished, which is an important factor of their well-being. However, although their well-being regarding sustenance seems to have increased, the direct provision of food by the ecosystems appears to have decreased, especially in the Sing CSA. Over the past 20 years, the villager's dependence toward their environment to provide food has gradually decreased, with a third of the interviewees already not producing any rice anymore. The rest of them however still rely, at least in part, on their production of rice for their subsistence. In Prang, the direct provision of food by ecosystems do not seems to have decreased much, as only one interviewee does not rely on any rice production. Regarding the food provided by the forest, most people still collect some, even though it considerably decreased in quantity and accessibility. It is possible to conclude that the provisioning services of the ecosystems are still strongly directly linked to the food subsistence of the villagers, especially in Prang, and are as such an important factor of well-being, but that they are decreasing over time. On one hand, people rely more on their income to provide food for the household and on the other hand, the provision of some of these services is considerably decreasing.

The last factor of Bodily Health is to have adequate shelter. This aspect was not discussed thoroughly during the focus groups, but having a house was deemed important for the well-being for some participants. Material for housing, such as timber or bamboo are produced and provided by ecosystem services. During the interviews, the villagers noted that, in the past, their houses were built out of bamboo and had a roof made of thatch (see Figure 4). They used to collect the materials from the forest and build

their house themselves. Their shelter was, at the time, entirely dependent on provisioning services from the local environment. Nowadays, most of the houses are made from cement or hardwood and other solid materials that they do not collect locally themselves (see Figure 5). As explained by some interviewees, the materials for their houses have to be bought now. These changes are linked to the increased income of the villagers and an easier access to outside markets and new materials. However, some villagers still rely on those ecosystem services for their houses, as they do not have financial means to afford better materials. The level of wealth does not appear as high in Prang as in Oudomsin or Nam Mai and the houses do not seem as developed. The number of houses in Prang still made of bamboo seems higher than in the villages of the Sing CSA.

It is important to note that most of the interviewees admitted not to be satisfied with their house and wished to have a "bigger, better and stronger house". When taking this fact into account, it appears that the products provided by the local environment are not sufficient for what the villagers consider as adequate shelter, and are as such not a factor of their well-being anymore.



Figure 4: Traditional house made from bamboo walls and grass roof, in the back (Ban Nam Mai)

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Figure 5: Traditional bamboo house next to more modern houses made of solid materials (Ban Prang).

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The dimension of Bodily Health has extensive links to ecosystem services. Health, sufficient nourishment and adequate shelter are three factors of well-being that have been closely linked to ES in the local context. It however appears that, over the past 20 years, the influence of the environment over these aspects of well-being has significantly decreased for most of the villagers. Nonetheless, it is essential to note that the villager's livelihood still entirely depends on the environment and its services.

8.2. Bodily Integrity

Ecosystems have the capacity to regulate and mitigate extreme events or natural hazards that could impact the villager's safety, such as floods, landslides or storms. However, apart from some strong wind a few years back, no villager interviewed recalled having experienced any such event. It is not possible to determine through the interviews if regulating ES have been altered with the land use changes over the past 20 years.

There appears to be no real direct links between the safety of the villagers and the ecosystem dis-services in this context. Some interviewees however recalled a time, during the war and before they were resettled, when the enemies were hiding in the forest, which provided them with cover. Others admitted to have felt unsafe when the villages were smaller with the houses further away from each other and located in the forest.

8.3. Control over one's environment

Having land is one of the main factors of well-being for the villagers. It is needed for agricultural activities, the predominant source of income in the region, and is considerably dependent on ecosystem services. Land quality

is the main ecosystem service that influences this aspect of well-being. The quality and fertility of the soil are elements that can influence the crop production and that are naturally dependent on well-functioning ecosystems. These elements can however be, in part, controlled by the villagers by using fertilizers and other chemicals. In addition to the impacts on the well-being aspect of health, the increasing use of these products decreases, to some extent, the dependence on the regulating services of the ecosystems.

Land available for agricultural production has also greatly decreased over the past 20 years. This is however only dependent on governmental laws and regulations and not on the availability of land itself. It is almost impossible for the villagers in the Sing CSA to clear, legally, new plots of land for agricultural production. It is easier in Prang as there are still areas of production forests that can be turned into agricultural land available for new households. As such, it can be concluded that, having land, or at least having new land, is not directly dependent on ecosystem services but on government regulations.

8.4. Links between ecosystem services and well-being

It has been shown in this chapter that only a few factors of well-being in this context appear to be dependent on ecosystem services. Indeed, only factors of health can be directly linked to the environment, with the provision of clean air, water and food and medicinal plants. However, it has also been shown that this dependence has decreased compared to 20 years ago, especially because of modern medicine.

More often than not, an increase in income is followed by a deterioration in some ecosystem services (McMichael et al., 2005). In the studied

villages, the main source of income is agriculture. As such, it is directly linked to the provisioning services of the environment. Whether they work on their own land or are hired as labor, the villagers are dependent on these ecosystem services. The diversity of these services has greatly changed over the past 20 years. On the one hand, the ones provided by the forest (NTFPs, construction wood, etc.) that can produce an income have decreased with the loss of natural forest. But, on the other hand, the income generated from more recent agricultural activities has considerably increased, opening new possibilities.

The expansion of cash crops production results in loss of natural forest area, subsistence plantations and biodiversity. Some of the lost services can however be replaced (perhaps not completely) by the increased income. The money can also be used to access new services that were previously not available or accessible, such as more developed health care, better education, improved housing, and many more, with considerable increases in some aspects of well-being. This will be addressed more in-depth in the next chapter.

With this we know which factors of the land users' well-being in the assessed villages is dependent on ecosystem services. However, we further want to understand how their well-being has changed over the past 20 years and why. Therefore, in the next chapter, I will identify the key changes that have impacted the villagers' well-being. The chapter will address all the factors of well-being that have evolved over the past 20 years, and not only the ones linked to the ecosystem services, like in this chapter.

9. Changes in well-being

This chapter is intended to answer the third specific research question: **What are key changes that have impacted the villagers' well-being in the past 20 years and how has it changed?** The aim is, in the first place, to identify the key changes that have occurred that could have impacted the livelihood of the villagers in the study region over the past 20 years. The next step is to determine which factor of well-being have been influenced by those changes and how. The results presented in this chapter come from answers obtained during the interviews and the focus group discussions. Some of the background information on cash crops cultures and land use changes are also based on two unpublished 2018 field mission reports by two members of the r4d project, Victoria Junquera and Vongvisouk Thouthone.

9.1. Land use changes

The villagers' livelihoods rely mainly on agricultural activities. As such it seems logical to start this chapter by describing the main land use changes that have occurred in northern Laos over the past 20 years. Due to their geographical proximity between them and with China, the land use changes appear to be similar between the villages of Nam Mai, Oudomsin and Pakha. I will thus address the three villages of the Sing district as the Sing CSA and separate this section of the chapter between this area and the village of Prang, which experienced different land use changes.

9.1.1. Main land uses and land use changes in the Sing CSA over the past 20 years

From the series of interviews and workshops I conducted in Nam Mai, Oudomsin and Pakha, three generalized land use changes in the Sing CSA over the past 20 years have been identified, as shown in Table 8. I will in this section describe these three LUC in the Sing CSA.

Table 8: Land use changes in the Sing CSA over the past 20 years

The three generalized land use changes
1) From rice production on paddy land and banana plantations to sugarcane plantations
2) From rice production on paddy land to banana plantations
3) From shifting cultivation on fallow land, forest, and various cash crops to rubber plantation

The first cash crops emerged in the Sing CSA in the late 90s when Chinese investors introduced the sugarcane in the area close to the Chinese border, before expanding further in the country. As cane do not need irrigation, it was advantageous and the villagers did not have to convert their good paddies. It is generally cultivated on non-irrigated flatland, poorly irrigated paddies or on low-slope upland. Depending on the land fertility, the sugarcane can be harvested three or four years after cultivation. During the late 1990s to the early 2000s, villagers converted their shifting cultivation area and fallows close to the villages to sugarcane plantation. Each year after the harvest the Chinese investors go to the villages to buy and transport it to China (Junquera, 2018; Vongvisouk, 2018).

The rubber boom started in 2004 and is today the main cash crop production in the region. Since people in the Sing CSA saw the successful

long-term profit of the rubber from relatives in China and from other villagers who started their plantation in the 1990s, numerous plots of sugarcane plantations, shifting cultivation and forest areas have been converted to rubber plantations (Junquera, 2018; Vongvisouk, 2018). Entire mountains can be seen covered by rubber trees, their grey color sticking out from the green natural forests (see Figure 6). Every household interviewed in the Sing CSA has rubber plantations.



Figure 6: Entire mountains covered by rubber trees, near Oudomsin
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The third cash crop that boomed in the region, between 2013 and 2015, was the banana, which was introduced by Chinese investors in response to falling rubber prices between 2012 and 2015. Unlike the sugarcane and the rubber, the investors, rented the land from the villagers to grow the banana, with contracts from three or six years. It was for many an easy income, as there was no need to work the land themselves. The crop however needs well irrigated flatlands and many villagers rented their best rice paddies, close to rivers and/or streams and roads, for what looked like a deal too good to turn down. Some people cut their young

rubber trees (not mature enough for tapping) and leased their land (Junquera, 2018; Vongvisouk, 2018).

