CASE STUDIES IN WETLAND VALUATION #8: October 2003

SEKONG PROVINCE, LAO PDR: economic returns from conserving natural forests

The rich yet undervalued forests of Lao PDR

Among countries in Asia, Lao PDR is noted for its high forest cover (> 50%). However, this figure is steadily decreasing at an average rate of 100,000-200,000 hectares per year (MAF, 1990). A major reason is that decision makers heavily undervalue the forest as a resource. The forest is mostly perceived in terms of its commercial value, not its importance for biodiversity and local livelihoods.

There is however a growing recognition of the importance of protecting watersheds and securing local livelihoods and some efforts are how being undertaken in Lao PDR to increase forest cover. The efforts include reducing slash and burn and developing reforestation programmes. However, given the high dependence of local communities on NTFP harvesting for their livelihoods, there is an ongoing debate about whether degraded forests should be transformed into plantation forests to increase long-term national and provincial income, or whether they should be allowed to regenerate naturally thereby favouring biodiversity and protecting the livelihoods of the current and future generations.

To inform this debate, and to demonstrate the links between biodiversity and current sectoral priorities and development needs in Lao PDR, IUCN and WWF jointly carried out a study to calculate the economic returns from conserving forests in Sekong Province. The main objective of this study was to influence development and economic sectors to integrate biodiversity concerns into their policies, plans, and budgets by highlighting the economic value of maintaining natural regeneration forests.

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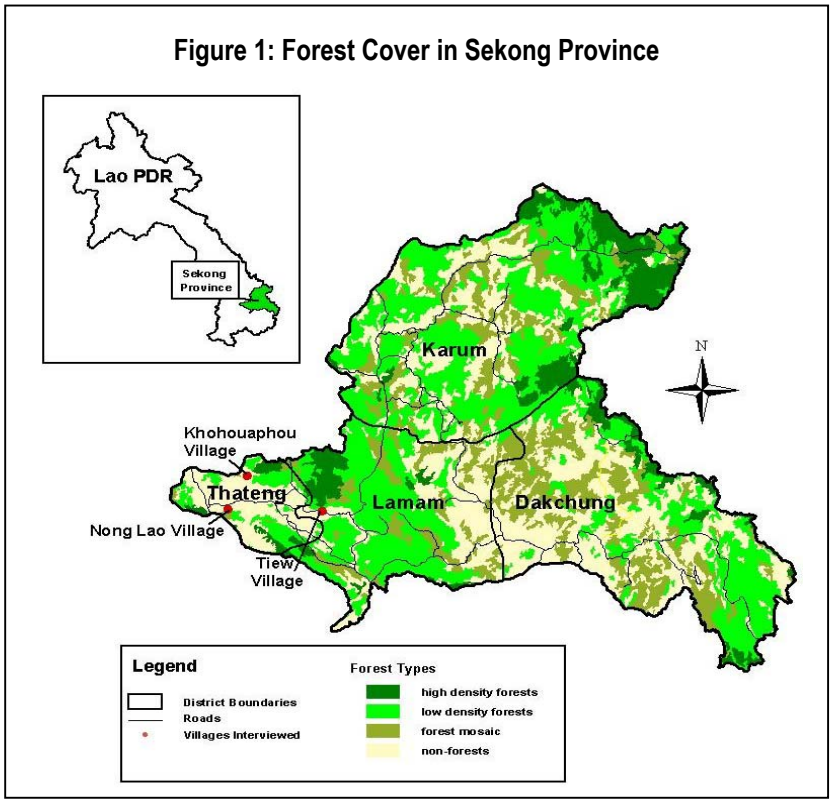
Integrating Wetland Economic Values into River Basin Management

Sekong Province: rural poverty and abundant natural resources

Most of the pristine forest in Lao PDR is located in the south of the country, which includes the province of Sekong. The provincial government estimates that about 66% of Sekong's households are poor. GDP per capita is estimated to be at US$ 120, way below the national average at US$ 420, and the majority of those living in Sekong experience rice shortages every year. As of 2001, population in the province reached a total of 71,386 people, 35,987 of which were female. The total land area is 7,665 km² and Sekong is bordered by Vietnam to the east, Attapeu Province to the south, Saravane Province to the north, and Champassak Province to the west. Sekong is the second smallest province in Lao PDR and has the lowest population density of any province in the country (9.5 persons/km²) (SPC, 2000).

