Community-Based Fire Management in Lao People's Democratic Republic: Past, Present And Future

By Sharon London; October 2001
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EXECUTIVE SUMMARY

The El Niño drought year of 1997, combined with intense fires and haze from these fires in Indonesia and Malaysia, brought the issue of forest fire management to the forefront in Southeast Asia. Community-based fire management (CBFiM) is a new strategy that is attracting increasing interest in the Southeast Asian region because it ties the idea of participatory community involvement (community forestry) with forest fire management. No research has previously been conducted on CBFiM in the Lao People's Democratic Republic (Lao PDR).

Lao PDR is a country rich in natural resources and culture, and it contains both biological and cultural diversity. The people are extremely dependent on forests, and much of the country's revenue comes from forest products. There are no confirmed data on the extent or type of forest fires in Lao PDR, although most fires are attributed to shifting cultivation. Escaped fires for hunting or clearing fields may actually cause more damage than shifting cultivation, but more research needs to be conducted before this can be confirmed. Numerous laws and policies already exist regarding forest fire management and community involvement in land management activities.

Present initiatives in Lao PDR related to forest fire management are primarily from government or donor-initiated projects and focus on fire prevention and preparedness. As forest fires are not seen as a major threat, few projects are based solely on forest fire management (except for the Cooperazione e Sviluppo [CESVI] project in Sayabouri Province, see p. 13), but rather are part of larger forest management initiatives. Forest fire management can be found in National Biodiversity Conservation Area (NBCA) management planning, in some development project initiatives where forest fires are considered a constraint, and in land-use planning, particularly at the village level. The IUCN non-timber forest product (NTFP) project in Salavan Province is an example where local people are actively involved with forest fire management on NBCA land that is also part of their village land.

Incorporating CBFiM into forest management will require sincere commitment from all stakeholders, particularly the Lao Government, the donor community and the local people involved. Many of the key elements necessary for establishing CBFiM already exist or are in the process of being established. Strategies should be encouraged that incorporate existing government law, support indigenous knowledge and clearly explain why forest fire management is necessary. More research is needed about the implications of Lao Government policy for CBFiM, the indigenous usage of fire, fire ecology and the overall impact and extent of forest fires in Lao PDR. Capacity building at all levels and funding will also be necessary.

Gestion a Base Communautaire des Incendies de Foret Dans la Republique Democratique Populaire Lao: Passe, Present Et Avenir

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RÉSUMÉ

La sécheresse provoquée en 1997 par le phénomène El Niño, qui s'ajoutait aux violents incendies et aux fumées provenant de ces incendies en Indonésie et en Malaisie, a fait prendre une grande importance à la gestion des incendies de forêt en Asie du Sud-Est. La nouvelle stratégie de gestion à base communautaire des incendies retient de plus en plus l'intérêt dans cette région parce qu'elle lie l'idée de l'intervention participative des communautés (foresterie communautaire) à la gestion des feux de forêt. Cette stratégie n'avait jusqu'ici fait l'objet d'aucune recherche en République démocratique populaire lao.

Le Laos est un pays riche en ressources naturelles doté d'une grande diversité biologique et culturelle. La population tire une grande partie de sa subsistance des forêts et les produits forestiers fournissent une bonne part du revenu national. On ne dispose pas de données confirmées sur l'ampleur ni la nature des incendies de forêt dans le pays mais la plupart de ces incendies sont attribués à la culture itinérante. En fait, les feux non maîtrisés allumés à des fins de chasse ou de défrichement pourraient causer plus de dégâts que la culture itinérante elle-même mais il serait nécessaire de faire des recherches plus approfondies pour confirmer cette hypothèse. Il existe déjà de nombreuses lois et autres mesures concernant la gestion des incendies de forêt et la participation des communautés à l'aménagement des terres.

Les initiatives en cours qui intéressent la gestion des incendies de forêt émanent essentiellement de projets du gouvernement ou de donateurs et sont axées sur la prévention et la préparation à la lutte contre les incendies. Étant donné que les incendies de forêt ne sont pas considérés comme une menace grave, les projets sont rarement fondés exclusivement sur la gestion de ces incendies (à l'exception du projet de Cooperazione e Sviluppo [CESVI] dans la province de Sayabouri), mais s'inscrivent plutôt dans de grandes actions d'aménagement forestier. La gestion des incendies de forêt est prévue dans les plans d'aménagement des zones nationales de conservation de la biodiversité, dans certains projets de développement lorsque les incendies de forêt sont considérés comme un obstacle et dans la planification de l'utilisation des terres, surtout au niveau du village. Le projet de l'UICN concernant les produits forestiers non ligneux (PFNL) qui est en cours dans la province de Salavan offre un exemple de participation active des populations locales à la gestion des incendies de forêt dans une zone de conservation de la biodiversité qui fait également partie des terres des villages.

La gestion à base communautaire des incendies de forêt ne pourra être intégrée dans l'aménagement des forêts qu'avec l'engagement sans réserve de tous les intéressés, en particulier le Gouvernement lao, les donateurs et les populations locales concernées. Bon nombre des éléments indispensables pour organiser cette gestion existent déjà ou vont être mis en place. Il

faudrait encourager l'application de stratégies qui prennent en compte les lois en vigueur, appuient les connaissances indigènes et précisent clairement pour quelles raisons la gestion des feux de forêts est nécessaire. Il faudrait entreprendre des recherches plus approfondies sur les implications de la politique du Gouvernement lao pour la gestion communautaire des incendies de forêt, l'utilisation indigène du feu, l'écologie des incendies et l'incidence globale et l'ampleur des incendies de forêt dans le pays. Il sera également nécessaire de renforcer les capacités à tous les niveaux et de mobiliser des fonds.

Manejo Comunitario de Incendios en la República Democrática Popular Lao: Pasado, Presente y Futuro

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RESUMEN DE ORIENTACIÓN

El año de sequía provocado por El Niño en 1997, aunado a los fuertes incendios y niebla provocada por los mismos, en Indonesia y Malasia, puso sobre la mesa el tema del manejo de los incendios forestales en Asia Sudoriental. El Manejo comunitario de incendios (MCI) constituye una estrategia nueva que cobra cada vez más interés en dicha región, debido a que ésta enlaza el concepto de participación comunitaria (forestería comunitaria) con el manejo de los incendios forestales. Hasta ahora no se ha efectuado ninguna investigación sobre el manejo comunitario de incendios forestales en la República Democrática Popular Lao.