Banana plantations are fragile and easily affected by diseases. The Panama disease TR4 spread through the Sing CSA, and the whole of northern Laos, devastating countless banana orchards. Many investors left before the end of their contract, often without fully paying the land owner and with no hope of compensation, either for the damaged land or for the workers sickened by the excessive use of pesticides. This resulted in a governmental ban on any new cultivation of banana in Laos in 2017 (Parameswaran, 2017).

The cultivation of this crop has left the land in a bad condition. According to the villagers, all the chemicals that have been excessively used have now polluted the ground and all the rocks have been brought up to the surface by the banana trees. Furthermore, this disease is very resilient and the fungus can remain in the soil for many years, infesting any further banana production (The Laotian Times, 2017).

This has left many villagers with no other choice than to rent their land, previously used for banana, to restore and "clean" it before starting another crop, as they most of the time do not have the workforce to turn the land back to its former quality. This situation has allowed the Akha people of the region to thrive on the opportunity. Indeed, most of the interviewees who had banana plantations have now rented their land (usually for three years) to Akha people, at a very low price. Interviewees from Oudomsin and Nam Mai stated that the Akha people have a tradition of cooperation and exchange of labor between villagers. They are used to working cooperatively at the village level and, as such, can more easily mobilize the workforce necessary to restore the land. They also have a lot of experience with sugarcane production, which is one of the main crops they now cultivate on those lands. The unstated reason is probably that

Akha are used to heavy manual labor and are eager to make as much money as possible. All these factors have allowed them to take advantage of these opportunities. The Akha village of Pakha, for example, has rented heavy machinery to plow the land, for its villagers to use. At the time of the harvest, I saw dozens of villagers working together on one sugarcane field, before going to the next one (see Figure 7).



Figure 7: Harvest of sugarcane crops near the village of Pakha. Many villagers work together to harvest the production

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9.1.1. Main land uses and land use changes in Prang over the past 20 years

From the series of interviews and workshops I conducted, two generalized land use changes in and around Prang over the past 20 years were identified, as shown in Table 9. I will in this section describe these two LUC in the region.

Table 9: Land use changes in Ban Prang over the past 20 year

The two generalized land use changes
1) From shifting cultivation on fallow land and forest to cardamom plantations
2) From shifting cultivation on fallow land, forest, and various cash crops to rubber plantations

Encouraged and instructed by the government, the village started cultivating rice in paddies in 1997. Some of the households still practice upland rice cultivation, due to the limited paddy area. Although most of the villagers have started growing cash crops on their upland plots, the village still owns some upland plots that are used for rice cultivation. Each year, the chief assigns some of those areas to villagers to grow rice. Also, unlike the villages studied in the Sing district, Ban Prang still has available, but decreasing, agricultural plots of land that can be assigned to new households.

Ban Prang started with cash crops later than the rest of the studied villages. The first wave of rubber trees was planted around 2006 and the second around 2013, both time after a visit of investors. Development projects have also initiated the cultivation of other cash crops, especially cardamom around 2006, which is now the main cash crop cultivated in the village.

From discussions with villagers in Prang, I learned that there are three types of cardamom in the region. The first one is natural wild cardamom that grows in dense forest. It is protected and only people from nearby villages are allowed to harvest it. Once a year, people from different villages will go together to the area where it grows to collect it. There is a limit on the quantity that can be collected to allow the cardamom to survive for the next years. The second type is the Pakxong cardamom,

which needs the same kind of cleared area as the upland rice. The crops areas are usually not big in Prang, not over 0,2 ha. The cardamom is commonly cultivated with shrubs and young fallows and are located near the village and in slopes between paddies or rubber plantations. This type of cardamom can be collected each year without being replanted. The Klouangtung cardamom is the third type growing in the region. It can only grow in the forest or old fallows, where there is enough shade. This type of cardamom can only be harvested once and needs to be replanted every time.

During the interviews, the villagers did not always differentiate the type of cardamom they cultivate. However, the Pakxong cardamom is the most commonly cultivated type of crop in the region, as it has to be planted only once for an annual harvest.

To conclude, the four study villages have experienced a major shift from a subsistence-based to a market-oriented agriculture since the introduction of the first cash crop in the late 90s. With the exception of the banana, the cash crops have successfully been integrated into the local economy and now represent the main source of income for the majority of the villagers interviewed. These changes in agricultural activities have also greatly altered the local landscapes with the rapid deforestation rates the region experienced the last 20 years.

9.2. Public services changes

Land use activities are not the only key things that changed in the region over the past 20 years. Some of the public services have also greatly improved, especially services regarding health, road development and water supply.

The inaugurations in 2008 of the health care centers in Nam Mai for the Sing CSA and in Nam Sing for Prang mark one of the major changes that have affected the lives of the people in the studied villages. The majority of the interviewees have agreed on the fact that it was one of the greatest improvements regarding their access to health care. Indeed, before 2008, the villagers had to walk long distances to the closest hospital. Note that they did not have cars and motorbikes and travelling long distances was more complicated 20 years ago. The health care centers are however sufficient for minor health issues only.

"There was no health care center or hospitals in the past. You had to walk for 4 hours from the upland to go to Namtha for care. It's easier now" (Interview P07).

The interviewees also noted that the hospitals in the district, and in the rest of the country, have greatly improved and have better equipment and doctors compared to 20 years ago. Furthermore, the villagers have mentioned that the construction of new roads and the improvement of existing ones have also greatly facilitated the access to furthest hospitals in Laos or neighboring countries. There were no roads going up to most of the villages in the past. The fact that they now all have motorized vehicles makes the travel easier too.

Another key change was the connection of the studied villages to the water supply network. The villagers noted that once boiled, the tap water is good for consumption. More importantly, their access to water is not dependent anymore on the season and the amount of water available in the rivers or streams or from the rain. Most of the interviewees considered that the quantity and quality of the tap water is better and more reliable. In Prang, since 2008 for some and 2013 for others, the villagers have access to an irrigation system for their paddies, giving them the possibility to grow and harvest rice twice a year. The government is currently also

working on connecting the villages of the Sing CSA to an irrigation network.

9.3. Changes in well-being

The changes in land use activities, the inauguration of the health care centers and the improvement of the public health services in general, the development of the road network and the connection of the villages to the water supply network are the key changes that have greatly influenced the life of the villagers. These are of course not the only changes that have occurred over the past 20 years, but they were repeatedly mentioned as major developments by the interviewees. The villages have also naturally gradually evolved over time. The villagers interviewed or someone in their household all have for example TVs, mobile phones, internet, electricity, motorbikes or cars, etc., improving their everyday lives, and as such improving their well-being. However, the previously cited key changes were deemed to have most significantly contributed to improve the villagers' well-being.

The introduction of cash crops in northern Laos had the biggest repercussions on the well-being of the people whose livelihoods depend on agricultural activities, mainly due to the increased income. Indeed, every interviewee whose cash crop cultivation already yielded profit agreed that it had highly raised their income, which is one of their most important factors of well-being. Furthermore, as they stated during the focus groups, money is necessary for everything and many factors of well-being are directly linked to it, such as health, education, food or private transportation, to only cite a few examples. All these factors have become increasingly accessible with the increase of income for the villagers.

"The rubber is comfortable. You just need to cut some grass and do some cleaning. It is a lot less work than upland rice,

but it costs more to maintain. Still, the income increased thanks to the rubber. Now the upland areas bring money” (Interview N01).

This has been stated by most of the interviewees when asked about the impacts of land use changes on their life: cash crops bring more money to the household and it is a lot less work compared to the traditional upland shifting cultivations.

“In term of economics we now have more ways to find more money. Families that did shifting cultivation in the past had very little free time in the village. They always worked in the field. Now we have more time and can work as laborer for Chinese watermelon garden⁵” (Interview PR04).

In addition to increased incomes from cash crops, the villagers also have more free time, which they can use to look for more opportunities to work and bring money to the household. Many have noted that since they do not have to spend their whole day working anymore, they can spend more time with their family and friends and just rest and relax. It also has an impact on the children's education. Indeed, a smaller workforce is needed to work on the cash crop plantation than on shifting cultivation, and as such, children do not have to sacrifice their education to help their parents, as they had to do in the past. This can be seen by the number of children that have graduated from high school, compared to their parents.

⁵ The watermelon is the most recent cash crop trend in the region (near Prang). Unlike the ones discussed in this thesis, they are only grown on large plantations by Chinese companies, which hire locals to work on them. The villagers interviewed were all particularly happy about the good salary and the extra income.

The following table (Table 10) summarizes the positive and negative impacts the shift from a subsistence-based agriculture to market-oriented one had on the villagers' well-being.