While being a poor province in terms of financial capital, Sekong is very fortunate when it comes to natural capital. It is part of the Central Annamites, which has been identified as one of five priority regions of the WWF's Ecoregion Conservation Program in Indochina (Figure 1). Of particular importance is the presence of a wide range of rare, endemic and threatened taxa therein, including several large mammals such as the Tiger, Clouded Leopard, and the Asian Elephant (Duckworth and Hedges, 1999). Douc Langur, Dhole, Asiatic Black Bear, and Sambar have also been recorded in Sekong (Bergmans, 1995). Bird diversity is also high in the area, with a total of 178 species identified in the above survey, including three of international importance – Crested Argus, Green Peafowl, and Spot-bellied Eagle Owl. The Ratchet-tailed Treepie and Great Hornbill were also observed. The diversity of fish, amphibian and reptilian species is most likely very high due to large expanses of undisturbed habitat and abundant watercourses, albeit there is a lack of scientific studies and inventories in this regard.

Figure 1: Forest Cover in Sekong Province



Livelihood sustenance vs. economic development

The Annamites offer a significant source of livelihoods of its inhabitants, who mostly rely on forest resources for the following:

a) Biodiversity-based activities, e.g. agriculture and aquaculture
b) Non-timber forest products (NTFPs)
c) Timber
d) Watershed protection, such as for flood prevention and urban water supply
e) Hydropower and associated activities

With the high level of poverty prevalent in Sekong many rural communities have difficulty meeting subsistence needs, especially at the end of the dry season, when NTFPs become an important component of their diet. Moreover, the incidence of acute malnutrition and chronically energy deficient children is high in Sekong relative to other provinces in Lao PDR (UNDP, 1997).

Economic development therefore rates high on the

Figure 2: Sekong Forests

provincial agenda and given the relative good state of the forests in Sekong, the provincial government has put forward a strategy to increase income by making use of its natural resources, mostly by harvesting timber and exporting these to bigger cities within the country. At the same time, in compliance with national strategies, a vital component of the five-year socio-economic development plan for Sekong is to stop slash and burn activities and to further arrest forest degradation. In order to meet national and provincial quotas on timber harvesting while simultaneously increasing the forest cover, certain portions of degraded forests, the current state of which were mostly due to slash and burn activities, are being allocated for tree plantations. Such schemes will necessarily compete with the alternative of letting forests regenerate naturally in the favor of biodiversity and livelihood sources.

Measuring Sekong's forests: economic values

The economic value of Sekong forests being measured refers to direct and indirect use values only and is derived through the following study sub-objectives:

a) Estimate the direct use values of Sekong forests in terms of their contribution to livelihoods
b) Estimate the financial returns from sustainable use of forests, mainly in the form of sustainable timber harvesting
c) Estimate the indirect use values of Sekong forests in terms of their contribution to watershed protection, biodiversity conservation and carbon sequestration

The study does not try to capture option and non-use values, as doing so would require extensive surveys. Hence, the figures reported here are minimum, so to speak, and can easily become larger if more types of economic values could be captured and measured. As can be seen in the graph below, the values that will be estimated will pertain to all types of beneficiaries, albeit not all benefits accruing to the global community will be captured.

Two methods were used to compute for NTFP values. The first method consisted of the use of market prices of goods, where available, together with estimated quantities of harvest. Focus group discussions (FGDs) were conducted in three villages to get specific species and quantities harvested in a year. The second method applied was the Participatory Environmental Valuation (PEV) technique, whereby local villagers expressed the value of NTFPs within the context of their own perceptions, needs and priorities rather than through conventional cash-based techniques

Figure 1: Economic Benefits From, and Beneficiaries of Sekong Forests

BENEFITS/ BENEFICIARIES	Village/ Community Level	Provincial Government	Watershed Catchment	Global Community
NTFP Harvests	x			
Timber Revenues		x		
Watershed Protection			x	
Carbon Sequestration				x
Biodiversity Conservation				x

