

Non-Timber Forest Products in Lao PDR: a practical application of the ecosystems approach?

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Overview

A Problem to be solved:

- No incentives for local people to protect biological diversity
- Unsustainable and inefficient use of Non-Timber Forest Products (NTFPs)

B Objectives

- Goal: *"to conserve forest bio-diversity by promoting sustainable economic exploitation of NTFPs at community and provincial levels"*. To be achieved by the following objectives:
 1. To demonstrate sustainable NTFP use systems that contribute to conservation
 2. To promote community-based organizations who manage NTFP/forest resources
 3. To improve well-being of pilot villages to reduce pressure on forests/ build capacity for conservation
 4. To improve marketing of NTFPs to create incentives for sustainable use through improved income from forests
 5. To develop an expansion strategy to spread sustainable NTFP use models
 6. To lay the groundwork for a national management strategy for NTFPs

C Approach

- Action learning and participatory approaches

D Applications of the Ecosystems Approach

- Case of community NTFP harvesting rules
- Case of NTFP marketing group
- Case of domestication of NTFPs
- Case of aquatic resource management

E Lessons Learnt

- NTFPs play an important but undervalued role in rural and national economy
- NTFPs provide a strong incentive for biodiversity conservation
- The NTFP approach is a good example of a practical application of the Ecosystems Approach

1. Background/Problem statement

Lao PDR is a unique country in the Southeast Asia region, with a high dependency on forest products, due to its low population density combined with a high rate of forest cover. Non-Timber Forest Products (NTFPs) provide 50% of cash income of rural villages, where 80% of the Lao population lives. Local subsistence use of NTFPs may account for 20-30% of the Gross National Product (Foppes & Ketphanh, 2000).

Because of this importance, NTFPs provide a strong incentive for forest users to manage forest resources sustainably. The NTFP Projects in Lao PDR was established in 1995 to test this hypothesis through an action-research programme. The project is funded by the Netherlands Government and executed by IUCN, the World Conservation and the Lao National Institute of Forest and Agricultural Research (NAFRI). Over the last five years, the project has identified models of sustainable use of NTFPs, which contribute to:

- Poverty alleviation, food security, gender and social equity
- Conservation of forests, biodiversity and landscapes/watersheds
- Development of sustainable forest-based commerce and industry

Such a combination of effects is an attractive proposition for local communities, private sector, national governments, foreign donors and conservationists alike.

This paper addresses the strong similarities between the approaches of the IUCN-NTFP Project in Lao PDR and the Ecosystems Approach, adopted by all parties endorsing the International Convention on Biological Diversity (CBD) during its fifth Conference in May 2000. Although the project was not originally designed as a part of the CBD system, it can be seen as a practical application of the Ecosystems Approach. This paper aims to interest CBD partners in the NTFP approach as a practical way to implement and gain acceptability for the Ecosystems Approach at local levels.

2. Objectives/Purposes of the activities

The goal of the IUCN-NTFP project in Lao PDR is: *"to conserve forest bio-diversity by promoting sustainable economic exploitation of NTFPs at community and provincial levels"*. The project attempts to achieve this goal by pursuing the following objectives:

7. SUSTAINABLE USE: To demonstrate sustainable systems of NTFP use that contribute to the conservation of forest biodiversity.
8. COMMUNITY FORESTRY: To promote community-based organizations who manage and monitor the use of their forest resources, especially NTFPs.
9. WELL-BEING: To improve well-being of pilot village communities through better food security and health, better income and better access to basic services.
10. MARKETING: To improve marketing of NTFPs through training, introduction of quality standards, marketing information systems and feasibility studies into product processing.

11. EXPANSION: To develop an expansion strategy through cooperation with government agencies and others to create conditions necessary for the extension of project activities.
12. NATIONAL STRATEGY: To lay the groundwork for a national management strategy for NTFPs by identifying appropriate policies and strategies and institutional mechanisms.

3. Details of the case study and the approach taken

3.1. Conceptual framework, Project process, key approaches

The NTFP Project can be categorized as an Integrated Conservation and Development Project (ICDP). Its conceptual framework implies the assumption that conservation outcomes are inextricably linked to rural development. While the unifying concept linking conservation and development is not always clear, there are three general assumptions that underpin the design of the project (Gilmour, 1994):

1. Alleviating poverty increases the interest and capacity for resource conservation (economic development approach)
2. Making alternative products or approaches available reduces the impact on natural resources (alternative livelihood approach)
3. Involving local people in the planning and management of natural resources and in the sharing of benefits increases the likelihood that these people will implement conservation initiatives (participatory planning approach).