Este país cuenta con un rico acervo de recursos naturales y culturales que a su vez, albergan tanto la diversidad biológica, como la cultural. La población depende en gran medida de los bosques, y buena parte de los ingresos nacionales provienen de los productos forestales. No se cuenta con datos que confirmen qué tipo y qué extensión caracterizan a los incendios forestales que afectan al país, aunque la mayoría de los incendios suelen ser atribuidos la agricultura itinerante.

Los fuegos que escapan fuera de control, cuando se les utiliza en la cacería o el desboscamiento del terreno, pueden, en realidad, provocar mucho más daño que la agricultura itinerante. Sin embargo, es necesario llevar a cabo investigaciones antes de poder confirmarlo. Ya existen numerosas leyes y políticas relacionadas con el manejo de los incendios forestales y la participación de la comunidad en las actividades de manejo de la tierra.

Las iniciativas que actualmente se llevan a cabo en la República Democrática Popular Lao, en materia de manejo de incendios forestales, son fundamentalmente de naturaleza gubernamental o fueron propiciadas por proyectos patrocinados por donantes y se centran en la prevención y medios para afrontar situaciones de emergencia en caso de incendios. Dado que no se considera a los incendios forestales como un peligro de gran magnitud, pocos proyectos consisten sólo en el manejo de incendios forestales (a excepción del proyecto de la organización no gubernamental

Cooperación y Desarrollo [CESVI] realizado en la provincia de Sayabouri), más bien, éstos suelen formar parte de iniciativas más vastas de manejo forestal. Es posible encontrar actividades de manejo de incendios forestales en los planes de manejo del Área Nacional de Conservación de la Biodiversidad (NBCA), así como en las iniciativas de algunos proyectos de desarrollo en donde los incendios forestales se consideran como un problema, y también en las actividades de planificación del uso de la tierra, especialmente en el ámbito de la aldea. El proyecto de productos forestales no madereros (PFNM) de la UICN, con sede en la provincia de Salavan, es un ejemplo de cómo la población local ha participado activamente en el manejo de incendios forestales en el Área Nacional de Conservación de la Biodiversidad, la cual también forma parte de sus tierras comunales.

La incorporación del manejo comunitario de incendios en el manejo forestal requiere de un compromiso genuino de parte de todos los actores, especialmente del Gobierno de la República Democrática Popular Lao, de la comunidad de donantes y de la población local que participa en él. Muchos de los principales elementos necesarios para establecer el manejo comunitario de incendios ya existen, o se encuentran en vías de establecimiento. Habría que fomentar las estrategias que incorporen las leyes gubernamentales actuales, así como apoyar los conocimientos indígenas y explicar claramente por qué es necesario el manejo forestal de incendios. Se requiere de más investigación acerca de las implicaciones que las políticas del Gobierno de la República Democrática Popular tienen sobre el manejo forestal de incendios, sobre el uso que los indígenas hacen del fuego, sobre la ecología relacionada con el fuego y sobre el impacto general y la extensión de los incendios forestales que afectan al país. Asimismo, es necesario realizar actividades para crear capacidades en todos los ámbitos, así como propiciar la financiación.

INTRODUCTION

The El Niño drought year of 1997, combined with intense fires and haze from these fires in Indonesia and Malaysia, brought the issue of forest fire management to the forefront in Southeast Asia. Community-based fire management (CBFiM) is a new strategy that is attracting increasing interest in the Southeast Asian region, because it ties the idea of participatory community involvement (community forestry) with forest fire management.

A meeting at the Regional Community Forestry Training Center (RECOFTC) in Bangkok, in December 2000, to assess CBFiM in Southeast Asia found that information about CBFiM is available in most Association of Southeast Asian Nations (ASEAN) countries, but little is known about the situation in Lao PDR. Therefore, this study was commissioned to determine to what extent Lao PDR is dealing with forest fire management, and how local communities are involved in forest fire management.

To answer these questions, this paper looks at existing policies and projects in Lao PDR, offers experiences from two case studies, and makes recommendations for future CBFiM initiatives in Lao PDR.

Background on Lao PDR

The Lao People's Democratic Republic (Lao PDR) is the only landlocked country in Southeast Asia. It is situated between 13º54'N and 22º31'N and between 100º05'E and 107º42'E in the centre of the Indochina Peninsula. China and Myanmar border Lao PDR in the mountainous north, Viet Nam to the east, Thailand to the west and Cambodia to the south. The land area covers 236 800 km^2, of which more than 80 percent is mountainous terrain with steep valleys (Rundel, 1999). The Mekong River flows for 1 700 km along the length of Lao PDR and the human population is mostly settled in the broad fertile valleys along the river and its tributaries. Lao PDR has a seasonal tropical climate with pronounced wet and dry seasons. The rainy season is generally from May to October, while the rest of the year can be quite dry (Duckworth, 1999). Fires are more common in March, April and May during the hot and dry season.

Lao PDR is a member of ASEAN. On the United Nations Development Programme (UNDP) Human Development Index, Lao ranks one-hundred-and-fortieth out of 174 countries, and it receives large amounts of foreign aid. The largely rural population is primarily engaged in agriculture. In 1998, the estimated annual per capita income was US$330. An estimated 46 percent of the Lao people live below the poverty line. The incidence of poverty is generally higher in remote areas, especially in the northern and southern provinces. As in neighbouring countries, strong economic growth in the 1990s in Lao PDR was reversed by the 1997 Asian economic crisis, but the economy seemed to be on the rebound at the time of writing. The country's 2.8 percent growth rate in 2000 (National Statistics Center, 1997) was one of the highest in Asia.

