

Research Semester Project Report



Research Project Title

“A study on customary land and resource use patterns inside Hin Nam No National Park for the process of zonation and the definition of use regulations”

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Abstract

Laos is home to a great diversity of different ethnic groups with unique languages, cultures and customs many of whom are heavily dependent on forest land and resources for their livelihoods. Protected areas are often observed to overlap with the customary use areas of local communities thus restricting people's access and use rights of these areas. Although the law provides for controlled use zones in protected areas where communities are granted limited use rights, the boundaries and respective regulations of these zones often do not match the reality on the ground due to a lack of information on, resource use patterns, specific traditions and the extent of customary use areas.

The Hin Nam No National Park that is located in one of the poorest districts in the country contains parts of the traditional village lands of 19 multi-ethnic guardian villages located in direct vicinity around the park border. Despite being governed by an innovative co-management system that promotes the involvement of guardian village communities in decision-making, a Free Prior and Informed Consent revealed grievances concerning the current zonation and use regulations in some villages.

In the framework of this research project data in two selected target villages were collected on which species of wildlife, NTFP and timber villagers use for which purposes, the spatial distribution of resource use inside the park, specific places inside the park used by villagers that are of management concern and villager's knowledge of and issues with existing use regulations. A methodological approach consisting of three participatory activities implemented in the form of a village meeting and a transect walk to customary use areas of villagers inside the park was tested. Group work with villagers was specifically designed to give women the opportunity to express themselves freely.

The results confirm the dilemma of the Salang ethnic group in the North of the park who presently heavily rely on the sale of valuable NTFP species in order to be able to afford enough rice for the family, however the entirety of their ancestral foraging grounds currently lie in the territory of neighboring villages.

From the piloting of the methodological approach a number of lessons learned and recommendations could be derived which may be considered by future participatory zonation work.

1. Introduction

1.1 Description of the research project topic

In the Lao PDR (hereafter Laos), biodiversity rich ecosystems are mostly found in remote areas where the livelihoods of the local population are still very much intertwined with the natural environment. Especially in the rather mountainous regions of the country forests are an important source for food and medicine and often serve as centers of spirituality (Bourgoin & Castella, 2011). The Lao Government currently recognizes 49 ethnic groups and 160 subgroups most of which show complex interrelationships between ecosystems and cultural systems, in a way that changes in the external environment can result in multiple impacts on the culture, livelihoods and customary practices (FAO & MRLG, 2019). Most ethnic groups practice subsistence agriculture in the form of shifting cultivation due to the scarcity of flat, fertile land as it exists in the valleys where paddy rice cultivation is possible. In

addition, wildlife hunting and the collection of non-timber forest products (NTFP) are important components of the livelihood system and act as a safety net in periods of food scarcity and a complementary income source for villages with sufficient market accessibility (Ketphanh & Soybara, 1998).

Since the 1990s the Lao government implemented land use planning (LUP) to develop commercial agriculture and reduce the rural population's dependence on forest resources. Subsequently, LUP in Laos was criticized as a policy instrument that forces populations to halt shifting cultivation in the name of environmental preservation without providing alternative livelihood options (FAO & MRLG, 2019). Another common government policy has been the resettlement of remote communities into consolidated village clusters to maximize poverty reduction and accelerate economic development. As a result, the relocated villages lost access to their customary land and faced situations of land scarcity (FAO & MRLG, 2019).

Meanwhile, the Lao government puts great emphasis on forest protection. The forestry strategy to 2035 states a goal of 70% forest coverage (Lao Gov., 2021b). Today the country counts 3 national parks, 24 national protected areas (NPAs) and a great number of conservation and protection forests on provincial and district level. These areas may contain entire villages, including their residential and agricultural production areas and customary use zones (FAO & MRLG, 2019). Hence, protected areas are often observed to conflict with the basic livelihood needs and traditional land rights of villagers living in the vicinity of PA boundaries (Castella et al., 2013). Land and resource use inside protected areas is only possible in controlled use zones (CUZs) where communities are granted limited use rights (Lao Gov., 2019b). However, CUZ boundaries and respective use regulations often do not match the reality on the ground due to a lack of information on the boundaries of customary use areas, resource use patterns and specific traditions (Robichaud et al., 2009).

Participatory land/resource use planning including a zonation approach that takes into account both conservation goals and customary use rights could be an effective way to find solutions that better fit the livelihood needs of local communities (Bourgoin&Castella, 2011; FAO & MRLG, 2019).

1.2 Organizational context of the research project

The research project was supported by two international organizations, the Center for Development and Environment (CDE) of the University of Bern and the Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

CDE is Switzerland's center of excellence for sustainable development conducting sustainability research in 32 countries worldwide with the goal to create 'solutions that are socially just and economically viable without exceeding planetary boundaries'. Projects in Laos deal among other topics with land management, land use change, land rights and ecosystems & biodiversity (CDE, 2021). CDE was a signing party to the internship contract and provided a field laptop for the duration of the internship.

In the framework of the project 'Protection and Sustainable Use of Forest Ecosystems and Biodiversity' (ProFEB) GIZ works together with the Ministry of Agriculture and Forestry (MAF) as well as with authorities at the provincial and district level to strengthen the institutional and technical capacities for the transboundary UNESCO World Heritage nomination of Hin Nam No National Park (HNN NP) (GIZ,

2021). During the past 10 years GIZ contributed to the establishment of a co-management approach for HNN NP involving the guardian villages located in direct vicinity to the park (GIZ, 2015). In accordance with the 2021-2025 management plan GIZ supports the revision of the current zonation and the bylaws of HNN NP (Flury, 2021).

GIZ provided literature and materials such as legal documents, technical reports, maps and GIS data as well as contact information of experts. Furthermore, GIZ assisted in the organization of the field research and provided the budget for the field trip.

1.3 Objective of the research project

The objective of this research project was to find out how customary land and resource use patterns of local and indigenous communities could be integrated into the upcoming revision process of Hin Nam No National Park's zonation and use regulations in order for it to be more inclusive towards people's livelihood needs. The results are discussed considering the following three questions:

1. How do customary land and resource use patterns in target villages differ depending on ethnicity and gender and what are implications for CUZ delineation and use regulations?
2. How might recent changes in the legal framework affect the formulation of use regulations for Hin Nam No National Park?
3. Which recommendations can be derived regarding future zonation work?

1.4 What makes the topic relevant for Biosphere Reserves?

Indigenous communities around Hin Nam No National Park have managed and protected the park's forest land and resources in a sustainable way for centuries long before its establishment (De Koning et al., 2017). This research aims to promote the recognition of customary resource use that is consistent with the nature conservation goals of the park and supports a participatory process of decision making that is inclusive to the people whose livelihoods are directly affected by management decisions. Thus, the research objective is also consistent with the biosphere reserves concept as 'a biosphere reserve is a tool to advance the well-being of human beings and nature' (UNESCO, 2021).

Despite the fact of being a national park aspiring World Heritage status, Hin Nam No exhibits a number of similarities to a UNESCO biosphere reserve (BR) especially in terms of governance structure and zoning.

The governance structure of a BR should be inclusive of various stakeholders and guarantee their involvement in decision-making processes (UNESCO, 2021). Since 2010, a co-management approach was developed for HNN with co-management committees on the guardian village, village cluster and district level that regularly come together in annual and quarterly planning meetings (see 2.2) (GIZ, 2015).

HNN's zonation system resembles that of a biosphere reserve whereas the totally protected zone (TPZ) resembles the core zone, the controlled use zone (CUZ) resembles the buffer zone and the buffer zone (BFZ) resembles the transition zone (for more detail see 2.2).

2. Hin Nam No National Park and future UNESCO World Heritage Site

The Hin Nam No National Park in central Laos with an area of 94,121 ha was established by prime ministerial decree in 2020. Most of the area was already protected as National Protected Area (NPA) since 1993, however its size increased by roughly another 5000 ha and its boundaries were changed as it became a National Park (Flury, 2021). The park is located in Khammouane Province, Bualapha District and is contiguous to the East with Phong Nha-Ke Bang National Park in central Vietnam (see fig. 1). Together with the national park on the Vietnamese side Hin Nam No NP covers a major part of one of the largest karst landscapes in Southeast Asia and is proposed to be nominated as transboundary UNESCO World Heritage site for the criteria VIII, IX and X (Department of Heritage, 2022).

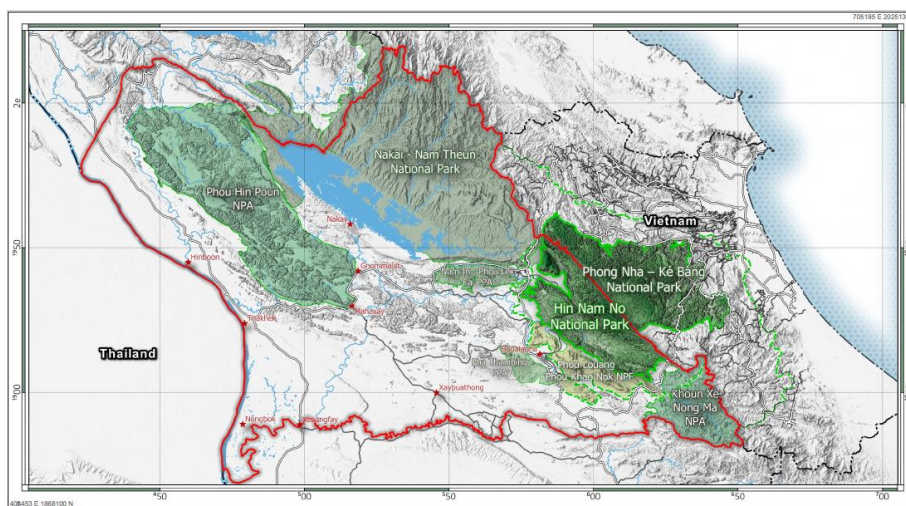


Fig. 1: Location of Hin Nam No NP in Khammouane Province at the border to Vietnam (GIZ, 2021)

2.1 Main characteristics of the ecological, social and economic situation

The national park's characteristic landscape is that of a dissected karst plateau with numerous large limestone caves partly formed by underground rivers and cliffs rising up to 500 m above alluvial plains and flat-bottomed basins supporting mainly limestone forest with smaller areas of sub-montane, tropical moist evergreen forest and mixed deciduous forest (HNN et al., 2015). HNN NP is a site of global significance for the conservation of biodiversity with a unique geomorphology supporting a number of globally threatened species, endemic species and karst specialist species. So far 377 vertebrate species and 452 vascular plant species have been recorded. Among the five globally endangered primate species occurring in HNN are the White-cheeked Gibbon (*Nomascus siki*) and the Black Langur (*Trachypithecus eburnus*) of which the park harbors the largest and one of the last populations worldwide (Erbe, 2020).

Hin Nam No NP is located in one of the poorest districts in the province and in the whole country. There are 19 guardian villages with a total population of about 8000 people located in direct vicinity around the park border, the traditional village lands of which partly extending into the National Park (De Koning et al., 2017). The multi-ethnic population of these guardian villages, mainly consisting of Phouthai, Tri, Makong, Kaleung, Yoy, Nguan (Viet) and Salang ethnic groups, exhibits a great variety of different livelihoods with some of them relying mostly on hunting and gathering while others practice upland rice

cultivation in a rotational slash-and-burn system (GIZ, 2015). Presently, the trade with non-timber forest products (NTFPs), wildlife and valuable timber species is the main source of income though the population lives mostly from subsistence farming (Eggenberger & Chautems, 2018). According to the Lao government all 19 guardian villages are classified as ‘poor’ with more than half of all households having an income below 180,000 LAK (~18 Euros) /month/capita and some even as ‘destitute’ (less than 60,000 LAK/month/capita) (HNN et al., 2015).

