

Tenure, Food Security, and Community Forestry Under Changing Conditions in Ban Huay Win, Doi Phu Kha National Park, Thailand

Kasina Limsamarnphun

Key Lessons

Poverty and food insecurity, combined with a recent shift towards cash crops, make Ban Huay Win village particularly vulnerable to the impacts of climate change. Despite unclear rights, low levels of education, and poor development service provision, Ban Huay Win has various assets that can support adaptation efforts as well as potential carbon sequestration initiatives. The community places high value on the surrounding forests and local community forestry structures. However, the long-term adaptive capacity of the Tai Lue indigenous people in Ban Huay Win is constrained by their lack of formal rights to live in their traditional lands within Doi Phu Kha National Park.

Some issues that need to be addressed to ensure the sustainability of the Park's forest and community resilience in the face of changing climatic conditions are:

- Clarity of tenure and status in Ban Huay Win and similar villages. Without clear entitlements to development service provision, decision-making processes, and participation in determining land use, there is a real risk of adaptive capacity being undermined and ultimately impacting negatively on forest ecosystems.
- Support is required to develop environmentally and socially sustainable strategies. This includes technical guidance and financial support for initiatives, such as rice field terracing, which can help reduce pressure on forests.
- Ban Huay Win has a long tradition and strong interest in sustainable forest management. However, remote location, limited livelihood options, and poverty make it difficult for the community to resist alternative land uses, such as maize cultivation. Financial incentives, for example, from REDD+, could provide critical support for the communities to manage forests sustainably.



Timeline

1983 Tai Lue indigenous people settle alongside the Huay Win Tributary, and in Ban Huay Win village.

The former fallow lands of a neighboring village, Ban Nam Mao, are transferred to Ban Huay Win for regeneration and management as forest.

1999 The Thai Government establishes Doi Phu Kha National Park, rendering the Tai Lue settlement in Ban Huay Win technically illegal.

2004-2008 The Joint Management of Protected Areas (JoMPA) project works to strengthen local forms of community forestry in protected areas.

2008-2011 Launched by the Raks Thai Foundation with support from Mitsui & Co, the Developing Sustainable Eco-friendly Communities project promotes land-use improvements, such as terracing of rice fields.

Case study location:

In red, Nan Province, Thailand, the location of the Ban Huay Win community.

1. Background

Ban Huay Win village is located inside Doi Phu Kha National Park in Nan Province, one of the northernmost provinces of Thailand. The province has been home to the Tai Lue indigenous people for more than 100 years following waves of migration from Xishuanbanna in Southern China. During years of conflict and communist insurgency in northern Thailand, the Tai Lue in Doi Phu Kha were displaced and eventually settled alongside Huay Win Tributary in 1983. Once settled, the Tai Lue initiated reforestation efforts on degraded lands in an effort to enhance their livelihoods. The village's 26 households engage in traditional rotational rice production, located two to four kilometres outside the village. Villagers have longstanding indigenous practices of community forestry and recognize livelihood dependence on surrounding natural resources.

In 1999, a Government decree established Doi Phu Kha National Park as part of a controversial push in the 1990s to establish protected areas and strict conservation measures to compensate for widespread deforestation. There had been little local consultation and the new land designation resulted in the Tai Lue having no legal grounds for access to their village and surrounding agricultural land. As a result, Ban Huay Win village lacks tenure security and basic development services.

Raks Thai JoMPA Project

In 2004, the JoMPA project, led by the Raks Thai Foundation (CARE Thailand), initiated a process to strengthen local forms of community forestry. JoMPA was jointly implemented by the Raks Thai Foundation, Doi Phu Kha National Park, and the Mekong Environment Resource Institute with support from the Danish International Development Agency.

The four-year project aimed to improve dialogue between villages and Park authorities over access to forest resources. JoMPA worked to establish a special zone for community forestry, and created village maps and land-use agreements through participatory mapping. This was constrained by the legislative environment as community forestry is not recognized as a management option under the Thai National Park Act of 1961.

After the JoMPA project ended, a follow-up project sought to develop models of joint climate change adaptation and mitigation for subsistence communities in northern Thailand. Project staff introduced improved land management systems including terracing for rice cultivation.