Table 10: impacts of the shift to cash crops on the dimensions of well-being for the assessed villagers

	Positive	Negative
Bodily Health	<ul style="list-style-type: none"> - Less work on the field and more time to rest and take care oneself. - More financial means to afford adequate care. - More financial means for a better house and household equipment. 	<ul style="list-style-type: none"> - Possible sickness due to uncontrolled use of chemicals and pesticides. - Decrease of subsistence production and consumable NTFPs.
Bodily Integrity	No impact	No impact
Senses, Imagination and Thought	<ul style="list-style-type: none"> - Experience new agricultural activities. - More free time for the children to go to school. - More financial means to afford prolonged education for the children. 	No impact
Emotion	No impact	No impact
Practical Reason	<ul style="list-style-type: none"> - More financial means to plan their own life or to reach objectives. 	No impact
Affiliation	<ul style="list-style-type: none"> - More free time to spend with family and friends. 	No impact
Other Species	No impact	<ul style="list-style-type: none"> - Decrease of natural forest areas. - Possible soil and water pollution from pesticides and chemicals.
Play	<ul style="list-style-type: none"> - More free time to play, laugh and enjoy life. 	No impact
Control over one's	<ul style="list-style-type: none"> - Many opportunities to clear forest areas for new 	<ul style="list-style-type: none"> - Almost impossible to own new plots of land

environment	cash crop plantations (in the past. Limited now). - More opportunities of employment on company-owned cash crop plantations.	legally without buying it from someone else (except in Prang for new households).
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The table above demonstrates that the land use changes that occurred in the assessed villages over the last 20 years have impacted, positively or negatively, all of Nussbaum's dimensions of well-being, with the exceptions of Bodily Integrity and Emotion. The latter two appear to be independent of land use. It is also possible to say that these changes appeared to have mainly positive impacts on the villagers' well-being. However, apart from the decrease of subsistence production that can be compensated by the increased income, the other negative impacts may have strong negative consequences in the future. At the time of the interviews, only five people mentioned having had a sickness possibly linked to pollution or the use of chemicals on the plantations. Overall, it seems possible to state that the land use changes have mostly improved the well-being of the villagers in almost all dimensions of Nussbaum's list.

The inauguration of the health care centers, coupled with the improvement of the roads and the public health care services, have also greatly improved the well-being of the villagers, especially in the Bodily Health dimension. All interviewees noted that these changes considerably improved their situation regarding access to adequate healthcare. Furthermore, thanks to the better roads (and the bikes and motorbikes), it is easier for the children to access to the high school, which is in Muang Sing for the Sing CSA and in Nam Sing, a neighboring village, for Prang.

The connection of the villages to the water supply network has also improved the villagers' life, especially in Prang, where, in addition to access to tap water, they also gained access to irrigation water for their

fields. With their access to tap water, the villagers have a sure and constant access to water they can drink, after boiling it. It is safer for their health than drinking water from a stream or a river, which can be polluted. This has especially improved the well-being of the villagers in Prang, where, thanks to the irrigation system, they can cultivate rice twice per year and as such, increase their production. This allow them to have smaller paddy fields for rice and cultivate more crops that can produce an income.

With this we have identified the key changes that have impacted the villagers' well-being and how. However, we further want to understand if the villagers have the capabilities to achieve well-being and if it easier nowadays compared to 20 years ago. Therefore, in the next chapter, I will identify if and how they achieve well-being through the lens of a capability approach.

10. Capabilities to achieve well-being

This chapter is intended to answer to the last specific research question: **Do the villagers have the abilities to achieve what they consider as well-being and how has it changed over the past 20 years?** The aim is here, first, to understand if, and how, the villagers are able to achieve what they consider as well-being and, second, how their capabilities have changed over the past 20 years. In order to do so, I will describe the villager's perception of their capabilities for each dimension of Nussbaum's adapted list.

10.1. Capabilities regarding Bodily Health

All but three people who answered the questions regarding healthcare said that they are satisfied with their situation. When asked what they would do if someone in their household had health problems, they almost all agreed to the same thing. In the Sing CSA, first, they would go to the health care center located in Nam Mai. If it is not resolved, they would then go to the district hospital in Muang Sing and then the provincial hospital in Luang Namtha. In Prang, they would first go to the health care center located in Nam Sing (about 4 km away). If it is not resolved, they would then either go to the district hospital in Vieng Poukha and then the provincial hospital in Luang Namtha or directly to the latest. The last resort, for some of them, mainly in the Sing CSA, would be to go to a hospital in China or Thailand that they consider more developed. Only one suggested that option in Prang. Of course, some interviewees, with more means or relatives abroad, would skip the district and provincial hospitals and go directly to China or Thailand. However, most of them agreed to this order as it goes from the least to the more expensive care.

They are however particularly happy with the health care center, which they deem good enough in cases of minor health issues. The three people who are not satisfied with their situation noted that the health care center sometimes do not have enough medicines, that the doctors can not treat them for serious health issues or that they do not wake up at night in case of emergency. One of them is also not satisfied with the district hospital.

Regarding financial means to access adequate care, the situation is more complicated. When it comes to getting minor treatment, the health care center is sufficient and affordable. However, in case of more extensive care requesting hospitalization, the majority admitted they would have to borrow money from relatives, but the answers differ depending on the village. Four people in Nam Mai, nine in Oudomsin, two in Pakha and six in Prang acknowledged that they can afford adequate care. The rest of them would have to borrow from relatives or sell livestock in case of need. Only three people in Pakha and one in Prang recognized they do not have financial means and they did not suggest they could borrow money to anyone. A small part of the people interviewed admitted that they still rely on traditional beliefs in addition to more modern medical care, like sacrificing a chicken or a pig to the spirits.

The villagers' healthcare situation has greatly evolved over the past 20 years. All the interviewees agreed that their situation is better nowadays than before, thanks to the health care centers, inaugurated in 2008, development projects that brought them sanitation and thanks to the road development, allowing them to access more easily more distant hospitals. Some of them also noted that the hospitals are better equipped than in the past. They do not have to rely only on traditional medicine and beliefs for their health care anymore.

When asked about their subsistence production, the answers varied between the villages. In Nam Mai and Prang, twelve people declared that

their rice production is enough for their household to be sufficiently nourished. This number goes down to eight in Oudomsin and only six in Pakha. Although it was rarely mentioned in the interviews, it appears that most of the villagers also have a vegetable garden and some livestock (chickens and pigs). Most of them admitted that it is easy to be sufficiently nourished despite the decrease of subsistence agriculture.

"It is easier now thanks to the market, you just need money. There are also shops and restaurants. You had to find and cook all by yourself in the past, there was no market" (Interview N15).

All agreed that nowadays, food can be bought if needed. When the subsistence production lacks, it is mainly because the household switched most of its land to cash crops for a higher income. It allows people to buy all the food they need and compensate the loss of own grown food. In some cases however, when there is a shortage in production, the household may have to sell some livestock to be able to buy enough food.

Fifteen people however conceded that it is harder for them to be well-fed in a year, compared to 20 years ago. Although they agreed that there are nowadays more ways to get food, it is more expensive than in the past.

"There was a lot of upland rice production, so the rice was cheap. It is more expensive now" (Interview O06).

This situation mostly affects villagers in Pakha, where there is less flat land to produce rice and where the average land per household is lower. In Nam Mai, the three people complaining about the harder conditions to be well-fed admitted to be self-sufficient in rice but that everything is more expensive. One villager in Prang complained that there are more people and more villages than in the past but not enough land for everyone, which makes it harder to produce enough food for everyone.

Finally, when asked about their houses, the large majority declared that they are not satisfied, especially in Pakha, where no one is, and Nam Mai, where only three are. In the villages, most of the houses appeared to be made from solid and hard materials like hardwood and cement, with cement or sheet-metal roofs. In Pakha all the houses are made from hardwood and are on stilts. They all want a "bigger and better" house than the one they have now.

"I want a bigger and better house, like the one I see on TV. However, I have a roof and room for my family, so it's ok I guess" (Interview N03).

Even some of the villagers satisfied with their house would still like a "bigger and better one". However, apart from five people, they all agreed that their house is in better condition than in the past, when they were small, with bamboo walls and a thatch roof.

10.2. Capabilities regarding Bodily Integrity

All people who responded to the questions regarding security in the Sing CSA said that currently they feel safe and that there are no issues in the villages. The only exception was one person in Oudomsin who mentioned that there are sometimes land disputes and that the village is less peaceful than in the past. However, everyone else agreed that they are as safe or safer than in the past. A few villagers noted that, before the police clusters, there were some robbers, land conflicts and some ethnic problems. One villager pointed out the fact that it is nowadays not possible to clear more land for agriculture, so there can not be land disputes or competition for land anymore. There seem to be no security problems in the assessed villages currently.

10.3. Capabilities regarding Senses, Imagination, and Thought

The only time the capability of “experiencing new things” came up was during the focus groups held in Oudomsin, when both groups of women and men chose it as an important factor of well-being. They agreed that it is important to learn about new agricultural practices and methods for their farming. The participants declared they can access new knowledge from neighbors, relatives in China (for rubber plantation for example) and in other villages, or on TV and the Internet.

As such, “experiencing new things” can be interpreted in this context as accessing new knowledge about agricultural activities and opportunities, such as information on a new cash crop or on how to tap rubber trees. When asked about their access to such knowledge, the majority agreed they could easily access it. It also became clear during the interviews that they share information between villagers.