The complex and rapidly changing biophysical, social and economic systems in which the Project operates, implies that the Project needs to operate with imperfect and incomplete knowledge. At the same time, the Project has to learn how to improve its understanding of these systems over time. These conditions require the use of “action-learning” approaches (Ingles, 1996).

The “action-learning” or “learning by doing” approach basically consists of three stages:

- Learning to be effective
- Learning to be efficient
- Learning to expand

It also implies a cyclical process of planning, acting, observing and reflecting. This approach led to a project design of organizing field teams at province level who engage directly with pilot villages, supported by a small support unit at the central level. The activities of the project were planned around eight “key components”:

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|---|---|
| 1. Project Management | 5. Research |
| 2. Participatory Planning | 6. Monitoring and Evaluation |
| 3. Implementation of Agreements
for NTFP trials and baseline surveys | 7. Dissemination/ consolidating results |
| 4. Training/capacity building | 8. Expansion of successful models |

Participatory techniques are essential for this “action learning” approach to investigate, negotiate, implement and review models of sustainable NTFP use. The Project developed and tested 24 RRA/PRA tools specifically designed for working with local people on NTFP issues. Typical examples are: community sketch mapping, ranking of NTFPs, seasonal calendars, rapid forest appraisals, etc. (Phoutharath, forthcoming).

Over the period 1996-2000, the Project field teams have developed various models of sustainable NTFP use. Some examples are presented in the next section.

3.2. Examples of models of sustainable NTFP use developed in Lao PDR

3.2.1. Example of community NTFP harvesting rules in Southern Laos

Forest dwelling communities can make a good estimate of declines in off-takes of NTFPs (see table 1). Exposure to examples of management practices from other areas in Lao PDR or from other countries assisted the community in developing its own set of use rules. The village of Ban Nong Hin, Champasak, developed management systems that vary from rotational harvesting rattans to prohibited fishing seasons or total hunting bans for certain species of wildlife (Kritcharoen, forthcoming).

Table 1: Changes in off-takes per effort units for 3 key NTFP's over the last 10 years (1989-1999), As seen by villagers of Ban Nong Hin, Champasak, 17/2/99.

NTFP	10 years ago	Today
Wildlife	Plenty of wildlife: turtles, monitor lizards, deer, snakes, jungle fowl, other birds. You could easily hunt them in your backyard. There was no outside market, no selling. Only our village hunted (9 families only).	Many species disappeared: turtle, deer, jungle fowl, birds. You can walk for 48 hours and still not get anything. Market demand is big, prices are getting higher (1 mouse-deer costs 12,000 kip). Many outsiders come to hunt in our forest. Village has 57 families now.
Fish	You could catch 4-5 kg within 1 hour. There were only 9 families. No selling, no destructive methods used, only traps and nets.	You can not even get 0.5 kg in 1 hour. There is not enough to feed all our 57 families. Strong outside market (2,500 kip/kg). Destructive methods used by outsiders: explosives, guns, poison. Decline: 90%
Rattan	In 1 day, you could get 300 stems, or as many as a man can carry. We used to also have big diameter rattan, now only small diameter species.	You can only get 20-30 stems in a day. Harvesting has intensified over the last 2 years. 1 stem sells for 200kip. We know there is no quota but we need to sell anyhow. Decline: 90%.

The reality of multiple user groups competing for the use of the same forest remains a challenge. Villagers of Ban Nong Hin could easily enumerate seven other user groups involved in (illegal) hunting and fishing in their forest blocks:

- (1) high ranking Government officials from the Provincial capital,
- (2) District officers,
- (3) soldiers of the District army camp,
- (4) soldiers of the army camp in the next village,
- (5) , (6) and (7) the four surrounding villages communities.

The NTFP Project then organized a meeting with all these stakeholders. Participants discussed the declines in forest products, reasons for destructive harvesting, alternative sustainable management systems, new rules and sanctions, the roles of all forest users, etc. At the end of the workshop, all participants agreed to adopt the proposed rules, giving village committees the right to use agreed sanctions against trespassers. This model is now replicated in the surrounding villages.