2.2 Administrative Structure, Important Stakeholders and Management

Hin Nam No NPA has been the first protected area in Laos to be driven by a co-management system based on a co-management plan elaborated in a participatory approach with different stakeholders (see fig. 2). The plan is approved at the national level and reviewed every 5 years (HNN et al., 2015). The co-management structure mainly consists of the steering committee of the Provincial Agriculture and Forestry Office (PAFO) and the National Park Office (NPO) who exchange and collaborate with so-called ‘co-management committees’ on district (DCMC), village cluster (VCCMC) and village (VCMC) level (see fig. 2). A VCMC board consists of a democratically elected chairman and vice chairman, the chief and vice chief of the village and each one representative of the village ranger force, the Women’s Union and the village tourism service groups. Each committee is elected for a period of three years (Bualapha District Government, 2015). All stakeholders within the co-management committees regularly convene in planning meetings and technical workshops/trainings mostly provided by the GIZ project in collaboration with the NPO. The latter includes the National Park Management Unit (NPMU) which is divided into five working groups, namely 1. Patrolling & law enforcement, 2. Biodiversity monitoring & research, 3. Ecotourism development, 4. Area management & livelihood improvement and 5. Community outreach.

Hin Nam No Co-Management Structure

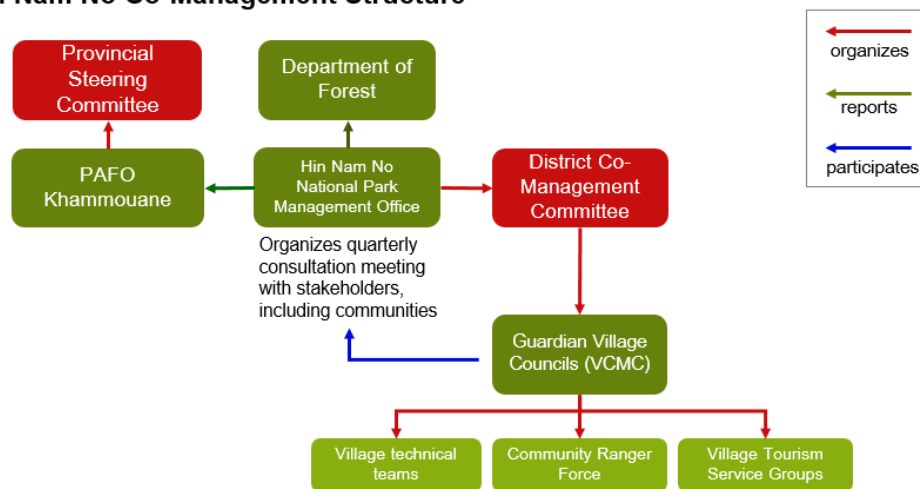


Fig. 2: Hin Nam No NP’s administrative structure and involved stakeholders (GIZ, 2022)

In 2014 village rangers started their activities in patrolling, trail mapping and wildlife monitoring (HNN et al., 2015). On the basis of trail maps from village ranger monitoring and an interrogation of villagers on

which areas they need access to for resource use, a first participatory zonation was carried out by GIZ in collaboration with IP Consult in 2015. The result was a zonation system that split the NPA into Controlled Use Zones (CUZ) and Totally Protected Zones (TPZ) (fig. 3). While the TPZ comprises mostly inaccessible areas of high conservation value the CUZs should represent the traditional village lands of surrounding villages prior to the establishment of the park where the customary rights of the respective villages can be exercised including NTFP collection, limited timber harvesting and hunting for subsistence, but no agriculture (De Koning & Dobbelsteijn, 2015; Bualapha District Government, 2015).

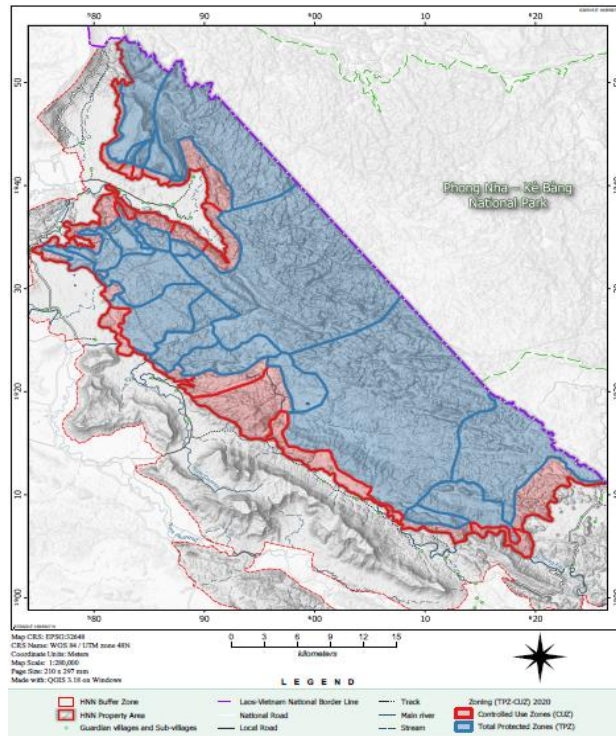


Fig. 3: Current zoning of Hin Nam No NP (GIZ, 2021)

Until the Hin Nam No NPA became a national park in 2020 several efforts to refine both zonation and use regulations were undertaken but without lasting impact as the participatory zonation approach designed by Wiedenmann & Lorfaiong (2018) was abandoned and a PLUP conducted by the Integrated Conservation of Biodiversity and Forests (ICBF) project in 2019 did not include areas inside Hin Nam No.

In preparation of HNN's UNESCO World Heritage nomination a Free Prior and Informed Consent (FPIC4WH) was carried out in 2020/21 designed to solicit the voices of women and indigenous communities. Village consultations revealed that most villagers still lack a solid understanding of the national park concept and are unsure about regulations and the exact location of boundaries (Flury, 2021).

Currently, a newly defined buffer zone awaits its approval that shall comprise the guardian village lands outside of the park as well as parts of other protected areas nearby (see fig. 3).

3. Theoretical Orientation

The theoretical basis for the field research draws partly on the methodologies and lessons learned from past participatory work done with villagers around HNN such as technical reports on participatory zonation work by De Koning & Dobbelsteijn (2015) and Wiedenmann & Lorfaïjong (2018) as well as methods used during the FPIC4WH process described in the 'Hin Nam No FPIC toolbox' (Coppens, 2021) and methods used for a socio-economic survey in the HNN guardian villages by Eggenberger & Chautems in 2018.

For the field methodology elements from a number of tools were integrated that are commonly used in natural resources management involving communities and that have been proven effective in the HNN context such as participatory mapping (Lynam et al., 2007) and the transect walk (FFI, 2013). The concept of the latter was amended by the Ecosystem Diagnostics Analysis (EDA) approach (Ibisch & Hobson, 2014).

In addition, a number of legal documents containing relevant information on zoning and regulations inside protected areas have been reviewed including the Land Law (Lao Gov., 2019a), Forestry Law (Lao Gov., 2019b) and its annexes, Wildlife and Aquatic Law (Lao Gov., 2007), the Forestry Strategy to 2035 (Lao Gov., 2021b), the Protected Area Decree No. 134 (Lao Gov., 2021a) and the Guideline on Zoning in Protected Areas (MAF, 2017).

4. Methodology

The research project can be structured into three main parts:

- 1) A **desk study** that mainly consisted of a literature and data review. Important steps were reviewing the results from the FPIC4WH for each guardian village, viewing land use patterns in relevant areas on remote sensing data and studying legal texts that define the use of protected areas and customary use as well as past work done on zoning and defining use regulations in Hin Nam No National Park.
- 2) A **field study** which involved the selection of target villages and corresponding areas of interest (AOIs), the development of a methodology to be tested during the work in the field and finally the implementation/piloting of the approach within the selected villages.
- 3) An **evaluation** of the data collected during the field mission as well as a synthesis taking into account all information gathered during the desk study and the field study including recommendations for future CUZ planning.

4.1 Selection of target villages

The two target villages were chosen using a set of criteria that were elaborated on the basis of data collected during the FPIC process in 2020/21:

1. History of resettlement
2. History of agricultural encroachment

3. Ethnic minority or not
4. Representation of traditional village lands by current CUZ
5. Livestock entering CUZ or not
6. Spiritual use (e.g. cemetery, place of worship) inside CUZ

Information for criterion 2 was derived from three Sentinel-2 (level-2A) image composites with 10m x 10m spatial resolution from the dates 20.02.2019, 05.05.2020 and 16.03.2021 covering the entire extent of the national park. The scenes were downloaded from the Copernicus Open Access Hub, a platform for the free distribution of data products derived from all Sentinel satellites provided by the European Space Agency (ESA). The image composites were created in SNAP software by using the mosaicking algorithm. Changes in the land cover were detected in QGIS by using different color composites and indices like RGB (true color composite), NIR (near-infrared), NDVI (Normalized Difference Vegetation Index) and NBR (Normalized Burn-Ratio).

The selection of AOIs for the transect walk inside the park was done following the same method.

4.2 Approach for field research

The four research activities to be implemented in the target villages, as initially planned, can be divided into village meetings with focal group work on the first and the last day and two days of transect walk to the AOIs inside the park in between.

For the village meeting one representative per household should attend if possible whereas the number of women and men should be balanced around 50/50. The appointed field team consisting of staff from responsible authorities such as the National Park Office (NPO) and the District Agriculture and Forestry Office (DAFO) should facilitate the implementation of village activities by supervising groups, explaining activities and taking photos.

In the following the planned procedure for each research activity is described:

1. Exercise on forest resource use

Purpose:

- Get an in-depth understanding about which species from the park are used, to what extent resources are used commercially and the current implementation of the authorization process for the extraction of resources with protection status.
- Get information on priorities in resource use of men and women and between different ethnic groups.

Preparation:

- Build groups – the number of groups depends on the total number of villagers attending, however there must be at least one women's group. Also, groups should be homogenous in terms of ethnicity in case the village consists of more than one ethnic group.

- Prepare on large sheets of paper (A0) tables with the headers 'NTFPs', 'wildlife' and 'timber' and sub-headers 'family use' and 'for sale'. On the backside of each sheet draw another table with the same headers and the sub-headers 'need authorization' and 'do not need authorization'.
- Distribute moderation cards in the colors red for wildlife, green for NTFPs and blue/yellow for timbers

Procedure:

1. Within each group villagers collect all the species on moderation cards that they extract from the park for own consumption/use, for sale and for special occasions like house construction, festivals, ceremonies or worshipping. Then use the cards to fill the table on the front side of the sheet.
 - a. *Note: Each group is supervised by one field team member who helps with writing.*
2. Arrange the species cards according to how frequently they use them from most frequently at the top to least frequently at the bottom.
3. See the table on the backside of the paper and let the group fill the table again with their species cards.
4. The field team member supervising the group conducts a focal group interview on the authorization process by filling out a questionnaire (see 'Questions for forest resource use exercise' in annex)

2. Participatory land and resource use mapping

Purpose:

- Get information about the extent and distribution of areas used by villagers inside the park.
- Understand at what points the villagers struggle with the current zonation.
- Record the villager's wishes and suggestions regarding a revised zonation.

Preparation:

- Build groups following the same principle as in the previous activity (or simply stay in these groups)
- Each group gets a printed map (A1) with important landscape features like the village location, rivers, roads, mountains, location of valleys and floodplains (called 'kuan'), caves and the current boundary and zonation of the relevant section of the NP
- Distribute markers with different colors to each group

Procedure:

1. The field team explains the map of the village's territory inside and outside the NP according to the current park boundary and zonation.
2. Let each group draw (with a different color each)...
 - Where they go for collecting NTFP, firewood
 - Where they go for hunting, fishing
 - Where they go for harvesting wood (for construction)
 - Where they lead their livestock for grazing

- Where they have paddy, upland fields
 - Where they have places of worship and ancestral grounds
 - Which areas could be used for tourism business in their opinion
3. Each group should think about how the boundary of their CUZ could be changed to better fit their needs. Then they draw their suggestion for a new CUZ with a red marker on the map.
 4. Each group (women's group first!) presents their map and explains their decision for the improved CUZ by answering the following questions:
 - Why would you change the boundary this way?
 - Do you think the surrounding villages would agree? If not, what compromise could you offer them to come to an agreement?

3. Transect Walk to places inside the NP that are used by villagers

Purpose:

- Detect and record/verify recent and past human-induced changes in the ecosystem that potentially conflict with nature conservation goals.
- Collect data on the location, extent, current status and history of places that play an integral role in the traditional livelihoods of villagers.

