BIODIVERSITY CONSERVATION, PROTECTED AREAS AND THE DEVELOPMENT IMPERATIVE IN LAO PDR: FORGING THE LINKS
IUCN - The World Conservation Union

Founded in 1948, IUCN - the World Conservation Union brings together States, government agencies and a diverse range of non-governmental organizations in a unique world partnership: some 800 members in all, spread across 133 countries.

As a Union, IUCN exists to serve its members - to represent their views on the world stage and to provide them with the concepts, strategies and technical support they need to achieve their goals. Through its six Commissions, IUCN draws together over 5000 expert volunteers in project teams and action groups. A central secretariat coordinates IUCN Programme and leads initiatives on the conservation and sustainable use of the world’s biological diversity and the management of habitats and natural resources, as well as providing a range of services. The union has helped many countries to prepare National Conservation Strategies, and demonstrates the application of its knowledge through the field projects it supervises. Operations are increasingly decentralized and are carried forward by an expanding network of regional and country offices, located principally in developing countries.

IUCN - The World Conservation Union seeks above all to work with its members to achieve development that is sustainable and that provides a lasting improvement in the quality of life for people all over the world.
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IUCN has been working in partnership with the Government of Lao PDR since 1988, and the Government has been a State member of the Union since 1969. IUCN maintains a country office in Vientiane and implements a programme on behalf of the Government focused on biodiversity conservation and protected area system establishment. Within this broad programme framework specific activities include protected area management, sustainable use of non-timber forest products and integrated biodiversity conservation and community development.

Lao PDR is the owner and custodian of some of the most important biodiversity resources in Asia. Lao PDR is surrounded by countries whose own natural resource base has already been substantially depleted and/or they are facing severe pressure from rapidly growing economies and population growth. Lao PDR's neighbours are anxious to find resources to meet their own rapid development requirements, and in particular to supply their energy demands. With its remaining forests, abundant water resources, stable Government and close proximity, Lao PDR presents a very attractive investment proposition for these countries. As well as having significant natural resources Lao PDR is one of the poorest countries in the world, ranking 138 out of 174 countries on the UNDP Human Development Index. Therein lies a dilemma, as the Government attempts to balance the need for planned and conservative use of its natural resources as a basis for sustainable development while meeting the urgent development needs of its people.

For various reasons relating to the physiographic, demographic and human development constraints facing the country, the prospects for large-scale commercial agricultural and industrial economic development in Lao PDR are limited - at least for the foreseeable future. This means that if the country is to generate much-needed income to support human development initiatives then it must look to sustainable use of its natural capital. However, the Government is faced with an enormous challenge in bringing together the various elements which will enable this to happen. Lao PDR's key physical resources are renewable. But without appropriate economic, social and environmental planning the country runs the risk of depleting these resources to the point where their "renewability" is in question. At the same time there is the prospect that Lao PDR may make its neighbours rich at its own expense. That the Government does not intend to let this happen is evidenced by the range of decrees and policies aimed at conservation and management of its natural resource base. However, if the Government is to achieve conservation and sustainable use of its natural resources then these policies must be implemented on the ground. The international community can play a vital role in supporting the Government in this implementation. While such support has been, and continues to be, provided by various sectors, there are others which are questioning the Government's direction on key issues, such as hydropower dam construction. What is emerging is a fundamental debate on the realities and interrelationships between conservation, environmental management and essential human development needs - as well as the rights of a sovereign country to manage its own affairs.

The purpose of this paper is to provide a perspective on this debate which highlights the essential linkages between biodiversity conservation and the limited, but critical development options available to the people of Lao PDR. The discussion paper was originally presented to the inaugural regional meeting of the IUCN Commission on National and Protected Areas in South Asia, held
at Cisarua in Indonesia in May 1996. A number of changes and additions have been made to widen the scope of that paper.

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<th>Abbreviation</th>
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<tr>
<td>BPKP</td>
<td>Bolisat Phattana Khet Phoudoi (Mountainous Region Development Company)</td>
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<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
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<td>CITES</td>
<td>Convention on Trade in Endangered Species</td>
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<td>CPAWM</td>
<td>Centre for Protected Areas and Watershed Management</td>
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<td>CPM</td>
<td>Capability Poverty Measure</td>
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<tr>
<td>DDT</td>
<td>Dichlorodiphenyltrichloroethane</td>
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<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GEF</td>
<td>Global Environment Facility</td>
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<td>GETF</td>
<td>Global Environment Trust Fund</td>
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<td>GwH</td>
<td>Gigawatt Hour</td>
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<td>HDI</td>
<td>Human Development Index</td>
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<td>ICDP</td>
<td>Integrated Conservation-Development Project</td>
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<td>IUCN</td>
<td>The World Conservation Union</td>
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<tr>
<td>Lao PDR</td>
<td>Lao People’s Democratic Republic</td>
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<td>LSFP</td>
<td>Lao-Swedish Forestry Cooperation Programme</td>
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<td>LWU</td>
<td>Lao Women’s Union</td>
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<td>MoU</td>
<td>Memorandum of Understanding</td>
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<td>MW</td>
<td>Megawatt</td>
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<td>NBCA</td>
<td>National Biodiversity Conservation Area</td>
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<tr>
<td>NGO</td>
<td>Non-Government Organisation</td>
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<tr>
<td>NTFPs</td>
<td>Non-Timber Forest Products</td>
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<tr>
<td>Ramsar</td>
<td>Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat</td>
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<tr>
<td>Sida</td>
<td>Swedish International Development Assistance Corporation</td>
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<tr>
<td>STENO</td>
<td>Science, Technology and Environment Organisation</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>United Nations Environment Programme</td>
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<td>UNESCO</td>
<td>United Nations Education, Science and Cultural Organisation</td>
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<td>WCS</td>
<td>The Wildlife Conservation Society</td>
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<td>WRI</td>
<td>World Resources Institute</td>
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Map 1: Location and Administrative Boundaries of Lao PDR

Source: UNEP Environment Assessment Program for Asia and the Pacific, 1996
1. INTRODUCTION

Once known largely for its involuntary involvement in the Indochina War, as a recipient of millions of tonnes of bombs and other ‘undeclared’ interventions, the Lao Peoples’ Democratic Republic is rapidly approaching the next century in a new role as a vital economic crossroads in Southeast Asia. In geographic terms, land-locked Lao PDR (see Map 1) is strategically placed between the growing economies of Thailand, China and Viet Nam. Plans are already being implemented to build or upgrade transnational roads between these countries, linking markets and ports and further accelerating economic development in the region. The ‘Friendship Bridge’ across the Mekong River which was opened in 1994, between Lao PDR and Thailand, has been the most recent and obvious symbol of the new development perspectives in the region, where historic enmities are being forgotten in the interests of regional economic cooperation. At the same time, the Lao PDR Government has been taking steps since 1986 to both facilitate its own national development through free market approaches, and to enable it to participate as an equal partner with its neighbours in the increasing economic development of the region.

As well as its growing strategic economic position in the region, Lao PDR also has major ‘strategic’ importance as a result of its abundant natural resources - in particular its water and forest resources. It is these resources which have been, and will continue to be, the keystones of its economic development for the foreseeable future. It is also these resources which are increasingly attractive to Lao PDR’s resource-depleted neighbours. Within the mainland Southeast Asia region the only other countries with comparable natural resource bases are Cambodia and Myanmar. Lao PDR has the advantages of location, and a stable political and commercial environment.

However, balanced against the apparent potential for national economic development and a beneficial future role in regional economic growth, is the fact that Lao PDR is currently one of the least developed countries in the world. The country is faced with a great paradox. Despite its abundant natural resources, human development indicators remain among the lowest in the world, and its limited skilled human resource capacities constrain a ‘home grown’ approach to providing rapid solutions to urgent national development issues. The most obvious alternative, over the short to medium term at least, is to rely on foreign investment and exploitation of natural resource assets.
Yet, despite this paradox between low development levels and possession of significant natural resources suitable for exploitation, the Lao PDR Government has taken the enlightened step of legally establishing a comprehensive and representative system of protected areas. It has also signed the Convention on Biological Diversity. The Government clearly sees a linkage between conservation of its biodiversity and landscapes and its ability to implement sustainable development, particularly in the context of using hydropower as a means of raising the human development levels of the country. Herein lies another paradox. After taking such a major initiative in declaring more than 12% of the land area for conservation, when many countries in the world are struggling with the “minimum 5%” concept, the Government is now coming under intense criticism from international lobby groups for its plans to link hydropower development to designated conservation areas.

There are indeed many issues of concern in relation to the way that some aspects of development are being undertaken in Lao PDR, as there are in most countries. However, if the international community - donors, NGOs, bilateral partners, international banks, and so on - is serious about providing effective assistance to the country then there needs to be a collective readjusting of perspectives in terms of “what is best for Lao PDR”. In the context of biodiversity conservation and protected areas this perspective needs to be seen in terms of the constraints and opportunities facing the people of Lao PDR. While there may be issues of concern relating to current approaches to development in this country, there are issues of equal concern in relation to the application of external conservation models and their relevance to the situation in Lao PDR.

The purpose of this paper is therefore to clarify the developmental issues facing Lao PDR in the context of protected areas and conservation of biological diversity, not only to identify constraints but to highlight the opportunities - of which there are many. Lao PDR has the benefit of learning from the hindsight of countries which have raised their development levels through the unsustainable exploitation of their natural resources. It is not inevitable that Lao PDR should follow the same path, but it is certainly probable if the current progress towards sustainable development is side-tracked or ignored. Organisations like IUCN, which work on a partnership basis with the Government, need to help the Government determine the most effective and relevant approaches for integration of national development needs with a strategy for
conservation of biodiversity. The country’s newly established protected area system is fundamental to such a strategy, and will remain so - provided that it is relevant to the needs and aspirations of the Lao people.

Rice fields dotted with bomb craters in Xieng Khwang. The Indochina War ended 21 years ago, but the legacy remains in unexploded ordinance and underdevelopment.
2. DEVELOPMENT FACTORS AND ISSUES IN LAO PDR

In order to place the interrelated issues of protected areas establishment and biodiversity conservation in perspective in Lao PDR it is necessary to review the overall developmental situation in the country. By doing so, the significance of the Government’s policy decisions with respect to nature conservation and sustainable development can be fully appreciated.

2.1 Cultural Diversity

If a country’s richness is measured by its cultural and ethnic diversity then Lao PDR is a wealthy nation indeed. By ethnolinguistic standards, more than 200 distinct ethnic groups have been identified in Lao PDR so far (J. Chamberlain, pers. comm.). The complex nature, and richness of ethnic diversity in Lao PDR has been evidenced in a recent socio-economic and cultural survey undertaken in the Nakai-Nam Theun protected area and adjacent plateau. The protected area is 3,710 km², yet its indigenous people comprise five distinct language groups with 28 different languages (CARE International, 1996). By comparison, the whole of the island of Borneo, despite a multiplicity of languages, has only one language group within its 751,000 km².

The Government has tried, without much success, to come to terms with the large number of minority groups in the recent census. To prepare for the 1985 and 1995 census the Institute of Cultural Research (formerly under the Committee for Social Sciences) grouped ethnic minorities into 47 categories, but most of these have sub-categories. From a technical ethnolinguistic point of view these categories are rather arbitrary and there is much need for improvement. Unfortunately, the results of the ethnic breakdown from the latest census are not yet available, but when they are published they will provide additional information on populations and localities.

However, the following breakdown into ethnolinguistic families reveals the broad diversity which exists:

- **Tai-Kadai**
  
  Tai languages have been divided by Li (1977) into three branches:

  - **Southwestern**, which ranges over Lai Chau, Thanh Hoa
and Nghệ An (Nghê Tinh) in Viet Nam, all of Lao PDR and Thailand, southern Yunnan, northern Myanmar, and Assam. This group is represented in Lao PDR by groups such as the Tai Dam, Tai Deng, Lue, Phou Thay, Nyo, Yooy, etc., and includes Lao proper;

- **Central**, which is confined to the eastern Guangxi-Viet Nam border area, including Hà Tuyên, Cao Bang, Lang Sơn, Bac Thái, Hà Bac, Hoàng Liên Sơn, and parts of Quang Ninh and Vinh Phu as well as the southern portion of Guangxi;

- **Northern**, which includes the northern portion of Guangxi, the eastern half of Guizhou, a substantial population in the vicinity of Lào Cai and adjacent parts of Yunnan (including the “Nhang”, who are represented by several villages in Lao PDR), and then a surprising distribution - separate from the rest - in Thanh-Hoà and Nghệ An in Viet Nam, and Khamkeut District in Bolikhamsai Province in Lao PDR (the Sek and the Mène).

The distribution of the ethnic Lao is quite narrow, confined to the valleys of the Nam Ou and the Mekong River, with small populations along the Tha and the Beng Rivers. Beyond this the lowland populations speak Tai languages other than Lao proper.

- **Hmong-Mien**

  This family has been known in the past by the Chinese term Miao-Yao, Miao (Meo) and Yao being the “outsider” terms for two of the main branches. However, many scholars now prefer to use the “insider” terms Hmong and Mien, and this usage is being generally accepted in most technical works nowadays. In addition, especially in Lao PDR, the Hmong peoples resent the term “Meo” and feel that it has pejorative connotations.

