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## Improving the lifestyles of people in protected areas of Viet Nam

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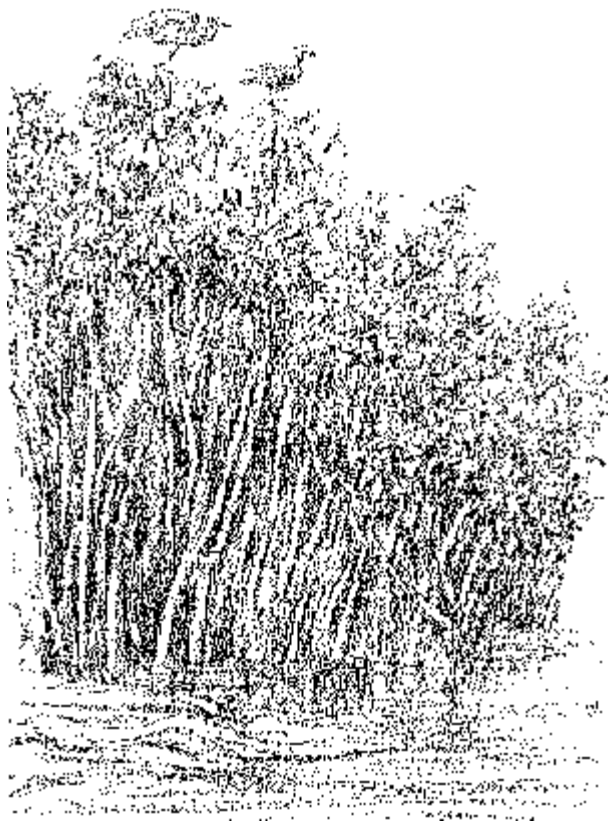
*An examination of protected area management through agroforestry development assistance to local, resource-poor communities.*

Viet Nam is located along the southeastern margin of the Indochinese peninsula. It stretches approximately from lat. 8°N to 23°N and has a total land area of more than 33 million ha and a coastline of about 3200 km. Three-quarters of the country are made up of mountains and hills, with the highest peaks rising to 3145 m in northwestern Viet Nam.

Although almost the whole country lies within the tropics, Viet Nam stretches over 1600 km from the north to the south. The climate and plants vary from tropical in the southern lowlands to temperate in the northern highlands. Thus, Viet Nam's forests have 12000 higher vascular plant species of which more than 7000 have been described. Of these, some 2300 species have been used by Vietnamese people for food, medicine, animal fodder, wood, oil and other purposes.

### [Viet Nam's nine national parks](#)

**Today, many thousands of hectares of mangrove swamps have been successfully reforested in Viet Nam**



Viet Nam also has a wide diversity of fauna, including 273 species of mammals, 774 species of birds, 180 species of reptiles, 80 species of amphibians, 475 species of freshwater fish, 1600 species of marine fish and many thousands of invertebrate species.

With respect to ecosystem diversity, Viet Nam has different types of forests, ranging from closed tropical evergreen forest to deciduous forests, lowlands to submontane, montane and subalpine zones, forests on limestone, mangrove and *Melaleuca* forests. The country's biodiversity and biological resources have provided the basis for the Vietnamese people's survival in the past and have the potential to continue to do so in the future.

However, over the past 40 years Viet Nam's population has doubled to approximately 70 million. Meanwhile, natural resource development has been limited and was severely disturbed during the wars for independence and reunification. During the wars, forest clearance accelerated rapidly; both by the Vietnamese to feed growing populations and provide for the armies and by air spraying and deliberate destruction. By the end of the war, the forest cover in both the south and the north was down to approximately 29 percent, with perhaps only about 10 percent being primary forest.

The mangrove forests were perhaps more seriously damaged in the wars than any other forest type. They were repeatedly sprayed with herbicides and proved particularly susceptible. Almost all the *Rhizophora*/*Avicennia* formations died and there was a resultant crash in fishery production and shrimp catches. The *Melaleuca* forests on the peaty soils behind the mangrove proved inflammable in the dry season and many were destroyed by napalm burning.

After the war, the Vietnamese launched a programme to replant the mangrove forests. Large areas were replanted with seedlings of *Rhizophora* but there was still probably too much toxin in the earth and few trees survived. In the early 1980s a new programme was initiated for replanting the area and, this time, the seedlings survived. Today, many thousands of hectares of mangroves have been successfully reforested; the fisheries are back, the shrimp catch rises each year and the roosts of wetland birds, which had completely disappeared during the war, have returned.

