Consuming the Future

The real status of biodiversity in Lao PDR

by: IUCN, WCS, and WWF.

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Do we need to shift our perceptions?

Perception: Lao PDR still has abundant wild animals and plants
Reality: Wild animal and plant populations in Lao PDR are reaching alarmingly low numbers and decline is happening rapidly.

Perception: Low levels of wildlife will begin to affect Lao PDR's rural population in the future.
Reality: Low levels of wildlife species are ***already*** affecting Lao PDR's rural population and national economy.

Perception: The rural poor are the cause of biodiversity loss and wildlife population declines.
Reality: Domestic, regional and international demand for luxary goods are major drivers of the overharvesting of wild species which leads to depletion of these natural resources.

Perception: Protecting forest area protects biodiversity.
Reality: Poorly regulated economic development, increasing access to resources and new markets often facilitate illegal and unsustainable harvest for trade even when forests appear to be intact.

How abundant are Lao PDR's natural resources?

"**A** hunter showed us an elephant tooth. He said it was at least 50 years old and that it was a long time since elephants had visited the area" (Poulsen *et al.* 2005).

Open any publication about Lao PDR and you are likely to find reference to its high biological diversity and abundant natural resources. And for good reason – these assets are heavily relied upon for the country's economic growth and the wellbeing of its people. Natural resources also form the basis of nearly all future economic development plans for the country and are expected to be a major contributor to regional development as well.

But just how abundant are natural resources in Lao PDR?

Recent research suggests that Lao PDR is losing its wild animals and plants at an alarming rate – an important indication that biodiversity might not be as abundant as is commonly stated. Thirteen species of animals are known to have become extinct in Lao PDR over the last 100 years. At least fifty-sixmore are expected to fall below viable population levels before 2013 (Phanthavong *et al.* 2003).

What's more, the consequences of these losses are already being felt across the country. The national economy loses income from illegal smuggling of wildlife and there are already cases of rural villagers suffering economically and health-wise from the effects of overharvesting of wild plants and animals for trade (Krahn 2005; Krahn & Johnson 2007). Should such trends continue, the rural population which accounts for about 80% of the overall population (Sisouphanthong & Myers 2006), including the country's poorest people, could lose the natural resources upon which their livelihoods depend. Some of these biodiversity changes and their consequences are already irreversible (e.g. species extinctions) and communities will have to cope with the repercussions. Further losses are avoidable, but only with broad public recognition of the true situation and high-level commitment backed by resources from policy-makers, developers, the private sector, donors and the conservation and research communities.

To reverse the rapid decline of species, these sectors should consider their effects on biodiversity loss and the potential consequences in decision-making:

- Planning and Investment
- Land Management
- Commerce and Industry
- Transportation and Roads
- Energy
- Mining and Hydropower
- Agriculture and Forestry

WWF

WILDLIFE CONSERVATION SOCIETY

IUCN
The World Conservation Union

The decline of species

Statements highlighting the current decline of Lao PDR's wild animal and plant populations are as common in technical papers as statements about the country's widespread abundance of natural resources are in other publications. Shrinking populations have been recorded both inside and outside of the national protected areas (NPA), which were established in 1993 as a way to protect species from extinction.

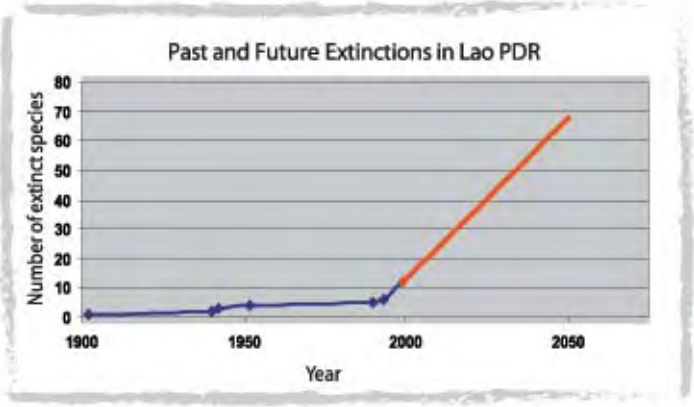

Figure 1. Past and predicted future animal extinctions if current rates of decline continue (Phanthavong et al. 2003)

