

PARC

Creating
Protected Areas
for
Resource
Conservation
using
Landscape Ecology



Creating Protected Areas for Resource Conservation using Landscape Ecology

PARC Overall Objective

To provide for effective biodiversity conservation in Viet Nam's anthropogenically impacted and fragmented habitats, through the application of a landscape ecology approach to protected area management.

PARC Immediate Objectives

To improve operations capacity at project sites in order to efficiently and sustainably manage and maintain the respective protected areas.

To reduce external threats to protected areas, through the integration of conservation and development objectives and activities at the local level.

This final project brochure summarises the achievements and activities of PARC Project between 1999 and 2004 and the experiences to be gained from its implementation.

The project "Creating Protected Areas for Resource Conservation using Landscape Ecology" (PARC) is an Integrated Conservation and Development Project of the Socialist Republic of Viet Nam. From 1999 to 2004, the project piloted a landscape ecology approach for conserving Viet Nam's diverse biological heritage. This approach integrates conservation and development by using resource use planning as a basis for project activities in the landscapes of three sites: Yok Don National Park, Ba Be National Park, and Na Hang Nature Reserve.

The project is co-financed by the Global Environmental Facility and the United Nations Development Programme. It is implemented by the Forest Protection Department of the Ministry of Agriculture and Rural Development and the United Nations Office for Project Services. IUCN - The World Conservation Union provides technical assistance at the national level and Scott Wilson Asia - Pacific Ltd. provides technical assistance at the site level.

PARC was the first GEF/UNDP-funded project to be nationally executed, which helps to ensure that project experience can be applied elsewhere in Viet Nam.

Landscape Ecology

PARC was also one of the first projects to use a landscape ecology approach to integrate the needs of economic development and resource conservation within the entire human-impacted landscape. By using landscape ecology, planning goes beyond the boundaries of the protected areas themselves. Landscape-level planning can identify and help avoid conflict between conservation and development interests. A core activity of PARC within this approach was therefore to assess resource use and resource use planning for villages and communes in and around protected areas.

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*Front cover: Limestone forest in
Na Hang Nature Reserve.
Back cover: Deciduous
dipterocarp forest in Yok Don
National Park; Calotes versicolor
in the foreground.*

PARC Project Sites

PARC Project was implemented at three sites with different management and funding jurisdictions.



Ba Be National Park **Bac Kan Province**

A provincially managed national park



Na Hang Nature Reserve **Tuyen Quang Province**

A provincially managed nature reserve



Yok Don National Park **Dak Lak Province**

A centrally managed national park



The Ba Be / Na Hang Conservation Complex

The Ba Be / Na Hang Conservation Complex, located in north-east Viet Nam, comprises the landscape in and around Ba Be National Park and Na Hang Nature Reserve. The region is characterised by steep limestone hills, interspersed with non-limestone areas of more undulating topography. It supports a mosaic of land-use types, including fragmented primary forest patches, patches of secondary vegetation, and areas of permanent and shifting cultivation.

Biodiversity surveys during PARC Project recorded 102 mammal species (including 51 bats), 327 bird species, 41 reptile species and 28 amphibian species. Thirty-four of these species are listed as nationally or globally threatened. Most significantly the conservation complex supports important populations of Tonkin Snub-nosed Monkey, Francois' Langur, White-eared Night Heron, and Vietnamese Salamander.

The main threats to biodiversity in the area come from habitat fragmentation, large-scale infrastructure development, illegal hunting, over-exploitation of non-timber forest products, and livestock grazing.



Forest at Na Hang

Ba Be National Park

Originally gazetted in 1977, Ba Be National Park in Bac Kan Province was established as a national park in 1992 with an area of 7,611 hectares. The dominant feature of the national park is the 500 ha Ba Be Lake, the largest natural freshwater mountain lake in Viet Nam and a popular tourist destination.

The lake is surrounded by extensive forest on limestone mountains, giving the park a spectacular landscape. It hosts about 80 fish species, some of which are threatened. Other important biodiversity values of the national park include over 300 butterfly species and a small resident population of endangered Francois' Langurs.