They all agreed on the fact that it is easier nowadays to have access to new knowledge thanks to better technologies and infrastructure in the villages (electricity, internet, mobile phones, TV, etc.).

When asked about their access to education, apart from two people, all said they are satisfied with the current quality of education in the villages, even if there is not a school in each village. Although most of them did not have much or no education, all their children have today access to it. Some villagers however noted that some schools could have better teachers, teaching methods and infrastructures and that it could still be better.

“Overall I’m just a bit satisfied. However, I am not satisfied with the methods of teaching. Some children who finish

school nowadays sometimes can't even read. Even old people who only finished primary in the past understand things better than children now. The children are now lazy to study" (Interview N03)

When asked about their own level of education, most of the interviewees in the Sing CSA are not satisfied with it. It is the opposite in Prang, where only two are not satisfied with their own level of education. When asked about their children's education, there is more satisfaction than disappointment, especially in Nam Mai and Prang. Some noted that they would only be satisfied if their children keep studying and when they graduate.

Regarding the changes in education, the majority agreed on the fact that it is nowadays better and easier to access a school and higher education. In Oudomsin however, some complained that the village's school had to close a few years ago. Most interviewees stated that better income and less work in the fields allow the children to focus on their study, rather than help the parents.

10.4. Capabilities regarding Emotion

There were no direct questions asked about freedom of speech during the interviews and it did not come up as one of the most important capability for the villagers during the focus groups. I however observed that the interviewees were not afraid to answer questions honestly and sometimes even criticize the village's leader and his decisions or even the national government, even with other people around listening to them. One villager in Prang clearly stated that the village leader is lazy and not really active and she acknowledged that she can speak freely about it, without fear of retaliation.

They also did not seem afraid to express other kind of emotions, such as love and grief or to miss other people. As stated a few times already, in every village, love has been described as a very important factor in their well-being, at the household and the village level. One villager stated that she feels lonely since her daughters left the house and another one said that she misses her husband because he's a truck driver and on the road, most of the time.

10.5. Capabilities regarding Practical Reason

When asked if they can follow their own dreams and plan their life the way they want, everyone, except two people, said they are free to do what they want and some added they can date who they want. They declared they have dreams in life and they'll do everything they can to reach them. Some stated their house, land or motorbikes as examples of objectives achieved. However, two villagers conceded to have dreams but not the capabilities to reach them. No one commented if it was easier or harder to follow their dreams nowadays.

10.6. Capabilities regarding Affiliation

When asked about the social relations between the villagers, everyone said to be satisfied. They all respect each other and almost everyone said there is no unequal treatment between them in the villages. Good social relations appear to be quite important for the villagers. It is a topic that came often during the focus groups and interviews as a factor of well-being. However, three people noted that rich and poor do not mingle and one villager of Oudomsin complained about some Christians who tried to convert villagers to their religion in recent years. One villager of Nam Mai also noted that when he first moved to the village, he was asked to convert to the village's beliefs. He however recognized that his own

religion is now accepted. In Prang, one interviewee talked about a couple of disabled elderly people who would not survive without the help of the villagers providing them with food and clothes.

Regarding the changes in the social relations in the Sing CSA, all except three indicated that the villagers are as or more united than in the past. My fieldwork coincided with the Chinese New Year. During that time, I have seen the whole village of Nam Mai celebrate together, the villagers going from house to house to eat and drink with everyone. It is especially true in Nam Mai, Pakha and Prang where the social relations increased, primarily thanks to the new agricultural activities. Indeed, the main argument given by the villagers is that they have more free time now to spend with their family and friends. The rubber and sugarcane plantations take less time and work than the shifting cultivation.

"In the past, you had to survive and provide by yourself. Now the villagers help each other and share food and knowledge" (Interview P09).

However, one villager complained about some religious issues that did not exist in the past and another one said that before the market, people used to share food more often. One interviewee in Prang also noted that they are less united because there are more ethnic minorities than in the past. Nevertheless, almost everyone else agreed that the villagers and family members are very united.

10.7. Capabilities regarding Other species

When asked during the interviews about the impact their agricultural activities had on the environment, most of the villagers said there were none, especially in Oudomsin and Prang, where no one said they have any negative impact on the environment. Some of them admitted they do not

know and a few conceded that the environment is negatively impacted by their activities, mainly due to the use of chemicals and that the quality of the environment decreased.

During the focus groups, only the women's group in Oudomsin and the men's group in Prang considered the quality of the environment to have increased, because of the government policies forbidding them to cut and clear new forest area. In the other focus groups, they all noted that the environmental quality had decreased, due to factories, deforestation, chemicals and plastic use and the burning of plastic and other trash. In Nam Mai, both groups considered the Chinese investors as a factor of environmental degradation.

Nevertheless, there are some forest areas that are, and always have been, untouched by the villagers, as mentioned by some. The cemetery or spiritual forest is protected in each village. Furthermore, the villages' water sources are also protected.

10.8. Capabilities regarding Play

Everyone who answered the question regarding free time said they are satisfied with it. During that time, they can go for walks, relax or rest, play cards, watch TV, spend time with family and friends, weave, etc. Almost all villagers agreed on the fact that they have more free time now than in the past.

"Free time has changed. In the past, you had to do shifting cultivation, it is hard work from early morning until evening and after that, you just go back home and sleep" (Interview N06).

Four people out of the sixty, however, conceded they had had more free time in the past. One noted that, once the work on the field was finished, they were free, but now they always have things to do, like checking on the rubber trees. Note that, in Prang, a few villagers still cultivate upland rice, which is a time-consuming activity.

10.9. Capabilities regarding Control's over one's environment

When asked about governance and participation in decision-making at the village level, only four people in Nam Mai and Prang said they were not satisfied with it. Many agreed that every villager, men and women alike, can vote for the chief of village and that often they can participate in land allocation with districts officials. Only two villagers in each of Nam Mai and Prang villages are not entirely happy with the village's governance. They noted that sometimes, the village's committee make decisions without consulting with them first.

Regarding the changes in governance, most interviewees agreed it is better nowadays than in the past and the rest considered it has not changed. Some noted that laws are better known and better enforced by the villages' leaders, that people participate more in the decision-making process and that everything is more open now.

No questions were asked about the decision-making process at the household level in the interviews. However, the issue was addressed during the women's focus groups in Oudomsin and Prang. The participants agreed that every decision in the family must be taken together between husband and wife. In other focus groups, some participants also admitted that it is important, for unity, that family members discuss together about problems and before making decisions.

In all villages, everyone declared that they own land and that they are able to cultivate what they want on it. The majority claimed to be satisfied with their land quality, especially in Prang, but only a few people said they were satisfied with the quantity of land they own. A lot complained, in the Sing CSA, about the laws that keep them from securing new lands without buying it to someone else, at a high price. In Prang, where more land is available, not many complained and just declared that there's nothing to do about those restrictions.

When asked whether they had lost land or if they were worried they could lose land in the future, the majority said no. Five villagers in Nam Mai and one in Prang admitted to worry about possible public infrastructure projects that could cross their land, such as the planned irrigation project in the Sing CSA. There would be no compensation, as the project is for "the greater good". In Oudomsin, two people admitted to having lost land near the border with China, turned into a parking for trucks, but they were compensated. In Nam Mai, one villager said that his grandfather leased land to neighboring villagers, but the family never got them back as there were no land titles in the past. However, not many people are afraid to lose land because they have land titles nowadays, and they pay taxes for the illegal land they obtained in the past by cutting down the forest. Indeed, even if their plots of land were illegally obtained, if the rubber trees on them are mature and producing, the government do not ask to revert the land to forest and just collect taxes. They declared that these taxes make it as official as land titles.

Regarding the changes, they all agreed that it is nowadays harder to get new land. In the past, the more workforce a household had, the more forest they could turn into agricultural land. Nowadays, they risk jail time for cutting down protected area of the forest.

When asked about their possibilities to make a living, most of the villagers said that they are satisfied with them. Those who declared that they were not satisfied, mostly indicated the reason for their dissatisfaction to be either not owning enough land, rather than any limit to the different possibilities to find employment. In addition to cultivating their own land, about half of the villagers in Nam Mai, Pakha and Prang mentioned that they work as laborer in other plantations.

"Now, we have more choice to earn more income than past time, we have more cash crop and sometimes, when we need money, we just go work for the Chinese company at the watermelon plantation. Every morning a car come to the village to find local people to work in the field and they give 60,000 kip/day. In the past, we just did shifting cultivation and it was very hard work. (Interview PR02).

In Prang especially, some noted that they were happy with the salary and the extra income. In Nam Mai, one villager who used to work in a Chinese banana plantation complained about the use of pesticides and other chemicals without protection. Many interviewees said that there are more ways to make a living nowadays than in the past.

10.10. Synthesis of the capabilities

It has been shown in this chapter that the majority of the villagers interviewed claimed to have, to some extent, the capabilities to achieve the factors of well-being from all the dimensions of Nussbaum's list. Nevertheless, the people in the assessed villages do not appear to all have the same capabilities to achieve different factors of well-being and it can vary between villages.

