



DỰ ÁN TĂNG CƯỜNG CÔNG TÁC QUẢN LÝ HỆ THỐNG KHU BẢO TỒN THIÊN NHIÊN TẠI VIỆT NAM
STRENGTHENING PROTECTED AREA MANAGEMENT IN VIETNAM - SPAM PROJECT



ASSESSMENT OF THE SPECIAL- USE FOREST SYSTEM AND ITS MANAGEMENT IN GIA LAI PROVINCE

**Original written in Vietnamese by
the Gia Lai Provincial Working Group**

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On behalf of the research team,

Tran Van Thieu

Vice-Director

Gia Lai FPD and

Chairperson

Gia Lai Provincial Working Group

List of abbreviations

CPC	Commune People's Committee
DARD	Department of Agriculture and Rural Development
Dept.	Department
DPC	District People's Committee
FP	Forest protection
MARD	Ministry of Agriculture and Rural Development
MB	Management Board
NR	Nature Reserve
PC	People's Committee
Sub-Dept.	Sub-Department
SUF	Special Use Forests
VND	Vietnamese Dong

INTRODUCTION

Special use forests system in Gia Lai province, under the plan, consists of five nature reserves, of which Kon Ka Kinh and Kon Ja Rang Nature Reserves are recognized by the Government and have been registered in the list of special use forest system in Vietnam, according to Decision No. 194/CT of 1986. In March 1999, Management Board of Kon Ka Kinh Nature Reserve was established, and investment project of Kon Ja Rang natural conservation area was appraised by the Ministry of Agriculture and Rural Development (MARD). The remaining Nature reserves such as North Pleiku, Chu Prong and Ayun Pa were investigated and feasibility studies were prepared and submitted to MARD for registering in the national list of Special-use Forests. These five zones have been protected for the genetic resources conservation and protection of rare and valuable animals and plants not only for the province, Vietnam, but also for the world, especially for endemic and endangered species. This leads to an increased abundance of biodiversity resources in the Central Highlands in general, and in Gia Lai province in particular. Apart from that, Nature reserves also play an important role in protecting catchment forests and control water of two large river valleys, the Ba River and Con River. At the same time, these nature reserves contribute to great economic, cultural, scientific research and the environmental values.

Many efforts have been made in the management and protection of the Special-use forest zones, but those were focused on restoration-oriented protection, so potentials of the special use forest have not been promoted fully. The management and protection of the NRs are insufficient as they cover large areas, scattered in 7 districts and city, most without management boards except for Kon Ka Kinh Nature Reserve and there are other objective reasons such as forest protection staff, commune People's committees, state forest farms that are not active as well as shortage of funds for construction and development of the Special-use Forests.

Apart from that, the special use forest system in the province with biological, ecological diversification, is located in residence areas of many different ethnic minorities, so the tendency of the zone development is also divergent. Consequently, the consistent management of the Nature reserves in the province is facing difficulties of specific characteristics in each locality, so there is no common solution for all NRs in the whole country. Appropriate solutions based on analysis of the situation of each NR should be developed.

Therefore, it is necessary to conduct research on analysis of the existing special use forest system in the province in order to describe in detail an overview of organization, management and impacts of the zones, then strategies for management, protection, construction and development of the Special-use forest system of the province are proposed, which contributes to strategy formulation on management of Special-use Forests in the country.

I. NATURAL, SOCIO-ECONOMIC CONDITIONS AND AN OVERVIEW OF SPECIAL USE FOREST SYSTEM IN GIA LAI PROVINCE

1. NATURAL, SOCIAL- ECONOMIC CONDITIONS IN GIA LAI PROVINCE

1.1 Natural conditions

1.1.1 Geography

Gia Lai is a mountainous province in North Central Highland with total area of 15,578 km², consisting of 1 city and 12 districts located between East longitudes 107°28'04 and 108°52'10 and North latitude 12°59'40 and 14°36'10. Quang Ngai, Binh Dinh and Phu Yen provinces bound Gia Lai on the East, on the west by Cambodia, on the South by Dac Lac and Phu Yen provinces, and on the North by Kon Tum province.

The national highway number 14 connects Gia Lai province with Quang Nam, Da Nang provinces and other provinces in Central highlands and North-east-south regions. Other national highways number 19 and 25 join the province with Quy Nhon port and Southern central coastal provinces. Apart from that, Pleiku airport links with the national airport system. The province has 90 km of border with Cambodia, it is a good condition for opening an international border gate in the West connecting national highway number 19 with Cambodia.

