Bitter bamboo and sweet living:
Impacts of NTFP conservation activities on poverty alleviation and sustainable livelihoods

- A case study for Lao PDR –

Prepared for IUCN's 3I-C Project on poverty alleviation, livelihood improvement and eco-system management

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1 Introduction

Socio-economic development and environment conservation are frequently assumed to oppose one another, especially as the former has often been driven by unsustainable exploitation of the latter. This type of thinking forces a choice between poverty reduction and environment conservation. However, government, donors and other key players in the development arena are paying increasing attention to the ways that poverty reduction and environment conservation can be mutually compatible or even reinforcing (for example, see *Linking poverty reduction and environmental management,* 2000)

The World Conservation Union (IUCN) has recently embarked on a project supported by an internal 3I-C Fund (i.e., innovation, integration, information and communication) to explore and understand better the links between poverty alleviation, sustainable livelihoods and eco-system management ("Poverty alleviation and conservation: linking sustainable livelihoods and eco-system management," undated). Part of the fund is dedicated to documenting IUCN projects that have clearly demonstrated these links and subsequently influenced policy makers and economic planners. The latter is particularly important if it is true that an emerging lesson from 20 years of Integrated Conservation and Development Projects (ICDP) has been that few of their achievements have been "scaled up" to economic planners ("Poverty alleviation and conservation…," undated).

The current report is a case study of the NAFRI-IUCN NTFP Project in Lao PDR (1995-2001). It focuses on sustainable harvesting regimes for bitter bamboo shoots and wild cardamom in one poor village in the northern mountainous province of Oudomxay. The sustainable harvesting regime for bitter bamboo in Oudomxay generated the most impressive results on poverty alleviation and livelihood development in the NTFP Project and continues to be a shining example in Lao PDR. The current case study has tried to translate these results into economic values through cost-benefit analyses and describe their impacts on local livelihoods and eco-systems through the voices of local people, local leaders and relevant organizations at district, provincial and national levels.

The case study showed that the sustainable harvesting regimes played a major role in reducing poverty and sustaining local livelihoods, while providing villagers with enduring incentives and adequate capacities to manage village forests. The achievements were also remarkable for their equitable distribution among villagers, capacity to reach the poorest households, and the interest that they raised in NTFP among development and conservation organizations.

The remainder of this section provides background information on the NTFP Project, the field site in Oudomxay province, and project activities that supported the sustainable harvesting regimes for bitter bamboo and cardamom. The second section describes the methodology for the cost-benefit analyses and other research methods. The third section presents the results of the study, according to economic valuations of the bitter bamboo and cardamom activities, changes in poverty rates and livelihoods, impacts on equity, impacts on forest conservation, unintended negative impacts and evidence of scaling up. Finally, the last section offers some conclusions and recommendations.

1.1 The NAFRI-IUCN NTFP Project

The National Agriculture and Forestry Research Institute (NAFRI) and the World Conservation Union (IUCN), with funding from the Royal Netherlands Embassy, jointly executed the NTFP Project from July 1995 to September 2001. The project was designed as an Integrated Conservation and Development Project (ICDP) with the goal ***to conserve forest bio-diversity by promoting sustainable economic exploitation of non-timber forest products (NTFP) at community and provincial levels*** ("Proposal for the Sustainable Utilization of Non-Timber Forest Products in Lao PDR," as cited in Ingles & Karki, 2001). Following a reformulation of objectives during a mid-term review in 1998, the project sought to achieve this goal by

- Demonstrating sustainable systems of NTFP use that contribute to forest and biodiversity conservation;
- Developing an expansion strategy in cooperation with government agencies and other relevant organizations; and
- Laying the groundwork for a national management strategy for NTFPs.

(Summarized from Donovan, Mounda, Souvanthalysith & Gilmour, as cited in Ingles & Karki, 2001).

As an ICDP, the NTFP Project had a vested interest in supporting livelihoods and community development. One of the five components of the sustainable NTFP systems was defined as:

> WELL BEING: To reduce pressure on forests and to improve the ability and motivation of village communities to manage forests by improving their well-being (i.e., income and basic village infrastructure)
>
> (Donovan et al., as cited in Ingles & Karki, 2001)

The initial Senior Technical Advisor to the project—now current Head of the IUCN Forestry Programme for Asia—subsequently described this approach as "conservation through economic incentives" (Ingles & Hicks, 2002). However, through implementation of the project, it was found that the links between livelihoods and conservation were much broader. Addressing poverty issues also promoted conservation by

- Removing some of the poverty-related factors that drive over-exploitation of NTFPs by local people;
- Empowering local people to better control the access and use of forests by outsiders; and
- Organizing local people to better coordinate their own behaviour through institutional building

(Ingles & Hicks, 2002)

The latter approach can be called "conservation by removing constraints" (Ingles & Hicks, 2002).

The NTFP Project's interventions in Oudomxay province now provide some of the best examples in Lao PDR of how poverty alleviation and environment conservation can be mutually reinforcing objectives.

1.2 Nam Pheng village in Oudomxay province

Oudomxay province located in the northwest of Lao PDR between Phongsaly and Luang Nam Tha and sharing a short section of border with China. Nam Pheng village is approximately a 2-hour drive north of the provincial capital on Road No.1, which was recently rebuilt and widened. Road No.1 passes directly through Nam Pheng and leads to the borders of Luang Nam Tha and China, less than half an hour away. Nam Pheng is 21 km from the capital of Na Mo District, also a half hour away.

Nam Pheng village was established in 1973. The people in Nam Pheng are Lao Theung from the Khamou Ou, Leua and Rok ethnic groups. They speak Khamou language and are mainly upland cultivators, using the slash and burn method. The village is organized according to a Village Committee, comprising the village chief and his deputy, the chief of security, and representatives from village unions for youth, women, elders, agriculture, forestry, education and health ("Field Report #4," 1996).

When the NTFP Project first arrived to Nam Pheng in 1996, the village contained 43 households with 244 people ("Field Report #4," 1996). Households cultivated an average of one hectare per year, yielding approximately 1.2 tons/ha and maintaining fallow cycles of 7-9 years. Most households also raised livestock, primarily cows and secondarily pigs and buffalo. The nearest school was in the neighbouring village of Na Hom[1], but attendance was reported to be low. Water for drinking and residential use came mostly from a stream passing through the village. Illnesses, especially diarrhoea and malaria, were prevalent. Villagers' main source of cash income was NTFPs, although they were mostly collected and bartered on a small scale. Bamboo shoots, in particular, were sold to traders exporting to China and Thailand.

During its period of implementation in Nam Pheng, the NTFP Project supported a village rice bank; water supply system; construction of a school; domestication trials for *Sa Pan,* cardamom and eaglewood; forest land allocation; and the establishment of marketing groups and sustainable harvesting regimes for bitter bamboo shoots and wild cardamom (Ingles & Karki, 2001).

1.3 Sustainable harvesting of bitter bamboo and cardamom

The sustainable harvesting regimes supported by the NTFP Project began by organizing a rice bank. The rice bank addressed the villagers' most pressing need, food security. It was indirectly related to NTFP conservation because it built trust among villagers in a conservation project, freed up their time for conservation activities, and reduced threats

[1] Field Report #4 reported that the school was located in Nam Pheng, but this was inaccurate.

of over-harvesting in forests ("Case study on the marketing group of bitter bamboo shoots in Nam Pheng village," undated). After the rice bank, the project began on forestland allocation, domestication trials and NTFP marketing.

Forests in the area of Nam Pheng were allocated during 1997 and 1998 in collaboration with the District Agriculture and Forestry Office (DAFO) in Namo. The forests were allocated communally to the Village Committee of each village, according to traditional village boundaries and mutually agreed borders. Forestland allocation was an important first step to sustainable harvesting because it gave the Village Committee authority to resolve resource-use conflicts within the village and respond to threats from outside. Village forests in Nam Pheng cover a total area of 648 ha, which was equal to 46.5 ha per household in 1998 (Case study on marketing group…," undated). 515 ha of bitter bamboo forest are currently allocated to Nam Pheng.

Next the project helped to organize an NTFP marketing group for bitter bamboo based on a series of meetings, where villagers and project staff gathered information, analysed problems, decided upon a management structure, elected members for management, agree on regulations, planned, trained and, finally, implemented ("Case study on marketing group…," undated). Anybody that collected bitter bamboo shoots for sale was allowed to join the group, which amounted to virtually all households in Nam Pheng. The management structure consisted of a Group Committee (which is the Village Committee) and one-person units for monitoring, accounting and trade. Decisions on were made collectively in meetings chaired by the Group Committee.

An important innovation of the marketing group was to introduce and train villagers on the use of weighing scales[2]. Previously, villagers simply bartered their NTFPs by bunches to passing traders for clothes, condiments, candies and other miscellaneous items. The use of scales has allowed villagers to command higher prices and have more confidence when negotiating with traders ("Case study on marketing group…," undated). The initial results were impressive. Off-take for bitter bamboo was 51 768 900 Kip in 1999 and 54 656 460 Kip in 2000 ("Case study on marketing group…," undated). Following the success of bitter bamboo, the marketing group organized a similar regime for cardamom. The marketing group was able to raise the local price for cardamom from the usual 500 Kip/kg to 35 000 Kip/kg in 1998. Prices have since dropped to around 12 000-14 000/kg (see Figure 3.3 below), but remain much higher than before.

The marketing group sets the dates for harvesting season each year, based on natural characteristics and regenerative capacity of the NTFP, for which the NTFP Project assisted villagers with ecological information and training. Harvesting season for bitter bamboo usually lasts about 4.5 months between December and April. However, collection for consumption is permitted throughout the year. The harvesting season is much shorter, usually for a period of 10 days in late August.

[2] The scales were introduced before the establishment of the marketing group and distributed to each collector of bitter bamboo. Currently, the village collectively owns one scale, which is used when villagers sell their product to the Group Committee.

Because the shoots command the highest prices when fresh, households sell their stock directly to Group Committee at the end of every day of collection. The Group Committee then sells on a larger scale to traders. For cardamom, villagers decorticate and dry the fruit and then sell to the marketing group usually at the end of harvesting season.

Generally, the individual collector takes 85-90% of the final sale, while the remaining 10-15% is put towards an NTFP Fund. For example, this past season, the marketing group sold bitter bamboo at an average rate of 2000 Kip/kg, of which 1700 Kip went to the collector and 300 Kip went to the NTFP Fund. Cardamom sold for 14 000 Kip, of which 13 500 Kip went to the NTFP Fund. The NTFP Fund is used to fund community projects (e.g., purchase of an electric generator), community services (e.g., provide loans), and pay salaries of 100 000 Kip to the monitoring, accounting and trade units. Between 1998 and 2000, 17 000 000 Kip had accumulated in the NTFP Fund from bitter bamboo and cardamom. In 1999, the fund was used to improve the village's water supply system and, in 2000, it supported the construction of a school, with financial assistance from the NTFP Project, and provided loans to fifteen households ("Case study on marketing group…," undated). Use of the fund and salary levels are also decided collectively by the marketing group.