Indochinese Tiger (*Panthera tigris*), a threatened mammal in Lao PDR

In one report, a Phou Khao Khouay National Protected Area wildlife survey revealed "a high diversity of birds and mammals, but densities of many species were abnormally low, and several species of particular conservation concern were missing" (Payne *et al.* 1994). All 20 NPAs have had baseline wildlife surveys and results continually show similar depressed numbers of individuals of many of the species surveyed.

Saola (*Pseudoryx nghetinhensis*), a threatened mammal in Lao PDR

Why do we need large mammals?

Maintaining wild species is vital for maintaining the services that the country's ecosystems provide. These services, such as clean water and air, soil quality, forest regeneration and pest management, are depended on by rural and urban populations alike.

- The absence of large plant-eating mammals (such as elephants, deer, and some primates) can increase the number of insects, including agricultural pests
- Loss of large carnivorous mammals (such as tigers and bears) can cause a surge in populations of smaller herbivores leading them to feed on crops due to lack of food
- Depletion of large mammals can occassionally increase the risk of diseases carried by insects

While loss of one or two species may not cause dramatic problems, when enough species are lost from an ecosystem, the entire system can collapse. This leaves behind a degraded area that no longer helps to clean the air, provide clean water or regenerate good soil for farming. No one knows how many species must be lost from Lao PDR's ecosystems before this kind of "ecosystem collapse" occurs.

Information from: Ostfeld *et al.* 2003; Pringle *et al.* 2003; Ceballos & Ehrlich 2002.

2000-2001.. 14 mammals

14 species of mammals camera trapped during the 2001 Danida supported exercise in Xe Pian (Poulsen 2001). Original photos not available - examples supplied by WWF and WCS/NEPL (1-8) photo databases

2005-2006.. 5 mammals

Only 5 species of mammals camera trapped during the 2005 WWF exercise in Xe Pian.

Surveys in Xe Pian NPA have detected wildlife population declines in as short a time period as 5 years. As part of wildlife surveys conducted during a Danida project in 2000-2001 and again by WWF in 2005-2006, researchers placed sensor-equipped cameras that take a photograph when they detect movement (camera traps) in the protected area. The cameras placed in the year 2000 captured a wide variety of species, some -- like the Pig-tailed Macaque, Eurasian Wild Pig, Sambar Deer and Muntiacus muntjak (Barking Deer) -- in relatively high numbers. The 2005 photographs revealed low levels of these species, particularly the Macaque and Sambar deer. Even more alarmingly, some rare species photographed in 2000-2001, such as the Asian Elephant, Dhole, Gaur and Small Indian Civet, were not spotted at all in 2005 (WWF 2006; Poulsen 2001;).

Wild plants are similarly declining across the country. Depletion of rattan, berberin (Kheua Hem) and agarwood is reported in most of the country including many of the NPAs (NAFRI *et al.* 2007).

In Dong Hua Sao NPA it has been estimated that the current supply of key forest resources is only 25% of what it once was. If current trends continue, villagers, district representatives, provincial representatives and technical experts fear that much of the remaining forest products of social and economic value will disappear over the next 10 years with predicted collapse of local livelihoods systems as a result (IUCN 2007). Other reports cite harvesting of orchids from forest areas in large volumes for export to neighbouring countries such as Thailand and China (CITES 1992; Foppes *et al.* 1996). Three companies have been given permits for orchid domestication and propagationfarms, but the large quantities of orchids exported from small farm areas (in one case, 900 tons of orchids were exported from a 60 ha Savannakhet farm to China in 2005 alone (DoF 2007)) suggest that orchids are being taken from the forest for international trade. Unfortunately there is no data on the current number of orchids in the wild or on the effect of harvesting and trade on wild populations. To protect these commercially and socially important species, more scientific monitoring is necessary to measure baseline wild population levels and the impacts that harvesting and trade have on them.