  The Hmong-Mien family is represented in Lao PDR by Iu Mien (Yao), Kim Moun (Lantène), White Hmong and Green (or Blue) Hmong. The Hmong entered the country very late, in two waves: the first in 1810, and the second about 1860. They arrived first, via Viet Nam, at Nong Het in Xieng Khwam Province, and spread across (then) northern Laos into Thailand.

  The particular form of Taoist religion practiced by the Moun and the Mien appears to date from the Sung dynasties (12th and 13th century). This is based upon analysis of the many...
remaining Taoist religious texts still in the possession of the Mien and Moun, many of whom are fluent writers of Chinese. The Yao are estimated to number 1.5 million throughout the region, 700,000 of whom are Mien, and 100,000 of whom are Moun. Like the Hmong, they did not begin to enter Laos until the 19th century.

• **Austroasiatic**
Since they have been present on the Southeast Asian mainland for at least the past 5,000 years, Austroasiatic populations represent the oldest and most diverse of the indigenous peoples in the region as a whole - and in Lao PDR in particular. It has been estimated that the Austroasiatic family is approximately of the same time depth as Indo-European. Some members of the family have formed nation-states and flourishing civilisations, such as the Vietnamese, the Khmers and the Mons. Others, such as the Miabri, are hunters and gatherers, living in the forests without cultivated agriculture.

The Austroasiatic branches in Southeast Asia belong to the Mon-Khmer family which is divided into South, East and North Branches. Representatives of the East (Katui, Bahnaric and Vietic groups) and the North Branches (Khmuic and Palaungic groups) are found in Lao PDR, and Austroasiatic speakers are found in every province.

• **Tibeto-Burmese**
Tibeto-Burman is an ethnolinguistic family within the larger Sino-Tibetan superstock. There is not a large body of literature to document the arrival of the Tibeto-Burmese speaking peoples into Lao PDR. All of them belong to the Lolo-Burmese subgroup, and the majority are known to have arrived from either Burma or Yunnan beginning in the 19th century, and with the latest migrations arriving well into the beginning of the 20th century. They have remained for the most part in remote areas, and only recently have some villages relocated to lower altitudes - either voluntarily or as refugees. Their agricultural practices in Lao PDR, the degree of swidden rotation or lack thereof, the effects on watersheds and the environment (by comparison with that of other recent arrivals like the Hmong) are undocumented. Tibeto-Burman speakers are confined primarily to the provinces of Bokeo, Luang Nam Tha, Phongsaly and northern portions of Luang Prabang and Oudomsay (such as Akha, Lahu and Phou Noy).

### 2.2 Human Development Indices
In the UNDP *Human Development Report 1996*, Lao PDR ranks 138 out of a total of 174 countries, with a Human

1 | Thailand - 52; Viet Nam - 121; Myanmar - 133; Cambodia - 156
Development Index (HDI) of 0.40, which compares with the average of 0.563 for all developing countries and 0.909 for industrial countries. Although life expectancy at birth increased by 10 years from 1960, it was still only 51.3 years in 1993 - compared to 69.3 years in Thailand and 65.5 years in Viet Nam. Similarly, although the average infant mortality rate declined from 155 per 1,000 live births in 1960 to 96 per 1,000 in 1992, this is still very high and compares poorly to Thailand with 36 per 1,000 and Viet Nam with 42 per 1,000. Eighty percent of the population of 4.6 million people is rural, with poor primary health care services, and limited access to safe water and sanitation (45% and 27% of the population respectively).

In the 1996 report, UNDP has introduced a “new, multidimensional measure of human deprivation called the capability poverty measure (CPM)”. The CPM considers the lack of three basic capabilities: to be well nourished and healthy (represented by the proportion of children under five who are underweight); healthy reproduction (indicated by the proportion of births unattended by trained health personnel); and the capability to be educated and knowledgeable, represented by female illiteracy. The emphasis on the deprivation of women is based on the adverse affect that this has on the human development of families and of society as a whole. Using this assessment mechanism Lao PDR has a Capability Poverty Measure value of 54.6, ranking the country 80 out of 120 countries assessed on this basis. This ranking is established by the fact that 52% of births are unattended by trained health personnel, 54% of children under five years of age are underweight, and the female illiteracy rate is 57.9%. These figures, combined with the result of the 1995 ‘Poverty Assessment’ which revealed that almost half of the population lives in poverty, indicate that more than half of the country’s people lack the minimum capabilities to achieve their human development potential (J. Mattsson, UNDP, pers. comm.).

2.3 Characteristics of the National Economy
Lao PDR’s low HDI is a reflection of a number of factors relating to the national economy and recent history. Decades of internal conflict, instability and external interference in the politics of the country, followed by a decade (1975-85) of self-imposed isolation from the free market economies of the broader region and implementation of a centrally controlled economy, contributed to a low level of national development. This was reflected in limited infrastructure development, especially with respect to roads and other services. Much of the predominantly rural population remained effectively isolated from the main urban centres, and could not break out of dependence on subsistence agriculture. However, in 1986
the Government announced the ‘New Economic Mechanism’, aimed at reducing central control of the economy and gradually introducing a market economy. Major changes which were introduced included: liberalisation of retail prices (except utilities and air transport, which for nationals are subsidised by the Government); state-owned enterprises were given autonomy; payment of cash to farmers for produce; and private commerce liberalised.

Since 1986 there has been good macroeconomic performance in terms of such factors as GDP growth and reduction in inflation (the latter having decreased from 76% in 1989 to 7% in 1993). However, the “reform process has...revealed serious obstacles to a sustainable growth path. Firstly, the low level of domestic resource mobilization (is) a major constraint (to) Lao PDR’s economic development; it points to the need for sustained external assistance”. Secondly, the country’s development strategy is seriously hindered by a small production/export base, with export earnings depending mainly on electricity, agriculture, timber and wood products. Thirdly, Lao PDR has increasingly been faced with acute absorptive capacity problems, resulting from the underdeveloped macroeconomic institutions and serious shortage of skilled manpower. Fourthly, the early fruits of economic development have not been spread evenly to regions outside the urban centres; absolute poverty is still widespread in rural and remote areas. The latter points to the need for a regional development strategy...Considerable external support will continue to be needed for Lao PDR’s future development” (Pham, 1994a).

This assessment of the national economic situation has direct implications for biodiversity conservation in general and protected areas in particular, namely:

- the fact that export earnings are highly dependent upon the natural resource base of the country (and likely to remain so for some time) means that pressures to exploit those resources are likely to increase, especially on water and forests;
- in turn, the capacity for sustainable development (rather than the unattainable and contradictory “sustainable growth” stated in the quote above) will be critically linked to sound policy development and implementation in relation to use and management of natural resources;
- the problem of absorptive capacities and skilled

2 The average per capita aid receipt is US$40/year, or 16% of the estimated GDP per capita
manpower also affects the Government's capacity to implement its policies and plans concerning nature conservation and resource management;

- the continuing state of under-development in rural areas, where the majority of the population resides, means that activities which conserve and manage natural resources need to be linked to the developmental needs of both the nation as a whole as well as local communities if they are to be successful;

- the concept of a regional development strategy is particularly relevant to the whole issue of biodiversity conservation and protected areas, since it relates to the need to integrate resource conservation and sustainable use into broader economic and land use planning; and

- the need for external support to Lao PDR has, in itself, a number of implications for biodiversity and protected areas - not only through provision of technical assistance but also through consistency of approach and coordination by bilateral and multilateral donors on issues relating to environment, conservation and sustainable development.

Fortunately, the Lao Government appears to be aware of these issues - at least in the broadest sense - and has been formulating policies and implementing activities aimed at dealing with them. These are discussed later.

2.4 Lao PDR's Natural Resource Base

Lao PDR has a land area of almost 237,000 km² and is comprised of predominantly rugged, mountainous terrain. Except for areas of Sayaboury, Oudomsay and Bokeo Provinces in the north and Champassak Province in the south, the western border of the country with Thailand and Myanmar is demarcated by the Mekong River - in the former case, a legacy of the French-Siamese treaty of 1893 which substantially reduced Lao territory. To the east, the high mountains of the Annamite Range and the northern highlands delineate the border with Viet Nam. The borders with China in the north and Cambodia in the south are more physiographically contiguous, with less clearly defined physical barriers to diverse factors such as migratory wildlife, transnational infrastructure development, and cross-border trade and incursions.

Table 1 summarises figures for some of the country's key natural resources. Figures are also given for neighbouring
countries (except China) for comparison. The relatively high retention of forest cover and limited availability of arable land of Lao PDR are aspects which clearly stand out, and contrast markedly with Thailand. But the figure which is remarkable is the availability of renewable water resources per capita. Even taking into account the much lower population level in Lao PDR, the relative difference with Thailand is considerable (30 times difference in water availability versus 11 times difference in population), especially considering that Thailand has more than twice the land area as Lao PDR. The only other countries, on a global basis, which have a higher figure are in equatorial Africa and Central and South America. The dimensions of the abundance of water resources are also placed into perspective by the fact that 60% of the water flow at the Mekong River delta is contributed by the catchments of Lao PDR.

Clearly, Lao PDR’s future wealth is unlikely to be supported by agricultural activities given the limited availability of arable land. Not only is arable land limited, but much of what is available has poor soils, including salinity problems, due to its location on the Korat Plateau. Even allowing for major advances in agronomy and agroforestry in the future, the country’s developmental problems are immediate and will continue for some significant time. Already the population density of cultivated cropland rises to 350 people per km² (STENO, 1993), despite the fact that the overall population density is only 19 people per km². This figure is more than Thailand (257 people/km²), although lower than Viet Nam with over 1,000 people per km². If the population rate continues to grow at its present rate of almost three percent per year the situation will become even more critical. Increasing population pressure is also having an impact on subsistence upland agriculture. This is not only as a result of the activities of traditional practitioners who are forced by declining yields and increasing needs to shorten their fallow periods in some areas, but also through the incursions of lowland people, who have historically been principally engaged in paddy rice cultivation, into upland areas. These factors are contributing to a continuing conversion of closed forest to grasslands, scrub and dry woodland (UNEP, 1995; Berkmüller et al., 1995).

2.5 Regional Economic Factors
In a 1994 survey of the global economy, The Economist reported that “over the next 25 years, the world will see the biggest shift in economic strength for more than a century”. This change will come about as a result of many countries in the third world embracing “market-friendly economic reforms and opening their borders to trade and investment”. This will include a number of Asian countries, in addition to the existing
and emerging so-called economic "tigers" (Hong Kong, Singapore, South Korea, Taiwan, Malaysia, Thailand and Japan). "Within a generation China will overtake America as the world's largest economy...and by 2020 as many as nine of the top 15 economies will be from today's third world" - seven from Asia (The Economist, 1994). In the countries surveyed, manufactured goods account for nearly 60% of their exports, up from five percent in 1955. If such an upsurge of economic growth is to continue to occur in eastern Asia then it is obvious that key resources will be at a premium. The demand for energy alone will be enormous. This has obvious implications for those countries in the region which still have significant reserves of natural resources which are in demand by the rapidly developing countries, the implications either positive or negative depending on how sustainably those countries manage their resources and how effective are their negotiations with the "buyers" of those resources.

Table 1: Key Aspects of the Natural Resource Base

<table>
<thead>
<tr>
<th>Resource/Feature</th>
<th>Lao PDR</th>
<th>Thailand</th>
<th>Viet Nam</th>
<th>Myanmar</th>
<th>Cambodia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area (km²)</td>
<td>237,000</td>
<td>514,000</td>
<td>332,000</td>
<td>677,000</td>
<td>181,000</td>
</tr>
<tr>
<td>Population (1993 - millions)</td>
<td>4.6</td>
<td>57.6</td>
<td>71.3</td>
<td>44.6</td>
<td>9.7</td>
</tr>
<tr>
<td>Forest &amp; Woodland (% land area)</td>
<td>52.8³</td>
<td>26.3</td>
<td>29.1</td>
<td>47.9</td>
<td>64.1</td>
</tr>
<tr>
<td>Arable Land ( % land area)</td>
<td>3.3</td>
<td>34.3</td>
<td>16.6</td>
<td>14.2</td>
<td>13.0</td>
</tr>
<tr>
<td>Internal Renewable Water Resources Per Capita (m³/year)</td>
<td>60,400</td>
<td>2,000</td>
<td>5,400</td>
<td>24,800</td>
<td>10,000</td>
</tr>
</tbody>
</table>

(Source: UNDP, 1996)

Selling off renewable natural resource capital through the free market can certainly produce apparent wealth and raise living standards - at least for some sectors of the community - within a relatively short time frame. However, it is highly probable that the shorter the time frame to achieve this change, the more likely that resource utilisation is unsustainable and that renewable resources are being treated as non-renewable assets to be exploited. In a region where a number of countries are rapidly making the transition from "developing" to

³ Note: the officially accepted figure for "forest" cover is 47% (that is, not inclusive of "woodland")

⁴ The World Resources Institute et al. (1996) figure for "domesticated land" (the sum of cropland and permanent pasture) is 7% of the total land area.
“developed” status, natural resources are valuable assets - not the least because those countries which are making the transition have long depleted, do not have, and/or are conserving their remaining resources for their own reasons. This places the relatively resource rich but under-developed countries in the region at an apparent advantage in terms of finding ready markets for their resources. However, it also makes them susceptible to over-exploitation, through their understandable desire to obtain wealth to improve their own living standards in as short a time as possible, thereby creating a pathway to unsustainable, short term depletion.