2. Climate Changes and Perceived Impacts in Thailand and in Ban Huay Win

Temperatures have increased in Thailand by 0.10 to 0.18°C per decade over five decades of observation (Jesdapipat, 2008). Rainfall in Thailand has been decreasing over the past three to five decades compared to the first half of the last century (ADB, 2009).

Thailand is predicted to see an increase in extreme events including prolonged floods and drought, landslides, and strong storm surges (Jesdapipat, 2008). These extreme events have become more frequent and more damaging over the past few decades with storms becoming less frequent but more intense (Jesdapipat, 2008). Changes in rainfall patterns and the frequency and intensity of rainfall have affected the quantity and quality of water resources in a number of watersheds (*ibid*).

Perceived Local-level Impacts

While climate models and national data indicate changes in climate, at local levels there remains little empirical documentation and so changes described here are largely based on reports from villagers. Ban Huay Win villagers have reported a number of perceived impacts of climate change. These include changes in seasonality, with seasons starting much earlier than in previous years. The community reports that in the past, the rainy season started in May and extended into October, with peak rainfalls in August and September. However, in recent years, the rainy season has begun as early as March and ended either much earlier or much later than previously. The normally intense rainy period in August is cited as having virtually disappeared. Rainfall patterns are reported to be highly irregular and the dry season to have grown longer and hotter. This is supported by predicted weather patterns and climate trends in the north of

Thailand (Jesdapipat, 2008). Attesting to the community’s perceptions of changes in weather, the average annual rainfall in Nan Province was 1,365 mm between 2000 and 2009, whereas the annual rainfall in 2010 was 2,933 mm (RECOFTC, 2011). Rates were similarly high in 2011.

The community perceives the main threats related to climate change to be increased food insecurity and natural disasters, such as flash floods and landslides. Changing seasonality and weather patterns have had adverse impacts on food security with observed declines in crop quality and quantity. Rain-fed rice cultivation, the food staple of the community, is cited as having been affected by seasonal weather fluctuations for the past five years, with the community reporting annual losses in rice yields of 40 to 100%. The impacts on recently introduced cash crops, such as maize, have been similar, resulting in financial losses for villagers investing in maize production.

Table 1: Reported Rice Yield in a Normal Year and Indicative Previous Year (2011) at Ban Huay Win

Cultivated land per year	1.5-1.8 hectares per family
Rice yield in normal year (prior to 5 years ago)	2,194 kg per hectare
Rice yield in 2011	884 kg per hectare
Rice yield reduction	59.71%

It is claimed that forest-based food sources such as sugar palm, rattan, and mushrooms have also declined. Villagers believe this to be related to increased rainfall that affects forest fire frequency needed to trigger spore production and the propagation of certain tree species. The populations of some animals are also reported to be changing. The local *mun* fish, an important river-based source of protein, needs sufficient stream water during the spawning season, but this is now coinciding with the prolonged dry season which impacts on stream water levels. Villagers report that the fish is becoming more difficult to find.

At least one positive change is perceived to be accompanying the changes in weather patterns. Rainfall appears to be increasing with Ban Huay Win reporting enough freshwater for household use in April 2011 for the first time in living memory. However, while total increased rainfall has been recorded for the past five years, long-term climate change forecasting suggests this will be temporary (Jesdapipat, 2008).

3. Assessing Adaptive Capacity and Resilience

Table 2: Asset Comparison in Ban Huay Win

Types	Strengths	Vulnerabilities	Effects on Adaptive Capacity
Natural Assets	<ul style="list-style-type: none"> ▪ 557.87 hectares of forest ▪ 521.35 hectares of agricultural land ▪ Freshwater availability (18 streams) ▪ Diversity of indigenous crops 	<ul style="list-style-type: none"> ▪ Poor quality upland soils, low fertility ▪ No clear or secure tenure or access rights to forests or agricultural lands 	<ul style="list-style-type: none"> ▪ Lack of tenure security undermines adaptive capacity and incentives for long-term investment in land ▪ Access to non-timber forest products (NTFPs) provides a safety net

