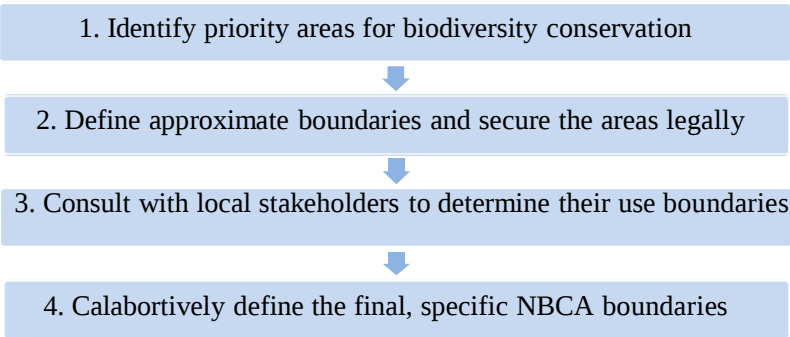


Technology Fact Sheet for Mitigation

1.

Technology Name:	Effective Protected Area Management ⁱ
Introduction	
The national protected areas are new allocated in Laos. The system has been legally setup in 1993 and has been developing to the present. According to evidences, in 1986 there are some priority sites for protected areas. Between 1988 and 1991, Department of Forestry (DOF), Lao Swedish Forestry Programme (LSFP) and International Union for Conservation of Nature (IUCN) conducted reconnaissance surveys of potential protected areas in Laos. By 1991, there are eight suitable areas were identified and recommended for management planning and additional areas are identified as priorities areas for assessment. In 1993 the Lao prime minister's decree 164 established for the first 18 national biodiversity conservation areas and the LSFP begins management planning in four NBCAS. In year 1995 and 1996 there were two more NBCAs added in the system, XeXap and Dong PhouVieng, which there are totally 20 NBCAs in Laos (William Robichaud <i>et al.</i> 2001).	
Technology characteristics	
Generally, all protection forests belong to the government, which includes five main level organizations from national to local levels: Ministry of natural resource and environment, ministry of national security, provincial agriculture and forestry, district agriculture and forestry and local village authority. The process of protected area organizing and managing is conducted following four main steps.  <pre> graph TD A[1. Identify priority areas for biodiversity conservation] --> B[2. Define approximate boundaries and secure the areas legally] B --> C[3. Consult with local stakeholders to determine their use boundaries] C --> D[4. Calabortively define the final, specific NBCA boundaries] </pre> Resource: (William Robichaud <i>et al.</i> 2001)	
Status of technology in the country	

Laos is one of the few countries in South East-Asia that still allocated a large area of national protected zones since early 1990s for major roles of biodiversity conservation and watershed management. There are 20 protected areas in the country and covered over 12% of the total country area. These national protected areas distribute in all parts of the country (southern, central and northern), See map 1. There are four level managements of protected areas in Laos: National, Provincial, District and Village. All protected areas are places allocated for variety purposes of forest management, which included forest and forestland conservation, preserving plant and animal species, forest ecosystem, water resources and other valuable sites of natural, historical, cultural, tourism, environmental, educational, and scientific importance (National Assembly 2005). Furthermore, protected areas are also important for land and biodiversity conservation, which are necessary for the world environmental development, especially climate changes from the reducing emission from deforestation and forest degradation (REDD+). The pressure on Lao forests has increased in recent years due

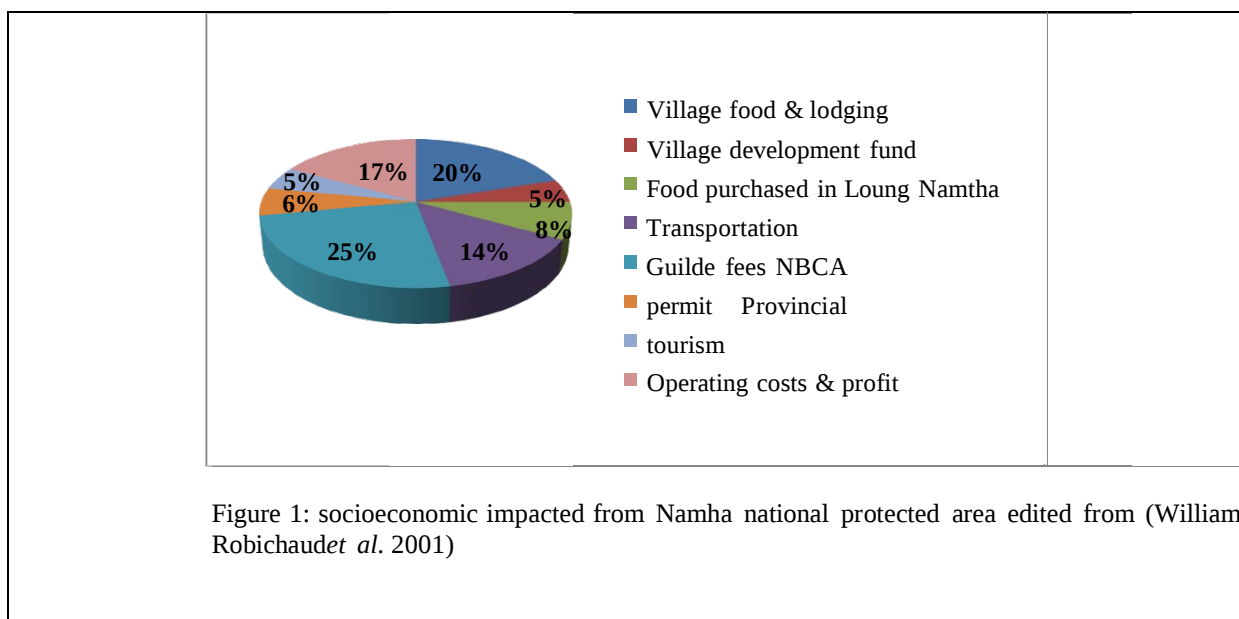
to its location next to Cambodia, China and Vietnam, whose forest industries demand big amounts of wood. However, there is an opportunity for protected areas to be developed to participate in a global mechanism called Reduction of Emission of Deforestation and Degrade Forest (REDD+). In good condition of forest management is great opportunity to sell the credit Carbon to Western countries in order to remains forest and its biodiversity in the future. They do so, because deforestation contributes to climate change, which poses a serious threat to mankind in Western countries and in Asia.



