2-9. Shifting Cultivation and Upland Life in Northern Laos

Is Shifting Cultivation the Cause of Deforestation in Laos?

Shifting cultivation refers to a farming practice also known as "swidden" or "slash-and-burn agriculture." It refers to a short-term crop-growing method in which farmers clear a parcel of land by cutting down trees and shrubbery and burning it. Normally, the land is left fallow after a harvest long enough for vegetation to recover. It is then cleared and used again to grow crops. Due to its association with the clearing of land, felling of trees and use of fire, shifting cultivation has tended to be viewed as a cause of deforestation. However, shifting cultivation can be a sustainable method of agriculture if its harvest is followed by fallow periods that allow enough time for vegetation to sufficiently recover.

In recent years, however, implementation of land and forest policies not suited to traditional land use, population pressures, and land concessions for cash crops[1] has led to scarcity of agricultural land in both relative and absolute terms. As a result, land often cannot be left fallow long enough for the forest to recover, and destructive farming practices leading to land degradation and erosion is increasingly common.

Shifting Cultivation: the Foundation of People's Livelihoods

In Laos, 80% of the population lives in rural villages. According to statistics from the year 2000, 25% of the rural population, representing 150,000 households, is engaged in shifting cultivation. When fallow land is included, then more than 80% of the land used for agriculture is used for shifting cultivation (Roder 2001). With the current shifting cultivation policy of the Lao government, the number of households engaging in this type of agriculture is decreasing. Yet, shifting cultivation remains an important means of producing food for many people in Laos, particularly for minorities living in mountainous areas.


Corn harvested from shifting-cultivation fields.

Apart from upland rice, shifting cultivation is used for an array of crops, such as corn, root vegetables and beans. Post harvest, the land recovers as a secondary forest, from which bamboo shoots and mushrooms can be harvested, and the land serves as both a source of food and cash income, supporting people's lives.

In northern Laos, upland farmers typically start their new year by selecting land for farming around January. This task is primarily the responsibility of men. They look for land to farm that they think will offer a good harvest, selecting a site based on past experience, the soil, and the age of the forest. From February to March, they cut and clear the shrubbery, dry the land and vegetation, and then set it alight to clear the land. Seeds are planted at the beginning of the rainy season. At this point, the rice seeds best suited to the land, sunlight volume, and slope of the land are selected. The actual planting and decisions about what is planted are primarily the responsibility of women. Plants such as

corn, root vegetables and beans are planted. Until the harvest season, from September to December, weeding—the most labor-intensive phase of shifting cultivation—is carried out.

In addition, shifting cultivation is also deeply intertwined with the culture and beliefs of these people. For example in the villages of the Kmhmu people in Oudomxay Province of northern Laos, a ritual to pray to the spirits is conducted before selecting a farming location, clearing it, burning it, seeding the rice and the harvest. Then again, after the harvest and before a new farming season, a festival to celebrate the new year and pray for a plentiful harvest in the coming year is held.

The Wisdom of Shifting Cultivation

The planted glutinous rice is categorized into early-ripening (*khao-dor*), mid-season (*khao-kaang*) and late-growing varieties (*khao-pii*) and their seeds have been handed down within families, generation after generation. In one village in Oudomxay Province, at least three varieties of the early-ripening, three varieties of the mid-season, and more than 12 varieties of the late-growing varieties have been handed down over time. Planting rice with different or staggered harvest periods is a way to hedge against the risks of poor harvests, such as weather fluctuations.

Rice seeds cannot be preserved for extended periods of time so each year all varieties of rice are planted and the seeds saved for the next year. Villagers say that the rice that grows the best one year will not necessarily be best for the next year's agricultural land or climate. Without a variety of rice seeds they run the risk of not being able to handle the varying conditions each year brings. In this way, the wealth of multiple generations of experience with shifting cultivation has taught people how to minimize risk and maximize the stability of crop production.

Biological Diversity of Secondary Forests

In the mountainous region of northern Laos, shifting cultivation is conducted in cycles of five to ten years. Villagers clear secondary forests, burn the land and till the fields. When the crops have been harvested, the field is left fallow for a few years. After a year, the field will be home to grass as tall as a person, until ultimately the field becomes a secondary forest producing forestry products such as bamboo shoots that can be harvested. Then later, several years after the initial harvest, when vegetation has regenerated to a sufficient degree, the field will be selected for use again.

Bamboo shoots harvested from secondary forests.

Depending on the location and the forest itself, secondary forests resulting from shifting cultivation are home to a variety of wild flora and fauna. Forestry products that can be obtained from secondary forests have helped to support the lives and livelihoods of villagers. They can sometimes serve as substitutes for rice and also can be used as a means of generating cash income. There are some plants that grow only in secondary forests. As such, these secondary forests are created by virtue of shifting-cultivation practices and support the lives of upland farmers. They could be referred to as *satoyama*,

a Japanese term denoting mountains, woodlands, and grasslands near or surrounding villages that support the livelihoods of residents.