Types	Strengths	Vulnerabilities	Effects on Adaptive Capacity
Physical Assets	<ul style="list-style-type: none"> Water diversion systems for household and irrigation purposes Most houses have a motorcycle, radio, and television 	<ul style="list-style-type: none"> No central and reliable electricity supply; small-scale solar panels provide limited power No central water source Poor road system No telephone connections or mobile phone reception 	<ul style="list-style-type: none"> Lack of basic infrastructure curtails capacity to respond to extreme events or environmental changes
Financial Assets	<ul style="list-style-type: none"> Agricultural crops, cattle, and pigs are raised as a source of income and for savings The village maintains cash reserves in a forest conservation fund and rice bank 	<ul style="list-style-type: none"> At village and household levels, cash reserves are very limited 	<ul style="list-style-type: none"> Community lacks financial buffers needed to improve resilience to shocks such as drought or pest attack
Social Assets	<ul style="list-style-type: none"> Trusted community forest committee Strong community cohesion and cooperation 	<ul style="list-style-type: none"> Community forest committee all male, women's role limited to housewives' groups for handicraft production 	<ul style="list-style-type: none"> Strong social capital compensates for other barriers to adaptive capacity Gender remains an inequity issue
Human Assets	<ul style="list-style-type: none"> Multi-skilled leaders Primary education is now available and compulsory Traditional knowledge, especially that related to land management practices 	<ul style="list-style-type: none"> Educational levels, particularly for adults, are low Women excluded from opportunities for development of leadership and other skills 	<ul style="list-style-type: none"> Strong attributes such as perseverance and work ethic Low education and literacy restrict ability to exert entitlement claims

Source: Key informant interviews (2011).

While other assets may require strengthening, the Ban Huay Win community has a strong asset in its robust social capital, defined as the value of social relations in achieving collective or economic results. The Tai Lue's strong kinship structures and internal relations provide a support network that allows for experimentation and innovation by individuals, often rooted in traditional knowledge. Lessons learned are easily shared and adopted within the community.

The community forest management committee has been strengthened by decades of struggle in exerting the community's rights over the forest areas, and it receives unified community support. Several committee members are involved in a loose climate change network established in Doi Phu Kha by the Raks Thai Foundation. Through this informal network, they have opportunities for further learning. These same members are often at the forefront of experiments with new livelihood technologies, such as new cropping patterns and crop varieties. Increasingly, these leaders are mobilizing their strong community support in advocating for increased rights with Park officials and local authorities.

The Tai Lue have a holistic view of the environment and ecosystem services. The forests are central to the Tai Lue's culture and include important sites for paying homage to natural spirits

and ancestors as well as providing broader ecosystem services, such as protection from wildfire, floods, landslides, and conservation of biodiversity. Because of spiritual associations with the land and their dependence on key ecosystem services, the Tai Lue have always emphasized sustainability in their land-use strategies.

Community forestry management plans limit extraction of forest resources, depending on forest category type, with allowances made for NTFP collection, such as bamboo shoots and herbs, in virtually all forest types. Collection of timber from the conservation and utility forests is allowed only for local construction purposes and must be approved by the committee.

4. Vulnerabilities

Participatory rural appraisal exercises with the community underscored food security as one of the most significant issues facing Ban Huay Win village. The community relies largely on subsistence activities, practicing rotational rice cultivation and depending heavily on forest products to supplement their livelihoods. Many families cannot produce enough food for the year and this is cited by the community as being exacerbated by changes in weather and ecological conditions believed to be associated with climate change.

In particular, barriers to knowledge acquisition, technology, basic infrastructure and services, and financial resources limit the adaptive capacity of the Ban Huay Win community.

Ban Huay Win's ambiguous rights over the land and unrecognized legal status are core issues for the community, with a range of consequences that affect their ability to benefit from forest products as well as their access to external support and so forth. The National Park Act of 1961 fails to support land tenure for groups such as the Tai Lue (RECOFTC, 2010) and the establishment of Doi Phu Kha National Park in 1999 led to conflict and distrust between the community and Park officials.