2 Methodology

2.1 Purpose of the study

The main purpose of the study was to describe NTFP Project activities contributed to poverty alleviation and livelihood improvement, and how these achievements may have been scaled up to policy makers and economic planners. Special emphasis was placed on quantifying results through economic valuation, as well as gaining local people's perspectives on livelihood impacts and other changes.

According to this purpose, the research team identified seven main areas for data collection:

- Economic valuation of bitter bamboo and cardamom activities
- Local people's perspectives of gains and losses
- Assessment of changes in livelihoods
- Assessment of impacts on equity
- Assessment of impacts on conservation
- Descriptive text boxes of case examples
- Discussions on scaling up

Cost-benefit analyses were used to valuate the bitter bamboo and cardamom activities, while interviews and common PRA tools were used to gain local people's perspectives and discuss aspects of scaling up.

2.2 Overview of the research

The research was carried out over a period of 16 days from September 17 to October 3, 2002. A total of ten days were spent in Oudomxay province, including 6 days in Nam Pheng village and a half-day trip to the adjacent village of Na Hom. Supplementary discussions were held with government offices and relevant organizations at the district, provincial and national levels, particularly on the topic of scaling up. A wrap-up meeting was also held at the Forest Research Centre in Vientiane to get feedback on results and discuss scaling up with representatives from various departments of the Forestry Research Centre, Faculty of Forestry, Special Program for Food Security (SPFS) of the National Agriculture and Forestry Extension Service (NAFES), Lao Tree Seed Project, Forestry Education Project of Gesellschaft Technische Zusammenarbeit (GTZ), and Forestry and Agriculture Organization (FAO).

The research was carried out by an international consultant, who had previously been a field advisor to the MARD-IUCN NTFP Project in Vietnam, and was closely supported by the former national director for the NAFRI-IUCN NTFP Project. The national director's familiarity with the project's collaborators facilitated immensely "entry to the field" at provincial, district and local levels. The national director also supported data collection with his knowledge of project history and translation. One staff from the

NTFP Office at PAFO in Oudomxay, who was a former field officer of the NTFP Project, also assisted with data collection in Nam Pheng.

Nam Pheng was selected for the research site based on a recommendation from the IUCN Country Office in Laos, who said identified the bitter bamboo harvesting regimes in Oudomxay as the best examples of the NTFP Project's achievements in poverty alleviation and livelihood improvement. Because the study emphasised documentation of best practices, as opposed to a summary evaluation, basing site selection on this recommendation was appropriate. Because of the limited time available, the research focused only on one village.

2.3 Methods

2.3.1 Cost-benefit analyses

The cost-benefit analyses varied from standard practice in that (1) they were calculated retrospectively; and (2) the results were calculated according to a day wage, as opposed to a direct monetary value. Although not ideal, cost-benefit analyses were conducted retrospectively, where participants had to remember and estimate their inputs and outputs over the past year, simply because of the limited time and resources available for the study. The reason that results were calculated according to a day wage was because virtually all inputs for bitter bamboo and cardamom collection were labour[3]. Calculating a day wage seemed the simplest and clearest method for comparing bitter bamboo and cardamom collection to the other income activities available in Nam Pheng.

The cost-benefit analyses were conducted over a 2 days with 10 households, selected by villagers during the participatory assessment meeting (see below). The sample criteria included representatives across wealth ranks, emphasized poor households and those that would be available for and reasonably responsive to an interview. The final sample consisted of 5 poor households, 3 average households and 2 well-off households, based on the 1996 wealth ranking.

A preparatory meeting was held with the 10 participants to review inputs and outputs, which formed the basis for the data collection formats. Other income opportunities available in Nam Pheng were also discussed, which included a group cost-benefit analysis for upland cultivation and fuelwood collection for comparison.

Because the cost-benefit analyses were conducted retrospectively, estimating inputs and outputs for bitter bamboo was difficult. Participants had to remember hours and kilograms on a daily basis over 4.5 month period that occurred five months ago. Therefore, the results from the cost-benefit analyses were triangulated with participants' estimates of the total value earned from bitter bamboo and cardamom last year. On average, the output for bitter bamboo from the cost-benefit analysis exceeded the direct estimate by more than three times, suggesting a relatively high degree of unreliability.

[3] The weighing scale of the Group Committee was the only specifically required monetary investment, but spreading its value among 40-50 villagers over a period of at least five years reduced its cost per villager to virtually nothing.

An alternative day wage was calculated including only participants that fell within one standard deviation of the mean, which yielded a moderately lower figure. Estimations for cardamom were easier because harvesting season was only one month ago, lasted for ten days, and most villagers sell their harvest all together at the end of the season. Participants were able to remember exact figures, such as 27.9 kg. The direct estimates of yearly output and the day wage including participants within one standard deviation of the mean were almost the same, suggesting a higher degree of reliability.

A notable shortcoming of the cost-benefit analyses (and the in-depth interviews) was that they were conducted almost entirely with men. It was emphasized several times to participants and the village leader that the interviews should be conducted with the person in the household who most often collected NTFPs, which is usually a woman. However, the recommendation was rarely followed up on, partly because women were working in upland fields some distance from the village's residential area.

2.3.2 Other methods

Participatory assessment. A participatory assessment meeting was held with approximately 20-30 villagers (the exact number was difficult to calculate because villagers frequently wandered in and out, invited or not). Participants were invited by the village leader and comprised a roughly proportional representation of households across wealth ranks, from the residential areas on either side of the river, and about 30% women. The assessment used the following tools:

- Wealth ranking for 2002 and retrospectively for 1996[4]
- Ranking of sources of income (with separate groups for women and men)
- Ranking of expenditures (with separate groups for women and men)
- Group discussion on changes in livelihoods, changes in forests, and assessment of gains and losses

The principle aims of the participatory assessment were to gain villagers' perceptions of the NTFP Project's impacts on livelihoods and to compare livelihood data collected from the NTFP Project's RRA in 1996 (Field Report #4, 1996).

In-depth semi-structured interviews. In-depth semi-structured interviews were held with four households to provide case examples of how the NTFP Project's interventions had influenced life stories. The households were selected among the participants in the cost-benefit analysis and included three households that had ascended wealth ranks and one that had not. Only the two examples most revealing for the current study are presented here.

Interviews with local leaders: Interviews and ongoing consultation were held with the village leader of Nam Pheng and his deputy. These interviews provided insight into many aspects of the data collection and helped to fill in information gaps. Interviews

[4] Unfortunately, the NTFP Project's wealth ranking from 1996 was missing and had to be redone retrospectively.

were also held with the heads of the Women's and Farmers' Unions. Data from village records were obtained from these interviews.

Interviews with local leaders in Na Hom village: A supplementary half-day interview was held with a group of local leaders in Na Hom to discuss the NTFP Project's impacts of livelihoods and conservation. The interview was attended by the village deputy, Head of the Women's Union, the deputy accountant, Chief of security, a member of the Elders' Association, and a host of unidentified and mostly silent others.

Interviews with government offices and relevant organizations at district, provincial and national levels: These interviews were mainly to discuss scaling up and to garner perceptions on the achievements and challenges of the NTFP Project from the Provincial and District Agriculture and Forestry Offices (PAFO and DAFO),. Interviews were held with the acting director of DAFO for Namo district, the acting director of PAFO for Oudomxay province, the Head of the Forestry Department in PAFO, the NTFP Office in PAFO, a technical advisor for a German Agro Action (GAA) Project in Oudomxay, and FAO in Vientiane. Additional telephone interviews were held with SUNV, GTZ, IFAD and JICA. Noticeable omissions were the Department of Forestry, who were unavailable at the time of the research due to the concurrence of an ASEAN conference on food security, and the Lao-Swedish Forestry Program, for which a representative was unavailable.

3 Results

This research has shown that poverty reduced and livelihoods improved in Nam Pheng since the NTFP Project first arrived there in 1996. Evidently, the NTFP Project cannot claim all the credit, but economic valuation and comments by villagers strongly suggested that collection of NTFPs and bitter bamboo, in particular, provided villagers with key opportunities for economic advancement. In addition, marketing group and the NTFP Fund have been effective mechanisms for generating community benefits and reaching the poorest households. An area for improvement will be to increase representation of women in the management structures of the NTFP activities. Meanwhile, project activities and economic incentives seemed to have provided villagers with sufficient incentives and capacities to manage their forests communally. Various reports indicated that forests had been conserved and perhaps even enriched.

Local government departments and international organizations reported that the achievements of the NTFP Project in Nam Pheng and elsewhere have sparked their interest in NTFPs. Many of them have visited Nam Pheng, consulted the project's resource materials and tested NTFP activities in other areas. A further challenge will be to emphasize scaling up to national policy makers and economic planners.

This section presents the results from economic valuations of bitter bamboo and cardamom activities, and describes changes in livelihoods, impacts on equity, impacts on forests, unintended negative impacts and scaling up.