Although monitoring data on the impacts to village livelihoods is unavailable for much of Lao PDR, anecdotal data from interviews with rural-villagers gives some indication of biodiversity trends. Most villagers report declining forest and wetland products; this means they have to venture further into the forest to find food, collect smaller-sized fish in declining quantities, and rely on more advanced technology for resource collection (see IUCN 2006; IUCN 2007; Poulsen *et al.* 2005; WWF 2005).

In a 2005 village survey, villagers in and around production forest areas in four provinces were asked which species were at one time present and whether those species were found "only before" or were "still present". Fourteen percent of species were reported to be present "only before" by the majority of people interviewed (Poulsen *et al.* 2005).

This research is evidence that you do not have to look into the future to see species declines and wildlife population losses in Lao PDR – the rapid depletion of wild animals and plants is occurring now.

Why biodiversity is declining: Unregulated access and insatiable demand

According to the 2004 Lao PDR Biodiversity Country Report, "It is not an exaggeration to say that wildlife trade is the most pressing threat for biodiversity conservation in the Lao PDR in comparison to all others (subsistence hunting, habitat loss and fragmentation and invasive species)" (MAF 2004). This statement is widely agreed upon among those working on biodiversity issues in Lao PDR.

Yet the best approaches to addressing loss of wildlife have not been so clear. For decades conservation efforts in Lao PDR have been hampered by a common misperception that the country's extensive forest cover and low population density would prevent it from a major loss of wildlife (Phanthavong *et al* 2003). Unfortunately this link is not holding true because of continually declining forest cover, growing population and new development projects that are facilitating loss of species even in forested areas with small human populations. Between the 1940s and 2002 forest cover declined from nearly 70% of the country's land area to 44.5% (see figure 2), species decline and wildlife population losses have increased significantly in recent year, while over this same period population growth rates have only risen slowly (NSC 2006).

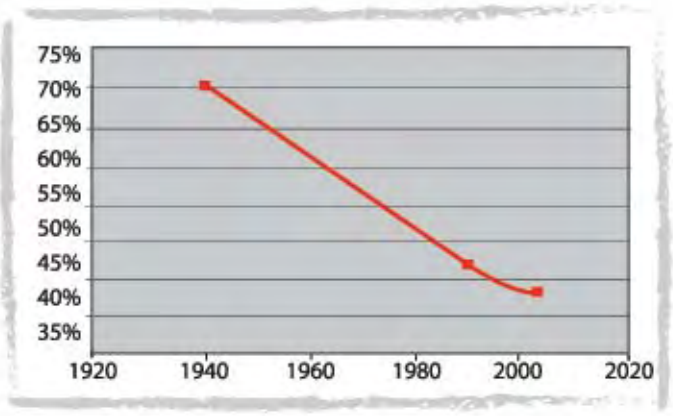

Figure 2. Changing Forest Cover
Source: UNEP/ADB, 2004

Furthermore, due to trade promotion and globalization, high forest cover and low population density no longer means rich biodiversity. Emerging reports suggest that in Lao PDR the most significant driver of the wildlife trade is persistent demand, primarily from neighbouring countries, but also from Europe, North America and within Lao PDR itself (Nooren & Claridge 2001; Singh *et al.* 2006; WB 2005). As people attempt to supply this demand, over-harvesting of wildlife occurs, permitted by increased access to forested areas and natural resources and to domestic and international markets without proper regulation and enforcement.

It is clear that in Lao PDR, like in many other parts of the world, we can no longer rely on the regenerating processes of nature alone – humans are impacting significantly and without conservation and better natural resource management, more biodiversity will be lost.


Unsustainable logging, a key threat to the forest environment.