In the dimension of Bodily Health, the majority of the villagers said they are able to have good health and live a long life. All the interviewees and their household also are able to be sufficiently nourished. It may just be a bit more expensive nowadays but it can be compensated by the increased income. Regarding the last factor in this dimension, it is first necessary to define the "adequate shelter" suggested by Nussbaum in her list. It can be seen as the opposite of homelessness. Yet, if we consider the villagers' answers, a majority are not satisfied with their house and wish for "bigger and better". Nevertheless, with the exception of five, all the interviewees were able to replace their old house made out of bamboo walls and thatch roofs to more solids and bigger ones. As such, in this context, it is possible to consider their houses as "adequate shelter".

In the dimension of Bodily Integrity, the villagers are able to be safe from any kind of violence.

In the dimension of Sense, Imagination and Thought, the villagers are able to experience new things and the children are nowadays able to get continued education and even, for some, go to university.

In the dimension of Emotion, the villagers appear to be able to express their feelings and emotions without fear of retaliation, at least between them in the village. In this context, this dimension has been restricted to the village level, as Laos remains an authoritarian state which considers criticism of the ruling party a criminal offense.

In the dimension of Practical Reason, all the interviewees, with the exception of two, said they were able to plan their own life the way they want.

In the dimension of Affiliation, everyone answered that they are able to have good social relations with others in the village and to spend time

with family and friends. There also appear to be no unequal treatment between the villagers and they respect each-others, with however a possible separation between rich and poor villagers.

In the dimension of Other Species, the villagers appear to not be able to take care of the environment.

In the dimension of Play, all the villagers are able to play, laugh and enjoy recreational activities when they do not work.

In the dimension of Control over one's environment, people are able to participate in decision-making, both at the household and the village level, regardless of their gender. Every household where someone was interviewed has land for agricultural activities, which demonstrates that they are able to have land and cultivate it. However, it is nowadays harder to own new plots of land. Finally, they all are equally able to seek employment if they want to.

11. Discussion

The results displayed in this thesis have demonstrated that the shift from a subsistence agriculture to a market-oriented one has greatly improved the livelihoods and the well-being of the villagers over the past 20 years. The direct and principal improvements from the culture of cash crops have been an increase in income and in leisure time for the farmers. These land use changes, in addition to government investment in roads, schools, clinics and hospitals have, overall, been a crucial factor of improvement of the villagers' well-being in the four case study villages. Some interesting findings arise when comparing these results to researches in similar contexts. Fox and Castella (2013) have studied and analyzed the different types of rubber farming that are developing in southern China, northeast Thailand, Laos, Cambodia and Myanmar. Their interest was on the impact these different systems have on local livelihoods (Fox & Castella, 2013). In early 2000s, in the prefecture of Xishuangbanna in China, the government aimed at developing the region and promoted the culture of rubber, which quickly replaced any other kind of culture. Today, rubber farmers have achieved unprecedented wealth (Fox & Castella, 2013), with some ethnic minority that have reached living standards generally found with middle-class urban residents (Sturgeon, 2010). The situation is quite similar in northeastern Thailand, where smallholder rubber farmers have also considerably increased their household wealth (Fox & Castella, 2013). Xishuangbanna and northeastern Thailand are two examples where the transition from a traditional subsistence agriculture to a market-oriented one has been a viable and successful solution against poverty. Rubber cultivation can lead to increased household income and greater resilience when it is integrated into an existing farming system (Viswanathan & Shivakoti, 2008). It is complimentary with rice production because it does not require too much labor, which makes it an ideal crop for small holders (Dove, 1993, 1994). The authors explain how appropriate support, such

as recognition of land use rights and support services and/or subsidies are necessary for smallholder rubber culture to be viable and lucrative (Fox & Castella, 2013). When addressing the case of rubber production expansion in Laos, Cambodia and Myanmar, Fox and Castella (2013) describe the smallholder rubber farmers as struggling to maintain community land and forests due to foreign companies' pressure and feeble land policies. It has however been shown in this thesis that the situation in the villages of Nam Mai, Oudomsin, Pakha and Prang appear closer to the one in Xishuanbanna (although not at the same wealth level) and northeastern Thailand. Where Fox and Castella (2013) present the ineffective land policies and legislations in Laos as an obstacle for the smallholder farmers, I suggest that it was actually what helped the villagers in the case study villages to thrive on the expansion of commercial agriculture production. When the sugarcane boomed in the 1990s and especially when the rubber culture expanded in the 2000s, farmers in the study area cleared, legally and illegally, as much forest lands as they could to start new cash crop cultures. This was only possible due to poor governmental regulation and enforcement. Even nowadays, if a farmer is caught cultivating on illegally obtained land, if the rubber trees are mature and producing, he must pay a fine, but he remains "owner" of those trees. The farmers have managed to take advantage of the feeble land policies and regulations.

These land use changes experienced by farmers in Laos falls into the typical trend of agricultural modernization in southeast Asia and the universal spread of cash crop agriculture (Marten, 1990). Since the 1960s most of the southeast Asian countries, and especially the five major agricultural countries – Indonesia, Thailand, Malaysia, Vietnam and the Philippines – have experienced a strong economic growth, mostly based on the growth of agricultural output. (De Koninck, 2003). They are triggered by two things: central government policy change and market changes (Leisz et al., 2009). Indeed, in northern Laos, the shift to cash cropping has first been provoked by the trade liberalization of the country

to foreign markets and by policies promoting new agricultural activities to replace tradition shifting cultivation. Market demands and prices have then driven the rapid expansion of the diverse cash crops. These observation are in line with theories that consider economic opportunities and institutional factors as the underlying cause of land use changes worldwide (Lambin et al., 2001).

From a human development point of view, which focuses on the improvement of the life people lead, their opportunities and choices (UNDP, n.d.), it seems safe to say that the land use changes have greatly helped improved the study villagers' opportunities and freedom to achieve and live lives they value. It provided the villagers with the opportunities to lead a healthy, productive and creative live that they value (UNDP, n.d.). While it appears that poverty have been reduced and the quality of life has considerably increased in the four case study villages, it is not possible to ignore the deforestation and the overuse of natural resources that the expansion and intensification of the agricultural activities have on the environment. Farmers grow crops to feed their families or to sell and earn a living. Their livelihoods depend on their agricultural production and higher yields means more food or income. This can be achieved by increasing the quantity of agricultural land or by using fertilizers and diverse chemicals, which are both at the expense of ecosystem services. Environmental problems, that are not yet felt, may threaten the long-term livelihoods of the villagers. Studies led throughout southeast Asia have shown that permanent cash cropping and monocultures plantations can increase surface erosion and landslides probability and decrease the soil and water sources' quality (Bruun et al., 2009; Ziegler et al., 2009). The loss of biodiversity is another potential danger of monoculture and some villagers have already noted that it is harder to find forests products (medicinal plants, animals, edibles, etc.) compared to 20 years ago. On the long term new environmental problems, provoked or intensified by climate change, may emerge, such as insufficient water availability,

erosion, frost or wind damages, which could make rubber and other cash crops unsustainable and non-viable in the region (Ahrends et al., 2015). Furthermore, some of the villagers interviewed have entirely abandoned subsistence farming and are only cultivating rubber and/or sugarcane. This complete dependence to cash crops is financially viable and profitable at the moment, but it also increases the vulnerability of the farmer in case of production loss, price drop or, like it happened with the banana, if a disease decimates the cultures. Numerous studies have criticized the rapid expansion of palm oil monocultures in Indonesia and in Malaysia as it considerably increases food vulnerability and insecurity (Bernard & Bissonnette, 2014). It is however yet unknown to what extent the switch from shifting subsistence agriculture to market-oriented agriculture in northern Laos has negatively impacted the local environment.

11.1. Key findings

A series of interesting and key findings have emerged from this research. The first research question revealed that money is one of the most important factor of well-being for the villagers in the local context. This is an interesting finding, as this thesis' framework is built, in part, on Nussbaum's capability approach, which does not take into account aspects related to money and income to evaluate one's capabilities to achieve well-being. The villagers stated it themselves: money is necessary for everything. This goes to show that, even if theoretically speaking income does not reveal the real access to services of well-being, money is still necessary to access those services. In this study, I only focused on well-being at the village level and the fact that all the villagers have the same access to these services (health care, food, diverse goods, etc.) makes it possible to consider money as a factor of well-being in this research. In this context, the increased income, produced by the cash crops, has been a major factor of the improvement of the villagers' well-being. Nevertheless, this is also due to the fact that the "provision" of some of

the most essential factors of well-being have also improved over the past 20 years. For example, the villagers can access better health care because they have more financial means but more importantly because the public health service considerably improved. Income growth may not be an end in itself, but it is certainly an important factor of development.