## **Establishment of protected areas**

The government started to establish nature reserves as early as 1962 when it declared the first national park at Cuc Phuong, about 130 km south of Hanoi. Further extension of the reserve system was slowed by the war but has proceeded rapidly since the late 1970s. The country now has a total of nine national parks and, in 1986, the government approved the extension of Viet Nam's reserve system to a total of 87 reserves, including 47 nature reserves and 31 cultural, historic, scenic and environmental forests. The total area is approximately 1.1 million ha or approximately 5.7 percent of the total forested area. These reserves are intended to protect representative examples of almost all the different forest formations in the country. Some are of a large size but most are very small (only a few thousand hectares) as a result of the highly fragmented condition of the remaining forest area.

The management of protected areas is coordinated by the Forest Protection Department within the Ministry of Forestry. The most difficult task related to the conservation and management of Viet Nam's reserve areas and national parks now results from the presence of settlements of local (often tribal) populations, most of whom were already in the areas before their designation as reserves. These local populations are generally poor, isolated communities, which practice shifting agriculture, subsistence hunting and forest product exploitation for survival and thereby often conflict with conservation objectives. The following sections of this article deal with two attempts to resolve the situation through the resettlement of tribal communities outside protected areas and through the improvement and stabilization of a tribal population's lifestyle within the buffer zone of a protected area by developing sustainable agroforestry practices and thereby relieving resource pressure.

[\*\*An extremely large example of \*Dalbergia bariaensis\* in Cat Tien National Park. Outside protected areas, specimens of this size are becoming increasingly rare\*\*](#)

## **Cuc Phuong national park**

Cuc Phuong, established in July 1962, is the oldest and most developed park in the country. Cuc Phuong is a virgin tropical forest situated 80 km southwest of Hanoi and covering an area of about 22200 ha and a buffer zone of 6550 ha. The flora and fauna are extremely varied, including nearly 2000 plant species, some 64 animal species, 137 bird species and 36 reptile species.

Within the park there are eight hamlets, with a population of between 1500 and 2000 people (many are of the Dao ethnic minority). The life of these communities has been based on shifting cultivation and subsistence hunting and has been characterized by very low standards of living and extensive resource destruction. In an attempt to decrease resource degradation, the government embarked on a two-pronged approach based on resettling communities living in the park area and improving the agricultural production capabilities of families living within the buffer zone.

[\*\*Stable settlements in the buffer zone surrounding Cat Tien National Park\*\*](#)

From 1986 to 1990, 138 families (of which 22 were Dao) from six hamlets in the Cuc Phuong commune were transferred outside the boundaries of the national park. Although economic incentives were offered to the families (approximately US\$ 1000 per family), many of the families of the Dao minority were particularly reluctant to move. They affirmed that they (unlike some of the more recent settlers) had lived on the Cuc Phuong site long before the national park was established and that it was the land of their ancestors.

Special efforts were made, therefore, to provide significant lifestyle improvements in the new communities. All-brick houses were constructed and schools, medical facilities and small-

scale water impounding systems were provided by the government. In addition, food aid has been provided to enable the families to make a new start in terms of agricultural production. According to Mr San, the head of a five-person Dao family that was particularly unwilling to move, the new community has enabled him to increase his rice production by 4 to 5 tonnes per year as well as to develop and maintain a fish pond. The result has been an income increase sufficient to permit him to purchase a rice processing machine and a television set for his family.

### [Examining traces of Java rhinoceros at Cat Loc, the site of a proposed 30000 ha nature reserve](#)

#### **Improving agricultural production in the Cuc Phuong buffer zone**

The buffer zone surrounding Cuc Phuong National Park covers 6550 ha which fall into the jurisdiction of 14 communes in four districts of three provinces. A recent survey of the buffer zone found it to be inhabited by 1737 families with 8560 people of whom 3690 were the main labourers. Almost 90 percent of the families belong to the Muong minority.

Agriculture is dominated by low productivity, extensive rice farming and annual production averages less than 250 kg of paddy per person. Especially in the upland areas of the zone, degraded land is increasingly the norm. More than 50 percent of the families suffer food shortages during at least one to three months of the year. Some 20 percent of the families still practice a semi-nomadic lifestyle and often enter into the protected area of the park to hunt illegally, harvest wood for fuel and construction or gather other forest products, both for subsistence and as cash crops.