Preparation:

- Select AOIs on the basis of ...
 1. a remote sensing analysis using various available data sources such as Sentinel-2 imagery, Google Satellite and data from Global Forest Change (Hansen et al., 2013)
 2. Specific places mentioned by villagers during the FPIC4WH consultations that are (presumably) inside the park and have high livelihood importance and/or conflict potential such as agricultural fields, gardens or places of worship
 3. Other existing information sources like maps and reports
- Map out the AOIs that could be spotted on remote sensing data/maps with polygon shapefiles in QGIS and load these together with the current park boundary & zonation layer and other helpful landmarks for orientation such as caves, rivers and valleys into a GPS device

Procedure:

1. At the village, appoint 2 village guides (preferably HNN rangers) and together plan the route for the transect walk including a discussion on which AOIs could be the most interesting ones and how many of them can realistically be visited within the given time frame
2. For each AOI visited during the transect walk fill in the 'Mapping Protocol – Areas of Interest (AOI)' (see annex) and walk around the area to record the circumference by using GPS. Also record the walked tracks, take photos and make waypoints at interesting locations.

4. Meeting on NP use regulations

Purpose:

- Get information on how familiar men and women are with the park regulations

- Get information on how results might differ between men and women by giving women the opportunity to speak independently
- Get to know which NPA regulations were problematic for the villagers and how some regulations might need to be changed

Preparation:

- The field team collects different activities of land/resource use that are mentioned in the park and village regulations and/or commonly practiced around Hin Nam No NP on moderation cards. Cards with hunting activities are red, NTFP collection cards are green, wood extraction cards are yellow and cards for agricultural activities and spirit worshipping are white.
- draw a table on a large sheet of paper (A0) with the headers 'allowed', 'allowed with authorization', 'forbidden' and 'not clear/unsure' and pin it on a wall in the meeting room.

Procedure:

The meeting shall be conducted with women and men separately. Women go first, then the procedure is repeated with the men.

1. Present cards with an activity written on them such as 'hunting with snares' one after another to the villagers and let them vote for what they think in which of the four categories the activity belongs. Pin the activity card inside the column that won the vote (exp: 'hunting with snares' → forbidden).
(field team takes a photo)
2. All activity cards are rearranged by the field team according to the regulations in the HNN NPA bylaws from 2015, recently updated species lists from the annexes of the Forestry Law and Aquatic&Wildlife Law, and village use regulations from 2019 (= latest sets of regulations available). Activities currently not clearly regulated are put into the column 'not clear/unsure'.
3. Ask villagers which activities they would like to be allowed/prohibited in order for the regulations to better fit their livelihood needs and let them consult amongst each other.

Guiding questions:

- Why do we want to allow this activity?
- When arguing for allowing a certain activity, what tradeoff can be found to minimize the damage on the environment?

Let the villagers rearrange the activity cards and explain their decision.

(Members of the field team make photos of the result and take notes from discussion)

5. Results

The two chosen target villages in which field research was conducted were Nongma village of the Makong ethnic group and Vangmaner sub-village of the Salang ethnic group, both of them belonging to the Mon-Khmer language family. Whereas the main concern reflected by reports and satellite imagery in the case of Nongma village is agricultural encroachment into HNN's CUZ mostly by means of slash-and-burn agriculture, the Salang people are former hunters and gatherers who had to move out of HNN's forests after the communist party took over in 1975 and are living in their current village since 2002 (Eggenberger & Chautems, 2018).

Nongma Main Village, where the research activities were carried out, is located in the very South of Hin Nam No NP with an on-the-ground distance to the Vietnamese border of about 5km and to the nearest NP border of about 3-6km (see fig. 4). The landscape around the village is characterized by a dense mosaic of shifting cultivation plots. Trails and roads leading to the NP are relatively flat and make the park easily accessible.

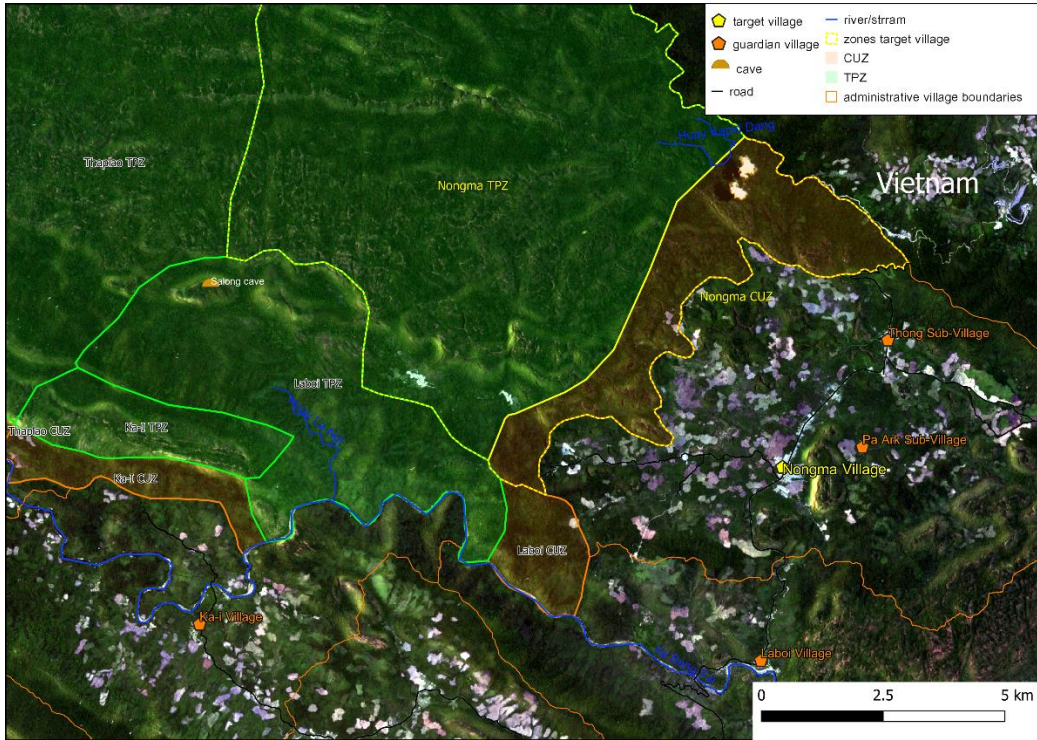


Fig. 4: Location map of Nongma Village and its allocated territory inside the park (background: Sentinel-2; zonation shapefile was courtesy of GIZ)

The Vangmaner sub-village (hereafter called Salang Village) is located in the northern part of Hin Nam No NP with a distance to the park boundary of app. 1km to the south-west and 1.5km to the north-east (see fig. 5). Vangmaner (Main) Village is located 1km to the West whereas the Nam Huk stream has to be crossed over a bridge. Adjacent to the North is an area for paddy rice production that was allocated to the Salang by the government which has not been cultivated for years. Only small tracks are leading to the park boundary and take steep slopes as soon as entering the NP.

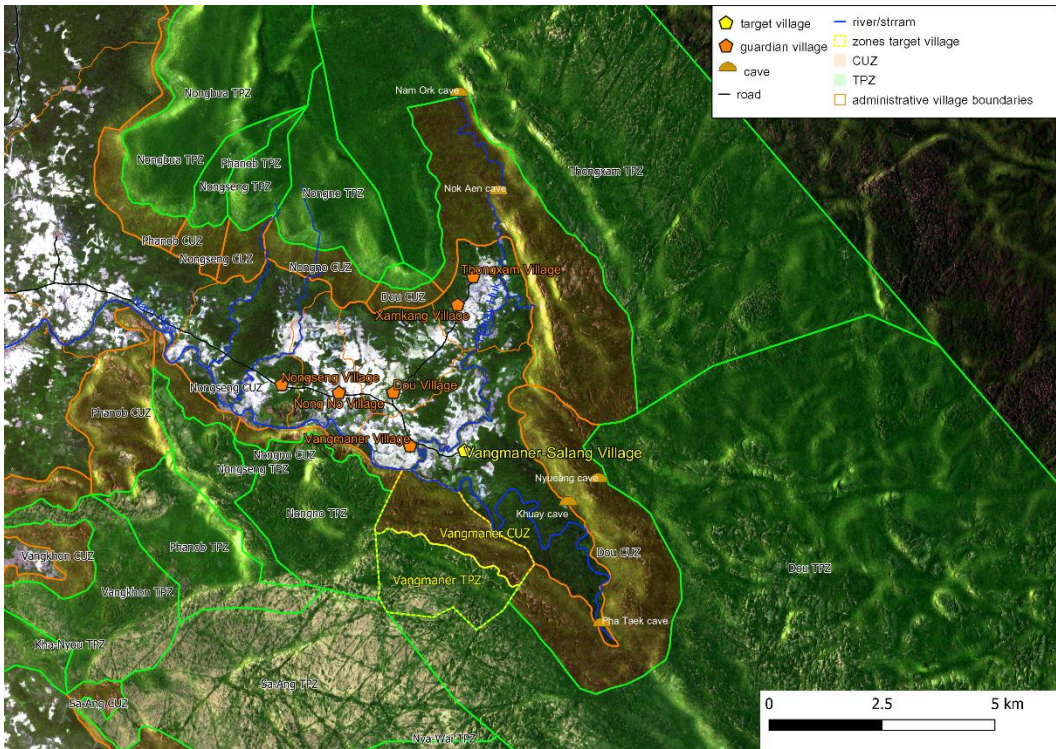


Fig. 5: Location map of Wangmaner Sub-Village (Salang Village) and its allocated territory inside the park (background: Sentinel-2; zonation shapefile was courtesy of GIZ)

Field research was conducted between the 10th and the 21st of December 2021 whereas the planned methodological approach was implemented on three full days per village (one day of activities with villagers and two days transect walk inside the park) first in Nongma Village (11th-14th) and afterwards in the Salang Village (17th-19th).

5.1 Exercise on forest resource use

In the two villages 68 species and species groups were mentioned in total of which 33 are animal species, 25 are NTFP species and 10 are timber species. The most widely used wild animal species in general seem to be bamboo rat, wild boar, Chinese goral and squirrels while the most commonly used plant species are Lao lady palm, Chinese rattan palm, Westerhout's Sugar Palm, wild orchids and the dragon's blood tree as these species were mentioned by almost all groups in both villages. All 10 timber species were brought up in Nongma village whereas none were mentioned in the Salang village.

5.1.1 Nongma Village

This was the first activity in Nongma village with a total of 51 participants of which 24 were women and 27 were men. With 62 households in the village the participation was about 82%. Participants were split up into three groups: one female and two male groups.

