PROJECT BRIEF

1. Identifiers

Project Number	PAR/98/G31
Name of Project:	Paraguayan Wildlands Protection Initiative [Iniciativa Paraguaya para la Protección de Areas Silvestres]
Duration:	Seven Years
Implementing Agency:	UNDP
Executing Agency:	Ministry of Agriculture and Livestock (MAG)
Requesting Country:	Paraguay
Eligibility:	Paraguay ratified the Convention on Biological Diversity in 1993 and is eligible for UNDP technical assistance
GEF Focal Area:	Biodiversity
GEF Programming Framework:	OP#3: Forest Ecosystems

2. Summary:

The proposed project seeks to operationalise conservation management within four Protected Area sites. Each located in a different eco-region– namely the Interior Atlantic Forest, the Cerrado forest/ grasslands complex, the Chaco/Pantanal ecotone, and the Chaco savannah– the chosen sites contain a broadly representative sample of Paraguay's rich biological diversity and are important wildlands. By arresting threats to native species and habitats, the project would safeguard sizeable global conservation values. Activities would strengthen a host of traditional Park management functions, including operational planning, enforcement, monitoring, and assessment functions. Training in conservation methods would be provided to Park's staff, conservation values would be imparted to key decision-makers and local communities through an awareness campaign, and sustainable uses of biological diversity would be fostered. The project would also support conservation activities in buffer areas to protect critical habitats and maintain biological corridors with neighbouring Parks. An important project goal is to establish a *modus operandi* for managing National Parks that is suited to the Paraguayan context and which can be replicated.

3. Costs and Financing (Million US$):

GEF:	-Full Project:	USD$ 8.9m
	[of which administrative costs are	USD$ 0.445 m
	-PDF B:	USD$ 0.305 m
	-Subtotal:	USD$ 9.2 m
Co-financing:	-UNDP:	USD$ 0.25 m
	-Govt of Paraguay:	USD$ 0.6 m
	-CAF:	USD$ 0.6 m
	-European Union:	USD$ 0.855 m
	-USAID/TNC:	USD$ 1.25 m
	Sub total:	USD$ 3.5 m
Total Project Cost:		**USD$12.76 m**

4. Associated Financing (Million US$):

Baseline financing provided by government, the IDB, the World Bank, European Union, GTZ, USAID, TNC, and several NGOs (costed at US$ 127,396,000)

5. Operational Focal Point Endorsement:

Name: Guillermo Sosa Title: Technical Secretary
Organisation: Technical Secretariat for Planning Date: August 5, 1998

6. IA Contact:

Lita Paparoni, Regional Co-ordinator, UNDP/RBLAC GEF Unit, Tel (212) 906 5468; Fax (212) 906 6998

Amendments made to the Project Brief Following the

UNDP/GEFSEC Bilateral, August 26th, 1998

1. Clarification is given as to the membership of national and local steering committees in paragraph 38.

2. Footnote 20 (paragraph 39) clarifies that most baseline endeavours are being executed by the Ministry of Agriculture, the same agency that would execute this project. This in turn would strengthen linkages between the project and baseline activities.

3. Paragraph 26.2 has been amended to reflect the fact that conflict resolution services would be made available in order to finesse and execute management agreements.

4. Activities in year 1 would be guided by an Operational Plan prepared as part of commencement stage tasks (see paragraph 26.1, Output 1, and the logical frame matrix).

5. A new paragraph (29.4) has been inserted into the narrative to clarify that sustainable use demonstrations would be spearheaded only after population trends of target species have been ascertained, scientific advice has been sought, and the biological parameters for management have been determined and agreed upon by resource managers.

6. Paragraph 27.6 has been amended to clarify that inventories and monitoring would focus on establishing population trends for indicator species.

7. The baseline estimate is reflected on the cover page and in paragraph 40: Incremental Costs.

8. The systems boundary is clarified in paragraph 5.1 of the incremental cost annex.

9. Paragraph 28.3 clarifies linkages with the CITES Convention.

List of Acronyms

Alter Vida	Ecodevelopment Studies and Training Centre
a.m.s.l.	above mean sea level
BGR	Federal Geosciences and Natural Resources Institute, Germany
CAF	Andean Development Corporation
CBD	Convention on Biological Diversity
CECTEC	Peasant Study Centre for Training and Technology
CITES	Convention on International Trade of Endangered Species
DDNP	Daniel Cáceres / Defensores del Chaco National Parks
Desdelchaco	Sustainable Development Foundation for the Paraguayan Chaco
DOA / MAG	Directorate for Environmental Management
DPNVS / MAG	Parks and Wildlife Directorate
EBA	Endemic Bird Area
ENAPRENA	Strategy for the Protection of Natural Resources
EU	European Union
FAO	United Nations Food and Agricultural Organisation
IFAD	International Fund for Agricultural Development
FMB	Moisés Bertoni Foundation for the Conservation of Nature
GoP	Government of Paraguay
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IAF	Interior Atlantic Forest
IBR	National Institute for Public Lands
IDB	Inter-American Development Bank
INDE	Paraguayan Indigenous Peoples Association
ITAIPU	Paraguay-Brazil Authority for Itaipú Hydro Project
IUCN	World Conservation Union
MAB	Man and the Biosphere Programme / UNESCO
MAG	Ministry of Agriculture and Livestock
MERCOSUR	Southern Economic Market
NP	National Park
PA	Protected Area
PBNP	Paso Bravo National Park
PSC	Project Steering Committee
PROCOSARA	Association for San Rafael Mountains
PTU	Project Technical Unit
RNNP	Río Negro National Park
SRNP	San Rafael National Park
SFN / MAG	National Forest Service
SINASIP	National System of Protected Areas
SSERNMA / MAG	Secretariat for Natural Resources and the Environment
TNC	The Nature Conservancy
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USAID	United States Agency for International Development
WB	The World Bank
WWF	World Wide Fund for Nature

Project Context:

1. General Context: Paraguay has an especially rich biological heritage. Until recently, little was known about the country's biodiversity and it was assumed to be biologically depauperate[1]. Ongoing field research has proven otherwise. The country's conservation programme is embryonic, only recently having gathered momentum. Nevertheless, an important window of opportunity exists to address biodiversity management needs and thus secure global conservation benefits. National commitment to biodiversity conservation is growing, the country's wildlands, for the most part, remain in relatively pristine condition, and potential still exists to protect large, contiguous blocks. Conservation strategies hinge on the establishment of Protected Areas and a Master Plan for a System of Protected Areas has been framed. The next steps involve creation of new set-asides and strengthening of management capacities. The challenge of establishing new Protected Areas is compounded by the fact that much land is privately owned. The government is creating Protected Areas on public lands and, under a wider land use rationalisation programme, is purchasing private lands where necessary to safeguard critical habitats. New policies and regulations are in place to backstop biodiversity conservation efforts, and, *inter alia*, circumscribe resource uses in Protected Areas to conservation-compatible activities. GEF moneys would be drawn down to demonstrate a workable Protected Areas management paradigm, geared to the needs of different eco-regions, and that could later be replicated countrywide.

2. Environmental Context**:** Divided on an East/West axis by the Paraguay River and on a North/South axis by the Tropic of Capricorn, Paraguay occupies an area of 406,752 sq. kms. The Occidental region or Chaco lies to the West of the River, and the Orient to the East, with an area of 246,925 and 158,827 sq. kms. respectively. The country includes four globally and regionally significant eco-regions, namely the dry Chaco savannah, and Pantanal[2] in the Occidental region, and the Cerrado and Interior Atlantic Forest (IAF) in the Orient (Dinerstein et al. 1995). These eco-regions are all ranked as top conservation priorities (*ibid.*). The vegetation in these areas includes xeric communities, mixed savannahs, tropical moist forests, shrublands, and seasonally flooded grasslands (Zardini, 1993). The Interior Atlantic Forest comprises Tropical Evergreen Broadleaf Forest on sandy soils, with bamboo thickets and isolated grassland patches. The Paraguayan Cerrado is a forest/ grasslands mosaic on poor soils, with stunted woodlands, gallery forests, shrubs, palms, and grasslands. The Chaco savannah consists mainly of dry woodlands, thorn forests, and scrubs on fine Andean fluvial deposits, with desert annuals blanketing sand dune formations in the north-west following rain. In the north-east Chaco a transition occurs between dry woodland communities and the permanently and seasonally flooded savannahs of the Pantanal, which support palm, herbaceous, and aquatic plant communities.

3. Lying at the heart of the floristically diverse La Plata River Basin, Paraguay is a centre of distribution for flora. The inventory consists of up to 13,000 species of vascular plants within 180 families and 1,103 genera (Zardini, 1993), including 760-plus species

---

1 The perception had more to do with a dearth of survey work rather than reality, collecting expeditions having covered only a fraction of the territory.

2 Paraguay contains a unique eco-tone between the Pantanal and Chaco savannah, hereafter termed the Chaco/Pantanal.

of trees and shrubs. Many species are endemic to Paraguay, or else are classed as near-endemic, being locally distributed elsewhere in the River Basin. The high level of floristic diversity is a product of spatial variances in levels of precipitation, substrate conditions, and geographical factors. The Orient is especially rich in flora with as many as 10,000 species, although the Occidental region is also floristically diverse, harbouring ~ 5,000 mostly different species (Zardini, 1998, pers comm.[3]). Indigenous groups use some 1,500 plants as 'folk medicines', and many plant species have consumptive and productive applications.

4. The floristic diversity is paralleled by the country's great faunal richness, with an inventory that includes an estimated 167 species of mammals[4], 672–700 of birds, 46 of amphibians, 100 of reptiles, and possibly as many as 100,000 of invertebrates. The four eco-regions contain a wide assemblage of restricted range, threatened, and near threatened species, each harbouring a different complement. Threatened or near-threatened mammals include the Marsh Deer, Chaco Peccary, Giant Armadillo, Short-tailed Opossum, Giant Otter, Bush Dog, Maned Wolf, and Oncilla**.** Of the avifauna, 60 are migratory species that arrive during the Austral summer, using the Pantanal and Interior Atlantic Forest as staging and stopover sites. The birdlist includes a large number of Atlantic Forest, Chaco, and Cerrado endemics. 86 species of birds are listed as threatened or near-threatened, including the Vinaceous Amazon, Hyacinth Macaw, Helmeted Woodpecker, White-winged Nightjar, Rufous-faced Crake, Russet-winged Spadebill, and Crowned Eagle. The inventory is continually being augmented by new records, an indication of the country's ornithological significance.

5. Socio-Economic Context: Paraguay has a total population of 5.1 million inhabitants, with a demographic rate of growth of 2.8% per annum. For the most part, the population is of immigrant stock, with pure indigenous groups accounting for a mere 2.1% of the total[5]. Some 97% of the populace inhabit the eastern region where a combination of rich soils, topography, and high rainfall has made conditions suitable for mechanised agriculture. Farm holdings include a mix of smallholder, medium, and large-sized properties, and cotton, soya bean, sugar cane, tobacco, cassava, corn, rice, and beans are grown. The principal source of livelihood in the Occidental region is provided by cattle production on medium-large sized ranches. The country had a gross domestic product of US$ 9.9 billion in 1997 (EIU, 1998), giving a per capita income of US$ 1,940. The agriculture, forestry, and fishing sectors account for over 26% of GDP, and dominate merchandise exports.

6. Policy Context: Paraguay's Constitution (1967) provides a mandate for judicious stewardship of the natural environment. Conservation policies centre on the establishment of a bio-geographically-representative system of Protected Areas. In 1992,

---

3 Elsa Zardini, Associate Curator, Missouri Botanical Garden, and director of the *Flora del Paraguay* project.

4 The Chaco savannah is particularly important for the conservation of large and medium sized mammals, which exist in high densities. The inventory includes a number of species normally associated with tropical forests, making this eco-region unique (Redford 1990).