In this scenario, the potential danger for Lao PDR lies in permitting excessive exploitation of its natural resource base before its human resource capacities are adequately developed through improved education and training, and its economic base diversified. In this case, the country would be doubly disadvantaged as the natural capital (forests, soils, water) which has historically supported its agrarian economy would possibly be reduced to unsustainable levels. In the case of hydropower development, Lao PDR must ensure that it is not economically disadvantaged through commitment to long-term, fixed-price power contracts negotiated at present or poorly predicted future values. Such an economic disadvantage could eventuate given the likely high increase in energy demands in the region during the life of the contract, driving the market price well above the negotiated contract price.

Throughout history the country now known as Lao PDR, in its various manifestations as separate and unified kingdoms and then a French colony, has had to interact with neighbours who have frequently perceived it (atleast after the decline of the Lane Xang Kingdom) as a buffer state and/or as a source of valuable natural resources. Under the French colonial regime Laos was valued for its strategic position relative to the Mekong River, Siam and Vietnam, and for its natural resources, which were exploited with very little return for the Lao people. Lao PDR achieved independence from colonisation in 1953 and then national unity in 1975. It would be an unfortunate irony if the unintended outcome of current development initiatives aimed at improving human development resulted in the enrichment of neighbouring and regional countries at the expense of Lao PDR's natural capital - indeed, its heritage - replicating the kinds of resource exploitation (but potentially on a much greater scale) which characterised 19th century colonial Asia.
3. BIOLOGICAL CONSERVATION VALUES AND ISSUES

3.1 Extent of Knowledge

The extensive forest, woodlands and other habitats of Lao PDR, even though considerably reduced over the last five decades, provide habitat for a high diversity of mammals, birds and probably other vertebrate and invertebrate groups (Salter, 1993). From a regional biogeographic perspective, the country falls within four subunits of the Indochinese subregion in the Indomalayan Realm (see Map 2). Of the total 1,250 species reviewed by Salter, 247 have been identified as being of regional or international significance: 37% of the mammals; 19% of the birds; 22% of reptiles; 55% of amphibians; and five percent of fish. Further studies are certain to reveal an even higher percentage of the country's reptiles, amphibians and fish as being regionally and internationally significant, as these groups are currently poorly known. The World Conservation Monitoring Centre (1994) lists Lao PDR in Group 2 of the 50 countries in the world with most endemism.

However, despite the considerable wildlife survey work which has been undertaken in recent years, much remains to be done. The scientific discovery in the last two years of new genera of large mammals in the Annamite Mountains bordering with Viet Nam, the Saola or Vu Qang Ox (*Pseudoryx nghethingingensis*) and Giant Muntjak (*Megamuntiacus vuquangensis*), highlights both the value of the country's remaining habitat and the likelihood of further discoveries. This has been evidenced in recent surveys by the Wildlife Conservation Society, which has confirmed an additional new species of Muntjak, a new species of rabbit, and is currently examining the possibility of new species of squirrel and a warbler (W. Robichaud, WCS, pers. comm.).

While the Saola and the Giant Muntjak also occur in Viet Nam, the prospects for continuing species survival would appear to be better in Lao PDR than in Viet Nam due to the better habitat in terms of extent and condition, and lower human population pressure. A case in point has been the recent discovery in Lao PDR of the Viet Nam Warty Pig (*Sus bucculentes*), last recorded in Viet Nam in 1892 (G. Schaller, WCS, pers. comm.). The species is listed as extinct in the IUCN Red Data Book. Further discoveries or rediscoveries are likely, particularly if survey work is expanded to the lower vertebrates and invertebrates. A number of new fish species have already been discovered (T. Roberts, pers. comm.) and, in an overall sense,
the biodiversity of wetlands is poorly known.

In addition, Lao PDR is completely lacking in an up-to-date botanical survey of its forests and other ecosystems. While pressure is growing on wildlife resources (see below), the botanical structure of large areas appears to be still intact. Focusing on this aspect of the country’s biological resources may reveal plant species equally as significant as the new fauna (re)discoveries. As biological resources in Viet Nam and Thailand come under increasing pressure from the considerably higher population levels in those countries the conservation value of the resources in Lao PDR will become even more important on a regional and international basis - provided that the resources are protected through good conservation management and, where appropriate, used on a sustainable basis.

As survey work continues, especially in conjunction with protected area management, previous assessments of conservation value will have to be reviewed. Already, rather general statements of national biological significance such as “extensive forest of moderate richness and endemism” (MacKinnon, 1995) seem inappropriate in the light of recent discoveries. There would seem to be a case for designating the Annamite Mountains bordering Lao PDR and Viet Nam as a regional, if not international, biodiversity “hotspot” in view of the recent, and continuing, discovery of new species in this area. Certainly, the current moves towards transboundary cooperation and World Heritage status are a valid reflection of the area’s growing importance.

3.2 Significant Issues Affecting Biodiversity Conservation

Despite the high value of its biological assets and the potential for sustainable development based on the wise utilisation (“conservation” in the broadest sense) of those assets, there are a number of critical issues affecting the long term viability of biodiversity conservation in Lao PDR. These issues are interrelated and many are complex in nature. For example, demographic and ethnic factors, and Government policies on such issues as migration, shifting cultivation, sedentarisation and alternative income generation, are closely linked to the viability of long term strategies for biodiversity conservation. Other interrelated issues include: traditional resource ownership and management, changes brought about by Government policies on land and resource allocation, policies on protected areas, and access to natural resources for

5 Estimates Year 2000: Viet Nam - 82.6 million; Thailand - 61.9 million; Lao PDR - 5.6 million (UNDP, 1996)
commercial exploitation. It is beyond the scope of this paper to provide a detailed analysis of all these issues and their implications for biodiversity conservation. However, the following discussion presents an overview of the most significant issues affecting biodiversity conservation in Lao PDR:

3.2.1 Declining Forest Cover
Although Lao PDR has one of the highest proportions of intact forest cover in Asia there is no basis for complacency, despite Government policies directly focused on conservation and sustainable use (see Chapter 4). Forest cover declined from 70% to the currently accepted figure of 47% over the last 50 years, and there are critical issues which still need to be dealt with if forest cover is to be stabilised at this level and forest resources used sustainably. While the Government’s decision to establish a comprehensive and representative protected areas system is applauded, the value of the remaining forest areas, as stores of biodiversity and renewable resources, must also be recognised and conserved. Various factors have had, and are having, a role in the decline of forest cover, including: clearing of lowland forest for permanent agriculture; logging; construction of roads and reservoirs; shifting cultivation; fires; and the use of chemical defoliants during the Indochina War. Some of those relating to agricultural practices are discussed under separate headings below.

With respect to commercial logging for timber, the Government has taken steps to enforce controls in order to conserve the resource (see Chapter 4). However, anecdotal evidence and observation in various parts of the country suggests that Government policy and regulations are difficult to enforce. The decentralisation of power to Provincial Governments and the semi-autonomous operations of regional military development companies make communication of policy and enforcement of regulations by central authorities difficult. The occasional publicised case of action taken against those ignoring regulations and abusing their power illustrates both the fact that the Government is prepared to enforce the law and also, unfortunately, that the law is sometimes being ignored by those in positions of power. A case in point was the conviction of seven officials from Attapeu Province in 1995, including the Governor, for crimes relating to timber industry corruption and failure to comply with forestry regulations (reported in the Vientiane Times, September 15-21, 1995).

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6 47% of the total land area, with 19% classified as high density forest in 1992 (Source: Department of Forestry National Reconnaissance Survey, 1992)
As one of the last countries in Asia with substantial reserves of high value timber, Lao PDR is attracting considerable interest from other countries in the region, in particular Thailand, Malaysia, Korea and Taiwan. As large, well-financed companies from these countries are granted timber concessions, the Government needs to ensure that sound forest management is implemented, such as effective codes of logging practice; and that resource allocation is undertaken following a process of land use planning. In particular, Government decision-makers and negotiators need to be constantly mindful that it is the forest which protects the catchments which provide the water to drive the turbines in the Government's existing and proposed hydropower dams.

Although already commenced, the Government's plantation forestry and reforestation programmes need to move towards more effective support of the forest industry sooner rather than later, so that pressure can be taken off the remaining natural forest ecosystems. This will develop what Goodland (1995) refers to as "cultivated natural capital". Timber is limited by remaining forests, not sawmills, and as natural forests become limited countries tend to invest in plantation forests. Of course, some countries - including those currently investing in Lao PDR - focus their exploitation on external sources of timber as their own resources are depleted. If Lao PDR builds up its cultivated natural capital now, and uses its remaining natural capital sustainably, then it may succeed in avoiding the levels of deforestation and land degradation that characterise many countries in the region. In addition, the economic benefits of timber exploitation from both plantation and natural forests need to be enhanced through domestic processing to create employment within the country, and to export higher value products rather than raw logs.

3.2.2 Hunting and Wildlife Trade
It is one of the many paradoxes in discussing the natural resource issues affecting Lao PDR that, despite the retention of extensive forest habitat and the discovery of new species of large mammals, biological resources generally are under threat, and that wildlife in particular is subject to intense pressure - even with a relatively low overall human population density. There is a long tradition of hunting in Lao PDR, and rural communities are also dependent on hunting and harvesting of wild products to supplement seasonal rice harvests, especially those communities dependent upon the vagaries of climate to support upland rice production.

However, the level of hunting has increased in recent decades, and the availability of modern automatic weapons and
explosives has had a considerable impact on wildlife populations. Commercialisation and trade in wildlife products has also increased as prices have risen and access to previously remote areas improved. Wildlife survey teams that come to Lao PDR are, unfortunately, always impressed by the paucity of wildlife in otherwise apparently intact forests (A. Rabinowitz, WCS, pers. comm.). Although only a relatively small number of (albeit very important) species are considered to be on the verge of disappearing (Salter, 1993), numbers of most species appear, on the basis of field survey observations, to be low and in decline.

By way of example, the recent socio-economic and cultural survey in the Nakai-Nam Theun protected area on the Lao-Vietnamese border (CARE International, 1996) provides supporting evidence for the observations of wildlife specialists. Since the official move to a freer market economy the survey reported that hunting and gathering of forest products has become more commercialised, driven by an increased demand for consumer goods by local people. There has also been an increased demand, and/or improved access to existing markets, in Viet Nam and Thailand for wildlife meat and live animals. As well as modern weapons, villagers also stated that they use snare lines much longer than those used in the past, in order to capture as many animals as possible. Villagers noted a decrease in the number and species of wildlife and fish. The area is frequented by Vietnamese traders who bring in consumer goods and take out various forest products. Similar activities by Hmong traders from a neighbouring province were also reported. The villagers also reported that the availability of certain heavily collected plant products, such as rattan, dipterocarp resin and fragrant wood (eaglewood), has been drastically reduced.

Information from other parts of the country suggests that the situation which prevails in the Nakai-Nam Theun area is widespread. A recent wildlife survey of Phou Xiang Thong protected area (Evans, et al., 1996a), along the Mekong River in Saravane and Champassak Provinces, also revealed the establishment of nine additional villages since 1983; all of which are still expanding. Heavy hunting with firearms, logging and increased clearing for cultivation were observed.

3.2.3 Changes in Agricultural Practices
The Nakai-Nam Theun survey reported that various villages complained about increasing population pressure on available

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7 For example: Irrawaddy Dolphin; Javan and Sumatran Rhinoceros; Kouprey; Brow-antlered and Hog Deer; White-shouldered and Giant Ibis; Siamese Crocodile
land for shifting cultivation, with subsequent decline in soil fertility and increased weed infestation as a result of decreasing fallow periods. It is likely that this situation also exists in other parts of the country, although in some areas where traditional fallows and practices are maintained shifting cultivation may be sustainable - provided that the population growth rate is stabilised. However, acting on the perception that shifting cultivation is a major cause of deforestation, the Government has committed itself to a policy of ending shifting cultivation by the year 2000. The programme to achieve this includes a number of elements: using technology to improve the productivity of crops and livestock; improving land use planning at the local level; formalising land tenure through a process of land allocation; and developing alternatives to agricultural income for shifting cultivators.

Fisher (1996) has identified a number of issues related to these programme elements. Some of these have direct implications for biodiversity conservation. In particular, the programme to allocate specific areas of land to shifting cultivators for sedentary cultivation is potentially of concern, since it involves an intensification of resource use which may be unsustainable without major additional inputs, such as fertilizers. As an example, Fisher refers to a report on land use for Thong Khang sub-district (Hansen and Sodarak, 1995) in Luang Prabang Province. This area currently supports about 600 families on 8000 hectares or about 13 hectares per family. Under the new regulations, each family would receive five hectares - less than half their current area under the shifting cultivation system. Unless this reallocation is accompanied by major effective changes in agricultural technology and provision of alternative sources of income serious problems will arise. As well as problems such as declining soil productivity, sedentary cultivation without adequate fallow areas will not produce the non-timber forest products (NTFPs) which are currently an important element in household economies and nutrition. That is, the vegetation regrowth in fallow areas acts as a natural resource buffer. In a sedentary situation where this buffer is absent (unless NTFPs are obtained from adjacent forest) it is not sufficient just to produce the same volume of rice. There must be considerably more rice produced, to provide cash to replace the lost NTFPs.