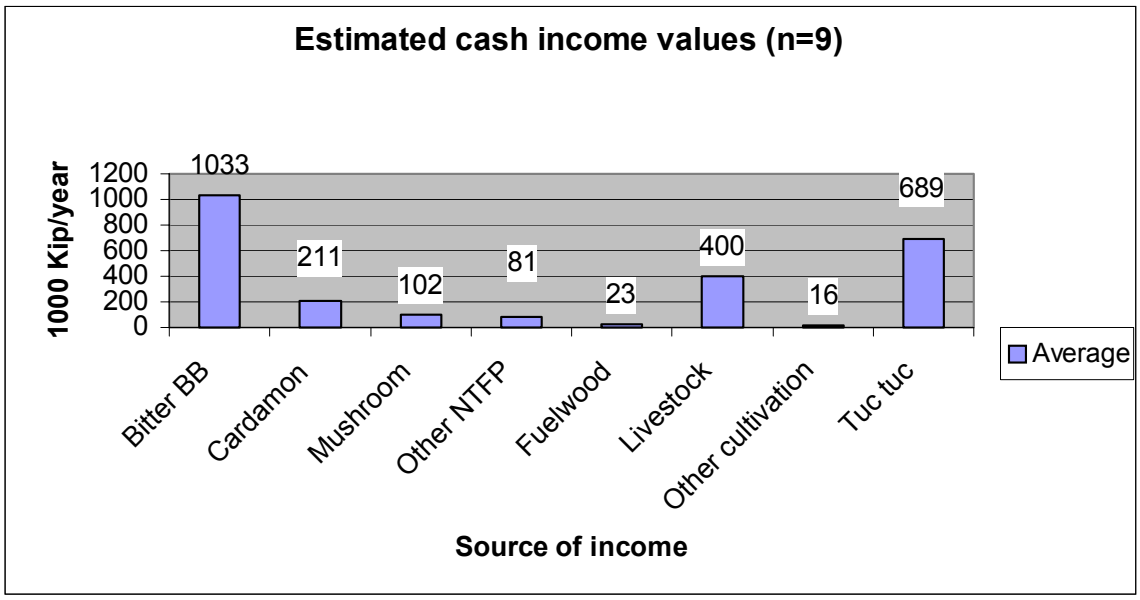
3.1 Economic valuation

3.1.1 Significance of NTFPs in household cash economy

Participants ranked bitter bamboo as their most important source of cash income. It was valued at an average of 1 033 000 Kip/year and accounted for 40% of the household cash income (Figure 3.1). Other NTFPs, not including firewood, contributed a total average of 394 000 Kip/year (15%) to household cash income. The other single major sources of income were driving a *tuc tuc* and livestock, contributing an average of 400 000 Kip/year (27%) and 689 000 Kip/year (16%) respectively. These figures show that bitter bamboo and NTFPs, in general, are major sources of cash income for the village as a whole. But to get a more specific idea of their relative contribution to individual households, the economic structure was calculated using only the households who derived income from the specific income source (Figure 3.2).

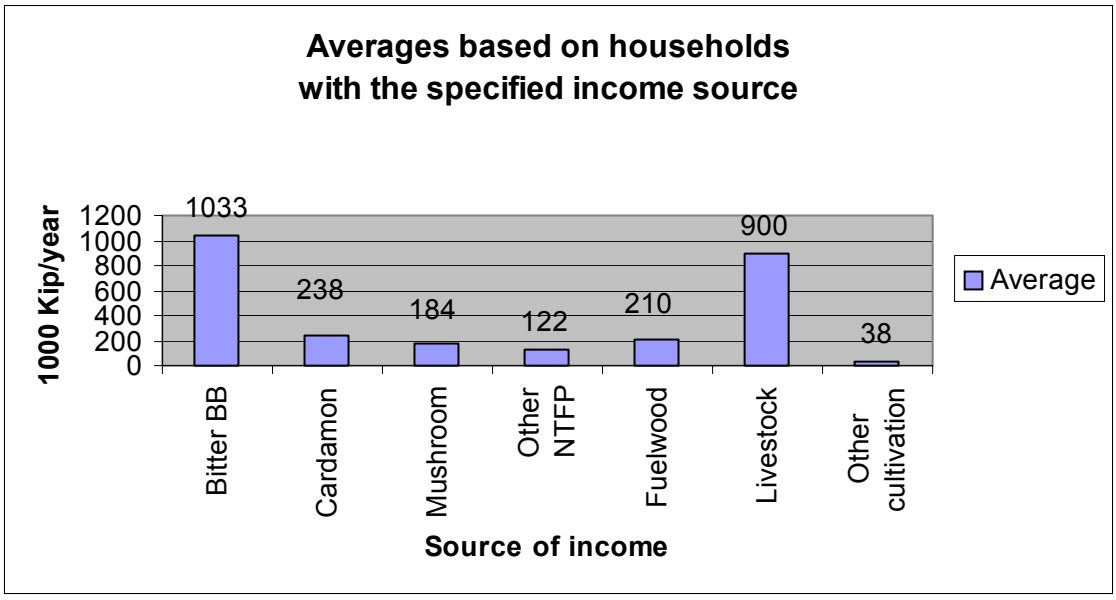
For example, only four of nine households received income from livestock last year for a total value of 3 600 000 Kip. The average value of livestock for the nine households of the sample was 400 000 Kip (Figure 3.1). But the average value for the four households that actually raised livestock was 900 000 Kip (Figure 3.2). The former figure shows that livestock is about half as important as bitter bamboo (1 300 000 Kip) to the village economy as a whole, while the latter figure shows that its value is comparable to bitter bamboo for households that raise livestock. Because all households collected bitter bamboo, its value remained constant in both charts.

Figure 3.1 Estimated composition of household cash economy



a. "Other NTFP" comprised *tut tieng* bark, bamboo worms, orchids and wild ginger
b. "Other cultivation" comprised home garden vegetables and sesame

Figure 3.2 Averages based on households with the specified income source



a. "Other NTFP" comprised *tut tieng* bark, bamboo worms, orchids and wild ginger
b. "Other cultivation" comprised home garden vegetables and sesame

At 6 200 000 Kip/year, driving a *tuc tuc* had a value, for the one household that drove it, that was nearly six times higher than bitter bamboo (which is why it does not appear on the graph). These data suggest that collection of NTFPs can compete with the most lucrative rural economic opportunities, such as small-scale animal husbandry, but not with more advanced options, such as driving a *tuc tuc*. In this way, NTFPs may be an important stepping stone to economic advancement, but perhaps insufficient to command major economic gains.

3.1.2 Economic valuation of bitter bamboo

Calculation of inputs, outputs and profits

Inputs for collecting bitter bamboo shoots were straightforward. They consisted of collecting the shoots and selling them to the Group Committee. Meetings for the marketing group were the only new inputs from the NTFP Project. The project had conducted trials on the application of various silvicultural techniques to improve production of shoots, but villagers had not adopted these practices.

Collecting included travel time to and from the collection site and was calculated according to a seven-hour day[5]. *Selling* takes five to ten minutes to weigh on the village scale and receive payment from the Group Committee. But sometimes villagers spend an hour or more waiting to be weighed. This time was excluded from calculations because villagers were not obliged to wait (they could return later) and they often described it as "enjoying the time" chatting with each other. For *meetings*, participants estimated that they spent about 10 hours per year, which was set as a standard rate for each household.

The output was calculated according to the participant's estimates of average daily collection, which may vary during the different period in the harvesting season. The harvesting season for 2001-2002 lasted 138 days, from December 18 to April 30. To account for seasonal variation, farmers gave answers such as 3-5 kg/day for the first 20 days, 5-10 kg/day for the next 60 days, and 10-20 kg/day for the remaining days. The total product was calculated by multiplying the lower figure with the number of days spent for each time period (e.g., 3 kg x 20 days + 5 kg x 60 days + 10 kg x 58 days). To account for variations in price, participants and the village leader estimated an average price of 2000 Kip/kg, of which 1700 Kip went to the collector. Only the collector's portion was calculated.

The profit was calculated according to a day wage, which is the total value of the output (in Kip) divided by the total number of days of input. The day wage was then compared to other income opportunities generally available to the villagers of Nam Pheng.

Calculation of day wage

The economic valuation for bitter bamboo showed that collectors harvested an average of 11.66 kg/day worth 19 560 Kip (Table 3.1). The day wage value is worth over ten times the day wage value of their main livelihood activity, slash and burn upland

[5] See note 4.

Table 3.1. Cost-benefit analysis for bitter bamboo

Household Inputs (days)	Si Sun	Kham	Th.Num	Lot In	So	Som Khit	Long	Kham La	Ping	Ken	Average
Collecting	120.00	241.14	34.29	336.86	138.00	120.00	272.00	262.00	272.00	120.00	191.63
Selling	1.43	3.29	1.43	4.68	1.64	1.43	6.57	6.24	6.48	1.43	3.46
Meeting	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
Total	121.43	244.43	35.71	341.54	141.07	121.43	278.57	268.24	278.48	121.43	**195.23**
Output											
Harvest (kg)	2160.00	3110.00	150.00	4740.00	940.00	2040.00	1674.00	3180.00	2315.00	2040.00	**2234.90**
Value (1000 Kip)	3672.00	5287.00	255.00	8058.00	1598.00	3468.00	2845.80	5406.00	3935.50	3468.00	**3799.33**
Profit											
Kg/day	17.79	12.72	4.20	13.88	6.66	16.80	6.01	11.86	8.31	16.80	**11.66**
1000 Kip/day	30.24	21.63	7.14	23.59	11.33	28.56	10.22	20.15	14.13	28.56	**19.56**

Table 3.2. Cost-benefit analysis for cardamom

Households	Si Sun	Kham	Th.Num	Lot In	So	Som Khit	Long	Kham La	Ping	Ken	Average
Inputs (days)											
Patrolling	4.00	0.29	5.00	8.57	0.00	12.00	0.00	5.14	0.00	5.00	4.00
Collecting	6.86	3.86	2.14	6.43	13.14	27.43	8.57	22.86	12.00	6.86	11.00
Cleaning	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00
Decorticating and drying	2.86	10.29	1.71	3.43	8.57	4.00	6.43	11.43	4.29	3.43	5.60
Selling	0.00	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	4.00
Meeting	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.40
Total	15.14	15.87	10.31	19.88	23.43	44.88	16.45	40.88	17.74	16.74	**22.10**
Output											
Harvest (kg)	15.00	9.00	9.00	25.00	27.90	32.00	13.00	30.00	7.70	12.00	**18.10**
Value (1000 Kip)	202.50	121.50	121.50	337.50	376.65	432.00	175.50	405.00	103.95	162.00	**243.80**
Profit											
Kg/day	0.99	0.57	0.87	1.26	1.19	0.71	0.79	0.73	0.43	0.72	**0.80**
1000 Kip/day	13.37	7.66	11.79	16.98	16.08	9.63	10.67	9.91	5.86	9.68	**11.20**

cultivation (Table 3.3). It is comparable to the higher end income opportunities available to villagers in Nam Pheng, namely road construction, heavy agricultural labour and sale of fuelwood. The difference is that these opportunities are sporadic, or villagers have to leave Nam Pheng to find them. According to villagers, restaurants from the border juncture make a round of villages about three times per year to buy fuelwood and villagers usually sell what they have in store. In addition, mostly men take on road construction and heavy labour, while bitter bamboo is collected primarily by women, and increased fuelwood harvesting would likely degrade the resource base thereby reducing labour returns.