As indigenous people, the Tai Lue are entitled to certain rights under international conventions, such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). These include the right not to be subjected to any action that has the aim or effect of dispossessing them of their lands, territories, or resources (Part II, Article 7). Thailand is a signatory to UNDRIP, but in practice application has been a challenge, mainly due to historical associations of indigenous hilltribes with the illicit drug trade. Some 300,000 indigenous people in the country remain without citizenship and accompanying rights accruing to citizens of a country (Aguettante, 1996).

Ban Huay Win's geographic and political isolation is a major barrier to building resilience. The community has limited access to development services such as health care, basic infrastructure, and education due to its ambiguous status within the Park. The community's isolation, poverty, and low education exacerbate this problem and limit opportunities for engagement in decision-making processes.

The villagers access the forests almost daily to gather food and fuelwood for subsistence activities. The villagers sell maize and occasionally rice and forest products for cash; however, this income remains relatively negligible. Other sources of income include handicrafts, such as bamboo rice containers and grass brooms made from NTFPs. However, retail is limited by poor market linkages and access. With low agricultural productivity and low income, the villagers of Ban Huay Win are left with few options other than seasonal outmigration as laborers and a shift to more profitable cash crops.

The thin layer of topsoil covering the limestone prevalent throughout the Park is vulnerable to erosion and landslides caused by increasingly heavy rainfall. Particularly where agriculture is taking place on sloping land, the community has observed that the loss of topsoil has been rapid and has reduced soil fertility.

The village is also highly exposed, located on a hill next to a tributary with little shelter from extreme weather events. Drought in the dry season, increased rainfall, storms, and unusually high or low temperatures are cited as having major impacts on all aspects of villagers' lives, including food security, agricultural practices, village infrastructure, mobility (due to road closures), and financial security.

The geography and ecological conditions of Doi Phu Kha are vulnerable to the changing climatic conditions and weather predicted for northern Thailand (Jesdapipat, 2008).

Certain groups, such as the elderly, the disabled, and those with young dependents, are particularly vulnerable as they lack the resources to produce sufficient rice. Also, women in the community have a marginalized role with men dominating leadership and decision-making positions.

5. Responses to Environmental Changes and Development Needs

Previously, Ban Huay Win engaged in subsistence production of rice for household consumption. In 2011, however, for the first time community members grew a higher proportion of maize, prioritizing income generation over subsistence needs. Agriculture extension officers as well as company representatives have actively promoted maize production and promised market price guarantees. The shift to contract farming of maize, however, involves high investment costs and high risks including lack of available food for daily subsistence. Efforts to compensate for declines in maize and rice production have involved high use of chemical inputs and shortened rotations of rice plots to as little as two years. Although maize production may not be the preferred option for the community, the villagers feel there is insufficient information and lack of options to make alternative livelihood choices.

A key response to crop losses has been the outmigration of labor to cities. For between three and 12 months of the year Ban Huay Win is populated largely by the very young and the very old.

Entering the forest" (*khao pa*) is the second most important subsistence livelihood activity for Ban Huay Win villagers, after rice production. Dependence on NTFPs is much higher in times of stress, such as during food shortage or natural disasters. In 2008, the worst year for rice yields in recent memory, villagers sold NTFPs in markets whenever possible to generate cash income to purchase rice and other necessities.

Climatic and environmental challenges have indirectly led to strengthening of community forestry institutions and enhanced appreciation of the ecosystem services that forests provide. At present, 51% of the total area under village management is forestland, 39% of this has been reforested by the community over the past 30 years.

From 2004 to 2008, the JoMPA project attempted to open discussions on underlying issues of tenure and land access rights. The project worked with Ban Huay Win and 19 other villages in the Doi Phu Kha National Park to jointly demarcate land uses with Park authorities and neighboring villages. This has been an empowering experience, directly involving community members in

formal processes and validating customary claims to forestlands. The loose network of 20 village community forestry management groups now oversees 23,873 hectares of forestland and has led efforts for return of fallow lands in order to expand overall forest areas. The project has also contributed to strengthening dispute resolution mechanisms within and among villages.