The most frequently extracted species, and therefore, the species with the highest livelihood priority, in Nongma village are frogs, squirrels, wild orchids, Lao lady palm, Chinese rattan palm, broomgrass and the timber species crape myrtle (*lagerstroemia spp.*) and bishop wood (*Bischofia javanica*) as they were indicated as such by at least 2 out of 3 groups during the activity (see fig. 6) (note: priority species are the first three species that are most frequently used identified in step 2 of the procedure).

| Species (group) name | Dominant use type / purpose of use | Mentioned by ... group(s) | Priority species in ... group(s) |
|--|------------------------------------|---------------------------|----------------------------------|
| Wildlife | | | |
| Fish spp. | subsistence | 1/3 (m) | 1/3 (m) |
| Frog spp. | subsistence | 2/3 (m, f) | 2/3 (m, f) |
| Mouse, rat spp. | subsistence | 1/3 (f) | 1/3 (f) |
| Snake spp. | subsistence & sale | 1/3 (m) | 1/3 (m) |
| Civet spp. | subsistence & sale | 1/3 (m) | 1/3 (m) |
| Squirrel spp. | subsistence | 3/3 | 3/3 |
| Muntjac spp. | subsistence | 2/3 (m) | 0/3 |
| Asiatic Brush-tailed Porcupine | subsistence & sale | 2/3 (m) | 1/3 (m) |
| Chinese goral / Indochinese serow | subsistence | 2/3 (m/f) | 0/3 |
| Indomalayan Bamboo Rat | subsistence & sale | 3/3 | 1/3 (m) |
| Wild boar | subsistence | 3/3 | 1/3 (m) |
| Pale-capped pigeon | subsistence | 1/3 (m) | 1/3 (m) |
| NTFP | | | |
| Spiny bamboo | subsistence | 2/3 (f, m) | 2/3 (f, m) |
| Dragon's blood tree (<i>Dracaena cambodiana</i>) | sale | 2/3 (m) | 1/3 (m) |
| Wild orchid spp. | sale | 3/3 | 2/3 (f, m) |
| Lao lady palm | subsistence & sale | 3/3 | 3/3 |
| Chinese rattan palm | subsistence & sale | 3/3 | 2/3 (f, m) |
| Westerhout's Sugar Palm | subsistence & sale | 3/3 | 1/3 (m) |
| bromgrass | sale | 3/3 | 2/3 (f, m) |
| Wild & golden cardamom | sale | 3/3 | 1/3 (f) |
| Timber | | | |
| Bishop wood | subsistence | 3/3 | 3/3 |
| Crape myrtle spp. | subsistence | 3/3 | 3/3 |
| Mun ebony (<i>Diospyros mun</i>) | sale | 2/3 (m) | 0/3 |
| Champa Pa (<i>magnolia bailloni</i>) | subsistence & sale | 2/3 (m) | 0/3 |
| <i>Sindora siamensis</i> | subsistence & sale | 2/3 (m) | 1/3 (m) |
| <i>Hopea ferrea</i> | subsistence | 1/3 (m) | 1/3 (m) |

Fig. 6: Species commonly used by Nongma villagers (species mentioned by at least 2/3 groups and/or were indicated as priority species at least by one group), priority species in bold; f = women's group, m = men's group

According to all three groups an authorization procedure for resource use inside the park is currently only implemented for timber species (and cardamom mentioned by one male group). During focal group interviews villagers pointed out that in case they need to cut wood for house construction they have to ask the village chief or other village authorities for permission one day in advance. There is a chainsaw in the village that can be rented from the village chief for this purpose (otherwise the possession and use

of chainsaws is forbidden). There are no clear rules on which species and what amount of wood can be cut. In general, they are allowed to take as much wood as they need to complete the house which is usually about 5 logs as explained by one male group.

For wildlife and NTFP species there is no authorization process or control mechanism in place. The amount of species extracted depends on seasonal availability, villager's consumption needs and market demand for species that are sold as explained by one male group. Two of the three groups (one male and one female) felt that all the species that they regularly extract decreased and that they have to go deeper into the forest than before to get the amount that they need. However, one male group stated that monkey species like langurs actually increase. The two male groups answered that they know which species are forbidden to extract and which tools are forbidden to use but that does not change anything as they need them for their livelihoods. They do not ask for permission, because they are afraid to get punished which is well known by the village chief.

As there is no market in the area villagers only sell their goods to merchants and traders (mostly Lao and Vietnamese) from the district capital and elsewhere who come to the village. Oftentimes, villagers do not take money but rice as an exchange. The annual income from sale of wildlife, NTFP and timber per person as indicated by the villagers ranges from 50 000 Kip (~5 Euros) in the female group to 100 000 – 200 000 Kip (~10 – 20 Euros) in one of the male groups (note: 10 000 Kip equals about 1 Euro).

5.1.2 Salang Village

In the Salang Village the activity was carried out second after the participatory mapping. A total of 34 villagers participated of whom 18 were men and 16 were women. Every household in the village sent a representative so participation was 100%. Villagers were split into a female and a male group.

The species with the highest livelihood priority for the Salang villagers were frogs, mice/rats, civets, Asiatic brush-tailed porcupine, bamboo rat, mushrooms, spiny and waya bamboo, dragon's blood tree, wild orchids, Lao lady palm, Chinese rattan palm and king fern as indicated by at least one of the two groups (see fig. 7).

| Species (group) name | Dominant use type / purpose of use | Mentioned by ... group(s) | Priority species in ... group(s) |
|---------------------------------------|------------------------------------|---------------------------|----------------------------------|
| Wildlife | | | |
| Frog spp. | subsistence & sale | f | f |
| Mouse, rat spp. | subsistence & sale | both | both |
| Civet spp. | subsistence & sale | m | m |
| Asiatic Brush-tailed Porcupine | subsistence & sale | m | m |
| Chinese goral / Indochinese serow | sale | both | / |
| Squirrel spp. | Subsistence & sale | both | / |
| Indomalayan Bamboo Rat | subsistence & sale | both | f |
| Red-shanked douc langur | subsistence & sale | both | / |
| Wild boar | subsistence & sale | both | / |

| NTFP | | | |
|---|-------------------------------|-------------|-------------|
| Mushroom spp. | subsistence & sale | f | f |
| Spiny bamboo | subsistence | m | m |
| Waya bamboo | subsistence | both | m |
| Membranous bamboo | subsistence | both | / |
| Dragon's blood tree (<i>Dracaena cambodiana</i>) | sale | both | both |
| Wild orchid spp. | sale | both | both |
| Lao lady palm | subsistence & sale | both | both |
| Chinese rattan palm | subsistence & sale | both | both |
| Westerhout's Sugar Palm | subsistence | both | / |
| King fern | subsistence & sale | f | f |
| Timber | | | |
| No timber species mentioned | | | |

Fig. 7: Species commonly used by Salang villagers (species mentioned by both the men's and women's group and/or were indicated as priority species at least by one group), priority species in bold; f = women's group, m = men's group

No timber species from the park are used according to the villagers (although the male group put species of bamboo into this category).

The focal group interviews revealed that the traditional foraging grounds of the Salang people inside the park currently belong to the territories of Dou and Thongxam village. The authorities of these villages want the Salang to ask for permission every time they enter and extract something three days in advance which was stated by both groups. There is no limit given by the authorities of the respective villages on how much can be extracted. The women's group explained that they do not tell the authorities when they go hunting or collecting Lao lady palm or Chinese rattan palm shoots. However, when they go for dragon's blood wood or orchids it can be dangerous not to inform the authorities in advance because if they get caught by the village police in the forest all collected NTFPs get confiscated and they are being fined 100 000 Kip per person.

While the women's group stated that it is not forbidden to use snares and guns as long as they pay a certain amount of money per month to the village chief of Vangmaner (main) village the men said that according to the village regulations the use of traps and weapons made of metal and using electricity is prohibited. Also whereas the women stated that there is a regulation on seasonal use but they would not know the details, the men explained that fishing is not allowed during the spawning season except when the river overflows its banks.

Both groups stated that most adults of the village go hunting and collecting NTFPs together in small groups in the forest for about 3 to 4 days once a month during the dry season. Per one day an amount of about 10-20kg dragon's blood wood and 5-10kg orchids per person can be collected. While the price for one kilogram of dragon's blood wood is usually around 10 000 Kip the price for orchids can vary according to the variety from 5000 Kip to 40 000 Kip per kg. Monkey and ungulate species range from 20 000 Kip to 40 000 Kip per kilogram. Especially the red-shanked douc langur is bought by people from Dou village who come to the Salang Village. According to the male group within one week Salang villagers can generate an income of about 400 000 – 500 000 Kip per household during the dry season. Half of this amount can be earned by selling orchids.

5. 2 Participatory land and resource use mapping

5.2.1 Nongma Village

Participatory mapping was conducted as second activity after lunch. The number of rejoining participants decreased drastically to a total of 22 consisting of 9 women and 13 men.

While presenting the map of Nongma's village lands outside and inside the park with the help of a knowledgeable village ranger it turned out that some of the valleys and cliffs on the map were in the wrong place and/or were spelled incorrectly. In order to correct this the local names were written on moderation cards according to the advice of the villagers and stuck on the projector image on the wall where they belong.

For the group work villagers were split into one male and one female group. Each group received two printed maps in A3 format in order to avoid overloading one map as it was not possible to print in a larger format.

It was decided not to ask the villagers to draw the locations of paddy and upland fields as planned in step 2 of the procedure in order to not make anyone feel guilty or caught but also because these plots can usually be identified quite easily on remote sensing imagery. The dashed lines on the resulting maps are the routes that villagers walk to get to the different places inside the park (see fig. 8).

The resulting maps in fig. X show that Nongma villagers enter the TPZ, mainly for NTFP collection and also use areas inside the park that are outside their allocated territory (marked by yellow dashed line) to collect NTFPs (maps 1a and 2a) and for spirit worshipping (map 1b).

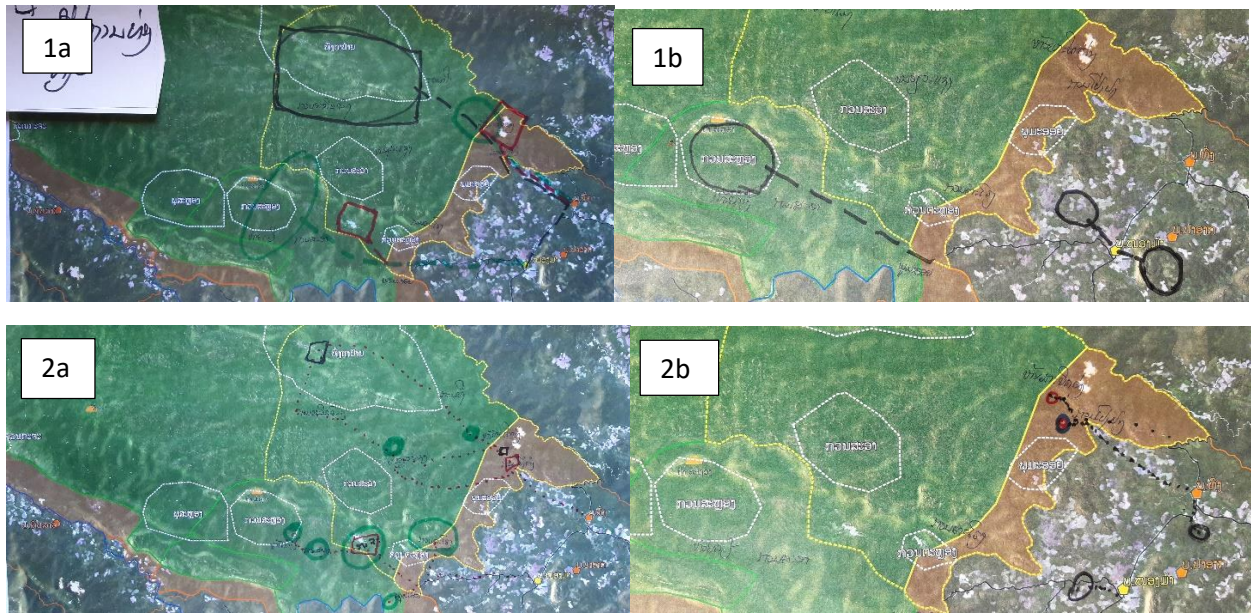


Fig. 8: Resulting maps of the female group (1a, b) and the male group (2a, b) in Nongma Village. Explanation of colors and shapes, map a: green circle = NTFP collection, red square = livestock grazing, black square = potential tourism site; map b: red circle = wildlife hunting, blue circle = timber extraction, black circle = place of worship

Steps 3 and 4 in the procedure were not implemented as planned in the groups but together in the plenary meeting due to time constraints. One male ranger and one (very confident) woman suggested the improved CUZ boundary for their village (see fig. 9) for mainly two reasons:

- Shift the CUZ boundary further into the park as the area including the valleys Kuan Kaja, Kuan A-Saeng and Kuan Ping are still considered important foraging grounds, especially concerning NTFP collection for subsistence
- Establish the southern part of the adjacent Laboi Village's territory inside the park as joint use zone between the two villages as the land and resources there traditionally have been (and still are) used by both villages

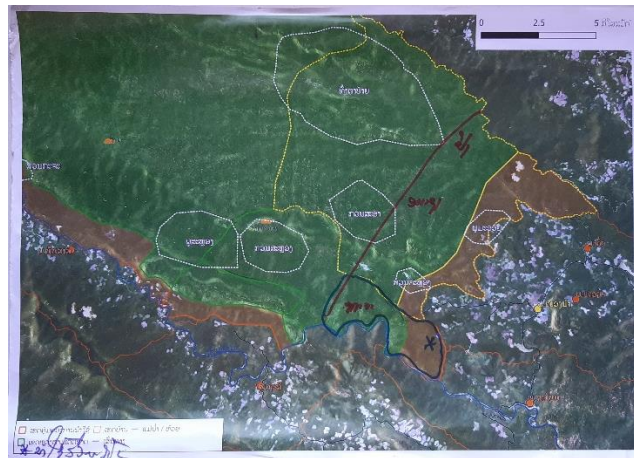


Fig. 9: Suggestion for a revised CUZ boundary, Nongma Village

Concerning the second question of step 4 about what could be done to come to an agreement with other villages about the new zonation they responded that they feel positive that Laboi Village would agree with their proposal and that it could be negotiated that also parts of Nongma CUZ can be used by Laboi villagers.