Table 3.3. Comparison of bitter bamboo and wild cardamom collection with other income opportunities

Income activity	Kip/day of labour
Hiring out labour for road construction	20 000
Hiring out heavy labour for agriculture	20 000
Collection of bitter bamboo (hi estimate)	***19 560***
Collection of fuelwood	17 000
Collection of bitter bamboo (lo estimate)[a]	***13 500***
Collection of wild cardamom	***11 200***
Hiring out light labour for agriculture	10 000
Slash and burn cultivation	1 500

a. Includes only households that fell within one standard deviation of the mean

Participants' estimates of inputs and outputs for bitter bamboo varied widely. For example, the estimates of bitter bamboo collected by one person in one day ranged from 4.20 kg to 17.79 kg. In addition, the average annual income from bitter bamboo calculated according to the cost-benefit analysis was 3 419 397 Kip[6], which is 3 times more than the 1 033 000 Kip that participants estimated directly (Figure 3.2). Therefore, an alternative calculation was made which included only the households that fell within one standard deviation of the mean. Based on this calculation, which included only four households, the day wage value was 13 500 Kip, which represents a more modest, but still considerable, return on labour.

3.1.3 Economic valuation of wild cardamom

Calculation of inputs, outputs and profits

Inputs for cardamom were nearly the same as bitter bamboo shoots, with the addition of patrolling, cleaning, and decorticating and drying. The NTFP Project had suggested opening canopies and tested drying ovens, but neither of innovation was adopted. Apparently, traders paid the same price for dried cardamom, thereby removing the incentive to invest in ovens.

For *patrolling*, all households agreed to report potentially threatening activity to the Village Committee, such as signs of fire or intrusion by wildlife or collectors from other villages. In some cases, villagers spent several days watching over the area. Only one

[6] Estimate is scaled down by .90 to match the sample of nine households calculated in Figure 3.2.

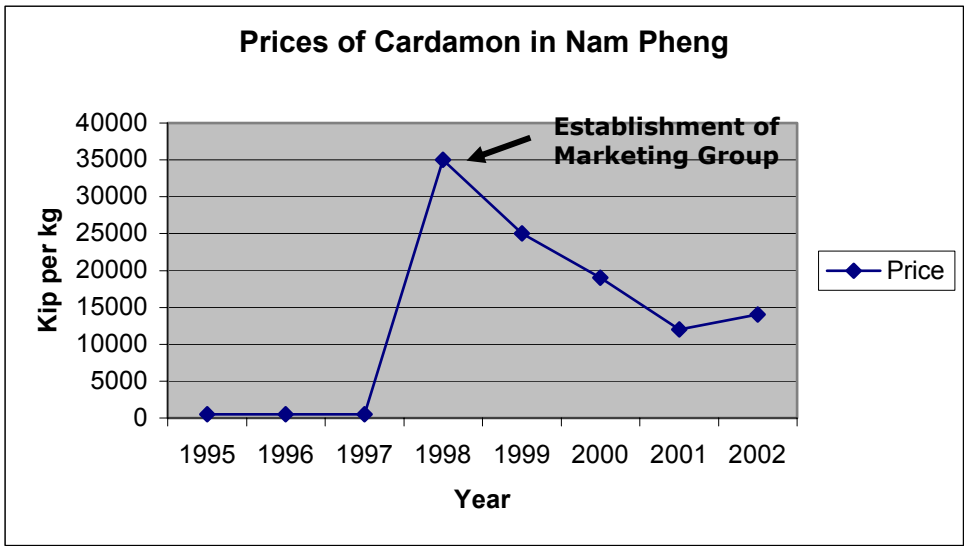
household said that they spent time *cleaning* cardamom. *Decorticating and drying* occurred simultaneously, usually in the evenings after collection. Collectors decorticated the fruit in the kitchen, while watching over the stove for drying. The times estimated for decorticating and drying were very approximate because these activities are done quite leisurely and various people in the family join in and skip out throughout the evening.

The output and profit were calculated in the same way as for bitter bamboo[7]. The price this year for cardamom was 14 000 Kip/kg, of which 13 500 Kip went to the collector.

Calculation of day wage value

The day wage value of cardamom was estimated at 11 200 Kip. The labour returns are modest, as seen in Table 3.3. It is worth about half of what can be earned by renting labour for road construction, heavy agricultural work and collecting fuelwood, without considering the drawbacks discussed earlier. However, villagers reported that the price of cardamom had fallen considerably since the marketing group first began trading it in 1998 (Figure 3.3). If calculated at 1998 and 1999 prices, the day wage would be closer to 25 000 – 30 000 Kip/day, which is higher than any of the other income generation alternatives listed in Table 3.3.

Figure 3.3. Falling local prices for cardamom



The estimations given for cardamom were more reliable. The average annual income from cardamom calculated according to the cost-benefit analysis was 243 800 Kip, which was remarkably consistent with the 238 000 Kip that participants estimated directly (Figure 3.2). Using only the eight households that fell within one standard deviation of the mean resulted in an almost equal calculation of the day wage at 11 100 Kip/day.

The economic valuation of bitter bamboo and cardamom showed that they provided modest returns on labour, but important income generation activities. The availability of

[7] One of the researchers recorded output as fresh cardamom, which was scaled down by a factor of ten to correspond to the weight of dried cardamom.

bitter bamboo for four to five months per year has made it the primary source of cash income for villagers. The local price of cardamom has dropped in recent years, but at its 1998 and 1999 levels it yielded the highest day wage among other income opportunities available. But perhaps the clearest indicator of the value of bitter bamboo and cardamom collection to each household is their economic decision to partake in their collection and trade. Participants collected bitter bamboo last year for an average of 131 days, accounting for 95% of the days in the harvesting season. Cardamom was collected for an average of five days, amounting to half of the days in the harvesting season (which is perhaps lower due to the recent drops in price). These data support the conclusion that although an activity of modest labour returns, collection of bitter bamboo is among the most important income generating options available to villagers in Nam Pheng.

3.2 Reduced poverty rates and improved livelihoods

Since 1996, Nam Pheng showed clear improvements in livelihoods. Wealth rankings showed a major reduction in poverty rates. Village records pointed to a progression in development indicators. New infrastructure and services were funded through the NTFP Fund. Villagers' range of expenses diversified, testifying to an improved quality of life and increased opportunity. Village organization, solidarity, natural resource management, awareness of NTFPs, and individual skills were reportedly enhanced. The reasons for the improvements are surely many. But villagers suggested that NTFPs and, in particular, bitter bamboo played a major role by strengthening the household economy.

3.2.1 Increased wealth and reduced poverty

Villagers in the participatory assessment defined wealth ranking criteria for both 1996 and 2002 as:

> *Well-off:* Permanent house, equipment and accessories (e.g., truck, TV/VCD), enough money and rice for one year, some livestock and enough labour
>
> *Middle:* Semi-permanent house (i.e., thatched grass roof, stripped bamboo walls), insufficient money or rice for half year, few livestock and enough labour
>
> *Poor:* Temporary house (i.e., bamboo or small trees for beams and pillars), insufficient rice for full year, no livestock and insufficient labour

The wealth rankings showed that the rate of poverty between 1996 and 2002 decreased by nearly half, from 33% to 18% (Table 3.4 and Figure 3.4). The rate of middle and well-off households both increased by 8%. In addition, 13 of the 29 poor and middle households in 1996 moved up at least one wealth rank, testifying to a wide distribution of benefits.

Figure 3.4. Changes in village wealth ranking 1996-2002

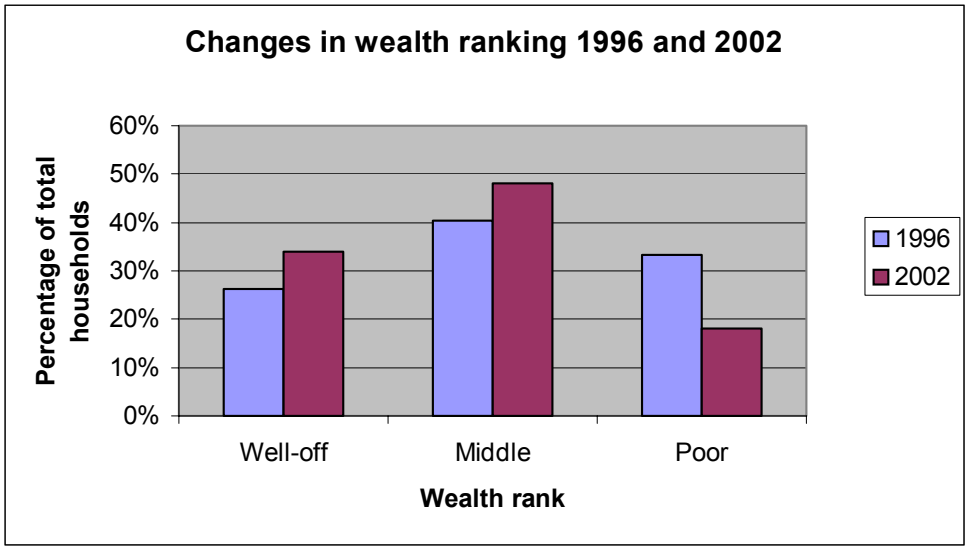


Figure 3.5. Changes in wealth ranking for households existing in 1996 and 2002

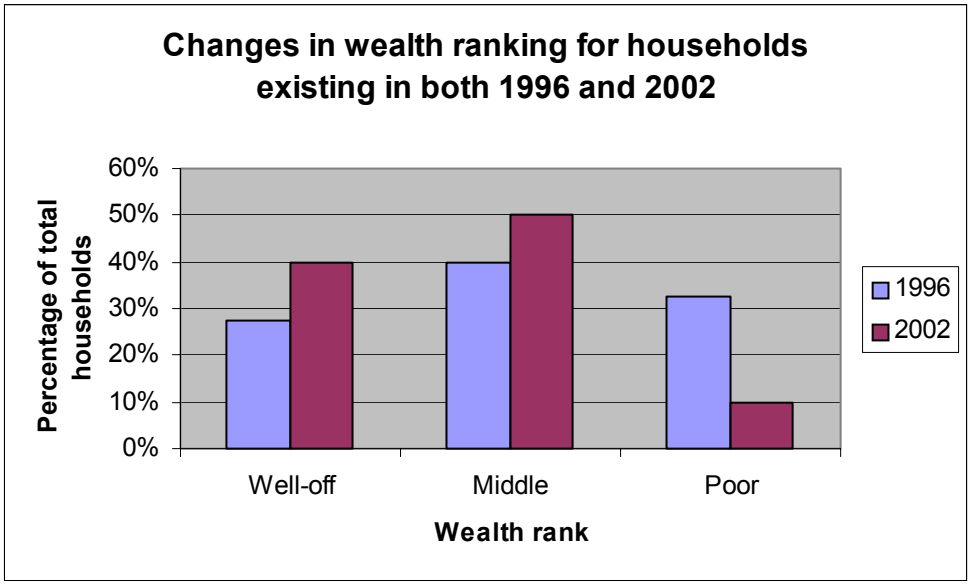


Table 3.4. Changes in village wealth ranking 1996-2002

Wealth rank	1996		2002		Difference	
Well-off	11	26%	17	34%	+6	+8%
Middle	17	40%	24	48%	+7	+8%
Poor	14	33%	9	18%	-6	-15%
Total households	42	100%	50	100%		

However, five of the nine poor households in 2002 were recently established households. If only the households that existed from the beginning of the NTFP Project until now are counted, the gains were even larger. Their poverty rate them decreased by more than 2/3, from 33% to 10% (Table 3.5 and Figure 3.5). The rate of middle and well-off households increased by 10% and 12%, respectively.