Gia Lai territory is a catchment of many rivers coming down to Southern central coastal provinces and Mekong river valley, so Gia Lai is endowed with an important role in adjustment of ecological balance not only for Gia Lai, but also for other provinces in southern central coastal region and Central highlands

With above-mentioned location, Gia Lai has a good condition for exchanging

commodities and has economic, cultural and social relationship not only with the provinces of central highlands, but also with the provinces of southern central coastal region and the whole country.

1.1.2 Topography

A great part of Gia Lai territory is located in Western Annamites (Truong Son), the territory slopes down from the North to the South and from the East to the West. The topography comprises mountains, hills and valleys, intermixed complexly.

Pleiku and Kon Ha plateaus are at 400-600 m over the sea level. These are large plateaus stretching to Cambodia border with fertile soils, suitable for perennial industrial crops, cattle development and small businesses.

Cheo Reo-Phu Tuc valleys are basin shaped. Most areas of Ayun Pa and Krong Pa districts are relatively flat, low hilled, and appropriate for rice planting, annual perennial, industrial crops and small businesses.

Complex topography of Gia Lai creates diversified and abundant landscapes, which are endowed with both specific characteristics of each area and mixed features of many areas. Therefore the forest development and protection should take the topographies and landscapes into consideration in order to maintain the sustainability and efficiency.

1.1.3 Weather

Gia Lai is located in the area, which has a tropical monsoon and plateau climate. The year has 2 seasons, rainy season from April to October, dry season from

November to March. In the areas at above 600 m of the sea level, the average temperature is around 18-20°C. In the areas lower than 500 m of the sea level, the average temperature is 25°C. Annual rainfall ranges from 2,200-2,500 mm.

Other features in Gia Lai's climate are prolonged dry season, with strong north-east wind, high water evaporation and reduced humidity. These are big constraints in keeping and providing water in the dry season. Thanks to its location, Gia Lai has advantages for development of annual crop varieties, perennial industrial crops and livestock production.

1.1.4 Soils

Gia Lai has a total area of 1,549,500 ha, with fertile soils suitable for crop development, especially for perennial industrial crops. Rivers and streams flow through the valleys and flat areas that are favorable conditions for irrigated rice and aquaculture development.

According to the findings of a soil survey in Gia Lai province, there are 27 types of soils, divided into 7 main categories, of which basalt group is the most important. Total area of basalt soil group is of 386,500 ha, distributed in the areas of Chu Prong, Chu Pah, Ia Grai, Mang Yang, Duc Co, Chu Se Kbang district, and Pleiku city, suitable for perennial industrial crops and plantation forests.

The groups of grey and brown-grey soils comprise 301,366 ha, concentrating in Chu Prong, Mang Yang, Konchoro, Krongpa, Ayunpa and An Khe districts, favorable for annual industrial crops, such as sugar cane, beans... and some perennial commercial crops like rubber, coffee, cashew nut.

The group of alluvial soils is 49,250 ha, distributed in riversides and stream banks in districts of An Khe, Krongpa, and An

khe, these soils are suitable for rice and annual commercial crops.

1.2 Social conditions

1.2.1 Population

Gia Lai had a population of 988,968 in April 1999, comprising 34 different ethnic groups, of which ethnic minorities account for 44% of total population. Jarai ethnic minority makes up 34.1% of the ethnic minorities, the remaining are other groups like Ba Na and Tay... The Kinh group consists of 57.8%, most of who come from provinces of Southern Central coastal region and from the North. However, besides a number of laborers migrated according to the government plan, the majority has emigrated uncontrolled to Gia Lai, that caused economic difficulties, and social security problems in the province.

Population in Gia Lai province can be split into three groups:

- Native inhabitant community is mainly ethnic minorities, such as Jarai, Ba Na, and Ede. The primary characteristics of this community are based on village/hamlet community foundation, hamlet-based organization form. It is the only social organization, which is relatively complete, independent, isolated, and self-contained in terms of cultivation and residential areas with close social structure/institutions. A part of the population has integrated into the market economy, while the greatest part is still practicing a subsistence production process. Low education level, backward customs are a great obstacle in social-economic development of the province, which is directed to improvement of production level and living standards of the indigenous inhabitant community.
- Kinh community came to Gia Lai before 1975, inhabited mainly in towns,

townlets, along transportation systems and in state farms, where infrastructures are improved. The Kinh people have market-oriented experience, dynamic and they have much production and trading experience.