5 Despite the small population of Amerindian groups, their status as forest-edge communities makes them important conservation stakeholders.

the government, with assistance from the FAO, undertook an assessment of conservation needs, identifying management constraints and articulating major policy objectives. The Master Plan for the National System of Protected Areas (SINASIP) was prepared the following year. The Plan identifies priority areas for conservation and designates management categories for Protected Areas[6]. In 1995, following wide-ranging consultations with both public and private stakeholders, the Government endorsed the National Strategy for the Protection of Natural Resources (ENAPRENA) in a bid to integrate environmental management objectives into cross-sectoral development policies, strategies and activities. Over the medium to longer-term, the government aims to establish two Biosphere Reserves, one in the Interior Atlantic Forest and the other in the Chaco. Anchored by National Parks (core wildlands), these would be configured to include buffer zones and transition areas subject to sustainable use management, with the goal of enhancing conservation prospects at a wider landscape level. Paraguay ratified the Convention on Biological Diversity (CBD) in 1993, and is also party to the Western Hemisphere, CITES, and RAMSAR Conventions.

7. Formulation of ENAPRENA has led to the enactment of a raft of progressive new legislation covering Protected Areas management, forestry, fisheries, and the assessment and mitigation of environmental impacts. Law number 352/1994: Protected Natural Areas and Law number 716/96: Ecological Crimes, provide a legal framework for Protected Areas, including a mechanism for imposing sanctions against actions that degrade the integrity of National Parks. The Law provides surety that once sites have been legally gazetted as National Parks, lands within them cannot cannot be allocated to contra-conservation uses.

8. Institutional Context: The Secretariat for Natural Resources and Environment (SSERNMA), within the Ministry of Agriculture and Livestock (MAG), is responsible for discharging the government's environmental management policies, strategies, and programmes. The National Parks and Wildlife Directorate (DPNVS/MAG), within the Secretariat, is responsible for executing conservation measures, managing the Protected Area system and co-ordinating management efforts with other government and non-government institutions. SSERNMA also contains the Forestry Directorate, responsible for oversight of the operations of forest industries and Environmental Management Directorate, tasked with monitoring and regulating the environmental impacts of development activities. The country is divided into 17 Departments (or provinces), currently under central government jurisdiction. New government policies aim at decentralising powers to the Departments, which, if executed, will increase their administrative role in conservation programmes. Finally, a number of NGOs are active in the conservation arena, including the Moisés Bertoni Foundation (FMB), The Nature Conservancy (TNC), Desdelchaco, Guyra Paraguay, and Altervida. Several others– notably Ecovida and CECTEC– work on sustainable development activities that have a conservation bearing.

---

[6] The Government is requesting GEF funding (through UNDP) to prepare a National Biodiversity Strategy and Action Plan. The Plan would be developed by the same agency responsible for execution of this project, and, with respect to Protected Areas management, would reflect the priorities and strategies articulated in the SINASIP Master Plan.

9. Conservation Priorities: The SINASIP Master Plan proposes that a total of 39 Protected Areas be established country-wide, covering an area of some 41,000 square kilometres, or just over 10 % of Paraguayan territory[7]. 22 Protected Areas have heretofore been established, with a total area of 15,000 square kilometres. Many of these sites lack adequate endowments of staff, equipment, and infrastructure. Recognising that it is simply not realistic to concurrently strengthen/ establish all 39 sites given resource constraints, DPNVS undertook a priority setting exercise as part of Block B implementation. The objective was two-fold, firstly to elicit the highest priorities for management intervention in existing sites, and secondly, to set priorities for operationalising new sites. Criteria used included [1] the need to protect sites that are species-rich, including endemic, restricted range, and globally threatened species, [2] the need to ensure adequate bio-geographical representation [3] the imperative of protecting large, contiguous habitat blocks, [4] the likelihood of successfully abating threats to biodiversity, and [5] the quality of existing and proposed baseline interventions at sites. Given these parameters, the following sites emerged as the country's top priorities for management intervention:

i. San Rafael NP in the Interior Atlantic Forest. This site, gazetted in 1992, is located in south-eastern Paraguay, and was created to protect the country's largest contiguous block of Tropical Evergreen Broadleaf Forest (730 square kilometres). Despite the fact that the Park likely constitutes Paraguay's most important forest reserve, containing a representative sample of the eco-region's diverse flora and fauna (Madroño et al. 1997, Lowen et al. 1996), it lacks field management, thus exposing it to anthropogenic pressures.

ii. Paso Bravo NP in the Cerrado (1,030 square kilometres). This is a new Park, formally gazetted in 1998 following the priority setting exercise. The site is currently in a pristine position, and harbours a diverse flora and fauna, with many Cerrado endemics. It constitutes one of the largest Protected Areas within the eco-region at a global level.

iii. Daniel Cáceres and Defensores del Chaco NP's in the Chaco savannah (13,440 square kilometres). Daniel Cáceres is in the process of being formally gazetted after being ranked as a top conservation priority on account of its biological values. The Park will protect a mix of dry woodlands, scrubs, and ephemerophytes, not found elsewhere. The site abuts the Defensores del Chaco NP, Paraguay's first Park and another top conservation priority in need of management support. Together, the two sites will conserve a representative sample of the dry Chaco landscape, including a transition from arid to more humid areas. They are important for the protection of large mammals, such as Jaguars, Brazilian Tapirs, and Chaco Peccaries, which exist at higher densities than is the norm in the neo-tropics. Because the two Parks would be jointly managed, they are treated as one site.

iv. Río Negro NP in the Chaco/ Pantanal ecotone (3,180 square kilometres). This

---

[7] Including 16 sites in the IAF, 10 sites in the Chaco savannah, 1 site in the Chaco/Pantanal and 2 sites in the Cerrado. 12 of the 39 sites in SINASIP have scenic or recreational attributes rather than high biological values. Moreover, not all of the 39 sites are necessarily large enough to safeguard ecological processes in the long-term (24 sites have an area of less than 500 square kilometres, and 14 of less than 100 square kilometres).

site is in the process of being legally gazetted. It has been declared a RAMSAR site, and is globally unique in that it will conserve a transition between Chacoan ecosystems and the Pantanal. A staging area for migrating birds during the boreal winter, Río Negro is also important for the conservation of threatened mammals, including the Maned Wolf and Marsh Deer.

Baseline Course of Action

10. Threats[8]: The nature and magnitude of threats vary spatially across the country. The high population density and concentration of economic activity in the Interior Atlantic Forest mean that anthropogenic disturbances are greatest in this eco-region. Some 87% of the original habitat has already been transformed to agriculture and other land uses. For the most part, forests have been fragmented, and only a few relatively large forest blocks remain (underscoring the global significance of San Rafael National Park). At an eco-regional level, the chief threats derive from land use conversion to agriculture, logging activities, over-hunting and the un-regulated harvest of non-timber forest products. There is an urgent need to insulate San Rafael from such pressures, and thus foreclose the possibility of their degradation. The main threats facing the Park include hunting, over collection of medicinal plants and non timber forest products, and growing insularisation, as biological corridors with neighbouring forest blocks are lost. While designation of the site as a Protected Area forecloses its conversion to permanent agriculture, surveillance/ enforcement capacities need to be built to guard against encroachment and other illegal uses.

11. The human population density of the Chaco savannah, Chaco/Pantanal, and Cerrado is very low, a situation that has heretofore checked threats to native species and habitats. But threats are expected to slowly grow over the medium to long-term as social and economic infrastructure is developed in these regions and demographic fundamentals change. The main threat lies in the development of large cattle ranches leading to the modification of vegetation communities and, in the Chaco, competition with wildlife for scarce water supplies. Subsidiary threats stem from over-hunting and forest clearance for charcoal production. In the Chaco/Pantanal eco-region, the industrial cultivation of cassava poses a nascent threat, providing a stimulus for land clearance. This region enjoys higher rainfall than the dry Chaco Savannah, improving conditions for human settlement. The Cerrado plains of north-eastern Paraguay still remain in a relatively pristine condition. On a global level, however, cerrado's face severe threats, mainly from cattle ranching and soya bean cultivation. Consequently, scientists classify this eco-region as being one of the top seven conservation priorities in the Neotropics (Kelsey, 1991). Legal establishment of the Daniel Cáceres, Río Negro, and Paso Bravo National Parks will provide a legal basis for precluding their conversion to cattle ranches, and in the case of Río Negro, cassava farms. But interventions are needed to address hunting pressures, as well as to prevent use of woodlands for charcoal production, the threat of which will increase with time. In all the sites, there is a need to create buffers to the Parks, providing conservation incentives to landowners.

---

[8] The threats to biological diversity are documented in some detail in annex VI, which also provides information on the root causes, including policy related and socio-economic determinants.

12. Baseline: The baseline for the project is described below for the 'bundles' of activities required in order to establish and effectively manage Protected Areas.

13. **Participatory Planning**: Management and Operational Plans are lacking in most Parks, including the 4 priority sites[9]. These are needed to provide a blueprint for the biodiversity management process, and to ensure an optimal allocation of financial, human, and other resources. In addition, while legislation governing PA management exists, this has yet to be translated into regulations circumscribing use at the site level. Despite the fact that the legislation allows PA's to be zoned for multiple uses, this has not happened, leading to confusion amongst managers and stakeholders as regards management objectives. A further dilemma is that local communities have traditionally been alienated from the conservation process, rarely having been consulted by Protected Area planners. DPNVS/MAG recognises that it will be necessary to involve the public in planning endeavours –to give them a greater stake in conservation– but lack the wherewithal and experience to apply participatory planning methods. The traditional approach to management has placed decision-making almost solely in the hands of Park Directors, and multi-stakeholder Parks Management Boards have yet to be constituted (at any site).

14. **Protected Area Operations:** Protected Area operations tend to be focused on a subset of established sites. Other sites suffer from shortages of staffing and a scarcity of basic equipment and infrastructure, and, for the most part, have yet to be physically demarcated. In general, this is the situation that prevails at each of the priority sites. However, in San Rafael, PA boundaries have been demarcated, and a World Bank financed Natural Resources Management Project would supply infrastructure and some equipment in the baseline scenario. Defensores del Chaco NP has some infrastructure and equipment, but the endowment is inadequate. Daniel Cáceres, Río Negro, and Paso Bravo National Parks have yet to be physically demarcated, and lack infrastructure and equipment. Capacity to perform traditional management functions, such as data gathering, surveillance, and enforcement, is weak, and needs strengthening. This task is hampered by weak linkages between Park's authorities and local police and magistrates responsible for enforcing environmental legislation. Daniel Cáceres, Río Negro, and Paso Bravo Parks are located in remote border regions but there is a lack of congruence between management in Paraguay and that occurring in neighbouring countries. Policy makers in Paraguay and neighbouring countries have advocated co-operation in order to enhance long-term prospects for conservation[10], but this has yet to be effected at an operational level.

15. Biological monitoring efforts are clearly inadequate, and are constrained by a lack of comprehensive biological data. Only the Mbaracayú NR has been intensively surveyed. Ad hoc survey work for some taxonomic groups has occurred in San Rafael (birds, plants), Daniel Cáceres/ Defensores del Chaco (large fauna, plants), Paso Bravo (parrots, plants), and Río Negro (birds). This work needs to be expanded to provide a more comprehensive biological data base, that could be used for management

---

9 A Management Plan was prepared by DPNVS for Defensores del Chaco NP in 1988, but needs to be updated.

10 This would provide synergies in planning and management, and galvanise a co-ordinated response to hunting and other threats.

purposes. DPNVS/MAG contains a Conservation Data Centre (CDC) that is technically responsible for co-ordinating biological inventory work; in practice, the Centre has little capacity to perform this function.

16. **Training:** A widespread problem afflicting the Parks system as a whole is that personnel lack experience and know-how in innovative approaches to conservation and the multiple disciplines with which contemporary conservation managers must be familiar. Although DPNVS/MAG does conduct training courses, the quality and quantity of such training is inadequate. Likewise, although NGOs such as FMB are supporting some training activities, they are unable to meet the needs of the expanded Protected Areas system.