Table 3.5. Changes in wealth ranking for households existing in 1996 and 2002

Wealth rank	1996		2002		Difference	
Well-off	11	28%	16	40%	5	+12%
Middle	16	40%	20	50%	4	+10%
Poor	13	33%	4	10%	9	-23%
Total households	40	100%	40	100%		

Based on a discussion of eight randomly selected households that had graduated from poor and middle ranks, villagers suggested that availability of labour was the main factor. Many of these households were described as having young children and/or an ill family member in 1996. When the children had grown up and ill people had become healthy (adding labour and requiring less tending time from labourers), their labour helped improve the household's productive capacity to reduce poverty (see also case examples in Boxes 1 and 2). Representatives of poor households described their reasons for poverty as lacking labour due to death, divorce, illness and old age. Meanwhile, representatives of rich households described themselves as having more labour, being more laborious, and keen on learning from outside sources.

However, participants also acknowledged that increased awareness of markets for NTFP markets and, in particular, bitter bamboo was very important. As one member said, "bitter bamboo shoots solved many problems in our lives. Without bitter bamboo we would be much poorer than we are today." If increased labour availability was the main factor for overcoming poverty, then collection of NTFPs was the main employer of that labour.

3.2.2 Improved development indicators

An examination of changes in development indicators (among those for which the Village Committee kept records) also showed improvements in well-being between 1996 and 2002. The most notable ones were the attainment of food security, the elimination of child mortality under 5 years of age, the doubling of school enrolment rates with a proportional enrolment of girls, and increases in livestock (Table 3.6).

Table 3.6. Changes in development indicators between 1996 and 2002

Indicator	1996	2002
Food security[a]	25-30 households lacked rice for 3-4 months	Food is secure
Child mortality <5	10	0
Illnesses	Malaria, diarrhoea and lung infection (for elderly)	Same illnesses, but now able to access medical services and purchase medicines
Education	30 children	67 children - 33 in primary school - 19 in secondary school - 15 in tertiary school 36 of total are girls[b]
Agriculture & Forestry	0 ha of paddy rice 45 ha of upland cultivation *Unavailable*[c]	5 ha of paddy rice 30 ha of upland cultivation 515 ha of bitter bamboo forest
Animal husbandry	60 cattle 10 buffalo 13 goats 30 pigs 100 poultry	28 cattle 12 buffalo 55 goats 40 pigs 200 poultry

a. According to the estimations of the village leader and deputy
b. Village leader later drew this figure from a total of 73 children, which differs from the previous figure of 67 but still suggests that enrolment more than doubled.
c. Areas of bitter bamboo collection in 1996, before land allocation, and other areas of wild NTFP collection currently available were difficult for villagers to estimate.

Food security: Nowadays, the village leader described food security as being "not much worry." Although most households are still to produce enough rice for one year from upland cultivation, they now have enough money available to purchase rice. Previously, the village leader said, households had to take on more desperate or risky labour tasks, such as working outside the village or cutting illegal timber to get money for rice, and/or cut rations.

Health: The village leader and deputy counted ten children under age 5 that died in 1996. Villagers in the participatory assessment suggested that, previously, 3-5 children under age 5 died every year in Nam Pheng. But years 2001 and 2002 recorded no deaths of children under age 5. Surely, a main reason was a Red Cross health promotion program in Nam Pheng that provided villagers with information and free medicine. However, the role of cash income generated from NTFPs in attaining food security, improving nutrition and making accessible medicines and medical services was also important.

Education: A major reason for the doubling of school enrolment rates was that the NTFP Project built a two-room school in Nam Pheng, whereas previously children had to travel to the neighbouring village of Na Hom. Strengthened household economies may have also freed up children from labour duties at home, especially for girls.

Animal husbandry: Villagers described increases in livestock as indices of wealth. They said they often invested surplus cash in livestock as savings, which is readily redeemed by slaughtering animals for market. The increase was mostly in small livestock, such as chickens, pigs and goats. Villagers explained that cattle declined because they were fed up with losing them to diseases and road accidents.

3.2.3 New infrastructure and services

Since the inception of the NTFP Project, Nam Pheng has built new infrastructure (e.g., meeting room, water supply system), purchased new equipment (e.g., electric generator, rice mill) and funded new community services (e.g., credit fund, one school teacher) (Table 3.7).

Table 3.7. New infrastructure and services

Sponsored by NAFRI-IUCN NTFP project	Funded by NTFP Fund	Purchased by individuals (through credit from NTFP Fund)
- Rice bank (1997) - 3 clean water taps (1999) - 2-room school (1998-1999)	- Electric generator for village (1999) - Meeting room (2001) - Village food storage house for WFP project (2002) - Credit fund (annual) - Salary for one teacher (annual)	- 2 Dryers for mushrooms and other NTFPs (2000, 2001) - Rice mill (2000) - 2 Tractors (1999) - 1 *Tuc tuc* (1999)

Many of the improvements in infrastructure and services resulted directly from the NTFP Fund, or indirectly through its private loans. Even though equipment bought by individuals may be privately owned, it often becomes available to other villagers, even if for a fee. For example, the *tuc tuc* became a source of income for one household, as well as a means for travel and transportation services for other households. The items sponsored by the NTFP Project are also included in the list to give evidence that conservation projects have a vested interested in livelihood development.

3.2.4 Wider range of expenditures

Villagers of Nam Pheng showed an increase in range of expenditures between 1996 and 2002, testifying to an improved quality of life and increased opportunity (Table 3.8 and Figures 3.6 and 3.7).

Table 3.8. Women's and men's ranking of expenditures in 1996

Year 1996	**Women**			**Men**		
Category	**No. of stones**	**%**	**Rank**	**No. of stones**	**%**	**Rank**
Clothes	8	40%	**1**	7	35%	**1**
Medicines	5	25%	**2**	6	30%	**2**
Food stuffs	5	25%		5	25%	**3**
Farming tools	2	10%	**3**	2	10%	**4**

Source: Field Report #4, 1996

Figure 3.6. Women's ranking of expenditures in 2002

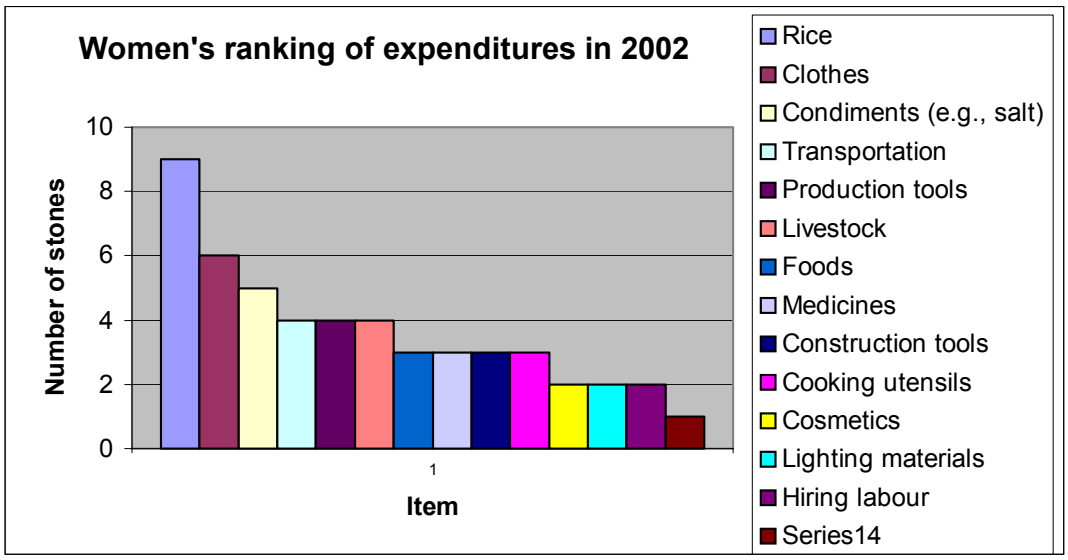
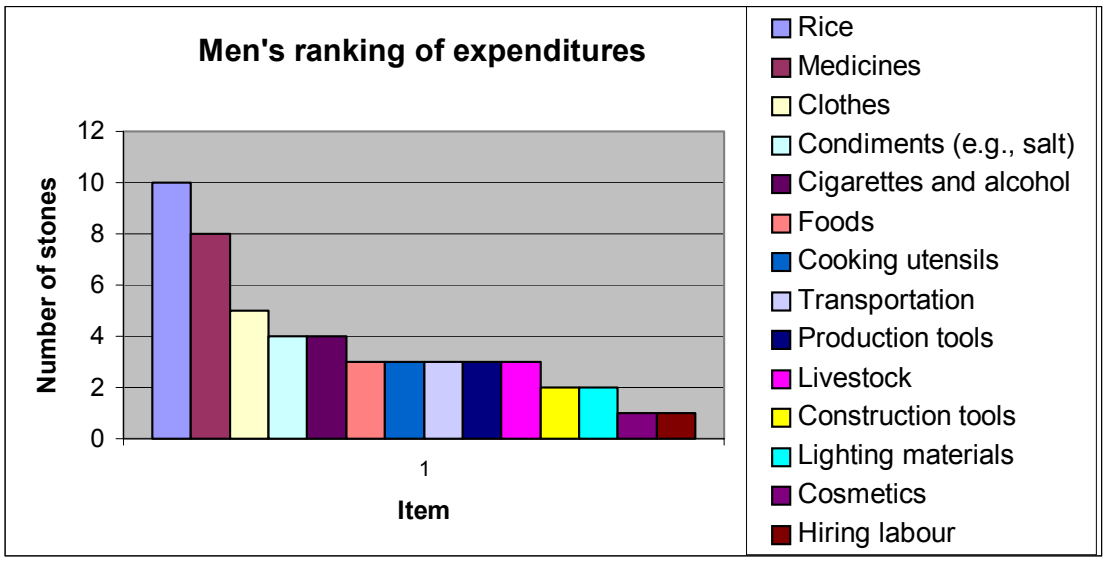


Figure 3.7. Men's ranking of expenditures in 2002



Women commented that expenditures increased because of cash income generated from NTFPs. Now they bought more clothes, books and other school supplies for children. They used plates, bowls, spoons, lighting materials and other home goods, whereas before they did without them or used less durable materials from the forest. Young women had become more interested in cosmetics from watching TV and visiting other areas. Some households were even able to hire labour, mainly to open up paddy fields.