3.2.2. Example of village NTFP marketing group

In some cases, a community first develops rules on selling NTFPs, before addressing the issues of sustainable management. In the village of Nam Pheng, Oudomxay Province, villagers used to be very poor, and could not produce enough rice to feed the community all year round. In the dry season they collected off-season bamboo shoots for sale, but the income was never enough. The IUCN/NTFP project assisted them to analyze their problems (Soydala, 1999).

In a series of meetings, the community gradually realized that they could improve their sales if they would all team up and sell for a fixed price, in a fixed place, not measured per bundle but measured per kilo. The community continued to discuss this idea until every family agreed to join the village selling group. The results were above all expectations. In five months, the village sold more 47 tons of shoots and earned 50 million kip or US\$6,670 (on average 1 million or US\$130 per family), at least four times more than the year before. The community also gained 5 million kip in a village development fund, setting aside 100 kip for every kilo sold. In the year 2000, the marketing group sold 44 tons, resulting in the equivalent of US\$7,000 (1 US\$ was about 7,500 kip in April 2000).

As a result, the community started to be very interested in monitoring and managing its bamboo forests. Together with district forestry officers, they are now making inventories of their bamboo forests and are testing various cutting regimes to determine optimal harvesting regimes.

There may be a lesson here how to sequence activities in group-development. It may be better to start with an income raising activity (e.g. an NTFP selling group) or a wellbeing improvement activity (e.g. rice banks), before venturing into forest management or sustainable harvesting agreements.

3.2.3. Multi-village arrangements on forest use rules

Villages around the Xe Bang Nouan Protected Area in Salavan, Southern Laos, have a history of poverty, permanent rice shortages and debts (Dechaineux, forthcoming). Over the last sixty years, various governments forced these communities out of the forested protected area on to the very fragile exhausted sandy soils around the Protected Area. People still use the forests inside the protected area intensively for fishing, collection of NTFPs, grazing of livestock, collection of firewood and illegal hunting of wildlife and logging. Inevitably, this intensive competition for limited forest resources resulted in conflicts of interest between villages.

As the village community is the traditional unit of organization in Laos, there are few structures for inter-village conflict resolution. Using workshops to create common

understanding on the need for conservation and sustainable forest use, the NTFP project brought representatives of up to twenty neighboring villages together. These workshops lead to basic agreements on forest use rules that will be worked out in more detail in follow-up workshops. All participants, including district Government representatives are excited and eager to continue the process.

3.2.4. Domestication of NTFPs

Another way of organizing the production of NTFPs is domestication in individual forest gardens. Typical cases of ‘forest cultivation’ or ‘agroforests’, forested landscapes influenced by forest users, can be found in Bachiang district, Champasak Province, in the South of Lao PDR. Here, shade-loving cardamom (*Amomum villosum*) is grown in gardens that can be more than 60 years old under high secondary forest. This is a locally developed agro-forestry system, combining forest conservation with cash crop production. The main reason for growing cardamom is to provide cash income to buy rice, as the hilly landscape is not suitable for making paddy fields.

These gardens are not real plantations in the strict sense but clearings in the forest where wild forest cardamom is allowed to regenerate after a year of growing upland rice. By weeding and other cultivation measures such as pruning bigger trees, clearing climbers etc, farmers achieve an almost pure stand of cardamom. Cardamom remains the dominant ground cover, for a period of 20-40 years while the secondary forest grows back over it.

In the village of Ban Kouangsi, 200 families have cardamom gardens. Due to the hilly terrain, it is difficult to grow paddy rice. Two thirds of these families cannot produce sufficient in rice and have to buy rice to feed the family all year round. Cardamom sales make up 35 % of gross crop income per family and 87% of the cash requirement to buy rice. Other major cash income sources were groundnuts and livestock sales.

All cardamom gardens are owned by somebody, there is no “open access”. The best cardamom is said to be from 3-4 year old fields, but most fields are 20-30 years old, the oldest field was 60 years old. These gardens continue to produce over an indefinite period of time, as long as the gardens are maintained properly. Maintenance is done once per year, at the same time as the harvesting. Cardamom needs some shade. Harvesting of cardamom usually takes place in October. The average yield is 120 kg/ha dry seed. An average family of 5-6 persons has 1-2 ha of cardamom gardens.

Cardamom is the second biggest agricultural export from Lao PDR. Every year 400-500 tons of dried seeds are exported to China, where it is used in as an ingredient in Chinese medicine, known as “sha ren”. Roughly 70% of cardamom produced in Lao PDR comes from the wild, 30% from cultivated gardens. Export price has been stable around US\$ 7 per kg dry seed over 5 years.