17. **Sustainable Use**: If conservation is to compete with other land uses in the long-term, then the relative values of components of biological diversity will need to be enhanced. Opportunities for stimulating non-consumptive uses of wildlife, such as through promotion of nature tourism, have yet to be realised in the priority sites although there is considerable potential, particularly in San Rafael. The domestic market for recreational tourism is large, with Paraguayan's making heavy use of Parks, although demand is presently concentrated within a few small sites with natural attributes but relatively little biodiversity. The challenge is to catalyse demand for the recreational use of high priority sites. Barriers to development include a lack of information and public awareness about the Parks, an absence of interpretation facilities, trails, and other basic on-site infrastructure, a lack of trained guides, and inadequate visitor management capacities.

18. There is a strong tradition of sports hunting in Paraguay, particularly in the gran Chaco. This activity is poorly regulated, and, potentially, has a contra-conservation impact. Nevertheless, carefully managed sports hunting of common species (in areas designated for the purpose) could provide an important sustainable use opportunity and conservation incentive. This is particularly relevant in the buffer areas to the Chaco parks, where wildlife disperses across neighbouring private ranches. Sports' hunting currently occurs in these areas, but it is poorly controlled, and accords little financial benefit to landowners. Barriers to development include a dearth of data on hunting levels and population trends for target species, a lack of understanding of the determinants of market demand, and an absence of adaptive management skills. Institutional capacities to manage use are also weak and need strengthening.

19. The harvest of medicinal plants for the production of folk medicines constitutes a threat to several species in the Atlantic Forest, including within San Rafael. The emphasis so far has been on ex situ cultivation, with trials having been conducted for some 300 species. But there is a paucity of information regarding management requirements for medicinal plants in a natural environment– a potent barrier to advancing sustainable use objectives. If the problem is to be comprehensively addressed, site based trials will be required for different species in order to determine responses to various intensities of harvest, and to develop and operationalise Management Plans to regulate collection.

20. **Conservation Awareness:** Public awareness of conservation values is limited, and the nation's conservation movement is embryonic. Media coverage of conservation

issues is scanty, although this situation is changing. DPNVS/MAG has launched a number of national awareness programmes. But on the whole, awareness of Paraguay's conservation values and the relevance of conservation to national development objectives and priorities is inadequate. FMB has sponsored some conservation awareness efforts in the vicinity of Mbaracayú NR. But it is unlikely that substantive and well-targeted awareness drives would occur in the environs of the four sites in a baseline scenario. Whilst legislation pertaining to Protected Areas and natural resource management has been strengthened, understanding of the letter of the law amongst most stakeholders, including authorities responsible for law enforcement, remains poor. This situation needs urgently to be addressed.

21. **Management of Buffer Areas:** There is a long-term danger that Protected Areas will be insularised as landscapes are modified. This in turn would imperil biodiversity by arresting the transfer of genetic material between wildlands. The government recognises that a landscape approach to conservation will be required in order to foreclose this outcome. A host of renewable resource sector programmes have been launched in the eco-regions, including the Natural Resources Management-project in Alto Paraná and Northern Itapúa, the Rural Community Investments-Pilot Project, and a programme to promote Sustainable Development of the Paraguayan Chaco. These initiatives are justified in Paraguay's own sustainable development interests, but if carefully orchestrated, may potentially contribute towards the realisation of conservation objectives.

22. In the Interior Atlantic Forest and Cerrado, baseline initiatives aim at promoting sustainable agricultural intensification, by encouraging poly-culture, crop rotation, the use of high yielding varieties, and other practices. This is being effected through marketing support programmes, strengthening of agricultural service networks, farming systems research, and widening of credit access. Given that agricultural extensification has played a significant role in engendering habitat conversion in the Orient, these initiatives are important from a biodiversity management perspective. But further interventions are required to facilitate and co-ordinate efforts between landowners to conserve biodiversity.

23. In the Chaco and Chaco/Pantanal, the challenge is to guard against excessive intensification of livestock husbandry practices, modification of native vegetation communities, and excessive abstraction of water supplies. Prime habitats for wildlife need to be identified and protected in buffers, and incentives found to encourage biodiversity conservation on private lands. Baseline initiatives aim at improving the productivity of livestock production in an ecologically benign manner, but need to be dovetailed with conservation efforts. Again, efforts need to be co-ordinated between landowners to protect critical habitats and migration routes that cut across the boundaries of private landholdings.

Alternative Course of Action

24. One of the main aims of the project is to furnish an effective model for managing Protected Areas, regearing the traditional parks management framework by invoking, for the first time, the active involvement of major stakeholders. The Alternative would focus interventions at San Rafael, Paso Bravo, Daniel Cáceres/ Defensores del Chaco,

and Río Negro National Parks[11], taking an ecosystem approach that addresses threats in a comprehensive manner[12]. In addition to operationalising management in the Protected Areas, the project would support conservation planning and management efforts in Park buffers, to ensure complementarity in the management of the parks and their surrounding ecological landscapes. Activities would be implemented over 7 years, providing sufficient time to build capacities and ensure sustainability of management following project closure.

25. Outputs: The project has six outputs, which may be summarised as follows:
i. Establishing a participatory planning system for Protected Area management;
ii. Strengthening Protected Area operations in the four target sites;
iii. Training conservation workers in biodiversity management methods;
iv. Overcoming barriers to sustainable uses of components of biodiversity;
v. Imparting awareness to major stakeholders; and
vi. Managing critical habitats and corridors in Park buffers.

Co-financing for the project has been leveraged from the Government of Paraguay, USAID/ TNC, CAF, and the European Union. USAID/TNC would assume responsibilities for Park strengthening activities in Defensores del Chaco National Park, thus contributing to development of the Daniel Cáceres/ Defensores del Chaco PA complex. The GEF would fund activities relating to the operational establishment of Daniel Cáceres, with co-financing from CAF for the development of Park infrastructure. The European Union would provide co-financing for sustainable use promotion and conservation awareness activities. Finally, the Paraguayan Government would absorb the recurrent costs of Park operations, in addition to significant baseline investments.

Output 1: ***Participatory Planning System for conservation management is developed and multi-stakeholder Parks Management Boards are piloted and in place.***

26.1 Three general types of activities would be conducted. First, planning efforts would provide a blueprint for the conservation process in each of the four sites, guiding future operations. Five and ten year Management Plans would be prepared for each site[13] (updated in the case of Defensores del Chaco) and Operational Plans developed to guide annual work programming. [An operational plan for year 1 would be prepared at the commencement of implementation, guiding project delivery in that year.] Planning capacities would be enhanced enabling DPNVS/MAG to prepare a second five year Management Plan in year 6, and institutionalise operational planning as a core management function. Park boundaries would be clarified with all major stakeholders, and areas would be zoned for strict protection, recreation, research, traditional uses and other purposes (as provided for under existing legislation). Existing policies and legislation would be reviewed with a view towards strengthening sanctions against

---

11 The process of legally gazetting Daniel Cáceres and Río Negro, triggered by Block B activities, would be completed prior to signature of the final project document.

12 A description of the biology of each of the sites is provided in annex V, together with area maps.

13 This activity would be the focus of implementation during year 1 of the project, providing a framework for management in later years. A 12 month period is considered necessary in order to fully engage local stakeholders in planning efforts.

illegal activities in the Protected Areas.

26.2 Second, a framework for participatory planning and management would be developed and applied, marshalling stakeholder involvement in decision-making and activity implementation. Procedures for stakeholder involvement would be developed and written into park regulations. These will dictate the type and frequency of multi-stakeholder forums, and establish reporting and accountability requirements. Multi-stakeholder Parks Management Boards would be convened at each site, and would assume oversight responsibilities for planning and operational management. In order to finesse and strengthen management compacts between different stakeholder groups at the local and national levels, the project would also supply conflict resolution services.

26.3 Third, the project would also seek to cement transboundary co-operation by co-ordinating activities in the Río Negro and Daniel Cáceres National Parks with PA activities in Brazil and Bolivia. Funding would be provided for regional workshops, providing an avenue to discuss common issues, and the additional transactions costs of communications between managers would be covered during the first 5 years.

Output 2: ***Operations of target Protected Areas are built and enhanced***.

27.1 Several activities would be sponsored. First, the project would satisfy the minimum infrastructure and equipment needs of the 4 sites. This includes Park offices, ranger posts, automated meteorological apparatus, vehicles, office equipment, communications equipment, field and rescue equipment, and monitoring tools[14].

27.2 Second, park boundaries would be formally demarcated, and zoning plans would be effected, with surveillance and enforcement functions strengthened to ensure adherence to park regulations.

27.3 Third, the project would absorb some of the incremental costs of staffing during the first four years of implementation, providing government salaries and entitlements to new field personnel (USAID/TNC would absorb these costs in Defensores del Chaco). This support would be cost shared with government, and would be provided on the understanding that Government absorb these costs during the life of the project, beginning in year 4.

27.4 Fourth, linkages would be established and strengthened between DPNVS/MAG and law enforcement authorities, with regular interface fostered between the different institutions. The objective would be to ensure follow through in prosecutions, as a deterrent to malfeasance.

27.5 Fifth, support would be provided to ensure the smooth functioning of the participatory management structures established under output 1, by convening multi-stakeholder forums, undertaking conflict resolution exercises where necessary, facilitating information sharing, and providing other ancillary support as needed.

27.6 Finally, the project would finance biological inventories in the project sites to document species and gather data on population trends (for the purposes of management). Biological monitoring capacities would be enhanced, chronicling

---

[14] Infrastructure would not be provided in SRNP, where it is being supplied as part of the baseline. Infrastructure delivery would be the responsibility of CAF in Daniel Cáceres and USAID/TNC in Defensores del Chaco.

management impacts on habitats and species, and providing an early warning of threats. [This work would focus on establishing population trends for indicator species, as a cost effective means of verifying natural system integrity.]

Output 3: ***Core institutional capacities of DPNVS/MAG, NGOs and community-based groups in the project areas are strengthened.***

28.1 Activities would strengthen the operational capacity of DPNVS/MAG and local NGOs working in the project areas through the provision of formal training to staff at various levels, including site based personnel and middle and top management. Training programs would be designed in an iterative manner, based on the absorptive capacities of different clients. Modules would be developed in a demand-driven manner, covering public policy, law, economics, sociology, conflict resolution and other relevant disciplines. The approach will embody a mix of formal instruction, coupled with hands on experience, with study tours arranged for participants to view management work at other sites.

28.2 The project would also provide targeted training to members of community-based groups in conservation related disciplines. The emphasis will be on seeking local solutions to conservation management problems, and empowering communities to manage uses of wild resources in buffer areas within the framework of agreed Management Plans.

28.3 Finally, customs officials would be sensitised to Paraguayan and International Laws governing the trade in threatened species in a bid to improve surveillance of and deter cross-border wildlife trafficking. These activities would directly contribute towards the fulfilment of the objectives of the CITES Convention.

Output 4: ***Demonstrations on sustainable use of wild resources completed and results disseminated***

29.1 The project would finance activities aimed at understanding and removing barriers to the development of ecologically and economically viable nature tourism and controlled sports hunting enterprises in designated buffers. One objective is to uncover and internalise the full costs and benefits of these activities, and to catalyse support for and long-term financing of biodiversity management. To encourage development of these uses, local entrepreneurs would be invited to join study tours to successful eco-enterprises overseas– sensitising them to opportunities. In addition, the project would seek to facilitate 'deal flows' by informing sources of private capital of promising investment opportunities, and matching investment vehicles with business ventures.