Women reported that expenditures on medicines decreased because of improved health awareness and free provisions from the Red Cross program. But men argued that expenditures were the same as before because costs were higher.

3.2.5 Other benefits

In addition to these tangible improvements, the NTFP Field Office in Oudomxay identified important non-cash and immaterial benefits resulting from project activities. They included:

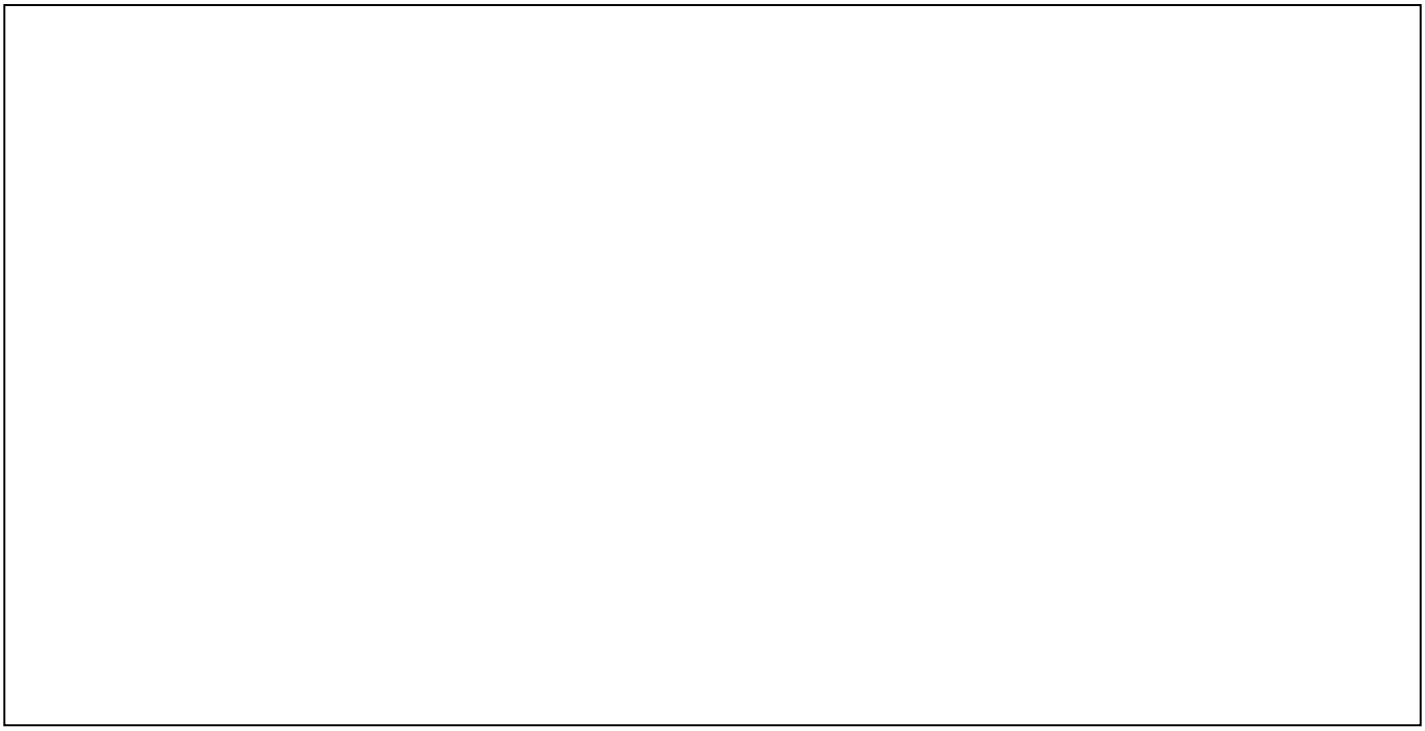
> *Group organization and empowerment*: village committees had enhanced their organizational capacities and villagers had more confidence in dealing with traders and other villages.
>
> *Skills development:* villagers had acquired skills, such as improved harvesting techniques, marketing/business skills, and knowledge of ecology.
>
> *Natural resource management:* villagers had more capacity to manage natural resources because of forest land allocation, harvesting regulations, and restrictions on upland cultivation with a system for punishing offenders and authority to deal with conflicts

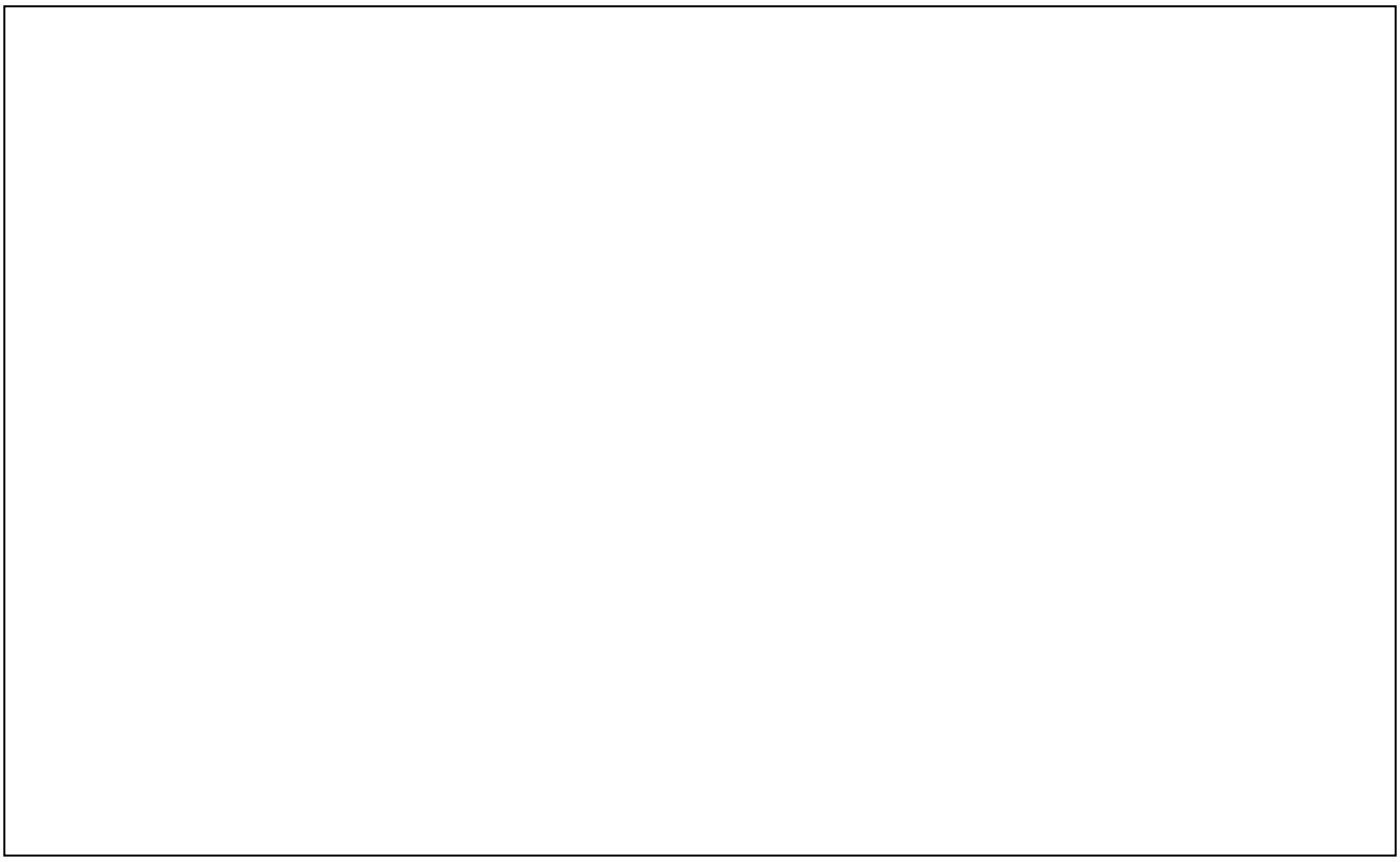
These ideas were reflected in interviews with local leaders from Na Hom village. They said that the activities of the project had increased a sense of *solidarity among villagers*. Now that they worked together buying and selling NTFPs, bargaining collectively with traders, and deciding on uses for the NTFP Fund, they recognized more the values of mutual help and collective action. They also mentioned *increased capacity* to bargain with traders, *increased awareness* about household economy, and *saved time* from fetching water, selling NTFPs at market, and bargaining with traders.

Villagers in both Na Hom and Nam Pheng asserted that the NTFP Project had raised their *awareness about the value of NTFPs*. Villagers in Nam Pheng said that it was as though their forests were in the dark before and the project had "opened their eyes" to its NTFPs (i.e., its economic values).

3.2.6 Case examples

The real value of NTFPs to the lives of the people collecting them easily to gets lost in statistical averages and chart diagrams. Two case examples are presented in Boxes 1 and 2 to give a sense of how activities of the NTFP Project impacted villagers' life stories.





3.3 Impacts on equity

3.3.1 Social equity

The NTFP Project showed remarkable achievements in distributing benefits equitably. Because forests were allocated to the community, all households had access to them. In addition, the NTFP Fund proved an effective way to generate communal benefits, such as electricity, a credit fund, a school teacher, a meeting room and a food storage house. In Na Hom, a portion of the NTFP Fund was used as a relief fund, where households in especially difficult circumstances could borrow money without interest.

One area that may need further attention regards neighbouring villages. Forestland allocation restricted harvesting from other villages, which may mean that gains for Nam Pheng amounted to losses for neighbouring villages. Local leaders in Na Hom said that two adjacent villages had been allocated only small areas of bitter bamboo forest, which were insufficient for the entire village. Village leaders in both Na Hom and Nam Pheng have attempted to manage the situation by permitting other villages to collection for consumption, or charging a small fee if for sale. The latter, however, occurs rarely. This dilemma draws attention to equity issues over natural resources that go beyond single villages and need to be addressed at a larger geographic level.