The implication of this for conservation could be a greater impact on natural resources adjacent to the settlement areas as families both intensify and broaden their harvest of forest and wetland products to raise income to supplement their rice production and replace NTFPs, or for direct alternative subsistence purposes. Where this occurs near or within...
protected areas, the integrity of the areas’ conservation values will be severely compromised. As Fisher notes, increasing population levels in many areas will mean that any increase in productivity will need to be large enough to: bridge the existing deficit; support the increased population; and compensate for decreasing productivity as a result of reduced fallows - which sounds like an improbable task. He suggests that the real problem, rather than shifting cultivation as such, is to find viable alternatives to agricultural income combined with increased productivity, if possible. Obviously, where local natural resources (plant products, wildlife, fish) are used to provide alternative income generation carefully planned resource management regimes will need to be set in place if activities are to be sustainable and critical conservation values not compromised over the long-term. The implications of using cash crops to provide alternative agricultural income are discussed below.

With respect to using improved technology, there is also the issue of encouraging farmers to use high-yield crop varieties which not only require increased amounts of fertiliser and pesticide but potentially threaten the continuing diversity of local crop varieties (see 3.2.5 below). The genetic diversity contained in many indigenous varieties of agricultural crops are being lost throughout the world as a result of the promotion and use of genetically engineered high-yield varieties, which also often require more water and result in deterioration of soil quality (WRI et al., 1996).

### 3.2.4 Commercialisation of Agriculture

Commercial production of crops is having a detrimental impact on biodiversity values in some areas. Unfortunately, it is a trend which is likely to continue as the free market develops further and foreign investment in the agricultural sector increases. There is a clear need for interdepartmental coordination within the Ministry of Agriculture and Forestry and between other relevant agencies, such as the provincial and district authorities.

As a case in point, in Champassak Province commercial coffee production has become an increasingly important part of the provincial economy as an export product, with buyers from other countries in the region purchasing coffee beans from village growers who cultivate their crops in small plots. However, while this is undoubtedly good for local income generation, it is having a negative impact on the values of Dong Hua Sao protected area and other remaining forest areas. Because the soil of newly cleared forest is considered the best for coffee production, resident communities within and
adjacent to the protected area have expanded their areas of cultivation into primary forest in order to produce this economically important cash crop (Evans, et al., 1996b). Unless management action is taken by the provincial authorities, in consultation with villagers, the conservation values of the protected area will continue to be fragmented. This is not to say that coffee production is undesirable in its own right, since it is a high value crop which could contribute significantly to the livelihood of villagers in protected area buffer zones. Large-scale agroforestry plans by the Thai-based company Asia Tech have also resulted in the clearing of several hundred hectares of secondary forest on the Bolovens Plateau in Champassak near Paksong outside the protected area. The original concession granted to Asia Tech of 16,000 hectares has now been reduced to about 8,000 hectares following protests by local communities about loss of access to land and resources. Large-scale activity of this nature which results in the alienation of local communities from their traditional resources is likely to result in increased pressure on the resources of nearby conservation forests.

Unfortunately, there are other negative environmental aspects of the move to commercial agriculture which need to be addressed by relevant authorities. For example, production of rice for subsistence is a full-time occupation in the planting, growing and harvesting seasons and even then there is a deficit, on the basis of one year out of every 4-8 years, which has to be met through credit and/or subsistence use or sale of forest and wetland products. Anecdotal evidence suggests that farmers engaged in commercial production of other crops, such as vegetables for local or Thai markets do not have the time to cultivate adequate quantities of rice to meet their needs. Thus profits from the sale of commercially grown crops need to be put back into purchasing rice for subsistence or repaying debts arising from rice credits. With respect to impacts on biodiversity, potentially these could increase significantly if villagers are forced to both widen and intensify their use of forest and wetland resources to meet shortfalls in subsistence production. For example, the profit to be made in trading endangered wildlife and their body parts would be an increasingly attractive option, especially high value animals such as tigers, elephants and bears.

Another example relates to the impact of agricultural pesticide use on natural systems. Although banned in Lao PDR, the organophosphate methyl parathion is produced in Thailand by the Bayer company and sold illegally in Lao PDR to farmers and villagers (I. Baird, pers. comm.). DDT is also used by rice farmers (Claridge, 1996). These extremely toxic chemicals are
not only used, with a lack of training and protection, on crops but also to poison aquatic resources as a harvesting mechanism. In many villages cropland is physically adjacent to or linked through food chains to forests and other natural ecosystems (especially wetlands), so the continuing use of these chemicals poses a serious threat to biodiversity values as well as human health. There have been a number of reports of death and sickness of people caused by the misuse of methyl parathion in the south of the country. Clearly, the Government needs to implement education and enforcement programmes with regard to the importation and use of these products.

3.2.5 Wetlands and Aquatic Resources
As well as forest resources, wetlands in Lao PDR play an extremely important role in the subsistence and commercial economy of the country. Although wetland resources are important in all parts of Lao PDR, including the mountain rivers and streams, it is in the lowlands where their value is particularly high, since much of the lowland forests have been cleared for agricultural use. As with NTFPs in forested areas, the availability of wetland resources provides an important social security or welfare mechanism in times of rice deficit - as well as an ongoing source of plant products and protein (fish, crustaceans, turtles, frogs, insects). In other words, the biodiversity of wetlands plays a critical role in supporting human development.

As well as biological values, wetlands also have essential roles in transportation, flood amelioration, hydropower generation and provision of potable water. It is for this reason that the management of wetlands is usually complex, and subject to the involvement of a number of Government sectoral agencies as well as local communities (G. Claridge, pers. comm.). If the diverse wetland values of Lao PDR are to be conserved and used sustainably then cross-sectoral coordination, linked to cooperative management arrangements with local people, will be essential. Such an approach is being implemented by the Lao Community Fisheries and Dolphin Protection Project in Khong District in Champassak Province (Baird, 1996).

The biological resources of wetlands are coming under the same kinds of pressure as terrestrial resources, to which they are usually ecologically linked. Claridge (1996) reports a number of critical issues affecting wetlands and the resources which they support as follows:

- unsustainable fishing practices - use of gill nets, blast fishing, fishing with poisons, pumping out of wetlands (a move away from traditional practices in small
wetlands to use of large irrigation pumps in large wetland areas), inappropriate use of wing traps (impact on migratory fish species);

- introduction of exotic fish species (carp and tilapia) into natural wetlands;

- hunting of wildlife and migratory waterbirds;

- trading in wetland wildlife (for example: turtles, tortoises, native fish species, Siamese Crocodiles) with Thailand and Viet Nam acting as both pipelines for other countries, including China, as well as directly absorbing some of the trade itself;

- the impact of dams, for example: drying out of overflow wetlands which are important fish breeding and nursery areas; decrease in or loss of fish stocks through blocking migration or changing water quality; possibility of increased vector-borne diseases (e.g., malaria and liver fluke); impacts on rice production;

- weed infestation, such as the large-scale invasion by *Mimosa pigra* in Savannakhet;

- abuse of DDT, methyl parathion and other pesticides, including their use as tool for harvesting aquatic fauna;

- the increasing threat of pollution as more industrial development is established in Lao PDR, especially in major urban centres along the Mekong River, and inadequate water quality standards are implemented - if they are implemented at all;

- a range of concerns related to irrigation projects, including: soil-related physio-chemical issues (salinisation, alkalinisation, water logging, sedimentation and erosion); loss of fauna and flora in wetlands deprived of water by irrigation reservoirs; impacts resulting from the use of agro-chemicals associated with the production of irrigated crops; and socio-economic aspects, such as relocation of people in or out of affected areas;

- increasing sedimentation of rivers, streams and reservoirs, with poor forestry practices associated with commercial logging and slash and burn agriculture the most likely cause.
Rice fields are also an important source of wild protein

Although the focus of the IUCN Inventory of Wetlands of the Lao PDR (Claridge, 1996) was on natural systems, the importance of man-made rice field ecosystems should not be overlooked, from which the volume of protein collected is probably similar to natural wetlands and where biodiversity is high. This includes the rice itself, with 28 varieties currently being used (G. Claridge, pers. comm.). There are particular faunal links to different rice varieties in terms of food chains, and different management regimes create different conditions (habitat, breeding) for a variety of fauna, which in turn provide protein for farmers. A move towards use of a small number of new, as opposed to traditionally developed, rice varieties will result in a loss or reduction of the existing varieties and their associated ecological linkages and management regimes. In addition, the requirement by new varieties for high amounts of fertiliser and pesticides would have direct impacts on the faunal biodiversity of the rice fields.

3.2.6 International Transboundary Issues

Lao PDR is surrounded by five countries and international transboundary issues are a major concern, including trade, economic development, transportation and sovereignty matters (in relation to border demarcation at some points). There are also a number of transboundary biodiversity and natural resource issues.

- Trade in Wildlife and Wild Products

Although Nash and Broad (1993) noted that wildlife trade in Lao PDR appears to be mainly for local food consumption, with additional local trade for curios and medicines, there is also a major international trade in wildlife and wildlife products to Thailand, China and Viet Nam (Sompoad et. al., 1992; Martin, 1992). Live wildlife, meat and skins recorded as traded to Thailand include: Sun Bear; Mouse Deer; Barking Deer; Porcupine; Civets; Leopard Cat; Wild Pig; Pangolin; White-cheeked Gibbon; Pig-tailed Macaque; and Douc Langur. While wildlife products to Thailand, China and Viet Nam, mainly for traditional medicines, include: deer antlers; birds’ bills; elephant ivory; tiger parts; and pangolin scales. As well as animals and their body parts, an extensive cross-border trade occurs in high value plants and plant products. For example, there is an ongoing trade in endemic orchids to Thailand (J. Foppes, pers. comm.), including species which are now extinct in that country.

Unless a combination of education and enforcement of wildlife regulations is implemented, international trade will contribute to the ongoing decline in wildlife in Lao PDR. An important international control mechanism which the Government is...
Currently reviewing is accession to the Convention on International Trade in Endangered Species (CITES). One of the issues relating to international wildlife trade is the use of Lao PDR’s non-participation in the convention by regional wildlife traders to bring in and then re-export wildlife from other countries. For example, the Orangutan (*Pongo pygmaeus*) was in a list of animals reported by CITIES Parties as exported from Lao PDR during 1983-1990 - an animal not naturally occurring in this country.

This is not to say that there are no positive aspects to international trade in wild products overall. Provided that harvesting is, or can be made, ecologically sustainable - including the option of breeding or cultivation - the international sale of wild resources can contribute significantly to the income of rural communities. Foppe *et al.* (1996) reported that 10 NTFPs, including nuts, oils and resins, rattan and cardamom, made an important economic contribution to the economy of Champassak Province in 1995, with 77% of the products exported to China, 14% to Thailand and six percent to Viet Nam. The question of sustainability and long term viability of the export of these types of products is being examined in the five year IUCN ‘Sustainable Utilisation of Non-Timber Forest Products Project’.

• **Transfrontier Incursions**

Another issue is the more general problem of natural resource depletion and exploitation through illegal cross-border incursions, as opposed to organised trading activities. These activities result in the loss of high value timber species and other forest products, as well as endangered wildlife. The problem is reportedly serious along the mountainous Lao-Viet Nam border, where such incursions have resulted in armed conflict with local communities.

• **Transfrontier Cooperation**

Despite the preceding issues, there is considerable scope for international cooperation on biodiversity conservation. For example, the Lao Nakai-Nam Theun protected area borders with the Vu Quang Reserve in Viet Nam. Together these reserves could form one of the most important transfrontier reserves in Asia, helping to conserve the habitat of the recently discovered species of mammals and other species which are likely to be discovered as wildlife surveys continue. The significance of these areas is such that a transfrontier Natural World Heritage Site is a possibility. The Lao Government is currently considering the nomination of the Nakai-Nam Theun area for World Heritage recognition. Other important
biodiversity conservation areas along Lao PDR’s international borders include: Dong Ampham protected area in Attapeu Province which borders Viet Nam and Cambodia; the forests of Dong Kghanthurung in Champassak Province along the Thailand and Cambodian borders (Berkmüller and Vilawong, 1996); Phou Dene Dinh in Phongsaly Province; Nam Phoun in Sayaboury Province; and so on. In fact, 14 of the current and proposed protected areas abut Lao PDR’s international borders (see Map 3).

There are obviously opportunities for transfrontier cooperation in locations where neighbouring countries have similar land use and conservation objectives. However, there is also an urgent need for cooperation and agreements with those countries in those areas where land use and conservation objectives do not match. Such cooperation could facilitate control of the neighbouring countries’ own nationals with respect to illegal resource depletion and trade.
It is obvious that there are fundamental links in Lao PDR between people, economic development needs and prospects, and natural resources. Specifically, the natural resource base will provide the basis for Lao PDR’s sustainable development and, in turn, the biological components of the resource base are critical to maintenance of the overall system. Clearly, therefore, it is a matter of formulating and implementing Government policies and strategies to ensure that natural systems and resources are utilised and managed sustainably and effectively. However, as any government would agree, actual resolution of development-environment issues is not as straightforward as identifying and agreeing upon the underlying principles in the first instance. This section of the paper discusses the approaches that the Lao PDR Government is taking to address this question, and some of the issues which need to be addressed if these approaches are to be successful.