5.2.2 Salang Village

Participatory mapping was the opening activity of the village meeting in the Salang Village. The order was changed in order to make sure that there is enough time for the exercise being implemented according to plan after facing time issues in Nongma village.

The procedure of jointly correcting the locations and local names of valleys and cliffs on the map was done in the same way as before in Nongma village with the help of a village ranger who had a very good understanding of maps.

Fig. 10 shows that Salang people do not use the area within the park allocated to Vangmaner Village (marked by yellow dashed line) at all. Instead the used areas concentrate east and south-east of the village inside Dou Village territory reaching far into the TPZ. Map 1b also shows that there are several places of worship inside the park approximately 7 to 8km north of the village that currently belong to Thongxam Village's territory.

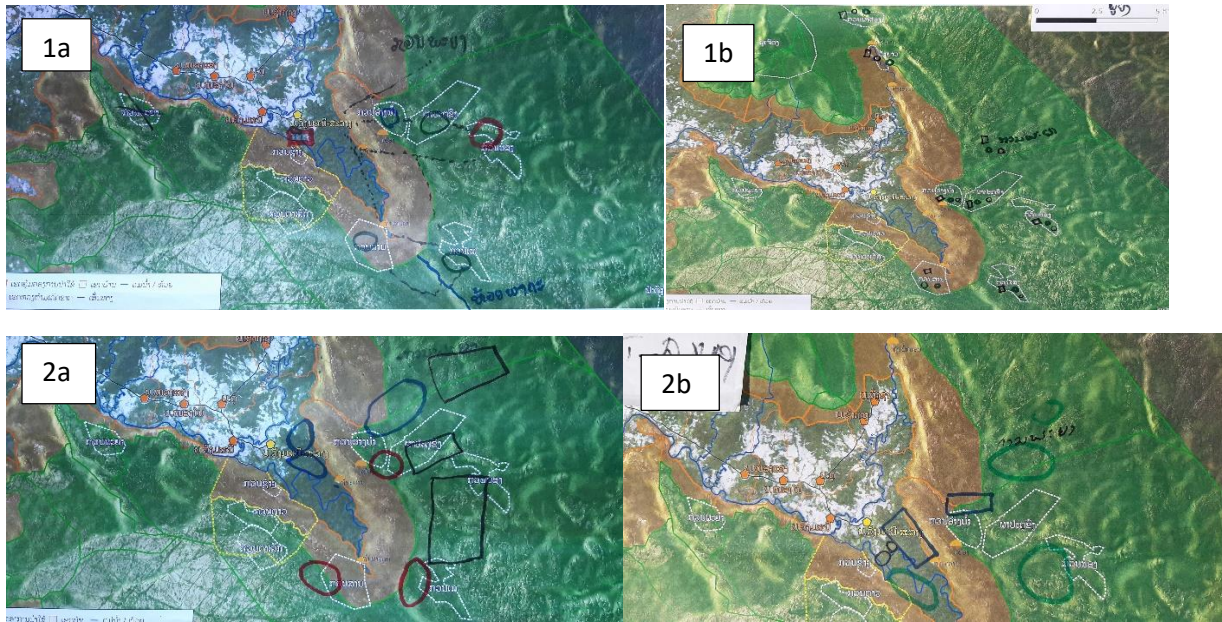


Fig. 10: Resulting maps of the female group (1a, b) and the male group (2a, b) in the Salang Village. Explanation of colors and shapes: green circle = NTFP collection, red/blue square = livestock grazing, black square = potential tourism site, red circle = wildlife hunting, blue circle = timber extraction, black circle = place of worship

As before in Nongma Village steps 3 and 4 had to be done in the plenary again due to a lack of time. About 5 men and 4 women contributed actively to the discussion. After identifying three priority areas (see fig. X) that the villagers nominated for becoming their CUZ, a voting was conducted to see which area is most important to the villagers. The area to the East encompassing Kuan Nam Ang valley, Patou Khong cliff and Kuan Nong valley won with 11 votes (see 1., fig. 11), second place was the area in the North consisting of Pha Song cliff and Vang Yao valley with 2 votes (see 2., fig. 11) and the third area in the South covering Kuan San valley did not receive any votes (see 3., fig. 11). The rationale for this result given by a young village ranger was that...

- Natural resources in the chosen area are still abundant compared to the other areas, especially with regard to NTFPs that they collect to generate family income and to buy rice (e.g. orchids, dragon's blood wood).
- The area is comparatively close to the village.
- Moist forests in higher elevations provide water also during dry season.

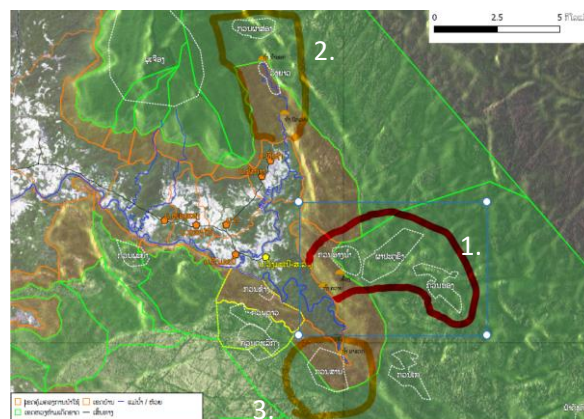


Fig. 11: Suggestion for a formally recognized CUZ by Salang Villagers for the Salang Village

Still, all three areas represent the Salang people’s ancestral grounds including cemeteries and places of worship so it was agreed that they would like to at least be able to continue spiritual use also in the other two areas.

Concerning the question on finding a compromise with other villages the Salang had no idea what to offer for negotiation and did not believe that Dou Village would agree with the boundaries of their suggested CUZ.

5.3 Transect Walk to places inside the NP that are used by villagers

In both target villages the transect walk covered two days with one overnight stay in the forest.

5.3.1 Nongma Village

The field team split up into two teams in order to be able to survey two different areas. Each team recorded information on two areas of interest by means of GPS ground trothing and filling out the AOI mapping protocol (see fig. 12).

Team 1 went with a ranger from Laboi village as, according to the villagers, the chosen AOIs fall inside the Laboi TPZ whereas according to the current version of the park zonation those areas are located within the Nongma TPZ. The main destinations of team 1 were two large areas of cleared land clearly visible on satellite images that turned out to be the farmland of the village chief of Nongma Village (see T1_AOI_1 and T1_AOI_2 in fig. 12). An old logging road that was extended by the village chief broad enough for a pickup car lead from Nongma main village all the way to the AOIs.

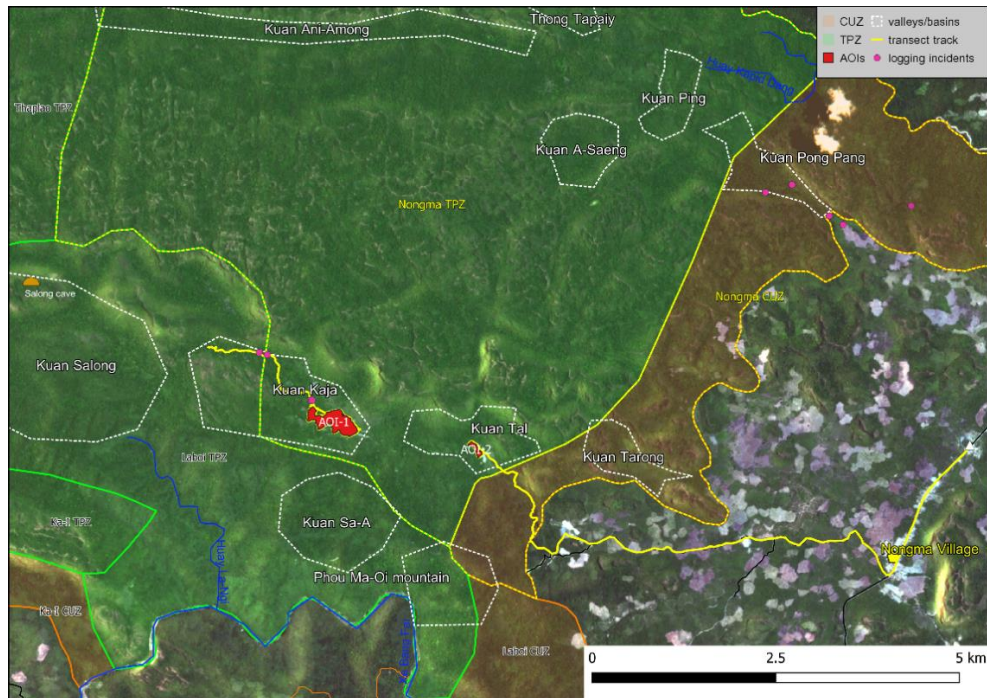


Fig. 12: GPS-recorded transect track and location of AOIs for which information were recorded inside the Nongma and Laboi village territory

With the car it took approximately one hour to get to AOI 1 which is located about 3.5km from the park boundary. The area covers 13.5ha encompassing two paddy fields with an area of 2.6ha and 0.6ha respectively, fallow areas supposedly from slash-and-burn rice cultivation North and South of the paddies covered by grasses and shrubs, and a compound with a small Lao-style stilt house, a granary and a goat, a cow and a chicken stable. A number of 70 cows and 8 goats (according to the village chief himself) are grazing freely on the area. Water is pumped from a stream further South through a hose to the farm.

AOI 2 is located about 1.5km East of AOI 1 and 1.7km away from the park boundary. It took 15 minutes to get from AOI 1 to AOI 2 by car. The area consists mainly of a paddy field with a size of 1.2ha, a small hut, a slash-and-burn fallow South of the paddy, an old cassava plot and a buffer of 10-20m grassland (mostly siam weed) around the paddy.

Mr. Khamboun the village chief, who was interviewed later at his house, spoke openly about his land inside the park. The areas indeed belong to the Laboi Village territory but the village chief of Laboi village officially granted him permission to use them for agricultural purposes back in 2003. Mr. Khamboun further explained that the area was already fallow forest before he cultivated it being used for shifting cultivation since the Vietnam War. He does not plan to expand the use area. In case he would have to give up on his land, he requests a compensation from the state.

Apart from the AOIs, team 1 also discovered a logging trail continuing further to the north-west from AOI 1 along the river bed of the Kaja stream which does not have water during dry season (see fig. 12). Both new and old logs could be found along the trail as well as motorcycle traces in the sand. The ranger from Laboi Village told us that Mr. Khamboun was extracting logs from this area and selling them to Vietnam up until 2015 when illegal wood trade was restricted by the law.

Team 2 as well was able to detect fresh logs in a valley some 2km from the Vietnamese border, however no GPS tracks were recorded and waypoints were not named.

5.3.2 Salang Village

The whole field team (7 people including myself) and two guides from the Salang Village walked together to the East into the NP territory of Dou Village (see fig. 13).

During the two days information on five AOIs could be recorded, four of them (AOI 1 and AOI 3 – 5) being upland rice fields and only AOI 2 representing a former settlement of the Salang people.