3.3.2 Gender equity

One of the most interesting results for women was found in Na Hom. Women there had negotiated with the Village Committee to allow one day of bitter bamboo collection per year to raise funds for the Women's Union—the Head of the Women's Union bargained that she would select *which* day to ensure that prices were highest. The Women's Union expected to raise about 1 000 000 Kip from this activity, which they intended to use for:

- Establishing a credit-relief fund for women (one part would be given as subsidies because women were said to suffer illnesses frequently)
- Supporting costs for meetings of the Women's Union and receiving guests and delegations
- Purchasing livestock as a source of investment capital for the Women's Union

In this way, revenues generated by bitter bamboo will have helped women address specific issues concerning women (e.g., frequent illness), assisted them to become more politically organized (e.g., supporting costs for meetings and communications with other organizations), and generated funds and capital to support their activities (e.g., collecting bitter bamboo, investing in livestock). A large part of the success of this initiative is owed to one women's leadership and a politico-administrative context that supported women. Having heard of the initiative in Na Hom, the Head of the Women's Union in Nam Pheng said that they soon intended to follow suit.

Collecting NTFPs is traditionally women's labour in Nam Pheng. In interviews, women were most frequently identified as the primary or only collectors in the household. During harvesting season, women frequently collected bitter bamboo, while men

prepared fields for upland cultivation. This can be interpreted as a negative impact for women because it may imply increased labour for women. However, when asked, women said that they readily accepted the labour because it resulted in increased income for the household. If women were not collecting NTFPs, they might have to assist in preparing upland fields, which is heavier labour and further away from the house. Or they might have to seek more desperate forms of labour to make ends meet, which is a burden that typically falls on women in traditional upland cultures.

3.3.3 Equity within organizational structures

Involving the poor and women at higher levels of management and decision-making in the NTFP Project's activities was more of a challenge. The Group Committee for the marketing group in Nam Pheng simply adopted the structure of the Village Committee. Because women and the poor are generally underrepresented in Village Committees, they had limited roles in the Group Committee. Hence, two well-off men headed the Group Committee (Head and Deputy Chief of the village) and only one woman (Head of Women's Union) was included among its associated members. The additional positions in the marketing group were also contracted to men because they had more experience in commerce and administration. Involving women and the poor more in the management structures of the project's activities would likely lead to more substantial and sustainable achievements in empowerment.

3.4 Impacts on forest conservation

The scope of the current study did not allow for resource monitoring or other types of direct assessments of changes in the resource base. However, some indications of impacts on forests were garnered from interviews with government officials, community leaders and villagers. Perhaps the most significant impact on forests was the reduction of upland cultivation by one third (see Table 3.6 above). The main reason is likely due to forest allocation. However, NTFP collection has also been helpful in generating income for villagers to invest in paddy fields, as mentioned in Section 3.2.4. It is unclear how forestland allocation will impact on yields from upland cultivation over the long-term and what will be the consequences for livelihood and natural resource management. Villagers themselves seemed to be weighing the values of upland cultivation with other economic activities in Nam Pheng. For example, they said that they would not clear forest areas with oak species (*quercus spp.* and *lithocarpus*) because they created a favourable environment for wild mushrooms.

Villagers suggested that illegal cutting of timber had decreased because of increased food security. Some villagers also said that the availability of NTFPs had increased since they began sustainable harvesting. One villager noticed particular increases in mushrooms, rattan and wildlife. He also suggested that he heard more birds and saw more squirrels than before. An NTFP Officer for PAFO suggested that forest cover in Nam Pheng had increased and that trees were larger since the inception of the NTFP Project.

Increased interest in NTFPs can also mean increased pressure on forest resources. However, villagers in Nam Pheng suggested that they were better able to respond to these pressures. For example, an emerging market for a variety of wild red mushroom

has created sudden demand. The current harvesting situation is similar to how it was for bitter bamboo and wild cardamom before the harvesting regimes. Villagers race to collect them, leading to premature and destructive harvesting. One villager spoke of some "excessively individual" collectors who squashed mushrooms that were too small to prevent other people from collecting them later. In response to this situation, villagers said that they wanted to organize harvesting rules and establish a system of fines. They intended to meet as a village on these topics before the mushroom season of this year. Surely, their experiences with bitter bamboo and cardamom will have provided them with valuable lessons and skills for addressing these issues.

3.5 Unintended negative impacts

Unintended negative impacts were not easy to identify. Villagers, community leaders, and district and provincial officials all expressed satisfaction with the project's activities. Their only major concern was the falling price of cardamom (Figure 3.3 above), which could have repercussions on forests. A representative in Na Hom said that if traders did not give them better prices for cardamom this year, they would clear those forests for upland cultivation. It is difficult to explain the drop in prices, but it shows how eco-system management and livelihood improvement can benefit from marketing components. Improved market information and analytical skills could assist villagers to foresee and respond appropriately to market trends. The falling prices also draw attention to the risks inherent in overly relying on markets, especially for NTFPs which are notorious for boom and bust cycles. However, in Nam Pheng, villagers appeared to diversify risk effectively by collecting a variety of NTFPs, practicing different livelihood strategies and maintaining their staple crops.

3.6 Evidence of scaling up

"Scaling up" can be distinguished as "horizontal" and "vertical". Horizontal scaling up refers to using the same approach, method, product, etc. in a different place, while vertical scaling up refers to using them on a larger scale. The great interest in NTFPs among government offices and international organizations operating at district, provincial and national levels as a result of the NTFP Project is testimony to horizontal scaling up. Evidently, the NAFRI and IUCN cannot take credit for all the NTFP initiatives that subsequently developed in Lao PDR, but the project is generally recognized among these organizations as innovators and an important resource in the field of NTFPs. Some evidence of vertical scaling up existed at the provincial level, but this remains a future challenge for similar projects.

3.6.1 National and international projects and programs

The acting director of PAFO described the NAFRI-IUCN Project as the first successful project in Oudomxay. He said that it had made them famous and that now many people talk about the NTFPs in Oudomxay. The outside interest is reflected in the numerous visitors to the Nam Pheng field site, which have included PAFO and Rural Development offices from other provinces, National Biodiversity Conservation Areas, national and international projects, and multi-lateral donors. PAFO in Oudomxay kept a list of these visitors (Table 3.9), which, said DAFO in Namo, was incomplete due to the many others that go directly to the district without passing by PAFO.

Table 3.9. List of visitors to Nam Pheng

Office or organization	Province	Date	Visitors
Rural Development Project	Luang Prabang	July 13, 1999	20
MARD-IUCN NTFP Project	Hanoi (Vietnam)	September 6, 1999	??
Foresters	Saravan	September 20, 1999	??
Asian Development Bank	Sayaboury	September 20, 1999	20
Rural Development Office	Luang Nam Tha	October 12, 1999	29
GTZ	Luang Nam Tha	December 8, 1999	14
GTZ	Luang Nam Tha	February 21, 2000	20
Nam Ha NBCA	Luang Nam Tha	February 25, 2000	20
ZOA	Luang Nam Tha	March 5, 2000	18
European Union	Phongsaly	May 16, 2000	24
Rural Development Office	Sayaboury	March 15-20, 2001	20
PAFO	Luang Nam Tha	March 20-22, 2001	14
Rural Development Office	Saravan	March 27-30, 2001	7
Agri. Development Project	Vientiane	April 24, 2001	26
GAA	Oudomxay	August 23, 2001	25
Nam Et-Phou Lei NBCA	Houaphan	August 26, 2001	11

Note: MARD - Ministry of Agriculture and Rural Development; IUCN – International Union for the Conservation of Nature and Natural Resources; GTZ - Gesellschaft Technische Zusammenarbeit; NBCA – National Biodiversity Conservation Area; PAFO – Provincial Agriculture and Forestry Office; GAA – German Agro Action

Source: Provincial Agriculture and Forestry Office of Oudomxay

Horizontal scaling up was evinced by the many organizations that have attempted to integrate NTFP development into their projects and programs. An SUNV program provided the following list of projects with major NTFP components (de Koning, undated):

NAFRI, NAFES and Lao Swedish Forestry Project: As of February 2002, this project launched a new 4-year phase that will include NTFPs in research and upland extension activities. More specific ideas have already been formulated to improve the production, processing and marketing of NTFPs. Activities will be carried out in Luang Prabang and Oudomxay provinces.

Faculty of Agriculture and Forestry: Previously, marketing research on NTFPs was carried out in collaboration between the Faculty of Agriculture and the French research institute OSTROM. The Faculty of Forestry has researched botanical issues, notably bamboo and rattan. Some activities have been carried out in Houaphan province. One PhD student is about to research the impact of land-allocation on NTFPs and user rights.

FAO: In 2001, FAO launched a project together with the Ministry of Forestry on marketing information and extension, emphasizing agricultural products. FAO is interested in broadening its scope, which would include forestry products and will likely

focus on marketing and agro-forestry for NTFPs. Previously, FAO had conducted research on Benzoin in Luang Prabang (1996-1998).

The following agencies worked on NTFPs at a provincial level (activity and/or type of NTFP included in brackets):

- UNESCO Nam Ha Eco-Tourism Project in Luang Nam Tha (link with eco-tourism)
- World Conservation Society in Luang Nam Tha (NTFP feasibility study and cardamom)
- Friends of Upland Farmers (FUF) in Luang Nam Tha (cardamom)
- GTZ project in Sing and Nale districts in Luang Nam Tha (cardamom)
- EU IRDP in Luang Nam Tha (cardamom) & new EU project in Luang Nam Tha
- ZOA in Luang Nam Tha (cardamom)
- EU micro-projects II in Luang Prabang (paper mulberry bark) & new EU project in Luang Prabang
- Lao Swedish Forestry Project in Luang Prabang and Oudomxay
- *Projet du Development Rural du District de Phongsaly* (cardamom)
- DWH/GAA in Oudomxay (honey)
- IFAD program in Oudomxay (loans of 13.4 million USD in which NTFPs are an important component)
- Nam Tan project in Sayaboury (NTFP feasibility study)
- PDRPB project in Champassak (cardamom)
- SUNV pilot eco0toursim project in Savannaketh (link with eco-tourism)
- CUSO in Saravan and Sekong (link with conservation issues)

(de Koning, undated, p.8)

Interviews and the wrap-up meeting revealed a few other initiatives that suggested some vertical scaling up at the central level:

> *NAFRI:* NAFRI developed a research programme that included a major component on NTFP research derived from the finding and recommendations of the NTFP Project.
>
> *SUNV:* An SNV-UNV co-operation is conducting an institutional analysis and intending to develop a technical assistance framework for the NTFP sub-sector.
>
> *Forestry Education Project:* GTZ has been working with the Faculty of Forestry at the National University to integrate NTFP management and conservation into the forestry curriculum. They said that documents from the NTFP Project were their main source of materials. They were also developing "model forests" at a practicum station, where they conducted trials on rehabilitating forests with bamboo and enrichment planting with rattan.