There are 15 villages in the national park, with about 3000 residents of Tay, Dao and Mong ethnicity, many of whom depend upon the lake's fisheries.



Ba Be Lake

Na Hang Nature Reserve

In 1992, the globally critically endangered Tonkin Snub-nosed Monkey was rediscovered in Na Hang District. This species was previously believed to be extinct and the discovery prompted Na Hang's designation as a 41,930 hectare nature reserve in 1994. Na Hang Nature Reserve is split by the Gam River into northern and southern sectors of roughly equal size, both holding populations of Tonkin Snub-nosed Monkeys and other endangered species.

Hunting and habitat fragmentation continue to threaten these species with local extinction. The construction of a 120 metre high dam on the Gam River, that began in 2002, has led to habitat disturbance and other negative impacts to biodiversity. The reservoir that the dam will create will fragment the remaining forests of the reserve and effect habitat of the largest population of Tonkin Snub-nosed Monkeys.

Expanding the protected area network

Through biodiversity surveys and hotspot analysis, PARC's landscape ecology approach led to proposing an expansion of the protected area network in the conservation complex. This recommendation was based on the need to provide greater protection for key species of conservation concern, to reduce forest fragmentation and to compensate for some of the habitat loss resulting from the dam. PARC Project worked with provincial and district Forest Protection Departments to establish two new protected areas contiguous with Na Hang Nature Reserve.



Map of the four protected areas in the Ba Be / Na Hang Conservation Complex, showing the new sites in light blue.

Community management for two new protected areas

These two sites are notable for being among the first in Viet Nam to trial innovative forms of community management, such as including representatives of local people on the management board and as site rangers.

The **South Xuan Lac Species and Habitat Conservation Area** is only 1,788 ha, but comprises an important extension of protected habitat for the Tonkin Snub-nosed Monkey. In addition, the first record of White-eared Night Heron in Viet Nam in over 25 years was recently made at the site and it also supports the Francois' Langur.

The proposed **Francois' Langur "Tu Cang" Species and Habitat Conservation Area**, supports the largest known population of Francois' Langurs in Viet Nam. Tu Cang is the name of the species in the local Tay language. These primates inhabit the relatively undisturbed limestone forests of the site, which also supports communities of rare conifers and broadleaf trees. Official site gazettelement is anticipated in early 2005.



Looking into the South Xuan Lac Species and Habitat Conservation Area.



The limestone karst landscape of the proposed Francois' Langur Species and Habitat Conservation Area

Yok Don National Park



Gaur, caught by camera trap



Black-shanked Douc Langur at Yok Don Mountain

Yok Don National Park was established in 1991 in Buon Don District, Dak Lak Province, in order to protect 58,200 hectares of lowland dipterocarp forest.

Scientific studies justified expanding the park to the north to include further areas of biological importance. As a result, in 2002, the boundary was redefined to include a total of 115,545 hectares, making Yok Don Viet Nam's largest national park.

The park occupies relatively flat land with two small mountains to the south of the Srepok River. It is mainly under natural forest, most of which is dry dipterocarp forest. Yok Don is the only national park in Viet Nam conserving this particular forest type.

The national park is an important site for the conservation of large mammals, particularly Gaur, Banteng and Black-shanked Douc Langur. It is also regarded as one of the most important areas in the country for bird conservation, particularly for Green Peafowl. Its importance is further strengthened by recent discoveries of the Giant Ibis and Mekong Wagtail in the park.

Although only one village is located within the park, the forests and wildlife of Yok Don National Park are under threat from hunting, grazing and bush fires. Furthermore, pressure is increasing with population migration and infrastructure development in the immediate vicinity of the national park.



Same forest, different seasons: the contrasting difference between the deciduous dipterocarp forest in the dry and wet seasons

PARC Project Programmes

A combination of activities is used to link conservation management objectives with the welfare goals of local communities. Implementing these activities helps build local community knowledge, promotes sustainable livelihoods, creates links between protected areas and local residents, and strengthens the technical skills and management capacities of protected area staff.