- Kinh community who have emigrated to Gia Lai since 1976 were from many provinces. This community has contributed to a certain extent to social development and security in the province. Key scientific, technological and economic management officers are mainly from this community. However, it should be noted that the community is complicated, and not uniform, the majority are un-skilled labors, and they have not been adapted to production procedures in Gia Lai ecology, especially those who emigrated freely have made social-economic obstacles for the province.

1.2.2 Labor and population distribution.

In the urbanization process, a complex population distribution process is taking place rapidly. This leads to un-equal distribution for different areas in the province, high population density in urban areas, while in rural areas, population density is low. Such a distribution is similar in labor force arrangement. There are about 533,290 laborers, accounting for 54% of the population in the province of which 11% are unemployed.

For skill level of laborers: the majority of the labor force has a relatively low level of education and technological knowledge. There are about 1,300 people graduated from universities, 2,200 have college level, 10,000 have technical school certificates and 12,300 are technicians. In comparison with demand of the national economy, the percentage of technical labor force is still low (accounts for only 0.8% of total labor

force). Rural labor is mainly involved in agricultural activities.

1.2.3 Economic characteristics

While Gia Lai province is one of the main areas of industrial crops, agricultural productivity is low in comparison with the average level of the country and agricultural production is not concentrated. However, some sub-sectors have achieved a certain level which is higher than that of expected social-economic outputs in the recent years and positive changes have emerged.

Over the past five years (1991-1995), average annual growth rate of GDP was 7.8% (planned rate was 7%), agriculture sector increased by 5%, industry and construction sectors raised by 11%, annual export turnover increased by 10%, basic infrastructure investment accounted for 15% in 1995 with an annual average growth rate of 5%. In 2000, GDP growth rate was 8.26%, industrial product values reached 638,74 billion VND. Total production in the province was 256.5 billion VND. Per capita GDP was 2.76 million VND/year at current price. In 2000, total public expenditure was 629.5 billion VND, increased 125.8% compared to the plan. The central government supplemented 375.9 billion VND, increased by 110.8% in comparison with the plan.

1.2.4 The key economic sectors.

a) Agriculture

By June 2001, total area used for agricultural purpose is 375,535.56 ha, accounts for 24.2% of the total natural area of the province, of which:

- Annual crop land 192,814.93 ha
- Garden land 37,032.64 ha
- Perennial crop land 144,760.40 ha

- Pasture land for livestock 821.13 ha
- Water surface area used for aquaculture 106.56 ha.

In recent years, many industrial crop varieties like coffee, rubber, pepper have been developed rapidly. In 2000, total area for coffee plantation was 81,037 ha (it was 23,610 ha in 1995); Rubber area was 55,810 ha (it was 21,890 ha in 1995); pepper area was 1950 ha (it was 140 ha in 1995). The industrial crop areas increased too fast, (especially for coffee), and affected forest protection activities in the province.

b) Forestry

The forestry production has shifted from resource exploitation to forest management and protection in recent years. Reforestation, minimized timber logging in natural forest, closing forest access in some important areas, as well as step by step stabilizing and improving living standards for a segment of people engaged in forestry activities have gained considerable attention.

Over the past five years (1996-2000), on the basis of Program 327, the province has signed contracts for 129,000 ha with 4,359 households. Since 1999, the province has been involved with the nation's 5 million ha reforestation program, but with a limited budget, the contracted areas was only 77,680 ha in 2000.

During the period from 1996-2000, 14,429 ha had been reforested, of which 5,235 ha are of catchment protection forests, apart from that 4.56 million scattered trees have been planted, 8,336 ha were reforested, and 404 ha of forests were regenerated. Total round wood logged from natural forest during 5 years was 334,105 m³, reduced 153,425 m³ compared to the period from 1991-1995, the great part of

the wood were processed, with restrained export of round wood out of the province.

**In general, the socio-economic situation of the province has the following primary characteristics: Low knowledge level; many backward customs, hilly farming production modes still remaining in some ethnic communities, dependence on nature, and the life of the majority of people is still difficult.*

1.3 Forest resources.

*** Forest flora**

According to the forest inventory in 1997 (based on instruction no. 286/TTg dated 02/05/1997 of the Prime Minister), total forestry land in Gia Lai is 1,112,425.8 ha, of which 728,372.3 ha are natural forests (account for 47% of the total natural area), which comprises diversified tree varieties, with timber capacity of 75,064,974 m³ and 97,994,600 bamboos. Gia Lai's forests are famous for valuable woods like *Baria dalbergia* and Pomu.