4.1 Government Policy
In its Economic Policy Framework for 1994-2000, the Government has stated its broad objectives as follows (from Pham, 1994b):

- consolidate macroeconomic reforms to ensure a smooth transition to a market-oriented economy;
- improve the efficiency of the public sector;
- accelerate socio-economic development and improvement of living standards; and
- *halt the degradation of the natural resource base* (author’s emphasis).

It is clear that the Government also sees that it is the country’s natural resources which will be used to drive national economic development “by exploiting ... agroforestry, hydropower and minerals extraction” (Souvannavong, 1994). With respect to those sectors which have most immediate relevance to biodiversity conservation, the policies are to:

**Energy**
- achieve national coverage of the electrification system;
- encourage private participation;
• increase export earnings;
• establish the long-term viability of the state-owned power utility; and
• maximise the benefits of hydropower.

Agriculture and Forestry
• expand and diversify a market-oriented agricultural system, with a move from a subsistence to a market-based production system;
• improve returns from sustainable management and conservation of forest resources.

Tourism
• concentrate on group packages and high income tourists;
• encourage private sector participation;
• minimise impacts on the environment and on cultural heritage; and
• promote ecotourism, incorporating the environment and traditional Lao culture into tourism activities.

Environment
• sustainable use of forest, land and water resources;
• conservation of biodiversity.

4.2 Government Action
The Government has taken a number of steps to implement its policy framework, particularly in the areas of forestry, conservation and energy development. Implementation of the tourism policies is taking more time, as the infrastructure to support the type of tourism proposed is only being developed at a slow pace and, with respect to ecotourism, the natural attractions of the country have some way to go in terms of planning and management before ecotourism can make a viable contribution to the economy. However, with respect to the other sectors, and conservation, Government action has included:

Forestry
• Implementation of the Shifting Cultivation Stabilisation for Environmental Protection Programme (commenced 1980, ongoing).
• Formulation and implementation of a National Forestry Action plan with a number of operational programme components funded by various donors (1991, ongoing), including watershed management and protected areas.

• Declaration of a number of Prime Ministerial decrees aimed at securing better forest resource management and implementation of a reforestation programme, for example: Decree 169 on the Management and Use of Forests and Forest Land in 1993; Decree 164 on the Establishment of National Reserved Forest (protected areas) in 1993; a Decision on Customary Rights and the Use of Forest Resources (1996).

• In May 1994 the Prime Minister issued instructions (No. 4/PM) aimed at curbing the overexploitation of forests and enforcing policies on logging and export of timber.

Energy
• The country’s first hydropower dam, the Nam Ngum, was commissioned in 1971 with an installed capacity of 150 MW (70% exported to Thailand). Since then, as part of the work of the Mekong Secretariat, more than 60 “promising” sites have been identified on the tributaries of the Mekong within Lao PDR (K. Phonekeo, 1994). It has been estimated that the country has a generating potential (including hydrocarbons) of over 18,000 MW, of which only one percent has been developed. In addition to the Nam Ngum Dam, another dam was built on the Xeset River in the south in 1991 (45 MW - 80% exported to Thailand), and a small dam at Selabam in the same year. A run-of-the-river capacity has been installed at Nam Song. Work is currently under way on the Houay Ho in Attapeu, and on the Theun-Hinboun in Khammouane Province. The largest capacity dam planned to be built in the short term is the 681 MW Nam Theun 2 (4,800 GwH), currently the subject of protracted financial negotiations and international attention from anti-dam lobby groups. An additional 17 dams are proposed to be built by the year 2009 (see Map 2) in order to meet the Lao Government’s commitment to supply Thailand with 3,000 MW of power annually by that date.

• As well as abundant water resources, Lao PDR contains reserves of lignite and coal. The mining rights to a large deposit at Hongsa, in the north, have been sold to Thai
### MAP 2: Hydropower Projects Under Development as IPP Projects

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Capacity (MW)</th>
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<tbody>
<tr>
<td>1</td>
<td>Theun-Hinboun</td>
<td>210</td>
</tr>
<tr>
<td>2</td>
<td>Nam Theun 2</td>
<td>681</td>
</tr>
<tr>
<td>3</td>
<td>Houay Ho</td>
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</tr>
<tr>
<td>4</td>
<td>Nam Mang 3</td>
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</tr>
<tr>
<td>5</td>
<td>Xekaman 1</td>
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</tr>
<tr>
<td>6</td>
<td>Nam Lik 1/2</td>
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<tr>
<td>7</td>
<td>Xekatam 1+2</td>
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</tr>
<tr>
<td>8</td>
<td>Nam Theun 3</td>
<td>237</td>
</tr>
<tr>
<td>9</td>
<td>Seplan/Senamnnoy</td>
<td>372</td>
</tr>
<tr>
<td>10</td>
<td>Nam Ou</td>
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</tr>
<tr>
<td>11</td>
<td>Nam Ngum 2</td>
<td>485</td>
</tr>
<tr>
<td>12</td>
<td>Nam Ngum 3</td>
<td>400</td>
</tr>
<tr>
<td>13</td>
<td>Nam Khan 2</td>
<td>126</td>
</tr>
<tr>
<td>14</td>
<td>Nam Theun 1</td>
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</tr>
<tr>
<td>15</td>
<td>Nam Nhep 1</td>
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<tr>
<td>16</td>
<td>Nam Cha (Bak) 1</td>
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<tr>
<td>17</td>
<td>Nam Cha (Bak) 2</td>
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<tr>
<td>18</td>
<td>Se Kong 4</td>
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<tr>
<td>19</td>
<td>Nam Nhep 2+3</td>
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<tr>
<td>20</td>
<td>Nam Suang 2</td>
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<tr>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>7074</strong></td>
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</table>

Source: Ministry of Industry and Handicraft, Vientiane, Lao PDR
investors. A 600 MW power station is proposed to be built there by the year 2000.

Conservation

- In terms of the Government's policy implementation, conservation of biodiversity is somewhat artificially separated from forestry activities, because it is within this sector of economic interest that nature conservation issues are also officially "housed", specifically within the Centre for Protected Areas and Watershed Management in the Department of Forestry (Ministry of Agriculture and Forestry). In a programmatic sense, with respect to forest resources as a whole, there is sense in linking (using the "sustainability" perspective) the more production-oriented programmes with those focused on conservation. Since Lao PDR still retains extensive forest cover, most conservation values tend to be associated with forest ecosystems. Of course, nature conservation has also historically been the domain of forest management agencies in many countries in Asia - as well as in many developed countries.

- Broadly speaking, the Government's conservation activities tend to fall into three interrelated areas: watershed management; sustainable use of forest resources, including non-timber forest products; and protected area management. Unfortunately, wetlands have tended to "fall between the cracks" in terms of programmatic support, even though they have been dealt with under the CPAWM watershed programme. IUCN has supported the preparation of a national wetlands inventory (Claridge, 1996), and is seeking funding to undertake a follow-up management action plan. However, donors have been - up until now - strangely reluctant to deal with this critical aspect of natural resource management in a country which places considerable reliance on its aquatic resources. This situation appears to be changing with the inclusion of Lao PDR in the current development of an Asian Development Bank Regional Technical Assistance for the Mekong countries focused on wetland issues, and possible support through a UNDP/GEF regional wetlands project.

- The Government's major achievement has been the declaration of Prime Minister's Decree 164 in 1993. This decree formally established the protected areas system (see Map 3), initially with 18 areas but now
MAP3: Protected Areas and Biogeographic Sub-Units in Lao PDR

Source: Berkmüller et al., 1995

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<td>3 Phou Loeuy</td>
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<td>B Nam Ha (West)</td>
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</tr>
<tr>
<td>C Nam Chuan</td>
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<tr>
<td>D Nam Xam</td>
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<td>E Nam Xam</td>
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<td>F Nam Xam</td>
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<td>G Nam Xam</td>
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<td>K Nam Xam</td>
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with 20. About 12.5% of the land area (almost 30,000 km²) is now legally protected. When areas currently being assessed are included the total will increase to 14.5%, the third highest percentage coverage in Asia next to Bhutan (21%) and Cambodia (16.5%). The technical assistance provided to the Government since 1988 by IUCN has been based on a thorough process of biophysical evaluation and application of objective, scientific criteria to select the best representative sites for the system (see Berkmüller et al., 1995; Berkmüller et al., 1993; Salter et al., 1991; Salter and Phanthavong, 1989).

• The Government has been successful in securing a range of international donor support for its conservation programmes (wetlands aside). Current assistance comes from the Netherlands Government (IUCN technical assistance - NTFP Project and protected areas management), the Global Environment Trust Fund (Wildlife and Protected Areas Conservation Project), the Wildlife Conservation Society, and the long-standing support of the Swedish Government (IUCN technical assistance). Other donors who have expressed an interest include the European Union and the Australian Government. Management has commenced in seven of the protected areas.

• Between 1986 and 1993 five decrees were issued related to protection of wildlife and control of hunting.

• With respect to international conventions, the Government became a Party to the World Heritage Convention in 1987. Although the old capital of Luang Prabang has been declared as a cultural site under the Convention, no natural sites have yet been nominated. However, the Government is currently considering a proposal to formally assess the value of the Nakai-Nam Theun area as a Natural World Heritage Site, in conjunction with a wider Biosphere Reserve within Khammouane and Bolikhamsai Provinces. The Government signed, but has not yet ratified, the Convention on Biological Diversity in late 1995; and is also considering joining CITES and the Ramsar Convention.

• In 1993 the Science, Technology and Environment Organisation prepared a National Environmental Action Plan, with assistance from the World Bank.
4.3 Connecting the Links

Unfortunately, the straightforward citing of Government policies and activities belies the complexity of the interrelationships between the various elements which contribute to any country's development framework, let alone a least-developed country facing enormous challenges to improve the living standards of its people. Inevitably, the list of policy achievements, and even those achievements in the first stages of policy implementation, become somewhat "shaky" when confronted with the realities of divergent and vested interests, lack of coordination between Government agencies and between donors, conflicts in policies from one sector to another, disaffected local communities, failure of provincial governments to implement national policy, the constraints imposed by limited skilled human resources, and so on. It is these realities which have to be effectively dealt with if the Lao Government is to be successful in steering a path to sustainable development.

The metaphor of "links" is deliberately used in this paper to emphasise the need to connect the various elements in the development framework. If those links are not consciously "forged" at every level of policy implementation from national to local levels then it is highly likely that the Government's stated aims to "halt the degradation of the resource base", have "sustainable use of forest, land and water resources", and conserve biodiversity will not be achieved. Additionally, in the case of Lao PDR, which is highly dependent on external assistance, the responsibility also lies with donors and international agencies to provide effective, relevant support which is in the best interests of the Lao people.

In order to facilitate the necessary environment-development linkages the following issues need to be considered:

4.3.1 Development, Resource Management, Land Use Planning and Conservation

One of the major problems (and Lao PDR is not alone in this) is the lack of a coordinated, cross-sectoral approach to development planning. Infrastructure (in particular roads and utilities), tourism, resettlement, energy, logging, mining, and other development activities are implemented in an ad hoc and uncoordinated way, even if at the policy level they appear separately to be complying with national development goals.

There seems to be a prevailing view that environmental impact assessments (EIAs) of individual development projects (where they are carried out) are sufficient to deal with the essential issues. However, this is clearly not the case. Project
environmental assessments are usually carried out as reactive responses to predetermined development decisions. In this context, a more honest and effective approach is to undertake combined environmental reviews and management planning of the proposed development. At least in this way management and mitigation measures are not postponed to some indeterminate future time frame following initial identification in an EIA.

Certainly, environmental assessment processes can be proactive and used to evaluate whether or not a project should proceed. But in an environment where human development needs are urgent and national development priorities are paramount, it is unlikely that EIAs will be used as decision-making tools - as unfortunate as that may be. As a result, the eventual outcome of the present development process over the long-term will be depletion of the resource base and increasing conflicts between different aspects of poorly planned and coordinated economic development. One of the major casualties will be biodiversity values and the status of protected areas, with increasing problems arising from the issues discussed in Chapter 3.

In order to overcome this situation there is an urgent need for coordinated and comprehensive regional and district approaches to land use and development planning, based on sound assessment of all relevant environmental and social parameters. The Government has officially devolved responsibility for national policy implementation to provincial governments and it is at this level that important economic development decisions are made and implemented. This is not to suggest that regional planning is a remedy which will resolve all issues. However, it can be an effective mechanism for establishing a development framework which involves all affected parties, presents the physical opportunities and constraints to be dealt with in the planning area, provides the basis for evaluating sustainable development options, and facilitates much-needed coordination between the national, provincial and district levels of Government, as well as the para-statal enterprises which are driving development in many parts of the country.

Of course, critical to the implementation of a more effective physical planning regime is the integration of social development strategies and concerns into the planning process. This includes such factors as: stabilising population growth; preventing new migration into ecologically sensitive areas (especially protected areas and water catchments); providing viable alternatives for subsistence and income generation.
(especially in relation to control of shifting agriculture and resource allocation strategies); providing incentives to encourage people to leave voluntarily from ecologically sensitive areas (e.g., schools, clinics, employment); ensuring that natural resources which support rural communities are sustained (especially wetlands and NTFPs); and that infrastructure development serves communities and not just the beneficiaries of short term development. Fundamental to the implementation of any planning process is the participation of affected people and communities in that process.