Conservation management

Improving the conservation management capacity at project sites through new planning mechanisms, improved enforcement, clarification of the natural resource status, and biodiversity monitoring activities.

Resource use planning and forestry

With the participation of local stakeholders, identifying additional habitats in need of protection for biodiversity conservation, defining protected area core and buffer zones, and reaching consensus on land-use around villages and degraded habitats suitable for reforestation.



Community development

Reducing the pressure on local forests through direct assistance to improve the livelihoods of local communities and introducing mechanisms for sustainable agriculture extension services.

Conservation awareness and ecotourism

Raising awareness of the purposes and benefits of protected areas by introducing environmental curricula into local schools, raising awareness among local communities and improving tourism services.



Images top to bottom: Francois' Langur (artist: Tuan Vinh); Detail of 3D map of Yok Don National Park; Tay woman (artist: Tuan Vinh); Information centre display at Yok Don National Park.

Conservation Management

Main achievements

A new Species and Habitat Conservation Area established and another anticipated to be established in early 2005.

Operational plans prepared for all three project sites.

Training of over 150 protected area staff in biodiversity conservation and monitoring.

Survey and review of sustainable mechanisms for financing protected areas.

Hunting gun exchange programme in Ba Be and Na Hang Districts - over one thousand guns turned in.

Basic protected area infrastructure investments such as new guard posts, monitoring stations and information centres.

Database application developed for conservation management.

Conservation planning

Planning is at the core of the PARC programme for biodiversity conservation and conservation management. PARC shifted the focus from producing management plans for the three protected areas to promoting a more practical system of managing conservation activities, with operational planning as the central pillar of a tiered planning system, as follows:

- 1. Conservation Strategies**
Overall management aims for a landscape-level area.
- 2. Financial Mechanisms**
Strategies for long-term financing of conservation in protected areas and economic development in buffer zones (see page 17).
- 3. Operational Planning**
Guidance documents for protected area managers to prioritise activities based on conservation needs and in line with available financial resources.
- 4. Landscape Unit Management**
Detailed management prescriptions for a specific unit in the landscape (e.g. Ba Be Lake, and the Srepok River in Yok Don National Park).
- 5. Site Plans**
Detailed day-to-day management plans for individual locations (e.g. ranger posts and tourist attractions).



The Srepok River, Yok Don National Park

Conservation strategies

Conservation strategies assume that large areas can only be successfully managed for conservation if they are managed as single units.

The Ba Be / Na Hang Conservation Complex includes the forests in and around these two protected areas – almost the final refuge of the Tonkin Snub-nosed Monkey. Without coordinated management of the entire forest complex this species will almost certainly become extinct. PARC therefore worked with local stakeholders to agree on a conservation strategy for the area. The strategy is consistent with existing government legislation for protected areas, including consideration of the recently defined protected area category “Species and Habitat Conservation Area”.

Yok Don National Park protects a seasonal habitat that is important for large mammals and birds. Therefore, conservation of suitable habitats outside the park borders is essential to ensure the continuity of migratory pathways. PARC has identified priority habitat areas in the wet and dry seasons and management needs for long-term conservation. Based on this information, a multiple-use conservation strategy has been being produced that includes proscribed management of the wider landscape.

Operational Planning

PARC worked with protected area authorities to design a set of simple tools to improve conservation management by focussing on day-to-day field operations. Operational plans define long-term management goals and provide detailed guidance for achieving them. They specify schedules, budgets, and protected area staff responsibilities. In practice, operational plans fill a planning need not adequately met by statutory investment plans. The latter focus predominantly on financing capital items such as infrastructure.

The PARC operational planning model was designed to suit the current protected area planning framework in Viet Nam. In support of this approach, the Ministry of Agriculture and Rural Development approved PARC Project sites as pilot areas for operational planning in Viet Nam. Within the approved management strategy for the protected area system in Viet Nam, operational plans will be used as a guide for deciding funding allocations for protected areas. The Viet Nam Conservation Fund has also incorporated the formulation of operational plans as one of its conditions for funding approval.