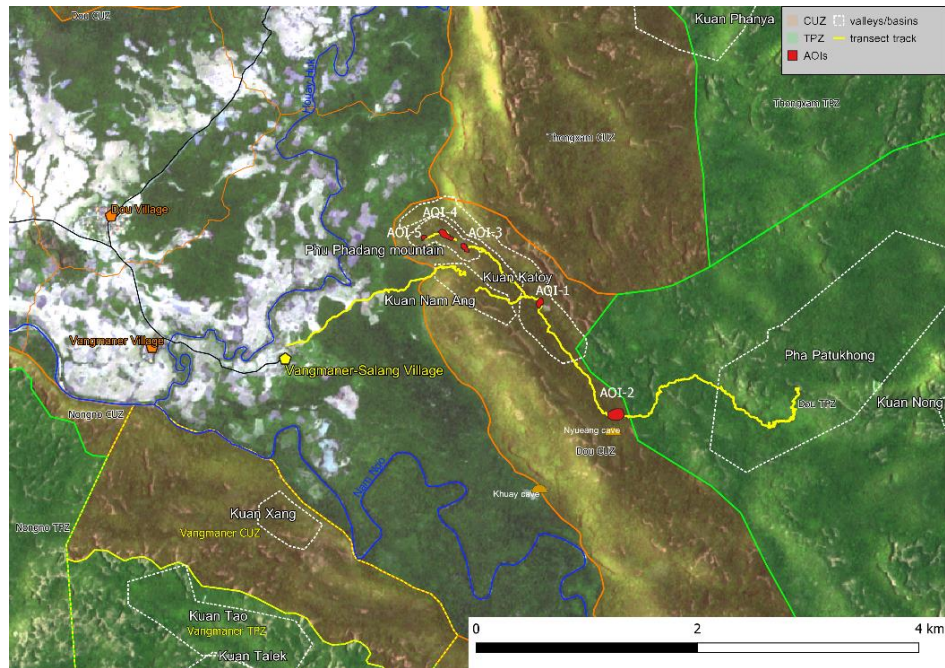


Fig. 13: GPS-recorded transect track and location of AOIs for which information were recorded inside the Dou village territory

The upland field of AOI 1 has a size of 0.4ha and was cleared and cultivated for the first time in 2021. A fallow area adjacent to the south-east was cultivated three years ago. The owner of the field is one of our guides who currently lives there most of the time in a small hut together with his wife, nephew and sister-in-law. They have a small number of chickens and some dogs and mostly live of bamboo shoots and squirrels shot with a crossbow. The guide explained that he has three allocated parcels of paddy land down in the village but no tractor or buffalo to plough the soil so he decided to do upland rice here. Another reason is that steep hills are safe from large livestock like cows eating the crops so there is no need to make a fence. The natural vegetation on the plot before the disturbance consisted mostly of bamboo species and some single larger trees as does the surrounding vegetation.

AOI 2 is a 3 hour walk away from the park border located near Tham Nyueang cave and very close to the boundary between the CUZ and TPZ of Dou Village. According to the guides the only remnants of a small settlement of Salang people about 30 years ago are one jackfruit and one orange tree that were planted by the Salang. The place was also used for spirit worshipping using wild boar, wild chicken and the red-shanked douc langur, however, nowadays it has no importance for spiritual use anymore. More detailed information could not be recorded as the elder guide who could still remember his life in the forest was strongly alcoholized and suffered from a lack of sleep.

The three upland fields of AOI 3, 4 and 5 were all cleared and cultivated for the first time very recently in 2020 by four families from the Salang Village for similar reasons as stated for AOI 1.

Initially it was planned to walk until Kuan Nong valley which was not reached due to the difficult terrain (long passages covered by spiky karst rocks) and insufficient time.

5. 4 Meeting on NP use regulations

In both villages this was the third and last activity of the village meeting on the first day. Due to time restraints it was not possible to conduct the meeting with women and men separately.

5.4.1 Nongma Village

A total of 22 villagers (9 women, 13 men) participated in the activity. Taking into account the results of the forest resource use exercise some activity cards were spontaneously added or taken out respectively in order to make sure they are relevant for the villagers.

| Allowed | Allowed with authorization | Forbidden | Not clear/unsure |
|---------------------------------|----------------------------|------------------------------|------------------|
| Hunting for subsistence | Hunting for sale | Use guns | |
| Use slingshot | Timber use for subsistence | Use explosives/poison | |
| Use snares | Cut crape myrtle | Hunt black langur | |
| Hunt wild boar | Cut sindora siamensis | Hunt red-shanked douc langur | |
| Hunt squirrels | Spirit worshipping | Hunt flying squirrels | |
| Hunt bamboo rat | | Cut wood for sale | |
| Collect crabs | Use chainsaw | | |
| NTFP collection for sale | | | |
| NTFP collection for subsistence | | | |
| Collect Chinese rattan palm | | | |
| Collect sugar palm fruit | | | |
| Collect orchids | | | |
| Collect dragon's blood wood | | | |
| Collect Lao lady palm | | | |
| Do gardening | | | |
| Raise livestock | | | |
| Paddy rice cultivation | | | |
| Upland rice cultivation | | | |

Fig. 14: Legality of land/resource use activities according to the vote of Nongma villagers (red = wildlife hunting related, yellow = NTFP related, green = timber related, white = land use related)

It was already late and the concentration of the villagers was accordingly low when step 3 of the activity was discussed. The only activity that was immediately mentioned by several people and that received agreement from almost all participants was upland rice cultivation. As Nongma Village's population is growing fast and suitable land for upland rice is getting scarce outside of the NP, the villagers would like to request that especially poor families are allowed to plant upland rice also inside the park on areas that already have been used for shifting cultivation in the past.

5.4.2 Salang Village

Out of 34 participants (16 women, 18 men) in the morning, 18 (11 men, 7 women) of them stayed for the last activity of the day.

| Allowed | Allowed with authorization | Forbidden | Not clear/unsure |
|---------------------------------|-----------------------------|------------------------------|--------------------------|
| Use slingshot | Timber use for subsistence | Hunting for subsistence | Collect sugar palm fruit |
| NTFP collection for subsistence | Cut crape myrtle | Hunting for sale | Use snares |
| Collect Chinese rattan palm | NTFP collection for sale | Hunt black langur | Cut sindora siamensis |
| Collect Lao lady palm | Collect dragon's blood wood | Hunt red-shanked douc langur | |
| Spirit worshipping | Collect orchids | Hunt flying squirrels | |
| | | Collect crabs | |
| | | Use guns | |
| | | Use explosives/poison | |
| | | Hunt wild boar | |
| | | Hunt squirrels | |
| | | Hunt bamboo rat | |
| | | Cut wood for sale | |
| | | Use chainsaw | |
| | | Cut Hopea ferra | |
| | | Do gardening | |
| | | Raise livestock | |
| | | Paddy rice cultivation | |
| | | Upland rice cultivation | |

Fig. 15: Legality of land/resource use activities according to the vote of Salang villagers (red = wildlife hunting related, yellow = NTFP related, green = timber related, white = land use related)

When asked about which activities they want to be allowed to continue in order to sustain their livelihoods two young women named collecting orchids and dragon's blood wood. A young man explained that those two species are the main income source of the villagers and without being able to sell or exchange them many families would not have enough rice to eat. Continuously bad yields on the paddy fields allocated to the Salang by a government project after their resettlement and the lack of necessary farm equipment made them abandon paddy rice cultivation as a whole.

In case it will not be possible to continue the extraction of those NTFPs the villagers would like to receive funding for the establishment of banana, sugar cane or cassava plantations or alternatively receive agricultural tools such as tractors.

During side discussions with village elders earlier it transpired that the traditional use of the red-shanked douc langur as offering for the spirits has been an important element of the Salang culture in the past. Individuals of this species have been offered as dowry in order to marry a girl or as oblation during an annual festival in order to conciliate the spirits. Therefore, the field team specifically asked if it would be important to the villagers to be able to revive/continue this tradition in a controlled manner. The villagers unanimously refused with the reason that their living conditions have changed a lot since then and it would be fine for them to use pigs or chickens instead now.

6. Discussion

6.1 Exercise on forest resource use

The results show that while in Nongma Village 81% of the commonly used species are for subsistence use and only 54% are for sale (note that some species can be used for both), in the Salang village the amount of species used in the family and species sold was nearly the same due to the high number of species used for both purposes. This was expected as the Salang people mostly have to buy their rice and other consumables which was already found by a socio-economic survey in 2017

(Eggenberger&Chautems, 2018). Fig. 16 illustrates this by showing that significantly more wildlife species are hunted for income generation compared to the amount hunted for subsistence in the Salang Village than in the Nongma Village. The figure also shows that actually more different species of NTFP are collected for sale than for subsistence in Nongma Village the reason for which is the availability of NTFP species with market significance such as cardamom and broomgrass in addition to orchids and dragon's blood wood in Nongma Village.

The reason for the fact that no use of timber species was reported in the Salang Village is likely related to the lack of necessary harvesting tools, the mountainous character of the landscape which makes extraction difficult and the fear of getting caught by the Dou Village police authorities as transpired during focal group interviews and side discussions.

In contrast, Nongma Villagers indicated 6 out of the 10 mentioned timber species as used for both, subsistence and sale which is surprising as timber extraction is the only form of resource use that is currently regulated at all and timber cutting inside the NP for commercial purposes is strictly prohibited (Nongma Village Regulations, 2019). On the one side this might show a great deal of honesty from the villagers but also that law enforcement and sanctioning mechanisms are likely to be quite weak and only loosely implemented. Mun ebony (*Diospyros mun*) and fragrant rosewood (*Dalbergia odorifera*) are extracted for sale although they rank within List I of the national tree list (Lao Gov., 2019b) and are classified as critically endangered (CR) and vulnerable (VU) respectively within the IUCN Red List (IUCN, 2021). According to Nongma Villagers nearly no trees of these species are left within their territory inside the park.

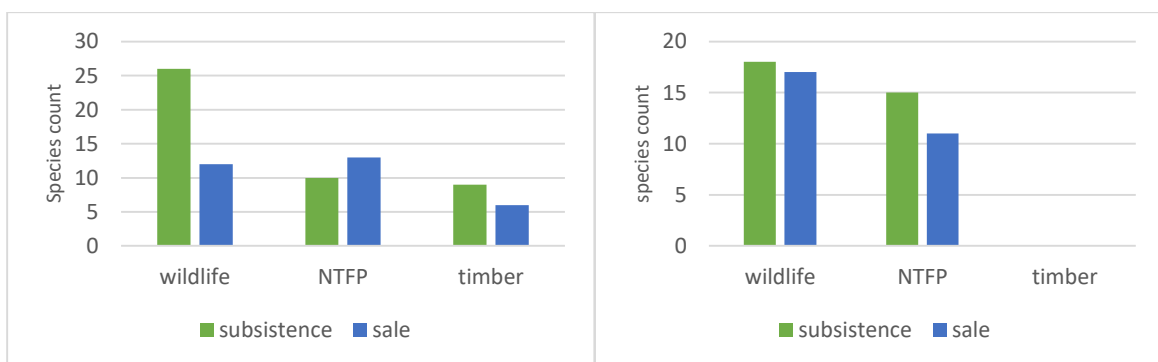


Fig. 16: Amount of all mentioned wildlife, NTFP and timber species extracted for subsistence and commercial use by Nongma (a) and Salang (b) Villagers

When aggregating the mentioned species of wildlife, NTFP and timber per villager group it can be observed that NTFP species make up the largest share in the female groups in both villages while wildlife tends to make up the largest share in the male groups (see fig. 17). This might reflect the traditional responsibility assignment of women being gatherers and men being hunters, however there are exceptions as we were told that in the Salang Village women and men usually go together when collecting dragon’s blood wood and orchids and that fishing and catching crabs and frogs is also done by women.