Lao PDR has a population of 5.09 million. The country is rich in natural resources and culture. Almost all of its 18 provinces border on at least one of the five neighbouring countries. Approximately 80 percent of the population lives in small villages in rural areas, with an average of about 300 inhabitants per village (National Statistics Center, 2000). For broad comparative purposes, ethnic groups are divided into three categories: Lao Loum (Lao of the lowlands), Lao Theung (Lao of the mountain slopes) and Lao Sung (Lao of the mountain summits). These terms refer to geographical distributions and do not adequately account for the linguistic or cultural

diversity of the population. In order to represent the people of Lao PDR more accurately, ethno-linguistic characteristics should be used.

The Lao Government census of 1995 identifies 48 different ethnic groups in the country (National Statistics Center, 1997), while other sources identify up to 230 ethnic groups (ADB, 2000). There are four major ethno-linguistic groups: Mon-Khmer, Hmong-Mien, Tibeto-Burmese and Tai-Kadai. Each ethnic minority has its "own language and complex system of religious beliefs, which might be labelled collectively as animistic, with totemic nuances," (ADB 2000). All four ethno-linguistic groups occur in both the lowlands and the highlands. However, the Tai-Kadai groups dominate in the lowlands where they cultivate paddy rice. The Mon-Khmer, Hmong Mien and Tibeto-Burman groups occur more commonly in the uplands and practise swidden agriculture. These three groups live primarily in rural areas and are dependent on forests for their basic needs.

Most of the Lao PDR population is Buddhist, Animist or a combination of the two. Both of these religions place importance on great respect for elders and for working collectively. Community cohesion is very strong in Lao PDR. A village head is usually leader of the community, and family ties are very strong.

Forests and fire occurrence

Forest cover in Lao is estimated to be between 40 percent (Galt, Sigaty and Vinton, 2000) and 47 percent (DoF, 2000). Forest products are the main source of foreign exchange, accounting for 42 percent of foreign exchange revenue in 1998 (STEA, 2000). Forests provide habitat for a large number of plant and animal species. Surveys have identified more than 250 wildlife species of regional or international importance, and 20 bird and 14 mammal species that are endangered or vulnerable. These include two species new to science: the saola (*Pseudoryx nghethingensis)* and the giant muntjac (*Mehamuntiacus vauquangensis)*.

Forest habitats in Lao PDR can be divided into four broad types: dry dipterocarp lowland (below 800 to 1 000 m), montane (above 800 to 900 m), mixed evergreen, and pine. Of these, dry dipterocarp forests, and possibly pine forests, may be actively maintained by fire. In addition, there are 20 National Biodiversity Conservation Areas (NBCAs) comprising 13 percent of the total land area, most of which is forest habitat.

There are no confirmed data on the extent or type of forest fires in Lao PDR. A distinction between fires caused by careless shifting cultivation and forest fires (meaning all other fires started in the forest or intruding on forests) is not always made when tabulating data. In addition, the area of mature forest that burns is not distinguished from areas of previously degraded shrub and grasslands that have been used for numerous previous cycles of shifting cultivation.

The impact of forest fires caused by war is another key element in Lao PDR. During the Indochina War, much of the forest along the legendary Ho Chi Minh Trail, on the Lao–Viet Nam border, was bombed by United States forces. In 2000, natural resource surveys of the villages in and around Hin Namno NBCA in the Annamite Chain found that the forest is healthier now than it was immediately following the war because it has had time to recover. It is not known how much forest was permanently damaged by fire from bombs and by exfoliants used during the war.

Fires caused by shifting cultivation

There are numerous relatively recent statistics on the extent of shifting cultivation in Lao PDR. In March 1999, the Department of Forestry (DoF) stated on a Web site that in 1992 there were 1.6 million ha under shifting cultivation, and that in 1998 this area had decreased to 132 500 ha. It is estimated that 90 percent of forest fires are due to shifting cultivation, with the rest attributed to hunting (Bouaket, 1999). However, the emphasis on shifting cultivation was later reduced and further qualified. In its Strategic Vision, the Lao Government takes credit for reducing the area of shifting cultivation, but states that more than 100 000 ha per year are still burnt (DoF, 2000).

The National Environmental Action Plan 2000 (STEA, 2000) offers a set of statistics about the extent of shifting cultivation. The plan quotes the Lao Agricultural Census (1998/1999) figure of 200 000 ha of deforestation due to shifting cultivation by hill tribe ethnic minorities. In addition, it estimates that 600 000 ha of forest is degraded by a five-year fallow period (i.e. approximately 120 000 ha per year). Lastly, it quotes the Department of Forestry to say that 300 000 ha per year is cleared by shifting cultivation practices and that some of this is caused by the "encroachment of upland areas by lowland farmers". The expansion of permanent agriculture is estimated to be about 30 000 ha per year (STEA, 2000).

Forest fire caused by slash and burn agriculture

Fires that escape from shifting cultivation to nearby forest were recognized to cause more damage than the shifting cultivation fires themselves, especially in the northern provinces (DoF, 2000). This is probably because villagers have been using fire for centuries and know how to control it. When villagers in Luang Prabang Province were asked to identify threats to upland crops, they did not even mention fire (McAllister, Gabunada and Douangsavang, 2001), presumably because they keep their swidden fires under control.

These statistics could be further qualified. Suggestions for research include:

- determining the area and rate of return of shifting cultivation;
- distinguishing the area of shrub and grass that has been used and reused for swidden agriculture from the area of more mature forest that is newly converted to swidden agriculture;
- conducting studies on the area of permanent agriculture versus repeated shifting cultivation.

Fires in natural forest and plantations

Forest species and forest types react to fire differently. For example, teak (*Tectona grandis*) needs fire to promote seed germination (Rundel, 1999). Mixed deciduous forests, particularly those that formerly contained teak, are especially adapted to fire owing to their strong seasonality and the consequent accumulation of leaf litter on the forest floor during the dry season. Likewise, many species found in the dry dipterocarp forests have unusually thick bark and maintain a canopy that is high enough to avoid most grass fires. Plantations also have variable risk of fire, depending on species and age. Eucalyptus (*Eucalyptus spp.*) is quite fire-resistant, but a plantation of acacia is susceptible to fire owing to its high litter volume (Linton, personal communication).

In northern Thailand and Lao PDR, where cultural and agricultural practices are almost identical, it has been reported that forest fires are started for clearing grasses, improving movement, ease of hunting, providing cattle forage and cultivating mushrooms (Makarabhirom, Ganz and Onprom, 2000). Escaped fires started for human use are probably the more harmful type of fire for forests, but statistics on the exact extent of this problem do not exist.

LAO GOVERNMENT AND CBFiM

The impetus for forest fire management in Lao PDR has both external and internal drives. Some argue that forest fire management is not an important issue for the country, especially since the health and environmental problems associated with fire are minimal when compared with those in other countries in the region, such as Indonesia (Sukata, personal communication). The perceived importance of fire management is reflected in the structure of the DoF. Nowhere in the system, from district to province to the central office, is there an official whose sole purpose is fire management. However, at all these levels, there are officials who carry out fire management as one of their responsibilities.

Forest after fire, surveying in XE Bang Nouan NBCA by the NTFP project team

The following are the two reasons why Lao PDR is concerned with forest fires (Pheng, personal communication):

1) *Managing the environment*: this is the main impetus for forest fire management in Lao PDR, especially since deforestation is occurring at a rapid rate and much of the country's revenue comes from timber exports and other natural resources that might be reduced by forest fires.
2) *Funding opportunities*: donor-driven projects are common in countries with limited sources of revenue. As a result, more impetus for forest fire management may come from outside Lao PDR than from within it.

Managing the environment

Sustainable management of natural resources is a high priority in Lao PDR, because natural resources are an important source of revenue. The two key issues tied with forest fire management are control of shifting cultivation, where escaped fires may cause forest destruction; and protection of plantations and reforestation efforts (Bouaket, 1999). Increasing forest cover in the form of plantations is a primary concern of the Lao Government. Plans have been drafted to ensure that 500 000 ha of plantation cover is reached between 2000 and 2005 (STEA, 2000). Reforestation seems to be a lesser objective, although some projects are working towards this goal, such as a project at Dong Dok National University funded by the German Government, and Japanese afforestation efforts in Vientiane.

However, plantations are particularly susceptible to fire, especially for such popular, quick-growing species as acacia. According to BGA Lao Plantation Forestry Ltd, most plantations have firebreaks, but not all of these are well maintained and some would not even function were a fire to occur (Linton, personal communication).

According to the DoF Strategic Vision for 2020 (DoF, 2000), other topics related to forest management and, indirectly, to fire management include the following:

- *Effects of war*: aerial bombardment started fires that devastated much of the landscape along the Ho Chi Minh trail during the Indochina War, resulting in the long-term reduction of forest cover.
- *Production forests and NBCAs*: management plans that include forest fire management are being written for these areas.
- *Village forests:* a land allocation process is now under way that should give villagers more access and rights to use their land, and that will include discussions about forest fire management.
- *Legal framework:* better laws to deal with forest fire management are being created.
- *Capacity of local forest officers:* staff capacity is limited and needs to be improved, particularly in terms of forest fire management (DoF, 2000).

Specific laws relating to CBFiM

There are numerous laws relating to forest usage and forest management. Laws most relevant to CBFiM are those related to forest usage and protected areas. Table 1 outlines the relevant laws made in the past ten years. They give local people rights to use the forest according to their customary beliefs, but limit the areas where shifting cultivation is permitted, particularly in protected areas on steep slopes.

Order 2094 is the only law directly related to forest fires. It gives authority to officials from the Provincial Agriculture and Forestry Office (PAFO) or the District Agriculture and Forestry Office (DAFO) to implement forest fire management activities and supports the involvement of local communities in forest fire management.

Table 1: Lao Government laws related to forest fire management

Law	Key provisions
Prime Minister Decree No. 164, 29 October 1993	• Established protected area system of Lao PDR, composed of 20 NBCAs • Forbids burning or planting in protected areas (Article 4.7)
Prime Minister Decree No. 169, 1993	• Gives local people the right to use forest resources according to their customs and village regulations (customary rights) • State measures will be taken against offenders who burn or destroy the forest • Establishes Village Forestry Officers for the protection of the natural environment within each village (Article 50)
Order 54/Ministry of Agriculture and Forestry (MAF) on the Customary Rights and Use of Forest Resources, 7 March 1996; followed by recommendations 377/MAF on the Customary Use of Forest Resources	• Secures legal rights for local people to use forest resources for subsistence • Limits customary rights that negatively affect collectives or individuals, or that are inconsistent with government policy such as "undifferentiated slash and burn" and forest fire for hunting
Forestry Law 1996 (Amendment to Decree 164)	• States the prevention and control of forest fire as the responsibility of all people • Gives PAFO and DAFO responsibility to educate local people about the "serious danger of forest fire" and to "work out necessary rules and measures to prevent forest fire" • In case of fire, DAFO and local community leaders should find or borrow equipment, vehicles and labour (which should be returned and compensated promptly) • Individuals and organizations (including the army) should cooperate with authorities in case of fire
Order 2094/MAF on Fighting Forest Fires During the Dry Season of 1999–2000, 31 December 1999	• Makes PAFO/DAFO responsible for fighting forest fires • Makes PAFO/DAFO responsible for educating local communities about forest fires (including managing, putting out and reporting fires in their area) • Staff should target areas of shifting cultivation, poor soil and deforestation that are at least 500 m from streams • Prohibits shifting cultivation in evergreen forests, NBCAs, watershed protection areas and forests on steep slopes that could cause landslides • Advises PAFO/DAFO staff to tell local people: - the proper technique for cutting before setting fires - to burn before sundown and when there is no wind • Prohibits burning trees, burning wild grass for hunting, dropping cigarette butts, making campfires without shelters and failing to extinguish campfires before leaving them
Prime Minister Decree, Instruction No. 01/PM 11 March 2000	• Implements countrywide decentralization • Declares provinces as strategic units, districts as planning and budgeting units and villages as implementing units

Decentralization

There is a push for decentralization from the top levels of the Lao Government. With the support of UNDP, round table meetings in 2000 encouraged the development of work plans at the provincial and district levels rather than at the central level. In March 2000, the Prime Minister signed an instruction that called for "building up provinces as strategic units, districts as planning and budgeting units and villages as implementing units" (Instruction No. 01/PM [11/03/2000]). According to the round table report "the decentralization policy represents a conscious effort to empower provincial and district authorities to achieve and defend a vision and to identify dynamic elements and to ensure coherence in their undertakings" (Government of Lao PDR, 2000).

The plan would make villages, districts and provinces "the masters of their own development and destinies, by empowering the grassroots level to participate in their own socio-economic development, thus lessening their dependence on the central level". However, a more likely scenario will be that community-based management of resources will require support from the district, the province and, ultimately, the central government. Although the province or district may write a plan, they will still need approval from their superiors. As the new Prime Minister (PM) Decree states, the communities will implement plans and, in the case of CBFiM, take part in managing their own land. However, although communities can create plans on their own initiative, the current regulations require political approval, especially at the district and provincial levels. They also require that government officials support and possibly facilitate community-based resource management. This will require additional capacity building for government officials. Capacity levels vary among provinces, districts and villages.

Some areas, such as protected areas, are clearly no fire/no use zones, but in an extremely forest-dependent country such as Lao PDR, much of the forest is still used even when it lies inside a protected area. Furthermore, in a country where limited government staff control vast amounts of resources and where local people are the main users of those resources, more coordination is necessary between government staff and local people. Shifting agriculture, especially the need to maintain forest cover, is also a key issue. A 1999 report by the Lao Government suggested the following plans to deal with fire and summarized the main goal of the laws:

- motivate the shifting cultivators to understand how to prevent, detect and control fires;
- provide sustainable land-use and job opportunities for shifting cultivators;
- prepare standard working groups and set up an organization for the coordination of regional fire control organizations or other government agencies; and
- prepare materials/guidelines for forest fire prevention and suppression (Bouaket, 1999).

From these suggestions, it is obvious that forest fire management is on the agenda of the Lao Government, although other issues related to basic livelihoods may be more pressing.

CURRENT FOREST FIRE MANAGEMENT PLANNING

Current initiatives in Lao PDR related to forest fire management come primarily from either the government or donor-initiated projects. Forest fires are not seen as a major threat, so few projects are based solely on forest fire management, which is instead part of larger forest management initiatives. Forest fire management can be found in NBCA management planning, in some development project initiatives where forest fires are considered a problem and in land-use planning, particularly at the village level.

National Biodiversity Conservation Area management

NBCAs have the clearest mandate for village involvement and forest fire protection, particularly in the terms of Order 2094 and Decree 164, which declares there is to be no burning in NBCAs. NBCAs often contain the best forest and cover 13 percent of the entire country area. Fifteen of the country's 20 NBCAs have or have had donor assistance. Most NBCAs have limited staff or equipment and try to work with local communities.

NBCA managers in 2000 were increasingly asked by DoF officials to be sure to include forest fire management in their quarterly work plans (Louangoudom, personal communication). For example, plans for Hin Namno NBCA stipulated that the dangers of forest fires should be discussed when conducting land allocation or socio-economic surveys in villages around the protected area. Other NBCAs, such as projects funded by the Swedish International Development Agency (SIDA) at Phou Song He and Dong Hua Sao, also encouraged discussions with villagers about fire management during visits to villages for other development initiatives (Mossberg, personal communication). An entire chapter of Phou Hin Boun NBCA's management plan is devoted to forest fire management (Claridge, 2000). Although not specifically ordered by law or government decree, NBCA managers and advisers have found that DoF officials encourage the inclusion of the following five items in NBCA work or management plans:

- forest fire prevention (including village visits and the purchase of tractors to build breaks and other infrastructure);
- land and forest allocation;
- forest inventories and boundary demarcation;
- tree planting; and
- community development (with an emphasis on stabilizing shifting agriculture).

Community development projects

Development projects, whether they are associated with protected areas or not, have mentioned forest fire management in their work with local communities. For example, the Phou Xieng Tong NBCA community development project (funded by German Agro-Action and implemented by Population and Development International [PDI] Thailand) in Champassak Province in southern Lao PDR used a campaign board in the NBCA buffer zone to encourage local communities to control forest fires during the dry season (Thongmak, personal communication). In another example, a Cooperative for Assistance and Relief Everywhere (CARE) project in Sayabouri Province in western Lao PDR conducted fire awareness activities with villagers as part of the contract to build and protect gravity-fed water systems. Forest protection (and fire) was linked to community resources, which included protecting watersheds at the spring source (Bluhm, personal communication). Fire management is a key component of a CESVI-funded project in Sayabouri Province (see Case study 2).

Land management at the village level

According to the Lao Government policy of decentralization and land allocation policies, which encourage *participatory* land management, CBFiM has the potential and recognized right to be implemented at the village level. Land allocation is occurring in every village throughout Lao PDR, and should be conducted in a participatory eight-step process: preparation, survey and mapping, data collection, land-use planning and allocation, field measurements, land agreements,

land extension, and monitoring and evaluation. However, in reality, the process is usually completed in only one or two steps, so the full benefits of participatory management intended by the programme are not being fully realized. Better training and capacity building for everyone involved may improve this process. In most cases, the experiences of people who have conducted land allocation from the field suggest that community participation seems to be the result of obligation rather than self-motivation.

In addition, according to PM Decree 169 Article 50, each village should have a Village Forestry Officer as a key contact for forest fire management. A number of protected areas are working with the strategy of co-management, particularly Xe Pian NBCA in southern Lao PDR, which was part of the Forest Management Conservation Project (FOMACOP). Although still in its early stages of development, the concept of co-management is a way for villagers to become involved in protected area and forest management activities. Other community forestry activities are being directed to Village Forestry Officers, for example by a WWF Community Forestry project in southern Lao PDR. An example of how communities have managed their land at the village level in the NTFP project in Salavan is described in Case study 1.

CASE STUDIES

Case study 1: Non-Timber Forest Product Project, Salavan

The IUCN Non-Timber Forest Product (NTFP) Project[1] in Salavan Province, Lao PDR, is possibly one of the best examples of CBFiM in the Southeast Asian region. The project began at the end of 1995 in three provinces in Lao PDR, and ended in April 2001. The project goal was to promote the sustainable exploitation of NTFPs and biodiversity conservation by supporting community-based initiatives for forest conservation to improve the well-being of people and the forest. Fire management was not the original goal of the project, but became an important project subcomponent in Salavan Province, effectively implementing the Lao Department of Forestry Notice 2094 for community involvement in forest fire protection.

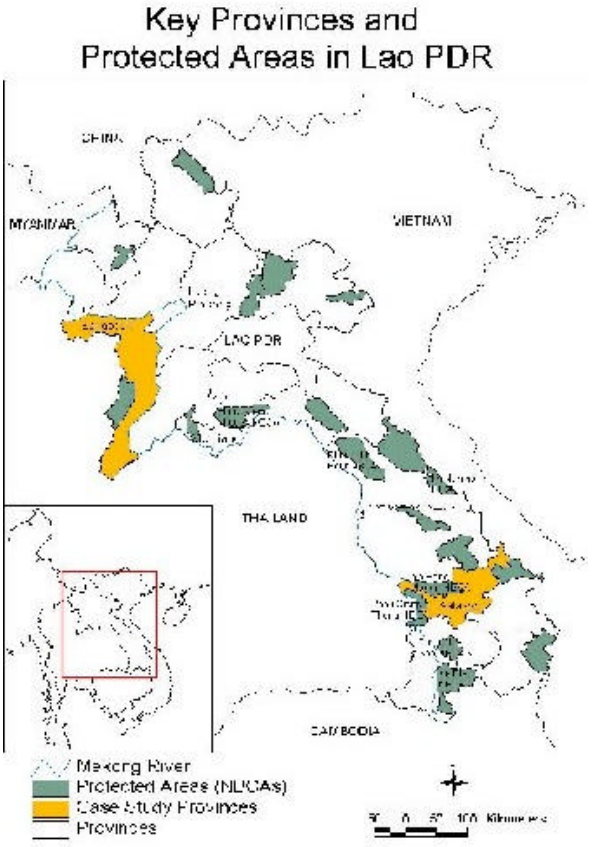
Background

Salavan Province is located in southern Lao PDR and borders Viet Nam to the east and Thailand to the west (see Map). The NTFP project worked with two villages located on the perimeter of Xe Bang Nouan NBCA. The project and the communities aimed to develop models for sustainable harvesting systems of NTFP in the protected area. With project support, community members in two target villages identified two key threats to sustainable livelihoods: the recognition of users' rights by other villages, and fire.

The project emphasized sustainable resource use and helped communities work together to understand forest conservation and develop multivillage agreements on land usage. It used existing committee structures to establish natural resource use committees, which were gender-inclusive and sought inputs from both men and women. Sustainable use, rather than conservation, was emphasized because the Lao term for conservation – *anulak* – suggests "no usage" and thus

[1] Funding for the NTFP Project came from the Government of the Netherlands and IUCN. The project was implemented by the Lao Government with IUCN support. At the central level, it worked with the National Agriculture and Forestry Research Institute (NAFRI). At the field level it was executed by NAFRI and IUCN, with field teams working under PAFO and DAFO in three provinces in Lao PDR.

has a negative connotation. The project has worked hard to challenge the Lao notion that conservation means no usage or prohibited usage, and seeks to associate the term with sustainable usage, which can be brought about through co-management plans (Deschaineaux, personal communication).



The traditional practice of villagers in this area is to use fire to encourage the growth of a grass locally called *yah kah,* which is used to make roofing for bamboo huts and as fodder for the livestock that graze in the forest during the wet rice production season. Villagers also light fires to facilitate hunting. Other causes of forest fires reported by villagers include clearing tracks and trails for more convenient access and escaped fires from the burning of *nam man yang* (*Dipterocarpus alatus)* to extract oleoresins.

Approach

A wildfire that burned from 4 to 6 January 1999 on Phou Thanaem Mountain in Xe Bang Nouan NBCA burnt a large area of the forest inside the NBCA. Local communities in the area did not recall other fires of this magnitude. Only those villages with immediate boundaries on the NBCA fought the fire using buckets, spades and natural firebreaks, such as rivers and streams. Unfortunately, there were not enough people available to fight the fire, nor was there any official responsibility or coordination among villages as many of the people living in the area were reluctant to act without official government orders. The cause of the fire is unknown, but it is

likely that irresponsible lighting of grass for livestock grazing, trail blazing fires to round up animals for hunting, or possibly more deliberate fire setting may be to blame. The ability to harvest NTFPs declined significantly as a result of the fire.

A few weeks after the fire, on 25 January, the district governor initiated a meeting to discuss forest fire management with the local communities that use forest resources from the NBCA. The governor decreed that fire control committees would be established in each village to protect the forest inside the NBCA. (Very little forest remains outside the NBCA.) The government staff advocated that all villages with access to the NBCA should coordinate fire protection and control and meet once a month. However, no strategies or procedures for fire management were developed or sanctioned. The local district government also conducted a post-fire survey to determine the area of land damaged by the fire. Members of the NTFP project also attended the meeting to identify corresponding needs of the local district staff and the project target communities and to plan and coordinate local fire management and sustainable resource use.

Community mapping in Xe Bang Nouan NBCA by the NTFP project team

In collaboration with the district government, the NTFP project conducted a series of four-day workshops for district-level stakeholders. These included representatives from 23 villages who used more than 5 000 ha of forest inside the NBCA, as well as a Lao Women's Union member from each village. Participatory learning techniques were used to teach conservation awareness and to disseminate information about co-management of resources in the NBCA. Villagers engaged in a participatory resource analysis in which threat ranking exercises and problem analysis clarified their understanding of forest fires. Activities included defining good fires as opposed to bad ones and setting up a system for fire preparedness. The main workshop output was a multivillage agreement on rules and regulations for the use of important NTFP resources, fire management and local networking and coordination. The workshop participants returned to their villages and acted as facilitators for conservation awareness, threat ranking and problem analysis activities at the village level. The newly trained trainers reported back to the district, the NTFP project and the NBCA about their village activities.

After the workshops and subsequent village activities, community members had a clearer understanding of the value of their resources, as well as the impacts that threats such as fire have on ecological systems. They were eager to exchange information on conservation and to promote proper use of resources for long-term benefits in their villages. This process gave local people the tools and capacity to conduct information exchanges. It also involved them in decision-making processes, which empowered the group and helped develop a sense of responsibility.

In January 2001, a year after the fire, a formal meeting was held at the beginning of the fire season and included the district governor, PAFO and DAFO staff and villagers. The local district reviewed and endorsed the village co-management plans, which included improving roles, coordination and procedures for existing village forest fire management committees and securing local government support. The NTFP project provided notebooks and pens, as well as a per diem to government staff for initial facilitation. Meetings among villages continue to occur once a month during the dry season (of six months) and twice during the wet season. The meetings provide a forum for consolidating information on local resource use.

The January 2001 meeting highlighted one of the constraints of the project: how to negotiate the sharing of benefits after prosecuting encroachers, as well as how to secure incentives for local communities to implement their own co-management plans effectively. The district government insisted on following the central decree from the Ministry of Finance (No. 266 of 3 February 2000), under which 70 percent of fines goes to the local district government and the remaining 30 percent is divided among key players at the community level. The villagers proposed that 40 percent go to village funds, 10 percent to the local district government, 30 percent to the informant and 20 percent to the village committee for administration and follow-up. The NTFP project advocated for village law with district approval. However, attempts to negotiate a more realistic incentive for local resource management were inconclusive and the plans were endorsed according to the existing decrees.

Lessons learned in Salavan

The NTFP project in Salavan provided support for fire management in addition to other natural resource management activities. The original impetus for fire management came from the district, with support from the local people because they were negatively affected by forest fires. Villagers and district staff received additional support from the project in terms of community organization, planning, and training and funding for meetings. The villagers and district would have established committees even without NTFP project support, as they were implementing DoF Notice 2094, but organization was probably more effective with project support. The project also provided facilitators who valued local knowledge and encouraged local people to make their own decisions.

Another important outcome of the project was stakeholders' new understanding that conservation of natural resource management does not mean no-usage, but rather sustainable usage of natural resources. Changing the perception of conservation (*anulak*) is crucial for success in all projects in Lao PDR and is an extremely difficult task. Efforts should be made to use a translation of the term "sustainable resource use", rather than the direct translation of conservation.

The project also helped to increase the participatory tools of local people and resource users, as well as to disseminate ideas about the links among conservation, biodiversity and resource use. The process respected local knowledge and provided technical information for decision-makers at

the district and village levels, as well as promoting links between indigenous knowledge and natural resource decision-makers. Other benefits included:

- increased stakeholder involvement;
- improved understanding of the economic and cultural value of NTFPs;
- promotion of local ownership;
- clarification of tenure use rights;
- capture of knowledge and ideas on the details of planning co-management that is appropriate to the socio-cultural context, for more effective natural resource management;
- new opportunities for local users to engage as a level of authority in the process of planning resource use and developing a regulatory system appropriate to the real context;
- enhanced and strengthened village-level capacity to be more aware and responsible for resource management and the monitoring of use and impacts; and
- support to new policy reforms for decentralization by developing strategies for effective application of provincial-, district- and village-level roles as the local district government played a supportive role to the local villages.

This example of a project that gained multivillage agreements on the co-management of natural resources can still be improved. The experiences from the NTFP project show that in order to fulfil commitments and implement collaborative natural resource management effectively, additional support is required to:

- promote the capacity of district and NBCA staff to support local management systems through training facilitators in specific technical skills, including participatory NTFP resource use planning, monitoring and evaluation, participatory conflict management, marketing and processing;
- follow up dissemination activities and produce materials;
- strengthen local monitoring of procedures and resource use so as to capture lessons learned from implementation, identify gaps and influence policy design and implementation; and
- develop networks to improve access to and exchange of information among local stakeholders, districts, provinces and other NBCAs.

Case Study 2: CESVI, Sayabouri Province

Background

Cooperazione e Sviluppo's (CESVI's) Disaster Preparedness and Prevention of Forest Fires (Fire Prevention Training Project in Sayabouri Province) is the only project in Lao PDR that has forest fire prevention as its main objective. The official goal of the project is: "to decrease uncontrolled forest fires in the project area and reduce the risk brought to the population, communities and environment." CESVI is an Italian non-governmental organization (NGO) that has been present in Lao PDR since 1998, when it started a food relief project in Sayabouri Province in the west of the country. The impetus for CESVI's support to forest fire prevention came from the Sayabouri provincial government and was a result of the extensive practice of slash and burn agriculture in the Sayabouri area. Drawing on lessons from Thailand, CESVI has taken a capacity building approach of training trainers at the provincial and district levels, who then return to the province and train other PAFO/DAFO staff and villagers. The project also has a strong public awareness component.

Approach

Phase 1 of the project was implemented in 1999 and involved 60 villages in five districts in Sayabouri Province. CESVI took a traditional approach to forest fire prevention, which involved capacity building and a public awareness campaign.

Capacity building. The project worked to build community capacity for the prevention and fighting of uncontrolled fires, at both the village and the administrative levels. This included a forest fire fighting training course in Thailand for district and provincial staff who then conducted training in the province, as well as the establishment of village fire prevention committees and a group of volunteer firefighters. The project also distributed 900 sets of fire fighting tools and conducted a study tour to Thailand to look at how forest fire issues were dealt with at the legislative and administrative levels.

Public awareness campaign. A campaign was conducted to raise villagers' awareness of the causes, consequences and dangers of uncontrolled forest fires. This involved training district officials, visiting villages to explain the implications of uncontrolled forest fires and distributing booklets, leaflets, T-shirts, flip charts and posters. The project used creative methods in its public awareness campaign, such as supporting the Lao Children's Cultural Center to create a show which toured in the five target districts. The National Theater Troupe of Lao performed a similar show for adult audiences. Radio and television broadcasts were used to highlight project activities throughout Sayabouri Province.

Phase II began in October 2000 and ended in September 2001. This phase included the first CBFiM training course for Lao Government staff. In April 2000, ten government staff members attended the course, which was conducted in Thailand. No Lao villagers attended.

The course used experiential learning and participatory training techniques to develop participants' skills and understanding of forest fire, and participatory methods to promote the participation of local communities in planning and managing their own forest fire regimes. The course also focused on participatory planning and mapping approaches that actively involve local communities in discussions of how fire should be managed actively in their own land areas (Ganz, 2001).

Lessons learned in Sayabouri

Critics of the CESVI project during Phase I pointed out that it used a simplistic approach to deal with a complex issue. It was less a community-based or participatory project than a community-involved, government-imposed one. As with the NTFP project, initial motivation for forest fire management came from the government, but required local involvement to be successful. The local people may have had a need for fire management, but they did not ask for help. Furthermore, Phase I of the CESVI project focused on prevention and management of fire, but did not go further. This is an issue throughout Lao PDR. Nevertheless, CESVI at least dealt with the issue and was willing to improve its programme. It was also the first fire management programme in Lao PDR. Depending on the results of the project, it could be used as an example for others looking for ways to educate and to disseminate forest fire prevention material. The project could also develop fire-specific materials and serve as both a pilot project and an information resource centre for other projects.

It can be problematic to train personnel in another country such as Thailand, especially if Thai issues are different from those in Lao PDR. It is necessary to ensure that Thai trainers understand the issues in Lao PDR (although it is not always easy to share information between the two countries; sharing between Lao PDR and Viet Nam is often easier). However, staff who attended the training course said that learning in Thailand was not a problem. Although not all of the case studies were immediately applicable to the Lao situation, the main concepts, which participants described as "listening to villagers' needs on a case-by-case basis", did come across clearly. It may also be useful to involve villagers in training to ensure understanding and ownership at all levels, not just within the government.

The real effectiveness of the CESVI training is not yet known, and will be evaluated as government officials facilitate CBFiM processes in their districts. It is hoped that the CESVI project will be able to generate some lessons from the field that are applicable to other parts of Lao PDR, or other countries (Ganz, 2001). CESVI is willing to collaborate with other organizations and invited participants from other NBCAs to join the training in Thailand. The NGO is also willing to allow other PAFO or project staff to join future training courses in Sayabouri.

CONCLUSION AND RECOMMENDATIONS

Projects based solely on CBFiM are not likely to be initiated in the near future because Lao PDR is facing other, more pressing, development needs. Fire does not pose the same threats as it does in some other countries in the region where it is a critical issue, such as it is in Indonesia and Malaysia. However, if devastating wildfires begin to occur more frequently as a result of climate change or deforestation (or a combination of both), the need for CBFiM will increase. Projects such as CESVI in Sayabouri may then be used as pilot projects for others in Lao PDR. CBFiM as a component of larger projects is likely to continue, such as in the NTFP project in Salavan. This will be especially important for projects dealing with shifting cultivation or protected area management, for which forest fire management falls directly under Lao Government law.

Incorporating CBFiM into forest management will require sincere commitment from all stakeholders, particularly the Lao Government, the donor community and the local people involved. Many of the key elements necessary for establishing CBFiM already exist or are in the process of being established. These include the Lao Government's commitment to decentralization, laws encouraging local involvement in natural resource management (particularly land allocation, which supports personal land-use rights), local institutions' support to community decision-making and regional support for forest fire management. However, many of these areas still need to be tested and implemented in the field. Capacity building and funding will also be necessary before any change can occur. Suggested strategies and research to establish CBFiM in Lao PDR are discussed in the following paragraphs.

Strategy

A clear strategy should be created to ensure that CBFiM is meeting the needs of all stakeholders. Strategies should consider, but not be limited to, the following:

- *Law and policy:* continued support to Lao Government laws that encourage participatory planning, such as Decree 2094. It is important that communities are not expected to conduct work without incentive, and that if they are involved it is by choice. The idea of

decentralization is good, so long as there is technical support, such as capacity and funding. More emphasis should be placed on preventing grass burning and escaped fires rather than on shifting cultivation.

- *Definitions:* define fire. What makes a good fire? What makes a bad fire? Both projects and governments should avoid blanket statements such as "no fire". A no fire policy may not be necessary if the fire does not get out of control and may, in fact, be good for clearing fuel.
- *Indigenous knowledge:* when working with local communities and ethnic groups, try to understand their "ritual technology". A statement made frequently by poor people interviewed for an Asian Development Bank participatory poverty assessment (ADB, 2000) was: "Please, start the development process by building on what *we* already know: swidden fields, livestock and the forest." Swidden agriculturists know how to burn. With the participation of local people, assess whether or not fire is even an issue. Asking villagers how to solve the problem, rather than offering a pre-packaged solution may provide unexpected solutions that benefit everyone.
- *Terminology/translations:* be careful of how concepts are translated and of the implications that they may have. In the Lao language, success is more likely if the term "sustainable resource use" is used rather than "conservation".

Research

Further research is necessary in order to understand fully the issue of forest fire management in Lao PDR. Suggestions for research include, but are not limited to, the following:

- *Effects of Lao Government policy:* assess how the land allocation programme, agricultural methods and fire can coexist without damaging forests.
- *Indigenous use of fire:* learn more about local people's uses of fire (including those of both men and women).
- *Fire ecology:* learn more about forest types and the impact of fire on different ecosystems. Fire may not damage the forest, and could even be beneficial, and this may have an impact on forest fire policy. For instance, teak forests are well adapted to periodic fires. Suggested areas to study include Phou Khao Khouay, with its unique pine forests and convenient location, and forests along the Ho Chi Minh trail, to learn about the effects of war.
- *Monitoring and evaluation:* use satellite imagery from government offices to monitor forest cover change and fire extent throughout the country.
- *Indicators:* establish indicators of what has been burnt, and how much, for all district offices on a quarterly basis. Such a standardized collection system can be used to determine the extent of the problem and the success of the project. For example, defining classes might include:
    - hectares of shrubs (< 2 m high) burnt for agriculture;
    - hectares of woodland (> 2 m high and < 8 m high) burnt for agriculture;
    - hectares of forest (> 8 m high) burnt for agriculture; and
    - hectares of these classes accidentally burnt.

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