To stabilize these local populations and thereby ease pressure on the resources of the protected area, in 1993 the Vietnamese

Government launched a three-year programme to support the development of agroforestry in the buffer zone. A plan has been devised, setting out the land-use priorities of the buffer zone as follows:

- Forest land = 4500 ha
  - Existing forest (<80 m<sup>3</sup>/ha) = 2500 ha
  - Waste land designated for afforestation = 2000 ha
- Agricultural land = 1474 ha
  - Rice field = 606.7 ha
  - Staple food crops = 867.3 ha
- Land for infrastructure (e.g. houses) = 576 ha

Incentive funding is being provided to local families to encourage participation in the programme. Families that agree to protect and restore existing forest land are being compensated at an annual rate of US\$ 50 per hectare for three years. Reforestation activities are being supported at a rate of US\$ 100 per hectare. In addition, during the first two years of the reforestation effort, i.e. before cover is extensive, agricultural intercropping is encouraged. Support is also being provided for the establishment of agroforestry-based home gardens, combining food crops and fruit-trees. The government is also funding a small-scale drinking-water scheme.

### **Stabilizing and improving the lifestyle of Dao minorities in Ba Vi national park**

## Forest garden development

Located north of Hanoi, Ba Vi National Park has an area of 7377 ha, divided into two zones: primary forest at an altitude of at least 400 m and ranging to the top of the mountain at nearly 1300 m; and secondary and degraded forest covering 5237 ha at lower altitudes. This area borders with a buffer zone of an additional 15053 ha.

The total population of the area is 42000 people, nearly all of whom live in the buffer zone. However, a significant number of the Muong and Dao minorities (which make up about one-third of the total population) live in areas of a relatively higher altitude (often above 300 m) and practice subsistence-level shifting agriculture as well as exploiting forest products both in the buffer zone and in the park itself.

The Vietnamese Government is encouraging ethnic minority families to transfer to areas below 100 m in Cau So province. New communities have been built for 85 families of the Dao minority and an additional 10 ha of improved rice terraces have been developed. Assistance is being provided to all families of both the Dao and Muong minorities to develop forest gardens. Each family garden has 0.4 ha for tea planting, 0.2 ha for fruit -trees and 2 ha for fuelwood plantation. At the community level, four irrigation dams and 60 wells have been dug and a school and medical clinic have been constructed. The combination of increased staple food production and the possibility of producing cash crops from the family gardens is already beginning to permit the resettled families to increase their standard of living and to refrain from exploiting the resources of the park's protected areas (see next box).

### Dao people with forest gardens in Ba Vi National Park

The Dao people came to Ba Vi mountain around 1920 and their commune was approved in 1938. At this time, the commune consisted of about 100 people whose main activity was hunting and gathering. The people lived a semi-nomadic lifestyle and inhabited caves at an altitude of more than 600 m.

In 1959, there was a government campaign to promote settled dwelling: the Dao people (approximately 600 at this time) were granted an 18 ha paddy for irrigated rice cultivation and moved near to this area - at an altitude of 85 to 150 m. At this time, the Ba Vi forest foothills were covered with trees down to an altitude of 80 m. Although the Dao people now had an 18 ha field, they had no experience in irrigated rice production and, without training, soon turned back to shifting cultivation. There was no strict control of the Bavi forest at this time and we could select any good forest for burning. Although we recognized that it was wasteful to destroy a hectare of forest to produce a tonne of [rain-fed] rice, we also recognized that, without burning the forest, we would not have the rice or potatoes we needed to eat, especially as the area granted to us for irrigated rice was never increased although our population continued to grow. Therefore, in the 20 years from 1965 to 1985, the Dao people had settled dwellings but still practiced shifting cultivation. The forest line was pushed back to an altitude of 800 m, the area of degraded land increased greatly and our lives became increasingly difficult.

In 1985, the government allocated us 1000 ha of land, on which we were encouraged to engage in reforestation efforts (mostly eucalyptus). From 1987 onwards, we received seedlings, technical instruction and rice in exchange for planting trees (World Food Programme [WFP] assistance). The rate of plantation establishment increased yearly and, by the end of 1993, the entire 1000 ha was expected to be reforested.