Forestry Research Centre: Extension services for upland cultivation were developing agro-forestry models in two districts in Luang Prabang, in which they intended to incorporate NTFPs.

Other projects expressed interest in developing NTFP activities, but were as yet uncertain on how to proceed, such as JICA, SFPS, and IFAD.

The GAA project in Oudomxay provided an illuminating example of how the NTFP Project had influenced methods and activities for NTFP development in another project (see Box 3). The GAA project's NTFP technical advisor was previously a field officer of the NTFP Project, which helps explain the high level of borrowing, but also demonstrates a use of the capacities built in the NTFP Project.

3.6.2 Provincial Agriculture and Forestry Office in Oudomxay

The acting director of PAFO in Oudomxay expressed a strong interest for NTFP development and provided an example of vertical scaling up. Over the past two years, PAFO invested 30 million Kip in 2001 and another 50 million Kip in 2002 to supply

some 50 ha of cardamom plantation, using the variety introduced by the NTFP Project. Funding was provided by the central government, based on a request from PAFO. In previous years, these funds were used to introduce new rice varieties, fruit trees, animal husbandry and irrigation, but in the past two years they were invested in cardamom.

PAFO also maintains two full-time staff in the NTFP Office that was established during the NTFP Project. However, lack of budget makes the NTFP Office increasingly difficult to maintain and no money is available to develop activities. The main functions of the office are to provide information and regulate the private sector in the provincial capital, such as furniture processors and distillers of eaglewood.

3.6.3 District Agriculture and Forestry Office in Namo

DAFO in Namo District also expressed a strong interest in NTFPs. The acting director expressed many ideas for future NTFP development, including aspirations to support marketing for *tut tieng* bark and wild mushrooms, plantation trials for eaglewood, and processing for bitter bamboo shoots and handicrafts. However, if PAFO is already constrained by budget, DAFO is even more so.

Nonetheless, DAFO has been able to support various coordination initiatives since the termination of the NTFP Project, which have supported collectors of NTFPs in Nam Pheng and other villages. They include:

- *Organized a workshop* in October 2001 with 6-7 villages to learn from and exchange experiences with Nam Pheng village. (Nam Pheng funded the hospitality lunch from the NTFP Fund.)
- *Co-ordinated a meeting with border officials* and relevant government offices to facilitate approval procedures for bitter bamboo at the Chinese border. The objective of the meeting was to identify bamboo products coming from Namo district, which would accelerate approval processes at the border. According to the acting director of DAFO, Chinese traders now have closer relationships with Nam Pheng village because they can transport their product quicker and more easily. The rapidity of the process is important to maintain the high quality (i.e., freshness) of the shoots.
- *Conducted a stakeholder meeting to exempt poor villages from taxes* on NTFPs traded into China.
- *Provide advice and follow-up to villagers* on existing activities from the NTFP Project through sporadic visits to Nam Pheng.
- *Advised and guided visitors* from other areas on NTFPs and project sites.

3.6.4 Spontaneous adoption and expansion to other villages

During the course of the project, the NTFP Project expanded its activities to three neighbouring villages of Nam Pheng, namely Na Hom, Na Kham and Pang Thong. This expansion was not exaction spontaneous adoption, because it was initiated by the project, but local leaders in Na Hom reported that project activities continue successfully since termination of the NTFP Project. They presented the following results:

- Allocation of forest in 1998 (simultaneously with Nam Pheng)

- Establishment of marketing group for bitter bamboo and cardamom (NTFP Project provided scale and 500 000 Kip start up fund)
- Village agreements on prices, informal patrolling duties, prohibition of cultivation in bitter bamboo forests, and opening and closing dates for harvesting

After three seasons of harvesting, the NTFP Fund has enabled them to obtain:

- Electricity (village generator)
- School room (which, in the future, will become a meeting room and a new two-room school will be built)
- Relief fund that has provided loans without interest to 7 households to treat persons suffering from illness in the family
- Credit fund with 10% interest rate that has provided loans to 6 households, mostly to open up paddy fields (e.g., purchase a buffalo for labour) and purchase livestock (e.g., ducks, chickens, pigs)

Community leaders in Na Hom estimated that harvesting bitter bamboo shoots brought the following levels of annual income to households, depending on availability of labour:

Table 3.10. Estimated annual income from bitter bamboo shoots

Labour availability of household	Estimated annual income
High	1 500 000 Kip
Medium	800 000 Kip
Low	500 000 Kip

Real spontaneous adoption to other villagers has been more difficult, as encountered by the GAA project in Oudomxay. GAA brought a delegation of villagers and local leaders from one of their project sites to learn from the experiences of Nam Pheng. However, without further project support, the villagers have had difficulty in establishing effective NTFP management regulations. According to a GAA technical advisor, it was a new way of organizing and villagers are distrustful of the Group Committee.

4 Conclusion and recommendations

Between 1996, when the NTFP Project first arrived to Nam Pheng village, and 2002, considerable advancements have been made in reducing poverty and improving livelihoods. Poverty rates reduced by at least one half. Food security increased; child mortality of children under 5 was eradicated; school enrolment doubled; over half of whom are girls); and savings increased, as shown through increases in livestock. The village acquired new infrastructure and new services, while villagers' range of expenditures widened, improving quality of life and increasing production capacity. Although there were likely many different factors at work in making these achievements, NTFPs clearly played an important role, as indicated by their predominant position in households economies and villagers' own testimonies. Currently, collection of bitter bamboo, cardamom and other NTFPs continue to be main sources of income for the majority of households in Nam Pheng.

In turn, the economic values of NTFPs have provided incentives for villagers to manage forests, included the 515 ha they have allocated as bamboo forest. Villagers in Nam Pheng said that the NAFI-IUCN project "opened their eyes" to NTFPs, which has meant an appreciation of forests as an economic asset as opposed to the more commonly assumed economic hindrance. Forest allocation gave Nam Pheng village legal authority over a defined natural resource area, which helped them to resist incursions from without and regulate conflicts from within the village. But perhaps the most important success of the sustainable harvesting regimes was the organization of the marketing group. The marketing group enabled villagers to act co-ordinate sustainable harvesting regimes, produce on large scale, and negotiate better prices with traders. This type of local level empowerment was made possible through supporting local institutions (e.g., support in organizing and managing the marketing group), skills building for individuals (e.g., using scales, ongoing technical support by project officers), and creating a supportive political and legal framework (e.g. forestland allocation, intermediation by DAFO with border officials).

However, despite the evident socio-economic advancements, it is also clear that Nam Pheng is still at a relatively low level of "development" in conventional terms. It is unclear to what levels of economic wealth can be reached NTFPs alone. However, several household NTFPs seemed to serve as a stepping stone to larger capital investments, such as a *tuc tuc* and more livestock, and allowed villagers to diversify income sources. But it is also unclear how the relationship between economic advancement and eco-system management changes as villagers graduate to these wealthier levels. This is an area that requires further study. The current study has shown how conservation activities have been effective in helping a remote mountainous community step out of poverty and secure sustainable livelihoods.

While the project may not boast miracle stories of wealth, it has made impressive strides in equitable and sustainable growth, which should be especially interesting to the field of poverty alleviation. Common access to forests allowed all villagers to partake in project benefits, as opposed to the type of privatized commercialization common to many rural

development projects that tends to favour farmers that are already advantaged in land, labour, capital, risk tolerance and social and political influence. The NTFP Fund also proved effective to help redistribute benefits on a community level, through investments in infrastructure, equipment and services. In Na Hom, the NTFP Fund was used to target the poorest households by supporting an emergency relief fund for households in sudden crisis. The Women's Union had similar ideas to use revenues from bitter bamboo collection to address women's needs and support women in crisis.

The accomplishments of the NAFRI-IUCN NTFP Project has sparked much interest from government offices at national, provincial and district levels and among international organizations. Many of them have begun their own initiatives with NTFPs. The NTFP Project helped introduce NTFPs into the national research agenda through NAFRI. PAFO in Oudomxay invested in the expansion of cardamom plantation, but cardamom plantation was only a minor activity of the NTFP Project and is already widespread throughout Lao PDR. In this way, horizontal scaling up was considerable, but vertical scaling up was more limited. An issue for further consideration is how these type of projects draw the attention of national level policy makers and economic planners?

Based on the discussion in this paper, the following recommendations are proposed:

- *Determine units of intervention according to resource use patterns.* Natural resource areas, such as forests, are most often used by several different communities or jurisdictional units. Projects, however, tend to intervene at the level of an administrative unit because it is organizationally simpler. In the NTFP Project, we saw how project interventions on a forest benefited one village, the unit of intervention. But we did not see how these positive interventions impacted the other users of those forests. Hence, the current assessment of the impacts on communities and forests is incomplete because we do not know the repercussions on these other forest users. To treat the issue more comprehensively would require intervening, or at least monitoring and evaluating, on the wider (or perhaps sometimes the smaller) community of resource users.

- *Implement sustainable harvesting regimes in tandem with forestland allocation to counter losses in agricultural yields.* Forestland allocation helped Nam Pheng regulate and organize the use of its forests. However, a persisting challenge of forestland allocation among shifting cultivators is that it reduces the area available for cultivation, thereby reducing fallow times and reducing crop yields. In Nam Pheng, villagers were to make up for those losses with income gained from NTFP collection. Therefore, sustainable harvesting regimes for NTFPs could be regularly implemented as a direct support to forestland allocation. This would help farmers compensate for losses in agricultural yield and, ultimately, making forestland allocation more effective.

- *Emphasize importance of local organizing and empowerment in conservation projects*. As discussed above, the effects of local organizing were probably the most important factors behind the successes in Nam Pheng. The capacity to act collectively and with authority far outweighed any technical intervention applied by the NTFP Project. The leader of the Women's Union in Na Hom village gave the example of how revenue

generation and a bit of organization create excellent conditions for the empowerment of women. Hence, conservation projects such as this one should also be seen for their potential for promoting empowerment through their dual focus on income generation and resource management.

Managing risk: Any activity that promotes a transition in production scales consumption to market needs to pay attention to market risks. Attention to marketing issues should be a key component. Farmers should also be encouraged to diversify livelihood strategies and maintain staple crops for security. In most cases, subsistence farmers will automatically employ these strategies, as seen in Nam Pheng, and so the project simply needs to make sure that it does not contradict them (e.g., by trying to eliminate upland cultivation or over-promoting economic gains through mass production).

Poverty-environment links: Poverty-environment links need to be monitored and researched at different levels of wealth. The current study has suggested mutually reinforcing goals between economic advancement and eco-system management at a level of sustainable livelihoods. How these relationships play out at other levels of wealth needs to be distinguished and studied further.

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