Forest on limestone mountains in Ba Be National Park.



A ranger post in the buffer zone of the newly-established South Xuan Lac Species and Habitat Conservation Area.



The endemic Vietnamese Salamander was found in habitats outside the established protected areas, highlighting the need for a broader landscape approach to biodiversity conservation at Ba Be and Na Hang.

Conservation Management



Landscape Unit Management

PARC Project has promoted conservation management of particular protected area resources by direct stakeholders. For example, the Ba Be Lake Management Co-operative has been established to help reverse prior over-exploitation of lake resources and dynamite fishing. Represented within the co-operative are stakeholders with an interest in the sustainable management of the lake, including Ba Be National Park, district authorities, and resident communities.

Site Plans

Site plans describe detailed day-to-day operations for conservation management activities and are an integral part of operational plans.

In Ba Be National Park, site plans were produced for caves that have important bats roosts, and to protect their sensitive limestone features.

In Yok Don National Park, waterholes are key ecological units of the landscape, providing seasonal water supplies for many animal species. The project mapped the most significant waterholes, and combined this information with other conservation data to identify biodiversity hotspots to target conservation activities in the park. As with other prime biodiversity areas, conservation management of the assemblage of waterholes in the national park is carried out through site planning.



Local fishermen are stakeholders in biodiversity conservation through the Ba Be Lake Management Co-operative.



*Cave Fruit Bat, *Eonycteris spelaea*, one of 17 species of bat recorded in Puong Cave, Ba Be National Park. The project identified the cave as a landscape feature requiring its own management plan.*



Mapping waterholes like this one in Yok Don National Park was important for defining



Hotspot analysis

By evaluating conservation criteria at the landscape level, PARC Project assessed biodiversity values within and beyond protected area boundaries. As a picture of different conservation values over the entire landscape was built up, maps were developed showing biodiversity hotspots. This approach assisted the project to identify where to target resources for highest return to biodiversity conservation and formed an important input to the planning processes. In many cases, it was concluded that biodiversity-rich areas were not restricted to the defined protected areas within the landscape.

Capacity building

PARC has supported and built the capacity of protected area technical staff and rangers, thus strengthening the final link in the chain of conservation management from the broad conservation strategy to on-the-ground operations.

A conservation management database has been developed to collate data from ranger patrols. It supports analysis of patrol effectiveness, serves as a basis for biodiversity monitoring, and highlights threats to that biodiversity. As it has been designed for operations at all PARC Project sites, it is appropriate for use in other protected areas in Viet Nam.

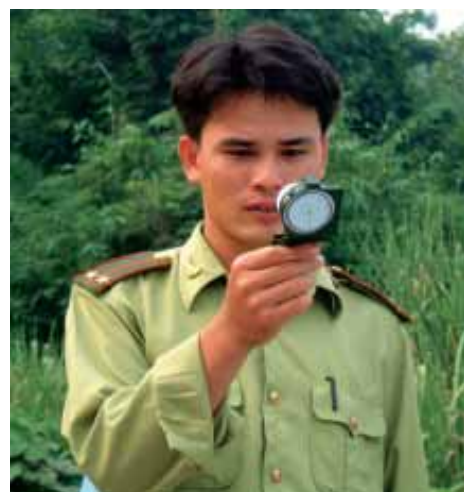
Field assesment and training of rangers at all PARC protected areas reinforced their understanding of the objectives of ranger work and improved their practical skills to carry out routine tasks more effectively.



conservation hotspots



The Crested-serpent Eagle is a resident of all PARC Project sites.



Training strengthened the capacities of both protected area and community ranger forces.



Water hyacinth and Mimosa pigra on the banks of the Srepok River were highlighted for urgent conservation management by PARC Project.

Resource Use Planning and Forestry

Main achievements

Agreements for joint resource management with local villages in Ba Be National Park and multiple-use zones designated at Yok Don.