29.2 In order to remove barriers to nature tourism in San Rafael and Río Negro, the project would help advertise and promote the parks, develop interpretation materials and facilities, construct basic infrastructure, including self-guided trails, and train local guides (focusing on indigenous communities). A visitor management strategy would be effected, with training provided to rangers in public relations, search and rescue, impact monitoring, and other visitor management functions. Activities aimed at encouraging sustainable sports hunting ventures would focus on designated areas within the buffer areas to the Chaco Parks[15]. Barriers would be removed by assessing the status and

[15] With a focus on the more common species, including species listed under Appendix 2 of the CITES Register.

biological needs of target populations, determining sustainable-yield harvest quotas, sensitising landowners to development opportunities, and transferring adaptive management know-how. The institutional capacity of DPNVS/MAG managers to regulate the industry would also be strengthened.

29.3 The project would also undertake a demonstration of medicinal plant management in the environs of San Rafael. Site based trials would be undertaken for 10 of the most threatened species, to divine response rates to different harvest intensities and identify whether and how productivity might be enhanced. This work would establish the biological parameters for sustainable harvests, as a basis for removing barriers to sustainable use. "No take" areas would be established as control plots, and to safeguard against extirpation. A second control would be established to demonstrate the impacts of unregulated harvests (as would occur in a business as usual situation). Data would be used to develop a Management Plan to regulate the harvest and sale of the species. The demonstration would also provide data for the management of less threatened species. Responsibilities for implementing the Plan and monitoring use would be shared between DPNVS/MAG and resource managers from local communities.

29.4 Prior to promotion of use, the status of target populations and ecosystems would be elicited, sustainable harvest limits determined, independent scientific council sought, management plans prepared, and institutional arrangements to regulate use strengthened. The sustainable use demonstrations will be based on good science and current best practice. In addition, design takes into account the recommendations made at the STAP Expert Group Workshop on Sustainable Use, held in the Genting Highlands, Malaysia, in November 1997.

Output 5: ***Conservation values are imparted through awareness creation and advocacy***

30.1 Awareness activities will be targeted at local communities in the project areas. A continuous and two way flow of information on pertinent conservation and natural resource management issues will be engendered. A special effort will be made to reach youth groups and involve them in conservation activities. A teacher-training component is proposed to inform local schoolteachers of conservation issues and encourage them to apply this knowledge in their teaching assignments.

30.2 The project strategy recognises that stable conservation in the target sites is predicated on the establishment of an active national (as well as local) conservation constituency. A carefully crafted awareness campaign would be executed, using the mass media to impart conservation values. Extensive use will be made of radio in order to reach communities in remote areas. Interpretation materials on Paraguay's biodiversity and conservation programmes (with the focus on the four project sites) would be prepared for dissemination to media, and will be regularly updated during the life of the project.

Output 6: ***Conservation planning and management mechanisms established and operational in buffers surrounding the parks***

31.1 The project would contribute towards the establishment of the proposed Biosphere Reserves, by providing a model for conservation-oriented land use management in buffers surrounding the National Parks. In San Rafael, activities would

seek to create a corridor with Caaguazú PA to the north, and would include protection of hedgerows, uncultivated strips, and woodlots of native species between fields and along ridges and ravines, plus conservation of remaining forest patches. The objective in Paso Bravo would also be to create a corridor– with the Serranía de San Luis Ecological Reserve to the south. In Daniel Cáceres / Defensores del Chaco and Rio Negro, the aim would be to encourage protection of critical habitats and migration routes in buffers[16].

31.2 Buffer area management would be operationalised through an organic and participatory process, co-ordinated by the multi-stakeholder Park Management Boards. The first step would involve mapping of biological corridors between Protected Areas and the designation of critical buffers. Spatial planning exercises would be undertaken to ensure contiguity between habitat patches on different landholdings. These tasks would be undertaken with the participation of local landowners, to obtain and address their perspectives and enlist their support. A multi-disciplinary team of field biologists, Park's staff, and agricultural extension workers would be responsible for discharging outreach functions.

31.3 The next step would involve development of a Conservation Management Plan for the identified corridor and buffer areas. The planning process would assist government to shape policies and legislation to engender and backstop management[17].

31.4 The Plan would be implemented in concert with on-going agriculture and livestock sector programmes, backstopped by the Parks Directorate. One objective is to ensure that baseline interventions are appropriately targeted to address the needs of landowners within the buffer / corridor areas, providing them with the necessary know-how and incentives to implement the Plan. Activities would be meshed with interventions spearheaded under Output 4, with the objective of creating a utilitarian incentive for biodiversity management. Farm and livestock extension workers would receive training in conservation methods, and would provide a long-term vehicle for supplying landowners with technical assistance. Routine monitoring would be undertaken to gauge progress in implementation, and inform policy-making. The entire process would be underpinned by awareness efforts fostered under Output 5, to inform landowners of the need to protect biodiversity at a landscape level. Farm extension workers in the Interior Atlantic Forest would be trained in aspects of environmental science, focusing on vital agro-ecological services such as integrated pest management, and soil nutrient recycling. In turn, extension workers would impart this knowledge to local landowners.

32. <u>End of Project Situation:</u> The following conservation outcomes are expected:

32.1 The four priority sites would be well protected, with threats to biological

---

16 In all the sites, private landholdings are largely of medium to large size, reducing the number of actors involved with buffer area management.

17 The objective is to divine win-win solutions that protect biodiversity and that are economically attractive. For instance, baseline interventions in the IAF are promoting economically efficient and ecologically sustainable means of agricultural intensification, reducing habitat clearance pressures. Activities under this project would complement the baseline, by identifying and promoting protection of critical habitats, thus better channelling the benefits of intensification.

diversity mitigated or reduced to manageable levels. Broad based political support for the parks will have been mobilised following an extensive awareness and advocacy campaign. SINASIP will have been strengthened, and a viable and replicable model for Parks management would be available. Functional Management and Operational Plans will have been prepared and will be guiding field operations, field staff will have been recruited, equipment delivered, and infrastructure constructed, such that the Parks are attaining their designated management objectives. Conservation workers at the sites will have been trained in a variety of conservation related disciplines and would be employing acquired skills in discharging duties. There will be wide stakeholder participation in the management of the Protected Areas, and local entrepreneurs will be investing in sustainable use ventures, following barrier removal. Knowledge of the biodiversity of the four eco-regions will have been enhanced, with inventories conducted for different taxa, and the population status and trends of threatened species verified. Additionally, project impacts will have been recorded, lessons learned documented, and monitoring and evaluation institutionalised as part and parcel of the management model.

33. Project Beneficiaries: As a public good, Paraguay's biodiversity accords a range of benefits at both the global and national levels– according direct, indirect use, option, and existence values. The global community will benefit from the protection of important wilderness areas, ecosystems, species, and races that would otherwise be extinguished, and which are fast being extirpated elsewhere in the La Plata River Basin. At the national and local levels, the project would maintain the option to use biological diversity for consumptive and productive purposes. Other beneficiaries include government personnel and staff from local NGOs working in the project sites who would benefit from additional training and exposure to innovative conservation approaches. The direct engagement of local communities, particularly indigenous groups, in the pursuit of conservation will provide them with a greater stake in the allocation and judicious management of wild resources.

34. Stakeholder Participation: The project strategy departs from the traditional way of managing Protected Areas in Paraguay by seeking to enlist stakeholders as conservation partners. In this vein, extensive efforts have been made to identify and involve all major stakeholders in the process of framing this proposal. Stakeholders include national and regional government authorities, local community leaders, indigenous groups[18], landowners, and representatives from community-based and non-government organisations. A number of public consultations have been organised, providing a means for local communities to guide development of the proposed conservation strategy. These meetings were arranged in concert with a media campaign (targeting local newspapers and radio) aimed at clarifying the objectives of the project to civil society. Project design builds on the substantive feedback obtained from all

[18] Indigenous communities neighbouring the Parks will be fully involved in the implementation of project activities, including enforcement, monitoring, guiding and other conservation functions. Usufruct rights in designated use areas would be clarified and further defined during the process of management planning, and in consultation with representatives of Amerindian groups, providing access to buffer areas for customary purposes, subject to management guidelines, and sanctions for malfeasance (i.e. non customary uses of resources).

stakeholding groups during development. A strong effort would be made to fully engage indigenous groups in the environs of the Parks in conservation management activities.

35. Indicators: A set of indicators has been selected to monitor progress in implementation. These are presented in the logical framework matrix.

36. Eligibility under CBD: The proposed project meets the objectives and principles articulated in the CBD in several ways. By integrating conservation objectives into cross-sectoral plans and programmes at a local and regional level, the project would fulfil the requirements of Article 6 of the CBD, General Measures for Conservation and Sustainable Use. Article 8, In Situ Conservation, would be fulfilled by operationalising management in the four Protected Areas. Other activities would identify and monitor the status of components of biodiversity (Article 7, Identification and Monitoring); build the management capacity of resource managers by providing training (Article 12); impart conservation awareness to stakeholders (Article 13); facilitate information exchange (Article 17), and develop a framework for sustainable use management (Article 10).

37. Eligibility for GEF Financing: As a recipient of UNDP technical assistance, Paraguay meets the eligibility criteria set out under paragraph 9 (b) of the GEF Instrument. The project is eligible for GEF assistance under Operational Programme number 3: Forest Ecosystems, meeting the eligibility criteria by: [1] generating substantial global conservation benefits, [2] being nested firmly within the national biodiversity conservation strategy, [3], financing the agreed incremental costs of measures to secure global benefits, [4] providing for institutional and financial sustainability, [5] following guidance regarding public participation, and [6] including a strong monitoring and evaluation component, that will document and widely disseminate lessons learned during the course of activity implementation.

Project Implementation

38. Implementation and Execution Arrangements: The project would be nationally executed by the Ministry of Agriculture and Livestock. The National Parks and Wildlife Directorate (DPNVS/MAG) would be responsible for project implementation abetted by non government organisations[19]. A Project Technical Unit (PTU) would be established within DPNVS/MAG to supervise and co-ordinate activity implementation. The PTU would also be responsible for ensuring the joint programming of activities financed by USAID/TNC, CAF and the European Union. At the national level, a Project Steering Committee would be established to provide overall direction to DPNVS/MAG, ensure cross-sectoral integration of policies and programmes, and co-ordinate wider advocacy activities. Membership would comprise representatives from government agencies, NGO,s community based organisations, including representatives of

[19] Non government organisations will be invited to implement components of the project relating to public awareness and education, as well as the monitoring and evaluation of impacts. Implementation responsibilities would be determined on the basis of comparative advantage (technical capacity, past performance, field experience and cost-effectiveness).

indigenous groups, and the private sector (industry associations). At the local level, multi-stakeholder Parks Management Boards would be constituted at the four sites, comprised of parks authorities and representatives from major stakeholding groups (Parks staff, NGO's, community/ indigenous groups, and landowners). The PTU would be responsible for ensuring linkages between the PSC and parks management Boards. Further details of implementation / co-ordination arrangements and mechanisms for public participation, are supplied in Annex VII.

39. Co-ordination of Activities with Baseline Initiatives: Extensive consultations have been undertaken with development agencies and bilateral and multilateral donor organisations involved in baseline activities in the four project sites with a view to co-ordinating respective project interventions[20]. The Project Steering Committee will provide a forum for linking up with associated baseline initiatives. Regular bilateral meetings will be scheduled with the task managers of associated projects, and joint appraisal workshops convened from time to time to take stock of progress and exchange information.

Financial Arrangements

40. Incremental Costs: Incremental Costs to be financed by the GEF amount to US$ 8,896,363 . Total cofinancing amounts to US$ 3,555,000**.** GEF investments represent a modest increment to Paraguay's own commitments to biodiversity conservation and sustainable development (the baseline has been estimated at US$ 127, 396,000). The scope of analysis captures existing and proposed interventions broken down into six programmatic categories.