But the question was, how would the Dao people live when the entire area was reforested and WFP assistance finished? Our 1991 population is 1315 and we still only have the same 18 ha rice paddy. Moreover, we are not be able to profit from the plantations because the average height of the eucalypts is only 8 to 9 m, not yet large enough for us to sell as raw material for the paper industry.

In 1989, an engineer from the Ministry of Forestry visited our commune to observe our lifestyle and habits. Based on his study, a forest garden model was to introduced in which cinnamon trees were to be the key, long-term crop. Intercropping was be with tea, *Toxicodendron succedanea*, as well as many other fruit-trees. In addition to the fruit-trees, medicinal plants and vegetables can be intercropped with

leguminous plants such as *Tephrosia candida* to improve the soil. This forest garden model is very suitable to the moods and aspirations of the Dao people. Cinnamon tree planting is an age-old custom and additional training courses provided in Hoang Lien Son province gave us further expertise.

Over the past three years, about 30 families have begun to establish forest gardens. However, we require additional start-up assistance, technical guidance, seedlings and planting material. With good investment and implementation, this forest garden model will enable the Dao people to provide themselves with forest and other products to exchange for rice and needed tools. We will be able to sell some of these same products, particularly fruit, tea and medicinal plants to visitors to the Bavi National Park. The forest gardens themselves will beautify the landscape while enabling us to reduce pressure on the natural forest, thereby increasing the attractiveness of the area for national and international visitors.

The forest garden model will help to stabilize our economic and social life; protect and indirectly develop the forests; stabilize the national park; and attract tourists. It is a reasonable and sustainable land-use option that could be used in many of the hill areas of Viet Nam.

[**Ed. note:** This box is drawn from a presentation by Leu Van Trong, a member of the Dao minority living in Ba Vi National Park, to the National Seminar on Setting Priorities for research in the Land-use Continuum in Viet Nam Held at Hoa Binh in September 1991, the seminar was organized under the auspices of the Forest Science Institute of Viet Nam, the International Institute for Environment and Development and the Swedish International Development Authority.]

## Challenges for the future

As described above, the Vietnamese Government has dedicated considerable effort and expense to building and maintaining a system of protected areas, and much progress has been made. Significant areas that were severely damaged during the recent wars have begun to recover, in terms of both flora and fauna. In fact, a previously unknown species of long-horn goat (*Pseudoryx nghie tinhensis*) has recently been discovered in the Khe Thoi nature reserve in Nghe An province. However, there are still many aspects that require further strengthening. First of all, the total extent of protected areas - about 1.1 million ha or 5.7 percent of the total forested area - is certainly too small; there are a number of characteristic ecological zones that have no protected areas, for example to the west of Quang Nam, in Da Nang and the islands of the Turong Sa archipelago. Moreover, many of the existing nature reserves are too small to ensure conservation in the long term. Overall plans call for the extension of the protected area system to a new target of 2 million ha that would cover 6 percent of the national territory and 10 percent of forest land. Particular attention will be given to marine and coastal reserves, including wetlands and estuaries. There are also plans to establish transboundary reserves by joining existing protected areas along selected areas of the borders with China, Laos and Cambodia, with parks in these countries.

A major constraint is the serious shortage of trained staff in the area of forest and nature conservation. The government has launched a five-level training programme. Basic in-service training in short courses is being provided to guards working in national parks and other protected areas. Short courses are also being held for managers and directors of parks and reserves. New curriculum elements are being prepared for protected area management courses in forestry training colleges. At the same time, the government is seeking funding for overseas study tours for senior managers and degree fellowships for technicians. Finally, but no less important, a general awareness programme designed for central government decision-makers has been launched. Special courses will be held at the Cuc Phuong, Bach Ma and Cat Tien National Park training centres as well as at the forestry college.

A key challenge for the future is to ensure the support of local people living in and around protected areas. External buffer zones are planned for the periphery of many protected areas to help meet local people's needs for forest products and thereby reduce pressure on the reserves proper. In addition, stable settlements of local people will help to prevent an influx of migrants from other areas who might otherwise enter the area to harvest forest products. To

encourage the support of local populations, special assistance projects such as those described above will continue to be developed, thereby enabling local people to develop self-sufficient, sustainable socio-economic units. Support will focus on developing more sustainable forms of intensive (as opposed to extensive) land use, agroforestry, household gardens, cash crop plantations and animal husbandry.

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