The second research question demonstrated that the villagers' dependence to ecosystem services for their well-being has greatly decreased over the past 20 years and has, in part, been replaced by anthropogenic alternatives. Environmentalists have long argued that the deterioration of the services provided by nature would endanger human well-being (Raudsepp-Hearne et al., 2010). The Millennium Ecosystem Assessment however found that human well-being steadily increased at the global scale despite a decrease in the majority of the ES assessed (MEA, 2005). It can be, in part, explained by the fact that technology and social innovations have decoupled human well-being from ES (Raudsepp-Hearne et al., 2010). Indeed, as we have seen in the case study villages, most of the services that used to be provided exclusively by the environment are now entirely or partially replaced by modern and technological alternatives. Even though deforestation led to scarcity of the medicinal plants that used to be at the center of the villagers' medicine, they now have easy access to modern health care. It is the same with the food, which can either be grown with better yield thanks to pesticides and fertilizers or just be bought at the local market. It is however important to keep in mind that the villagers' livelihoods are still strongly depending on the environment. They are however less vulnerable to the whims of nature.

Finally, the last research question raised another interesting finding regarding the social relations in the village. A study on the rubber boom in the province of Luang Namtha by Shi (2008) presents the land use changes as a driver of disparities and animosity between villagers. She

explains that the increasing value of the land creates land disputes between villagers and villages as the villages boundaries and LUPLA are not well known (Shi, 2008). This is interesting because during the interviews I conducted, people considered the social relations as good as or as even better than in the past, before the new agricultural activities. It is of course possible that their answers do not reflect the real situation. However, when some villagers mentioned land disputes, it was always in the past tense, when there was still new land available to grab. The fact that there is (legally) no more land available to transform into agricultural land may explain why there are, nowadays, no conflicts and why the social relations are good in the villages.

12. Conclusion

This thesis tried to define and analyze human well-being in the villages of Nam Mai, Oudomsin, Pakha and Prang, and the role land use activities have on this well-being. In particular, I have tried to present how the changes in land use activities that have happened over the past 20 years, have transformed the villagers' well-being. The results of this study, following the specific research questions, are summarized below.

The first research question, addressed in chapter seven, was the following: What is considered as important and needed for the villagers' well-being? The results have shown that the villagers' factors of well-being are numerous and can vary between villages, but the most important, with quite a margin, appeared to be health, money and family. The results also demonstrated that all the forty factors given by the villagers, with the exception of money, fall in Nussbaum's list of universal dimensions of well-being.

The second research question, addressed in chapter eight, was the following: What part of the villagers' well-being is linked to ecosystem services and how has it changed? The results have shown that only a few of the villagers' factors of well-being are linked to ecosystem services. Only their health, nourishment, shelter, security and agricultural activities are, in part, dependent on services provided by the environment. Furthermore, over time, this dependence has considerably decreased, with the introduction of and easier access to modern medicine, new markets to buy more diverse food, better and stronger materials for the houses and the introduction of pesticides and other chemicals for agricultural production.

The third research question, addressed in chapter nine, was the following: What are key changes that have impacted the villagers' well-being in the past 20 years and how has it changed? The results have shown that the key changes are the introduction of the cash crops in the region, the inauguration of the health care center, the roads improvement, the development of the hospitals and the connection of the villages to a water distribution system. The impacts those changes had on the villagers' well-being, appeared to be mostly positive. Cash crops bring in more money for less work, they have better and easier access to improved health care, the children can go to school more easily and almost all the villagers have access to clean and constant water directly at home.

The final research question, addressed in chapter ten, was the following: Do the villagers have the abilities to achieve what they consider as well-being and how has it changed over the past 20 years? The results have shown that, overall, the villagers' capabilities to achieve what they value as important have, in general, increased over the past 20 years. It has become easier for them to achieve most of the factors of well-being that have been discussed previously. The only exception would be their abilities to take care of the environment, which have actually decreased. These improvements appear to be mostly due to the increased income from the new agricultural activities and the improvements in public services.

Finally, it seems now possible to answer the general research question, which was as follow: How has human well-being, linked to rapid land use change dynamics, evolved in the villages of Nam Mai, Oudomsin, Pakha and Prang in the province of Luang Namtha, in northern Laos? This thesis demonstrated that well-being is a multi-dimensional concept. It depends on a multitude of factors and aspects that relies heavily on one's perception and feeling and it cannot be simplified to a simple aspect such as material wealth or happiness. By using Nussbaum's list of central

human capabilities, I have demonstrated that the villagers' well-being is dependent on forty factors, ranging from being healthy to household equipment. The land use changes have opened many new opportunities for the villagers to improve their well-being. Cash cropping is very profitable and increases considerably the income of the farmers. Furthermore, it requires less work compared to traditional shifting cultivation. It is especially true for the rubber culture, after six or seven years when the trees are mature and producing.

The villages have taken advantages of these new agricultural activities differently. People in Nam Mai and Oudomsin mostly cultivate rubber trees. In Pakha they managed to thrive on the opportunity offered by the unsuccessful banana cultures by cultivating sugarcane on cheaply rented land (in addition to their rubber plantations). In Prang, the main cash crop cultivated is the cardamom, but rubber, which came later, is increasingly gaining in popularity. Prang is the furthest away from China, where most of the investors come from, and as such, it did not benefit from cash cropping at the same time as the other villages. Furthermore, in the Sing CSA, the dependence of some factors of well-being to ecosystem services has considerably decreased over time. In Prang, this decrease appears to be less significant. Nevertheless, the villagers' well-being did not appear to have improved considerably differently between the villages and it is as such possible to generalize the results obtained in this thesis. Overall, the well-being of the villagers of Nam Mai, Oudomsin, Pakha and Prang has considerably improved over the past 20 years and the land use changes, in addition to government investment in roads, schools, clinics and hospitals, have been a crucial factor of those improvements. However, these changes have led to considerable environmental degradation and even though they are not yet felt by the villagers in the study region, they can have negative impacts on their life and well-being in the future. As a final word, I would call for further research focusing on the impacts the

environmental degradation will have on the lives of the villagers and on the sustainability of their current agricultural activities.

13. Bibliography

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14. Annex

Annex 1: Focus group guidelines

Focus group discussions on wellbeing in northern Laos

Main goal:

- Understand what constitutes wellbeing for the local actors, and the needs to accomplish it
- Understand how and why wellbeing has changed over time

Main results:

- List of wellbeing aspects, in order of importance
- Notes of needs (opportunities/capabilities) to accomplish those aspects
- Main changes during the past 20 years and the reasons for them
- Identification of the most challenging and the most accomplished aspects of wellbeing

Procedure of the focus group discussion on wellbeing	
Main steps	Specific activities
Introduction	<ul style="list-style-type: none"> • Explain who we are • Explain what the meeting is about, what our goals are and what we are going to do • Clarify that we are not an NGO who will implement a development project -> Present the r4d project • Make sure the participants are willing to take part in the meeting and ask if we can record • Introduction of the participants and the research team
Step 0: Discuss results from mapping – 30 min	<ul style="list-style-type: none"> • Explain previous work done, how the mapping was done • What are the results from the mapping? Do they have comments or things to correct? • Lead over to well-being assessment, we need to understand the impacts of these changes
Step 1: Identify the wellbeing	<u>Research question (RQ): "What do people in the respective village consider as being important for their wellbeing?"</u>

<p>aspects</p>	<p>Goal:</p> <ul style="list-style-type: none"> • Identify the different wellbeing aspects in the village <p>Triggering question:</p> <ul style="list-style-type: none"> • <i>What is needed to have a good life in this village?</i> <p>Activities:</p> <ul style="list-style-type: none"> • Collect the wellbeing aspects from the discussion on small papers and assemble them in different groups (same wellbeing aspects together) on a separate flipchart. • Once they do not mention new aspects, we probe for remaining aspects on the Nussbaum list <p>Outcomes:</p> <ul style="list-style-type: none"> • List of consolidated wellbeing aspects <p>Roles:</p> <ul style="list-style-type: none"> - Phokham: Moderator - Souliayaphon (Aot): write cards (Lao / English) and translate - Nicolas: take notes of translation - Julie: take care of notes
<p>Step 2: Prioritize the wellbeing aspects</p>	<p>Goal:</p> <ul style="list-style-type: none"> • Identify the most important wellbeing aspects in the village <p>Activities:</p> <ul style="list-style-type: none"> • Give each participant 5 stickers • Each participant choose which aspects are the most important for them by putting their stickers next to them. Possible to choose 5 different aspects or to put more than one sticker per aspect. Individual exercise: each participant needs to choose by himself without following the others. Everyone does it at the same time. • Once it's done, count the number of stickers for each aspect and transfer them to the first column of the matrix in order of importance (number of stickers). <p>Outcomes:</p> <ul style="list-style-type: none"> • List of wellbeing aspects in order of importance

<p>Step 3: Identify why each aspect is important for their wellbeing</p>	<p>Goal:</p> <ul style="list-style-type: none"> To identify why each aspect is important for their wellbeing <p>Triggering question:</p> <ul style="list-style-type: none"> <i>Why is this aspect important for your wellbeing? Is there another reason for the importance of this aspect?</i> <p>Activities:</p> <ul style="list-style-type: none"> Fill the second column of the matrix with the answers
<p>Step 4: Identify what is needed to achieve each aspect</p>	<p><u>RQ: "In how far do the people of the village have the opportunities/capabilities to accomplish what they value as wellbeing?"</u></p> <p>Goal:</p> <ul style="list-style-type: none"> To identify what is needed to achieve each aspect of the wellbeing <p>Triggering question:</p> <ul style="list-style-type: none"> <i>Could you explain to us what you need to achieve this wellbeing aspect? (for each aspect)</i> <p>Activities:</p> <ul style="list-style-type: none"> Write the different mentioned opportunities and challenges on small papers Assign each of them to the different wellbeing aspects <p>Outcomes:</p> <ul style="list-style-type: none"> List of what is needed to achieve each aspect of wellbeing (column 3) Notes about the needs to accomplish wellbeing in the village