41. Budget

Project Outputs	GEF (US$)	Cofinancing (US$)
PA Planning	816,660	USAID/TNC: 150,000
PA Operations	4,152,331	GOP 600,000 (operations) USAID/TNC: 640,000 CAF: 600,000
Training	980,232	USAID/TNC: 80,000
SU Demonstrations	991,468	European Union: 425,000 USAID/TNC: 80,000
Awareness and Advocacy	979,234	USAID/TNC:120,000 European Union: 200,000

[20] Prospects for co-ordinating project activities with baseline initiatives are good. Agriculture, forestry, and conservation programmes in Paraguay are administered under the umbrella of a single Ministry: the Ministry of Agriculture, providing for ease of communication between cross sectoral activities.

Project Outputs	GEF (US$)	Cofinancing (US$)
Buffer Area Planning and Management	976,438	UNDP: 250,000 USAID/TNC: 180,000 European Union: 230,000
Total	**8,896,363**	**3,555,000**

42. Cost-effectiveness: The future costs of repairing Paraguay's natural landscapes are likely to be prohibitive. Much of the disturbance will be irreversible– particularly in the context of the Interior Atlantic Forest. In the other eco-regions, the situation is less acute, but again, if pressures are allowed to prevail, the corollary will be a loss of biodiversity and impairment of ecological functions. A precautionary approach to conservation is cost-effective when weighed against the magnitude of future costs. The proposed paradigm will spread responsibilities for addressing conservation needs amongst a range of actors, including regional and development agencies. In addition, the participatory approach will engender greater stakeholder "ownership" of conservation efforts, improving the chances that stable conservation outcomes will be secured. Relative to the traditional "command and control" model, this paradigm is likely to prove highly cost-effective by reducing the long-run costs of surveillance and policing functions. Finally, project financing is modest relative to the potential benefits that will accrue from implementation.

Sustainability of Project Results:

43. Project Risks**:** The principal preconditions, assumptions, and risks that underlie project design are presented in the logical framework matrix in Annex III. Activities have been designed to mitigate risk, which are outweighed by the potential direct and indirect benefits of the project. Receptivity towards conservation amongst policy-makers and agents of civil society has increased substantially over the past decade, improving the climate for action. The proposed strategy has been carefully negotiated with stakeholders, and is nationally driven, providing greater surety that project objectives will be achieved.

44. Sustainability: The institutional and financial sustainability of project interventions has been catered for in design. The former will be ensured through capacity building of DPNVS/MAG and by strengthening capacities of partner NGO's and local communities to engage in conservation activities. Over the longer-term, new conservation partnerships between government authorities, NGO's, the private sector and local communities shall increase conservation awareness, and serve to assemble a domestic conservation constituency– so vital to sustainability. The cluster of co-operating agencies and groups involved in the project are ready to work together to co-finance, and contribute to training, capacity building, research and monitoring. The recurrent costs associated with managing the four Protected Areas are estimated at US$ 300,000 per year at current prices. The Government has agreed to gradually absorb these costs into the regular Parks budget, commencing in year 4. These fundamentals auger well for long-term project sustainability.

Monitoring, Evaluation, and Lessons Learned

45. Detailed biological surveys will be conducted during year 1 of the project to provide a baseline for future impact monitoring. Additional field surveys will be sponsored during the life of the project to ascertain population trends for keystone species and assess habitat quality. Surveys would also chronicle the social and economic impacts of interventions and appraise social relations between different stakeholders. Results would be presented to the PA Management Committees to inform decision-making– to ensure that management decisions take due cognisance of trends. A series of case studies would be developed to document the findings of the monitoring exercises. Field units will be required to report on implementation progress to the Project Technical Unit on a quarterly basis. In addition Quarterly Progress Reports would be submitted to the executing agency and UNDP prior to each meeting of the Project Steering Committee. The PTU will be responsible for developing analytical and sampling tools for monitoring.

46. Three independent external evaluations are scheduled, one in year two, one in year 4 and a final performance audit prior to project closure at the end of year 7. These evaluations will provide an independent perspective of project performance, comparing implementation progress and outcomes against the predetermined success indicators set out in the log frame. In addition, annual Participatory Evaluation Exercises will be undertaken with key stakeholders, including local communities, NGOs, and partner organisations. UNDP will report on project performance to the GEF at the annual PIR.

47. The lessons learned during implementation would be documented and disseminated to decision-makers. The PSU would maintain open lines of communication with other GEF projects in neighbouring countries, and thus benefit from wider experiences. The lessons learned from other Protected Area initiatives in Latin America have been accommodated in design. This point to the need to base management measures on good science– linked to ongoing biological monitoring, ensure wide and active stakeholder participation, including constitution of multi-stakeholder Park Management Boards, the importance of developing stakeholder skills in participatory appraisal and conflict resolution, the need to leverage strong policy commitments at an early stage, and to focus on building basic conservation functions, such as surveillance, enforcement, and awareness raising. As regards sustainable use, a key lesson incorporated in design is that barrier removal is a complex endeavour, and activities need to be well targeted and resourced.

Annex I
Incremental Cost Analysis

1. Broad Development Goals:

1.1 Environmental protection is enshrined in the Constitution, which proclaims the right of all Paraguayan's "to live in a healthy and ecologically balanced environment". In 1996 the government endorsed ENAPRENA, the National Strategy for the Protection of Natural Resources, with the objective of improving environmental management. In addition, a raft of enabling legislation has been enacted, including the Environmental Impact Law (1993) regulating the impacts of development activities, the Protected Areas Law (1994), providing a legal basis for the designation and management of Parks, and new laws governing the forestry and fisheries sectors (enacted in 1995 and 1996 respectively).

1.2 The strategy for biodiversity conservation centres on the creation and management of Protected Areas. A Master Plan for a System of National Protected Areas (SINASIP) was formulated in 1993, the year that Parliament ratified the Convention on Biological Diversity. The Plan aims at ensuring that the PA network contains representative samples of all of the country's ecosystems. In the long-term, the government plans to establish a number of Biosphere Reserves in order to manage wider landscapes for conservation purposes. The reserves would build on an existing nuclei of National Parks.

2. Global Environmental Objective:

2.1 The Chaco, Chaco/Pantanal, Cerrado and Interior Atlantic Forest eco-regions of Paraguay are important repositories of globally significant biodiversity. The significance of these areas has been highlighted by recent biological field surveys, which show them to be a centres of floristic diversity within the La Plata River Basin. Additionally, the inventory of fauna is continually being revised upwards. Additions to the list include populations of several threatened species, including a population of the White-winged Nightjar, *Caprimulgus candicans,* in the Cerrado (one of two known populations globally), and the Chaco Peccary, *Catagonus Wagnerii,* a Pleistocene relic, in the Chaco savannah. But this cornucopia is increasingly coming under threat. Thirty-three species of mammals and 86 of birds are classed as either threatened or near threatened. And an unknown number of flora are threatened, particularly in the Interior Atlantic Forest, where anthropogenic pressures are most acute.

2.2 If left unchecked, direct and indirect threats will result in a loss of ecological integrity and species, causing the global community to forfeit sizeable conservation benefits (including direct and indirect use values, and existence and option values). In the long run, it would be more cost-effective to take remedial action at this juncture rather than delay intervention until ecosystems have suffered extensive damage. It is also worth noting that all of the above-mentioned eco-regions are globally threatened; the chances of successfully conserving them are likely to be greater in Paraguay than in neighbouring countries mainly because the magnitude of threats is, in relative terms, smaller.

3. Baseline:

3.1 Despite the laudable policy ambitions of government, there is a considerable unmet need for conservation. The Protected Areas system, as currently constituted, is not serving as a bulwark against pressures. Established parks suffer from poor management, and are often too small to maintain healthy populations of rare species. A number of new Protected Areas have been established under SINASIP. But for the most part, these have yet to be fully operationalised. The baseline situation (for the 7 year duration of the project) is as follows:

i. **PA Planning Systems**: Few parks boast sound Management Plans. In addition, there is little stakeholder participation in planning conservation strategies and field activities, in part because a suitable paradigm is lacking and parks staff lack participatory planning skills. This situation is unlikely to alter significantly in the baseline scenario. The lack of coherent planning suggests that inefficiencies in the allocation of financial and human resources within the parks system will in all likelihood continue.

NGO expenditures on conservation planning are limited to FMB allocations for operational planning in Mbaracayú Natural Reserve. The German Federal Geosciences and Natural Resources Institute has provided funding for the purchase of GIS equipment and procurement of LANDSAT imagery for the Chaco and eastern Paraguay. This will abet conservation planning efforts in the Chaco, Cerrado, and Interior Atlantic Forest (however, because this investment represents a sunk cost, it is not costed in the baseline). Less than US$ 650,000 would be expended on Protected Area planning over the next seven years. This sum includes expenditures by Government and NGOs, as well as inputs by the Andean Development Corporation (CAF) in Tte. Enciso National Park, south of Daniel Cáceras NP.

ii. **PA Operations:** The capacity of DPNVS/MAG to manage the PA system is inadequate. With a few exceptions, the parks lack infrastructure and equipment, hampering efforts at protection. PA boundaries have not always been legally recognised and demarcated. While new Laws have improved the regulatory framework governing natural resource management, the penalties for malfeasance are inadequate. Performance monitoring is inadequate, and is delinked from Protected Area planning processes.

The bulk of financing for operational activities in the baseline (just over US$ 7 million) would be obtained through government budgetary appropriations, mainly to cover salaries and basic operations in State owned parks. The FMB, would appropriate US$ 840,000 in financing in the Mbaracayú Reserve (in the northern IAF). The World Bank financed Natural Resources Management project, executed by UNDP, would provide some US$ 500,000 for the procurement of equipment and development of infrastructure (ranger posts, a research station and a central office) at San Rafael NP. Park boundaries were demarcated in 1996-97 with funding from this project. Finally, CAF would make a limited investment in infrastructure in Tte. Enciso National Park.

The baseline also includes a sizeable appropriation by Government (IBR) to compensate landowners for the alienation of private lands within National Parks. [The Law delimits use of lands within Parks for conservation purposes whatever their status, but the

government is gradually compensating the original landowners for lost access]. These funds would mostly be allocated to San Rafael National Park, the other priority Parks lying mostly on public lands.

iii. **Training and Institution Building**: A serious impediment is that parks service personnel lack the multiple skills required to effectively manage PAs. While DPNVS/MAG would make a small investment in training, this would be insufficient to address the full range of needs of parks personnel. Likewise, FMB would provide some training to its own personnel working in Mbaracayú Reserve. The baseline estimate projects that some US$ 315,000 would be available for conservation training, from all sources, during the project life.

iv. **Wild Resource Use:** A range of wild resources have associated consumptive and productive use values. Some of these resources are currently being harvested at unsustainable levels, a trend that, if left unchecked, will likely lead to local extirpation of the target species. This threatens to foreclose future use values, including recreational use options, and has wide ecological ramifications. In the short-term, a number of barriers hamper resolution of the problem. These include a lack of understanding of species management requirements, lack of information on market determinants, a dearth of skills and relevant management experience, and the inability of current institutions to regulate use. The institution responsible for regulating international trade in native species is the national CITES Secretariat within DPNVS/MAG. The office is responsible for discharging the Government's responsibilities as a signatory of the CITES secretariat. However, in-house capacity is very weak, and the office is unlikely to invest in barrier removal activities to engender paradigm shifts from unsustainable to sustainable uses of wild resources.