Today, Lao PDR is developing as a "land-linked" country, playing a key part in increasing regional access. Over 66% of the Greater Mekong Subregion infrastructure projects within the North-South Economic Corridor are in Lao PDR even though the country makes up only 10% of the corridor area. This means more roads, more bridges, more phone-lines and more power-transmission lines – more access to more of the country. Lao PDR has also increased regional markets by joining the ASEAN Free Trade Area (AFTA) in July of 1997 and signing the Lancang-Mekong Navigation Channel Improvement Project in 2000 with a view toward developing international passenger and cargo transportation in order to promote and facilitate trade and tourism. The country will increase access to international markets even more through its planned accession to the World Trade Organization (WTO) and the ASEAN-China Free Trade Area (ACFTA).

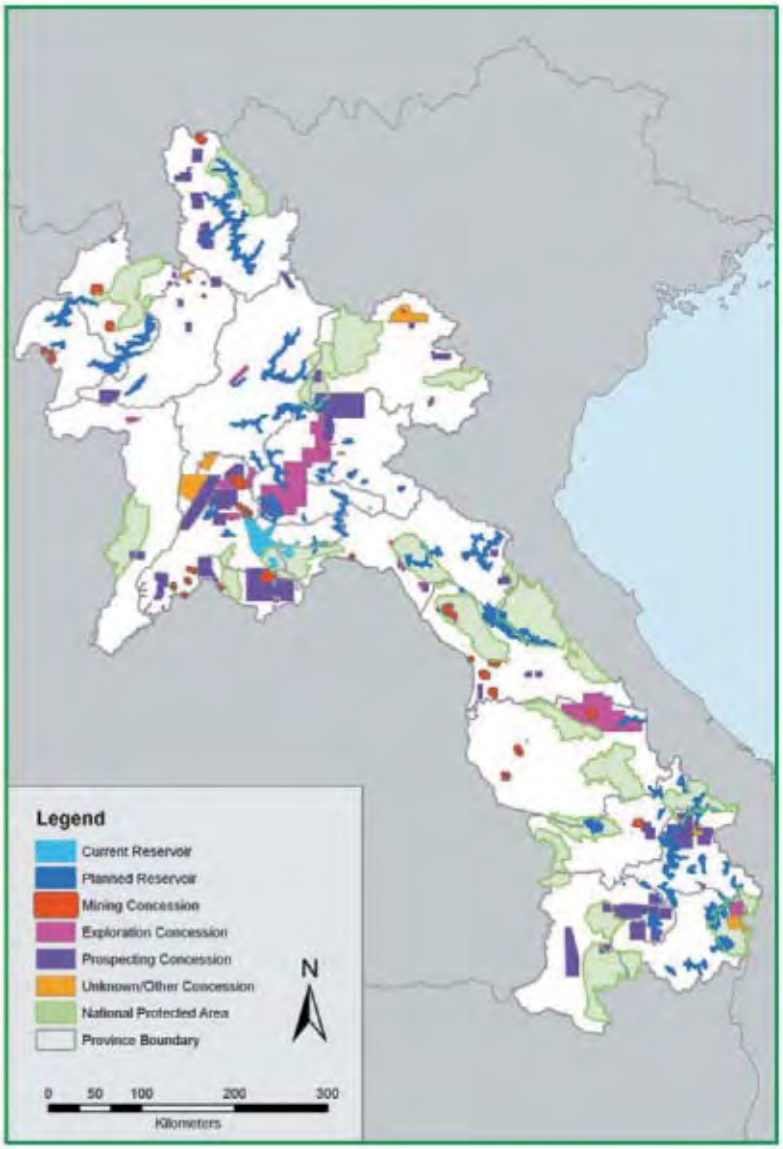

Figure 3. Current and Future Dams and Mining in Lao PDR.
Source: Combination with different sources.