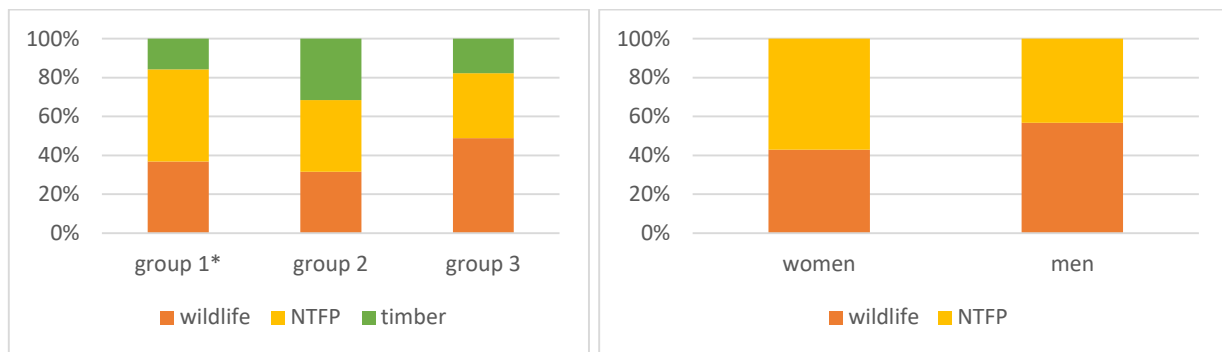


Fig. 17: Shares of wildlife, NTFP and timber species out of all species mentioned during the activity by a) Nongma and b) Salang villagers (* = female group)

Four species of NTFP - namely Lao lady palm (*Rhapis laosensis*), Chinese rattan palm (*Calamus rhabdocladus*), wild orchid (*Orchidaceae spp.*) and dragon’s blood tree (*Dracaena cambodiana*) – clearly stand out as they were mentioned as priority species by almost all groups in both target villages. While the shoots of the former two species are important for daily consumption but can also be sold, the latter ones are valuable NTFPs internationally demanded, especially by China (Wiedenmann & Lorfaijong, 2018). According to a list determining the conservation status of NTFPs on the national level published regularly by the Ministry of Agriculture and Forestry (MAF) Lao lady palm is a ‘general’ species (list III), Chinese rattan palm a ‘controlled use’ species (list II) and both wild orchids and dragon’s blood tree are ‘totally protected’ species. Except from wild orchids, of which nearly 700 species could be recorded in Laos so far (KFBG, 2021), none of the other three species have been assessed by the IUCN or are regulated under CITES so far. This poses challenges to decision making. Although protected area managers have a certain amount of margin when it comes to the determination of use regulations they have to stay within the legal framework as explained in the latest draft version of the PA decree (Lao Gov., 2021a). It would be very hard to allow any kind of limited access to totally protected species, especially when harvested for commercial purposes which is generally considered unsustainable. Extensive scientific studies on the status and distribution of these species would be needed in order to make a sound decision on what extracted amounts would be sustainable as was already suggested by Wiedenmann & Lorfaijong (2018).

When looking at the results from the focal group interviews it appears that Salang villagers can generate a lot more income through selling forest resources than Nongma villagers, however it is possible that the

Salang villagers only indicated the monetary value of what they can collect/hunt rather than the actual amount of money they receive as especially NTFPs are often times exchanged for rice.

6.2 Participatory land and resource use mapping

Although not planned, the revision of the map concerning places with local names by the villagers turned out to be very valuable for future zonation work because land, resource and spiritual use seems to concentrate within and around those valleys and karst cliffs which is visible on the resulting maps derived from group work and also stood out during the discussion afterwards. A total of 9 places in Nongma Village and 1 place in the Salang Village could be corrected on or added to the map. It can be assumed that there is still a large number of places with local names inside Hin Nam No NP that have not been recorded yet on any map so individual mapping surveys in preparation of zonation work might be worth the effort.

Interestingly, the Salang used the Lao language version of the names for the places they once inhabited inside the park while the Makong in Nongma used names in their own language called Bru for places they use inside the park. However, during the transect walk one of the Salang guides told us that there actually are Salang language versions of these names but they are rarely used anymore. The likely cause for this is the assimilation of the Salang culture and language that was induced by the Lao government since the resettlement of this ethnic group as was also mentioned by Larsen (2021).

The results from participatory mapping in Nongma Village suggest that the male group was able to relate the places on the map to places in reality better than the female one as they marked specific locations while the women drew larger circles in a more general manner. As there are only male NP rangers this observation is somewhat not surprising. However, in the Salang Village this difference was not recognizable probably because as a sub-village it has no trained NP rangers. Furthermore, the women in both villages were very unsure about the location of hunting grounds as according to them only the men go hunting inside the park. Although the Salang did not mention any used timber species during the forest resource exercise both men and women indicated locations for timber extraction on the map. The reason could be that they did not dare to tell what kind of wood they extract but more likely is that they counted species of bamboo used for construction as timber which is what the male group did during the forest resource exercise.

For the Salang villagers the urgency of receiving permission and legal recognition for the utilization of resources inside their traditional lands is apparent. The Guideline on Zoning for National Protected Areas published by the Ministry of Agriculture and Forestry states that '(guardian) village lands located within the boundary of a National Protected Area are designated as being in the controlled use zone' (MAF, 2017). Within article 23 of the PA Decree draft version from July 2021 it is explicitly stated that authorities should '*[...] issue land use certificates to villagers who have lived inside a Protected Area before the areas became a Protected Area as customary use rights in accordance with Article 44 of the 2019 Land Law*' (Lao Gov., 2021a).

However, the current CUZ of Vangmaner Village that is permitted to be co-used by the Salang does not encompass any of the areas formerly inhabited by the Salang. Meanwhile the CUZ boundary suggested during participatory mapping extends far into the current TPZ of Dou Village (see fig. 11). A compromise

could be to establish a customary use zone for the Salang where specific use rights can be exercised such as NTFP collection and hunting of non-threatened species for subsistence as well as spirit worshipping (in case this is still relevant). The legal basis and detailed regulations could be defined in a conservation agreement with the Salang Village. Another way would be to establish a set of village regulations specific to the Salang Village, however the precondition for this would be that its status gets elevated from sub-village to guardian village with an own village co-management committee (VCMC).

6.3 Transect Walk to places inside the NP that are used by villagers

The transect revealed NP encroachment by two very different types of actors and thus both cases also should be handled very differently.

In the light of Hin Nam No NP's application to become UNESCO World Heritage it is unlikely that permanent agricultural use on an area of several hectares inside the TPZ as in the case of the farmland of Mr. Khamboun can be continued. UNESCO criterion ix states that proposed sites should represent 'significant on-going ecological and biological processes' (Department of Heritage, 2022) which might be strongly altered in an agricultural landscape. Furthermore, the owner of the land's livelihood arguably does not depend on continuing the use as he possesses several hectares of paddy land also outside of the park (Eggenberger & Chautems, 2018).

Swidden agriculture as practiced by the majority of Nongma villagers and a small number of Salang villagers inside the CUZ of Dou Village is less detrimental than sedentary agriculture and more biodiversity friendly as long as fallow periods are long enough and the cultivation stays inside a fallow forest mosaic (Sovu et al., 2009). A study from the neighboring Nakai-Nam Theun National Park suggested that shifting cultivation there had a very low impact on forest cover since the 1970s (Robichaud et al., 2009). On the other hand the upland fields visited during the transect were established relatively recently apparently in locations that have not been cleared before or at least not for a considerably long period of time. In order to tell with certainty whether primary forest was cleared on these plots an analysis of long and dense satellite image time series would be necessary as was done for the Nongma area by Faehling (2019). Therefore, the decision if an individual or a family should be granted permission to establish or continue swidden agriculture inside the park should be made on a case-to-case basis while considering all available information on ecological values and the living conditions of the people in question (for a proposed procedure see 6.4).

Another objective of the transect walk was to record information on locations inside the park with spiritual or cultural importance for the communities. However, very little information could be collected on this matter for both target villages mostly due to those places being located relatively deep inside the park and covering them would have gone beyond the planned time and financial resources.

In case of the Salang the results of this research suggest that the present importance of places for spirit worshipping within ancestral lands could have been somewhat overestimated. However, the results from the FPIC4WH draw the picture that spiritual use inside the park is still a big concern of Salang villagers (Larsen, 2021). While fully acknowledging that only a very small fraction of the areas formerly inhabited by the Salang could be explored during the transect walk our impression was that especially the younger generation is not so much invested in the old traditions and customs anymore. The younger

one of our guides (age 23) said that he would not even be that sure about the way leading to the old worshipping places in Kuan Nong valley as he only went there once as a child. Young people learn the Lao language from an early age on and most speak it fluently.

Our team had the opportunity to witness the annual 'spirit feeding' festival of the Salang held about 1km South of the village at the Nam Ngo river bank on the day before the village meeting. Whereas the festival has been practiced once a year since the time they were living in the forest and today is still very important to them, it struck us that all the food and utensils used during the ceremony were exactly the same as in the Lao tradition. Merely Lao lady palm shoots and banana tree stems were taken from the forest while chickens and pork meat were bought from Vangmaner Village. Mr. Dard, the elder who was conducting the ceremony, told us that originally the meat of several red-shanked douc langurs was needed to satisfy the spirits but today many things have changed and other options have become available. This suggests that the Salang tradition has already strongly mixed with and even partly been replaced by the Lao one.

Regardless, a special field mission with the aim of assessing the present state and the exact location of places currently still used for spirit worshipping inside the park could be very insightful, especially in the case of the Salang.

6.4 Meeting on NP use regulations

When looking at the results from the voting in both villages (see 5.4, fig. 14 and 15) the first thing that strikes the eye is that Nongma villagers considered most of the land/resource use activities as allowed while Salang villagers thought most of them were forbidden. The reason for that might be that control mechanisms are currently not being enforced in Nongma Village while the Salang have plenty of experience with getting caught and being fined by Dou Village authorities as was revealed during the forest resource use activity.

During step 2 of the activity in Nongma Village, when all activities were rearranged according to the provisions in the present legal framework, the villagers were asked why they assumed that especially the land use-related activities would be allowed inside the park. A man answered that these activities simply must be allowed, otherwise he would not be able to make a living. This reflects well the extent to which people in Nongma village depend on the land and resources inside the park which also became clear during the FPIC4WH consultations where they expressed their concern of not being allowed to enter HNN anymore when it becomes World Heritage site.

Regarding some aspects the currently existing laws and regulations are very clear such as the general prohibition of extracting any List I species like for instance wild orchid or the red-shanked douc langur no matter if inside or outside a PA or the ban on timber extraction from a PA for commercial purposes (Lao Gov., 2021a). However, in many cases the law is very unspecific which on the one hand leaves a lot of margin for protected area planners to adapt the law to local conditions (MRLG & LIWG, 2021) but on the other this leaves local authorities with great uncertainty and creates the potential for misusing this freedom. For instance, the law does not elaborate on the approval process for the use of species within List II and III, how their use for commercial purposes should be regulated and which extraction methods and tools are allowed or forbidden respectively. While this is partly covered by rather generic guardian

village regulations in the case of Hin Nam No, there is a need to develop an approach that handles the authorization of individual requests of specific user groups who might be more disadvantaged by the current situation than others such as the Salang.

Such an approach for the authorization of slash-and-burn agriculture inside HNN's CUZ might include the following steps:

1. Requesting family informs village authorities about the approximate location and extent of the area that they want to clear
2. Village authorities forward request to the district level (DAFO) and the National Park Management Unit (NPMU) who have the technical and professional capacity to check upon the LULC history of the respective area using satellite data and other available information
3. NPMU and district staff consult amongst each other and consider the request after checking on a list of standard criteria that include the economic situation of the requesting family, household size, LULC history and ecological value of the respective plot, etc.
4. NPMU/district staff inform village authorities about their decision and explain the reason (where applicable also may suggest an alternative area that is better suited)

Conditions/Regulations:

- Cultivation has to stay within the land mosaics of secondary forest traditionally used for shifting cultivation
- After a certain period of time (e.g. 30 years) without disturbance it is prohibited to clear a forest patch for shifting cultivation (→ ecosystem restoration)
- Determine a minimum fallow period for areas that are traditionally used for shifting cultivation in order to reduce use intensity (e.g. at least 5 years no clearing)
- The use of chemical fertilizer, pesticides and agricultural machines is prohibited

Monitoring:

- Check on recent high-resolution satellite imagery (e.g. Sentinel-2)
- Village rangers go confirm the actual location and condition of authorized plots within their CUZ

The Lao government actively tries to restrict shifting cultivation in order to force people to adopt sedentary agriculture as through article 128.2 of the 2019 Forestry Law which states that a land use right is deemed to be abandoned if not exercised for three years, thereby making fallow periods impossible (MRLG & LIWG, 2021). However, the article could eventually be avoided if a family would plant native, fast growing crops such as banana after rice cultivation so that the area keeps being agriculturally used during fallow periods which in fact we observed to be already practiced by the Salang. Interestingly, both the 2019 Forestry Law (article 71) and the latest draft version of the PA Decree from September 2021 (article 24) state that '*agricultural production and livestock farming on stable areas of land and in an environmentally friendly way*' should now be allowed inside a CUZ (Lao Gov., 2019b; Lao Gov., 2021a). Although most likely not intended by the drafters, this provision could actually facilitate the above described practice of intercropping on shifting cultivation fallows.