Heavy rains have allowed weeds and fungal diseases to multiply and in conjunction with eroded soil, have contributed to declining rice and other crop yields. In the past, villagers waited for the rainy season to subside before rice planting; now given the unpredictability of weather patterns, they prepare for cultivation at the earliest opportunity. Preparation generally involves burning the plot, a practice believed to increase soil fertility. However this is increasingly being replaced by the use of chemical fertilizers in response to State restrictions on fire use as well as the widespread availability of chemical inputs. Commercial fertilizers are expensive and risk increasing the debt load of the community.

Plot rotation cycles have also changed in response to declining yields, land-use restrictions by the Park, and an increasing population. Fallow periods for plots have declined from six-year periods to typically four years with some being as short as two years. The financial expenses and workloads required to maintain the same or even lower levels of agricultural productivity have risen significantly.

Ban Huay Win has demonstrated innovation and interest in exploring new sustainable land management practices while embracing indigenous knowledge and crop varieties. Farmers have adapted and modified traditional cultivation practices and species on a trial-and-error basis independent of any official external assistance.

A component of the Raks Thai project, though still in its early stages in Ban Huay Win, is focused on the promotion of sustainable and more efficient forms of land use, such as the intensification of rice cultivation through terracing. As part of project support, up-front investments associated with terracing were subsidized by 50%. In return, farmers designated areas of fallow land for natural regeneration of the forest. Terracing is a new method for the Tai Lue, and while the labor and initial investments for terracing are high, terracing in Doi Phu Kha has resulted in increased yields per hectare of land and improved retention of both topsoil and water (Raks Thai, 2008). The introduction of terracing is hoped to mitigate forestland encroachment by reducing the amount of land required for cultivation. While income generation is clearly important, the villagers expressed their preference for setting aside fallow land for the regeneration of natural forest. Embarking on large-scale terracing is part of the long-term plans of the community, although they feel as yet unready to make the investments required.

6. Adaptation, Mitigation, and Community Forestry Linkages

In Ban Huay Win many adaptive strategies are mutually reinforcing climate change mitigation objectives, particularly in the context of community forestry; for example efforts to relieve pressure on forestland through improved agricultural systems and in particular, terracing. Other activities such as the shortening of crop rotations may reduce pressure on forestland, but are ultimately likely to result in negative impacts on livelihoods through declining yields and the need for high chemical input use.

The community has sought to maintain the momentum of forest conservation activities despite the termination of the Raks Thai project; however, unless pressing livelihood and food security needs are accounted for there is a real risk of land-use practices becoming increasingly unsustainable.

REDD+ Potential

REDD+ is on Thailand's national agenda for improved forest management and could offer opportunities for both climate change adaptation and mitigation benefits. While REDD+ discussions in Thailand remain contentious with little trickle down to the level of national parks such as Doi Phu Kha, potential income from REDD+ could offer critical compensation to ensure continued community support for forest conservation. REDD+ could also serve as an important lever in clarifying and securing community rights to the forest and surrounding areas.

The Raks Thai projects strengthened existing community forestry management practices and standardized forest use rules and regulations (Raks Thai, 2008). They also catalyzed the important step of joint land mapping, which has established the basis and processes for community-Park collaboration. However, before considering REDD+ engagement, critical issues such as land tenure, community status within the Park, and the strengthening of participatory processes must be addressed. Without the endorsement of indigenous peoples' rights and their role in participatory processes, it will be difficult to ensure that communities such as Ban Huay Win will benefit equitably rather than ceding further rights to the Park or State authorities.

Although Thailand has recognized community forestry as a strategy for forest management since the 1970s, it lacks an official framework for local participation and recognition in forest management, especially in the context of national parks and upland indigenous peoples. Given the lack of policy clarity around community-managed forests, the development of REDD+ in Thailand is likely to be constrained until these issues are addressed.

Finally, it will be important to consider time and labor requirements associated with REDD+ relative to expected benefits. REDD+ initiatives may increase local workloads, for example, to develop alternatives to existing forest exploitation strategies. It will be critical in precarious contexts such as Ban Huay Win that carbon sequestration objectives do not undermine livelihood assets and overall adaptive capacity.