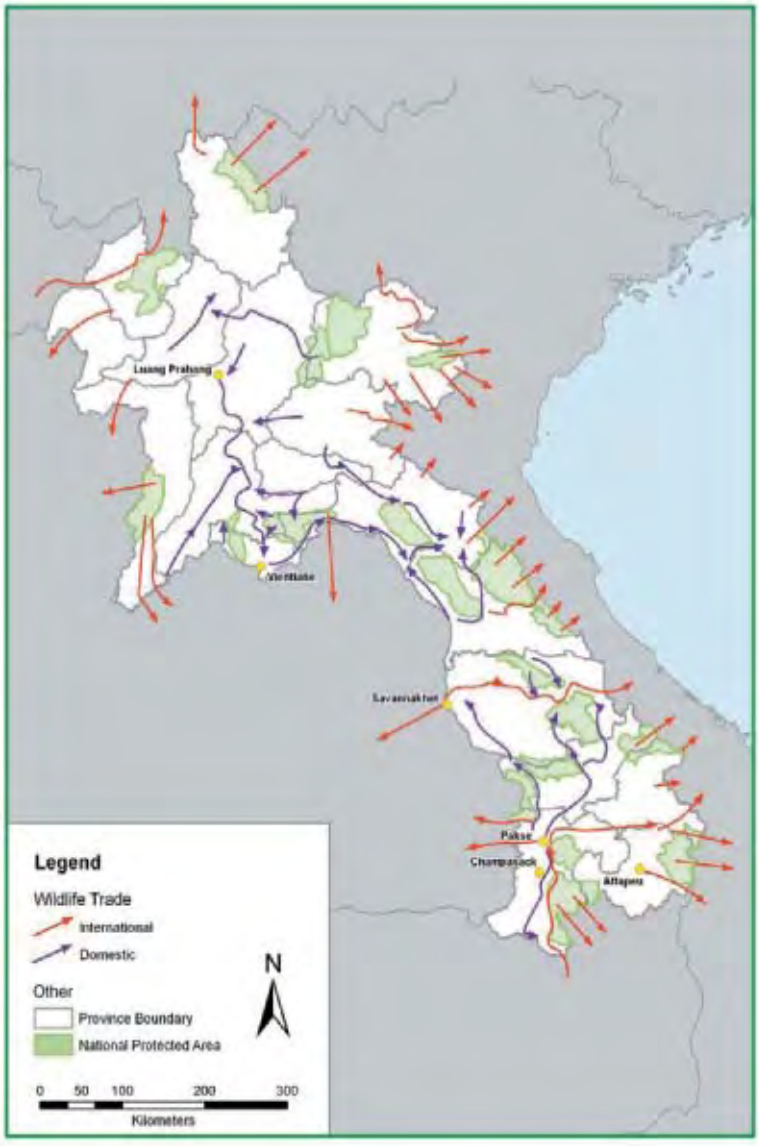

Figure 4. Wildlife Trade in Lao PDR.
Source: ICEM,2003. Lao PDR National Report on Protected Areas and Development.

While increased access does not automatically lead to unsustainable trade, this is indeed the result we are seeing in Lao PDR. Wildlife products are being harvested and traded more and more as increased accessibility allows more opportunity to supply the regional demand. Access roads paved by large infrastructure projects as well as pathways and cleared patches for activities like logging facilitate the harvesting of natural resources from previously inaccessible areas. New roads also increase the efficiency of transporting those resources (Shepherd *et al.* 2007; Singh *et al.* 2006). Without adequate education, regulation and enforcement, the result is the decline of resources, including wildlife, that we are seeing today (see Case Study: Nakai Nam Theun NPA) (Duckworth *et al.* 1999; Shepherd *et al.* 2007; WB 2005). Often the real value of these resources is unknown by local officials and villagers and therefore not reflected in harvest quotas and compensation (Chamberlain *et al.* 2002).

CASE STUDY: Nakai Nam Theun NPA

Accessibility outpacing regulation

In 2004, people from 54 villages in and around the Nakai Nam Theun NPA reported up to 75% decline in large-bodied wildlife species as well as a near complete removal of valuable plants such as agarwood, rattan, and damar resin in the last decade.