3.2.5. Community aquatic resource management

Fish conservation zones have emerged as a very popular concept over the last seven years. Fish and frogs are considered by most rural Lao people as forest products. Indeed much fish is caught in forest streams and wetlands close to forest. Because fish is such a vital food resource for Lao people, interest in sustainable fish management is very high. Results are quickly visible and easy to monitor. Fish conservation provides an excellent entry point for integrated development and conservation programs.

In the South of Laos, where the Mekong diverges into thousands of islands before flowing into Cambodia, the waters are extremely rich in fish. Local people traditionally relied heavily on fish for their food. Over the last twenty years, improved road and boat connections to urban centers stimulated a surge in commercial fishing, introducing new fishing methods e.g. gill-nets. As a result, cash income of villagers from fishing became very important, but catches of fish declined rapidly.

The Lao Community Fisheries and Dolphin Protection Project developed a program of village level meetings, which enable communities to become aware of these problems and to make decisions on management regulations (Baird, 1999). The meetings are held in harmony with local customs. Meetings involve all existing local organizations and decisions are documented and validated by local authorities. As a result, over 60 village communities in one district in Southern Laos have set up successful co-management systems for fish and frog conservation since 1993.

The management systems take into account the complex system of seasonal water flows and fish migration patterns. Fish migrate from main streams to spawn in wetlands and paddy fields as water levels increase during the rainy season. During the dry season, water and fish recede back to the main streams. There are all sorts of exceptions to this general pattern, but the whole system leaves local fishermen with dozens of opportunities to catch fish travelling in one direction or another at any time of the year. Typical management options chosen by local communities are:

- No-fishing zones in well-defined strips of the mainstream Mekong river. These deep-water areas act as a refuge for fish during the period of peak fishing pressure in the dry season.
- Bans on stream blocking. This measure allows fish to move into spawning areas such as wetlands and paddy fields at the beginning of the wet season.
- Bans on various methods that are seen as unfair (e.g. water banging, fishing with spears lights, use of explosives, chemicals and electricity)
- Juvenile fish conservation (ban on scoop-netting of juvenile snakehead fish, *Channa striata*)
- Regulations for fishing in paddy fields in communal ponds (revive community traditions)
- Frog conservation schemes (limited hunting during spawning season, no catching of tadpoles)

4. Analysis

4.1. Application of the Ecosystems Approach

4.1.1. The Lao NTFP project as an illustration of the use of the twelve principles of the ecosystems approach

The work of the NTFP Project in Lao PDR applies all twelve principles of the Ecosystems Approach, adopted by the Convention on Biological Diversity (see table 2).

Table 2: The application of the twelve principles of the Ecosystems Approach by the IUCN-NTFP Project in Lao PDR.

The 12 principles	Example of application by the NTFP project in Lao PDR
1 objectives of biodiversity management are a matter of societal choice	Yes: The project used participatory approaches to: <ul style="list-style-type: none"> - empower local people to select important NTFP species for management; - motivate local people to explore and decide on NTFP sustainable management options; - recognize and reduce conflicts by negotiating multi-village agreements on NTFP sustainable management; - legalize/ratify community agreements at district level.
2 management should be decentralized to the lowest appropriate level	Yes: Project focused on villages as the most appropriate level of forest management, but also supported higher level networking approaches, where necessary, e.g. trade regulations and inter-village agreements at district level.
3 consider effects of activities in one ecosystems to other ecosystems	Yes: Domestication of NTFPs in gardens is aimed at reducing harvesting pressures on wild resources.
4 manage ecosystems in their economic context <ul style="list-style-type: none"> a) reduce market distortions b) align incentives to promote conservation c) internalize costs and benefits 	Yes: for example: <ul style="list-style-type: none"> a) income from bitter bamboo shoots in Oudomxay was increased manifold by empowering village community to negotiate better prices; b) rice banks in Salavan reduced debts of poor families, which had a clear effect of reducing illegal hunting and logging inside the protected area; c) villagers in Salavan agreed to a rule that for each tree cut for household use, five seedlings must be planted and maintained by the person who cut the tree.
5 preserve ecosystem structure to maintain ecosystem services	Yes: certain NTFPs can only grow in conjunction with other species. Villagers agree to maintain certain forest types a source for these NTFPs, e.g. “het puak” a mushroom species which can only grow on termite mounds; “hak tin hung” ferns that only grow in certain bamboo forests.
6 manage ecosystems within the limits of their functioning	Yes: forests are complex and extraction methods are very extensive, therefore monitoring of wild stands of NTFPs