Figure 1: Laos NPAs (http://www.mekong-protected-areas.org/lao_pdr/pa-map.htm)

Benefits to Economic development

According to data recorded, national protected areas management in Laos shares largely benefits to both national and local people in terms of income, food security and infrastructure. The process and activities of national protected areas management involve a variety of land allocation, which locate a clear land boundary between to village to village and as well as divided land use planning in the villages for their agricultural production. The activity of land use planning is one of the factors to give sufficient agricultural lands for the local people in order to support food security for the villagers. National protected area management also conducts activities of linking local villagers to the markets, supporting natural resources management in sustainable use in the village. For example supporting non-timber forest products management and utilization in the areas, the process also emphasise increasing income and improving the quality of life and livelihood for the local people. In the rural area where the average per capital income is less than \$ 400, the values of non- timber forest products consumed annually per family has been estimated at \$ 280, which represents of 20% of the nationwide GNP (William Robichaud *et al.* 2001). Furthermore, ecotourism is another activity, which was first organized in the northern part of Laos at Namha national protected area, Louangnamtha Province. This kind of activity shows great potential to benefit of the local stakeholders, who live in the national protected area. It can be an important key of local people poverty alleviation together with a strong link between income generation and biodiversity conservation in the site (Figure 1). The Lao national tourism authority reports that while most tourists to Laos concentrate about 70 % extraction in natural tourism (William Robichaud *et al.* 2001). This great potential is strong to gradually expand ecotourism to other national biodiversity conservation areas. At the same way, national protected areas development also gains a great potential development of infrastructure, example, road, local help service station, school and as well as accessing electricity to the villages.



Benefits to Environment development

National protected areas benefit not only on social-economics, but it also contributes greatly on hydropower and environmental development in terms of watershed protection and carbon dioxide reduction. Reports confirm that national protected areas have significant impactson some hydropower productivity, example water flow. According to landscape and geographic, Laos has a huge potential development of hydropower based on dams construction. However, it also needs other activity supporting for its productivity, example, and natural forest management relating to national protected areas. This is in order to protect watershed and environmental development. The Government of Lao PDR recognized that water resource of 60.400 m³/year/capita have impacted from national protected areas management (William Robichaud *et al.* 2001). Mostly, national protected areas are located at the rural areas where they are mountainous with high slopes, therefore, forest and biodiversity that are good management in the areas can protect land erosion. As national protected areas contribute great benefits for hydropower development and as this reason the government has to deduct some annual gross income of hydropower for national protected areas management. Example, the Namthuen Two hydropower has agreed to pay \$1 million per annum supporting for national protected areas management (CIEM 2003).

Climate change mitigation potential

There are varieties potential factors applications for national protected areas in Laos such as, law and regulation. Laos has a clear supporting law and regulation for organizing and manag ng of national protected areas in the country. According to the Prime Minister’s Degree 164 established national protected areas or National conservation forests, which mapped at 1:500 000 scales. The national protected areas management

systems have three main objectives: (i) protection of forests, wildlife and water, (ii) maintenance of natural abundance and environmental stability and (iii) protection of natural beauty for leisure and research. The decree has prohibitions on the following activities in the national protected areas: (i) any cutting and removal of any of timber except for research purposes; (ii) hunting, fishing or NTFP collection without specific authorization each time from Ministry of Forestry (MOF) and Department of Forestry (DoF); any activity of mining, and construction of reservoirs or roads without government permission.

Another forestry law established in 1996, article 42 also provided more detail for national protected areas, which defines the role of protection forests as watershed protection, erosion control, national security and prevention of natural disasters. The system has highly potential contribution to biodiversity conservation. Furthermore, there are other international agreements, United Nation Convention on the protection of biodiversity (CBD) and ASEAN Membership, which all agree on the principal legal instruments for conservation of Nature and Natural resources, as well as world heritage convention under the auspices of UNESCO.

ⁱ This fact sheet has been extracted from TNA Report – Technology Needs Assessment Report For Climate Change Mitigation– Laos. You can access the complete report from the TNA project website <http://tech-action.org/>