4.3.2 The Hydropower Debate
Although a subset of the previous discussion, the question of hydropower dam construction is currently the dominant development issue in Lao PDR. It is, in fact, an issue which has entered the international arena, being debated by major lending institutions such as the World Bank and environmental groups such as the International Rivers Network. The hydropower issue is a critical factor in the overall development and conservation framework of Lao PDR and requires discussion of the main issues as they affect biodiversity conservation and protected areas.

In Chapter 2 the urgent development needs of Lao PDR have been highlighted, balanced against the opportunities provided by the considerable natural wealth which the country contains. Water and forests form the major part of this wealth. Although there is considerable international discussion about the concept of sustainable forestry, and it is also a policy of the Government, it would appear that the best options for supporting sustainable development over the long-term derive from hydropower development. That is, the sustainability of forest ecosystems may be best achieved through their role in maintaining watershed functions.

In discussing the need for developing countries to have access to environmentally sustainable energy sources to provide the basis for their development, Goodland (1996) states that: “if this growth is denied, and developing countries are prevented from consuming more energy, the environmental impacts could well be worse - cultivation of marginal land, deforestation, accelerated topsoil and biodiversity loss, and increased population growth...Only two sources of energy have the capacity to bridge the transition to fully sustainable and renewable energy, namely natural gas and hydro...Developing nations with excellent hydro sites can vastly accelerate their economic development, reduce their poverty, and approach sustainability by generating electricity (and) exporting surpluses”. However, in view of the internationally poor
reputation of hydropower development, Goodland challenges the industry to become environmentally sustainable if it is to survive. If it does not, he postulates that the "world will be worse off in the urgently needed transition to sustainable and renewable energy."

All of these points apply to Lao PDR, which is in the position of being able to build its national development using hydropower as a source of sustainable and renewable energy, and has a nearby large market for sale of its surplus requirements. However, there is reason for concern that there is still a wide gap between what is possible in terms of environmental sustainability and what is actually happening in reality. The issues of concern include:

- At the macro-scale there appears to be very little rational assessment of the physical suitability of dam sites in broad planning terms, other than the location of streams and rivers. This is indicative of the wider concern relating to the lack of an effective environmental and land-use planning process at national, regional and local levels. There are, undoubtedly, a number of viable hydropower dam sites throughout the country, but if environmental and therefore economic sustainability is to be assured then it is essential that a more considered and carefully evaluated approach is taken to site selection.

- It appears that Memorandums of Understanding (MoUs) are signed with prospective dam developers without conducting even superficial assessments of the environmental implications of proposals. While the urgent development needs of the country are accepted, and the length of time needed to physically construct the dams is acknowledged, a case of "hasten slowly" may be wiser. Dams represent high cost capital investments and their long-term viability needs to be maximised. A thorough site and systems assessment, before major agreements are undertaken, should be seen as an essential prerequisite.

- Once MoUs are signed, there is a trend for permitting logging of the inundation areas of the proposed dams – even before the economic feasibility studies of the projects have been completed. While clearing the inundation area of timber is economically and ecologically sound, this should only be done when the project has advanced beyond the assessment of its economic feasibility, and finance for construction has
been confirmed. Unnecessary loss of important ecosystems and biodiversity values will occur as a result of proposed dam construction when a project does not proceed for economic reasons but the area has been logged subsequent to the MoU stage.

• The existing process of environmental assessment is very "hit or miss". Some developments go through a thorough process while other proposals are subject to shallow assessments, or none at all. Whether or not EIAs are carried out, or at least effectively carried out, seems largely up to the goodwill of the developer rather than as a consequence of Government policy. For example, extensive work has been undertaken for the Nam Theun 2 dam on the Nakai Plateau but very little for the Houay Ho on the Bolovens Plateau, both located in ecologically sensitive areas. Also, EIAs tend not to be available for review by agencies whose interests are directly affected by the proposed development, such as CPAWM, or who are in a position to provide technical assessment advice on environmental and social issues.

• Relocation of local communities are likely to have long-term detrimental impacts on adjacent protected areas if viable mechanisms for their economic support are not addressed by Government and dam developers. Clearing for agriculture and depletion of timber, NTFPs and wildlife will result if people are relocated near protected areas and not given adequate means of livelihood in the new location. This is especially important in the early years of resettlement.

• In the absence of a land/resource use planning framework, and effective implementation of the protected area system in terms of defining management objectives for each area within local and national contexts, there is a possibility that hydropower development may be the start of a fragmentation of the declared areas, creating a 'shrinking island' scenario for the country’s prime biodiversity assets. Hydropower dams and the watersheds that support them need to be seen as completely interdependent and high value assets. Since these watersheds form a critical part of the country’s ecological wealth they must be valued and managed accordingly.

The suggestion has been made that where dams are proposed in currently designated protected areas, the
dam reservoir should be excised from the protected area by redrawning the boundaries. In some political respects this may seem to be an appropriate course of action, in view of the criticism the Government is receiving about building dams in designated protected areas. However, such excision would be unwise. Many of the values of the ecological functions of the protected areas are also values for the successful operation of dams: slope stability, retention of topsoil, control of rate of surface and groundwater flow, and maintenance of water quality. To artificially separate dam reservoirs from the best natural resource protection available in the country will result in the reduction of their long-term economic viability. In fact, where dams are located adjacent to protected areas their catchment should be considered for addition to the existing protected area. However, it must be emphasised that this is not advocating a deliberate policy of locating dams in national biodiversity conservation areas. But when the most appropriate location, based on a thorough analysis, is determined to be in or adjacent to these protected areas then this approach should be used. On the other hand, when dams are to be located outside the current “national” (in terms of relative conservation value) protected areas system then their catchments should be designated as provincial reserves and managed on the same ecological basis as that needed for dams in or adjacent to national protected areas, since the same principles relating to ecological functions and dam viability will apply.

- It is not clear that the cost of dam construction and operation includes the full environmental and social costs relating to the development. These need to be included in all construction costs and built into the revenue base when the dams are operational. That is, in the first instance, developers should contribute to the management of the watersheds supporting the dam and, secondly, the cost per unit of electricity generated should take into account the full environmental management and social costs associated with the development. In view of the fact that the major proportion of hydropower generation is to be sold for export, then the full costs should be included in exported electricity. Otherwise, the Lao Government will be subsidising its neighbours’ use of its own natural resources.
Lao PDR has enormous potential to build upon the strengths of its hydrological assets, using them to achieve environmental sustainability - provided that it addresses these critical issues.

4.3.3 International Conventions and Conservation Programmes

As noted in 4.2, Lao PDR is party to the World Heritage Convention and has signed the Convention on Biological Diversity (CBD), but not yet become party to the Ramsar Convention on Wetlands of International Importance and CITES. While all international conventions and treaties place various obligations on the signatories, it would be in the interest of the Government to become party to all of these conventions. As a land-locked country, Lao PDR (as noted in 3.2.6) is often affected by the actions of its numerous neighbours - both formally and informally, positively and negatively. Implementing the formal obligations imposed on all parties by international conventions can be an important mechanism for ensuring that there is a common approach among countries to environmental and conservation issues of international and national concern.

For example, this is one of the reasons why it is important that Lao PDR becomes party to CITES. International trade in wildlife from (and through) Lao PDR to other countries, particularly trade in endangered species, will probably increase over time as the resources of nearby countries become depleted - and the value of wildlife increases. The application of international as well as national controls will become even more important. In the case of the World Heritage Convention, there could be major benefits in linking the establishment of a Natural World Heritage Site, for example, in the Nakai-Nam Theun region to one established for the Vu Quang reserve in Viet Nam, thereby fostering transfrontier cooperation on biodiversity conservation and protected areas management. Similarly, the establishment of Biosphere Reserves under UNESCO’s Man and the Biosphere Programme provides the opportunity for international collaboration and assistance on the integration of human development needs and environmental conservation and management within specific regions of the country. With respect to assistance, becoming party to these various conventions will enable Lao PDR to access the funding and technical support mechanisms which are provided to assist parties, especially in developing countries.

Another potential benefit in the effective implementation of international conventions at the national level is that it usually requires cross-sectoral cooperation and coordination. For
example, in Lao PDR implementation of the CBD is the responsibility of the Science, Technology and Environment Organisation (STENO), which is also the agency responsible, among other things, for national environmental policy. However, as in many governments throughout the world, there are often difficulties in bringing together the objectives and activities of policy oriented agencies and those responsible for sectoral ‘on ground’ implementation - even though both are essential for the successful execution of Government programmes. The wide-ranging elements of the CBD affect almost every sector of Government. Therefore, if the Government is to comply with the convention then cross-sectoral cooperation will be essential.

4.3.4 National Protected Areas System - Where to Now?
The conservation values of Lao PDR have been, and continue to be, identified and the Government has taken action at the policy level to conserve and manage these values. However, much remains to be done if the current achievements are to be sustained and further opportunities developed. With respect to biodiversity conservation, the decision by the Government to establish a large protected area system means that, at least in a legal sense, there now exists an effective core for national biodiversity conservation. However, what is now required is that the protected area system evolve further so that its role in the national development framework is clarified and its importance emphasised. In order to do this the following key issues have to be addressed:

• **Integrating Protected Areas into the Planning Process**
The lack of an effective regional and local land and resource use planning process has been highlighted previously. So, in this sense, it is difficult to recommend the integration of protected areas into a process which does not exist. However, given the broad values of both protected area resources and the ecological processes which occur within them for national, regional and local development (water, genetic resources, NTFPs, timber, tourism, etc.), there is some basis for optimism that protected areas can be the catalyst for generating the necessary planning process.

From the perspective of the protected areas, the implementation of an effective integrated planning process at all levels of development decision-making is essential to the long-term viability of the system, that is, to the successful implementation of Government policy. Figure 1 is a diagrammatic representation of the relationship between protected areas and the current situation where there is no effective planning
FIGURE 1: PROTECTED AREAS AND DEVELOPMENT PLANNING

(A) WITHOUT WIDER PLANNING FRAMEWORK

PROBLEMS

Local:
- Inadequate boundary and buffer zone demarcation
- Failure to involve local people
- External commercial incentives for local people (hunting, agriculture)
- In-migration of communities

Provincial/Para-Statal:
- Poorly planned and built infrastructure
- Poorly planned and implemented forest exploitation
- Non-compliance with national policy

National:
- Lack of cross-sectoral coordination
- No environmental planning
- No provision of funding and resources

CONSEQUENCES

- Loss/modification of habitats
- Unsustainable use of NTFPs
- Depletion of wildlife
- Loss of wider benefits (e.g., catchment values for water supply, energy, slope stability)
- Road incursions: habitat loss, opportunities for in-migration
- Incursions into PA, threats from fires, erosion, wildlife
- Failure to provide adequate PA management
- Conflicts with different resource users
- Badly sited development - severe environmental impacts
- Lack of adequate staff & equipment

(B) WITH WIDER PLANNING FRAMEWORK

OPPORTUNITIES

Local:
- Include participation of communities in district & provincial planning
- Clarification of PA boundaries
- Planned development opportunities
- Settlement strategies

Provincial/Para-Statal:
- Preparation of resource & land use plans
- Forest management plans implemented
- National policies followed

National:
- Cross-sectoral participation in development planning
- Procedures for environmental planning established
- Resources provided for PA management
- International participation & recognition (World Heritage, Biosphere Reserves, etc.)

BENEFITS

- Observed agreements on PA management
- Incursions controlled & agreements on resource use
- Prevention of in-migration
- Location and role of PAs respected - incursions reduced or prevented
- PA management supported
- Implementation of policies for biodiversity conservation
- Rational processes for site selection for development
- Economic & environmental values of PAs recognised
- Environmental impacts minimised
- International conventions implemented
framework (A), and how the situation should change when such a system is operational (B). The examples which are given are not intended to be definitive, but to indicate the types of problems and consequences (A) currently facing protected areas, as opposed to the opportunities and benefits (B) which should result from an interactive planning process.

**Implications of Cultural Diversity**

The ethnic diversity of Lao PDR, and the presence of resident, indigenous peoples in all of the protected areas has a number of implications for the linkages between economic development, biodiversity conservation and protected area management:

- a challenge for the Government is to blend the diverse lifestyles, cultures and livelihoods of the ethnic groups into the country’s mainstream development goals, incorporating valuable aspects of indigenous knowledge and management but also modifying aspects which are clearly incompatible with long-term national interests, particularly with respect to conservation and management of natural resources (e.g., non-sustainable hunting, over-harvesting of wild products, and short rotation shifting cultivation); these problems are likely to be increasing as traditional customs and beliefs become altered by the demands of the new consumer-driven economy; and such unsustainable activities are equally incompatible with the long-term survival of the lifestyle of the ethnic groups themselves;

- the indigenous people are custodians of valuable genetic resources (domesticated crops and livestock, and wild resources), in an increasingly commercial world where key elements of genetic variation (such as resistance to disease and pests) are being simplified or lost; the retention of traditional domestic varieties and their wild relatives is essentially to provide options for continued agricultural improvement (MacKinnon, 1995);

- the various ethnic groups have considerable, and differing, knowledge about the use of the wild resources in their environments (Anderson, 1993), many of which could have commercial potential, as well as survival value for the people themselves.