Introduction of over 25 Village Forestry Clubs as a means of promoting farmer-owned forestry practices and afforestation in Ba Be / Na Hang.

Agroforestry models to promote afforestation of slopes and occupied shrub land within Na Hang Nature Reserve.

Participatory boundary demarcation in Na Hang Nature Reserve using Resource Use Planning as a conflict resolution measure.

Forest stewardship systems to reduce conflict between local communities and protected areas in disputed locations of Ba Be National Park.

Boundaries and land-use defined for current, newly-established and proposed protected areas.



PARC Project sought to reconcile this mosaic of different land-uses outside Ba Be National Park with conservation objectives inside the national park.

Participatory Resource Use Planning (PRUP)

Participatory Resource Use Planning (PRUP) integrates local resource use needs with long-term land use planning at the village level. The approach serves to balance conservation and development priorities in a participatory manner. The process necessarily involves local community stakeholders, government agencies, and protected area administrations. It was initially piloted at the Ba Be and Na Hang sites and then improved and implemented at the Yok Don site, covering more than 20 communes overall.

PARC initiated PRUP to improve understanding of how natural resources such as land, water, wood and non-timber forest products are used by communities living in and around the protected areas. Through, participatory mapping of village resource use, PRUP helped identify options for community development and conflicts related to biodiversity conservation.

During the project, PRUP evolved into a methodology for local communities and protected area authorities to resolve boundary disputes, such as in Na Hang, and to monitor and regulate natural resource use within the landscape.

Detailed PRUP, incorporating 3D mapping, was carried out for Drang Phok Village, in Yok Don National Park, to define land usage around the village and to assist authorities to develop an appropriate management strategy to minimise the impacts of the village on biodiversity in the park.



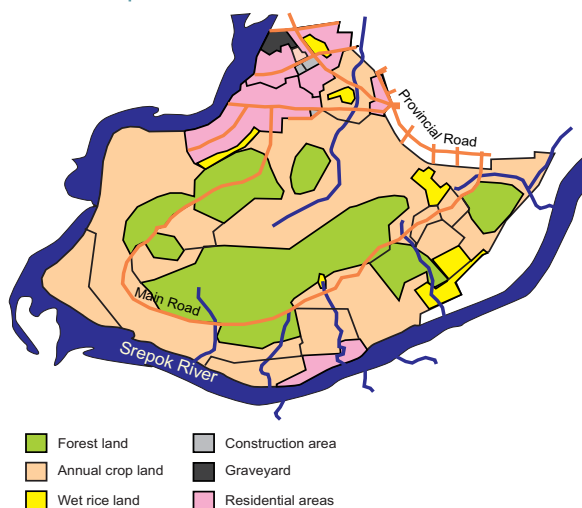
PRUP was a key component in the process of defining the boundaries of two new protected areas and their buffer zones. It also identified key priorities for community assistance at these sites that would help alleviate pressures on biodiversity rich forests.

The information generated by PRUP took on a new dimension, as the approach became integrated into operational planning and provided a basis for planning project activities.

PRUP Outputs

- o Maps and documents identifying administrative, strict protection, rehabilitation and other prescribed protected area zones.
- o Analysis of resource users in and around protected areas.
- o Data sets and information derived from statistics, maps, reports and interviews, describing opportunities and constraints for biodiversity conservation and resource use at each project site.
- o Assessment of past and present trends related to biodiversity conservation and resource use in each target community.
- o Consensus among stakeholders about conservation and development priorities within the target landscape.
- o Recommended village development activities, with financial frames, that can be carried out by different agencies and groups.

Land use planning map to 2010 Tri A village, Krong Na Commune



An example of a land use planning map resulting from the PRUP process in the buffer zone of Yok Don National Park.

Forestry

The 661 Programme of the Government of Viet Nam, through forest protection contracts with local households, had implications for all three PARC sites. The project reviewed the contracts at all sites and explored approaches to strengthen biodiversity conservation through them.