Why such a fast decline?

Most of it can be attributed to improved accessibility to the area from Viet Nam, and the influx of Vietnamese entrepreneurs in the last 10 years. This has lead to increased poaching by Vietnamese and Lao people selling to Vietnamese markets. On-the-ground management and national policies have not kept pace with these rapid changes. While international trade should be regulated under the Convention on the International Trade of Endangered Species of Animals and Plants (CITES), implementation has been slow due to lack of funds and capacity rendering it merely a paper policy.

Information from: The World Bank 2005; Nooren and Claridge 2001.

This pattern has already contributed to the decline of Douc Langur populations in the north of Lao PDR (Timmins & Duckworth 1999) and Chinese Three-striped Box Turtle (Golden Turtle) populations throughout the country (Timmins & Khounboline 1999) and has been linked to declines in wildlife in Luang Namtha Province in and around the Nam Ha NPA (Johnson *et al.* 2005). In the Nam Et Phou Louey NPA in Houaphan and Luang Prabang Provinces, detection of porcupines in camera trap monitoring has dropped from 25% of the sample sites in 2004 to 8% in 2007. This decline coincides with the extension of the Lao American Road to Viet Nam, completed in late 2006, and an expansion in porcupine 'farming' in Song La Province on the Viet Nam side of the border (Johnson *et al.* in prep.). In Attapeu province, the opening of Route 18B linking Attapeu to Kon tum Province in Viet Nam has improved links between forested areas and domestic and international markets, demonstrated by the rapid expansion of timber extraction and related activities (Singh *et al.* 2006).

While Lao PDR's position as an access point for the region gives it significant opportunity for regional leverage, these kinds of negative impacts have the potential to undermine the associated benefits if they are not sufficiently planned for at early states of development activities and regulated and enforced throughout the implementation process.

How do current patterns affect Lao PDR?

When it comes to gains from biodiversity, Lao PDR is losing.

Illegal trade of wildlife does very little to benefit the national economy. In fact, by depleting resources that could otherwise be used by local communities for consumption, conserved for ecosystem functions, or used sustainably for income-generating activities, such as high value certified products or ecotourism, this trade is harming the economy of Lao PDR and its people.

The value of Lao PDR's natural resources should not be underestimated. Nooren and Claridge (2001) estimate that the value of wildlife illegally smuggled into Viet Nam from Lao PDR along Xepon Route 9 in 1998 alone was worth USD 11.8 million (Nooren & Claridge 2001; WB 2005).

The Government of Lao PDR did not generate a singleKip of revenue from these transactions. While the actual value might be slightly higher or lower, the magnitude of the trade represents a significant liquidation of the country's natural assets.

Forest products contribute more than USD 350 million a year to the economy in gross production and consumption. More than two thirds of this (USD 233 million) comes from local-level household consumption alone (Emerton 2005). If illegal trade depletes the natural resources, leaving Lao PDR with very little benefit from its sale, then the outcome will be increased poverty among the rural population. In other words, Lao PDR's poorest people stand to lose most directly from a loss of natural resources - particularly striking when looked at in the context of the country's goal to eradicate poverty by the year 2020.

Cases illustrating economic and social impacts of biodiversity loss on the rural poor are already visible. A recent study on upland food security revealed that villagers' growth was stunted because they were no longer consuming the nutrients traditionally supplied by forest and wildlife products. Villagers further in the forest with more abundant resources had better nutrition than those recently moved to a road or living in over-exploited forest (Krahn 2005; Krahn & Johnson 2007). In Attapeu Province, local development strategies that emphasize rice production are failing to consider the impact on aquatic resources. Fish and other aquatic resources have been found to be fundamental for health and nutrition, particularly for the poorest families who produce insufficient rice yields and depend on harvesting wild aquatic resources for food. As fisheries are depleted the diets of more people become insufficient to maintain good health (Meusch *et al.* 2003). A report from monitoring along the Mekong in northern Lao PDR tells that, "For more than a decade, local communities have reported that fish catches in the northern part of the Mekong River in Lao PDR have been declining, both in species and in abundance, resulting in an ever increasing gap in food supply and income generation for rural people" (Lazarus *et al.* 2006). Another study showed that villagers in Dong Hua Sao NPA are losing their income sources due to over harvesting of forest-products to sell on newly opened markets (see case study: Dong Hua Sao).