As well as these specific points, there is also a broader issue concerning the implications of the establishment of protected
Ethnic communities, such as this Khmu village in Oudomsay, are the custodians of valuable indigenous environmental knowledge - and key partners in successful protected area management.

There is an enormous gap in the state of knowledge regarding the relationship between culture and the environment in and around protected areas. Various technical documents on the development of protected areas in Lao PDR refer to "enclave villages" within the recently created reserves. Many, if not most, of these villages were established before the protected areas. Unfortunately, use of the word "enclave" implies separation or isolation from the surrounding area whereas, in fact, the communities in these villages usually have an intimate relationship with, and knowledge of, their surrounding environments. Those involved in the management of such areas in the name of the relatively new contemporary concept of "biodiversity conservation", and coming from predominantly conservation science backgrounds, need to ensure that stronger links are formed with the ethnosciences to discover the depth of indigenous knowledge which exists and could be used for more effective protected area management.

Communities and Protected Areas

In common with other developing countries, the successful integration of the needs and aspirations of local communities and the objectives of protected area management are critical to the long-term viability not only of the areas themselves but also of the communities. Accordingly, the first two principles of McNeely's (1995) "Ten Principles for Successful Partnerships" apply: "1. provide benefits to local people" and "2. meet local needs". However, this is often more easily recognised than implemented, especially when taking into account the work which needs to be done in understanding the depth of indigenous knowledge and the range of cultural perceptions of the environment. The various protected area management projects which have now commenced in Lao PDR are attempting to deal with these issues, but it will be some time before the success, or otherwise, of various approaches.
can be assessed. In a recent review of 21 integrated conservation-development projects (ICDPs) around the world, Wells et al. (1992) discovered that “progress has been very modest”. Nevertheless, they concluded that “innovative, well-designed ICDPs at carefully selected sites that constructively address local people-park relationships are essential to the conservation of biodiversity and thus to sustainable development”. In terms of biodiversity conservation, Lao PDR has at least 25 carefully selected sites (18 declared protected areas\(^8\) and other priority areas subject to declaration). All of them have local communities and therefore the ICD approach is likely to be valid in every case. The challenge will be to make all of them successful. An important part of the solution will be the development of the wider planning framework, so that the NBCAs and their dependent communities are not dealt with in isolation from surrounding activities and influences.

Closely related to the overall issue of integration of development and conservation is the question of economic and environmental sustainability of harvesting of natural resources from protected areas. The resources contained in protected areas, in particular NTFPs, are likely to become more valuable over time as the same resources become scarcer in surrounding areas due to clearing and over-exploitation. The opportunity, and indeed the imperative, exists to work with buffer zone villages to develop community agreements on, and management procedures for, sustainable utilisation of these resources. The implementation of effective management regimes will provide the basis for improving village and individual incomes from the sale of products\(^9\) while, at the same time, providing incentives for the communities to respect and enforce regulations aimed at protecting the area’s conservation values, including core areas. Conversely, the failure to reach such agreements on sustainable use of protected area resources will result in their over-exploitation and loss, especially as their values increase over time.

• **Partnerships in Conservation**

While local communities are the “front line” partners in protected area management, the opportunity also exists in Lao PDR (as it does in most countries) to develop effective partnerships with other stakeholders. This includes parastatal bodies such as the Lao Women’s Union (LWU) and youth organisations. In the former case, the LWU has already been

\(^8\) Two areas which were added to the system by the Government were not listed as high priority/value in the original assessment of suitability for NBCA status

\(^9\) NTFPs (from all areas) represented 5.5% of the total agricultural exports of Champassak Province in 1995, and were valued at US$1.7 million (Foppes *et al.*, 1996)
participating in IUCN supported protected area projects, but there is considerable scope for the LWU's inclusion in a wider range of activities related to the much-needed social dimensions of protected area management.

However, in terms of physical management and protection activities, especially in protected areas along international borders, there is potential for effective involvement of the Lao defense forces. Already Phou Khao Khoay protected area is managed by the army. D'Souza (1995) cites 14 countries where the military cooperates in protected area management, highlighting the comprehensive support provided by the military in India to conservation and environmental management programmes. He notes that military forces are often deployed in ecologically rich and often threatened areas, comparable to the Annamite Range along the Lao-Viet Nam border, or the forests bordering Cambodia and Thailand. In India the military has initiated reforestation and afforestation programmes, and in other countries the military is involved in antipoaching activities. However, an important difference between Lao PDR and other countries at the moment is the fact that there is no comprehensive development of their potential role in conservation and certainly no formal or informal training (apart from Phou Khao Khoay through the Lao-Swedish Forestry Cooperation Programme) of military personnel in this field. Recently agreement was reached with the military based in Pakse to curb their use of resources in Dong Hua Sao protected area, in particular timber felling and hunting.

Of major significance in Lao PDR are the military development companies which have been established in various regions of the country with a mandate to progress rural development in areas under their control. The activities of these companies range from logging and timber milling to tourism, such as Bolisat Phattana Khet Phoudol (BPKP), or Mountainous Regions Development Company, based in Bolikhamsai and Khammouane Provinces. Again, the potential exists to develop partnership arrangements between national and provincial conservation agencies and these military development companies. Possible activities could include: collection of seeds of high value timber species for ex situ propagation and production, such as Pinus merkussii (old growth trees are currently being harvested from the Nakai Plateau); tourism and ecotourism ventures in partnership with local people; assistance to under-staffed provincial authorities in patrolling and enforcement; and providing manpower and equipment for reforestation of degraded areas. However, before this can
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happen existing stakeholders in conservation need to make a conscious effort to involve the military and its associated companies in a partnership dialogue and to offer training and other incentives to facilitate their active participation.

Private enterprise can also contribute directly or indirectly to the implementation of the Government’s conservation agenda. For example, in areas where hydropower dams are being, or planned to be, constructed the Government should insist that the developers (as part of the build-own-operate-transfer approach) contribute finance and resources to the ongoing management of the water catchments supplying the dam. Where dams are located adjacent to or within protected areas this contribution should include support for the full range of management requirements on an ongoing basis: surveys; reserve infrastructure; equipment; contributions for staff salaries and training; and so on. For example, current planning for the Nam Theun 2 dam includes long term support for the Nakai-Nam Theun protected area.

Over the long term it is possible that local NGOs will be able to be established which can also work as partners in conservation activities, particularly at the community level.

- **Refinement of the Protected Areas System**

The generic term of National Biodiversity Conservation Areas (NBCAs) is currently used to describe all of the protected areas which have been nationally evaluated and planned through the Centre for Protected Areas and Watershed Management, with IUCN technical assistance. Although this term is useful to describe the overall purpose and status of the system it does not define the individual areas in the system in terms of their primary management objectives. Indeed, the term NBCA is not used in Decree 164 which established the system in October 1993, but rather the term “nationally reserved forest”. Therefore, there is a need to further refine the system using the internationally accepted IUCN protected area management categories (see Table 2) as a starting point to develop a management system which is suited to the particular needs and characteristics of Lao PDR. The value in doing this will be to clarify the relationships between the status and role of the NBCAs and other elements of the national development framework.

However, it also needs to be pointed out that, from a protected area management perspective, application of the IUCN system to the Lao situation will need to take into account the complexity of internal zonation within individual NBCAs (core protection areas, sustainable use areas, village buffer zones).
Thus different management categories may need to be applied within single areas, as well as the overall system. The IUCN Guidelines for Protected Area Management Categories (IUCN, 1994) also provide for these circumstances:

"Zoning within Protected Areas
Though the primary purposes of management will determine the category to which an area is assigned, management plans will often contain management zones for a variety of purposes which take account of local conditions. However, in order to establish the appropriate category, at least three-quarters... of the area must be managed for the primary purpose. (p. 12)

Multiple Classifications
Protected areas of different categories are often contiguous... Thus many Category V areas contain within them Category I and IV areas; some will adjoin Category II areas. Again, some Category II areas contain Category Ia and Ib areas. This is entirely consistent with the application of the system, providing such areas are identified separately for accounting and reporting purposes. (p. 13)"

Table 2: IUCN Protected Area Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Main Management Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Strict Nature Reserve (Ia)/Wilderness Area (Ib)</td>
<td>Science or wilderness protection</td>
</tr>
<tr>
<td>II</td>
<td>National Park</td>
<td>Ecosystem protection and recreation</td>
</tr>
<tr>
<td>III</td>
<td>Natural Monument</td>
<td>Conservation of specific natural features</td>
</tr>
<tr>
<td>IV</td>
<td>Habitat/Species Management Area</td>
<td>Conservation through management intervention</td>
</tr>
<tr>
<td>V</td>
<td>Protected Landscape/Seascape</td>
<td>Landscape/seascape conservation and recreation</td>
</tr>
<tr>
<td>VI</td>
<td>Managed Resource Protected Area</td>
<td>Sustainable use of natural ecosystems</td>
</tr>
</tbody>
</table>

(Source: IUCN, 1994)
The following table illustrates the primary and secondary management objectives which often characterise individual protected areas:

Table 3: Matrix of Management Objectives and IUCN Protected Area Management Categories

<table>
<thead>
<tr>
<th>Management Objective</th>
<th>Ia</th>
<th>Ib</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific research</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Wilderness protection</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Preservation of species and genetic diversity</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Maintenance of environmental services</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Protection of specific natural/cultural features</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Tourism and recreation</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Education</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sustainable use of resources from natural ecosystems</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Maintenance of cultural/traditional attributes</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Key:
1 Primary objective
2 Secondary objective
3 Potentially applicable objective
- Not applicable

(Source: IUCN, 1994)

On a related issue, CPAWM has proposed the inclusion of provincial and district protected areas into the national system. This is appropriate, provided that the structure of the national system has been clearly defined and adopted. At the moment, 18 of the NBCAs have been identified, evaluated and proposed on the basis of their national, regional and international biodiversity conservation significance. To simply add lower conservation value provincial and district areas and categorise them the same way will devalue the areas which have the highest value. For example, the biological conservation values of a nature reserve or national park (in terms of the IUCN management categories) are not the same as a provincial timber reserve or district recreation park - even though the latter fulfill a very valuable role in their own right. This means that the national protected area system needs to be expanded and suitably structured so that relative values are clarified. Figure 2 shows the conceptual structure of such a system, and indicates the type of interrelationships and values which could apply.

A more coherent protected areas system also needs to deal with the issue of corridors between NBCAs - management objectives, status and inclusion in the wider development planning framework.
FIGURE 2: CONCEPTUAL STRUCTURE OF NATIONAL PROTECTED AREAS SYSTEM

PROVINCIAL AND DISTRICT RESERVES
- National and local values: national heritage, watershed protection, slope stability and topsoil retention, timber reserves, non-timber forest products, genetic diversity, recreation and tourism
- International values: genetic diversity, carbon offset, Biosphere Reserves

NATIONAL BIODIVERSITY CONSERVATION AREAS
- International conservation values: global and regional biodiversity significance, World Heritage status, Ramsar sites, transboundary reserves, tourism, Climate Change Convention - carbon offset, Biosphere Reserves, etc.
- Compliance with Convention on Biological Diversity - in situ conservation
- National values: national heritage, watershed protection, slope stability and topsoil retention, non-timber forest products, genetic diversity

PROVINCIAL RESERVES

DISTRICT RESERVES
5. VALUE OF INTERNATIONAL INVESTMENT IN BIODIVERSITY CONSERVATION IN LAO PDR

5.1 What is Meant by “Investment” in the Context of Lao PDR

Lao PDR is the recipient of millions of dollars in development aid every year, and it is easy to lapse into donor terminology when discussing funding and technical support for environment and conservation activities. Indeed, the word “donor” has been used in the preceding sections of this paper, since that is the term which is most familiar in this context to readers. However, rather than using the word “donor”, it is far more relevant and meaningful to refer to supporting bilateral, multilateral agencies and international organisations as “investors”. Investors on behalf of their constituencies in the well-being of the planet as a whole, and for the people and environment of Lao PDR in particular.

Over the last decade the relevance of the term “global village” has become more and more apparent in all matters relating to society, economy, technology and environment. Environmental management and conservation issues in particular can no longer be seen as only national issues - not that they ever were in a real sense. As each year passes, the impacts of transboundary pollution increase (acid rain, waste dumping in rivers and oceans etc.), the effects of climate change become more apparent (increasing storm damage, extremes in local weather patterns, crop failures, etc.), and more of the earth’s biological heritage is lost through forest clearing and other habitat modification. This heritage offers a lifeline for human survival through the resources which it provides in the form of genetic diversity, chemicals for medicine and other technology, biological control of pests, and structural support for soil formation, maintenance of water quality, erosion control, and so on.

However, even though external funding and technical assistance in environmental management and conservation should be seen as a vital, collective investment by the international community, there are also important considerations to be borne in mind:

- Providing Support in the Lao Context

Support and guidance for conservation in Lao PDR needs to be delivered in the context of the Government’s own policy framework in relation to its development objectives and its
human resource capacities. As noted in this paper, the Government has made significant progress in the formulation and implementation of conservation policies. In setting aside 12.5% of the country’s land area as protected areas Lao PDR has made a much greater commitment than any of its neighbours, with perhaps the exception of Cambodia. However, this may have raised unrealistic expectations in some quarters of the international community in terms of the speed at which decrees and policies can be implemented on the ground. It is easy to forget that protected area establishment and system development in most developed countries took at least several decades to achieve. The protected area system in Lao PDR was only established by decree in 1993 and the Government at all levels (central, provincial and district) faces an acute shortage of trained professionals, technicians and field staff to undertake “on-ground” implementation in each reserve.