PARC supported counterparts to implement forest management activities to promote conservation through local participatory approaches. These activities supported the improved management of 3,200 ha of protected area forests in Yok Don.

In Ba Be, forest stewardship programmes helped create consensus for conservation and development among local communities at the national park. At Na Hang agroforestry models helped protect hillside forests and restore forest cover.

Village Forestry Clubs were established in Ba Be and Na Hang to provide interested households with a forum for exchange and discussion on common social forestry issues. The common goal of these clubs was the protection of watersheds, prevention of erosion, conservation of habitat and creation of future income sources.



Lagerstroemia in the evergreen forest of Yok Don National Park

Community Development

Main achievements

Tailored forestry, fishery and agriculture-based income generation models linked to conservation efforts.

Locally-initiated replications of community development activities.

Village Assistance Funds and Agricultural Seed Banks to support agriculture intensification.

Promotion of off-farm alternative incomes through training for women's weaving groups.



The fish pond model introduced in the buffer zone of Yok Don.

Village Development Plans

At the centre of the PARC Project approach to community development was the provision of development strategies for target villages, based on current and predicted resource use needs. The aim was to reduce unsustainable use of natural resources by exploring appropriate alternatives, thereby integrating conservation and development objectives at the project sites. The planning process followed three steps:

- 1. Participatory Resource Use Plans**
Plans mapping current natural resource use at the village level and providing budget estimates to implement identified activities. These were based on baseline socio-economic information gathered by the local communities as main stakeholders.
- 2. Village Development Plans**
Five-year strategies based on the results of Resource Use Plans and subsequent meetings with village and commune stakeholders. They included clear villager commitments to sustainable use of natural resources. Results were integrated within the sectoral development plans of district and provincial governments.
- 3. Village Action Plans**
Specific six-month activity schedules outlining PARC Project support to target villages. They were based on the Village Development Plans.



Intercropping maize and green beans.

Agricultural Development

Throughout the project sites agricultural productivity has increased in target communes, with numerous replications of successful crop trials. Direct involvement of the District Departments of Agriculture and Rural Development will help ensure the long-term sustainability of activities.

Village Extension Farmers

In 34 target villages, local people were trained and assigned to provide technical assistance to members of their own communities, alongside para-veterinarians. These farmers were selected on the basis of their practical experience and proven ability and remain as permanent village-level partners for the District Departments of Agriculture and Rural Development.

Alternative energy sources

Firewood needs in Ba Be and Na Hang are mainly met from local forests. Over 1,400 fuel-efficient stoves, and 34 domestic biogas plants were constructed to reduce fuelwood use with technical and financial support from PARC. Since this support ceased, villagers have been replicating the fuel-efficient stoves themselves. Estimated household fuelwood savings from the improved stoves is about 30%, and could reduce fuelwood use by about 2,000 m³ per year for a village. Fuelwood savings from biogas plants comes close to 50%.

Successful introductions of new techniques

Ba Be / Na Hang

Yields of staple crops such as rice, maize, and soybean have increased through intensification techniques.

Introduced winter crops such as potato, tomato and sweet potato have added a second and sometimes a third annual crop.

Cash crops such as taro, potato, and Shan tea have been introduced and replicated.

Livestock mortality has reduced by about 70% since the establishment of 21 village para-veterinarians.

Yok Don

The bamboo shoot cultivation model developed by PARC replicated by local people and extension services.

The productivity of soya, maize and green beans has increased by introducing intercropping.

Livestock breeding programmes have been developed.

All cattle vaccinated against foot and mouth disease.



A farmer in Ba Be shows off his sweet potatoes.



Simple improved stoves like this can reduced fuelwood use by 30%.



In the Yok Don area, the project supported local communities by identifying obstacles to successful chicken breeding.

Environmental Education and Ecotourism

Main achievements

Incorporation of new environmental education curricula into local schools at each project site. One of these to be adopted for Bac Kan Province.

Improved capacity of local counterparts to design and implement conservation awareness activities.

Song Da Dam Company being proactive in educating construction workers about forest law in Na Hang. Similarly for the mine companies in Xuan Lac.