Mak Jong (Malva Nut), a NTFP which may generate income of more than USD 1,000,000 in some years with China being its largest market.

All of these cases represent a pathway toward increased poverty that goes against the goals set out in the country's key policies.

CASE STUDY: Dong Hua Sao NPA

Depletion of natural resources depletes local livelihoods

A 2007 study in Dong Hua Sao NPA found that illegal activities such as logging, clearing for plantations and hunting of wildlife, are making the forest less productive and giving local people less incentive to manage the area sustainably. Companies with newfound access to Dong Hua Sao buy forest products that are collected by local people. Because the resource depletion does not yet affect the market and because villagers have little market influence, the companies pay low prices. This means villages must collect more to be able to make these transactions worthwhile. Since the forest is becoming degraded by outsiders anyway, there is even less incentive for them to harvest sustainably. This unsustainable harvesting eventually depletes the forest products and in turn harms both the incomes and nutrition of local people. Eventually companies will move to new areas and new villages to supply their demands, leaving the original villages without income and without forest resources to eat or sell locally.

Information from: IUCN 2007

Transforming new perceptions to renewed action

The Government of Lao PDR and its development partners have committed to eradicating mass poverty nationwide by 2010 and graduating from least developed country status by 2020 (NGPES 2004). Opening regional trade paths and communication lines through improved infrastructure development can contribute to meeting this commitment. However, local impacts such as environmental degradation and in turn cases of localized poverty amplification that we are seeing today should be taken as warning signals.

If the increased access to natural resources and markets that infrastructure developments provide is to really contribute to sustainable and long-term poverty alleviation, its impacts should be adequately monitored and mitigation measures based on monitoring results should be integrated into the development process. Furthermore, national and regional policies to lessen the impacts of increasingly open access to resources and markets should be written and enforced in order to promote sustainable trade that contributes to the national economy and the livelihoods of Lao PDR's people.

The Government of Lao PDR already recognizes the importance of these issues. After failing to see the expected poverty-reduction results from plantations and other resource extractive land concessions – originally justified by their poverty alleviation potential – the Prime Minister suspended all land concessions on 7 May, 2007 until current policy is improved. The National Assembly has also declared concern over loss of natural resources and at its most recent meeting "urged the government to curb its use of natural resources as a way of ensuring sustainable income in the long-term" (Vientiane Times 2007). However, in order to address the larger issue of biodiversity decline and the resulting effects on poverty, there needs to be a wider dialogue and increased real action.

The Government has also committed to addressing these issues through accession to several international agreements. Once again, however, action is now needed for the country to fulfill its accepted obligations. Lao PDR recently sent its first delegation to the international Conference of the Parties (CoP) of the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) since becoming a signatory in 2004. The delegation's engagement shows an initial commitment to its international obligations, but reports back from the CoP indicate that Lao PDR has a lot of work to do to fully meet them. For example, the Government has committed to passing a National Wildlife Law by 2006 and to meet various monitoring and reporting requirements. A commitment at a ministerial level to fulfilling these requirements would not only be a first step toward reversing the damaging impacts of illegal wildlife trade, but is also important for the country's international standing.

Although the country has continually displayed an awareness of the importance of its natural resources and a commitment to maintaining them, renewed action at the highest level on the ground will help Lao PDR meet its poverty reduction and development goals as well as its international obligations.


Selling NTFP products in the Attapu Market

Recommendations

The biological diversity of Lao PDR should not be extracted like mineral resources, but should be sustainably managed to produce long term benefits for society.