It should also be remembered that all the developed countries have established protected areas on their own terms. For example, the classic wilderness reserves of Yellowstone and Yosemite in the United States were established in the 19th century after much of the country had already been substantially modified by development, and only then because of the pioneering work of visionary individuals. The sheer size of the country’s land area, as well as the fact that the population of the indigenous people who once lived in these areas were severely depleted and relocated, enabled the US Government to establish these and subsequent reserves as strictly controlled access areas. Similar situations prevailed in other large countries in the New World. Only recently has the system concept taken hold and consideration been given to including resident people in protected areas and their management. In the European countries, with smaller land areas, high population densities and a history of intensive use going back a thousand years or more, there are very few strict wilderness protected areas and a large number of “protected landscapes” and “managed resource” protected areas with modified ecosystems and resident people. In all countries, biodiversity conservation as an all encompassing concept (that is, not only within protected areas system) is a recent phenomenon.

In Lao PDR there is a great opportunity to conserve an important component of the world’s, and certainly Asia’s, biodiversity. However, the investment contribution being made by the international community in biodiversity conservation needs to be provided on the clear understanding that the conceptual bases and methodologies of such conservation will
be suited to the particular constraints and opportunities of the Lao situation. That is, the constraints imposed by severe underdevelopment and the need to address these as a matter of urgency at national, provincial and local levels; and the opportunities provided by high biodiversity values, unique landscapes and the need to work with local people in the development of effective management regimes. This may require acceptance by investors of linkages and trade-offs between development and conservation which may no longer be acceptable in their home countries (such as the use of protected areas as catchments for hydropower dams), but are nonetheless relevant - if not imperative - in the Lao context. This is not to say that investors should accept reduced standards in environmental and social assessment of development or accept unsustainable use of resources - all of which are also in the interests of the Lao people themselves.

- **Need for Long Term Commitments**
  
  Investors in biodiversity conservation in Lao PDR need to make long term commitments. While some area-specific field projects lend themselves to short term (three to five year) implementation, generally speaking a much longer time frame will be required. It is well known that the trained human resource capacity in Lao PDR is low, and this is especially true of the environmental management and nature conservation fields. Bearing in mind that most of the industrial countries have taken several decades to develop their own capacities in these fields it is unrealistic to expect that the Lao Government can achieve similar levels of institutional capacity in a short time frame. Therefore, international investors should plan on a minimum 10 year commitment to ongoing support. The long term Sida-funded Lao-Swedish Forestry Cooperation Programme (16 years) is an outstanding example of this kind of commitment which is needed.

  Another important aspect is that simply pouring in large sums of money over short time frames will not resolve capacity and management issues. While large funding does indeed bring many benefits (infrastructure, equipment, training) it can, at the same time, be self-defeating if the local capacity is so low that it cannot adequately deal with the management and application requirements of projects with large-scale funding. There is a danger that this may already be happening in Lao PDR, although the focus on support to provincial governments may ease the situation - at least in the short term. In the case of the protected area system, the dilemma lies in the fact that having established the system "on paper" there is now a sense of urgency to bring the areas under effective management as soon as possible - both on the part of the international
community and Government decision-makers who wish to see their policies implemented. Again, such implementation needs to be carefully planned to suit the Lao context, with realistic funding levels and commitments on both sides: the investors and the recipients.

A closely related issue is the question of recurrent costs. Even relatively low intensity "broad acre" management of natural areas has an annual cost which must be budgeted by the various levels of Government. Staff (salaries and training), vehicles, office equipment and supplies, maintenance, and community programmes are all essential annual costs in the management of protected areas. While the provision of funds through short term projects brings essential benefits, these can be short-lived or even self-defeating if the Government is unable to provide for ongoing recurrent costs once the project is completed. For example, vehicles purchased and maintained during the life of projects will have little overall benefit for ongoing management if there are no funds for fuel or repairs once the project is completed. In view of the need to provide for recurrent costs an alternative, long term mechanism needs to be found to support Government initiatives. In this respect, it is hoped that current investigations by the Sida-supported IUCN technical assistance to the Lao-Swedish Forestry Cooperation Programme (LSFP) and the World Bank/GETF Wildlife and Protected Areas Conservation Programme will result in the establishment of a Conservation Trust Fund to provide for such costs. An additional option, which was discussed in 4.3.4, is to make major developers and users of natural resources contribute to the long-term management of the environments which they directly affect - or alternately to contribute directly to a national Conservation Trust Fund along with other investors.

\section*{Coordination of Investor Activities}

With the increasing interest by the international community in biodiversity conservation in Lao PDR there is an urgent need for coordination of the activities of the various players. At present the following support is being provided to the Government:

- Sida-funded IUCN technical assistance to the Centre for Protected Areas and Watershed Management, through the LSFP (one Advisor and funding support for the national system and four protected areas).

- Netherlands Government-funded IUCN Biodiversity Conservation Project in Champassak and Saravane Provinces;
• Netherlands Government-funded IUCN Sustainable Use of Non-timber Forest Products Project in Oudomsay, Saravane and Champassak Provinces (principally aimed at forest conservation outside of protected areas, but includes Xe Bang Nouan protected area);

• World Bank/GETF Wildlife and Protected Areas Conservation Programme in Champassak, Sekong, Savannakhet and Khammouane Provinces;

• wildlife surveys, training and protected area management (Nam Ha) by the Wildlife Conservation Society (formerly the New York Zoological Society).

In addition to current support the following activities are planned:

• Lao Government/World Bank-supported IUCN Integrated Community Development and Biodiversity Conservation Project for the Nakai-Nam Theun protected area in Khammouane and Bolikhamsai Provinces;

• Integrated Community Development and Biodiversity Conservation Project for Nam Et and Phou Loei protected areas in Houaphan Province; and

• European Commission-funded seven year community development, buffer zone, conservation, land use planning, and institutional strengthening activities in and around Phou Dene Dinh protected area in Phongsaly Province.

5.2 Conclusion: The Role For IUCN in Lao PDR

Founded in 1948, IUCN-The World Conservation Union brings together States, government agencies and a wide range of non-government organisations in a unique global partnership which covers 133 countries. As well as its membership, the Union has six Commissions: Education and Communication; Environmental Law; Environmental Strategy and Planning; National Parks and Protected Areas; Species Survival; and Ecosystem Management. The Commissions constitute a global network of more than 8000 scientists and professionals.

10 As of January 1996: 72 States; 100 government agencies; 603 national NGOs; 56 international NGOs; 34 non-voting affiliates; total 865 members
IUCN's mission is:

"to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable"

Lao PDR (as Laos) became a State member of IUCN in 1969 and IUCN has been working in partnership with the Lao Government and the Government of Sweden through the LSFP since 1988. The scope of IUCN is such that all of the current investors in biodiversity conservation in Lao PDR (Sweden, Netherlands, Wildlife Conservation Society, World Bank, European Union) are either IUCN members or formal partners through memorandums of understanding. In addition, IUCN has a global framework agreement with UNDP and UNEP, and undertakes the evaluation of nominated Natural World Heritage Sites for UNESCO. The relationship between IUCN and these investors in, and supporters of, biodiversity conservation places it in a distinctive position to assist the Lao Government in implementing its policies and programmes.

Before examining the role which IUCN can play in helping the people of Lao PDR forge the links between biodiversity conservation and their development imperatives it is worth reviewing key statements on environment and development in the Strategy for IUCN, which was adopted by members at the 19th General Assembly (Resolution 19.1):

- "...the conservation goal cannot be approached directly; its attainment depends on the achievement of ways of living (i.e., development) that are consistent with it."

- an integrated approach to conservation and development "recognises the human dimension, both in creating the principal threats to the global environment, and through humanity’s dependence upon nature and natural resources. No organisation can succeed in achieving nature conservation unless it recognises that conservation is itself a foundation for, but also must be advanced within, development."

- "a very complex, interlocking set of economic, ecological and social relationships is
In order to implement its global mission and mandates within the context of Lao PDR, IUCN is continuing to build on its programme with the assistance of its international partners and the Lao Government. The focus of the IUCN Lao PDR programme continues to be on biodiversity conservation - but in its widest sense, not only confined to protected areas. Now that the Government is a signatory to the Convention on Biological Diversity with its wide-ranging applications and relevance to the environment-development issues facing Lao PDR, it has been decided to structure the IUCN programme around the convention (see Figure 3). The programme framework provides for ongoing interaction with IUCN partners, Commissions and members. It is a fundamental premise of the IUCN programme that only by working together in a coordinated and cooperative manner will investors be able to provide the necessary and relevant support to the Government.

Taking these perspectives into account, the specific assistance which IUCN can provide to Lao PDR includes:

- providing guidance on the wide range of technical issues which fall within IUCN’s capabilities and, as appropriate, implementing programmes and projects in partnership with the Government and other players;

- providing objective technical advice and assistance to Government and partners on resolution of key environment-development issues facing Lao PDR such as hydropower dam construction;

- assist the Government in coordinating the numerous conservation-oriented projects and programmes which are implemented and/or funded by IUCN members and partners11 in order to maintain a coherent and effective national approach to biodiversity conservation;

- providing mechanisms for the Lao Government to interact with and benefit from the international knowledge base on conservation and sustainable development through IUCN’s global and regional networks (training, specialist meetings, demonstration tours, etc.).

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11 For example, under the IUCN technical assistance to the LSFP Phase IV the IUCN Advisor is responsible for assisting CPAWM convene a coordinating and interactive Technical Advisory Group for conservation projects
Above all, IUCN’s basis for existence is to function as a Union in achieving its mission and programmatic objectives. As such, the Union works in Lao PDR to provide guidance and assistance on issues that are fundamental to forging the links between conservation and the country’s development imperatives, and which are consistent with its mission and objectives. In terms of policy, the Government’s perspective and commitments on conservation and development are consistent with IUCN’s mission and objectives. The challenge for all concerned, investors and Government alike, is to ensure that these policies are effectively and sustainably converted into reality. In the case of the investors this means providing long-term support on the basis of its appropriateness for the Lao context, as discussed above. On its part, the Government must ensure that its policy commitments continue to be transformed into action through the development of the capacities and capabilities of the Lao people to effectively conserve their valuable but finite resources.

The analogy of the “crossroads” is most appropriate for the position in which Lao PDR is now placed as it enters the regional and international economic arena. Resolution of the human development imperatives confronting the country can be undertaken by two pathways, one based on rapid exploitation of the natural resource base and the other based on sustainable development principles. Deviation from the path of conservative natural resource management and sustainable development as defined by current Government policy, and supported by international investors, towards one characterised by exploitation and depletion of resources will result in future disbenefits to the Lao people. In contrast, the current direction will ensure that future generations of Lao will have a basis for their welfare, that unique Lao cultural and natural heritage is conserved, and that the international community has made an important contribution to global biodiversity conservation.
FIGURE 3: IUCN PROGRAMME FRAMEWORK IN LAO PDR

Programme Framework: Convention on Biological Diversity

IUCN (+ external partners)

Theme: Skills/Expertise

Education and Awareness:
- Community awareness
- Environmental education
- Specialist training

Sustainable Resource Use:
- Natural resource management
- Environmental assessment
- Environmental planning
- Community development
- Resource economics
- Environmental law

Identification and Monitoring:
- Biological survey
- GIS implementation
- Resource genetics

Partnership

Existing* and Potential Programme Activities

- Public awareness programmes
- Formal environmental education programmes
- Environmental training programmes for educational specialists
- Sustainable use strategies
- PA management planning*
- Environmental reviews*
- Regional/local land use planning
- Participatory resource use and management*
- Determine economic values of PAs and other biodiversity assets
- Development and implementation of environmental legislation
- Protection of genetic resources
- Restoring and implementing conventions
- Continue wildlife and vegetation surveys*
- Monitor changes in biological resources, especially threatened species & ecosystems
- Develop and implement effective capacity to measure and record changes in biodiversity
- Identify genomes and genes of social, scientific or economic importance

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Government of Lao PDR

Needs/Objectives

- Increased public awareness - various media
- Environmental curricula in schools and tertiary centres
- National capacity building for environmental training
- National development objectives
- Implementation of protected area system
- Environmental impact: avoidance and mitigation
- Land/resource use planning in provinces and districts
- Involvement of local communities in development planning
- Income generation, alternatives to shifting cultivation
- Identify values of biodiversity to national, provincial & local economies
- Establish a legal base for implementing policies
- Legal (international) control of national biodiversity assets
- Participating in, and implementing, international conservation agreements (CITES, Ramsar, World Heritage, Biodiversity, etc.)
- Continue to improve the knowledge base of biodiversity assets
- Monitor changes in national natural resource assets
- Develop national and provincial infrastructure & human resource capacity to assess, record & monitor natural resource assets
- Develop knowledge base of genetic resources and their existing and potential uses

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6. REFERENCES


IUCN Commission on National Parks and Protected Areas and World Conservation Monitoring Centre (1994). Guidelines for Protected Area Management Categories.