Another new article on customary use (article 55, PA Decree draft 09.2021) permits *'the traditional usage of forest that was inherited over a long time'* explicitly referring to *'traditional festivities and religious ceremonies'* which could be used as legal basis for allowing spirit and ancestor worship inside Hin Nam No NP.

7. Lessons learned & Recommendations

In general, the chosen methodology seems to meet its objective of collecting data on land and resource use while being sensitive to different user groups that might be underrepresented otherwise. However, the pilot implementation revealed that some fine-tuning is necessary in case it will be used for future applications such as zonation work.

The biggest issue during piloting clearly was a lack of time which prevented most activities from being carried out exactly according to plan. The main cause for this was that all activities of the village meeting were originally planned for two days but ended up to be implemented within one day following to the recommendation of NPO staff in order not to occupy the villagers too often and keep them away from their livelihood activities. While this is generally a valid point, the second village meeting was planned for only half a day after the two days transect walk and more time would have resulted in a higher quality of the data and reduced stress and fatigue for both the villagers and the field team.

Other challenging aspects were the local language (esp. Salang Village) and literacy (esp. Nongma Village). Although communication in the Salang Village was not a big issue as most people can speak Lao reasonably well, no one in the field team actually spoke the Salang language (only Bru which is somewhat similar). Illiteracy was tried to be tackled by reading all moderation/activity cards aloud several times, however this is a problem which is generally hard to overcome as languages of the Mon-Khmer family in Laos do not have a script (anymore).

The following provides an overview on lessons learned (indicated by a dot) and corresponding recommendations (indicated by an arrow) derived from the piloting experience in the field:

Exercise on forest resource use

- The focal group interview took a lot of time and probably felt quite lengthy for the villagers.
 - Keep questions as simple, short and focused as possible (especially in the Lao translation!)
 - Take the rather specific questions out that are more suitable for a qualitative interview with a single person and conduct those interviews separately (e.g. with the village chief, a member of the women's union or the village police).

- Low participation of villagers in a group if the group is too large.
 - Keep groups at a size of not more than 10 people if possible and make sure the field team has enough members who are able to conduct the activity and supervise each group especially in larger target villages (such as Nongma Village).

- Some villagers did not really understand what NTFPs are and how they are different from timber (despite of an explanation with examples in the beginning of the activity).

- Instead of using the terms 'NTFPs' and 'timber' ask for trees, plants, fruits, mushrooms etc. that they use, then put the card in the respective category.
- Villagers tend to name generic animal categories such as fish, bird, snake, frog, etc.
- Always ask villagers to think about specific species (in case there are many, name the ones that are most commonly used)

Amendment:

Add 'spiritual/cultural use' as a third use purpose category besides 'subsistence use' and 'commercial use' in order to get information on exactly which species are being used for worshipping, traditional festivals, etc. Correspondingly, add interview questions about which spiritual activities require the use of the named species and how frequently during the year those activities take place.

Participatory land and resource use mapping

- Village rangers know how to read maps and are able to indicate the approximate location of cliffs and valleys that have local names
- Collaborate closely with the rangers when explaining the map
- It might be more effective to use a digital elevation model in QGIS software during revision of the map together with the villagers on the projector image in order to confirm the valley's boundaries
- Make sure there is enough time to implement steps 3 and 4 in the focal groups as each group should produce its own suggestion for a revised zoning!

Amendment:

Amend step 2 with short background questions about the use of each marked spot such as whether the use is seasonal or all year round and which species they go to find there. In case there are specific species (e.g. the red-shanked douc langur) or places of interest (e.g. old cemeteries) known to be used by villagers their distribution/location could also be specifically asked for.

Transect Walk to places inside the NP that are used by villagers

- Most of DAFO and NPO staff need training in correctly using GPS for ground-truthing.
- The Locus Map app that can be used on the smartphone has proven to be a suitable and convenient tool for ground-truthing as photos shot with the app are directly geo-tagged.
- Organize workshops/trainings introducing the app with relevant staff including NP rangers.
- Time plan and budget for the transect walk should have a certain range of flexibility as the final decision on which AOIs will be headed for has to be made in consultation with village rangers and thus cannot be planned in detail in advance. Depending on the character of the terrain

(elevation, slope), weather conditions and walking-distance from the village the transect might need more time in some villages.

- Determine a minimum of 2 and a maximum of 4 days in the budget/time plan.

Meeting on NP use regulations

- When rearranging the activity cards according to currently existing laws and regulations it is important to make very clear to the villagers that these are not set in stone but in fact are currently under revision and that their voice will be considered in this process, however it might be not possible to include all of their recommendations.
- Step 3 of the activity is difficult to implement if there is a high number of illiterate villagers.
- Read aloud all activities in the category 'forbidden' and let villagers vote for up to three activities that are most important for their livelihoods
- In step 3 the answer to the guiding question 'Why do we want to allow this activity?' was very obvious and did not generate any new knowledge.
- Instead ask the question: 'In case an activity cannot be allowed, what kind of support would you need as compensation?'
- Many villagers (esp. women) in both target villages did not actively participate in the votings likely due to the group being not separated according to gender and too large. Also villagers were exhausted after the long day and concentration was bad.
- Conduct this activity in the morning of a separate day after the transect walk. First invite the women to have the meeting who afterwards take turn with the men.
- Note down the amount of votes given for each option in order to see which topics villagers agree on and where they are divided.

8. Final Project Reflection

In the framework of the project it was possible to collect a wide range of information in the studied villages on which species are of importance for villager's livelihoods, the spatial patterns of resource use and what villagers think the park management allows them to do and what not. The results show that while in both studied villages people partly use similar resources (see 4.1) their use priorities may differ depending on specific traditions and customs (see 5.1 and 5.3) but also on their economic situation and market accessibility (see 5.1) as generating family income from the sale of forest resources (esp. NTFPs) can be considered as one of the major reasons villagers enter the national park in the first place.

However, due to time constraints during field research it was not possible to exploit the full potential of the planned methodological approach especially concerning the focus on gender-specific group work. It is thus highly recommended that future applications of the approach take sufficient time for the thorough implementation of all steps. That villagers have a pleasant and relaxed rather than a tiring and

stressful experience while working with the NP management team is very important for future collaborations with villages and the functionality of the co-management system as a whole.

Nevertheless, the research provides an insight into the current situation and the issues concerning the use of land and resources inside the park that are unique in each of the two villages and emphasize the importance of a participatory approach that provides information on exactly how strong villager's livelihoods are presently tied to land and resources inside the park in order to make a sound management decision. The proof for the fact that this was not thoroughly done before is the case of the disenfranchised Salang people whose traditional village lands presently lie entirely inside the territories of neighboring villages.

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Formal Declaration

I herewith declare that this report is based on my own work carried out during the research semester and in the framework of the internship with CDE. I assert that the statements made and conclusions drawn are an outcome of my research work. I further certify that...

1. The work contained in the report is original and has been done by me under the general supervision of my supervisor.

2. The work has not been submitted to any other institution for any degree/diploma/certificate at Eberswalde University for Sustainable Development or any other university.
3. I have followed the guidelines provided by the university in writing the report.
4. Whenever I have used materials (data, figures, text) that I have not created myself, I have indicated this in the text of the report and cited the source under 'bibliography'.

Tim Faehling

Enrollment No.: 20213084

Appendix

Documents used for field research:

1. Questionnaire for Forest Resource Use Exercise

Questions for forest resource use exercise

Village: _____ Group number: ___ Group size: ___ Group gender: _____ Group ethnicity: _____

For resources in the category 'need authorization':

1. Whom do you ask when seeking for permission: When collecting/hunting/cutting for family use?
When collecting/hunting/cutting for sale?

2. How long do you have to ask in advance to get permission? How long does it take until you get the answer?

3. For each resource category and species, are you given clear limits on how much you can take (e.g. 15kg per day per family)? Is there a fixed limit for every species or does the authority decide individually every time (e.g. based on the season, family size, ...)

4. Does the authority inform you about which means of hunting/fishing/wood extraction are allowed in the CUZ and which are not? What methods, utensils are forbidden?

5. Do you have to go ask for permission every time you want to enter the park (CUZ) or is permission granted over certain periods of time (like a week or a month)? Is that different for some species?

6. How do authorities control check what and how much you collected when you come back? (Do they come to your house or do you have to go to show them at their office?)

For resources in the category ‘do not need authorization’:

7. Can you take out as much as you want?

8. Are certain means of hunting/fishing/wood extraction forbidden for species in this category or does this only apply if you need to seek authorization?

9. Do you feel that any of the species in this category have declined in the CUZ during the past 5 years? If yes, which? Do you have to go deeper into the forest than before to find these species?

10. For each species in this category please estimate how much you take out per day, week **or** month during the rainy and the dry season (**in kg or number of individuals or tree trunks**)

Species taken out per _____

| NTFP | | Wildlife | | Timber | |
|--------------|------------|--------------|------------|--------------|------------|
| Rainy season | Dry season | Rainy season | Dry season | Rainy season | Dry season |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

11. How much money do you get for one **kg or individual** of each species?

How much can you earn with selling NTFPs and wildlife per day, week **or** month?

| NTFP | | Wildlife | | Timber | |
|--------------|-------------|--------------|-------------|--------------|-------------|
| Species name | Price (LAK) | Species name | Price (LAK) | Species name | Price (LAK) |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Income from selling NTFP and wildlife per...

Day _____ week _____ month _____

(Name of respondent for questions 10 and 11: _____ gender: _____ ethnicity: _____)

2. AOI Mapping Protocol for Transect Walk

Mapping Protocol – Areas of Interest (AOI)

AOI-ID: _____

Team-ID: _____

Target Village: _____

| General Information | | |
|---|--------------------|--|
| NP Zone: | Date: | Time: |
| Local name of the area: | Elevation (meter): | GPS Accuracy (meter): |
| Size of the area: 1) <input type="checkbox"/> 0.1 – 1 ha 2) <input type="checkbox"/> 1 – 5 ha 3) <input type="checkbox"/> more than 5 ha | | Minutes/hours walk from target village: |
| Accessibility (from park border): | | Track circumference possible? <input type="checkbox"/> yes <input type="checkbox"/> no reason: |

| Land Cover & Land/Resource Use | |
|--|--|
| Land Cover 1: | Land Cover 2: |
| Land Use 1: | Land Use 2: |
| Resource Use 1: | Resource Use 2: |
| Specification Land Cover: | |
| Specification Land Use: | |
| Specification Resource Use: | |
| Use signs: <input type="checkbox"/> fire <input type="checkbox"/> cut vegetation <input type="checkbox"/> grazing <input type="checkbox"/> litter <input type="checkbox"/> fences <input type="checkbox"/> tilling <input type="checkbox"/> crops <input type="checkbox"/> animal remains <input type="checkbox"/> objects for worshipping <input type="checkbox"/> cooking utensils <input type="checkbox"/> small hut <input type="checkbox"/> animal traps <input type="checkbox"/> other _____ | |
| Comment: | |
| Degree of human disturbance (1 very low – 5 very high): Comment: | Importance for villager’s livelihood (1 very low – 5 very high): Comment: |
| Since when was the area used in the present way? | |
| Was the area used differently in the past? How was it used? | |
| Why was the use established in this place? | |
| How many people (from your village) are using the area? | |
| How frequently do people come to use the area? | |
| Do other villages or people from outside also come to use the area? Who? What do they do here? | |
| Which species of NTFP, timber and animals can you find here? | |
| How far away is the nearest water source? Is there water during dry season? | |
| Other Remarks: | |

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| Photos | |
|-------------------|-----------|
| Photo of... | Photo-IDs |
| Signs of land use | |
| NTFP species | |
| Timber species | |
| Water source | |
| Animal Remains | |
| Traps | |
| | |
| | |
| | |

- * Land cover = trees, shrubs, grassland, rocks, barren, crops, built-up
- * Land Use = agriculture, place of worship, cemetery, hunting ground, foraging ground, settlement
- * Resource Use = hunting, NTFP collection, timber harvest
- * 1 = dominant, 2 = secondary

Internship Documents: