



**UNITED NATIONS DEVELOPMENT PROGRAMME
PROJECT OF THE GOVERNMENT OF CAMBODIA
PROJECT SUPPORT DOCUMENT**

Project Number: PIMS 2177
Project Title: Establishing Conservation Areas Landscape Management (CALM) in the Northern Plains
Short Title: Cambodia CALM
Estimated Start Date: August 2004
Estimated end Date: August 2011
Management Arrangement: National Execution
Executing Agent: Ministry of Agriculture, Forestry and Fishery (MAFF)
Implementing Agent: Ministry of Agriculture, Forestry and Fishery (MAFF) and Ministry of Environment (MoE)
Cooperation Agency: WCS
Project Site: Cambodia

Summary of UNDP and Cost-Sharing/Trust Fund Inputs (as per attached budgets)	
UNDP:	US\$
- TRAC (1&2)	
- Other	
Cost-sharing/Trust Fund:	
- GEF:	\$2,300,000
- GEF PDF-B:	\$210,000
Total:	\$2,510,000
Parallel Financing:	
WCS	
- Grant:	\$1,100,000
- In Kind:	\$500,000
- Prep phase:	\$475,400
<i>Seila</i>	\$467,136
Total	\$2,542,536

Classification Information

ACC Sector and Subsector: Environment/Environment Policies, Planning and Legislation
DCAS Sector: Natural Resources/Policy and Planning
Primary Areas of Focus/Sub-focus: Promotion of Sustainable Natural Resource Management
Primary Target Beneficiaries: Target organizations/Government organizations

Government Inputs	
In kind (prep phase)	\$21,500
In kind (full project)	\$105,210

LPAC Review Date:
BPAC Review Date:
Programme Officer: Environment Cluster

Brief Description:

The Northern Plains of Cambodia are the largest remaining extensive intact block of a unique landscape of exceptional global importance for biodiversity conservation. The area is either a last refuge for, or maintains a key population of 36 species on the IUCN Red List, including six listed as Critically Endangered. The project addresses the problem of escalating biodiversity loss across the Northern Plains, caused by increasing human land and resource use. This is achieved through a seven-year, three-pronged approach: (1) the introduction of biodiversity considerations into provincial level land use processes; (2) the demonstration of specific mainstreaming interventions at four key sites (including community land-use tenure, community contracts and incentives for biodiversity supportive land-use practices, as well as work to mainstream biodiversity into the forestry and tourism productive sectors); and (3) strengthen biodiversity management by government at the four key sites. The Landscape Species Approach has been used to identify the four sites.

The CALM project is consistent with the GEF Strategic Priority BD-2 (Mainstreaming Biodiversity in Production Landscapes and Sectors). The project interventions will work to introduce biodiversity values into landscape-level land-use planning processes. Implementation will focus particularly on building the capacity of provincial departments and authorities and integrating specific project initiatives with established provincial planning processes (supported through the *Seila* program). These specific project initiatives include the direct implementation of the new land law and sub-decree on community forestry to develop management plans for natural resource areas that include conservation of key components of biodiversity. The project will also work with the forestry and tourism sectors, and the provincial departments of agriculture and environment, to enhance the recognition of key components of biodiversity in planning and management strategies. The project achievements are therefore in line with objective (a) of the GEF Strategic Priority: facilitate the mainstreaming of biodiversity within production systems.

However the **situation analysis** in the Project Proposal highlights the marginal nature of “production” sectors across the Northern Plains. Changes in land-use practices to incorporate conservation impacts will involve a loss of short-term earnings (from wildlife trade, timber etc...) in favour of long-term gain (e.g. income from wildlife tourism, sustainable resin-tapping, community forests, etc...). Encouraging these changes will require not only an increase in security of tenure, but also positive incentive measures to replace the short-term loss of production income. The project will therefore also work at key landscape biodiversity sites across the Northern Plains to demonstrate more specific mainstreaming interventions such as community land-use tenure, community contracts and incentives for changes in land-use practices, biodiversity-friendly resin tapping, and - most importantly - working to mainstream biodiversity into 2 production sectors; forestry (in the concession sites) and tourism. This is in line with objective (c) of the GEF Strategic Priority: demonstration.

Approved on behalf of:	Signature:	Date:	Name/Title
Government:	_____	_____	H.E. Mr. Keat Chhon, Senior Minister, Minister of Economy and Finance
Executing Agent:	_____	_____	Chan Sarun, Minister, Ministry of Agriculture, Forestry and Fisheries
UNDP:	_____	_____	Mr. Ladislaus Byenkya-Abwooli, Resident Representative, a.i.

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ABBREVIATIONS

AAH	Action Against Hunger
APR	Annual Project Review
ASEAN	Association of South-East Asian Nations
BPAM	Biodiversity and Protected Areas Management Project
CALM	Conservation Areas through Landscape Management
CARERE	Cambodia Area Reconciliation and Rehabilitation (UNDP)
CBD	Convention on Biodiversity
CCF	Country Co-operation Framework
CDC	Council for the Development of Cambodia
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CTIA	Cambodia Timber Industry Association
DAFF	Department of Agriculture, Forests and Fisheries
DNCP	Department of Nature Conservation and Protection
DoE	Department of Environment
FA	Forest Administration of MAFF
FAO	United Nations Food and Agriculture Organization
GAP	Government Action Plan
GEF	Global Environment Facility
GEF-SEC	Global Environment Facility Secretariat
GIS	Geographical Information System
GTZ	German Technical Corporation
IA	Implementing Agency
IUCN	International Union for the Conservation of Nature
KPWS	Kulen Promtep Wildlife Sanctuary
LMAP	Land Management and Administration Project (of MLMUPC, funded by GTZ)
LSA	Landscape Species Approach
MAFF	Ministry of Agriculture, Forests and Fisheries
MDGs	Millennium Declaration Goals
MLMUPC	Ministry of Land Management and Urban Planning and Construction
MoE	Ministry of Environment
MOU	Memorandum of Understanding
MRC	Mekong River Commission
MRD	Ministry of Rural Development
MWRM	Ministry of Water Resources and Meteorology
MYFF	Multi-Year Funding Framework
NBSAP	National Biodiversity Strategy and Action Plan
NBSC	National Biodiversity Steering Committee
NEAP	National Environmental Action Plan
NGO	Non-Government Organisation
NREM	Natural Resource and Environment Management
NTFPs	Non-timber forest products
OP	Operational Programme
PA	Protected area
PDF	Project Development Facility
PDP	Provincial Development Plan

PIR	Project Implementation Review
PLUP	Participatory Land Use Planning
PSC	Project Steering Committee
RCAF	Royal Cambodian Armed Forces
RGC	Royal Government of Cambodia
SEDP II	Socio-Economic Development Plan 2001-2005
<i>Seila</i>	Social Economic Integration in Local Administration ('Foundation Stone' in Khmer)
STAP	Scientific And Technical Advisory Panel (of the GEF)
TOR	Terms of Reference
TPR	Tri-partite review
UN	United Nations
UNDAF	United National Development Assistance Framework
UNDP	United Nations Development Programme
UNDP-GEF	UNDP's Global Environment Facility Office (with the Bureau for Development Policy)
WB	World Bank
WCS	Wildlife Conservation Society
WS	Wildlife Sanctuary

PART IA: SITUATION ANALYSIS

Background

1. Since 1995 Cambodia has been a ratified signatory of the Convention on Biological Diversity (CBD). As part of its response to the CBD Cambodia has developed a National Biodiversity Strategy and Action Plan (NBSAP), with support from a GEF Enabling Activity through UNDP. The strategy provides a framework for action at all levels, which will enhance Cambodia's ability to ensure the productivity, diversity and integrity of its natural systems and, as a result, its ability as a nation to reduce poverty and improve the quality of life of all Cambodians. Specifically, the NBSAP highlighted the importance of the Northern Plains landscape.

2. The Northern Plains is a very remote region of Cambodia, a country that ranks amongst the poorest in South-East Asia. From the early 1970s the region was a central base of the Khmer Rouge and as a consequence experienced long periods of conflict and civil war, which only ceased in 1998. During this time the local population was translocated and forced to adopt collectivized paddy rice growing. As security improved from the 1980s onwards families returned home and, to some extent, re-established traditional livelihood practices. The region is presently sparsely populated, with densities as low as 5.5 people/km² in some areas. The vast majority of families rely on subsistence rain-fed paddy rice growing, collection of forest products and seasonal fishing. Chamkar (shifting cultivation) is practiced by many families for vegetables and either to supplement rice production from paddyfields, or as an alternative. Fish, and to some degree wildlife, is the principal source of protein. Livelihood assessments (see Annex 11 for an example) have highlighted the prevailing food insecurity in the region, which is only mitigated by the extensive availability of forest products.

3. The Northern Plains landscape is defined by the geography of the area, its boundaries being naturally delimited by the Dangrek Mountains to the north, the Mekong River to the east and the Tonle Sap Great Lake to the south and west. The total region covers over 18,000km². Land tenure in the area is complex as the Northern Plains stretches across the borders of four Provinces: Oddar Meanchey, Siem Reap, Preah Vihear and Stung Treng. Government authority over the majority of the area is centred on the provincial capitals and the Provincial Governors Office. Jurisdiction for natural resource issues falls under the Provincial Department of the Environment (DoE) and the Provincial Department of Agriculture, Forests and Fisheries (DAFF, particularly the Provincial Forestry Office). The DoE is responsible for Protected Areas and DAFF for forest and agricultural lands. Overall development priorities for the Province are set out in the Provincial Development Plan produced by the Provincial Governors Office in collaboration with all line departments and the Provincial Rural Development Committee (PRDC).

4. The Northern Plains of Cambodia are the largest remaining extensive intact block of a unique landscape of exceptional global importance for biodiversity conservation. The area is either a last refuge for, or maintains a key population of 36 species on the IUCN Red List, including six listed as Critically Endangered (see Annex 1). The 1997 National Biodiversity Prospectus lists the Northern Plains as a landscape of national and international importance, because it is the largest remaining example of a forest type that once covered large areas of Indochina. Many species that rely on these forests are known to be extinct elsewhere, thus heightening the value of this region. One, the Giant Ibis *Pseudoibis gigantea*, was only known from a handful of records in the 1900s, until re-discovered during the PDF-B in considerable numbers in the Northern Plains. Conservation of these species is particularly challenging because the majority of them - large birds and mammals - have large spatial requirements.

5. The landscape supports one of the most intact remaining examples of the bird community of the dry forests of central Indochina. Many large bird species are dependent upon waterbodies, including Green Peafowl *Pavo muticus*, White-winged Duck *Cairina scutulata*, Sarus Crane *Grus antigone*, White-shouldered and Giant Ibises *Pseudibis davisoni* and *P. gigantea*, Greater and Lesser Adjutants *Leptoptilus dubius* and *L. javanicus* and Black-necked Stork *Ephippiorhynchus asiaticus*. These resources are spatially restricted and seasonal in nature, so the bird species rely on a few key locations during the dry season and disperse across the landscape following the rains.

6. There are strong linkages between the Northern Plains landscape, and one of the other major landscapes in Cambodia, the Tonle Sap lake. A host of globally threatened waterbirds, such as Spot-billed Pelicans *Pelecanus philippensis*, Painted Storks *Mycteria leucocephala*, Greater and Lesser Adjutants breed on Tonle Sap, but disperse across the Northern Plains in the wet season. Conversely, Sarus Cranes and White-shouldered Ibis breed in the Northern Plains and return to the large permanent wetlands on the floodplain at the beginning of the dry season. Maintenance of one landscape would be insufficient for the conservation of these species.

7. Raptors, especially White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *G. tenuirostris* and Red-headed Vulture *Sarcogyps calvus* have large home ranges and rely on extensive areas of intact habitat for their food supply. However, they also have restrictive spatial requirements for breeding, because they are dependent upon isolated tall trees. The same *Gyps* species have undergone > 97% declines in the last 5-10 years in the Indian subcontinent due to poisoning by a veterinary drug, and are expected to become extinct within a few years. Cambodia has one of only two existent refuge populations of these once widespread species (now listed by the IUCN as critically endangered).

8. In addition to their key value to birds, the plains are also crucial to large mammal conservation in Cambodia and, in fact, the entire Indo-Malayan Realm. Many formerly widespread species are now only found in a few areas of which the Northern Plains is one of the largest and has high potential for conservation. Examples of these include Lyle's Flying Fox *Pteropus lylei*, Eld's Deer *Cervus eldii*, Banteng *Bos javanicus*, Tiger *Panthera tigris*, Fishing Cat *Prionailurus viverrina* and Asian Elephant *Elephas maximus*. Like the water birds, these species rely on being able to concentrate in a few key resource areas during infertile or dry times and disperse widely across the floodplains when the water enriches the soil.

Range sizes are poorly known, but data from other countries would indicate that many of these species require large areas; even the spatially restricted Eld's Deer has been recorded moving 20 km in a single night in Myanmar, crossing areas of unsuitable habitat (e.g. village rice fields and dense forests). Other large mammals, e.g. Elephants and large cats, have much more greater requirements.

9. Although the landscape is of demonstrated global biodiversity importance, current conservation efforts are inadequate to mitigate the threats to biodiversity. Such is the vulnerable nature of the environment during the seasonal extremes, that although keystone resources (permanent water bodies, semi-evergreen forest, mineral licks) are distributed across a wide area, they are small in number, localized and especially vulnerable, so that the removal of even one such resource could have significant detrimental affects on unique components of biodiversity across a large distribution. Accordingly, an integrated conservation management strategy must ensure sufficient maintenance of these resources across the landscape in order to be successful. In addition, to incorporate the range requirements of large mammal species some extensive areas of habitat, within the human-use landscape, will need to be retained.

10. All forest resources and land are technically managed by MAFF, which has very little provincial capacity for this task. For example, the Forestry Office in one province has 16 staff for 130,000 inhabitants. Historically, communities had no legal right to use forest resources, beyond some trival activities (e.g. firewood collection), and their traditional ownership systems (e.g. of resin trees) are not recognised. Further, 25 years of conflict has disrupted traditional forms of land management, and encouraged a prevailing attitude of insecurity, promoting a short-term approach to resource extraction based upon competition with other individuals or groups. The people who benefit most from this situation tend to be those who are richer and better equipped (generally people from outside or members of the military or police), at the expense of local people.

11. Hunting of wildlife (particularly turtles and lizards) is an important seasonal protein source for local people. Commercial hunting of large mammals and waterbirds is undertaken by a limited group of people who either have guns, or rent them from the police or army. Substantial declines in the populations of large mammals in the last 10 years have probably reduced the number of people engaged in this activity. Wildlife is principally sold to Thailand, or occasionally Laos PDR. Two border crossing points to Thailand (one of which is not recognised) are the main exit points for wildlife products. The prices paid are comparatively high - e.g. \$50 for a Sarus Crane chick, \$150 for an Eld's Deer, and \$2500-3000 for a Tiger. In comparison, average family resin-tapping income is around \$150/year.

12. Commercial activities are limited. The principal legally traded product is the resin of dipterocarp trees, which is transported to Vietnam or Laos PDR for processing. Historically, resin-tapping was a traditional activity undertaken for fuel and lighting and it became commercially widespread only since the late 1980s. The tapping is probably sustainable (Evans *et al.* 2002 *A study of resin-tapping and livelihoods in southern Mondulkiri, Cambodia, with implications for conservation and forest management*, WCS Report), and is undertaken by the families that are recognized, by the community, as owning a particular group of trees. Studies have indicated that resin income is particularly important for livelihood security - families use resin income to buy food, in times of shortage, or are able to borrow money from the trader against future tapped resin.

In recent years conflicts have arisen between the tappers and loggers (either concessionaires or illegal logging by armed forces), who do not recognize the communities' traditional ownership system. The implication of the removal of family resin income on livelihood security is the subject of a present study (by the Cambodia Development Resource Institute and WCS). The communities surrounding the Chendar Plywood concession organized themselves into a local NGO as a consequence of logging of resin trees in 2000.

13. Logging was undertaken by various groups in the 1980-1990s, and more recently by concessionaires. The concessionaire system was established in the late 1990s, with 5 concessions across the Northern Plains (TPP, Chendar Plywood, Timas, Samrong, Pheapimex Fuchan, see Map 1). Cambodia declared a ban on all logging in 2001, following which all concessionaires were required to submit revised management plans and environmental and social impact assessments. Five concessions have been re-approved, including Chendar Plywood in the centre of the Northern Plains and logging is anticipated to re-commence in 2005. In the meantime, illegal logging by armed forces (police or military) has been widespread. Community involvement is restricted to acting as guides to show the armed teams the locations of the best trees, for which they are paid around \$2.5/day.

Problem to be Addressed

Problem Statement

14. Escalating land and resource use across the Northern Plains is leading to competing human-wildlife requirements and loss of key biodiversity values. Human land and resource use has increased partly as a result of increasing human population and in-migration, although population densities remain fairly low, but also because as security returns to the area there is much greater potential for resource exploitation. The conflicts are exacerbated by the current "open-access" management system of natural resources across the Northern Plains, which manifests through the following threatening processes:

a) Over-exploitation of wildlife resources

15. Local communities do not rely on large mammal or bird species for their food security, although they do hunt other wildlife species (e.g. monitor lizards) at particular times of the year. Most protein consumed in villages comes from fish. Hunting equipment is relatively small-scale such as wire or rope snares and activities tend to accompany trips for other purposes - such as resin-tapping or fishing. As such, disturbance is primarily focused in areas that are also critical for wildlife (dense forest areas, rivers and seasonal waterbodies). Invariably, people are accompanied by dogs on these trips, which is one of the principal causes of disturbance and incidentally hunting of wildlife. Dogs are a particular threat to the globally threatened White-winged Duck when they are moulting or have young, flightless, chicks.

16. Uncontrolled commercial hunting has led to a massive decline in many species across the landscape. Hunting of large mammals mainly requires guns and metal snares and is performed by a relatively small group of people who have access to this equipment (generally connected to police or military). The peak hunting season follows the first rains, when large mammal species are attracted by new grass shoots in burnt, low-lying, regions of the landscape that are adjacent to denser forest areas (used for hiding, such as the Chendar concession). Later in the wet season large mammals can be attracted by the new rice growth in paddyfields and shifting cultivation plots, and are easy targets for hunters. Large waterbirds start to nest in the wet season, and are particularly susceptible to collection of eggs and chicks. Some of this collection is opportunistic (e.g. Giant Ibis), whilst for other species hunters undertake specific trips (e.g. Sarus Cranes). Large-scale hunting with guns and snares and collection of eggs and chicks is driven by their commercial value from the wildlife trade. Wildlife is sold through a series of middlemen either for the national markets, or the international trade, principally across the Thai border. These border crossings are controlled by the police and military on both sides. In the wet season traders will periodically visit villages to buy eggs and chicks, again mainly for sale to Thailand or Laos PDR.

b) Over-exploitation of forest resources

17. Strong economic incentives promote logging, recently by military and police, and historically by concessionaires. Logging occurs in areas of dense, evergreen, forest also used by large mammal species for shelter and browsing, and by some species of birds for breeding (e.g. White-winged Duck nests in tree-holes, Adjutants and Vultures nest in large trees). Whilst logging activities do not directly threaten these species it does contribute to a high level of disturbance and removal of too much of the forest canopy which can lead to forest degradation, soil erosion and an insufficient number of large trees for nesting purposes. More importantly, the construction of logging roads opens up new areas and poor salaries given to loggers (concessionaire and military) create ideal opportunities for hunting to supplement income and food. Logging can have major implications for local villagers, who rely on timber and the products that the forests provide. In particular, the loss of resin trees removes the major cash income source for local people and the livelihood security that this provides. Present logging by the military is on-going in the Kulen Promtep Wildlife Sanctuary, the Preah Vihear Protected Forest, the Chendar Plywood concession, Phnom Tbeng and surrounding several communities in the region.

18. Shifting cultivation by communities and the associated forest clearances is not a major problem for biodiversity conservation, especially as these activities are generally located near settlements and key biodiversity resources are mostly further distant. All communities complain of over-exploitation by outsiders as the principal factor creating the present situation, and they benefit little from these activities. For example, a villager may be paid \$2.5/day to show military loggers suitable trees for felling. However, under present land management systems the communities have no tenure or title over land or natural resources adjacent to their villages and accordingly have no legal right to prevent exploitation by outsiders. Forest land and resource management resembles an 'open-access' system where there is no barrier, other than capacity, to anybody exploiting the resource in any particular way.

c) Seasonal destruction of key water bodies

19. Waterbodies are a critical resource in the Northern Plains, and most of the key components of biodiversity are dependent upon them for some of the year for food, water and habitat. Human use of waterbodies is also essential for local livelihoods, as people are dependent upon fish for protein, and traveling groups rely on particular watersources along forest trails. In the late dry season, when only a few locations still contain water, competitive exclusion of wildlife from waterbodies by humans may have serious implications for species' populations.

20. The same open-access system that is causing degradation of the forest resource has similar implications for the management of water bodies. The driving incentive is to maximise returns as quickly as possible. This encourages over-exploitation of water resources and the use of unsustainable methods. The most obvious and destructive include the illegal use of bomb, poison and electric fishing techniques. These are generally used by temporary migrants (sometimes military or police), who enter an area to remove all the fish and then leave. Communities have more limited availability to such techniques, and are more aware that the use of these methods reduces future yields in their area. All communities complained of reductions in fish yields resulting from the use of unsustainable fishing methods by outsiders, although communities are known to be increasing the use of electric fishing methods.

Underlying Causes

21. The threatening processes outlined above are caused by main “production sectors” operating across the Northern Plains: the wildlife trade; NTFP collection; timber production; and fishing. Biodiversity conservation or sustainable use considerations are clearly not factors shaping the operation of these “sectors”. Partly this is a function of the fact that these sectors can barely be considered established sectors:

- They operate in and outside of the Royal Government of Cambodia’s legislative framework and rule of law. The wildlife trade is not only on the whole illegal, but is also in contravention of international agreements, such as the CITES. The timber production sector has historically included legal as well illegal elements. However, currently logging is undertaken in the shadow of the 2001 ban. Electric, poison and bomb fishing methods are technically illegal.
- They operate at commercial and subsistence levels. As has already been explained, much of the productive activity of local communities is at the subsistence level – or at least at non-commercial levels. This applies to the timber production and fishing sectors. Commercial scale production logging and fishing takes places (generally by outsiders) and while destructive, only a small proportion of these operations are formal (and legal). Resin tapping has been a commercial activity since the early 1990s, but it is unclear how many potential sources remain (i.e. most trees are now tapped).
- Even where productive activities are legal, they have been undertaken largely in an “open-access” regime. This is a consequence of the short history of democratic governance in the Northern Plains and the debilitatingly low baseline of systemic, institutional and individual capacity that the long periods of conflict have created. The resultant insecure tenures and rights shorten the planning horizons and promote the pursuit of short-term rents at the expense of sustainability.

- Changes in land-use practices to incorporate conservation impacts will involve a loss of short-term earnings (from wildlife trade, timber etc...) in favour of long-term gain (e.g. income from wildlife tourism, sustainable resin-tapping, community forests, etc...). Encouraging these changes will require not only an increase in security of tenure, but also positive incentive measures to replace the short-term loss of production income.

22. As a result, the Northern Plains are characterized by varying land and resource use gradients, creating an ad-hoc mosaic of biodiversity pressures and exploitations. Given the distribution of relatively limited keystone resources that the globally significant large mammals and waterbirds require, this invariably leads to an escalation of human-wildlife conflicts across the Northern Plains –with a corresponding loss of biodiversity.

23. Further, tourism is a growing “production sector” for the Northern Plains. In 2003, the Royal Government of Cambodia set a new policy to transform the Northern Plains into a new Tourism Zone Destination through a Triangle Tourism Development Strategy between Cambodia, Laos PDR and Thailand. This will require a significant level of infrastructure rehabilitation and development, potentially contributing further to biodiversity conflicts.

24. A final underlying cause of biodiversity decline relates to populations of key species of carnivores and scavengers (e.g. Tigers and Vultures). Research in other countries has shown that these species are critically dependent upon abundant prey populations. The maintenance of these species in the landscape can only, therefore, be achieved by addressing the threats outlined (above) and ensuring that populations of prey species return to previous levels. The present low numbers of these species across the Northern Plains is one of the major threats to carnivore and scavenger species. Research during the PDF-B revealed that populations of Vultures are critically low.

Current Situation (Baseline)

Legal Setting

25. Environmental management and biodiversity conservation in Cambodia has the potential to build upon a strong, developing, base of legislation, policies and institutional structures. Articles 58 and 59 of the Cambodian Constitution (Rot Tommanuoen) relate specifically to the natural environment, and Article 59 states in part: “The State shall protect the environment and balance of abundant natural resources and establish a precise plan of management [of environmental resources]”.

26. The legislative framework governing the management of land and forestry has been improved greatly by the RGC within the past three years (see Annex 7). This includes Cambodia’s first land law (2001), the new forestry law (2002), and sub-decrees on community forestry and wildlife protection (2003). The Commune Administration Law (2001) established, through local elections, authorities to manage small groups of villages (communes), government funds for their work, and a local development planning process. Together this framework provides, for the first time in Cambodian history, sufficient legislation to address issues of land tenure, community rights and participation in management of natural resources.

The framework substantially improves laws regarding the enforcement of forest crime, wildlife hunting and wildlife trade, and will be strengthened further with new sub-decrees on wildlife protection. These laws apply both inside and outside protected areas and forests, and therefore have the potential to be implemented across the whole of the Northern Plains landscape. However, there is no current facility to ensure that all stakeholders are aware of these new laws and it will be necessary for NGOs and other agencies to help increase understanding of the implications and possibilities arising from these laws if they are to be implemented.

27. The new land law establishes a clear classification system for land, both public and private (see Appendix 3 of Annex 7) and the usufruct rights of communities - the right to use natural resources. A process of participatory land-use planning (PLUP) has been adopted by the Ministry of Land Management, whereby facilitators assist communities to identify and map the land that they use and to develop plans for its improved management. PLUP maps can eventually be registered, achieving formal ownership (land title and resource tenure). Several projects, supported by a variety of donor agencies including GTZ, UNDP and FAO are using PLUP to improve natural resource management in Cambodia, although outside of the Northern Plains.

28. The new forestry law (2002), follows and respects the community title of the Land Law and goes further in ensuring user rights for forest products to local communities living in or near forests, even those who may not be able to obtain title under the land law (see Annex 7). The mechanism defined in the forestry law to protect these community rights is a Community Forest Agreement between the Forestry Administration and the local community for a specific area within state forest land that the community traditionally uses for subsistence uses. The new sub-decree on community forestry (2003, see Appendix 1 of Annex 7) sets out the required procedures. Whilst this is a marked improvement over previous legislation, the complexity and novelty of the law, and the relative inexperience of provincial authorities with regard to law, require that support be given to all stakeholders in the coming few years. Further, the Community Forest Agreement only covers the use of forest NTFPs, one of the three threats identified (above). Additional tools would be required to improve management of waterbodies or hunting and trade of wildlife.

29. *Seila* (see below) is the principal promotion agency of decentralization, including the transfer of implementation responsibilities over national programs included in the new laws. However *Seila* has only recently started to function in some of the provinces within the Northern Plains landscape, and initiatives relating to the new land and forestry laws are only being implemented in one of the four provinces, Siem Reap. LMAP (see below) is the principal implementation project of the new land law, however only Siem Reap belongs to the priority provinces. Some assistance will still be provided to non-priority provinces, including support for a provincial land conflict resolution committee. Agencies can, however, be informed by *Seila* projects in other areas - particularly the provinces of Ratanakiri and Mondulhiri (with LMAP). Without the assistance from another Agency the implementation of the new legislative framework in the Northern Plains would be weak.

30. Some existing legislation contains minor provisions on hunting and trade of wildlife issues. However they fail to address several key issues or provide MAFF with incentives necessary for adequate enforcement. Inside a protected area, enforcement is governed by MoE. A series of wildlife protection sub-decrees is currently being enacted, developed by the Forest Administration, with technical legal assistance from WCS.

31. Despite substantial improvements in Cambodia's legal framework within the past three years there is no current facility to ensure that all stakeholders are aware of these new laws and it will be necessary for many agencies to help increase understanding of the implications and possibilities arising from these laws. In addition, without positive incentives to encourage changes in land use that are allowed for by the new laws current patterns of land management may not be altered, despite implementation.

Seila program and LMAP (see Annex 8)

32. *Seila* Program is an aid mobilization and coordination framework in support of the Royal Government's decentralization and deconcentration reforms, and its goal is to contribute to poverty alleviation through good governance. *Seila* provides technical and funding assistance to provincial government and departments and local communities in support and implementation of development plans. At the province level, the Provincial Rural Development Committee (PRDC) chaired by the Governor and including all Department Directors, District Chiefs and senior officials from the military and police, are responsible for the administration and management of the provincial territory. At the Commune level the Commune Development Committees (CDC), chaired by the commune chief and elected representatives are responsible for the administration and development of the commune. This includes management of natural resources (including forests), however in general these issues are afforded lower priority than those relating to health, education, and so on.

33. *Seila* also provides support to provincial departments in their decision-making and implementation, especially where it is relevant to national strategies. Recently, support has been provided to the provincial Department of Environment, in establishing a community forestry area inside the Kulen Promtep Wildlife Sanctuary, and the provincial Department of Agriculture, Forests and Fisheries to establish a community forest. However, capacity constraints mean that these initiatives are likely to remain localized, and will not consider the landscape priorities in the allocation of future funding.

Institutional Framework

34. Two ministries, MAFF and MoE, are responsible for the management of components of biodiversity. Planning in both ministries does not incorporate landscape conservation values. For example, the Kulen Promtep Wildlife Sanctuary contains 20,000 people in 4,000km². Recently the provincial department of the environment has requested that several villages be moved, for conservation purposes. However, these villages are located in areas with few of the key components of biodiversity, or resources that they depend upon. Further, the villages are located along a main road and are being settled by people moving out of a region that contains several species of key conservation concern.

35. Enforcement of laws governing logging and the hunting and trade of wildlife is the authority of Forest Administration (FA) of MAFF, and, inside a protected area only, MoE. The capacity for MoE for enforcement is weak, mainly due to a lack of training, equipment, infrastructure and (particularly) provincial-level support.

36. The new FA structure has created a four-tiered hierarchy of administration units from Sangkats (covering several communes), Divisions (one or more districts), Cantonments (effectively Provinces) and Inspectorates (each governing approximately a quarter of Cambodia). This decentralization has led to large numbers of staff being relocated to provincial areas, and has led to an increase in law enforcement and regulation. The new Sangkat boundaries do not particularly reflect forested regions or conservation priorities. In addition, in a similar manner to MoE, staff lack training, equipment, infrastructure and provincial-level support. In some cases, FA staff have been involved in the confiscation of small-scale hunting gear and logging equipment used by local communities and of incidental trade of lizards or turtles. However, these activities ignore areas of much greater importance for biodiversity and much more serious threats (hunting with guns, large-scale logging, wildlife trade to Thailand, activities by armed forces etc.). Some activities, for example placement of small traps around rice fields, may be illegal but have little impact on the key components of biodiversity, which are generally found further from villages.

37. In the past few years development projects have begun to transform the landscape. New roads have been built bisecting the Kulen Promtep Wildlife Sanctuary and a road is planned across the Preah Vihear Protected Forest. One road through the wildlife sanctuary split an area that, in the wet season, supports a colony of breeding large waterbirds. A logging concession (TPP) was declared that included a steep-sided plateau, Phnom Tbeng. However, logging of the slopes would seriously increase the risk of landslides and floods and would have implications for the quality of the water supply to one of the provincial capitals.

38. In general, Government capacity to address conservation issues at the landscape scale still remains very weak at all levels, although it is improving. The capacity at provincial level to implement and enforce laws is still low. Coordination between government agencies and with relevant stakeholders is lacking. The capacity of the local community and provincial departments to participate in decision-making and in land use planning and management is limited.

Summary of Baseline

39. The baseline response to the threats and underlying causes can best be characterized as having a strong new legislative framework, but very little implementation of that framework with consideration of conservation objectives would be achieved for the following reasons:

- Government staff and institutions are not yet using the new framework; partly because it is a new development, but also largely because they lack the capacity for implementation.
- There is little awareness amongst government staff and institutions regarding the globally significant biodiversity values of the Northern Plains, and how these could be incorporated into implementation of the new laws.
- Implementation of the new framework would be slow and fragmented, with different government institutions promoting particular aspects (e.g. land rights, enforcement, and so on). Although changes might be achieved these would probably be too late to sustainably manage the keystone landscape resources that wildlife populations require.
- Low incentives for armed forces to participate in implementation of the new legislative framework.
- Low incentives for alternative land use options amongst local communities means that present land use management may not change, despite implementation of the new legal structure.

Consequently, exploitation of the landscapes' natural resources will continue through unrestrained and unmanaged land use and development. This will lead to increased conflict with wildlife movements across the Northern Plains and their reliance on keystone resources.

PART IB: STRATEGY

Project Rationale (The Alternative)

40. The CALM project applies a three-pronged approach to augmenting the baseline efforts in order to achieve global environmental outcomes:

(i) introduce biodiversity into provincial-level land use processes (using PLUP, land tenure and the implementation of new Laws). These interventions will occur across the Northern Plains by virtue of the fact that they will be strengthening provincial level institutional capacities. This will be done through ***Component 1***.

(ii) “road test” more specific mainstreaming interventions at 4 key sites - community land-use tenure; community contracts and incentives for changes in land-use practices, biodiversity-friendly resin tapping, and - most importantly - working to mainstream biodiversity into 2 production sectors; forestry (in the concession sites) and tourism. This will be done through ***Components 2***. They can be scaled-up by contributing to Component 1.

(iii) strengthen biodiversity management at 4 key sites within the landscape mosaic by ensuring the needs of the landscape species (waterbirds and large mammals) are understood and addressed. This will be done through ***Component 3***.

41. The second and third prongs will be developed under the “Landscape Species Approach” to achieving biodiversity results at the landscape level. The approach is consistent with the GEF Strategic Priority BD-2’s rationale of integrating biodiversity conservation into the broader development agenda through *capacity building* and *demonstration*¹.

Introducing Biodiversity at the Provincial Level

42. The project intervention will work to introduce biodiversity values into landscape-level land-use processes. Implementation will focus particularly on building the capacity of provincial departments and authorities and integrating specific project initiatives with established provincial planning processes (supported through the *Seila* program). These specific project initiatives include the direct implementation of the new land law and sub-decree on community forestry to develop management plans for natural resource areas that include conservation of key components of biodiversity. The project will also work with the forestry and tourism sectors, and the provincial departments of agriculture and environment, to enhance the recognition of key components of biodiversity in planning and management strategies. These activities are described in Component 1 of the full project. The aim of the work will be to ensure biodiversity considerations are incorporated into the new land use planning and management regimes anticipated under the land law and forestry law. The project therefore is in line with objective (a) of the GEF Strategic Priority: facilitate the mainstreaming of biodiversity within production systems.

¹ GEF/C.21/Inf.11

Additional Measures to Achieve Biodiversity Results Across Production Landscapes – the LSA

43. The earlier explanation of the underlying causes of biodiversity loss (see paragraph 21) set out the marginal nature of “production” sectors across the Northern Plains. The ramifications of this are that landscape-level biodiversity outcomes are unlikely to be achieved by mainstreaming biodiversity considerations into the production systems alone.

44. As a result of these ramifications, the GEF alternative will also deliver biodiversity outcomes at the production landscape level through the application of innovative landscape-level conservation tools. This is in line with objective (c) of the GEF Strategic Priority: demonstration. New and better land use management practices are required to help people and wildlife share the same landscapes. The project will apply the “Landscape Species Approach” (LSA) – a wildlife-based strategy used to define conservation landscapes, identify threats and achieve conservation outcomes at the landscape scale in a cost-effective manner (by prioritizing conservation investments). LSA helps identify where human and biological landscapes intersect. It is a tool to mainstream biodiversity values into human uses of landscapes (i.e. productive processes).

45. Pioneered internationally by WCS through its Living Landscapes Program, the LSA centres on preserving the ecological integrity of a large area or wilderness through understanding and conservation of a suite of “landscape species”, selected as being ecologically representative of that landscape. The Living Landscape philosophy is to develop strategies for the conservation of large, complex ecosystems that are integrated in wider landscapes of human influence which includes, but is not restricted to, protected areas, community land, forestry concessions, plantations and other areas of economic importance. For landscape scale conservation to be socially as well as ecologically sustainable, strategies must succeed in a mosaic of different land uses that not only conserve biodiversity, but also allows people to make a living.

46. The focus on landscape species (wildlife) allows the landscape to become geographically tangible and ecologically meaningful and makes the targets for, and outcomes of, conservation investments explicit and measurable. In other words, the approach guides where interventions should “touch the ground” in order to have broader landscape-level impacts. The Northern Plains are ideally suited to this approach as the main biodiversity values reside in populations and unique assemblages of large mammals and waterbirds. Both groups include very good “landscape species”.

47. Simple decision rules were used to select a suite of 10 landscape species (or species groups) that had particular habitat requirements and were threatened by particular human behaviours (see Annex 1). The Living Landscape philosophy states that interventions designed for the conservation of these species will be sufficient to address the threats faced by and habitat requirements of the other key components of biodiversity found across the landscape. During the PDF-B the distribution of each species was mapped across the Northern Plains (see Map 2). This distribution was analysed in comparison with the human threats (see Map 3) and used to select four key sites for conservation (Map 4), comprising a total of 12 core and 8 buffer areas (see Annex 2).

48. The selection of these key sites implies that the successful management of each, for all of the key species, will result in the maintenance of all components of biodiversity across the Northern Plains landscape. However, only one of the key sites, Kulen Promtep Wildlife Sanctuary, lies within a formal PA, and, in addition it has a population of over 20,000 people. Another is within the Preah Vihear MAFF-designated 'protected forest' for which management guidelines are yet to be established but will include conservation objectives together with productive uses. The remaining sites are the O'Scach and O'Dar rivers within the Chendar Plywood logging concession, which is contiguous with the Preah Vihear Protected Forest, and the Phnom Tbeng plateau, inside the TPP logging concession. The CALM project is designed to integrate biodiversity values within the human land-use systems found in these key sites, with the aim of maintaining local populations of key species. If the assumptions of the Living Landscape approach are valid then the suite of sites selected will (importantly) be sufficient for the successful conservation of all key components of biodiversity across the landscape.

49. At the four key sites the project will test specific project initiatives that aim to mainstream biodiversity values into the human use of the landscape. These initiatives will include the use of PLUP with communities and authorities to map and approve community land-use areas and establish management plans for these areas that recognize biodiversity values (Component 2). Community land-use will include the establishment of security of tenure for the owners of resin trees, in order to promote this sustainable form of forest use. A program of 'contracts' will provide direct incentives to those communities that incorporate measures for the conservation of key biodiversity components into their management plans, and lead to tangible changes in resource-use behaviour (Component 2). An education and awareness program (Component 3) will be necessary to increase the capacity of communities to plan and manage natural resources with consideration of the impact of decisions on biodiversity components. The products of Component 2 will be integrated into provincial-level (and hence landscape-level) processes through Component 1.

50. Lack of know-how has been identified during the PDF-B phase as a key barrier to sustainable natural resource management that needs to be addressed - in addition to securing tenure and user rights. Simple usufructual rights will not promote sustainable management if communities are unaware of the alternatives to short-term over-exploitation. The project will support the removal of some of the key knowledge barriers to sustainable natural resource management through Component 2:

- a) *Economic and financial viability* The conditions necessary for the economic and financial viability of sustainable natural resource management have not been elaborated in the Northern Plains. Clear guidelines are needed for practitioners and planners to be able to recognize the conditions under which the new legislative framework can provide adequate incentives for communities to adopt sustainable practices. This will be evaluated by activity 4.2.
- b) *Technical know-how* Provincial authorities and local communities need to understand appropriate harvesting systems and management strategies for forest NTFPs and water resources. In addition, they lack the technical knowledge of how to use the results of community-based monitoring to define sustainable harvesting limits.
- c) *Financing* Provincial authorities and local communities lack appropriate knowledge of accounting systems and the costs and benefits of sustainable natural resource management.

- d) *Enforcement* Practitioners need to know what types of internal and external enforcement/control/oversight mechanisms to recommend for sustainable natural resource management and how to maintain these functioning systems.

51. In some cases improved knowledge may be insufficient to encourage a change to sustainable management practices, particularly if they are viewed with suspicion, or require foregoing financially attractive but highly unsustainable alternatives. If the new land-use management regime is to be effective in achieving biodiversity conservation outcomes and sustainable livelihoods it will have to generate much more substantial incentives for local communities. Support in protecting their natural resources from illegal activities will help, but it is expected that additional incentives will be required.

52. The incentive scheme and the community contracts (Component 2) are therefore essential requirements of the intervention. Recent reviews of Integrated Conservation and Development Projects have shown that there are very few incidences where increasing peoples livelihoods or meeting developmental needs has contributed to conservation objectives (e.g. Wells, M., S. Guggenheim, A. Khan, W. Wardojo, and P. Jepson. 1999. *Investing in Biodiversity*. The International Bank for Reconstruction and Development, Washington D.C.). Many conservation projects around the world are emphasizing more direct incentives approach or in some cases a direct payment for biodiversity conservation. These might be in the form of easements for non-use and performance payments based conservation outcome. These payment plans are based on a person or group of people producing conservation outcomes in exchange for a payment in cash or exchange (Ferraro, P. J., and A. Kiss. 2002. Direct Payments to Conserve Biodiversity. *Science* 298). In the Northern Plains, these incentives will replace income lost through reductions in current exploitation patterns in the short-term whilst long-term sustainable practices are developed (including wildlife tourism, resin-tapping, community forests and fisheries). Options will be investigated during the first year of the project, but might include:

1. The leasing of keystone watersources in the short-term, replaced by a tourism observation platform in the longer term.
2. Payments for reductions in incidences of poison fishing in the short-term, in the longer-term the establishment of community fisheries and the recovery of fish populations would demonstrate the clear benefit of the cessation of unsustainable fishing methods.

53. An evaluation system would be established for the incentives scheme, and rewards only provided if the community contract is upheld. During the PDF-B CALM established a pilot project that serves as an example of how the incentives scheme might work. The village of Tmatboey was selected as an eco-tourism site. An agreement was made with the village whereby CALM would facilitate tourist visits to see Giant Ibis, in exchange for a commitment not to hunt with guns, collect eggs or chicks (or assist others with these activities). Each tourist group was levied a fee, and the agreement states that this money will be dispersed to the village at the end of the 2004 wet season, if the agreement has been upheld. Village meetings will be held before this time for the community to decide how the funds should be spent.

54. Activity 4.2 of the intervention will specifically research the requirements for the incentive scheme. In particular, there will be an economic analysis of the environmental values being compensated, and the benefits of short-term over-extraction. This will be used to determine an appropriate level of payment under the incentive scheme.

Activity 4.2 will also establish the mechanism (rules and processes) by which incentives are provided to communities, and the procedure for evaluation of the scheme. Finally, Component 3 will address the sustainability of the scheme, by calculating its long-term running costs and identifying the source of future revenue.

55. Within the same key sites the project will strengthen biodiversity management through support to the relevant government structure (MoE in Kulen Promtep Wildlife Sanctuary and the FA in the remaining sites). At the MoE site activities will be managed by the WS Director, with support from project officers. At FA sites local activities will be managed by the Sangkat and Division directors of the FA, with site co-ordination provided by a FA Site Manager. WCS/FA have successfully adopted this management structure for another project in Mondulkiri. This implementation structure ensures that project activities are integrated within government structures, thus increasing the sustainability of initiatives. The FA and MoE site managers will be responsible for approving and promoting agreements made with communities (including Community Forestry Agreements and PLUP maps) established during Component 2. Some immediate government action will be necessary at these sites if the threats from outside individuals and armed forces are to be reduced and biodiversity is to be maintained. However, in the longer term project initiatives (Component 2) will strengthen local community governance and reduce the need for FA and MoE management.

56. In Component 3 the project will provide site assistance to the local FA or MoE management structures - particularly through training, equipment and infrastructure to address the 'knowledge barriers' outlined. Site staff will be supported in the production of management plans, particularly focusing on the importance of adaptive management and the ability to respond to prioritize responses to threats across jurisdictional units. The project will ensure that there is a structure for sound management of long term activities. Site management staff will be members of the appropriate authority (FA or MoE) with jurisdiction over the area including key sites. The project will not therefore create new (non-government) management structures, instead providing support to existing systems. Component 3 will also ensure that sufficient training is provided to government managers and provincial staff. Activities under this component will further establish the infrastructure and necessary equipment for long-term management of key sites.

57. At each site, the project will train and support FA or MoE staff in the legal framework and law enforcement (Component 3). Government staff will then work to address site threats and, across their jurisdictional control (FA Sangkat or MoE WS), to target threats such as the wildlife trade. Enforcement will be conducted within the limits set by agreements made between the users of key sites (such as communities or concessionaires) and the local authority (FA or MoE). The primary objective of law enforcement teams will be the mitigation of the immediate and substantive threat caused by outside individuals and the armed forces. This threat will also be addressed through the education program (Component 3), which will operate both within key sites and for threats (e.g. military bases) across the landscape. In addition, the project will seek the active engagement of armed forces in law enforcement, through their direct involvement in enforcement teams. This model has been used at several locations in Cambodia to reduce threats caused by armed forces.

58. A monitoring program (Component 3) will establish the progress of the project in meeting the objective of maintained biodiversity, in order to inform adaptive management. The LSA implies that the successful management of each site, for all of the key species, will result in the maintenance of all components of biodiversity across the Northern Plains landscape. Component 3 will monitor populations of wildlife and their habitats across each of the sites to ensure that this objective is met. Results will be used to inform an annual process that will prioritize activities for each site. This will ensure that the project does not adopt a 'site-by-site' approach, whereby site activities are completed in isolation and without consideration of the status of other sites. For example, an immediate land encroachment problem would be solved by mobilization of PLUP teams from other sites where threats were lower.

59. Activities within Component 3 will include an initiative to monitor the remaining population of *Gyps* vultures in the Northern Plains. These species will become extinct in the Indian subcontinent within the immediate few years as a consequence of poisoning by a veterinary drug - a drug that is not used in Cambodia. The Cambodian and Myanmar populations will therefore represent the only wild populations in existence. Within Component 3 the project will use techniques (vulture restaurants) developed during the PDF-B to monitor the vulture populations in the Northern Plains.

60. Many project activities (Component 1, 2-3) will be completed within the 7 year project plan. For other activities (Components 2 and 3) and management support (Component 3) start-up costs will be covered by the project and long-term running costs are expected to be low. Component 3 will assess the cost of maintaining necessary project activities in the longer-term and identify funding sources (see below).

Relevance to UNDP Outcomes

61. The project will directly contribute to the achievement of the service line 3.5 Conservation and sustainable use of biodiversity under the second Multi-Year Funding Framework (MYFF) 2004-2007 of UNDP. The linkages that the project will build with the provincial *Seila* program (see Annex 8) will help to integrate environmental concerns into the local planning process and thus will strengthen the framework and strategies for sustainable development at the local level (service line 3.1). In addition, the project will develop community land use planning, monitoring and law enforcement mechanisms, thereby helping to control deforestation and land degradation (service line 3.4). At the landscape-level the project will facilitate the incorporation of biodiversity conservation values into provincial and national planning processes, including, for example, the recognition of key sites for conservation. The project will contribute to the achievement of the target 9 of MDG 7, to "integrate the principles of sustainable development into country policies and programmes", specifically indicators 25 and 26 regarding forest cover and protected areas.

National Support for the Alternative

62. The Royal Government of Cambodia's key policy documents illustrating support for the objective of the project are: (i) the Second Socio-Economic Development Plan (SEDP II) adopted in 2002; (ii) the National Environmental Action Plan (NEAP) adopted in 1997; (iii) the National Climate Change Action Plan; (iv) the Cambodia's Initial National Communication to the UNFCCC; (v) the National Biodiversity Strategy and Action Plan adopted in 2002;

(vi) Cambodia Report to the World Summit on Sustainable Development (WSSD) approved in 2002; (vii) the Governance Action Plan (GAP)² adopted in April 2001; (viii) the National Poverty Reduction Strategy (NPRS) launched in March 2003; and (ix) the Cambodia Millennium Development Goals (MDG) Report. The National Biodiversity Strategy and Action (NBSAP) highlighted the importance of the Northern Plains landscape and the necessity for improved management of Kulen Promtep Wildlife Sanctuary.

63. Through the development of new laws on land, forests and wildlife protection within the past three years, the RGC has demonstrated a strong willingness to improve the management of forested areas and their wildlife components. Cambodia is presently undergoing a forestry review period that includes evaluating alternatives to commercial forestry, such as community forests, the sustainable harvesting of NTFPs by indigenous communities, and biodiversity conservation. The policy of the national Forestry Administration (FA) of MAFF aims to improve forest management through the development of strategies that complement or provide alternatives for commercial forestry. The CALM PDF-B has directly informed the decision of MAFF to designate the Preah Vihear Protected Forest. In other regions of Cambodia these protected forests are being used to develop models for forest management.

64. The Royal Government of Cambodia considers good governance as the backbone of the national strategy to alleviate poverty. The National Development Objectives outlined in the SEDP II focus on “Three Pillars”:

- Economic growth that is broad enough to include sectors where the poor derive a livelihood
- Social and cultural development
- Sustainable use of natural resources and sound environmental management.

65. In support of this, UNDP considers sustainable management and rational use of the natural resources of Cambodia a necessary supplementary prerequisite to the national strategy to alleviate poverty. Accordingly, and in line with the government’s national priorities, support to good governance in the fields of environmental and natural resource management is also a priority area for both the UN system and the RGC. This is elaborated in the first United National Development Assistance Framework (UNDAF 2001 - 2005) and the second UNDP Country Co-operation Framework (CCF 2001 - 2005). Sustainable management of natural resources is one of the four programme areas of concentration in the UNDAF 2001-2005 for Cambodia. The UNDAF provides for the UN system focusing on supporting national efforts in land use planning, sustainable forestry and fisheries activities, and the promotion of environmental awareness and protection.

² Reform of natural resources management (land, forestry and fisheries) is one of 8 priority areas to which the RGC has committed itself through the implementation of the GAP.

66. Under this overall framework, UNDP's second CCF for Cambodia has identified the Management of Sustainable Resources as one of the three programme areas. Under the CCF UNDP's support to Cambodia in the area of environment and natural resources, management is focused on:

- I. Strengthening monitoring and assessment of environmental sustainability.
- II. Promoting national policy, legal and regulatory framework for environmentally sustainable development
- III. Enhancing national capacity for participation in global conventions, regulatory regimes and funding mechanisms for environmentally sustainable development.

67. The proposed CALM project reflects on all three programme areas. By strengthening the sustainable development strategy of Cambodia through capacity development and good governance, the project is consistent with the UNDAF/CCF.

Project Sustainability, Partnerships and Linkages

National Ownership

68. National ownership of project activities and outputs is critical for successful implementation. Ownership will be achieved by the fact that activities and processes will be dictated and carried out entirely by Cambodians through a series of national stakeholder consultations.

69. The project steering committee will be set up to oversee the project's direction and strategies. The ownership of the project will be broadly linked with the current UNDP supported decentralization program (*Seila*). The project activities and plans will be integrated into the Provincial *Seila* Program thus the project will be recognized and will operate within the provincial annual planning framework. The Provincial Rural Development Committee/EXCOM will be used to provide leadership forums to discuss and coordinate to integrated landscape conservation and development into the *Seila* program. The existing National Biodiversity Steering Committee will provide an overview on how the project should contribute to the achievement of the national conservation agenda as set in the National Biodiversity Strategy and Action Plan. The National Committee on Discussion, Recommendation and Conflict Resolution of Protected Areas, which was established in 2000 will be used to resolve any institutional conflicts regarding the management objectives of Kulen Promtep Wildlife Sanctuary in particular and regarding the management of the productive landscape in general.

70. To implement Component 2 participatory land use planning (PLUP) will be used as a tool to generate consensus on how land is management and allocated to local communities. This will contribute to the objectives of conservation and sustainable use of the landscape.

Commitments, Partnerships and Linkages

71. The Royal Government of Cambodia has committed to long term conservation and sustainable use of natural resources in the region through the establishment of the Kulen Promtep Wildlife Sanctuary and the Preah Vihear Protected Forest in the region. UNDP is committed to capacity building and sustainable management of natural resources in Cambodia.

72. The Wildlife Conservation Society (WCS) Cambodia Program will be the major non-Governmental implementing agency, operating under its existing MoU with both the Government implementing agents. The Royal Government of Cambodia and UNDP have pre-selected this NGO based on its proven technical expertise and both global and Cambodia-specific experience in conservation and promoting a community based participation in conservation in the project area. Moreover, WCS already operates under a 5-year MoU signed on 13 December 1999 with MAFF and MoE defining a co-operative programme on biodiversity conservation in Cambodia. WCS has now been required to sign individual Project MoUs. The project agreement with MAFF for the Northern Plains was signed in December 2003 and lasts for the duration of the 7 year project (until 2011). WCS is committed to the conservation of the Northern Plains landscape having contributed \$475,400 to activities during 2000-2003. During the full project WCS is looking to mobilise co-financing of about \$1,600,000.

73. Specific linkages to GEF and IA programs and activities include:

- UNDP/GEF/ADB Integrated Resource Management and Development in the Tonle Sap Region

There is an important relationship between the Northern Plains and the Tonle Sap that is essential for the existence of a unique assemblage of wildlife. Reflecting this, the project would complement the current UNDP-GEF for Integrated Resource Management and Development in the Tonle Sap Region. Many of the globally threatened species that breed on the Tonle Sap, such as Spot-billed Pelicans *Pelecanus philippensis*, Painted Storks *Mycteria leucocephala*, Greater and Lesser Adjutants *Leptoptilus dubius* and *L. javanicus* are heavily reliant on being able to disperse across the Northern Plains in the wet season when resources on the lake are scarce. Conversely, Sarus Cranes *Grus antigone* and White-shouldered Ibis *Pseudibis davisoni* breed in the Northern Plains and return to the large permanent wetlands on the floodplain at the beginning of the dry season. However, far from being a simple flow of wildlife following the flood line, the regeneration of habitats and the movements of wildlife are complex and little understood. Of the two landscapes, the lake has received nearly all of the recent conservation attention, and has been designated a UNESCO Biosphere Reserve. Whilst warranted, the status of the Northern Plains as, firstly, a unique biome and, secondly, as an integral ecological cornerstone for the Tonle Sap, has been entirely neglected. This bias in conservation resources has long-term dangers, which, if ignored, could result in the loss of a significant proportion of regional biodiversity.

- WB/GEF Biodiversity and Protected Areas Management Project (BPAMP)

BPAMP's overall objective is to improve the MOE's capacity to plan, implement and monitor an effective system of protected areas (PA's). The immediate objectives focus on developing and testing measures to minimize degradation of the biodiversity of Virachey National Park (VNP) and to use the field experiences for the development of the national PA system. At national level, the project has made important contributions towards improving the capacity of the MOE by strengthening the Geographical Information System (GIS) Unit and drafting a Protected Area Law. The final enactment of this law, possibly in 2004, will be particularly relevant for CALM and activities in Kulen Promtep Wildlife Sanctuary. BPAMP has also achieved significant local successes in developing 'best practice' models for some project components, which are suitable for implementation inside and outside of Protected Areas in the Northern Plains.

These include the development of community-based NRM planning and its integration with *Seila*, and the on-going implementation of a management information system (MIST) originally designed for use in Ugandan National Parks. CALM has held consultations with BPAMP staff to understand how linkages can be made with these components. A trainer from BPAMP participated in the CALM PLUP training course, including a detailed description of the activities undertaken to setup community NRM committees. The MIST software is particularly relevant for use by enforcement teams, to enable reporting and analysis of patrolling effort and trends in illegal activities, and might be suitable to transfer to the Northern Plains as part of Component 3 (Law enforcement) of CALM. BPAMP has also recently developed a management plan for VNP, which, although relatively complicated, might provide a model for plans developed by CALM for Kulen Promtep later in the project. During the full project these linkages will be investigated further.

According to BPAMP's mid-term review the project's impact has been limited by (i) insufficient technical support (especially from international advisors), (ii) the physical distance between the two project offices; (iii) the weak institutionalisation of the project which limited the scope of project operation and continue to make planning and agreements beyond the project period difficult; and (iv) rapid changes in legislation which made it difficult for the project to pursue a coherent strategy towards the local communities. Two of these (ii and iii) are relevant to CALM, whilst the others are less applicable. CALM has, for example, been developed with strong international assistance from WCS, and this relationship will be maintained through the full project. Further, the legislative framework (with the exception of the new PA law) is now established and further changes in policy are unlikely, although individual components may be strengthened through sub-decrees. However, the physical remoteness of the Northern Plains is likely to have a strong impact on the project, and this should be taken into account when determining where project staff should be stationed. CALM should also take into account the relative weakness of BPAMP to produce institutional arrangements within MOE, or to form linkages with other ministries (especially MAFF) and projects. This has particular relevance to Components 1 and 3 of CALM, although both ministries are implementing agencies and are represented on the project steering committee. Project activities and management structures should be rapidly integrated during the full project with ministerial and provincial departments, if the project is to achieve government ownership and management sustainability. Opportunities for forming cross-linkages between staff working on similar components in MAFF and MOE areas should be pursued, to foster ministerial cooperation at multiple levels.

- UNDP/GEF Medium-size Project for the Cardamom Mountains

The Management of the Cardamom Mountains Range Project focuses on the consolidation of management activities in the region's three protected areas: the Central Cardamom Protected Forest (CCPF), the Phnom Aural and Phnom Samkos Wildlife Sanctuary (PSWS). The project aims to build national and local government capacity to manage the three areas, combined with sustainable development interventions designed to reduce pressure on the sites from local populations. The project is being co-implemented by the Forest Administration (FA) of the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Department of the Nature Conservation and Protection (DNCP) of the Ministry of Environment (MoE) in partnership with Conservation International (CI) and Fauna and Flora International (FFI) respectively. The CI/FA component will last until August 2004; while FFI/MoE component will last until April 2006.

The project will improve the planning, management and regulatory framework for these protected areas, for example through management plans and land-use zoning systems, practices that could be shared with the CALM Project. The two projects will be able to exchange information regarding wildlife, monitoring and data management to provide a better understanding of landscape management issues. The Cardamom Project will also provide examples of the engagement of local communities in sustainable natural resource management through the use of agreements and the PLUP process. These initiatives are similar to those proposed by CALM under Component 2.

- UNDP/*Seila*

The project activities and plan will be integrated into the Provincial *Seila* Program, thus the project will be recognised and will operate within the provincial annual planning framework. The Provincial Rural Development Committee/EXCOM will be used to provide leadership forums to discuss and coordinate to integrated landscape conservation and development into the Provincial Development Plans (PDPs). At the commune level, the CDC will be responsible for drawing commune PLUP maps and producing management plans for natural resource areas.

Seila is establishing community-based natural resource and environmental management programmes in other provinces, including Ratanakiri (building on the CAREERE initiatives) and Siem Reap (supported by DANIDA). The Siem Reap provincial project will extend to an area including one of the Northern Plains' key sites for conservation in 2005-7. Experience from these other initiatives will be used to understand how to implement CALM initiatives within the *Seila* framework in the Northern Plains.

- UNDP-GEF Mekong River Basin Wetlands Biodiversity Conservation and Sustainable Use Programme

The Northern Plains covers four provinces including the Ramsar Site of Stung Treng located on the Mekong River, which is the demonstration site of the Mekong Wetland Project. The sustainable use and conservation of the Ramsar site should be seen as part of the landscape management strategy and would significantly contribute to the conservation of habitats for migratory bird species. The Mekong Wetland project aims for conservation and sustainable use of biodiversity in the Lower Mekong Basin through strengthening capacity at regional, national and local level, formulating mechanisms to effectively manage wetlands. The project involves four countries sharing the Mekong wetland river basin: Cambodia, Laos, Thailand and Vietnam. At the regional level, the program will develop and apply technical tools for conservation and management of wetlands, as well as developing systems for all the countries to collaborate in wetland conservation. Given the importance of Mekong wetlands for migratory birds within the Northern Plains region, the two projects will provide direct benefits to each other. At national level, by encouraging a multi-sector approach through building capacities and increasing public involvement, the programme will enhance planning processes. The information base needed to support sound wetlands policy, planning and management decision-making will also be strengthened through the development of specialists network, awareness campaigns, adequate tools, and Wetland Action Plan. At the local level, within the demonstration site of Stung Treng, integrated planning and community-based natural resource management will be implemented. The programme will identify the values of the fresh water ecosystem and work with local people to develop improved management systems and alternative livelihood options.

Training will be provided and information will be disseminated as part of a targeted awareness campaign. Sharing lessons learnt from local governance, community based natural resource management and ecotourism, as well as national policy implication from GEF projects will benefit conservation of biodiversity in the respective projects.

- WB/Land Management and Administration Project (LMAP)

The overall goals of the project are to reduce poverty, promote social stability and stimulate economic development. The specific objectives of the project are to improve land tenure security and promote the development of efficient land markets. The project is planned to run from 2002-2007 and is managed by the Ministry of Land Management, Urban Planning and Construction. LMAP has supported the establishment of the “Council on Land Policy Reform” by the Government.

LMAP is developing legislation and policies to strengthen land tenure through implementation of the land law, which is directly relevant to component 2 of CALM. LMAP has set up Provincial Cadastral Commissions to resolve land disputes and conflicts, following the guidance of the recently approved Sub-decree. CALM will help local communities and Government officials to understand and use these commissions to help secure community tenure and title as part of component 2. LMAP is also producing guidelines and case studies to improve land-use mapping and zoning and CALM will be able to learn from these findings and integrate them into the management of the Northern Plains.

Sustainability

74. CALM will build the capacity of the government staff at the national and local levels to maintain project ownership. This will include considerable support to the new local government system, the Commune Councils, which were established by elections in 2003. The commune officials will be primarily responsible for developing community regulations on natural resource management. Further, CALM will build cross-institutional coordination amongst relevant government agencies. Key project outcomes will be endorsed by the appropriate government authorities. Consultation and participatory processes will generate a better understanding of conservation priorities and better cooperation with relevant government agencies. The participatory and consultation processes will also be promoted to generate trust and respect the voices of various national stakeholders.

75. The project will develop leadership of key national staff in planning, decision making and coordination. The implementation process will be led by Cambodian nationals with the minimum of technical assistance from external consultants. This will ensure that there is very little dependency on external resources after completion of the project. The use of participatory land-use planning processes with communities and stakeholders will build local capacity for land management and development planning. Component 1 will develop a landscape conservation plan, which will be mainstreamed into the local, provincial and national planning process. The project will integrate the principles of good governance such as improving accountability and transparency of decision making process.

76. Several factors will help to ensure the sustainability of necessary project activities and benefits beyond the completion of the GEF project.

- Conformity of project activities with new RGC legislation and policy development strategy, and specifically by integrating the project into the Provincial Development Plans (PDPs).
- High level of commitment from the RGC for integrated forest management in the Northern Plains. Evidence for this includes the recent designation of a major new protected area (Preah Vihear Protected Forest) and the commitment already shown during the PDF-B phase.
- Strong level of commitment from NGOs to support continued biodiversity -conservation and community natural resource management in the Northern Plains.
- Conformity with the RGC's policy of decentralisation. The project will raise provincial and community capacity to manage biodiversity and natural resources, in order to substitute expensive centralised control.

77. The project will be designed to cover all setup costs, and ensure that any necessary long-term maintenance costs of project initiatives are minimal. Many components will be completed within the timescale of the project:

- Landscape Conservation Framework (Component 1).
- Establishment of community land-use tenure and title (Component 2) and resource management plans (Component 2).
- Environmental Education program (Component 3)

For other components or activities initial costs will be high, however necessary maintenance costs will be low:

- Incentives scheme (Component 2).
- Law enforcement (Component 3). As security and institutional structures are established the capacity of local communities and provincial government to enforce laws should be strengthened so that available resources are sufficient to cover long-term costs.
- Monitoring (Component 3).

However it is recognised that sufficient financial sustainability must be established to cover these maintenance costs, especially the incentives scheme and monitoring program. An incremental cost matrix will be produced to identify the costs and activities. Opportunities for key-species eco-tourism have been researched during the PDF-B, and there is potential for tourism to fund necessary project activities, especially the village incentive scheme (Component 2). During the full project, activities will create a framework for key species eco-tourism that benefits both biodiversity and local communities. Further activities will investigate the potential for establishing a trust fund, or securing long-term additional government and NGO financial commitment, to fund other necessary project activities (e.g. the monitoring program).

78. WCS/FA/MoE has successfully piloted a model for biological monitoring at a project site in Mondulkiri. The same model will be implemented in the Northern Plains as part of Component 3, and was established at the Preah Vihear Protected Forest during the PDF-B. Although the start-up costs can be quite high, by year 4 the annual cost of this program is about \$5,000.

79. Through Component 3, the project will ensure that there is a structure for sound management of long term activities. Site management staff will be members of the appropriate authority (FA or MoE) with jurisdiction over the area including key sites. The project will not therefore create new (non-government) management structures.

The only exception is the Site Project Manager; this position will follow a model created by WCS and the FA for another region in Cambodia. In this region, the FA employs a site manager to co-ordinate activities between FA jurisdictional units within a landscape of importance for biodiversity conservation. Component 1 will ensure that the importance of particular sites within the landscape is recognised and provide support for the continued existence of site managers in the long term. Component 3 will ensure that sufficient training is provided to government managers and provincial staff. Activities under this component will also establish the infrastructure and necessary equipment for long-term management of key sites.

Implementation Strategy

Inter-Agency Cooperation

80. The Ministry of Agriculture, Forestry and Fisheries, the executive agency of the PDF-B, will also be the executing agency for the full project. As remarked earlier, one of the current constraints faced by MAFF is the lack of an inter-sectoral approach. Through this landscape project, strong ties with MAFF and MoE (relatively the Forestry Administration of MAFF and the Department of Nature Conservation and Protection of MoE) will be established by the project. During the progress of the project, senior staff and technical representatives from various relevant departments at both national and provincial levels will be required to interact, serving to promote multi-sectoral collaboration addressing landscape conservation in the Northern Plains. At policy level, a project steering committee will be established to coordinate policy and management issues. At technical level, a project technical advisory committee will be established to coordinate technical issues.

Stakeholder Consultation

81. Inclusion of all stakeholders is critical to the formulation of the project relevant outputs. Stakeholder identification and outreach are needed to ensure participation of a wide range of interests and concerns, including marginalized groups. Extensive consultation through the means of interviews, seminars and workshops will assist in improving planning and decision-making under the project. Annex 9 gives the stakeholder consultations completed under the PDF-B, and gives the participation plan for the full project.

Risks

Risk Analysis

82. There are three major risks to the project intervention:

1. Provincial support to the implementation of the new legal structure and government initiatives (land management and administrative policy, forestry reform and law development).
2. Failure to engage the armed forces.
3. Inadequate financial resources for long term running of necessary project activities.

Risk Management Strategy

1. Ensuring Provincial support

83. The project relies heavily on the assumption that present national government initiatives continue. Although national policy and legislation is advanced, provincial implementation has been slow and therefore this project will be one of the first to apply the framework in a forested region. Success will be dependent on the extent to which provincial governments are interested and required to execute the new initiatives, though experience with the PDF-B suggests that this interest will remain relatively high. Developing provincial capacity and awareness will be particularly important. The high level of support from national government, and the activities of *Seila* means that there are several mechanisms to ensure the engagement of provincial government in project activities.

2. Engagement of Armed Forces

84. Project success will also require the engagement of the Royal Cambodian Armed Forces and Police Forces. The military and police are influential bodies in the Northern Plains, particularly in the border regions, and the governor of Preah Vihear province is a military general. The involvement of the military will be especially necessary if border wildlife trade and logging is to be controlled and if community management plans are to be successful.

85. Engaging the RCAF and Police Forces in conservation will not be a simple matter. Enduring biodiversity results will only come from overall improvements in good governance. The 2003 UNDP Human Development Report considered the issue (Chapter 6: “Public Policies to Ensure Environmental Sustainability”). It suggests two responses to institutional failures and poor governance: strengthened property rights and decentralisation of environmental governance (accompanied by efforts that build community capacity to manage environmental resources and influence planning and policy-making). The CALM project provides these responses. Components 1 and 2 strengthen property rights; components 1 and 3 also strengthen decentralisation of environmental governance; and components 2 and 3 help build community capacity.

86. The 2003 Human Development Report goes on to state: “In many developing countries natural resources are plundered by corruption, benefiting powerful elites at the expense of poor people who depend on such resources. Countering corruption requires strengthening governance, with better enforcement, stiffer penalties and increased community involvement. In several countries citizens are assessing how well governments provide access to environmental decision-making and regularly monitor environmental governance. Both efforts will likely spur further progress.” CALM fully supports this approach. The project alternative is to strengthen local community ownership of what are essentially “open-access” resources; by assisting with the application of new Land and Forestry Laws to provide land tenure or usufructual rights and also to develop Community Management Plans for these resources. A general increase in governance of the Northern Plains is hoped to “squeeze” the illegal activities out.

87. To achieve this “squeeze”, careful attention needs to be paid to making the link between biodiversity management and human development. CALM integrates biodiversity issues into the national development frameworks, by building on the new legislative framework.

The project will also strengthen decentralisation for environmental management by supporting the new laws and working through the *Seila* program. It aims to empower civil society through an environmental awareness program and by demonstrating mechanisms to strengthen civil management of biodiversity resources. It also seeks to reduce environment-related conflict by working at four sites specifically chosen to minimize the potential for conflict.

88. All of these measures help to strengthen environmental governance and governance in general of the Northern Plains. Nonetheless, actions to involve and work with the armed forces are required. Local initiatives will include environmental education awareness-raising for armed forces (Component 3), approval of community land-use areas and their management plans by the provincial government, and the recognition of this by armed forces (Component 2), and involvement of the armed forces in law enforcement (Component 3). As a key output the project will develop and disseminate a code of environmental conduct for the military to be approved by the National Defence Ministry, MoE and MAFF. Nevertheless, there is a clear risk that some project activities, although they implement national law, will not be respected. Influence on local situations can be obtained from higher levels within the armed forces.

89. Frequent reporting to national government will be necessary so that the executing ministry, MAFF, is aware of those situations where local initiatives are failing. Experience with other projects suggests that national government is driven and able to intervene in those situations where conflicts arise. The most important of the project's key sites, the Preah Vihear Protected Forest, was declared by Government sub-decree in 2002, and its borders determined by the same government staff who have worked on developing CALM. National government has also shown considerable interest in the threats to biodiversity, such as those the project aims to reduce. One of the major threats highlighted during the PDF-B phase, destruction of waterbodies, has been the subject of a recent sub-decree by the Prime Minister, who on September 1 2003 ordered the Cambodian Armed Forces to assist officials in halting illegal fishing practices including electro-fishing.

3. Financial Sustainability

90. The project is assuming that it will be possible to ensure financial sustainability of necessary activities, particularly the incentives scheme. This will be essential if the project is to create structures for long-term biodiversity conservation. The section on sustainability (above) has already considered this issue.

PART II: RESULT FRAMEWORKS

91. The CALM project will deliver the GEF alternative through seven components over the seven year project duration.

Component 1: Incorporating biodiversity into the implementation of new laws

Outcome 1 - Biodiversity considerations introduced into provincial-level land use processes

92. Cambodia is currently developing and implementing new land management legislation, of which the Land Law is the most significant at the national level, but within this, biodiversity conservation values are not yet fully recognised. Provincial implementation of this policy is weak, and an opportunity exists to integrate conservation management objectives at the landscape scale, working both inside and outside the current protected areas network. To do this, the project will work in cooperation with the UNDP-funded *Seila* program to build the capacity of provincial planners and land management decision-makers to consider and apply biodiversity values. The project will also integrate the results of Components 2 and 3 into commune plans, district integration workshops and provincial planning processes. Through the project steering committee and Provincial Rural Development Committee a framework will be established for integrated conservation planning at the landscape scale. The framework will include dialogue and agreements made with all relevant stakeholders on activities.

Component 2: Community land-use tenure and title

Outcome 2 - Establishment of appropriate community land tenure and resource-right use

93. Current land and resource-use patterns reveal an ‘open-access’ system that results in general over-exploitation with no incentives for sustainable or co-ordinated management. The Royal Government of Cambodia’s new Land Law permits the process of Participatory Land-use Planning (PLUP) for all land estate, including forest estate and protected areas. Elements of the PLUP process will be used to determine rights, title and demarcate village land-use areas. This process of planning will subsequently highlight where and how tenure may be sought and, using additional PLUP elements, how appropriate tenure systems should be established over particular resources and resource areas. These activities are essential in order that more complex resource-use issues can be addressed in Component 3. Since two of the project key sites lies within concession forests, the land use planning process will enable biodiversity to be mainstreamed into the forestry sector.

Outcome 3 - Community engagement in natural resource management

94. A participatory process will work with villages to produce management plans for the land areas and resources for which tenure and title were negotiated as part of Component 2. Initially management plans will cover simple issues where there is considerable agreement between authorities and villages. For more complicated issues where agreement cannot be reached, such as forest fires or hunting with dogs, an incentive scheme will be introduced to reward improved management. The scheme will provide benefits in return for improved management and maintenance of wildlife populations (measured by Component 7) to encourage the concept of ‘ownership’ and the value of the wildlife resource. An on-going evaluation of the incentive scheme will be conducted for adaptive management.

Through the use of incentive schemes and land use planning at potential eco-tourism sites, the project aims to mainstream biodiversity into this sector.

Component 3: Financial and management sustainability of activities

Outcome 4 - Establishment of long-term financial and management sustainability

95. The project will be designed to cover all setup costs, and ensure that any necessary long-term maintenance costs of project initiatives are minimal. Many components will be completed within the timescale of the project:

- Landscape Conservation Framework (Component 1).
- Establishment of community land-use tenure and title (Component 2) and resource management plans (Component 3).
- Environmental Education program (Component 5).

For other components or activities initial costs will be high, however necessary maintenance costs will be low:

- Incentives scheme (Component 3).
- Law enforcement (Component 6). As security and institutional structures are established the capacity of local communities and provincial government to enforce laws should be strengthened so that available resources are sufficient to cover long-term costs.
- Monitoring (Component 7).

96. However it is recognised that sufficient financial sustainability must be established to cover these maintenance costs, especially the incentives scheme and monitoring program. An incremental cost matrix will be produced to identify the costs and activities. Further, the project will establish a structure for sound management of these activities. Site management staff will be members of the appropriate authority (FA or MoE) with jurisdiction over the area including key sites. This will provide the necessary sustainability of project management. Opportunities for key-species eco-tourism have been researched during the PDF-B, and there is potential for tourism to fund necessary project activities, especially the village incentive scheme (Component 3). During the full project, activities will create a framework for key species eco-tourism that benefits both biodiversity and local communities. Further activities will investigate the potential for establishing a trust fund, or securing long-term additional government and NGO financial commitment, to fund other necessary project activities (e.g. the monitoring program).

Outcome 5 - Increased public awareness of the key project sites for conservation and the need for sustainable use of natural resources

97. While environmental awareness will be an important theme throughout the work of Components 1, 3 and 4, additional supplementary activities will be needed to target specific groups and specific issues (e.g. those with communities living in close proximity to breeding bird colonies). This work needs to be both specialised and to have its achievements measurable if it is not to avoid conventional pitfalls of education/awareness activities. This Component will run concurrently with the PLUP process, with which it is closely linked, and seek to identify specific activity needs that the process will highlight.

98. A mobile education unit will be formed to increase awareness levels in and around key sites for conservation and a school support program will target local education efforts. The program will aim to build awareness and pride in key species conservation. Particular focus will be placed upon education and awareness activities for armed forces and at military bases to encourage their participation in conservation. An on-going evaluation scheme will assess and adapt the education activities to improve their impact. The setup costs (teacher training, production of materials and so on) will be covered by this component. However, by training provincial teachers and provincial department staff it is anticipated that activities will continue with minimal funding beyond the 7 year project.

Outcome 6 - Reduction in illegal commercial exploitation of biological resources and their components

99. Effective law enforcement will be necessary for successful biodiversity conservation, particularly with respect to reducing commercial hunting and wildlife trade. This will require improvements in the technical training, equipment and available infrastructure (e.g. offices for FA Sangkats) for government staff. Law enforcement teams will include representatives from relevant provincial authorities and the armed forces and work within guidelines determined by authorities and village natural resource management agreements. Additionally, once community organisations are established and tenure issues have been resolved, then local representation on these enforcement teams will begin in order to better involve locals, increase community responsibility for NRM management, and to build local methods of dealing with forest crime. The timing and nature of this participation will be linked to the achievements of Component 2.

100. A data management system will be designed to collect and collate information gathered during patrols and enforcement activities, and a reporting system established to monitor these activities and their impacts. This data system will probably be modelled on that already implemented by BPAMP project in north-eastern Cambodia.

Outcome 7 - Adequate data for conservation management and project evaluation purposes

101. The results framework will use four indicators to measure the project's impact:

- Biological populations
- Habitat extent
- Level of human activities identified as threats
- Extent of Government support

102. The first three determine the immediate success of the project in achieving the objective, the last will be crucial if activities are to be sustained. A dedicated monitoring program will collect standardised data to allow rigorous conclusions to be made about the levels of the first three indicators; government plans, reports and proclamations will measure progress on the final indicator. This will require the development of a database management system for input of field data and analysis of results. Training in data collection and analysis techniques will ensure that there is sufficient capacity for provincial staff and communities to understand the results of the monitoring program and the implications of these results for project activities. A pilot database was developed during the PDF-B phase and staff trained in its use.

Under this component, one activity will use the vulture restaurant program, also developed during the PDF-B, to monitor the population of *Gyps* vultures in the Northern Plains. The Cambodian population will represent only one of two existent populations following the dramatic declines in the Indian Subcontinent.

103. This component will monitor and quantify the ecological impacts and requirements of the innovative sustainable natural resource management being trialled at the four key sites. These will be used to generate knowledge on the application of sustainable natural resource management techniques in the Northern Plains. The results will be used as adaptive management tools both for the improvement of outcomes at the key sites and to contribute to the broader application of biodiversity considerations in land management processes at the provincial levels. Protocols for data collection and monitoring will be developed and improved as part of the adaptive management process. To the extent possible, community-based monitoring techniques will be developed and used.

104. Each year there will be a major, participatory adaptive management review of each of the four key sites. The missions will be timed so that they benefit from as up to date monitoring results as possible, but more importantly, can provide timely input to the annual project review. The adaptive management reviews will also include a focus on knowledge management (through formal lessons learned preparation etc and informal consultations and feedback loops), as well as dissemination to practitioners across the Northern Plains.

105. The project is adopting a 'landscape' conservation strategy, with targeted interventions at particular sites. These sites have been selected because together they are necessary and sufficient for successful conservation of all species found in the landscape. An annual evaluation process, informed by data collected during the monitoring program, will be necessary to set intervention priorities for the following year. The objective should be the maintenance of key species at all the identified sites. This annual evaluation will be necessary if the project is to avoid a 'site by site' implementation strategy that will not result in successful landscape-level conservation.

106. This component will include all the costs involved in monitoring the impact indicators and the progress made towards achieving them. It will also include the annual project reviews, adaptive management missions and planning meetings, adaptive management technical expertise, mid-term evaluation (\$75,000) and final evaluation (\$100,000).

Table 1: PROJECT RESULTS AND RESOURCES FRAMEWORK

Intended Outcome: Improved capacity of national/sectoral authorities to plan and implement integrated approaches to environment management and energy development that respond to the needs of the poor (7-year project duration).
Outcome Indicator: level of coordination at central/provincial level, including community participation in the management of natural resources
SAS: Institutional framework for sustainable environment management and energy development
Partnership Strategy: Project has been formulated in partnership with Royal Government of Cambodia, WCS and other relevant partners.
Project Title: Establishing Conservation Areas through Landscape Management (CALM) in the Northern Plains of Cambodia

Project Components	Outcome Indicators (2004-2011)	Indicative Activities	Inputs
Component 1. Incorporating biodiversity into the implementation of new laws	<p>Number of <i>Seila</i> Commune Development Plans including conservation planning</p> <p>Level of capacity in key provincial ministries and government for conservation planning and co-ordination.</p> <p>Provincial Development Plans, Sectoral Agency Plans (e.g. Concessionaires) include conservation priorities</p> <p>Conservation landscape incorporated within national planning strategies</p>	<p>1.1 Training of provincial staff from MoE, MAFF, MLMUPC in planning and project management. These staff will be responsible for implementation of new laws and conservation priorities.</p> <p>1.2 Training and awareness (through Component 3) in conservation priorities and planning for relevant staff in all provincial governments in the Northern Plains.</p> <p>1.3 Incorporate village PLUP land-use plans into commune development plans (supported by <i>Seila</i>).</p> <p>1.4 Incorporation of commune development plans into district integration workshops and provincial planning processes, supported by <i>Seila</i>.</p> <p>1.5 Holding of integration workshops and stakeholder consultations to disseminate project plans and receive input from other planning agencies.</p> <p>1.6 Establish a framework through the Provincial Rural Development committee and Project Steering Committee to integrate conservation priorities into development planning.</p> <p>1.7 Co-ordinate conservation activities with Military, Concessionaires and development agencies. Formation of agreements.</p> <p>1.8 Integration of project conservation plans into sectoral planning processes, including provincial government (PLG), MoE, MAFF and Ministry of tourism.</p>	<p>\$1,022,581</p> <p><u>Of which:</u></p> <p>GEF: \$500,000</p> <p>WCS: \$293,385</p> <p><i>Seila</i>: \$212,081</p> <p>RGC: \$17,115</p>
2. Applying Mainstreaming Measures	Level of Provincial capacity for participatory land-use planning	3.1 Training courses in years 1-2 in new laws and PLUP process. Visits to other relevant national projects.	<p>\$483,412</p> <p><u>Of which:</u></p> <p>GEF: \$250,000</p>

Project Components	Outcome Indicators (2004-2011)	Indicative Activities	Inputs
2a. Community land-use tenure and title	<p>Government approved land-use maps</p> <p>Number of village committees</p>	<p>3.2 Preparation of PLUP maps and formation of village natural resource management committees.</p> <p>3.3 Conflict resolution in villages.</p> <p>3.4 Cooperation with authorities to formally recognize PLUP maps. Workshops to disseminate results.</p> <p>3.5 Demarcation of village land-use areas and development of local agreements on land-use maps.</p> <p>3.6 Consolidate outputs into GIS system for national registration.</p>	<p>WCS: \$135,440</p> <p>Seila: \$92,197</p> <p>RGC: \$5,775</p>
Component 2b. Village agreements on natural resource management linked to direct incentives scheme	<p>Level of Provincial and local capacity for Sustainable Natural Resource Management</p> <p>Number of villages successfully implementing natural resource management plans</p> <p>Number of villages with successfully implemented incentive scheme contracts</p>	<p>4.1 Training and awareness workshops on Sustainable Natural Resource and Environmental Management, agreements and regulations for government staff and communities.</p> <p>4.2 Design of appropriate mechanism for an incentive scheme: how the scheme will function and be monitored.</p> <p>4.3 Development of village agreements (including Community Forestry Agreements) for management of natural resources, including agreements on the situations when enforcement activities will be used. Initiation of agreement monitoring system.</p> <p>4.4 On-going evaluation of village agreements produced in priority villages.</p> <p>4.5 Negotiations with villages regarding key conservation issues. Implementation of incentive scheme to cover the results of these negotiations.</p> <p>4.6 Regular auditing of incentive scheme activities for adaptive management.</p> <p>4.7 Extension of activities to further villages.</p>	<p>\$653,284</p> <p><u>Of which:</u></p> <p>GEF: \$300,000</p> <p>WCS: \$221,799</p> <p>Seila: \$125,710</p> <p>RGC: \$5,775</p>

Project Components	Outcome Indicators (2004-2011)	Indicative Activities	Inputs
<p>3. Strengthening capacity for biodiversity management</p> <p>3a. Financial and management sustainability of activities</p>	<p>Established project management structures for key sites</p> <p>Key site management plans</p> <p>Sustainable financing of project activities</p>	<p>2.1 Establish management structures within existing FA and MoE systems for key sites. Provide training to staff in management and financing.</p> <p>2.2 Provide equipment and adequate infrastructure for key sites.</p> <p>2.3 Establish an accountable financial system, for the long-term running of the project.</p> <p>2.4 Annual and long-term management plans for key sites.</p> <p>2.5 Determine long-term running costs to maintain necessary project initiatives (especially Component 2 and 3) in the long-term at each key site.</p> <p>2.6 Establish a framework for key species eco-tourism that benefits biodiversity and local villages, through incentive schemes and agreements created under Component 2.</p> <p>2.7 Evaluate feasibility of establishing a trust fund, partnerships and capacity development to mobilize resources to cover costs identified under Activity 2.4.</p> <p>2.8 Secure additional long-term government and NGO commitment to cover costs identified under Activity 2.4 and management costs under Activity 2.1.</p>	<p>\$707,332</p> <p><u>Of which:</u></p> <p>GEF: \$350,000</p> <p>WCS: \$309,032</p> <p>RGC: \$48,300</p>
<p>3b. Environmental awareness program targeted at communities and armed forces.</p>	<p>Number of villages around key sites with increased awareness of project, species and the importance of natural resource management.</p> <p>Number of provincial sectoral staff and agencies with increased awareness of project, sites, and issues for conservation management</p> <p>Number of army personnel and commanders with increased</p>	<p>5.1 Identification of education requirements and methods. Consideration of strategies required for different groups (military vs. communities).</p> <p>5.2 Preparation of environmental education materials, training of staff.</p> <p>5.3 Education activities in all villages surrounding key sites and with armed forces across the landscape.</p> <p>5.4 Building local/provincial support for key species conservation.</p> <p>5.5 On-going evaluation of education activities and their impact.</p>	<p>\$406,470</p> <p><u>Of which:</u></p> <p>GEF: \$200,000</p> <p>WCS: \$162,497</p> <p>Seila: \$37,148</p> <p>RGC: \$6,825</p>

Project Components	Outcome Indicators (2004-2011)	Indicative Activities	Inputs
	awareness of project, sites, and threats to conservation		
3c Law enforcement	<p>Number of incidences of commercial logging within key sites</p> <p>Number of incidences of wildlife trade</p>	<p>6.1 Production of agreements with local authorities, communities and security forces.</p> <p>6.2 Assemble staff and define law enforcement protocol, target areas and activities. Develop a strategy for curtailing border wildlife trade.</p> <p>6.3 Training, equipment and infrastructure provided for provincial government enforcement staff.</p> <p>6.4 Demarcation of protected sites within the landscape.</p> <p>6.5 Development of a database to monitor effectiveness of enforcement activities, with a reporting system.</p> <p>6.6 Evaluation of enforcement activities.</p>	<p>\$406,539</p> <p><u>Of which:</u></p> <p>GEF: \$200,000</p> <p>WCS: \$199,714</p> <p>RGC: \$6,825</p>
3d. Monitoring and adaptive management	<p>Number of key sites with monitoring programs designed to collect sufficient data for evaluating project impact indicators.</p> <p>Increased provincial capacity for biological monitoring.</p> <p>Adaptive management to inform intervention priorities at key sites.</p>	<p>7.1 Planning of monitoring program, including methodology, monitoring sites and protocols.</p> <p>7.2 Training of staff in monitoring methodologies in years 1-2.</p> <p>7.3 Trial of monitoring program.</p> <p>7.4 Development of a data management system for the monitoring program, with training of provincial staff in its use.</p> <p>7.5 On-going evaluation of trial monitoring program.</p> <p>7.6 Extension of program to other key sites by year 2.</p> <p>7.7 Monitoring of Vulture populations</p> <p>7.8 Annual evaluation of project activities based on results of monitoring program to identify problems and priority interventions for following year.</p>	<p>\$792,728</p> <p><u>Of which:</u></p> <p>GEF: \$500,000</p> <p>WCS: \$278,133</p> <p>RGC: \$14,595</p>

PART III: MANAGEMENT ARRANGEMENT

Execution

107. In accord with UNDP's policy promoting national ownership, leadership and accountability, the CALM project will be nationally executed. The Ministry of Agriculture, Forestry and Fisheries (MAFF), which was the executing agency of the PDF-B, is the designated Executing Agent for the Project.

108. As per UNDP's National Execution guidelines, the Executing Agency, MAFF, will be primarily responsible for the planning and overall management of the activities of the project, including reporting, accounting, monitoring and evaluation, and management of the audit. MAFF will thus be responsible to the Government of Cambodia and UNDP for the production of outputs, the achievements of programme objectives and therefore the use of UNDP resources.

Implementation

109. The project will be jointly implemented by the Department of Nature Conservation and Protection (DNCP) of the Ministry of Environment, the Forest Administration (FA) of MAFF and the Ministry of Land Management (MLMUPC). DNCP has a mandate over the management of Kulen Promtep Wildlife Sanctuary while FA has a mandate over the management of the Preah Vihear Protected Forest, Phnom Tbeng and the concession forest that includes the O'Scach River. Thus, the DNCP will play a leading role in implementing project activities in the Kulen Promtep Wildlife Sanctuary and the FA will lead project implementation of project activities in remaining areas. The Ministry of Land Management (MLMUPC) is the Government body responsible for the implementation of the Land Law and will be an essential partner in the Participatory Land-Use Planning (PLUP) process across the landscape, within both the Wildlife Sanctuary and the rest of the Forest Estate.

110. The National Program Director appointed by MAFF will serve as the overall government manager of the project. The same modality worked efficiently during the PDF-B phase and is therefore recommended to continue in the full project.

111. To facilitate the implementation of the project, and at the request of the executing agency, the UNDP Cambodia Country office will provide support services to the project in accordance with the UNDP procedures. These services include sub-contracts arrangements and the procurement of goods and services as described in the Letter of Agreement between UNDP and the Royal Government of Cambodia for the provision of support services.

112. The practical and technical implementation of the project will be assisted at all steps by the Wildlife Conservation Society (WCS). The Royal Government of Cambodia and UNDP have pre-selected this NGO based on its proven technical expertise and both global and Cambodia-specific experience in conservation and promoting community based participation in conservation in the project area. Moreover, WCS already operates under a 5-year MoU with MAFF and MoE defining a co-operative programme on biodiversity conservation in Cambodia. In addition, the project agreement with MAFF for the Northern Plains was signed in December 2003 and lasts for the duration of the 7 year project.

WCS's involvement in the project will be a major asset to the Government. Under the provisions of the UNDP Country Office direct support services, and as per UNDP rules and procedures, UNDP will enter into a subcontract with waiver for comparative binding with WCS to deliver project outputs, as described in the terms of reference for the sub-contracts.

113.A Project Steering Committee will be established to provide overall guidance for the implementation of the project. The Committee will consist of representatives of the relevant parties including the Council for Development of Cambodia, the Ministry of Environment, the Ministry of Agriculture, Forestry and Fisheries, MLMUPC, UNDP, WCS and provincial governors of 4 provinces, which share boundaries and territories with the Northern Plains landscape.

114.The committee will be chaired by the Minister of Agriculture Forestry and Fisheries and the Minister of Environment on a rotational basis. It will meet twice a year, or more often, if required.

115. Detailed information on the institutional arrangements and project management structure (including capacity assessment guarantees and terms of reference for the Steering Committee etc.) will be provided in the final UNDP Project Document.

Monitoring and Evaluation and Audit

Adaptive management

116. UNDP is intent on implementing a monitoring process that serves as an effective support tool to the project implementation team, allowing them to incorporate new scientific knowledge, and the results of lessons learned in similar projects elsewhere. This approach is particularly important for a project, which seeks to integrate conservation into a productive landscape.

117. Adaptive management will be promoted in order to create conditions that ensure greater success in project implementation. The term "adaptive management" is used in the context of experience developed by "Foundation for Success", under the Biodiversity Conservation Network. They defined the concept as³:

"Adaptive management is a process of defining actions, decision-making, and learning in which a group responsible for the conservation of a particular area is responsive to biophysical and social changes and is able to respond quickly and appropriately to these changes. In order to make sound management decisions under complex and evolving conditions, a group must be able to:

- Continuously test assumptions and hypotheses;
- Experiment with alternative approaches to resolve problems and address pertinent issues;
- Generate, analyze and use relevant and reliable data and information;
- Determine the impacts of its chosen course of action; and

³ From: "Adaptive Management of Conservation and Development Projects: Transforming Theory into Practice". Biodiversity Support Program Reference No.: 39, 1999

- Learn from failure as well as success and apply these lessons to future program decisions.

“An organization's ability to understand and react to the complex and dynamic ecological and social environments at a given project site is a major determinant of its success. Adaptive management is a useful tool in helping organizations deal with the complexity of managing conservation and development projects.”

118. Adaptive management practices and tools will be integrated into the implementation of the project through the mechanisms set out in Component 3. WCS, MoE, MAFF, UNDP including UNDP-GEF, and independent experts will be involved in the two-yearly adaptive management reviews. In addition, UNDP-Cambodia and UNDP-GEF will identify projects sharing common themes during the same period. Team members should also be aware of the incremental cost / global environmental benefits orientation of GEF funded projects.

119. The objectives of the adaptive management reviews in the context of the CALM project will be:

- To strengthen the existing annual project review process (APR). The reviews will provide support to the project implementation team in preparation for the APR and will improve the basis for recommendations made by the TPR⁴.
- To apply adaptive, learning-based approaches to project implementation. Adaptive, learning-based implementation requires a clear understanding of the project logic and periodic well structured events in which the project's experience (successes and failures) and changes in its operating context (opportunities and threats) can be examined in an objective manner by those involved.
- To promote exchange and learning across UNDP/GEF's portfolio of similar projects in the Asia/Pacific region. Progress in individual projects and across the UNDP/GEF portfolio will be enhanced by reciprocal visits that permit peer managers to examine and contribute to addressing issues raised by the execution of one another's projects.
- To improve the documentation and dissemination of project learning's and project accomplishments. This will ensure that the outcomes and lessons learned from each project are widely disseminated.

Conservation Impact Monitoring

120. The conservation impact of the project will be evaluated using 4 key indicators (see Annex 4):

- a) Populations of key wildlife species (see Annex 1 for definitions)
- b) Habitat Extent
- c) Level of human activities identified as threats (see Annex 3)
- d) Government support, indicated by recognition for key sites

⁴ The Tripartite Review (TPR) is no longer a corporate requirement of UNDP. Instead, such discussions on project strategy can be held using mechanisms such as steering committee meetings. However, UNDP still recognizes the value of such for a TPR. In the context of CALM Project, TPR meetings will be held or special meetings of the steering committee will be held, depending on the ToR of the steering Committee and wishes of the CO.

121. A monitoring and evaluation program will also be essential for:

- a) To provide the objective, quantifiable, measures of change required to determine reward rates for the community-based incentive scheme
- b) Inform law enforcement teams
- c) Provide information for internal project adaptive management at key sites

122. In the project logframe, the monitoring program is designated a separate component in recognition of its importance, and the necessity of maintaining independence between project activities and their evaluation. This is particularly relevant given that the results of the monitoring program will be used to set reward rates for the incentive scheme. The project recognises the critical need for quantifiable indicators, not just for management to adapt activities, but to provide a public and transparent process to evaluate project success. Both communities and government need to understand and accept monitoring results for there to be genuine stakeholder buy-in to the project.

123. A model for monitoring of biological populations has been developed by WCS/MAFF/MoE in another area of Cambodia and will be applied to the project site. Key species have been identified (see Annex 1), and will be the principal target of population monitoring. The necessary baseline data for the biological monitoring program was collected during the PDF-B phase, and this will be used to analyse future trends in populations during the full project. Key members of government and communities have received appropriate training in applying the methodologies.

124. Monitoring of habitat extent and quality will require the analysis of time-series remote sensing data, with field data collection for ground-truthing. Suitable baseline datasets already exist, both from aerial photography and satellite imagery.

125. Trends in human activities, where they impact on land-use, will also be monitored through the results of remote sensing data analysis. Data on other human activities, including illegal activities and other types of hunting, fishing and NTFP collection will be collected by field teams. The details of the data required will depend upon the threats analysis (see Annex 3) and those activities prohibited under agreed village management regulations. For the latter reason, monitoring systems may require different forms for particular villages. Baseline data needs will be determined early in the project, and data recorded before the implementation of management agreements and incentive schemes, in order that their impact can be evaluated.

Work plan and Reporting requirements

Quarterly Operational Work Plan and Annual Work Plan

126. The project will be monitored and evaluated following UNDP-GEF rules and procedures. The Executing Agent (MAFF) will be required to prepare quarterly operational work plan and annual work plans to be submitted to UNDP for agreement. The annual work plan needs to be endorsed by the project steering committee.

Quarterly Operational Report

127. One week after the end of each quarter, the Executing Agency is required to prepare a summary report (maximum one page) of the project's substantive and technical progress towards achieving its objective as described in the annual work plan. These quarterly reports will include financial statements and the work plan for the subsequent quarter. The summaries are reviewed and cleared by UNDP one week before being sent to the UNDP/GEF Regional Coordinator.

Annual Project Review (APR) and Project Implementation Review (PIR)

128. The National Executing Agency (MAFF) needs to prepare and submit Annual Project Review (APR) for UNDP and Project Implementation Review (PIR) for GEF. The APR/PIR is used as an input to the Tripartite Review Meeting and must be ready two weeks prior to the TPR meeting. The APR should be completed and submitted to UNDP two weeks after the end of the year while the PIR will be submitted to UNDP no later than 30 May for UNDP's review before being submitted to UNDP/GEF Regional Coordinator in the first week of June.

129. Both the APR and PIR will provide a more in-depth summary of work-in-progress, measuring performance against both implementation and impact indicators. APR/PIR would inform decision-making by the PSC, which will evaluate whether any adjustment in approach is required. A terminal report will be completed prior to the completion of the project detailing achievements and lessons learned.

130. MAFF will undertake continuous internal project monitoring. The outcome indicators (output targets) as mentioned in the results and resource framework (Table 1), are the parameters that will be monitored by the MAFF and UNDP under the CALM formulation project. These will be reviewed for their practicability and completeness early in the project implementation. Additional monitoring activities will be carried out (if necessary) to verify the attainment of some specific indicators/targets, as indicated in the project logframe (Annex 5). The extent by which the CALM formulation project goal is achieved will be evaluated based upon these results.

131. MAFF and UNDP-Cambodia shall be responsible that the overall monitoring and evaluation framework for the CALM project will effectively assess the quality and appropriateness of the various outputs/results of the project activities, and contribute to the national development goals of the country.

Evaluation

132. There will be independent mid-term and final evaluations of the project. Quantifiable indicators established through the monitoring plans will be measured to determine the extent to which the project has achieved its intended outcomes. Specific funds will be assigned for monitoring and evaluation in the CALM project budget.

Audit

133. In compliance with UNDP/GEF requirements for nationally executed projects, an annual project audit will be undertaken in each year during which project expenditure exceeds \$20,000.

PART IV: LEGAL CONTEXT

134. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Royal Government of Cambodia and the United Nations Development Programme, signed by the parties on 19 December 1994. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

135. UNDP acts in this Project as Implementing Agency of the Global Environment Facility (GEF), and all rights and privileges pertaining to UNDP as per the terms of the SBAA shall be extended mutatis mutandis to GEF.

136. The UNDP Resident Representative in Cambodia is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto with the Executive Coordinator, GEF Unit, UNDP (or designated Officer-in-Charge/Representative) and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- Revision of, or addition to, any of the annexes to the Project Document;
- Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- Inclusion of additional annexes and attachments only as set out here in this Project Document.

PART V: ANNEXES

- Annex 1 : The Global Biodiversity Value of the Northern Plains of Cambodia**
- Annex 2 : Mapping Key Sites for Conservation in the Northern Plains**
- Annex 3 : Threats and Problems Analysis**
- Annex 4 : Results Measurement Framework**
- Annex 5 : Logical Framework**
- Annex 6 : Incremental Cost Matrix**
- Annex 7 : Legislative Framework**
- Annex 8 : Linkages between CALM project, *Seila* Programme, LUPU and LMAP**
- Annex 9 : Stakeholder consultations and Participation Plan**
- Annex 10 : Conservation Awareness and Community Participation (CACP)
Considerations in Preah Vihear Protected Forest**
- Annex 11 : Chey Sen & Chhep Districts Socio-Economic Assessment**
- Annex 12 : Potential for Eco-tourism**
- Annex 13 : Maps**
- Annex 14: Endorsement and Co-financing Commitment Letters**

Annex 1: The Global Biodiversity Value of the Northern Plains of Cambodia

137. The deciduous dipterocarp forests that once spread across southern Indochina from Bangkok to Saigon were formerly home to the greatest aggregation of large mammals and water birds that have existed beyond the savannas of Africa. These forests have largely disappeared from Thailand and Vietnam, due to burgeoning rural populations and associated pressures on land and resources. In the Northern Plains Cambodia remains the largest contiguous block of this unique and critically important habitat. Further, the region still maintains an unparalleled assemblage of globally endangered species not under protection anywhere else in the world. The area is either a last refuge for, or maintains a key population of, 36 species on the IUCN Red List, including six listed as Critically Endangered.

138. Within Cambodia, the Northern Plains contains the largest number of Globally Threatened species of any landscape. The following tables are taken from the Government’s ‘Cambodian Biodiversity Status Report’ from the Cambodia Biodiversity Enabling Activity Project (CMB/98/G33) and highlight this importance:

Global conservation status of mammals recorded for each faunal area

FAUNAL AREA	Critical	Endangered	Vulnerable	Near-threatened	Data Deficient	Total
Northern Plains	2	3	8	5	6	24
Eastern Plains	1	4	7	4	5	21
South Annamites		4	8	3	4	19
Cardamoms		2	5	7	4	18

Global conservation status of birds recorded for each faunal area

FAUNAL AREA	Critical	Endangered	Vulnerable	Near-threatened	Total
‘Dry’ Forests*	4	2	5	7	18
Tonle Sap	1	2	7	6	16
Mekong River			2	4	6
Coastal		1	2	2	5
S. Annamites			2	3	5
Cardamoms		1	2	3	5

*‘Dry’ Forests = Northern and Eastern Plains

Addition data collected under the PDF-B has only enhanced the importance of this landscape by adding species not included above.

Cambodia: a National Biodiversity Prospectus 1997

139. Lists the Northern Plains as follows: “Likely to be the largest deciduous dipterocarp forest remaining within the Indo-Chinese province of the Indo-Malayan Realm ... Remote, and possibly very old, lowland forest area with major wildlife populations ... historically supported the highest density of Kouprey. Other large mammals such as elephant, tiger, gaur, banteng, bear, deer believed to still be present in substantial numbers.”

National Environmental Action Plan (NEAP) 1998-2002

140. The NEAP (1998) does not prioritize Kulen Promtep Wildlife Sanctuary due to lack of information, but notes the following “A number of the protected areas such as Preah Vihear, Kulen Promtep ..., lie in military security zones or in areas occupied by the Khmer Rouge ... Ironically, the security problem has in some way served to protect natural habitats since 1980. Whilst it has not been possible to establish conservation programs in insecure zones, it has also not been possible to undertake large-scale development in these areas.” Based on the little information available it states that Kulen Promtep is “The largest area in the protected area system, intended to protect the Kouprey. The principal habitats are lowland open dipterocarp forest (which historically held a high density of Kouprey), lowland evergreen/semi-evergreen forest, and the largest swamp in northern Cambodia.”

141. There is an important relationship between the Northern Plains and the Tonle Sap that provides the essential conditions for the existence of some unique assemblages of wildlife. The value added to global biodiversity conservation by having UNDP-GEF support efforts across the Tonle Sap and the Northern Plains is considerable. There are essential linkages for both projects as many of the globally threatened species of the Tonle Sap are heavily reliant on being able to disperse to the Northern Plains when the lake floods in the wet season in order to breed and feed when resources on the lake are scarce. However, far from being a simple flow of wildlife following the floodline, the regeneration of habitats and the movements of wildlife are complex and little understood. Of the two landscapes, the lake has received nearly all of the recent conservation attention, and has been designated a UNESCO Biosphere Reserve. Whilst warranted, the status of the Northern Plains as, firstly, a unique biome and, secondly, as an integral ecological cornerstone for the Tonle Sap, has been entirely neglected. This bias in conservation resources has long-term dangers, which, if ignored, could result in the loss of a significant proportion of regional biodiversity.

142. A host of globally threatened species, such as Spot-billed Pelicans *Pelecanus philippensis*, Painted Storks *Mycteria leucocephala*, Greater and Lesser Adjutants *Leptoptilos dubius* and *L. javanicus* breed on the lake, but disperse across the Northern Plains in the wet season. Conversely, Sarus Cranes *Grus antigone* and White-shouldered Ibis *Pseudibis davisoni* breed in the Northern Plains and return to the large permanent wetlands on the floodplain at the beginning of the dry season. The PDF-B has contributed essential data needed to understand this relationship more thoroughly and has directed attention to sites within the Northern Plains that, if protected, would contribute to the lakes conservation efforts.

143. In addition to their key value to birds, the plains are also crucial to large mammal conservation in Cambodia and, in fact, the entire region. Many formerly widespread species are now restricted to a few small localities of which the Northern Plains is the largest and have the greatest potential for conservation. Examples of these are Lyle's Flying Fox *Pteropus lylei*, Hog Deer *Axis porcinus*, Eld's Deer *Cervus eldii*, Banteng *Bos javanicus*, Tiger *Panthera tigris*, Fishing Cat *Prionailurus viverrina* and Asian Elephant *Elephas maximus*. Like the water birds, these species rely on being able to concentrate in a few key resource areas during infertile or dry times and disperse widely across the floodplains when the water enriches the soil. Other species present also help to underscore the uniqueness of the Northern Plains.

On a PDF-B survey, MoE, MAFF and WCS discovered the Critically Endangered Wroughton's Free-tailed Bat *Otomops wroughtoni*, a bat that was formerly only known from a single cave in western India.

144. Although the landscape is of demonstrated global biodiversity importance, current conservation efforts are inadequate to mitigate and prevent the threats that they are under. Such is the vulnerable nature of resources during the seasonal extremes, that although keystone resources (permanent water bodies, semi-evergreen forest, mineral licks) are distributed across a wide area, they are small in number, localized and especially vulnerable, so that the removal of even one such resource could have significant detrimental effects on unique components of biodiversity. The PDF-B gathered considerable data on the location, role and significance of these resources as well as on the threats to them. Thus the project is well placed to achieve immediate and enduring results, and in addition, have positive implications beyond the focal area.

Directory of Important Bird Areas in Cambodia: Key Sites for Conservation, March 2003

145. The Cambodian directory of Important Bird Areas (IBA), produced with the assistance of Birdlife International, identifies areas with globally important bird populations. Three of Cambodia's IBAs are located in the Northern Plains - Kulen Promtep Wildlife Sanctuary, O'Skach and Chhep. Identification of these areas relied heavily on data collected by WCS, and staff from MoE and MAFF during the PDF-B phase.

146. Kulen Promtep Wildlife Sanctuary supports one of the few breeding colonies of Darter *Anhinga melanogaster* remaining outside of the Tonle Sap Lake floodplain. In addition, the wildlife sanctuary is an important breeding site for Sarus Crane *Grus antigone* and Lesser Adjutant *Leptoptilos javanicus*. Furthermore, a number of other globally threatened and near-threatened species have been recorded at the site, including Giant Ibis *Pseudoibis gigantea*, White-shouldered Ibis *Pseudibis davisoni*, Greater Adjutant *Leptoptilos dubius*, Black-necked Stork *Ephippiorhynchus asiaticus* and Grey-headed Fish Eagle *Ichthyophaga ichthyaetus*.

147. O'Skach is important for conservation of a range of forest bird species including Green Peafowl *Pavo muticus*, Siamese Fireback *Lophura diardi* and Great Hornbill *Buceros bicornis*. Most notably, the Northern Plain supports breeding population of White-winged Duck *Cairina scutulata*, the most significant known in Cambodia.

148. Chhep (Preah Vihear Protected Forest) supports one of the most intact remaining examples of the bird community of the dry forests of central Indochina, including a large number of globally threatened and near-threatened bird species including Green Peafowl *Pavo muticus*, White-winged Duck, Sarus Crane, White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *G. tenuirostris*, Red-headed Vulture *Sarcogyps calvus*, Greater Adjutant, Lesser Adjutant and Black-necked Stork. Most notably, Chhep supports one of the largest remaining populations of Giant Ibis in the world. In addition, it supports small numbers of wintering Manchurian Reed Warblers *Acrocephalus tangorum*.

Key Landscape Species

149. The PDF-B used the Living Landscape approach to develop the project proposal. Pioneered internationally by WCS, the approach centres on preserving the ecological integrity of a large area or wilderness through understanding and conservation of a suite of “landscape species”, selected as being ecologically representative of that landscape. These species often use large, ecologically diverse areas and have significant impacts on the structure and function of natural systems; thus conserving a suite of landscape species will result in the conservation of most plants and animals within their collective landscape. The Living Landscape philosophy is to develop strategies for the conservation of large, complex ecosystems that are integrated in wider landscapes of human influence which includes, but is not restricted to, protected areas, community land, forestry concessions, plantations and other areas of economic importance.

150. As part of the PDF-B a computer information system developed by WCS was used to identify the key landscape species or species groups that subsequently formed the focus of the biodiversity and key resource mapping. Key species were selected based upon their conservation importance, value as an indicator species of a particular threat or a particular habitat. Consequently, not all endangered species were chosen. Greater adjutants, for example, require similar habitats and food sources to Giant Ibis and Sarus Crane, and are threatened by the same human activities. Therefore they were not selected. Other species, such as Wroughton's Free-tailed Bat *Otomops wroughtoni* and several turtles, were excluded due to the difficulties of collecting comparable data. The importance of these species is, however, recognized in the project threats analysis, key site selection, and project design.

Species and species groups selected by Living Landscapes computer system -

Name	Conservation Status	Key resources
Asian Elephant, <i>Elephas maximus</i>	Endangered	Evergreen forests
Giant Ibis, <i>Pseudoibis gigantea</i>	Critical	Dry forests and waterbodies
Eld's Deer, <i>Cervus eldi siamensis</i>	Data Deficient	Dry forests and waterbodies
Large Cats, <i>Panthera spp.</i>	Endangered (<i>P. tigris</i>)	Prey populations
Sarus Crane, <i>Grus antigone</i>	Vulnerable	Grasslands and waterbodies
White-winged Duck, <i>Cairina scutulata</i>	Endangered	Riverine forests
Wild Cattle, <i>Bos spp.</i>	Endangered (<i>B. javanicus</i>) Vulnerable (<i>B. frontalis</i>)	Evergreen and dry forests

A further three species and species groups, were selected that had limited range but were of conservation importance, or were indicators of particular resources -

Name	Conservation Status	Key resources
Oriental Darter, <i>Anhinga melanogaster</i>	Near-threatened	Flooded rivers
Vultures, <i>Gyps spp.</i> and <i>Sacrogyps spp.</i>	Critical, (<i>G. bengalensis</i> , <i>G. tenuirostris</i>) Near-threatened (<i>S. calvus</i>)	Prey populations
White-shouldered Ibis, <i>Pseudoibis davisoni</i>	Critical	Waterbodies

Globally Critical or Endangered species known or considered likely to still exist in the Northern Plains. [Name in **bold** = confirmed]

Name	Conservation Status*
Siamese Crocodile <i>Crocodylus siamensis</i>	Critical
White-shouldered Ibis <i>Pseudibis davisoni</i>	Critical
Giant Ibis <i>Pseudoibis gigantea</i>	Critical
Wroughton's Bat <i>Otomops wroughtonii</i>	Critical
White-rumped Vulture <i>Gyps bengalensis</i>	Critical
Long-billed Vulture <i>Gyps indicus</i>	Critical
Banteng <i>Bos javanicus</i>	Endangered
Dhole <i>Cuon alpinus</i>	Endangered
Asian Elephant <i>Elephas maximus</i>	Endangered
Yellow-headed Temple Turtle <i>Hieremys annandalii</i>	Endangered
White-winged Duck <i>Cairina scutulata</i>	Endangered
Particolored Flying Squirrel <i>Hylopetes alboniger</i>	Endangered
Elongated Tortoise <i>Indotestudo elongata</i>	Endangered
Cantor's Giant Softshell <i>Pelochelys cantorii</i>	Endangered
Greater Adjutant <i>Leptoptilus dubius</i>	Endangered
Tiger <i>Panthera tigris</i>	Endangered

Species which are listed as Vulnerable* or Data Deficient* **and** for which the Northern Plains maintains a potentially globally important population:

Name	Conservation Status*
Lesser Adjutant <i>Leptoptilus javanicus</i>	Vulnerable
Sarus Crane <i>Grus antigone</i>	Vulnerable
Clouded Leopard <i>Neofelis nebulosa</i>	Vulnerable
Pileated Gibbon <i>Hylobates pileatus</i>	Vulnerable
Marbled Cat <i>Pardofelis marmorata</i>	Vulnerable
Golden Cat <i>Catopuma temminckii</i>	Vulnerable
Fishing Cat <i>Prionailurus viverrinus</i>	Vulnerable
Green Peafowl <i>Pavo muticus</i>	Vulnerable
Greater Spotted Eagle <i>Aquila clanga</i>	Vulnerable
Giant Asian Pond Turtle <i>Heosemys grandis</i>	Vulnerable
Malayemys <i>subtrijuga</i>	Vulnerable
Siebenrockiella <i>crassicollis</i>	Vulnerable
Asiatic Softshell Turtle <i>Amyda cartilaginea</i>	Vulnerable
South Asian Box Turtle <i>Cuora amboinensis</i>	Vulnerable
Imperial Eagle <i>Aquila heliaca</i>	Vulnerable
Indochinese Hog Deer <i>Axis porcinus annamiticus</i>	Data Deficient
Indochinese Eld's Deer <i>Cervus eldii siamensis</i>	Data Deficient
Gaur <i>Bos frontalis</i>	Vulnerable
Malayan Sun Bear <i>Helarctos malayanus</i>	Data Deficient
Masked Finfoot <i>Heliopais personata</i>	Vulnerable
Hairy-nosed Otter <i>Lutra sumatrana</i>	Data Deficient
Lyle's Flying-fox <i>Pteropus lylei</i>	Data Deficient

<i>Hipposideros pomona</i>	Data Deficient
Smooth-coated Otter <i>Lutra perspicillata</i>	Vulnerable
Northern Pig-tailed Macaque <i>Macaca leonina</i>	Vulnerable
Sladen's Rat <i>Rattus sikkimensis</i>	Vulnerable

* Status from BirdLife International (2000) *Threatened Birds of the World*, for birds and 2000 *IUCN Red List of Threatened Species* for all other taxa.

Annex 2: Mapping Key Sites for Conservation in the Northern Plains

Introduction

151. In December 2002, WCS commenced a 1-year GEF PDF-B (project development phase). The PDF-B aimed to “develop the full project by allowing essential data to be gathered on both the human and wildlife use of the landscape, including locating and mapping of critical resource sites and to analyse their respective threats. Concurrently, the PDF-B will assist the building of a landscape-wide stakeholder network and the establishment of a politically and socially expedient framework for the full project to follow. With this framework and the data that contributed to it, the full project will then focus appropriate interventions on these key resource areas and those issues which threaten them, working through provincial and local authority structures that will have been coordinated and prepared for the project.”

152. As a first step, WCS initiated the mapping of the human and biological landscape, including resource use areas and their respective threats. This report covers the work that has been undertaken to fulfill these aims during the PDF-B phase, and the organisation of data from other sources (wildlife surveys during 2000-2002, and other data sources).

Methods

153. The GEF study aimed to map the biological and human landscapes of the northern plains. Data would be gathered from general surveys, and specific surveys focusing on camera trapping, water-body mapping, and collection of data on village natural resource use.

Wildlife Surveys

Standardised Data Collection

154. A standardised data collection methodology was developed and made into a field data book. The datasheets included information on species encountered, as well as human activities, natural features and roads. Every data record was associated with a UTM co-ordinate, to generate a ‘pixelated’ map of the landscape. For example, roads were not mapped specifically in full, but a series of points taken along the road described its characteristics. Each general survey was associated with a GPS trackfile, which allowed the entire survey route to be plotted in full. Specific road segments could then be cut out, and used to compile a map of major roads. Supplementary datasheets on water-bodies, villages and nesting birds gave extra information. A system of codes was developed to standardise data collected on specific observations. The general survey form and the code system formed the basis of a database designed for entry and storage of the data.

155. Data recording sheets were developed for water bodies due to their particular importance for wildlife. At least 3 of the landscape species (Giant Ibis, Eld's deer and Banteng) are dependent to some extent on seasonal ponds (trapeangs), which are also focal points for human activity in the dry season (for water and fish). White-winged Duck and Gaur are dependent upon the gallery forest around key rivers, which again are important for human activities (water, fish and resin trapping). Surveys aimed to map the location of trapeangs, and collected standardised data on the habitat, wildlife species and human threats. Further surveys were designed to record incidences of poisoning (and any dead animals), human use, wildlife sign, and the volume of water present. It is anticipated that only a minority of these features contain permanent water; consequently these are likely to be of importance for human and wildlife activities in the late dry season and early wet season (before the water levels rise in June-July). The water body mapping activities were mainly conducted in the Preah Vihear Protected Forest.

156. A camera-trap data sheet was developed, for entry of data from camera-traps. This wildlife data format collects extra information on each photograph - including date and time, and number of individuals. The format also facilitates data analysis.

157. Further datasheets were created for the recording of illegal activities, in order to assist in a threats analysis for the area.

Existing Data

158. From Wildlife Surveys conducted in 2000-2002, WCS already understands the biological situation across a large part of the Northern Plains. Extensive surveys and camera trapping in the Preah Vihear protected forest and Chendar Plywood concession, by Pete Davidson, Kong Kim Sreng, Prum Sovanna and Tan Setha in 2000-2002 means that the key species and locations for conservation in this area are known. Standardised transects conducted by the WCS team in 2000-2001 across the huge Kulen Promtep Wildlife Sanctuary, provides a useful comparable dataset to examine the distribution of key species in this area. Aerial surveys by ICF in the wet season in 2001 identified important water bird breeding sites, especially for Sarus Crane. Based upon this information the western part of the wildlife sanctuary is clearly of greater priority than the east, although two specific key locations in the east are worthy of conservation action (Darters and Cranes at Tukhung, and White-Shouldered Ibis at Thmatboey).

159. Past data, from surveys and camera-traps, was compiled in the standardised format, where possible. An Arcview shapefile was generated for each survey, giving the route followed. Wildlife data was extracted and entered into the new format. Any information on features, villages, human activities, etc., was also extracted, where possible - although this was extremely limited. Subsequent analyses used the wildlife data only for 2000-2002, although other data (especially trapeangs) could be used in the future.

Survey List

160. The appendix gives the compiled survey database from 2000-2003. 27 Surveys were completed prior to the PDF-B, a further 37 were performed during the PDF-B (2002-2003), and 8 community surveys were undertaken. Reports exist for all 71 surveys mentioned authored by the survey leader.

Wildlife survey work in 2003 focused on the following areas -

- a) A re-survey of known key areas (Preah Vihear Protected Forest, breeding bird sites in Kulen Promtep Wildlife Sanctuary) - Prum Sovanna, Kong Kim Sreng, Pich Bunnat, Songchan Socheat
- b) New surveys in northern Chhep - Prum Sovanna
- c) New surveys in northern and western Kulen Promtep - Kong Kim Sreng, Songchan Socheat, Pich Bunnat
- d) New surveys in forest concessions - Sin Polin, Pich Bunnat, Sok ko
- e) New surveys in Sar Kum Thmei - Prum Sovanna

Communities

161. Community work included:

- a) extensive consultations with groups of villagers, including village and commune chiefs
- b) participatory mapping, to identify natural resource use areas and key wildlife areas
- c) participatory threats analysis, to list and prioritise environmental problems and threats in each village
- d) interviews with key informants - village and commune chiefs, traders
- e) household socio-economic questionnaire.
- f) trial of various environmental education materials and techniques

162. Activities a-d were completed in 7 villages surrounding Preah Vihear Protected Forest, and 2 villages in Kulen Promtep Wildlife Sanctuary. The socio-economic questionnaire was only used for villages in the Preah Vihear Protected Forest region, although it is suitable for application elsewhere. Education activities focused on 2 pilot villages near the Protected Forest.

163. Mapping the human landscape was of particular importance, as previous work had only focused on wildlife. Human threats can be divided into those by 'outsiders' - loggers, hunters, etc. - which involve illegal activities, and the livelihoods of the communities themselves. Data on the former was collected by compiling reports on known events, and information gathered during general surveys. Community data was obtained from two sources (1) general survey recording of human activities, and (2) specific community socio-economic questionnaires.

164. The socio-economic questionnaires were designed with the following objectives -

- a) The economic status of the village, including the number of livestock, other assets (e.g. motorcycles) and food security (in terms of rice production). Inequalities of distribution - i.e. the village may be rich, but have a substantial number of people without adequate food. General information about the village - presence of a school, a salaried teacher, other NGO projects in the area. This information will help CALM to decide what needs the village has, and how these might be addressed through a 'direct incentives for conservation' program.
- b) The importance of resin tapping, at the village and family level. Extent of families practising resin tapping, and the income generated. In comparison with results from (1) this can indicate the importance of resin tapping for providing income to survive food shortages. Informal discussions with traders provides information on resin trade routes, other products traded (e.g. rice) and the costs of transport and trade. The data collected is directly comparable to that obtained in 2002 by Tom Evans in Mondulkiri.

- c) The importance of fish to local livelihoods. It is practically difficult to measure the volume or weight of protein, and fish is rarely bought or sold in trade (i.e. so measurement of trade would hugely underestimate consumption). The importance of fish is therefore difficult to assess. The questionnaire chose to focus on - (a) the amount of time spent fishing during different seasons, (b) the distance people are willing to go to obtain fish, (c) crude estimates of the catch size, per fishing trip to each locality, (d) the amount of time during which the fish are eaten (e.g. the river catch in October provides sufficient fish until December), although obviously this ignores meal size. Of these four ‘currencies’ the first two probably have greatest potential to measure the importance of fish. Questionnaires also asked for the availability of other protein sources in each month - to assess the relative importance of fish versus other forms (e.g. lizards in May, frogs in the wet season, etc.). Domestic meat appears to serve as a form of currency reserve, to be sold in times of hardship, or for consumption on special occasions only - i.e. domestic meat is not a staple protein source.
- d) The importance of forest activities. This was assessed as the amount of time spent in the forest, whether resin-tapping or fishing. It was difficult to obtain information on hunting activities, although it is probable that this is done in combination with fishing or resin tapping. The location information for resin trees and fishing areas (name, distance/time walked, if the trip involved overnight stays) was designed to build a ‘resource map’ of the areas used around the village. This was complemented by participatory village resource mapping exercises done in groups.

165. Villages with large numbers of families engaging in activities within the key conservation areas should be targeted during subsequent conservation interventions.

GIS Data sources

166. GIS data is available for some aspects of the human landscape. The validity of the most recent village census data was checked, and updated where it was inaccurate. No useful data was available for roads; so extensive mapping of major roads was undertaken by survey teams. Good GIS data was available for land use jurisdictional units – such as protected areas, forest concessions and wildlife sanctuaries – although often the boundaries of these are not demarcated on the ground. Data was also obtained on the estimated location of mines (Level 1 survey) and the location of mine-related incidents (CMVIS), since the former is thought to be very inaccurate. The JICA 2002 Landuse dataset (obtained from analysis of Landsat TM images) was used as a baseline for forest cover and land-use type.

Threats Analysis

167. Data on threats was compiled from 3 sources –

- recording of human activities during general wildlife surveys
- completion of forms on illegal activities by rangers and WCS survey staff – e.g. information on wildlife trade, illegal logging, traps etc.
- results of community consultations, interviews, and socio-economic questionnaires

168. All threats data has an associated geographical location, to allow mapping of threats across the landscape. Data was used to directly inform the threats analysis process.

Vultures

169. Parts of the Northern Plains were thought to be important for vulture species. Since vultures are rarely seen during general surveys, a program of vulture restaurants (provision of carcasses) was initiated in March 2003, and 8 were completed by the end of December. The aim was to monitor the carcasses to collect data on the species, numbers, and structure of the vulture populations. The restaurants were performed at different locations, so as to collect data on the spatial distribution of vultures across the landscape. Data collection at carcasses focused on the recording of detailed counts of the species, numbers, age, and behaviour of individual or small groups of vultures (since the numbers expected were low). An additional datasheet was produced to record the habitat at the carcass, since some locations might be more preferable than others for vultures.

170. Given the scarcity of wildlife, domestic meat is presumably the major food source for vultures. Community questionnaires recorded the number of cattle and water buffalo in each village, so that the size of the potential food source is known. Villages differ, however, in the extent to which they allow their livestock to wander in the forest. Livestock that die near to villages are more likely to be eaten by people. One hypothesis for vulture declines is the scarcity of available food. Accordingly, a second questionnaire was undertaken in October-November 2003 for a selection of villages. The questionnaire was designed to collect information on the number and location of domestic cattle fatalities. Cattle that died further from the village would be less likely to be consumed by domestic dogs. Further information was requested about the behaviour of villagers - some would remove the meat from fresh carcasses, whilst other people were more or less careful about caring for the livestock.

Results

Data Analysis

Calculating Survey Effort

171. Data was analysed by using 1-km grid squares to map survey effort and wildlife populations across the entire landscape. Survey routes were overlaid in a GIS system and grid squares were identified where the survey entered the squares. For each square, a count was made of the number of surveys that intersected with it. All surveys had equal value regardless of the distance or time that a survey was present in the square. Different counts were made for surveys that had collected data on mammals, versus those that had recorded birds, or those that collected data on human activities (2003 surveys only).

Biological Landscape

172. Species data was compiled and intersected with the grid-squares, to give a count of the number of surveys that recorded each key species in each square (i.e. a presence/absence for each survey). The number of times a particular species was recorded by a survey was not included. Surveys differed in their observer skills for particular species groups, and the amount of search effort spent in each square. Consequently a simple presence/absence was judged to be sufficient, for key species.

173. The survey effort and the species record count data for each square was normalised to provide the probability that a species was recorded in a square each survey (count of surveys recorded / count of surveys that visited a square). This was used to provide a map of species distribution across the grid.

174. The biological landscape was completed by consideration of habitat and topographical features. The 1-km grid squares were intersected with the relevant GIS data sources to calculate the following parameters -

- area of each square under each land use type
- area of each square that contains wetlands (from the ICF digitised topomap data), and if a wetland is present or absent
- presence or absence of a trapeang in a square (from WCS survey data)
- distance to nearest river, of different types

Community Landscape Use

175. Two sources of data were available on communities' use of the landscape -

- Participatory maps drawn during village meetings
- From community surveys, the location of resin trees and fishing areas used by each family (name, and approximate distance).

176. These two sources of information were plotted on to a map to build an approximate picture of the area and locations used by the community. At a later stage this could be complemented by the collection of GPS points at resin trees or fishing areas.

177. Provisional results suggest that communities differ in the extent to which they know and use the landscape. Members of some villages may go 20-30 km into the forest to service resin trees and fish, whereas people in an adjoining village only go a few km. Resin trees may provide important focal points in the dry season - when the required weekly visit to the trees dictates locations where hunting and fishing activities take place. It may be important to understand these differences between villages, as it will determine those areas that are important for future community work, education, and patrolling.

178. The size of villages may also be important. For example, Robounh is located in a prime wildlife area, but only has about 40 families, whereas Dangphlat has 135 and Moluprey commune around 200. The intensity of landscape use is therefore likely to be much more intense around the larger villages. The community land use area should not therefore be considered to be used at uniform intensity. A preferred approach would be to generate a pixelated map - with dots for each family indicating the location of use areas. These could then be intersected with the 1-km grid squares, to generate a count of the 'number of families using each grid square'. Around Robounh, for example, the land use area may be quite large, but the intensity low. By contrast, around Moluprey the land use area is very intensive, but a minority of families also travel 20-30 km to use rivers in the Preah Vihear protected forest at low intensity. This approach provides a map of the location and intensity of community landscape use.

179. A second dataset is available - based on information collected during the 2003 GEF surveys, where the location and type of human activities was recorded. This data can be compiled in the same manner to the species data - i.e. to provide a count of the number of surveys that record human activity in a particular square. This data can be standardised by the number of surveys to a square to provide an index - the proportion of surveys that record human activity in the square.

Human Landscape Features

180. The human landscape map is completed by consideration of particular features - particularly borders, roads and villages. The 1-km grid squares are intersected with each to calculate the following parameters -

- distance to Laos PDR border
- distance to roads - of different types (main road, truck road, ox-cart road)
- distance to village
- distance to village, weighted by village size
- presence of mines, or mine-related incidents

Statistical Analysis

181. Data was analysed using logistic regression. Each survey visit to a grid square was treated as an independent event, with each key species or human activities either present (1, recorded by survey) or absent (0, not recorded). Explanatory variables were continuous, and included -

- area of each square under each land use type
- area of each square that contains wetlands (from the ICF digitised topomap data), and if a wetland is present or absent
- presence or absence of a trapeang in a square (from WCS survey data)
- distance to nearest river, of different types
- distance to Laos PDR border
- distance to roads - of different types (main road, truck road, ox-cart road)
- distance to village
- distance to village, weighted by village size
- presence of mines, or mine-related incidents

182. The dataset was analysed to identify the impact of particular variables on key species records, and to model areas of high or low human activity.

Camera-traps

183. Camera data was analysed by computing average encounter rates (number of photographs / 100 trap-nights) for key species, based upon all cameras placed in a particular area for a single period. Results were differentiated between those placed at focal points (trapeangs, salt-licks), and those placed along roads or trails.

Water bodies

184. Two trapeang surveys were undertaken in 2003. Firstly, WCS staff completed the 'trapeang datasheet' during their surveys. Secondly, in May-June 2003, rangers completed the same datasheet during independent surveys across the Preah Vihear Protected Forest. The datasheet used in the second survey was almost identical, except it contained a special section to record incidences of wildlife, and poisoning, at trapeangs. This allowed wildlife information to be directly associated with the trapeang, whereas for the first dataset this 'spatial join' was achieved by selecting all wildlife records (from all years) within 50m of the trapeang point.

185. Data was used to produce a map of trapeang locations, and to identify areas important for key species. The information collected on human activities, especially frequency of poisoning.

Community Socio-Economic Data

186. In addition to mapping community landscape use areas, the socio-economic data gathered was used to investigate the importance of forest resources to communities.

187. Resin tapping data was analysed in the same manner as Tom Evan's work in 2002. Particular importance was placed on the amount of time (work) invested in resin tapping, the income gained, and the importance of this income for food security.

188. Fishing data was used to assess the importance of fishing to community livelihoods. Four 'currencies' were used to indicate this - (a) the amount of time (work) spent fishing and the distance walked (b) the catch obtained, (c) the time when fish are eaten. Of particular interest was the assessment of the importance of core wildlife areas for forest resources, versus the resources obtained at other locations. For example, the majority of resin trees used by villagers at Moluprey are within 10km of the village, and are not in core wildlife areas - i.e. there is no conflict.

Administrative Landscape

189. Map 1 shows the Northern Plains landscape, including protected areas, protected forests, forest concessions and provincial boundaries.

Biological Landscape

190. The biological landscape was mapped by calculating the proportion of surveys that recorded key species in each square. Seven widespread landscape species (or species groups) were chosen - Asian Elephant, Eld's Deer, Giant Ibis, Large Cats, Sarus Crane, White-winged Duck and Wild Cattle - plus a further three species of global importance but restricted range - Oriental Darter, Vultures and White-shouldered Ibis. Map 2 gives the biological landscape for Kulen Promtep Wildlife Sanctuary and Preah Vihear Protected Forest (and adjacent areas).

191. This method of analysis omits two species groups of importance. Results from the vulture restaurants indicated that numbers were greatest within Preah Vihear Protected Forest, especially in the Bai Samnon and O Kapok areas. Surveys of Phnom Tbeng revealed that caves within the hillsides support large numbers of bats, in addition the area is important as a watershed.

192. The biological landscape maps also show habitat type, wetland areas and major rivers.

Human Landscape

193. Map 3 shows the major features of the human landscape for Kulen Promtep Wildlife Sanctuary and the Preah Vihear Protected Forest (and adjacent areas). Features include agriculture, villages, roads, military bases and minefields.

Discussion: Key Sites for Conservation

194. Landscape data was used to identify key sites for conservation, in addition to informing the project plan and threats analysis. Both Core and Buffer areas were mapped. Core areas were defined on purely biological criteria, as regions where >50% of grid squares visited contained key species on >40% of occasions. Twelve core areas were identified -

Preah Vihear Protected Forest -

- Robounh - Asian Elephant, Eld's Deer, Giant Ibis, Large Cats, Sarus Crane, White-winged Duck, Wild Cattle
- O Koki - Asian Elephant, Eld's Deer, Giant Ibis, Large Cats, Sarus Crane, Wild Cattle
- O Kapok - Asian Elephant, Eld's Deer, Giant Ibis, Large Cats, Sarus Crane, White-winged Duck, Wild Cattle, Vultures
- Bai Samnon - Eld's Deer, Giant Ibis, Large Cats, Sarus Crane, Vultures
- Narong - Eld's Deer, Giant Ibis, Sarus Crane

O'Scach-O'Dar (adjacent to Protected Forest)

- O'Scach - Asian Elephant, White-winged Duck, Wild Cattle
- O'Dar - Asian Elephant, Giant Ibis, Large Cats, White-winged Duck, Wild Cattle
- Russey Trap - Giant Ibis, Sarus Crane

Kulen Promtep Wildlife Sanctuary -

- Stung Sen River - Giant Ibis, Oriental Darter, Sarus Crane, White-winged Duck
- Tukhung - Giant Ibis, Oriental Darter, Sarus Crane
- Tmatboey - Giant Ibis, Sarus Crane, White-shouldered Ibis
- Prey Veng - Eld's Deer, Giant Ibis, Large Cats, Sarus Crane, White-winged Duck, Wild Cattle

195. Buffer areas were of two kinds. The Preah Vihear Protected Forest, O'Scach-O'Dar, Tmatboey-Stung Sen and Prey Veng areas were defined to include several core areas. Four further buffer areas were identified because they include some species of interest -

Kulen Promtep Wildlife Sanctuary -

- Phnom Pul - Wild Cattle [this area is under-going very heavy exploitation by illegal logging, and previously was of much higher quality]
- Rolum Choeng Spean - White-winged Duck
- Stoeng Roengear - White-winged Duck

Phnom Tbeng -

- Phnom Tbeng - bats, and crucial watershed area.

196. Map 4 shows the key sites, selected across the Northern Plains for their importance for conservation. The sites can be grouped into 4 areas - Preah Vihear Protected Forest, O'Scach-O'Dar, Kulen Promtep Wildlife Sanctuary and Phnom Tbeng.

197. By decree, two areas in the Northern Plains have formal protected status, covering 5,902 km². However, extensive regions have little biological importance. The core areas cover only 782 km², of which 668 km² currently has some protected status. Together with the buffer areas the total is 3,265 km², of which 72% is protected. This is only 55% of the total protected area. It is strongly recommended that future activities are focused into this smaller subset of protected, and currently unprotected areas, especially in situations where resources are limited.

Appendix - Survey List 2000-2003

Name	Date	Description	Location
WILDLIFE SURVEYS			
<u>2000-2001</u>			
1 Joe Walston and Sin Polin	Dec-00	Chhep foot survey	Chhep
2 Pete Davidson and Tan Setha	Dec-00 – Feb-01	Chhep and KPWS bird survey	Chhep/KPWS
3 Men Soriyun	Dec-00	KPWS Transect Surveys	KPWS
4 Pich Bunnat	Jan-01	KPWS Transect Surveys	KPWS
5 Sin Polin	Jan-01	KPWS Transect Surveys	KPWS
6 Kong Kim Sreng	Dec-00	KPWS Transect Surveys	KPWS
7 Kong Kim Sreng	Jan-01	KPWS Transect Surveys	KPWS
8 Prum Sovanna	Dec-00	KPWS Transect Surveys	KPWS
9 Prum Sovanna	Jan-01	KPWS Transect Surveys	KPWS
<u>2001</u>			
10 Prum Sovanna	Feb-01	Chhep put cameras	Chhep
11 Prum Sovanna	Mar-01	Chhep collect and put cameras	Chhep
12 Prum Sovanna	May-01	Chhep collect and put cameras	Chhep
13 Prum Sovanna	Jul-01	Chhep collect cameras	Chhep
14 Kim Hout, Malcolm Coulter	May-01	Giant Ibis Survey	Chhep
15 Kim Hout	Oct-01	Check Tukung Bird Colonies	KPWS
16 Pete Davidson and Tan Setha	Aug-01	Giant Ibis Nest	Chhep
17 International Crane Foundation	Sep-01	Aerial Surveys	Northern Plains
<u>2002</u>			
18 Kong Kim Sreng	Jan-02	Chendar Plywood, Cameras	Chhep
19 Kong Kim Sreng	Feb-02	Chendar Plywood, get cameras	Chhep
20 Prum Sovanna	Jan-02	Chhep, put cameras	Chhep
21 Prum Sovanna	Feb-02	Chhep, get cameras, re-put	Chhep
22 Prum Sovanna	Apr-02	Chhep, retrieve cameras	Chhep
23 Tan Setha, Songchan Socheat	Jan-02	Chendar, White-winged Duck survey	Chhep
24 Kim Hout	Mar-02	Colexim and Boeng Per Survey	Concession
25 Tan Setha	Sep-02	Check Tukung Bird Colonies	KPWS
26 Pich Bunnat	Oct-02	Check Tukung Bird Colonies	KPWS

27	Tan Setha	Nov-02	Check Tukhung Bird Colonies	KPWS
	<u>PDF-B, 2003</u>			
1	Kong Kim Sreng	Dec-02	Field Survey near Thmatboey, put cameras	KPWS
2	Pich Bunnat	Jan-03	Field Survey near Narong	Chhep
3	Prum Sovanna	Jan-03	Field Survey near Robounh, put cameras	Chhep
4	Songchan Socheat	Jan-03	Field Survey towards Kamkut	Chhep
5	Kong Kim Sreng, Tan Setha	Jan-03	Field Survey near Thmatboey	KPWS
6	Pich Bunnat	Feb-03	White-winged Duck survey near Robounh	Chhep
7	Prum Sovanna	Feb-03	Field Survey near Robounh, get cameras	Chhep
8	Songchan Socheat, Kong Kim Sreng	Feb-03	Phnom Tbeng	Phnom Tbeng
9	Songchan Socheat, Tan Setha, Pich Bunnat	Feb-03	Vulture Restaurant 1	Chhep
10	Pich Bunnat	Mar-03	White-winged Duck survey in Kulen	KPWS
11	Pich Bunnat, Sin Polin	Mar-03	TIMAS Survey	Concession
12	Prum Sovanna	Mar-03	During Communities work	Chhep
13	Songchan Socheat	Mar-03	Vulture Restaurant 2	Chhep
14	Songchan Socheat	Mar-03	Vulture Restaurant 3	Chhep
15	Kong Kim Sreng	Mar-03	Field Survey W-KPWS, put cameras	KPWS
16	Pich Bunnat, Sin Polin	Apr-03	Everbright Survey	Concession
17	Prum Sovanna	Apr-03	Eld's deer survey on Chendar road	Chendar
18	Songchan Socheat	Apr-03	Collect Cameras	KPWS
19	Songchan Socheat	Apr-03	Vulture Restaurant 4	Chhep
20	Kong Kim Sreng	Apr-03	Field Survey W-KPWS, put cameras	KPWS
21	Pich Bunnat	May-03	KPWS Bird survey	KPWS
22	Prum Sovanna	May-03	Ta Seng survey	Ta Seng
23	Songchan Socheat	May-03	Survey in eastern Chhep	Chhep
24	Kong Kim Sreng	May-03	Odour Meanchey Survey, put cameras	KPWS
25	Tong Yee	Jun-03	Bat Cave and threats survey	Phnom Tbeng
26	Prum Sovanna	Jun-03	Ta Seng survey, collect cameras	Ta Seng
27	Songchan Socheat	Jun-03	Yeang Survey	KPWS
28	Songchan Socheat	Jun-03	Vulture Restaurant 5	Chhep
29	Sin Polin, Sok Ko	Jun-03	COLEXIM Survey	Concession
30	Pich Bunnat	Jul-03	KPWS Bird survey	KPWS
31	Songchan Socheat	Jul-03	Vulture Restaurant 6	Chhep
32	Pich Bunnat	Aug-03	KPWS Bird survey	KPWS
33	Pich Bunnat	Sep-03	KPWS Bird survey	KPWS
34	Songchan Socheat	Nov-03	Vulture Restaurant 7	Chhep
35	Songchan Socheat	Dec-03	Vulture Restaurant 8	Chhep

36	WCS/MoE Rangers	July-Nov-03	Field survey and protection of nesting birds	KPWS
37	WCS/MAFF Rangers	July-Nov-03	Field survey and protection of nesting birds	Chhep
COMMUNITY WORK				
	<u>PDF-B, 2003</u>			
1	Hout Piseth	Jan-Jun-03	Community questionnaires and consultations	Chhep
2	Hout Piseth	Apr-03	Community consultations	KPWS
3	Tan Setha, Prum Sovanna, Troy Hansel	Mar-03	Community consultations and education	Chhep
4	Tan Setha	May-03	Community consultations and education	Chhep
5	Tan Setha	Jun-03	Education Awareness	Chhep
6	Tan Setha, Rebecca Watters	Nov-03	Development of Education Strategy	Chhep
7	Tan Setha, Rebecca Watters, Allan Michaud	Dec-03	Filming of Education Video	Chhep

Annex 3: Threats and Problems Analysis

Immediate Threats	Underlying Factors	Root Causes	Proposed Interventions (Project Components)
<p>1. Over-exploitation of wildlife resources</p>	<ul style="list-style-type: none"> • Snaring of bird and mammal populations • Hunting with dogs on NTFP collection trips • Egg and chick collection of breeding water birds during the wet season • Commercial hunting with guns by robbers and security forces. • Outsiders exploiting community resource-use areas. 	<ul style="list-style-type: none"> • Strong incentives for trade of wildlife species driven by national and international markets • Wildlife resources perceived to be no-cost or lowest-cost source of protein to supplement limited food supplies, motivating opportunistic, indiscriminate collection of wild sources by increasing % of communities • Increasing human population with proportionate and additive demands • Illegal wildlife trade promises short-term gains that cannot be matched by available alternatives (on a return per unit of input basis). Risks (of being caught) are either perceived as worth taking, or are not considered • Negative perceptions of Govt. No history of support • Communities have no tenure over resources, creating disincentives for longer-term resource management and encouraging over-exploitation by outsiders. • Little intra- and inter-community cooperation due to modern local turmoil. No pre-existing informal management structure • No history of stability, tenure or title • Barriers to uptake of alternatives include access to capital. • Local insecurity reduces incentives • Barriers to uptake of alternatives include technical capacity to diversify and improve agriculture or domestic fish/livestock 	<ul style="list-style-type: none"> • Use of national PLUP (Participatory Land-use Planning) process to establish and agree on land- and resource-use patterns surrounding communities (Component 2) • Environmental Education program to increase conservation awareness, understanding of the project, the benefits of wildlife conservation and knowledge of wildlife laws (Component 3) • Community Agreements on land-use zones and their respective regulations (Component 2) • Enforcement program to reduce wildlife trade and extraction from outsiders and increase confidence within communities over tenure (Component 3) • Community Contracts that provide direct benefits for reductions in illegal activities and adherence to less formal Community Agreements (Component 2) • Pilot villages and core areas to demonstrate/test models of incentives-based wildlife management (Component 2) • Monitoring of a) wildlife, b) community agreements and c) incentives-based contracts (Components 2,3) • Integration of local planning initiatives into provincial development plans through the <i>Seila</i> program and national land and forestry planning strategies (Component 1) [e.g. new forest administration planning]

Immediate Threats	Underlying Factors	Root Causes	Proposed Interventions (Project Components)
		<ul style="list-style-type: none"> • Little awareness of alternatives for wildlife management, or the capacity to implement alternatives and plan developments • Perceived inability to effectively control illegal activities from outsiders • No demonstrations of alternative management systems 	
2. Over-exploitation of forest resources	<ul style="list-style-type: none"> • Logging by military and police • Logging by communities for commercial trade • Logging by concessionaire exploiting key resources 	<ul style="list-style-type: none"> • Weak governance structures • Military and police not subject to due judicial process • Strong economic incentives for illegal timber logging • Forest perceived as an open-access resource, promoting behaviour favouring short-term high-yield activities over longer-term conservation and sustainable use. • Risk of being penalised for illegal exploitation does not outway the benefit (risk = size of penalty * chance of being caught). • Few local cash-generating options exist • Low management awareness, incentives and capacity for mitigating potentially harmful impacts • Concession viewed as discrete management unit rather than as part of a inter-dependent landscape 	<ul style="list-style-type: none"> • Promote awareness of new forestry law to authorities and communities (Component 3) • Build capacity for the implementation of new legislative framework (Component 1) • Use of national PLUP process to establish and agree on important timber and resin resources surrounding communities and possible tenure (Component 2) • Enforcement program to target illegal logging by outsiders and promote local confidence (Component 3). • Community Agreements on land use zones and regulations (Component 2) • Community Contracts that provide direct benefits for reductions in illegal activities and adherence to less formal Community Agreements (Component 2) • Pilot villages and core areas to demonstrate mechanisms for management and monitoring of Contracts (Component 2) • Monitoring of community agreements and incentives scheme (Components 2,3) • Lobbying of provincial and national authorities on

Immediate Threats	Underlying Factors	Root Causes	Proposed Interventions (Project Components)
			<p>illegal logging activities by military and police bodies (Component 1)</p> <ul style="list-style-type: none"> • Coordination with concessionaire over project activities, development of best-practices policy and inclusion of concession within monitoring program (Component 1) • Integration of component initiatives into provincial and national policy frameworks (Component 1)
<p>3. Seasonal destruction of key water bodies</p>	<ul style="list-style-type: none"> • Use of bomb, poison and electric fishing techniques • Repetitive extraction leading to over-utilisation • Perception of ‘open access’ with no protected fishing areas 	<ul style="list-style-type: none"> • Water bodies are an open-access resource. • Despite acknowledging the problem, communities unable to defend traditional fishing areas • Current tenure regime creates competition to exploit common resources. • Recognition of problem and need for coordination tempered by no local experience of positive regulations of any sort, only negative • Barriers to effective enforcement of illegal fishing methods result in perception of low risk <ul style="list-style-type: none"> - Legally grey area - Little application of most laws anyway - Low provincial and district capacity - Ineffective judiciary - Lack of co-operation between provincial authorities • Open-access nature of fish resources makes investment in alternative sources of food economically unattractive. Massive reliance on natural fish stocks for protein. 	<ul style="list-style-type: none"> • Use of national PLUP process to establish community rights/tenure over ‘problem’ water bodies (Component 2 feeding in to Component 1) • Community Agreements on location of key fishing areas and appropriate fishing methods (Component 2) • Community Contracts that provide direct benefits for reductions in illegal activities and adherence to less formal Community Agreements (Component 2) • Pilot villages and core areas to demonstrate models for positive management of water bodies (Component 2) • Monitoring of community agreements and water bodies (Components 2,3) • Environmental Education program to increase awareness of the impact of illegal fishing methods, and the law (Component 3) • Enforcement program to reduce the use of illegal fishing methods in cooperation with local communities (Component 3) • Natural Resource Management options study for local areas to assess potentially more effective land-use

Immediate Threats	Underlying Factors	Root Causes	Proposed Interventions (Project Components)
			strategies (Component 2) <ul style="list-style-type: none"> Integration of component initiatives into provincial and national policy frameworks (Component 1)

Capacity Constraints

Capacity Constraints	Underlying Factors	Proposed Interventions (Project Components)
<ul style="list-style-type: none"> Poor capacity at all provincial levels for land-use planning means that few structures exist for incorporation of biodiversity conservation values. Poor management capacity of protected area and forest management authorities results in inadequate promotion of conservation values. Lack of implementation, and poor provincial awareness, of new legal framework for land management and administration Key landscape conservation priorities (identified during PDF-B phase) are not currently recognised by government. 	<ul style="list-style-type: none"> Poor technical capacity of commune committees and provincial government Few technically trained staff within provincial department of the environment (responsible for protected areas), department of agriculture, forestry and fisheries (responsible for forests, including protected forests) and department of land management. Inadequate infrastructure and equipment for management authorities, especially department of environment and department of agriculture, forestry and fisheries Historically poor legal framework New legal framework exists, but provincial implementation depends upon funding and technical support from non-governmental sources. Existing protected areas and forests are large (and hence unsustainable), have no demarcated boundaries and do not accurately reflect biodiversity and environmental conservation priorities. Challenging to justify to Government the value of prioritising key sites for conservation inside and outside of protected areas and forests. Priority sites not represented within other responsible ministries e.g. Ministry of Land Management 	<ul style="list-style-type: none"> Training, funding and technical support for the PLUP process (Components 1 and 2) Training, infrastructure and equipment for management authorities (Components 1, 2 and 3) Inclusion of multiple Government bodies responsible for land planning in PLUP process (Components 1 and 2) Establishment, where appropriate, of title to strengthen appropriate land-use activities and reduce potential for loss (Components 1 and 2) Integration of component initiatives into provincial and national policy frameworks, including government recognition of key sites and government decrees on the management of protected forests (Component 1) Inter-ministerial committee established at provincial level to improve coordination planning between MoE, MAFF, MLMUPC, Provincial Government (PLG) and military authorities (Component 1) Support to Commune, District Provincial level committees on land use planning (Component 1)

Capacity Constraints	Underlying Factors	Proposed Interventions (Project Components)
<ul style="list-style-type: none"> • Government management regulations for forested areas and PAs require improvement. • Conservation priorities are ignored during development activities - e.g. establishment of communities, commercial activities, or infrastructure development 	<ul style="list-style-type: none"> • MoE Protected areas are perceived as weak and ineffectual • MAFF protected forests are newly created, with no defined role or function • Reform of forestry sector is on-going, and the integration of conservation objectives into forest production has yet to be piloted. • Infrastructural development often planned, financed and undertaken by military, concessions and other less accountable bodies • Coordination weak between provincial and national authorities and between institutions 	

	<i>Government Support -</i> Number of hectares of key sites	236,886ha (72%)	4 sites recognised by year 5.	Government maps	
Project Objective	Key Outcome Indicators	Baseline	Target	Verification Means	Assumptions or Risks
The effective conservation of the key components of Cambodia's Northern Plains Landscape	<p>Number of military bases in key sites</p> <p>Biological Populations - Percentage of Km squares where key species recorded (patch occupancy)</p> <p>Survey records from monitoring transects and points, e.g. encounter-rates from camera-traps</p> <p><i>Maintenance of Habitat -</i> Number of hectares of forest within key sites</p> <p>Number of hectares of grassland</p> <p><i>Reduction in human activities causing excessive resource use-</i> Percentage of water bodies with poison/electric fishing activity within key sites</p> <p>Number of hunting incidences (traps/dogs/guns) recorded at monitoring points within key sites</p> <p>Number of Km squares with logging activity recorded by teams in key sites</p>	<p>Protected Forest - 2</p> <p>Wildlife Sanctuary - 2</p> <p>Baseline data exists for 3 key sites, and will be collected for site 4 in year 1.</p> <p>Phnom Tbeng - 1</p> <p>Results of monitoring transects and points established at all sites in year 1.</p> <p>Protected Forest - 135,396</p> <p>Wildlife Sanctuary - 76,884</p> <p>O'Scach-O'Dar - 57,998</p> <p>Phnom Tbeng - 27,858</p> <p>Analysis of remote-sensing data in year 1</p> <p>90% of dry season water bodies poisoned or electric fished</p> <p>Baseline will be established in year 1 for all sites</p> <p>Baseline data exists for 3 key sites, and will be collected for site 4 in year 1.</p>	<p>at each site by year 5.</p> <p>25% increase in total key species records at two sites by year 5, remaining by year 7.</p> <p>Maintained presence of each key species at respective sites</p> <p>No decreases in forest area compared with baseline during years 2-7.</p> <p>No net loss of grassland area compared with baseline during years 2-7.</p> <p>50% reduction in Protected Forest site by year 2, achieved at remaining sites by year 4.</p> <p>75% reduction at all sites by year 5.</p> <p>20% reduction in Protected Forest site by year 2, achieved at remaining sites by year 4.</p> <p>75% reduction at all sites by year 5.</p> <p>30% reduction in Protected Forest site by year 2, achieved at remaining sites by year 4.</p> <p>75% reduction at all sites by year 5.</p>	<p>Government records</p> <p>Monitoring program (Component 3)</p> <p>- standardized transect data</p> <p>- point counts</p> <p>- fixed camera-traps</p> <p>Monitoring program (Component 3)</p> <p>- analysis of time-series remote sensing data</p> <p>Monitoring program (Component 3)</p> <p>- data collection within key sites, including core areas and village management areas</p> <p>- enforcement team reports</p>	<p>Maintenance of government, military, police and community interest and support for biodiversity conservation</p> <p>Conservation areas are of sufficient size to support biological populations</p> <p>Populations are able to recover from past over-exploitation</p>
Key Species: Asian Elephant (evergreen forests), Giant/White Crane (grasslands), Vultures, Wild Cattle (evergreen and dry forests)		<p>White-shouldered Ibis (water bodies), White-shouldered Ibis,</p>	<p>Eld's Deer (dry forests and water bodies), White-winged Duck (river forests)</p>	<p>(Component 3)</p> <p>- standardized transect data</p>	<p>Oriental Darter, Sarus</p>

Annex 4: Results Measurement Framework

Project Components	Key Outcome Indicators	Baseline	Target	Verification Means	Assumptions or Risks
1. Building a landscape conservation framework	Number of <i>Seila</i> Commune Development Plans including conservation planning	Currently no CDPs include conservation plans	5 by year 3, 8 by year 5	- Revised Commune Development Plans	Authorities' interest in being involved in coordinated land-use planning continues
	Level of capacity in key provincial ministries and government for conservation planning and co-ordination.	No staff trained.	Candidate staff from each ministry, authority and agency trained by year 3. At least 100 staff trained.	- Reports of training courses. Number of staff trained.	<i>Seila's</i> interest in supporting NRM continues.
2. Financial and management sustainability of activities	Provincial Development Plans, Sectoral Agency Plans (e.g. Concessionaires) include conservation priorities	PDP, Ministry, Agency plans and Environmental Impact Assessments do not account for conservation priorities	Plans and EIAs reference conservation plans by year 3	- Conservation guidelines for landscape, including maps of priorities and management objectives - Minutes of Provincial Development committees Sectoral Plans (Ministries and NGOs) and EIAs	Provincial capacity can be increased or is sufficient for coordinated planning Community and district plans are supported by higher authorities
	Conservation landscape incorporated within national planning strategies	Currently only mentioned within Biodiversity Action Plan	Included within MAFF annual plans by year 3. Endorsement of key site management plans by year 3 (MAFF, MOE, MLMUPC).	- Revised plans by central level agencies	Key developments are made in Cambodia's land law legal framework <i>Seila</i> accepted as main provincial planning framework
2. Financial and management sustainability of activities	Established project management structures for key sites	Although 50% of project staff are full government employees, only 1 key site has a government management structure that includes relevant project staff.	Project staff at two key sites are included in government management structures by year 2, remainder by year 4.	- Government management structures.	Government support for project management and activities.
	Key site management plans	None exist	Plans for 2 areas by year 2, remaining 2 areas by year 4.	- Management Plans exist and are reviewed annually	Security threats remain limited. Sufficient interest exist in key species eco-

Project Components	Key Outcome Indicators	Baseline	Target	Verification Means	Assumptions or Risks
3. Community land-use tenure and title	Sustainable financing of project activities	95% funding from WCS and UNDP-GEF	30% funding from WCS by year 7, remainder from government, tourism or other sources.	- Financial statements.	tourism. The targeted eco-tourism market requires minimal infrastructure investment.
	Level of Provincial capacity for participatory land-use planning	1 training course for provincial government staff completed during PDF-B	2 further training courses for 20 government staff each. Training courses for 12 villages by year 3.	- Number of trained PLUP facilitators.	Provincial governments support PLUP process
	Government approved land-use maps	No villages have tenure or title maps	6 villages by year 3, 12 by year 5 to have established land and resource tenure	- Government recognized PLUP maps	Trained provincial staff remain in provincial government.
	Number of village committees	No villages have land-use planning committees	6 villages by year 3, 12 by year 5 to have established committees	- Number of committees and records of activities	Local governance structures (Commune Councils) remain. Authorities endorse community plans. No drastic change in legislative framework
4. Village agreements on natural resource management linked to direct incentives scheme.	Level of Provincial and local capacity for Sustainable Natural Resource Management	Provincial staff and villages have no capacity to support villages in developing sustainable natural resource management plans	3 training courses for 20 government staff each. Training courses for 8 villages by year 5.	- Number of trained natural resource management facilitators. - Number of communities trained.	Communities agree to act together with the support of the project to manage key wildlife and natural resources.
	Number of villages successfully implementing natural resource management plans	No villages have natural resource management plans	5 villages by year 3, 8 by year 5	- Existence of natural resource management committees - Commune development plans in years 3-7. Community Forestry Agreements.	Communities recognize/agree to enforcement teams as a support and monitoring

Project Components	Key Outcome Indicators	Baseline	Target	Verification Means	Assumptions or Risks
5. Environmental awareness program targeted at communities and armed forces.	Number of villages with successfully implemented incentive scheme contracts	Contract established with 1 village for initiation of eco-tourism, in exchange for reduction of hunting and wildlife trade	5 villages by year 3, 8 by year 5	- Village contracts	Senior military support continues.
	Number of villages around key sites with increased awareness of project, species and the importance of natural resource management.	Pre-testing will be conducted in year 1.	6 Villages recognize project and its objective, state key species and threats by year 3, further 6 villages by year 5.	- Comparison of pre-testing results with questionnaires completed in years 3, 5 and 7.	
	Number of provincial sectoral staff and agencies with increased awareness of project, sites, and issues for conservation management	Existing provincial and agency plans	Staff and agencies can identify key sites by year 2, and identify issues for conservation management by year 5	- Provincial, Ministry and Sectoral Agency plans in years 3-7.	
6. Law enforcement	Number of army personnel and commanders with increased awareness of project, sites, and threats to conservation	No baseline exists, pre-testing will be conducted in year 1	Personnel at 5 bases can identify key sites by year 2 and threats to conservation by year 4. 12 military personnel have participated in enforcement team activity by year 2.	- Comparison of pre-testing results with questionnaires completed in years 2-7 - Agreements produced with military commanders (Component 3) - Enforcement team composition	Security threats remain limited Approval of enforcement teams
	Number of incidences of commercial logging within key sites	Enforcement team reports in year 1	Less than 5 incidences of commercial logging annually in Protected Forest site by year 3, achieved at remaining sites by year 4.	Monitoring program (Component 3) - data collection within key sites - enforcement team reports	

Project Components	Key Outcome Indicators	Baseline	Target	Verification Means	Assumptions or Risks
7. Monitoring and adaptive management	Number of incidences of wildlife trade	Enforcement team reports in year 1	Less than 20 incidences of wildlife trade annually in Protected Forest site by year 3, achieved at remaining sites by year 4.		Relevant authorities agree to the establishment of enforcement teams.
	Number of key sites with monitoring programs designed to collect sufficient data for evaluating project impact indicators.	Biological Monitoring program established at the Preah Vihear Protected Forest during the PDF-B.	Monitoring program established at all sites by year 2.	- Annual monitoring report for key sites - Database	Patrol teams have sufficient authority to effect law enforcement.
	Increased provincial capacity for biological monitoring.	1 provincial team trained in biological monitoring during PDF-B.	4 provincial teams trained by year 2.	- Number of people trained.	Illegal activities of armed forces can be brought under control.
	Adaptive management to inform intervention priorities at key sites	No adaptive management	Management plans for key sites take into account the results of monitoring programs when determining annual priorities.	- Revised management plans	

Annex 5: Logical Framework

Components	Outcome Indicators (2004-2011)	Activities	Indicators	Assumptions
<p>Component 1. Incorporating biodiversity into the implementation of new laws</p> <p>Outcome 1. Integrated conservation and development planning at the landscape-level</p>	<p>Number of <i>Seila</i> Commune Development Plans including conservation planning</p> <p>Level of capacity in key provincial ministries and government for conservation planning and co-ordination.</p> <p>Provincial Development Plans, Sectoral Agency Plans (e.g. Concessionaires) include conservation priorities</p> <p>Conservation landscape incorporated within national planning strategies</p>	<p>1.1 Training of provincial staff from MoE, MAFF, MLMUPC in planning and project management. These staff will be responsible for implementation of new laws and conservation priorities.</p> <p>1.2 Training and awareness (through Component 3) in conservation priorities and planning for relevant staff in all provincial governments in the Northern Plains.</p> <p>1.3 Incorporate village PLUP land-use plans into commune development plans (supported by <i>Seila</i>).</p> <p>1.4 Incorporation of commune development plans into district integration workshops and provincial planning processes, supported by <i>Seila</i>.</p> <p>1.5 Holding of integration workshops and stakeholder consultations to disseminate project plans and receive input from other planning agencies.</p> <p>1.6 Establish a framework through the Provincial Rural Development committee and Project Steering Committee to integrate conservation priorities into development planning.</p>	<p>1.1 Training completed during years 1-3. Number of people trained.</p> <p>1.2 Number of people trained during years 1-3.</p> <p>1.3 Commune Development Plans from the villages where PLUP is completed (Component 2).</p> <p>1.4 District integration workshops, and provincial plans shown to include village PLUP plans.</p> <p>1.5 Number of people consulted or attending workshops, agencies involved.</p> <p>1.6 Planning recognizes conservation priorities and adapts development plans as a result.</p>	<p>Authorities' interest in being involved in coordinated land-use planning continues.</p> <p><i>Seila's</i> interest in supporting NRM continues.</p> <p>Provincial capacity can be increased or is sufficient for coordinated planning.</p> <p>Community and district plans are supported by higher authorities.</p> <p>Key developments are made in Cambodia's land law legal framework</p> <p><i>Seila</i> accepted as main provincial planning framework</p>

		<p>1.7 Co-ordinate conservation activities with Military, Concessionaires and development agencies. Formation of agreements.</p> <p>1.8 Integration of project conservation plans into sectoral planning processes, including provincial government (PLG), MoE, MAFF and Ministry of tourism.</p>	<p>1.7 Meetings and resultant agreements. Monitoring reports of agreements.</p> <p>1.8 Endorsement of plans in land-use by <i>Seila</i> committees, MoE committees, PLG committees, MAFF committees, Ministry of tourism. Government support for key sites for conservation.</p>	
<p>Component 2. Applying Mainstreaming Measures</p> <p>Component 2a Community land-use tenure and title</p> <p>Outcome 2. Community land-use tenure and title</p>	<p>Level of Provincial capacity for participatory land-use planning</p>	<p>2a.1 Training courses in years 1-2 in new laws and PLUP process. Visits to other relevant national projects.</p>	<p>2a.1 Number of people attending training courses and visiting other projects.</p>	<p>Trained provincial staff remain in provincial govt.</p>
	<p>Government approved land-use maps</p>	<p>2a.2 Preparation of PLUP maps and formation of village natural resource management committees.</p>	<p>2a.2 Natural resource management committees created in 5 priority villages⁵ around two key sites in year 1. Extension to villages in remaining key sites by year 3.</p>	<p>Local governance structures (Commune Councils) remain Authorities endorse community plans.</p>
	<p>Number of village committees</p>	<p>2a.3 Conflict resolution in villages.</p>	<p>2a.3 Conflict resolution completed in priority villages in year 2, with extension to remaining areas in year 3.</p>	<p>No drastic change in legislative framework.</p>
		<p>2a.4 Cooperation with authorities to formally recognize PLUP maps. Workshops to disseminate results.</p>	<p>2a.4 PLUP maps receive formal recognition in year 2 for priority villages, extension to remaining areas by year 5. Number of people attending workshops.</p>	<p>Provincial government support for PLUP process continues.</p>

⁵ Priority villages have already been identified during the PDF-B, defined as villages particularly close to keystone resources for wildlife, where establishment of land management systems is an urgently required intervention.

		2a.5 Demarcation of village land-use areas and development of local agreements on land-use maps.	2a.5 Demarcations completed for priority villages by year 2, remaining villages by year 4.	
		2a.6 Consolidate outputs into GIS system for national registration.	2a.6 All project data stored in database and linked to a provincial-level GIS system	
<p>Component 2b Village agreements on natural resource management linked to direct incentives scheme</p> <p>Outcome 3. Community engagement in natural resource management</p>	<p>Level of Provincial and local capacity for Sustainable Natural Resource Management</p>	4.1 Training and awareness workshops on Sustainable Natural Resource and Environmental Management, agreements and regulations for government staff and communities.	4.1 Number of people attending training courses. Set of village regulations.	<p>Communities agree to act together with the support of the project to manage key wildlife and natural resources.</p> <p>Communities recognize/agree to enforcement teams as a support and monitoring presence.</p>
	<p>Number of villages successfully implementing natural resource management plans</p>	4.2 Design of appropriate mechanism for an incentive scheme: how the scheme will function and be monitored.	4.2 Report.	
	<p>Number of villages with successfully implemented incentive scheme contracts</p>	4.3 Development of village agreements (including Community Forestry Agreements) for management of natural resources, including agreements on the situations when enforcement activities will be used. Initiation of agreement monitoring system.	4.3 Agreements completed and signed by priority villages by year 2.	
		4.4 On-going evaluation of village agreements produced in priority villages.	4.4 Adapted village agreements resulting from evaluations.	
		4.5 Negotiations with villages regarding key conservation issues. Implementation of incentive scheme to cover the results of these negotiations.	4.5 Contracts between the project and priority villages governing incentive structures. Revised village regulations.	
		4.6 Regular auditing of incentive scheme activities for adaptive management.	4.6 Adapted management plans.	

		4.7 Extension of activities to further villages.	4.7 Village agreements and contracts.	
Component 3a. Financial and management sustainability of activities	Established project management structures for key sites	3a.1 Establish management structures within existing FA and MoE systems for key sites. Provide training to staff in management and financing. ,	3a.1 Government management structures. Number of staff trained	Government support for project and activities continue.
Outcome 4. Establishment of long-term financial and management sustainability	Key site management plans	3a.2 Provide equipment and adequate infrastructure for key sites.	3a.2 Equipment purchased and buildings funded.	Security threats remain limited.
	Sustainable financing of project activities	3a.3 Establish an accountable financial system, for the long-term running of the project. 3a.4 Annual and long-term management plans for key sites. 3a.5 Determine long-term running costs to maintain necessary project initiatives (especially Component 2 and Component 3) in the long-term at each key site. 3a.6 Establish a framework for key species eco-tourism that benefits biodiversity and local villages, through incentive schemes and agreements created under Component 2. 3a.7 Evaluate feasibility of establishing a trust fund, partnerships and capacity development to mobilize resources to cover costs identified under Activity 3.4.	3a.3 Project financial system. 3a.4 Written management plans for each key site produced annually and every 5 years, from year 2. Management plans are adapted based upon results of monitoring program (Component 3). 3a.5 Incremental cost matrix 3a.6 Eco-tourism guidelines, payment system and management system. 3a.7 Recommendations of feasibility report acted upon.	Sufficient interest exists in key species eco-tourism. The targeted eco-tourism market requires minimal infrastructure investment.

		3a.8 Secure additional long-term government and NGO commitment to cover costs identified under Activity 2.4 and management costs under Activity 3.1.	3a.8 Necessary funding commitment from NGOs and Government.	
Component 3b. Environmental awareness program targeted at communities and armed forces. Outcome 5. Increased public awareness of the key project sites for conservation and the need for sustainable use of natural resources	Number of villages around key sites with increased awareness of project, species and the importance of natural resource management. Number of provincial sectoral staff and agencies with increased awareness of project, sites, and issues for conservation management Number of army personnel and commanders with increased awareness of project, sites, and threats to conservation	3b.1 Identification of education requirements and methods. Consideration of strategies required for different groups (military vs. communities). 3b.2 Preparation of environmental education materials, training of staff. 3b.3 Education activities in all villages surrounding key sites and with armed forces across the landscape. 3b.4 Building local/provincial support for key species conservation. 3b.5 On-going evaluation of education activities and their impact.	3b.1 Plan of environmental education project. 3b.2 Pre-testing assessment. Number of staff trained. 3b.3 Priority villages and armed forces bases completed by year 2, remaining areas by year 4. 3b.4 Component plan developed in year 2 based on outcomes of 3b.1 and 3b.2 3b.5 Evaluation shows increased awareness of target audience.	Senior military support continues.
Component 3c. Law enforcement	Number of incidences of commercial logging within key sites	3c.1 Production of agreements with local authorities, communities and security forces.	3c.1 Agreements produced by the end of year 1.	Security threats remain limited

<p>Outcome 6. Reduction in illegal commercial exploitation of biological resources and their components</p>	<p>Number of incidences of wildlife trade</p>	<p>3c.2 Assemble staff and define law enforcement protocol, target areas and activities. Develop a strategy for curtailing border wildlife trade.</p> <p>3c.3 Training, equipment and infrastructure provided for provincial government enforcement staff.</p> <p>3c.4 Demarcation of protected sites within the landscape.</p> <p>3c.5 Development of a database to monitor effectiveness of enforcement activities, with a reporting system.</p> <p>3c.6 Evaluation of enforcement activities.</p>	<p>3c.2 Team structures and staffing. Written plan of proposed enforcement activities.</p> <p>3c.3 Number of people trained and equipped.</p> <p>3c.4 Boundaries established and marked on the ground.</p> <p>3c.5 Evidence of use of the data management system, including generated reports.</p> <p>3c.6 Reduced wildlife trade and illegal logging demonstrated by reports and data collected by enforcement teams.</p>	<p>Approval of enforcement teams</p> <p>Relevant authorities agree to the establishment of enforcement teams.</p> <p>Patrol teams have sufficient authority to effect law enforcement.</p> <p>Illegal activities of armed forces can be brought under control.</p>
<p>Component 3d. Monitoring and Adaptive Management</p> <p>Outcome 7. Adequate data for conservation management and project</p>	<p>Number of key sites with monitoring programs designed to collect sufficient data for evaluating project impact indicators.</p> <p>Increased provincial capacity for biological</p>	<p>3d.1 Planning of monitoring program, including methodology, monitoring sites and protocols.</p> <p>3d.2 Training of staff in monitoring methodologies in years 1-2.</p> <p>3d.3 Trial of monitoring program.</p>	<p>3d.1 Report on the proposed monitoring program in year 1.</p> <p>3d.2 Staff training materials; number of people trained.</p> <p>3d.3 Monitoring program established in one key site during year 1. First year report.</p>	<p>Staff trained in monitoring methodologies remain in provincial govt.</p>

<p>evaluation purposes</p>	<p>monitoring. Adaptive management to inform intervention priorities at key sites.</p>	<p>3d.4 Development of a data management system for the monitoring program, with training of provincial staff in its use.</p> <p>3d.5 On-going evaluation of trial monitoring program.</p> <p>3d.6 Extension of program to other key sites by year 2.</p> <p>3d.7 Monitoring of Vulture Populations</p> <p>3d.8 Annual evaluation of project activities based on results of monitoring program to identify problems and priority interventions for following year.</p>	<p>3d.4 Data management system and documentation. Number of staff trained.</p> <p>3d.5 Adaptation of monitoring program following from the results of evaluations.</p> <p>3d.6 Implementation and yearly reports.</p> <p>3d.7 Annual reports of vulture numbers</p> <p>3d.8 Adaptation of workplans resulting from problems analysis. Priorities established for each site intervention.</p>	
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Annex 6: Incremental Cost Matrix

Component	Category	US \$	Domestic Benefit	Global Benefit
Component 1. Incorporating biodiversity into the implementation of new laws	Baseline	\$68,000 <i>Seila</i> /PLG and MoE, MAFF annual provincial budgets	<i>Seila</i> support to PLG and Provincial Rural Development Committee (PRDC). However, the PRDC currently has does not consider conservation values. Sectoral management by Provincial MoE and MAFF considers some aspects of the landscape, but is uncoordinated and unfocused. Technical management capacity and infrastructure (including equipment) are poor.	No consideration of the global importance of biodiversity and key sites in planning decisions.
	Alternative	\$1,090,581		
	Increment	\$1,022,581 <u>Of which:</u> GEF: \$500,000 WCS: \$293,385 <i>Seila</i> : \$212,081 RGC: \$17,115	Establishment, through PRDC and Project Steering Committee of integrated provincial and national conservation and development planning. Management between agencies is co-ordinated. Planning decisions by government and agencies reference and take into account conservation priorities.	Global conservation values included in national and provincial planning strategies. PRDCs reflect global conservation priorities.

Component	Category	US \$	Domestic Benefit	Global Benefit
Component 2. Applying Mainstreaming Measures 2 a. Community land-use tenure and title	Baseline	\$120,000 LUPU (land Use Planning Unit)	Isolated projects supported by LUPU, but without consideration of conservation priorities. General absence of implementation of mechanisms to regulate ownership of natural resources. Continuing over-exploitation by communities, especially in competition with increasing numbers of immigrants and temporary migrants from other areas. Unregulated new settlements impacting on resource-use patterns of established communities. Eventual loss of wood, fish and wildlife resources. No community benefit from tourism.	No clear ownership of key sites for conservation and associated management responsibilities. 2 key sites afforded govt. recognition
	Alternative	\$603,412		
	Increment	\$483,412 <u>Of which:</u> GEF: \$250,000 WCS: \$135,440 <i>Seila</i> : \$92,197 RGC: \$5,775	Implementation of new laws governing the ownership of natural resources. Community understanding of rights and responsibilities. Reduction in unauthorised immigration, and resource exploitation by temporary migrants.	Ownership (state/private) established for key sites for conservation, producing a framework upon which subsequent activities are developed. Recognition of key sites by govt. Reduction in threats to global biodiversity conservation values.
2 b. Village agreements on natural resource management linked to direct incentives scheme	Baseline	\$60,000 <i>Seila</i>	Commune Development Plans assisted by <i>Seila</i> programme, but these do not explicitly include natural resource management. Poor local government capacity to manage natural resources. No incentives for improved natural resource management, or conservation-orientated activities. Continued unregulated over-exploitation.	Local government planning process does not include conservation values.

Component	Category	US \$	Domestic Benefit	Global Benefit
	Alternative	\$713,284		
	Increment	\$653,284 <u>Of which:</u> GEF: \$300,000 WCS: \$221,799 <i>Seila</i> : \$125,710 RGC: \$5,775	Implementation of new laws governing the management of natural resources. Community understanding and regulation of improved management practices, and defence of resource-use rights. Incentive scheme provides direct rewards in return for reduction of threats to wildlife. Crucially, the scheme establishes a link between wildlife and rewards given, creating a clear foundation for community conservation management.	Reduction in activities by communities that threaten global wildlife conservation values. Creation of link between biodiversity and incentives results in community support against immigrants that seek to exploit local wildlife.
Component 3: Strengthening capacity for biodiversity management	Baseline	\$nil	No financial management planning by Provincial MoE/MAFF. Wildlife tourism occurs, but is unregulated and gives no benefits to local communities or protected area/forest management.	Conservation management remains weak and under-funded.
3a. Financial and management sustainability of activities	Alternative	\$707,332		
	Increment	\$707,332 <u>Of which:</u> GEF: \$350,000 WCS: \$309,032 RGC: \$48,300	Plan for long-term financing of activities. Management structure, including transparent financial system, established. Eco-tourism guidelines and regulations, so that communities understand the link between conservation and tourist income.	Long-term funding and management structure for an area of global significance for conservation.
3b. Environmental awareness program targeted at communities and armed forces.	Baseline	\$nil	Poor understanding of threats to biodiversity conservation and the importance of maintaining environmental services. No understanding of the location and boundaries of key sites for conservation, or new protected forest. No focusing of efforts on these key sites.	No understanding of the global importance of species.
	Alternative	\$406,470		

Component	Category	US \$	Domestic Benefit	Global Benefit
	Increment	\$406,470 <u>Of which:</u> GEF: \$200,000 WCS: \$162,497 <i>Seila</i> : \$37,148 RGC: \$6,825	Co-ordinated education program targeted at all stakeholders, including communities, armed forces and authorities, especially around key sites. Increased understanding of the threats to biodiversity conservation and the necessary services provided by the environment (e.g. maintenance of watersheds). Understanding of the location and boundaries of key sites for conservation, and the project and its objectives.	Clear understanding by stakeholders of the global importance of species found on the Northern Plains.
3c. Law enforcement	Baseline	\$30,000 (MAFF and MoE law enforcement budgets)	Weak implementation of protected area laws, new forestry law and wildlife sub-decrees by MoE and MAFF. Untargeted and unplanned enforcement does not recognise key sites for conservation or the major threats to conservation.	Global importance of biodiversity, or the necessity of maintaining critical ecosystem services not recognised in enforcement activities.
	Alternative	\$436,539		
	Increment	\$406,539 <u>Of which:</u> GEF: \$200,000 WCS: \$199,714 RGC: \$6,825	Clear understanding of laws and requirements for implementation. Co-ordinated, planned enforcement activities focused around key sites and address key threats. Teams are well trained, equipped and have sufficient infrastructure.	Global importance of biodiversity and critical ecosystem services recognised in enforcement activities. Reduction in illegal activities, especially at key sites.

Component	Category	US \$	Domestic Benefit	Global Benefit
3d. Monitoring and adaptive management	Baseline	\$nil	No collection of standardised data. No analysis of trends in populations, habitat, or human activities. Little adaptive management, or evaluation of management activities.	No monitoring of species of global importance.
	Alternative	\$792,728		
	Increment	\$792,728 Of which: GEF: \$500,000 WCS: \$278,133 RGC: \$14,595	Established monitoring programs at all key sites. Training of staff in methodologies, data analysis and interpretation of results. Sufficient data for long-term monitoring of populations, habitats and human activities to determine project impact. Provision of simple reports to advise adaptive management.	Ongoing monitoring of the impact of project outcomes in achieving global environmental benefits.

198. The budgets for Components 3 (Law Enforcement) and 1 (Building a Landscape Conservation Framework) are relatively high, and require substantial GEF resources. Many of these resources are required for infrastructure and equipment improvements for the provincial departments of forestry and the environment and for the key sites for conservation (ranger stations, etc.). Further resources will be required for capacity building of provincial staff. The long-term financial requirements, particularly for law enforcement, are considered to be much lower. Similarly, a substantial part of the Monitoring and Evaluation budget (Component 3) will be required for establishing the monitoring system and for the mid-term and final project reviews. The long-term costs of the monitoring program will be within the capacity of government and other agencies. Law enforcement will be a key activity in years 2-5 of the project, in order to establish security for the land management systems created during Component 2. However, it is anticipated that following this period the longer term running costs of enforcement will be considerably lower.

199. The *Seila* program is committing various financial resources to the four provinces (Preah Vihear, Odor Meanchey, Stung Treng and Siem Reap) of the Northern Plains project. Some of these resources are for unrelated activities or for activities that can be considered baseline to the GEF proposed project (e.g. assistance in the production of Commune Development Plans). However, considerable resources are being directed to specific activities that are crucial for the success of the CALM project and which are recognised in the project logical framework.

200. The current phase of the *Seila* Program is due to last until 2005. The components of this phase which will directly contribute to natural resources management in 2004 of the four provinces is \$122,039. Although *Seila* does not specify budget levels for the period beyond the current phase, it is expected that funding will continue and that Natural Resource Management will be a priority. Even if the *Seila* contribution remains the same, the minimum contribution over the seven-year project period will be \$427,136. In reality, the CALM project is expected to motivate a greater contribution of leveraged financing from *Seila*, through influencing the ability of the relevant Government agencies to apply for resources.

201. In addition, Siem Reap Province is one of the three target provinces of the *Seila*/DANIDA Natural Resource and Environment Management project. Svay Leur District of Siem Reap Province, which is inside the project area includes the Kulen Promtep Wildlife Sanctuary key site, will become a target of the *Seila*/DANIDA NRM project from 2005 until 2007. Over the two-year period, the direct contribution of the *Seila*/DANIDA NRM Pilot Project on this particular district is expected to be \$40,000.

202. In total, from the committed budgets of the *Seila* program and the operational plans for coming years, it is expected that US\$467,136 will be provided for activities directly related to key activities of the CALM project.

203. Further leveraged resources will be expected from proposals by WCS with Action Against Hunger (AAH) for direct improvements in food security in the target villages.