	by traditional botanical inventory methods can never be cost-effective. The only realistic alternative is to develop methods of monitoring actual off-takes, e.g. by using criteria such as off-take per unit of effort.
7 apply ecosystems approach at appropriate spatial and temporal scales	Yes: Knowledge on appropriate size of area or timing of life cycles of various NTFPs resides with local people. The Project developed a specific 'barefoot botany' program to capture this knowledge and to use it in participatory design of sustainable use systems.
8 set long-term objectives for ecosystems management, in view of temporal scales and lag-effects	Yes: NTFPs can provide incentives for engaging local participation in long-term management of forests, as long as short-term benefits are visible. E.g. main incentive for domesticating rattans is for edible shoots, providing short-term benefits and reducing pressure on forest sources. There is less for raising rattans to produce canes as this takes 20+ years.
9 recognize that change is inevitable	Yes: The Project enabled local people to change dominant static views on society and nature by learning to analyze trends, changes and how to deal with them.
10 balance conservation and use	Yes: NTFPs provide clear incentives for local people to balance conservation and use.
11 consider all forms of relevant information	Yes: the Project focused on the use of local/indigenous knowledge and linked it to scientific knowledge producing processes.
12 involve all relevant sectors and disciplines	Yes: the Project identified and involved all relevant sectors by stakeholder workshops, strategic arrangements for embedding Project activities in existing local institution.

4.1.2. Some comments from the field on the twelve principles of the ecosystems approach

The authors observed that their local colleagues and other stakeholders in the NTFP sub-sector in Lao PDR have great difficulty to relate to the twelve principles of the Ecosystems approach. The problem is mainly with the way the principles are formulated:

- The language is very biased towards biologist jargon, making it very difficult to follow for practitioners
- The principles are formulated at a very abstract level, making it difficult to relate them to practical situations
- The order in which the principles are presented, does not correspond to the priorities of most practitioners. Most practitioners are primarily interested in the issues raised under principles 10,11 and 12.

It would seem that the partners to the Convention on Biological Diversity need to make sure that they can communicate the twelve principles to practitioners effectively, for the Convention to reach its goals. The authors suggest that the partners to the Convention produce a "user friendly format" for a more effective diffusion of the twelve principles.

4.1.3. Goods and Services provided by biodiversity in Lao PDR

The main benefit of biodiversity for the people of Lao PDR is derived from forest products. Especially NTFPs provide food security, a material basis for rural subsistence, and foreign exchange earnings from exports. More indirect services from biodiversity are watershed/landscape protection and a potential source of income from eco-tourism.

The majority of Lao people depend on NTFPs for their existence. Among 700 products identified by local people during initial appraisals of the IUCN-NTFP Project, about 50% are used for food and only 10% are saleable products (Lamxay, forthcoming). Medicinal plants also rank highly as a proportion of NTFPs collected for local use. NTFPs provide perhaps 40% of the total rural family shadow income, compared to 50% as the equivalent for subsistence rice consumption/production and only 10% cash income only. Subsistence use of NTFPs could thus contribute up to 20% of the BNP (US \$261 per capita in 1998). NTFPs contribute to roughly US\$ 6-7 million per year or 2% of total export income for Lao PDR. Cardamom (*Amomum sp.*) and malva nuts (*Scaphium macropodum*) both used in Chinese medicine, are the most important export products, together representing 60-70% of the total NTFP export value for Lao PDR. The main NTFP export destinations are China, Thailand and Vietnam (Foppes & Ketphanh, 1997).

4.1.4. Beneficiaries of NTFPs obtained from forests

Rural families are the main producers and consumers of NTFPs. They are also the ‘de-facto’ managers of NTFP resources. They should be considered as key beneficiaries.

Among this group, the poorest families are most dependent on NTFPs as their only source of cash income, which they need to buy rice. This group deserves special attention. Women are the main collectors of food products. They are also key decision-makers on other NTFP issues such as seed selection for domestication. Local innovators are another special group of beneficiaries. In every village, several individuals are experimenting with new ways of collecting or domesticating NTFPs. Their “indigenous technical knowledge” (ITK) is indispensable for appropriate development of sustainable NTFP production systems (Ingles et al. 1998).