<p>Step 5: Identify the key changes that have affected the wellbeing in the past 20 years</p>	<p><u>RQ: "Has it become easier or more difficult to accomplish the wellbeing aspects during the past 20 years?"</u></p> <p>Goal:</p> <ul style="list-style-type: none"> To get an overview of the key changes regarding wellbeing during the pas 20 years <p>Triggering question:</p> <ul style="list-style-type: none"> <i>When you think of around 20 years ago (or imagine your parents or grand-parents, or people you know), has it become easier or more difficult to accomplish the different wellbeing aspects (see the list on the matrix)?</i> <p>Activities:</p> <ul style="list-style-type: none"> The moderator encourages participants to speak about concrete examples they know from their own experience, or from people they know Notes of the mentioned changes on small papers and marks them with arrows to visualize how the opportunities to accomplish wellbeing have developed over time [Changes in wellbeing and arrows (↓→↑)] <p>Outcomes:</p> <ul style="list-style-type: none"> List of key changes in the wellbeing in the past 20 years in the 4th column Arrows to symbolize the impacts of those changes on wellbeing (↓→↑)
<p>Step 6: Identify how the previously defined key changes have impacted people's wellbeing</p>	<p><u>RQ: "How have people's wellbeing been affected by those changes?"</u></p> <p>Goal:</p> <ul style="list-style-type: none"> Assessment of the impact of those changes on the wellbeing <p>Triggering question:</p> <ul style="list-style-type: none"> <i>When you think of around 20 years ago (or imagine your parents or grand-parents, or people you know), what has changed/what is not the same anymore?</i> <p>Activities:</p> <ul style="list-style-type: none"> The moderator encourages participants to speak about concrete examples they know from their own

	<p>experience, or from people they know</p> <ul style="list-style-type: none"> • Collect the reasons of those changes on the matrix (column 5) <p>Outcomes:</p> <ul style="list-style-type: none"> • List of the reasons for the changes in the matrix
<p>Step 7: Identify the most challenging and the most accomplished wellbeing aspects</p>	<p>Goal:</p> <ul style="list-style-type: none"> • Identification of the most challenging and the most accomplished wellbeing aspects <p>Activities:</p> <ul style="list-style-type: none"> • Give each participant 3 red stickers (most challenging) and 3 green stickers (most accomplish) • Each participant put their stickers according to their own judgment on the matrix next to the wellbeing aspects. Possible to choose 3 different aspects or to put more than 1 sticker per aspect. • Same rules of individuality as step 2. <p>Outcomes:</p> <ul style="list-style-type: none"> • "Clouds" of stickers representing the most challenging and the most accomplished wellbeing aspects of the focus group participants.
<p>Debriefing</p>	<p><u>Reflection of the focus group</u></p> <p>Goal:</p> <ul style="list-style-type: none"> • learning how the workshop was perceived by the participants and how a next workshop can be improved. <p>Triggering questions:</p> <ul style="list-style-type: none"> • <i>Please, could you provide us a feedback regarding this workshop? Can you show with your thumb, how satisfied you are with the day? What shall we change for a next workshop?</i> • <i>Which parts of the workshop did you enjoy? Which parts were too long? [as a workaround for "what should we improve?"]</i> <p>Activities:</p>

	<ul style="list-style-type: none">• Open group discussion• Assistants carefully record statements <p>Outcome:</p> <ul style="list-style-type: none">• Notes of the feedback
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Annex 2: Interview guidelines

Information from our side

- Who we are
- Explanation of the purpose of the interview
- Explanation on how we will take care of the information/data and what we plan to do with it (confidentiality)
- Ask if it's ok to record the interview

Personal data

Village name:	
Date and time of interview:	
Gender:	
Name:	
Age:	
Coordinates (GPS) of the household:	
Where are we:	
Who is present:	
Identifier (Interview ID/code):	

1. Starting questions

1.a	<p>Are you and your family from this village?</p> <p>If no:</p> <ul style="list-style-type: none"> ○ Where do (does) you (or your family) come(s) from? ○ For how many years have you lived here in this village? ○ Why did you move here?
1.b	<p>How many people live in this household (incl. kids and elderlies)?</p> <ul style="list-style-type: none"> • How many kids and how many adults? • How many members of the household work?
1.c	<p>Have family members left the household?</p> <p>If yes:</p>

	<ul style="list-style-type: none"> • To where? • Do they contribute economically to the household?
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2. Income and land

2.a	<p>What are your household main activities to make a living (income and subsistence)? (what crops, animals, casual work, employment, business, rent out land etc.)</p> <ul style="list-style-type: none"> • In what order?
2.b	<p>Are you satisfied with the quantity and quality of land you have?</p> <ul style="list-style-type: none"> • If not, why?
2.c	<p>Did you lose land or do you worry you could lose land?</p>
2.d	<p>Are you free to use your land the way you want to? (pesticides, crops type, etc.)</p>
2.e	<p>How did your activities change from the past (last 20 years) and how?</p>
2.f	<p>How did these changes impact you? (economically, culturally, satisfaction, etc.)?</p> <ul style="list-style-type: none"> • Are there also negative/positive impacts from these changes? • How about impacts on the environment?
2.g	<p>Are you satisfied with the conditions to sell your crops (access to markets, information, price etc.)?</p> <p>If not, why?</p>
2.h	<p>Are you satisfied with your possibilities to make a living (incl. income activities, employment possibilities, amount of land, etc.)?</p> <p>If not, why?</p>
2.i	<p>Do you manage to save money? How?</p>
2.j	<p>How many cars and motorbikes do you have?</p>
2.k	<p>How many agricultural machinery do you have?</p>

3. Forest

3.a	<p>Do you collect any products in the forest?</p> <ul style="list-style-type: none"> • If yes, do you sell them?
3.b	<p>Apart from these products, do you think the forest is important for you for anything else?</p>

3.c	How has your access to the forest changed during the past 20 years? What is the consequence?
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4. Water, food and health (BH + L)

4.a	Can you get enough drinking water? <ul style="list-style-type: none"> • Is the quality good enough? (pollution) • Has the quantity and quality changed in the last 20 years?
4.b	Can you get enough irrigation water? <ul style="list-style-type: none"> • Is the quality good enough? (pollution) • Has the quantity and quality changed in the last 20 years?
4.c	Are the subsistence products enough for your household to be sufficiently nourished? <ul style="list-style-type: none"> • Is the quality good enough? If no, is your income enough to buy food to be sufficiently nourished? <ul style="list-style-type: none"> • Is the quality good enough?
4.d	Has the quality and quantity of the food changed in the last 20 years? <ul style="list-style-type: none"> • Easier or harder to be sufficiently nourished in a year?
4.e	Are you or someone in your household affected by any pollution (air, soil, sanitation, etc.)?
4.f	What do you do when someone in your household has health problems? <ul style="list-style-type: none"> • Are you satisfied with this situation? • Do you have the means to get adequate care?
4.g	How has any of these aspects regarding health changed in the last 20 years?

5. Education and knowledge (SIT)

5.a	Do you and your family have access to education? <ul style="list-style-type: none"> • What is the highest level of education in the household? • Are you satisfied with your level of education? If not, why? • Are you satisfied with your children's education? If not, why?
5.b	Are you satisfied with the quality of the education in the village? (teachers, buildings, methods, material, etc.)
5.c	Do you have access to the knowledge and the information you need (weather forecast, agriculture, price, politics, etc.)?
5.d	How have those aspects related to education, knowledge and information changed during the past 20 years?

6. Infrastructure, shelter and safety

6.a	How has your ability to travel changed in the past 20 years?
6.b	Are you satisfied with your house? <ul style="list-style-type: none"> • If no, why?
6.c	Are you satisfied with your access to electricity?
6.d	How has your situation and your satisfaction with your house changed in the past 20 years?
6.e	Do you live in security in this village? (peace in the village, criminality, ethnicity, land use, etc.) <ul style="list-style-type: none"> • How have the aspects related to security changed in the past 20 years?
6.f	Can you cope with natural disasters (floods and droughts)? <ul style="list-style-type: none"> • Has it changed in the last 20 years?

7. Social relations (A + E)

7.a	Are you satisfied with your ability to support your family?
7.b	Are you satisfied with the relations you have in the village?
7.c	Are you or someone in the village affected by unequal treatment (wealth, age, ethnicity, religion, gender, by the government, etc.)?
7.d	How have those aspects related to social relations and equal treatment changed in the past 20 years?
7.e	Are you free to plan your own life the way you want to? (follow your dreams, have a relationship with anyone, to plan your life the way you want)

8. Participation and governance (CE + PR)

8.a	Are you satisfied with the governance of the village? (decision making)
8.b	Can you participate in decision-making at the village level the way you wish to?
8.c	Are you satisfied with the support from the higher-level government?
8.d	How have those aspects related to participation and governance changed during the past 20 years?