The baseline for sustainable use includes Government appropriations for running the CITES office (~US$ 280,000), plus the budget for forest management activities in the systems boundary (~US$420,000). CECTEC, the Eco-development Studies and Training Centre has plans to promote sustainable uses of medicinal plants, but has little financial resources of its own (US$ 10,000) and the scale of demonstration is unlikely to be significant. Likewise, Altervida, another national NGO specialising in sustainable development issues, has a mandate to rehabilitate degraded ecosystems to recover productive functions, but has little money to execute the task (US$ 10,000).

v. **Conservation Awareness & Advocacy:** Understanding of the importance and local relevance of biodiversity conservation is limited. While conservation has been endorsed at the highest levels, decision-makers lack an awareness of management fundamentals. Paraguay's conservation movement is embryonic, and has little capacity to engage in advocacy. Nevertheless, some awareness/ advocacy activities would occur in a business as usual situation. DPNVS/MAG supports some conservation awareness at a national level, and FMB funds community awareness activities in the vicinity of Mbaracayú, with limited efforts at the national level. Alter Vida runs a radio programme in the Ybyturuzú NP area which in part focuses on biodiversity conservation issues. The World Bank Natural Resources project would make a small investment in awareness. The combined investment in conservation awareness and advocacy activities over the next seven years is estimated at US$ 590,000.

vi. **Natural Resource Management:** Government policy supports the establishment

Biosphere Reserves, comprising core protected wildlands, buffer areas and sustainable use zones, known as transition areas. The objective is to integrate conservation objectives into cross-sectoral programmes and activities. A considerable number of programmes have been launched to develop the agriculture, livestock and forestry sectors. These activities are funding infrastructure development and ancillary economic support programmes, and aim at improving market access, credit outreach, communications, access to agricultural extension services, farming technologies, and farming systems research. The total baseline for development within the systems boundary is conservatively estimated at US$ 102 million.

In the vicinity of San Rafael, the baseline includes the World Bank financed Natural Resources Management project, Land Use Rationalisation project, and Rural Development Investments project, an IDB financed agricultural support project, and the IFAD Rural Development Credit projects. ITAIPU has plans to improve watershed management in the Paraná catchment area, part of which includes the area around the park. UNDP is funding a small project to improve the livelihoods of peasants and indigenous communities in the eastern region. In the Cerrado area, the baseline includes the IFAD Credit project, the above-mentioned UNDP project, and investments by BGR. At a more general level, CECTEC provides training to high school students in sustainable farming and resource management practices, with a focus on the eastern region. Alter Vida is also active in the eastern region, focusing on social mobilisation for sustainable development. The baseline for the Chaco is considerably smaller, given the small population base. The European Union would provide moneys through the Prodechaco project to support natural resource management and rural livelihood advancement. Finally, GTZ will provide moneys for Phase 2 of ENAPRENA, which will support implementation of pilot environmental management projects at the national, provincial, and local levels. Project sites have yet to be identified, but will include areas in the Chaco.

While several of the foregoing initiatives include environmental mitigation components, with the exception of the Prodechaco and Natural Resources Management projects, these do not focus specifically on biodiversity conservation. Biodiversity conservation objectives remain poorly integrated into regional development planning, a serious lacuna in management. While DPNVS/MAG is tasked with regulating the environmental impacts of buffer zone activities, in practice it has little capacity to do this. Land in these areas is thus being allocated for purposes that conflict with conservation objectives. Linkages between DPNVS/MAG and the Authority of Public Lands need to be strengthened, the latter being the authority responsible for allocating land titles.

4. GEF Alternative

4.1 Without execution of the GEF Alternative, Paraguay's capacity to manage Protected Areas would remain weak, and the total area under effective management would be low. Globally significant Protected Areas would face growing insularisation as lands in the buffer are modified in ways that are incompatible with conservation aims, threatening the long-term survival of species unable to adapt to changing ecological conditions. This project aims at averting this, by strengthening management of San Rafael, Daniel Cáceres/ Defensores del Chaco, Río Negro and Paso Bravo National Parks– providing a model of conservation geared to the needs of different eco-

regions. The following interventions are proposed:

i. **Participatory Planning & Management System:** GEF moneys would be employed to strengthen the Protected Area planning system at the sites, with USAID/TNC resources providing for planning needs in Defensores del Chaco. Multi-stakeholder Management Committees would be constituted at each PA, providing a platform for participatory management. The project would assist DPNVS/MAG to develop procedures for participatory planning. Management plans would be formulated, and land zoned for multiple purposes, including strict protection, recreational and scientific uses. These plans would provide a blueprint for PA management in each eco-region, guiding annual operational planning. In order to establish and co-ordinate management of transboundary reserves, the planning process will be linked to conservation efforts in Brazil and Bolivia. The project would assist the Government to tighten conservation regulations, gearing them to site specific needs and increasing penalties as a deterrent against law breaking.

ii. **Strengthening PA Operations:** The project would provide resources to demarcate park boundaries, and with funding support from other donors, construct basic infrastructure at recently established sites and supply essential equipment as needed. The project would also support functioning of the Management Committees, serving as a Secretariat until they become self-sustaining entities. A robust monitoring system will be established to gauge conservation trends, feeding into ongoing planning efforts and providing data on project performance. Finally, linkages with the police force, magistrates, Authority of Public lands, and, in remote border areas, armed forces, will be strengthened, making these agencies more accountable for the execution of the government's conservation policies. GEF investments in infrastructure development and equipment supply would be concentrated in Paso Bravo and Río Negro, where there is no existing baseline. Infrastructure support in Daniel Cáceres/ Defensores del Chaco will be co-financed by CAF and USAID/TNC respectively. However, a small investment is required in San Rafael as a top up to funding already dedicated by the Natural Resources Management project (incremental moneys would be used to purchase horses for patrols and procure equipment for biological monitoring).

iii. **Training:** GEF moneys, supplemented by funds from USAID/TNC, would finance a comprehensive training program in conservation methods targeted at DPNVS/MAG staff and national NGO staff. A "Mobile School" will be established to service training needs, with training programs delivered in iterative cycles. The training programme will also target local communities, to make them more effective partners in conservation; dedicated training modules will be designed for the purpose.

iv. **Promoting Sustainable Use of Wild Resources:** The project will undertake three demonstrations (nature-based tourism, controlled sports hunting, and medicinal plants harvesting) in designated areas aimed at establishing the economic and ecological viability of sustainable use options and developing effective management measures. The principal focus will be on strengthening management capacity amongst institutions and developing effective regulatory instruments. To encourage the wide-scale adoption of sound practices, information will also be fed to ongoing baseline initiatives. To catalyse investment in conservation friendly businesses, a number of study tours to eco-development schemes in other countries will be organised for entrepreneurs. Co-financing for this component would be provided by the European Union and

USAID/TNC, which would work in the Chaco/ Chaco/Pantanal parks to improve the sustainability of consumptive uses of wild resources (i.e. hunting, charcoal production and fuelwood use).

v. **Awareness Creation and Advocacy:** The project would support implementation of a media outreach programme focusing on biodiversity conservation issues. Activities would strengthen the capacity of local NGOs to engage in conservation awareness and advocacy. Linkages will be built with local radio stations ensuring that programming content includes information on pertinent conservation issues. High quality publications would be prepared to sensitise different stakeholders to Paraguay's conservation significance and needs. A special effort will be made to target landowners and local communities in park buffer zones. This component would be co-financed by the European Union.

vi. **Buffer Area Management:** The livelihood needs of local communities in the buffer zones are being addressed in the baseline situation. These programmes will have important conservation spin-offs, for instance by intensifying farming practices (and thus reducing extensification pressures). In order to better channel these benefits, the project would support development of a conservation planning and management framework in the buffers to the 4 sites. The main focus would be on establishing biological corridors and protecting vital habitats on private lands adjacent to the parks. This component would be co-financed by UNDP, USAID/TNC and the European Union. The GEF would fund the overlay of planning and management relating to the conservation of biological diversity.

5. Scope of Analysis:

5.1 The systems boundary covers the four eco-regions that are the focus of interventions of the GEF alternative (covering an area of some 100,000 square kilometres). The geographical area includes Itapua, Caazapá, Alto Paraná, Canindeyú provinces in the Interior Atlantic Forest, Concepción Province in the Cerrado, and Boquerón and Alto Paraguay Provinces in the Chaco/ Chaco Pantanal. The analysis includes a range of activities, aggregated into the 6 activity bundles. Costs have been estimated for 7 years– the duration of the planned GEF Alternative (sunk costs, incurred prior to 1998 have been omitted from the analysis). The baseline captures investments within the eco-regions. The Alternative captures the additional actions required to secure conservation objectives within the four priority sites. Co-financing consists of funds leveraged in order to fulfil the objectives laid out in the Alternative.

6 Costs and the Incremental Cost Matrix:

6.1 Baseline expenditures amount to US$ 127,396,000; the Alternative has been costed at US$ 139,847,363. The GEF would provide US$ 8,896,363 in incremental cost financing, or roughly 6.3% of the total cost of implementing the Alternative[21]. Co-financing has been secured from USAID for strengthening of Defensores del Chaco NP, CAF for operations, the EU for sustainable use and conservation awareness activities, and UNDP for strengthening the planning and management in buffer areas. In addition, the Government absorb the additional costs of Protected Area operations at

[21] This sum is in addition to the US$ 305,000 allocated in PDF B funding.

the sites– financing that would not ordinarily have been provided in the absence of this project. Total co-financing amounts to US$ 3,555,000.

6.2 The project will generate few incidental, tangible domestic benefits in the short-term. In the longer term, removal of barriers to sustainable use will widen the menu of development options available at a local level, and provide a new source of funding for conservation. Protection of the natural integrity of the 4 parks will also serve to maintain direct, indirect, option, and existence values accruing to Paraguayan's from wildlands conservation. In other words, the country would have avoided losing its significant biodiversity endowment at a stage in its development when it was unable, by itself, to foreclose loss. These benefits are not treated as avoided costs in this analysis because they are difficult to quantify, uncertain, diffuse, and mostly benefit future generations (thus being discounted at the national level).

Incremental Cost Assessment: Paraguay Protected Areas Project

Cost/ Benefit	Baseline (B)	Alternative (A)	Increment
Domestic Benefits	1. Wild resources are used for a number of consumptive and productive purposes but the ecological sustainability of wild harvesting is low; sustainable use opportunities face a number of barriers to viability. 2. Environmental service functions are being hampered owing to ecosystem degradation 3. Future recreational opportunities are being lost as wildlands are cleared	1. Pilot projects demonstrating ways and means of removing barriers to wild harvesting (controlled sports hunting, medicinal plants) will be supported; The project will support information exchange between Paraguayan entrepreneurs and successful eco-businesses in other developing countries. 2. Strengthening of the capacity of responsible authorities and other stakeholders to support conservation and manage uses of wild resources. 3. The project will improve management of an expanded PA system, and invest in barrier removal activities to encourage nature tourism in SRNP and RNNP.	1. Demonstration of paradigm for sustainable management of medicinal plants harvesting and sports hunting; the menu of sustainable use options will have been expanded. 2. Indirect use values for environmental services and economic activities mediated by biodiversity in the target PAs and adjacent ecological landscapes will be maintained. 3. Future use opportunities for nature tourism in the priority sites will have been secured, with a demonstration of park's promotion and visitor management.
Global Benefits	4. Existing PA system is embryonic, and globally significant ecosystems are insufficiently represented. Many existing PAs are too small to safeguard natural processes. 5. Hunting of wildlife for commercial, sport and subsistence purposes is contributing to the loss of globally significant species; illegal uses of Protected Areas, including encroachment and logging, are contributing to a loss of habitat quality. 6. Land use conversion to agriculture is leading to habitat fragmentation, particularly within forest ecosystems.	4. Increasing Protected Area coverage. These areas will form the nucleus of Biosphere Reserves to be created as part of the country's agenda for sustainable development 5. Improving Parks operations and strengthening and supporting enforcement of regulations; Demonstration of viability of sustainable sports hunting in designated areas; 6. Sustainable agricultural practices will be supported by drawing linkages between conservation and baseline agricultural development activities 7. Strengthening of national capacity to manage Protected Areas and provide	4. Globally significant ecosystems will be adequately represented in the PA network; sites added to the system will be sufficiently large to provide for species survival needs, so reducing the risk of extirpation; maintenance of economic values accruing to the global community including values associated with use and non-use benefits. 5. Hunting pressures on endangered and rare species and other illegal uses of Protected Areas will have been curbed. 6. Activities leading to habitat erosion will be stemmed, enabling ecosystem integrity to be maintained in the long-term. 7. Sustainability of conservation