Apart from the rural population, urban consumers should not be neglected as a group of beneficiaries. Consumers could be motivated to buy more forest products to support the local economy, at the same time reducing the consumption of ecologically endangered products.

Private sector agents, ranging along a ‘marketing chain’ from local traders to exporters and processing industries are another important group of beneficiaries. Processing and marketing of NTFPs is still very limited inside Lao PDR. Local traders and other entrepreneurs in the private sector need to acquire new skills to change marketing patterns, develop feasibility studies or develop new processing methods. This group is also the prime actor in the cross-boundary trade of NTFPs.

Both rural NTFP users and the private are reached by a limited number of ‘mediators’ who influence their behavior. Typical mediators are District/Province Offices e.g. Rural

Development, Forestry, Protected Area staff, Health, Education, Trade and Tax, Military, Religious leaders, other leading social figures and NGOs and Foreign aid funded project aimed at rural development and conservation on district/province levels

These mediators are the prime agents of change in a rural setting, who could contribute a positive role as trainers/facilitators for sustainable NTFP use. Specific strategies should be devised for engaging and supporting each of these groups of mediators.

4.1.5. Approaches of adaptive management used in the NTFP Project

The IUCN-NTFP Project in Lao PDR tested a number of adaptive management approaches: in-situ sustainable harvesting of NTFPs, ex-situ domestication of NTFPs to reduce pressure on wild resources, participatory management of forests by local communities and activities aimed at improving well-being of rural communities to reduce pressures on forests. Table 3 summarizes these approaches, their intended effects and some examples of successful cases.

Table 3: Examples of adaptive management approaches tested in the NTFP project

Approach	Expected effects	Examples
1 sustainable harvesting systems (in-situ)	Sustainable use	Community based agreements on rotational harvesting practices in forest blocks for particular NTFP species e.g rattans and bamboos, permitting for regeneration of the resource.
2 domestication (ex-situ)	Reduce pressure on forest resources	Domestication of cardamom, rattans (Sengdala & Evans, 1998) and several other NTFPs in privately owned forest gardens managed as sustainable production systems.
3 NTFP based community forest management	Sustainable use	Multi-village agreements on forest land use, fire control and sustainable use of NTFPs inside and outside protected areas.
4 well-being improvement	Improved well-being reduces dependency on forests and destructive forest use practices	1. Village rice banks reduce debt-related dependencies on forest products (Dechaineux, 1998) 2. Improving health and basic wellbeing enables communities to engage in conservation work 3. Village marketing groups improve equitable benefits from NTFPs
5 marketing systems	Sustainable off-takes of NTFPs and equitable distribution of benefits	NTFP based marketing groups are more motivated to make agreements on sustainable use

4.1.6. Scales of management in the NTFP Project

The main unit of management is the village community and its forest. This is the natural and most often the only ‘de facto’ forest management level in Lao PDR. As one piece of forest is often used by several adjacent villages, multi-village management arrangements are also needed. The project enabled a new layer of forest management at sub-district (“khet”) level, by organizing multi-village meetings to discuss management arrangements. This resulted in agreements on coordinating local measures for forest fire control and development of rules and regulations on sustainable use of valued NTFPs.

Higher management levels addressed were those of Districts and Provinces and those of National Protected Areas, which can cover several districts or provinces. The sphere of management at these levels is usually limited to decisions and legislation on off-takes of forest products, quota etc. rather than sustainable forest resource management systems. The project identified constraints and engages national policy-makers in strategy-building processes.

4.1.7. Sectors involved in the NTFP Project

The NTFP Project found that a large number of sectors should be involved to create an enabling policy environment. The key policies needed are those that can provide security on access rights to forests for local communities and those that can effectively regulate sustainable off-takes of forest products through fair trade arrangements. Thus typical sectors to be involved include: forestry, trade, tax, rural development, mass mobilizing agencies (e.g. Lao Women’s Union), health, social welfare, education, etc. The lack of platforms and means for networking remains a bottleneck for concerted and coordinated involvement of all these sectors.

4.2. Relevance to the thematic work programmes of the Convention

The work of the IUCN-NTFP Project in Lao PDR is relevant to all six thematic programmes of the Convention, except the marine programme as Lao PDR is a land-locked country (see table 4).