9. Recreation

9.a	What do you do in your free time?
9.b	Are you satisfied with your free time? (are you free to do what you want, the way you want to)
9.c	In general, what do you need to be happy?
9.d	How have those things related to your free time changed during the past 20 years?

Overall satisfaction

Thinking of all the discussed topics, as well as aspects we have not yet discussed:

Income, crops, land, jobs, transportation, environment, forest, health, water, food, education, house, social relations, free time

- Which 3 topics constitute the biggest challenge in your life?
- Which 3 topics do you consider as being fulfilled, or satisfied?

Others

Are there any important issues we have not yet discussed today? Is there anything else you wish to discuss? Do you have any questions?

Annex 3: Details on the interviewees and their household composition in each village

Interview code	Nam Mai					
	Gender	Age	HH members			
			Total	Children	Elders	Workers
N01	W	42	7	0	0	4
N02	M	29	9	0	2	7
N03	M	50	8	2	0	2
N04	M	62	13	4	0	6
N05	M	43	8	3	1	4
N06	M	40	6	2	2	2
N07	W	37	4	2	0	2
N08	M	43	4	2	0	4
N09	M	33	13	4	2	7
N10	M	57	8	6	2	2
N11	M	49	5	0	0	5
N12	M	48	9	2	2	5
N13	W	45	6	1	1	4
N14	M	50	14	5	0	9
N15	W	25	4	2	0	2

Interview code	Oudomsin					
	Gender	Age	HH members			
			Total	Children	Elders	Workers
O01	M	40	5	3	0	2
O02	W	36	5	2	1	1
O03	W	52	10	7	1	1
O04	W	44	5	1	1	3
O05	W	42	5	0	0	5
O06	W	41	4	2	0	2
O07	M	32	2	1	0	1
O08	M	45	4	2	0	2
O09	W	45	7	1	1	5
O10	M	54	6	1	2	3
O11	W	51	3	1	0	2
O12	M	55	10	3	0	3
O13	M	64	11	3	2	6
O14	W	48	4	2	0	1
O15	M	32	6	1	0	5

Interview code	Pakha					
	Gender	Age	HH members			
			Total	Children	Elders	Workers
P01	M	54	11	4	2	5
P02	M	52	6	2	2	2
P03	M	44	7	2	1	4
P04	M	30	4	2	0	2
P05	M	60	7	3	2	2
P06	M	25	6	2	2	2
P07	M	65	4	0	2	2
P08	W	18	7	1	1	5
P09	W	39	6	2	1	3
P10	M	24	5	1	2	1
P11	M	32	3	1	0	2
P12	M	21	6	2	2	2
P13	M	36	5	2	1	2
P14	M	58	7	3	2	2
P15	M	32	4	2	0	2

Interview code	Prang					
	Gender	Age	HH members			
			Total	Children	Elders	Workers
PR01	W	24	6	1	2	3
PR02	M	54	6	3	2	1
PR03	M	63	3	0	2	2
PR04	M	52	7	1	2	3
PR05	M	30	5	2	1	3
PR06	W	55	7	2	2	2
PR07	M	25	3	1	0	2
PR08	M	37	6	4	0	2
PR09	W	35	5	3	0	2
PR10	M	56	4	0	2	2
PR11	M	68	5	1	2	2
PR12	M	55	5	0	3	2
PR13	W	66	4	0	2	2
PR14	W	28	4	2	0	2
PR15	W	56	5	1	2	2

Annex 4: Focus groups results per village and gender

Men's focus group in Nam Mai (6 participants)

	Most important	Most difficult to achieve	Easiest to achieve	Probed
Money	5	6	0	
Education	4	0	0	
To be married	4	0	0	
Health	3	4	0	
House	3	0	0	
Food	2	0	3	
Electricity	2	0	0	
Land	1	4	0	
Experience new things	1	0	0	
To have work	1	0	0	
To express your emotions	1	0	1	x
Private business (handicraft)	1	1	1	
Private transport	1	0	0	
Water supply	1	0	0	
Agricultural activities	0	0	0	
Agricultural equipment	0	1	0	
Take care of environment	0	0	0	x
Plan your own life	0	0	2	x
Social relations	0	0	1	x
Spend time with family	0	0	0	x
To be respected by others	0	0	5	x
Participate decisions at village level	0	0	0	x
Participate decisions at household level	0	0	0	x
Play, laugh, enjoy	0	0	0	x
Road	0	2	0	
Livestock	0	0	5	

Women's focus group in Nam Mai (6 participants)

	Most important	Most difficult to achieve	Easiest to achieve	Probed
Health	5	0	0	
Money	4	7	0	
To have work	4	0	0	
Love	4	0	0	
Private transportation	3	5	0	
Unity	2	0	4	
Understanding each other in the family	2	0	0	
Food	1	0	3	
Education	1	0	0	
To spend time with family and friends	1	0	0	x
House	1	6	0	
Long life	1	0	0	x
Healthy environment	1	0	0	x
Land	0	0	0	
Be active	0	0	1	
Play, laugh, enjoy	0	0	3	x
To be respected	0	0	5	x
Plan your own life	0	0	2	x
To have children	0	0	0	
Household equipment	0	0	0	
Road development	0	0	0	
Communication (mobile phone)	0	0	0	
Water supply	0	0	0	
To be patient	0	0	0	
Clothes	0	0	0	
Electricity	0	0	0	
Sanitation	0	0	0	
Express your emotions without fear	0	0	0	x
Participate at the village level	0	0	0	x
To be safe	0	0	0	x
New experiences	0	0	0	x

Men's focus group in Oudomsin (3 participants)

	Most important	Most difficult to achieve	Easiest to achieve	Probed
Love in the family	3	0	0	
To be safe	3	0	0	
Money	2	0	0	
Health	2	1	0	
Experience new things	2	0	0	x
Food	1	1	0	
Education	1	0	0	
To plan your own life	1	0	3	x
Higher price for the rubber	0	3	0	
Private transportation	0	0	0	
House	0	0	0	
Unity (in the village)	0	2	0	
Land	0	0	0	
Work	0	0	0	
Long life	0	1	0	x
To express your emotions without fear	0	0	0	x
To play, laugh, enjoy	0	0	3	x
To be respected by others	0	0	3	x
Decision making at the village level	0	0	0	x
Environment	0	0	0	x

Women's focus group in Oudomsin (6 participants)

	Most important	Most difficult to achieve	Easiest to achieve	Probed
Decisions at the HH level	5	0	0	x
No conflicts in the family	4	0	0	
Land	4	0	0	
Love in the family	3	0	0	
Money	3	6	0	
House	2	0	0	
Health	2	0	0	
High price of rubber	2	0	0	
Experience new things	2	2	0	x
To be respected by others	2	0	6	x
Education	1	0	0	
Work	0	4	0	
Good relations in the village	0	0	0	x
Long life	0	6	0	x
Food	0	0	0	x
Safety	0	0	0	x
To play, laugh and enjoy	0	0	6	x
Spend time with the family	0	0	0	x
Express your emotions without fear	0	0	0	x
To plan your own life	0	0	6	x
Environment	0	0	0	x
Decisions at the village level	0	0	0	x

Men's focus group in Prang (5 participants)

	Most important	Most difficult to achieve	Easiest to achieve	Probed
Land	5	2	0	
Money	5	3	0	
Health	4	2	0	
Private transportation	3	4	0	
Food	3	0	0	
Education	3	0	0	
House	2	0	0	
To be married	0	0	0	
High price of agricultural products	0	0	0	
Work	0	0	0	
Money management	0	0	0	
Social relations in the village	0	0	0	x
Plan your ow life	0	0	0	x
Express your emotions without fear	0	0	0	x
Experience new things	0	0	0	x
To be safe	0	0	1	x
Long life	0	0	2	x
To be respected by others	0	0	0	x
Spend time with family and friends	0	0	4	x
Play, laugh, enjoy	0	0	0	x
Decision at the village level	0	0	1	x
Decision at the HH level	0	0	4	x
Environment	0	0	0	x

Women's focus group in Prang (6 participants)

	Most important	Most difficult to achieve	Easiest to achieve	Probed
Health	6	0	1	
Long life	5	0	0	x
Love in the family/Living with the family	4	0	1	
Livestock	3	3	0	
Education	2	0	0	
Money	2	6	0	
Jewelry (gold)	1	3	0	
Private transportation	1	4	0	
House	1	1	0	
Food	1	0	5	
Land	1	4	0	
Work	1	0	0	x
Social relations in the village	1	0	0	x
To be safe	1	0	1	x
To travel	0	0	4	
Husband and wife helping each other	0	0	0	
Plan your own life	0	0	0	x
Express your emotions without fear	0	0	0	x
Experience new things	0	0	2	x
Play, laugh, enjoy	0	0	0	x
Decision at the village level	0	0	0	x
Environment	0	0	0	x