(Emerton, 1996). Cash measurements are of little relevance to subsistence economies, and values are better expressed through a numeraire that is accepted and accorded a high value in the village. It is important to note, though, that the numeraire must have a market value, even if the respondents are not aware of what it actually is. In the Sekong study, rice was used as the numeraire, given that it is the staple crop planted and eaten. Villagers were then asked to rank all the products extracted from the forest, including rice, by placing counters on each product harvested. The number of counters would signify the importance placed on that particular product. The value of each product was then expressed relative to the value placed on rice. Results of the PEV and the FGDs were then compared and used to validate each other. Ideally, the survey should have been done in a random fashion, covering more respondents. Due to the usual limitations of time and budget, this was not achieved. Nevertheless, the results should be taken to reflect relative amounts, and can be used for providing bases for policy recommendations, but not to calculate and extrapolate values for the whole country.

As mentioned the indirect use values considered in this study are composed of watershed protection, biodiversity conservation and carbon sequestration. Watershed protection refers to the function of the forest in protecting downstream users, such as irrigation facilities, micro-hydro power supplies, lowland agricultural production and fishery resources that fall within the watershed's catchment area, against floods and sedimentation. The production value of fisheries, agriculture, and hydropower, both existing and potential, are estimated. Also the presence of the forest facilitates the protection against damages from floods and erosion. The avoided costs from these damages are thus what would represent the value of watershed protection from Sekong forests. Biodiversity conservation services of the forest are estimated using the "revealed willingness to pay" of the government as expressed by its expenditures for forest conservation. Finally, for carbon sequestration, the benefit-transfer method (BTM) was used. BTM is an approach that involves taking the results from one or more primary economic studies with estimated values for similar impacts, and modifying and transferring them to the area being studied (ENRAP, 2000).

Sekong forests – how much are they worth, and for whom?

The forests of Sekong Province offer a wide range of economic and financial values that prove to be substantial and numerous. Estimates of direct use values show that the estimated annual value of NTFPs is between US$ 398 to 525 per household, figures which are way above the provincial average income of US$ 120. NTFPs thus prove to be a very important source of non-cash income for Sekong households, particularly for the poorest group. Moreover, the absolute value of NTFPs seems to be positively correlated with knowledge about the forest and its resources. As households veer away from poverty though, the relative contribution of NTFPs towards their livelihoods decline. Nevertheless, they still form a considerable portion of total income.

As far as timber revenues are concerned, Sekong forests provide huge earnings for the provincial government. In 2003, the projected revenues could amount to US$520,000 and tax

Table 2: Sekong forest economic benefits

Type of Use/ Benefit	Annual Value (US$)	Annual Value (US$/ha)
1. Direct Uses		
a. NTFP	4,906,942 – 6,472,725	398–525
b. Timber Revenues	605,000	10.35
2. Indirect Uses		
a. Watershed Protection		
a.1 Fisheries & aquatic resources	135,919	0.47
a.2 Agricultural Production	714,550	2.5
a.3 Micro-hydropower facilities	792-5,367	.003 - .02
a.4 Potential hydropower supply	67,255,472–455,575,755	233 - 1,581
a.5 Flood Control	26,597,000	92.3
b. Biodiversity Conservation		
Conservation Expenditures	1,887	0.07
Bioprospecting	13,658 - 68,289	0.11 – 0.55
c. Carbon Sequestration	649,400,000	1,284

earnings could reach $85,000, bringing in a total value of $605,000 for the province. Caution should be applied, though, in relying too heavily on timber revenues, as history has proven that unsustainable logging will only lead to huge economic and environmental costs. Whatever short-term gains brought about by continuous logging can easily be wiped out by the long-term negative impacts it causes.

Approximations of indirect use values only further emphasize the importance of natural forests to people's lives. Watershed protection functions, in the form of erosion and flood control, allow for enormous economic costs to be avoided. Hydropower generation is made possible, and allows for renewable energy production. Biodiversity, which is intricately interlinked with human existence and quality of life, is conserved because of the presence of forests. Finally, natural forests regulate the atmosphere through the sequestration of carbon, preventing global warming damages from occurring. Rough estimates are summarized in table 2.

Comparing the above findings with the average household income in Sekong province proves that the economic benefits provided by natural forest are of a substantial magnitude. Therefore, judging from the results, conserving natural forests in Sekong is a worthwhile undertaking and it thus becomes imperative that goals, which the provincial government set out to pursue, such as improved livelihoods and sustainable development and utilization of natural resources, should translate into the promotion and conservation of natural forests in order for them to succeed in the long run.