Table 4: Relevance of the IUCN-NTFP Project in Lao PDR to the six thematic work programmes of the Convention

Thematic Programme	Relevance of the NTFP Project
1 Forests biodiversity	Yes, the key focus of the project is on sustainable use of (non-timber) <i>forest</i> products. The project developed models that give incentives to local communities to preserve forest biodiversity resources.
2 Marine and Coastal biodiversity	No, Lao PDR is a land-locked country
3 Inland waters biodiversity	Yes, some 30-40% of Lao NTFPs are obtained from wetlands, streams, paddy fields etc.
4 Dry and sub-humid lands biodiversity	Yes, 20 % of Lao forests are sub-humid deciduous Dipterocarp forests with a dry season of more than 5 months (Manivong & Sandewall, 1992)
5 Mountain areas	Yes, more than 60 % of Lao forests occur on mountains

biodiversity	with slopes of more than 20%, and 30% of forests occur on slopes over 30% (Manivong & Sandewall, 1992).
6 Agricultural biodiversity	Yes, many NTFPs are domesticated and many occur in forests that are formed as a result of shifting cultivation systems.

4.3. Relevance to cross-cutting work programmes of the Convention

The relevance of the experience of the IUCN-NTFP Project in Lao PDR to cross-cutting work programmes of the Convention is summarized in table 4 below. The NTFP Project clearly adds positively to six of the eight cross-cutting programmes. The two programmes less touched are invasive alien species and national biodiversity strategy and action plans. The latter is mainly due to the lack of much work on such an action plan in Lao PDR up to date. If such a plan were to be developed, NTFP action research results could feed into such a programme.

Table 4: Relevance of the IUCN-NTFP Project in Lao PDR to the eight cross-cutting work programmes of the Convention.

Cross-cutting Work Programme	Relevance of the IUCN-NTFP Project
1 invasive alien species	No: only known invasive species in Lao PDR are two weeds who dominate fallow lands: <i>Chromolaena odorata</i> and <i>Mimosa invisa</i> . Neither are used much as NTFPs.
2 indicators of biological diversity	Yes: RRA methods revealed clear indicators such as status of local knowledge on NTFPs, rapid forest inventories, changes in off-takes per unit of effort etc.
3 incentives for conservation	Yes: NTFPs are the main reason why people go into the forest. Dependency is described in text above.
4 impact assessments	Yes: RRA methods provide good indicators for changes in well-being of people and forest, e.g. wealth ranking.
5 benefit-sharing	Yes: NTFP based group strengthening/empowerment approaches resulted in equitable sharing of benefits derived from forests.
6 indigenous and local knowledge	Yes: most available knowledge on NTFPs resides with local people. Most solutions developed in the project were identified by local people.
7 sustainable use	Yes: sustainable use of NTFPs is a cornerstone of the approach, used as entry point for biodiversity conservation
8 national biodiversity strategy/action plan	Less: Lao national biodiversity action plan still in preliminary phase.

5. Conclusions

5.1. Outcomes of the activities

The NTFP Project in Lao PDR produced a number of key findings:

1. NTFPs play an important but undervalued role in rural and national economy
2. A number of models for sustainable NTFP use were developed:
 - ✓ Sustainable NTFP harvesting systems in a community forest management context
 - ✓ Multi-village arrangements for co-management of communal protected forests
 - ✓ Domestication of NTFPs to reduce pressures on forests
 - ✓ Village NTFP marketing groups
 - ✓ Feasibility studies for processing of NTFPs
 - ✓ Models for expansion of project results
 - ✓ Models for developing national NTFP strategies
3. NTFPs provide a strong economic incentive for biodiversity conservation
4. NTFPs make conservation more acceptable to local governments with multiple goals

The approaches of the NTFP Project are very similar to the Ecosystems Approach, adopted by the Convention on Biological Diversity, as it:

- a) adheres to all twelve principles of the Ecosystems Approach
- b) addresses four out of the five thematic areas of the Convention
- c) is highly relevant to six out of the eight cross-cutting themes of the Convention

5.2. Lessons learnt

The striking similarity between the principles of the NTFP approach and the Ecosystems Approach suggests that:

- The Ecosystems Approach could gain more rapid adoption at local levels if it used practical applications such as the NTFP approach
- The NTFP approach could gain more rapid adoption beyond local levels by linking to regional and global approaches such as the Ecosystems Approach.



6. Literature

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