Tourist facilities and interpretation improved in Ba Be and Yok Don National Parks.



Guided tourism services in Ba Be National Park.

Awareness of the purpose and benefits of protected areas for local people and visitors is necessary to support practical conservation efforts. Awareness-raising activities targeted three main groups:

School children The next generation of decision makers and resource users.

To establish long-lasting conservation awareness by building on existing capacities, PARC worked with local teachers to design environmental curricula that are integrated within school timetables. Students in grades three to nine in 38 schools of 14 communes now receive regular lessons from teachers about their local environments and protected areas.

Local adult residents The current resource users.

To reduce negative environmental impacts of specific livelihood activities, village meeting programmes have been organised with protected area staff and local Youth Unions to help conservation information reach inaccessible areas. Information about successful project community development alternatives was disseminated to farmers not directly involved in PARC activities.

Visitors Learning and spreading the message of conservation.

Explaining the values and aims of the protected areas to visitors is as important as trying to control negative visitor impacts. PARC supported the tourism sections of Ba Be and Yok Don National Parks to develop low-impact tourism infrastructure, prepare information materials for visitors, and build the capacity of tourism staff.

At Ba Be, PARC has helped establish a local Boatmen's Association to encourage the self-organisation of local residents who earn income by providing boat tours to visitors.



Visitor information centres designed by PARC Project at Ba Be and Yok Don National Parks.

Beyond the PARC landscapes

PARC Project had a mandate for examining approaches to integrating biodiversity and conservation needs that could be applied throughout Viet Nam. Some activities went beyond the scope of the target landscapes where PARC was implementing its programmes.

Study on financing protected areas

Potential mechanisms were investigated for providing long-term funding to biodiversity conservation and community development around the three protected areas. The findings and lessons learned were targeted at PARC Project and its central and local government partners, but also have wider application for other protected areas and agencies involved in protected area finance in Viet Nam.

One of the most significant findings of the study was that a lack of funds is not necessarily the greatest financial constraint to managing protected areas for nature conservation. Instead, immediate improvements could be made by considering the quality, administration and targets of funding that is already available. The operational planning process piloted by PARC is a key tool in enabling conservation activities to be prioritised for the funds targetted at protected areas.

Environmental Impact Assessment

At Na Hang, the project found its project objectives faced with a threat coming from construction of a hydropower dam; a threat from beyond the scope of landscape planning, but at the level of the national energy strategy. As mitigation of the dam's impacts on the habitats of Na Hang Nature Reserve became a priority issue, an environmental impact assessment was carried out through PARC Project and mitigation measures were implemented as dam construction proceeded.

Policy Analysis

As a final chapter in PARC Project, a policy analysis will be conducted in early 2005. Based on the experiences of PARC and other internationally-funded conservation projects, the analysis will assess conservation issues and opportunities in Viet Nam, and provide recommendations to improve the policy and legislation environment for conservation management.



PARC experience has shown that the process of funding protected areas in Viet Nam is skewed towards infrastructure development rather than recurring costs for conservation management.



On-going construction of the Tuyen Quang Dam in Na Hang Nature Reserve.



This Sarus Crane chick from Yok Don National Park provides the first confirmation of these birds breeding in Viet Nam and a new hope for conservation. However, its capture also demonstrates the on-going threat to wildlife from hunting.



Building on the foundations of PARC

During its five-year implementation, PARC Project has improved operational capacity and helped to reduce threats to biodiversity at project sites. In particular, PARC developed and tested innovative models for protected area management that lay the foundations for long-term integration of biodiversity conservation and socio-economic development. These models in-turn are being taken up and applied throughout the country.

A new approach to protected area management

One of PARC's major policy results was the application of **operational planning** for conservation management, whereby operational needs would guide investment priorities, rather than vice versa. Three other protected areas have since adopted the operational planning approach. Furthermore, the GEF/World Bank-sponsored Viet Nam Conservation Fund requires protected areas to have prepared operational plans in order to be eligible for funding.