This case study is adapted from Rosales, R., Kallesoe, M., Gerrard, P., Muangchanh, P., Phomtavong, S. and S. Khamsomphou, 2003, The Economic Returns from Conserving Natural Forests in Sekong, Lao PDR, IUCN – The World Conservation Union Asia Regional Environmental Economics Programme and WWF Lao Country Office, Vientiane

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Atlas of Laos, Spatial structures of the economic and social development of the Lao People's Democratic Republic. National Statistical Centre, State Planning Committee of Lao PDR and Christian Taillard LASEMA-CNRS, GDR Libergeo-CNRS, France.

Bouttavong, Somvang, Lucy Emerton, Lamphoukeo Kettavong, Sounh Manivong and Sawathvong Sivannavong. (2002). Lao PDR Biodiversity: Economic Assessment. IUCN, The World Conservation Union, Gland, Switzerland.

Central Planning Committee, Sekong Provincial Government. (2000). Five-Year Socio-Economic Development Plan for Sekong Province. Sekong, Lao PDR.

Coates, D. (undated). Biodiversity and Fisheries Management Opportunities in the Mekong River Basin. IUCN, The World Conservation Union, Gland, Switzerland.

Emerton, Lucy, Oudamsack Philavong, and Kaisorn Thanthatep. (2002). Nam Et-Phou Loei National Biodiversity Conservation Area, Lao PDR: A Case Study of Economic and Development Linkages. IUCN, The World Conservation Union-Asia, Colombo, Sri Lanka.

Emerton, L. (1996). Participatory Environmental Valuation: Subsistence Forest Use Around the Aberdares, Kenya. African Wildlife Foundation Discussion Papers Series.

Freeman, A.M. (1994). The Measurement of Environmental and Resource Values: Theory and Methods. In: Dharmaratne, G., F. Sang & L. Walling (2000). Tourism Potentials for Financing Protected Areas.

Lao National Mekong Committee, and WWF Lao Project Office. (2002). Community-based forest management for conservation and sustainable development in the upper Sekong Watershed, a joint project proposal. Vientiane, Lao PDR. pp. 26.

Ministry of Agriculture and Forestry , Lao PDR. (1990). Tropical Forest Action Plan (first phase), Vientiane, Lao PDR.

Ministry of Agriculture and Forestry, Lao PDR. (2001). Agricultural Statistics, 25 years, 1975-2000. Department of Planning, Vientiane, Lao PDR.

Ministry of Agriculture and Forestry, Lao PDR. (2002). Agricultural Statistics Yearbook, 2001. Department of Planning, Vientiane, Lao PDR.

Padilla, Jose and Rina Maria P. Rosales. (1998). Economic Valuation of Biodiversity: A Preliminary Survey of Current Thinking and Applications. People, Earth and Culture. Los Baños, Laguna, Philippines.

Philippine Environmental and Natural Resources Accounting Project (ENRAP). (2000). Guidebook for Environmental and Natural Resources Accounting: Methods and Procedures. DENR-Philippines/ USAID/ REECS, Manila Philippines.

Simpson, R. D. (1997). Biodiversity Prospecting: Shopping the Wilds is Not the Key to Conservation. Resources for the Future, Washington, D.C., USA.

UXO Lao. (1997). Living with UXO, Final Report. National Survey on the Socio-Economic Impact of UXO in Lao PDR.. Report by Handicap International. For Ministry of Labor and Social Welfare. Lao national UXO Programme (UXO LAO).

World Wide Fund for Nature (WWF) (2001). Benchmark Socioeconomic Data Report for the Central Annamites Priority Ecoregion. WWF Lao Project Office, Vientiane, Lao PDR.

This document was produced under the project "Integrating Wetland Economic Values into River Basin Management", carried out with financial support from DFID, the UK Department for International Development, as part of the Water and Nature Initiative of IUCN - The World Conservation Union.

This project aims to develop, apply and demonstrate environmental economics techniques and measures for wetland, water resources and river basin management which will contribute to a more equitable, efficient and sustainable distribution of their economic benefits at the global level and in Africa, Asia and Latin America, especially for poorer and more vulnerable groups.

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