Cost/ Benefit	Baseline (B)	Alternative (A)	Increment
	7. National capacity constraints hamper conservation efforts. 8. Paraguayan society, particularly rural communities are not sensitised to conservation values.	for long-term conservation objectives 8. Conservation awareness and advocacy programme will be executed to reach wider civil society and key decision-makers.	interventions will be better ensured. 8. Improved receptivity of key stakeholders to conservation ideals thus providing a better platform for durable conservation in the long-term
Costs(US$) **PA Planning System**	DPNVS 400,000 NGOs 50,000 CAF 106,000 European Union 80,000 **Total 636,000**	**Total: 1,602,660**	**GEF:** 816,660 **Co-financing** USAID/TNC 150,000 **Total: 966,660**
PA Operations	DPNVS 7,270,000 IBR (land purchase) 14,000,000 WB NRM 500,000 FMB 840,000 CAF 300,000 **Total 22,910,000**	**Total: 28,902,331**	**GEF:** 4,152,331 **Co-financing** DPNVS 600,000 USAID/TNC 640,000 CAF 600,000 **Total: 5,992,331**
Training	DPNVS 105,000 FMB 210,000 **Total 315,000**	**Total: 1,375,232**	**GEF:** 980,232 **Co-financing** USAID/TNC 80,000 **Total: 1,060,232**
Sustainable Use (in situ)	MAG/ CITES 280,000 MAG/ SFN 420,000 AlterVida 10,000 CECTEC 10,000 **Total: 720,000**	**Total: 2,216,468**	**GEF:** 991,468 **Co-financing** EU 425,000 USAID/TNC 80,000 **Total: 1,496,468**
Costs (US$) **Awareness,**	DPNVS 90,000 FMB 350,000 Altervida 40,000		**GEF:** 979,234 **Co-financing** EU 200,000

Cost/ Benefit	Baseline (B)	Alternative (A)	Increment
Education & Advocacy for Biodiversity Conservation	CECTEC 50,000 WB NRM 60,000 **Total: 590,000**	**Total: 1,889,234**	USAID/TNC 120,000 **Total: 1,299,234**
Buffer Zone Planning and Management	SSERMA-SFN/DOA 2,600,000 FMB 100,000 Altervida 280,000 CECTEC 105,000 WB NRM 27,270,000 WB Land Use 6,000,000 WB (RDI) 15,000,000 IDB 6,000,000 IFAD [310 PG] 1,100,000 IFAD (407-PY) 10,000,000 UNDP 10,000,000 BGR/Germany 1,500,000 ENAPRENA 500,000 Itaipú Binacional 5,000,000 EU 16,770000 **Total: 102,225,000**	**Total: 103,861,438**	**GEF** 976,438 **Co financing** UNDP 250,000 USAID/TNC 180,000 EU 230,000 **Total: 1,636,438**
Cost Totals (US$)	**Grand Total: 127,396,000**	**Grand Total:** **Full Project 139,847,363** With PDF 140,152,363	**Incremental Costs to be funded by GEF** Full project 8,896,363 PDFB: 305,000 Total GEF: 9,201,363 **Co-financing: 3,555,000**

Annex II

Logical Framework Matrix: Paraguay Protected Areas Project

Intervention Logic	Indicators of Performance	Means of Verification	Risks and Assumptions
Development Objective: Paraguay's rich storehouse of Biological diversity is conserved	By the end of the project, the area of the PA system will have increased by 66 %. Area coverage will be as follows (in sq kms). **Pvt PAs** **Public PAs** **B/line** 640 14,936 7 yrs 640 24, 786 Habitat conversion pressures within the expanded PA system will have decreased.	Legal & Administrative documents Threats analysis, Satellite imagery	♦ Paraguayan society is receptive to conservation ideals and goals. ♦ Populations of endangered species are able to recover from past & present pressures.
Project Purpose: The **i**ntegrity of 4 globally important Protected Areas is assured and conservation capacity enhanced	SRNP, PBNP, RNNP & DDNP are registered in internationally recognised PA lists. Population dynamics of indigenous species within the core PAs have stabilised by the end of the project. At least 3 other Paraguayan PAs are being managed following the model developed under the project By year 7, conservation polices and legislation will have been regeared to take into account best practice measures derived under the project.	IUCN / WCMC PA Registers Keystone Species monitoring in years 1 (baseline), 3,5 and 7 Planning Documents Legal gazettes	♦ Regional and local governments are committed to long-term conservation objectives. ♦ Local stakeholders are willing to adapt resource use practices in order to facilitate biodiversity conservation.
Output 1: Participatory Planning System for conservation management is developed and in place	An operational plan for year 1 activities has been prepared within the first month of implementation. By the end of year 1, an integrated 5 and 10	Planning document Master Plan documents / Project	♦ Financial requirements of the Conservation System are assured and the project does not deleverage the baseline of conservation. ♦ The Governments of Paraguay, Bolivia,

Intervention Logic	Indicators of Performance	Means of Verification	Risks and Assumptions
	year management plan (Master Plan) exists for each of the four sites. Annual Operational Plans will be prepared by park managers in each PA from year 2 onwards By the end of year 2 local co-ordination structures (management committee by stakeholders) are agreed and functioning. Being adapted if necessary, they function through out the project At the end of year three, co-ordination arrangements with neighbouring countries on common conservation strategies and measures have been established By the end of year 3, all necessary legislative and regulative provisions to ensure the stability of the core areas have been taken. At the end of year 5, a second five year management plan would have been prepared by DPNVS/MAG for each site At the end of year 6, a negotiated and approved "transition plan" assures full operation of 4 area complexes after the end of the project	records Operational planning documents in each PA Project documentation/ Committee statutes/ Register of minutes Aide memoire of negotiations/ Memorandum of Understanding Gazette/ Park statutes Master Plan documents/ Project records Approved planning document/ National budget/ Operational Plans of PAs	and Brazil are willing and able to participate in transboundary conservation initiatives in the long-term.
Output 2: Operations of target Protected Areas are built and enhanced	By year 3 boundaries of all PAs have been legally recognised and demarcated By year 5 infrastructure has been developed in all PAs (see register) and equipment supplied	PA statutes/ Gazette/ Field observation Park inventories/ Mid term project progress report/ Field observations	♦ Government absorbs additional operational costs arising from the project. ♦ Government willing to enforce conservation regulations. ♦ Stakeholders' consensus can be obtained and maintained.

Intervention Logic	Indicators of Performance	Means of Verification	Risks and Assumptions
	Conservation compacts have been established with groups/organisations of at least 70% of indigenous and small farmer communities within the core PAs and the immediate buffer zones No. of successful prosecutions for malfeasance has increased Yr. 3 (15%), yr. 5 (30%) yr 7 (50%)	Project records/ Community contracts/Committee statutes/ Register of minutes/ Analysis of committee deliberations over time Magistrate records	
Output 3: Core institutional capacities of DPNVS/MAG, NGOs and community-based groups in the project areas are strengthened.	A broad training programme is established during the 1st year and continually implemented through the project, addressing a) 100% of the staff and management committee members and b) important stake holders in the buffer zones	Training Programme document/ Lists of participants/ training manuals and materials	♦ Trainees receptive to new conservation approaches and willing to apply new skills.
Output 4 Demonstrations on sustainable use of wild resources completed and results disseminated	Visitation will be showing a steady upward trend, with evidence of sound visitor management (lack of litter, graffiti, and other visible damage) and involvement of local communities in nature tourism activities 4 controlled sports hunting concessions would have been established in designated buffers by the end of year 3; annual biological surveys in succeeding years show stable populations of target species Management plan for medicinal plant harvesting in designated areas of SRNP prepared and operationalised by the end of year 6 The economic gross return of the new alternative uses exceeds US$ 300,000 by year 6	Park visitor records; visitor comments; ground truthing/ Resource management plan Biological inventory and monitoring records; Resource management plan Resource Management Plan; Biological surveys and monitoring records Economic analysis	♦ Authorities, especially those of Agriculture, support the dissemination of project results. ♦ The international community is willing to support sustainable use activities and market opportunities can be developed.

Intervention Logic	Indicators of Performance	Means of Verification	Risks and Assumptions
Output 5 Conservation values are imparted through awareness creation and advocacy	Public opinion on biodiversity conservation has changed significantly in the buffer zones Necessary project decisions are being taken quickly and with positive results By year 3, a stamp series with conservation motives is in circulation By year 4 at least 50% of the schools in the buffer zones are participating in the outreach programme (teachers training, regular visits, environmental education focusing on biodiversity, etc.)	Opinion surveys in the buffer zones in years 1,4 & 7 Project records / Mid term and final evaluation First day covers Project records / School curricula	♦ The public is responsive to conservation outreach and willing to change behaviour.
Output 6: Conservation planning and management mechanisms established and operational in buffers surrounding the parks	Biological corridor established in San Rafael and Paso Bravo PAs by the end of year 6 of the project, with approved management plan; Establishment of a working buffer to Daniel Cáceres and Río Negro PA's, by the end of year 6. Habitat in corridor and designated buffers remains in good condition. Policies and strategies in place for integrating conservation objectives into baseline programmes.	Project records / legal gazettes / minutes of planning forums Project records / legal gazettes / minutes of planning forums Records of biological monitoring Planning records, Activity work plans for baseline initiatives; budget papers	♦ Stakeholders in economic sectors willing to integrate conservation objectives into cross-sectoral activities. ♦ Political will to operationalise biosphere concepts and enforce regulations is high at national and provincial levels.
Activities			**Assumptions**
1.1 Formulate Master Plans for each Protected Areas complex **1.2** Elaborate corresponding operational plans **1.3** Establish procedures to establish participatory planning systems at all levels.			♦ The Governments of Paraguay, Bolivia, and Brazil agree to co-ordinate conservation measures in the border

Intervention Logic	Indicators of Performance	Means of Verification	Risks and Assumptions
1.4 Establish co-ordinating mechanism with Bolivia and Brazil for management of transboundary reserves			region. ♦ Other Ministries and development stakeholders are willing to co-operate in advancing conservation objectives. ♦ Stakeholders are willing to participate and Parks authorities are receptive to participatory decision-making. ♦ Local Communities are receptive to sustainable use opportunities and demonstrations are socially viable. ♦ The mass media is willing to disseminate conservation information. ♦ Education authorities and teachers are willing to co-operate on conservation issues. **<u>Pre conditions</u>** ♦ Government agrees to absorb additional operational costs arising from the project. ♦ DPNVS / MAG receives authorisation to recruit 25 new park rangers.
1.5 Establish Management Committees with representatives from all important stakeholder groups for management of the Protected Areas			
1.6 Strengthen PA regulations for malfeasance			
1.7 Strengthen Parks Authority (DPNVS / MAG) patrimony			
2.1 Finalise demarcation of PAs boundaries			
2.2 Build PAs infrastructure (including interpretation facilities, ranger posts etc.)			
2.3 Provide equipment for PAs including data collection & interpretation, vehicles, field equipment, office equipment and communications facilities			
2.4 Establish functional maintenance systems for infrastructure / equipment			
2.5 Establish and execute a conservation monitoring system in PAs and their buffers			
2.6 Strengthen organisational and conservation skills of communities in the buffer zone			
2.7 Ensure effective functioning of management committees			
2.8 Build linkages with law enforcement agencies			
2.9 Build linkages with Authority of Public Lands (IBR)			
3.1 Train PAs staff in control, management, monitoring, conflict resolution, visitor relations, and interpretation skills			
3.2 Provide short-term scholarships to parks staff for courses overseas			
3.3 Train local communities and other stakeholders in conservation approaches and resource management methods			
3.4 Conduct training for customs officers to abet identification of traded specimens and improve enforcement			
4.1 Identify potential sites for field demonstrations			
4.2 Investigate biological parameters for sustainable use			
4.3 Analyse market determinants and potential			
4.4 Conduct site specific trials of management methods and document results			
4.5 Build linkages with natural resource development activities			
5.1 Design and implement a media outreach programme for biodiversity conservation			
5.2 Sensitise decision-makers to PAs needs and opportunities and constrained for conservation			
5.3 Document and disseminate lessons learned from implementation of the project			
5.4 Formalise and strengthen schools / youth outreach initiative (train the teachers, youth camps)			
5.5 Organise study tours for land owners to sensitise them to innovative sustainable use methods			
6.1 Identify key habitats to be designated as buffers and biological corridors by assessing aerial imagery and conducting field surveys			
6.2 Enlist support of local landowners and other stakeholders for buffer zone management			
6.3 Develop Management Plans for buffer areas			
6.4 Provide training in conservation methods to agricultural extension workers			

Intervention Logic	Indicators of Performance	Means of Verification	Risks and Assumptions
6.5 Leverage programmatic interventions from baseline initiatives to address management needs in buffers **6.6** Monitor and report on habitat quality in buffer areas			♦ Government legally declares Daniel Cáceres NP and Río Negro NP.