Incorporating the resource-use needs of local communities

The **Participatory Resource Use Planning (PRUP)** approach designed and trialed by PARC proved to be an ideal bottom-up approach for land-use planning within the landscape. The approach has since been adopted for the buffer zone of Tam Dao National Park, and by PLAN International, the largest international non-governmental organisation working in Viet Nam.

Greater biodiversity protection and community involvement

The PRUP approach combined with assessments of biodiversity values proved vital for planning biodiversity conservation within the landscape and led to PARC working with local authorities to support the establishment of **two new protected areas**: the South Xuan Lac and the Francois' Langur Species and Habitat Conservation Areas. A further outcome resulting from PARC's approach is that both protected areas will include **representation by local communities within the management boards**, setting a new precedent for cooperative conservation of biodiversity in Viet Nam.

As PARC Project closes, so it opens new opportunities for building on field and policy models initiated by the project, within the landscape-level context of biodiversity conservation in Viet Nam.

PARC Publications

Policy briefs

The policy briefs summarise the planning approaches taken by PARC Project and are intended to serve to strengthen policy for protected area management in Viet Nam by sharing the experiences gained from the project.

1. Covering the costs of Viet Nam's protected areas
2. Biodiversity conservation through landscape ecology
3. Integrating conservation and development through participatory resource use planning
4. Management planning for protected areas in Viet Nam
5. Conservation and development modelling within the landscape: The PARC experience

Biodiversity reports

Biodiversity Report on the Ba Be / Na Hang Conservation Complex

Biodiversity Report for Yok Don National Park

Guidebooks (Vietnamese only)

Field guide to the mammals, birds, reptiles and amphibians of Ba Be / Na Hang

Experiences in dealing with conflicts between elephants and humans

Environmental Education Curricula (Vietnamese only)

Environmental curricula that were distributed among schools around Ba Be, Na Hang and Yok Don.

PARC Library on a disc

A CD-ROM compiling the above publications and more PARC Project documentation and materials.

PARC Project website

More project documentation can be found on the PARC Project website, including :

Biodiversity Conservation

- A Conservation Strategy for the Ba Be / Na Hang Conservation Complex
- Bat survey and management plan for Puong Cave, Ba Be National Park
- Feasibility study for a conservation programme for the Vietnamese Salamander in Ba Be and Cho Don Districts
- Evaluation of Wildlife Trade in Ba Be, Cho Don and Na Hang Districts
- Designation and management of the South Xuan Lac Species and Habitat Conservation Area
- Development of the Francois' Langur Species and Habitat Conservation Area
- Operational plans of each site

Resource Use Planning and Forestry

- The forest rehabilitation needs of Yok Don National Park
- Review of previous activities and forestry possibilities at Yok Don National Park
- Resource Use Plan of Krong Na Commune

Community Development

- Evaluation of the community development programme at Yok Don
- Community development specialist mission report for Yok Don National Park
- Rural Economy – Agricultural / Agroforestry Systems in Ba Be / Na Hang

Conservation Awareness and Ecotourism

- Ecotourism Promotion / Development for Yok Don
- Ecotourism Development for Ba Be and Na Hang

Studies and general reports

- A series of reports on financing mechanisms for the PARC Project sites
- Environmental Impact Assessment of the Tuyen Quang Dam
- PARC Project and Management Planning for Protected Areas in Viet Nam
- Recommendations to the PARC Project: Based on results of the first Viet Nam ICDP Workshop

PARC Project

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Nature Conservation Division
Forest Protection Department
Ministry of Agriculture and Rural Development
2 Ngoc Ha, Ha Noi, Viet Nam
Tel: +84 4 7335676; Fax: +84 4 7335685
E-mail: cites_vn@fpt.vn

UN Reference Library
United Nations Development Programme
25-29 Phan Boi Chau, Ha Noi, Viet Nam
Tel: +84 4 9421495 ext 114; Fax: +84 4 9422267
E-mail: registry@undp.org.vn
Project website: www.undp.org.vn/projects/parc