These secondary forests are very important places for securing food for people. Secondary forests are home to many plants, from wild grasses and varieties of bamboo shoots and mushrooms to potatoes, which can be picked and gathered. Wild animals, from squirrels and mice to wild boar, can be hunted. When the staple food of rice falls into short supply, villagers have looked to the forest to collect food including bamboo shoots or potatoes to avoid hunger. In addition, the forest is also a trove of medicinal grasses such as those that help with headaches, stomachaches, nerve pain or toothaches. These secondary forests are often misunderstood by outside observers to be nothing more than overgrown or degraded forest land. However, these patches of forest growth actually host a wealth of biodiversity and support the lives of people living nearby.

The products of secondary forests are also a precious source of cash income for villagers. At the village market, in addition to vegetables harvested in the field, foodstuffs such as bamboo shoots, mushrooms, and banana flowers from the forests are sold as well. Moreover, they also sell secondary forests products that brokers come to buy, such as cardamom, wild *khaa* (a variety of ginger grown in Thailand), paper mulberry, which can be used to make paper, and tiger grass, which is used to make brooms.

Environmental Changes and Shifting Cultivation

Expanding rubber plantations.

Land erosion seen in fields growing corn for livestock.

Fields used in shifting cultivation are a crucial source of food production for many farmers. The Lao government has regarded shifting cultivation as a cause of deforestation and vowed to stamp it out, pursuing a number of policies toward that end. However, these efforts were not accompanied by an improvement of agricultural productivity or the creation of businesses to generate employment opportunities. The eradication of shifting cultivation was trumpeted as the goal and involved the forced relocation of villages among other things, and there were many instances of land and forest use disruption as well as people losing their livelihoods.

At the same time, in recent years, the scale of monoculture cash crops in Southeast Asia has been expanding. These include the following crops: rubber, eucalyptus and acacia for producing paper, oil palm for commercial plantations, and cassava, sugarcane, and corn for animal feed. Monocultures are used to increase productivity for commercial purposes, but repeated planting and harvesting of

a single crop has negative environmental consequences including soil depletion and can also risk harming the food security of local residents. In Laos, shifting-cultivation fields have been increasingly converted into common fields to grow cash crops. Consequently, areas are increasing where repeated harvesting of monoculture crops is depleting the soil, and the use of pesticides is on the rise.

Increases in population, government policy restricting shifting cultivation, and expansion of monoculture, are decreasing the area of land that can be used for shifting cultivation. Hence, areas left fallow must be used again for shifting cultivation before they have sufficiently regenerated. This places demands on nature that it cannot meet and cases of soil depletion are on the rise.

Climate Change and Shifting Cultivation

Shifting cultivation is an agricultural practice that by definition involves removing vegetation and tilling land. As such it results in the release of carbon dioxide (CO_2) into the atmosphere, which is regarded as a cause of global warming. In Laos, when international climate change policy schemes such as REDD (Reducing Emissions from Deforestation and Forest Degradation) have been debated, shifting cultivation has tended to be treated as one factor contributing to deforestation.

However, specialists and organizations well versed in this topic have pointed out that in Asia, the primary factor driving deforestation and CO_2 emissions is not the expansion of shifting cultivation, but rather the conversion of forest directly into industrial plantations or agricultural land (FAO et al. 2008). Also, in Laos, major causes of deforestation include the clearing of forest vegetation for large-scale hydropower dam construction, mine development and road construction.

In addition, research has also shown that when shifting cultivation is accompanied by an adequate fallow period, it absorbs far more CO_2 than industrial plantations or land on which the same crops are grown seasonally (Erni 2009).

If climate change schemes are introduced with no consideration given to local citizens' land use practices, then not only may this lead to impoverishment of local citizens, but it could also result in a loss of biodiversity in secondary forests and turn out to be more destructive.

The Future of Shifting Cultivation

Shifting cultivation, when practiced with a sufficient fallow period that allows adequate return of vegetation, has historically been a sustainable method that also works to protect forests and contribute to biodiversity. As such, shifting cultivation has played a significant role ensuring food security for residents of this region and fostered biodiversity in secondary forests, and should be reevaluated on these merits.

At the same time, land available for shifting cultivation has become scarcer in recent years in both absolute and relative terms, shortening cultivation cycles across the region. These developments are driven by both internal factors, such as population growth and a shift to cash-crop cultivation by more local residents, as well as by external factors, including village relocation projects, the Lao government's policy to restrict shifting cultivation, large-scale infrastructure development, and the creation of industrial plantations. When policies related to land and forest or the implementation of development projects by government or business are being considered, it is essential to also take into account local residents' land and forest use practices and to involve them in decision-making. Introduction of climate change schemes such as REDD must be

premised on consideration of land use by local residents, including shifting cultivation.

In addition, the Lao government has been promoting a shift to cash crop cultivation, especially among local communities engaged in shifting cultivation. Risk-related information such as fluctuations in market prices and environmental impacts, however, are not properly communicated to residents. Consequently, curbing shifting cultivation and encouraging cash-crop cultivation will cause a decline in food security and increase environmental destruction. What is of paramount importance, regardless of whether shifting cultivation is continued or other land use methods are adopted, is that residents themselves select the method of land use that they deem to be most suitable for their area.

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1. In these concessions, the government rents land to private companies, giving them the right to use an area of land for a long period of time (usually 20-50 years) for development and business purposes.