Annex IV

STAP Technical Review

A. Assessment of the scientific and technical soundness of the project.

This project is well founded on a rich base of information about the biodiversity and ecosystems of Paraguay. The selected sites, being fully in context in dealing with that biodiversity, represent conservation objectives well in the different communities and are based on enough strong background of inventory and earlier work to be entirely sound from a scientific and technical point of view. Each of the communities is well understood and well inventoried from the standpoint of plants and vertebrates at least, and the sustainable approaches that are proposed, which are to be community-based to a much fuller account than has been the case earlier, are appropriate and draw on best current conservation science values and strategies. Protected areas in Paraguay have not so far been managed with full stakeholder participation: but the point I want to make here is that based on my careful review of the materials submitted, this project is scientifically and technically sound.

B. Identification of the global environmental benefits and/or drawbacks of the project.

Paraguay is quite diverse biologically for its size, and occupies a very important position within the Rió de la Plata Basin. A very high amount of quite restricted biological diversity is represented within the borders of Paraguay and there are, because of their relative degree of development of the country and the knowledge base that has been built up, quite reasonably good prospects for protecting it well. By world standards, Paraguay is relatively well off, and has a GNP per capita of approximately US $1,850, a relatively low population (approximately 5.2 million people) for its area, but a fast growth rate. It is relatively well endowed with scientific and technical institutions and trained people, and is therefore in a position to act decisively with respect to its conservation priorities. Considering the high degree of concentration of biological diversity of unusual and restricted biological diversity, Paraguay appears to be a very good target country for action.

The global environmental benefits are therefore great in the setting appropriate to achieve these. I can see on the other hand no real drawbacks, because I think the combination of scientific knowledge, institutional development, national development and the kind of plan presented here will be very effective from a global point of view in preserving biological diversity.

C. Evaluation of the project's compliance or fulfillment of the goals of GEF, as well as its operational strategies, program priorities, GEF Council guidance and provisions of relevant conventions;

For the reasons outlined largely under B, I believe that the initiation of this program would be very important in achieving the overall goals of GEF in capacity building, and putting in place a mechanism whereby the biological diversity of Paraguay, important on a global scale, could be quite important. The kinds of strategies that are employed by GEF around the world are well represented here, and from the proposals I have reviewed, I would say that this one is very efficiently positioned in respect to taking advantage of the actual potentialities of the systems in place nationally; building them up and improving them, involving more stakeholders; and getting ready for a national improvement of performance in the future very effectively. I think, in other words, that Paraguay is a very good place to carry out this project; that it suits GEF priorities extremely well; and it will move the country and the preservation of its biodiversity forward effectively into the future. I am very pleased with it.

D. Assessment of the project's significance, benefits and drawbacks with the context of the region and its economy;

I believe I have covered the points here adequately in my answer to part B primarily. I think that there are a few drawbacks and that this is a very effective conservation program in the regional context and from an economic point of view.

E. Characterization of the potential replicability of the project, i.e., added value for the global environment beyond the project itself;

The potential replicability of the project is good. The particular points are, first of all the rigorous and quite decisive division of Paraguay into biological regions with conservation activities planned for the most significant of these; the effective assessment of the knowledge available for each of these regions; the inclusion of stakeholder dialogue to a higher degree in the pursuit of this program than had ever been the case previously (in fact, in effect, the initiation of stakeholder dialogue in connection with this program); and the building up of government and other agencies able to deal with the biological diversity of Paraguay effectively and on an ongoing basis.

For all of these reasons, there is little doubt in my mind that the initiation and carrying out of this program would not only have rich rewards for the preservation of biodiversity in Paraguay in the immediate future, that it will also have lasting effects in having involved more people more effectively and laid the groundwork for pushing on with these plans from now on. All of the elements that I really like to see in GEF proposals: a firm scientific base; a careful consideration of conservation priorities; involving stakeholder communities well and continuously; and building institutions within the country are well represented in this proposal, so that while it is not exactly original in terms of all of these elements, it is what I would call an ideal proposal and one that I would like to see replicated many times over.

F. Estimation of the project's sustainability in institutional, financial and technical terms;

For the reasons that I have outlined above, which include the relative wealth of Paraguay both financially and in terms of the institutions involved; the incorporation of stakeholders in planning for conservation priorities in the region; and the stance and organization of the present project I consider it to be fully sustainable beyond the time of this program.

G. Appraisal of the extent to which the project will contribute to the improved definition and implementation of GEF's strategies and policies, thus paving the way for more effective international, technical cooperation, assistance and investment projects;

I believe that my answer to point E is adequate for point G as well; by being what I consider an ideal and very well defined and developed project, this should help to define the kinds of GEF operations that I would like to see go on in countries all over the world.

H. Evaluation of relevant linkages to other focal areas (biodiversity conservation, climate change), identifying potential benefits or drawbacks;

I can see no particular linkages to climate change or other GEF objectives in this proposal, although obviously any time natural communities are managed well and sustainably, there is a positive input to carbon sequestration, and thus of mitigation of carbon dioxide buildup in the atmosphere.

I. Assessment of the insertion of the project into the framework of other programs and action plans at regional or sub-regional levels;

No comments.

J. Characterization of any other beneficial or damaging environmental effects not resulting from analyses above;

None observed.

K. Characterization of the degree of involvement of relevant stakeholders in the project;

Although the involvement of relevant stakeholders is something planned in this proposal and not really well developed now, the commitment, because it is so important, should be monitored for the duration of the project.

M. Estimation of the project's innovations in terms of approach and implementation;

I believe adequately covered in the responses given above. Having dealt with the individual criteria in this outline form, I will now
go on to the coverage of areas.

1. OVERALL IMPRESSION

This is an outstanding project that is well conceived, badly needed in conservation terms, and highly likely to succeed for the reasons that I have outlined on the previous page.

2. RELEVANCE AND PRIORITY

The relevance of this project to biodiversity conservation is high. Approximately five percent of global biodiversity is found in Paraguay, and its preservation will be well carried out in this relatively thinly populated and affluent country with its excellent scientific basis. This is not in essence a strategy to implement the aims of the biodiversity convention overall, but within Paraguay which would require a bit more inventory work, and looking at the whole national stock of biodiversity in an integrated way; but operationally this program will contribute very well to the goals of the biodiversity convention and the development of national priorities, goals, objectives, and strengthening national institutions.

3. BACKGROUND AND JUSTIFICATION

Enough scientific and technical justification has been provided for this project. The reasons for the selection of the individual protected areas within the context of different communities in Paraguay have been made clear, and the substantiation is wholly adequate. The program fits within national priorities and commitments and, in fact, extends them well. The need for this project is amply justified because of the variable degree of protection of different communities within Paraguay, and it is very clear that its implementation will result in the preservation of a major segment of global biodiversity, restricted to temperate southern South America in a way that could not be accomplished well by any other means. It draws on institutional strength in Paraguay, and will leave them even better equipped to deal with the problems of biodiversity conservation in the future.

4. SCIENTIFIC AND TECHNICAL SOUNDNESS

This project is as sound as it could be from a scientific and technical point of view, and is basically a strong approach to the conservation of representative segments of important vegetation types filled with endemic organisms, involving the appropriate stakeholders and with institutional, technical and financial backing that will result in a continuing good
effort in this area for the indefinite future.

5. OBJECTIVES

The objectives of the program are absolutely concrete, admirable, and can be achieved within the strategies outlined.

6. ACTIVITIES

The roster of activities included in this project are appropriate, stated in the right terms at this level, and properly monitored (I stress again the need for continued involvement of stakeholders and full attention to that area) should achieve the objectives outlined very well. There is a logical sequence to the organization of the activities in this proposal.

7. PARTICIPATORY ASPECTS

As outlined above, it will be important to monitor the environment of stakeholders, and that area should be pursued strongly over the years to come. All segments of the Paraguayan community and those involved in the economic development conceptualization of the individual regions should be involved in each area and ways appropriate for that area; and perhaps midway through the project and at the end of the project the effectiveness of that involvement should be assessed carefully. However, the project clearly defines the importance of stakeholder involvement, assesses it to some degree for each area and each part a reserved area, and offers very good hope for developing this aspect fully in the future.

8. GLOBAL BENEFITS

These are fully identified in the project brief and very adequate for the reasons that I have outlined in a number of the paragraphs above: an effective strategy to preserve a major proportion of global biological diversity in a way that is very compatible with, and will contribute to the sound and sustainable future of Paraguay.

9. GEF STRATEGIES AND PLANS

Yes, this project fits within GEF strategies and plans in the ways outlined above.

10. REPLICABILITY

Handled above.

11. CAPACITY BUILDING

Handled above.

12. PROJECT FUNDING

The proposed level of funding appears to me to be appropriate. Without detailed knowledge of the overall financial priorities or possibilities of Paraguay, it is not possible to be more specific; but the sums of money do appear reasonable to achieve the objectives outlined and are, to the extent of my experience, appropriate for the strategies proposed.

13. TIME FRAME

The time frame is perfectly adequate, and what can be accomplished during the period outlined is clearly feasible and fundamentally important.

14. SECONDARY ISSUES

a. No comments.

b. With respect to linkages to action plans at regional or subregiona levels, I have no exact answer, but I would like to restate, as brought out in the proposal, that the preservation of a major portion of Paraguay is biodiversity, is important, interesting, and worthwhile. If one looks at the whole Rió de la Plata Basin as a conservation entity: at its endemic plants and animals, and the global requirements for conserving them, then one could certainly regard this project as a very effective regional strategy for doing so, and one that is important for the whole of temperate to subtropical South America.

c. As I mentioned above, the project is not exactly innovative in any particular aspect, but within the whole regional context, it is very important and would link well to possibilities of preserving the unique biota of southern temperate to subtropical South America effectively.

15. ADDITIONAL COMMENTS

I am fully satisfied that this project is ready for support now.

List of Optional Annexes

The annexes listed below are not required as part of the standardised GEF project brief. However, they are available on file for reviewers seeking additional background information.

Annex V: Provides information on the biology of the four sites, including zoogeographical and taxonomic data. The attachment also contains a map of Paraguay plus maps of the Orient and Occidental regions showing the location of the 4 sites.

Annex VI: Describes threats prevailing in the project sites; an attached table provides an assessment of root causes– showing how these would be addressed under the project.

Annex VII: Articulates co-ordination mechanisms for project implementation and describes public involvement arrangements. A brief profile of different institutions with a stake in conservation is provided in an attached table.

Annex VIII: Contains the standard GEF Project Categorisation Table.

Annex IX: Provides a list of references used in formulating the project (including both published and grey literature).

An indicative workplan showing the duration and sequencing of project activities is also available.