Researchers, NGOs, and other institutions working in LaoPDR need to recognize the severity of the current situation, portray it honestly in their documents and strategically direct research efforts to better understand it. All initiatives in the country should acknowledge the relevance of resource management to poverty alleviation. They can start by:

- Focusing research on the current status of Lao PDR's resources, changes over time and the impact of trade on those resources
- Producing scientific data on sustainable harvesting threshold levels
- Supporting zoning and demarcation of NPAs and enforcement of government regulations that manage resource offtake and control illegal trade
- Focusing research on the impact of trade on Lao PDR's wild plant and animal resources
- Providing constructive suggestions to policy-makers for changes based on scientific data.

International and regional development agencies should adequately monitor the impacts of their activities and act to ensure that the benefits of development activities are realized with long-term sustainability and equal benefit-sharing. They can start by:

- Increasing technical and financial support for improving national capacity to carry out Environmental Impact Assessments (EIAs) and to monitor and mitigate negative environmental and social impacts of infrastructure projects
- Adhering to environmental and social "safeguard policies" in all development activities
- Using their leverage position to ensure that contractors actually adhere to environmental and social "safeguard policies" in all construction activities.

Government decision-makers should more clearly demonstrate their political will to address these issues and commit to allocating a significant portion of resources to regulation, monitoring and proper land-use planning. They can start by:

- Passing a National Wildlife Law
- Providing higher level support to implementing international conventions, such as the Convention on Biological Diversity (CBD) and the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES)
- Allocating more resources to the national protected areas and improving management efficiency
- Integrating measures to mitigate the impact on natural resources into policies in all sectors.

Regional coordinating-bodies should integrate concrete measures to identify and stop negative environmental impacts of regional development into policy, recognizing that they are caused by regional level trade patterns. They can start by:

- Allocating resources toward enforcing adherence to existing regional and international policies for sustainable use of resources
- Integrating measures to mitigate impacts on natural resources into regional policies in all sectors
- Linking GMS development priorities with the goals of existing ASEAN wildlife trade enforcement and action plans.

Residents of Lao PDR should contribute to national efforts by helping to raise awareness about these issues through incorporating them into their every-day lives. They can start by:

- Insisting that products are harvested sustainably before buying, trading or consuming them
- Choosing alternatives to wildlife at urban markets and restaurants
- Educating others about the need to conserve natural resources.

Those in the private sector should recognize the importance of biodiversity to society and to the sustainability of their businesses, their role in biodiversity decline and their shared responsibility to find solutions to address this problem. Businesses can start by:

- Recognizing the business risks of biodiversity loss and the business value of acting to ensure biodiversity survival
- Adhering to national and international laws that seek to protect biodiversity
- Working with government and civil society to better understand the current situation and to implement measures that ensure biodiversity survival (e.g. sustainable harvesting/certification of NTFPs)
- Actively discouraging illegal trade in wildlife, for example through supply chain policies, and offering solutions such as developing and marketing alternative products that help change current unsustainable consumption patterns.

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WWF Greater Mekong
Laos Country Programme

P.O.Box 7871
House No. 39, Unit 05,
Ban Saylom, Chanthabouly
District, Vientiane, Lao PDR

Tel: +856 21 216 080
Fax: +856 21 251 883

For more information about WWF,
see www.panda.org/laos
wwflaos@wwfgreatermekong.org

Wildlife Conservation Society (WCS)
Lao PDR Program

P.O.Box 6712
House no. 173, Unit 15
Ban Sisavad Tai, Chanthabouly
District, Vientiane, Lao PDR

Tel: +856 21 215 400
Fax: +856 21 215 400

For more information about the WCS
Lao Program,
see www.wcs.org/laos

The World Conservation Union (IUCN)
Lao PDR Country Programme

P.O. Box 4340
082/01 Fa Ngum Road
Ban Watt Chan, Chanthabouly
District, Vientiane, Lao PDR

Tel: +856 21 216 401
Fax: +856 21 216 127

For more information about IUCN,
see www.iucnlao.org
info@iucnlao.org