As differentiation of natural conditions, and human intervention, the natural forest in Gia Lai can be formed into the following main forest types:

- Broad-leafed, evergreen forests cover 422,377.4 ha (account for 58% of the total natural forest). They are distributed in northern and eastern parts of the province, where rainfall and humidity are high, in districts of Kbang, Chu Pah, east Mang Yang, east Duc Co, east Knchor, east Ayunpa and east Krongpa.
- Seasonal broad-leafed forests (mixed forest) cover 296,013.2 ha, making up 40.6% of the total natural forest. They are located in the West and the South of the province, where topography and water evaporation are higher than that of evergreen forests. They are

distributed in districts of Chu Prong, Chu Se, South Mang Yang, south Duc Co, west Konchoro, West-south Ayuna and west-south Krong pa.

- Mixed broad-leafed and coniferous forests cover 413 ha, occupying 0.05% of the total natural forest, distributed in neighboring areas between Mang Ang and Kbang districts (KonKaKinh zone)
- Bamboo forests cover 9,568 ha, accounting for 1.3% of the total natural forest.
- Forest products: Apart from, wood and bamboo, Gia Lai's forest are abundant with forest products under forest canopy, which are useful and valuable, consisting of different varieties such as unulin, amomum, nux vomica ...oily and resinous plants, besides rattan and cotton bushes.

* Forest fauna

Forest fauna distribution is related to feed sources and habitat condition. In general, the fauna in the province is abundant and diversified in genus, species and numbers. It has high scientific, service values, especially for rare and valuable animals such as caiman, tigers, wild pigs, squirrel, red dog, wildcat, slow loris, black gibbon, spotted bats and so on. Bird species are white necked crane, peacock, motley pheasant, red faced *Lophura diardi*.

* Forest resources changes

- Natural forests: The forest inventories in 1987, 1992 and 1999 show that:
 - + In 1987,
forest area: 881,425 ha,
wood capacity was 87,935,000 m³
 - + In 1992,
forest area: 784,576 ha,
wood capacity was 83,696,000 m³
 - + In 1999,
forest area: 728,372 ha,
wood capacity was 75,069,974 m³

Thus, from 1992 to 1999, forest area and wood capacity in Gia Lai decreased by 56,204 ha, and 8.626,026 m³ respectively, this occurred mainly in rich and medium quality forests. Clearing forest for cropping, illegal forest exploitation and change use purpose of forests are the main reason for decline of the forest area. Although forest area annual growth rate is 1.5-2.0% for specific forest types and area, forest area decline could not be compensated for.

- Planted forests: The current area is 22,489.1 ha, increased by 13,182.1 ha compared to 1992 (9,307 ha). The planted forest consists of mainly tree species such as three-leafed pine; eucalyptus; acacia. Planted forest areas are increased every year, which contributed to reforestation of barren mountains and hills, and increase forest coverage level in the province (but with exotic species).

* Classification of forests (3 levels).

In accordance with Decision 469/QD-UB dated 21/09/2000, the total forest area (1,112,425.8 ha) can be classified as follows:

- Forest land for special use forests: 61,364.6 ha (accounts for 5.5% of total forest land), of which land covered by forest is 50,242.5 ha and land without forest is 11,120.7 ha.
- Forest land for catchment protection forests: 277,613.5 ha (makes up 25% of total forest land), of which land covered by forest is 162,546.9 ha and land without forest is 115,066.6 ha.
- Forest land for production forests: 773,447.7 ha (accounts for 69.5% of total forest land), of which land covered by forest is 538,070.6 ha and land without forest is 235,377.1 ha.

According to this Decision, the forest land area of special use forests comprises only the areas of the nature reserves: KonKaKinh; KonJaRang; and 98.7 ha of Pleiku Reservoir.

** In conclusion, forest resources of Gia Lai province are rich in terms of areas, species. They are abundant and diversified, and do have not only economic values, but also play a role in security, national defense, and biodiversity, scientific research, maintaining the ecological balance in the province and the region.*

2. OVERVIEW AND PROFILE OF THE SPECIAL USE FOREST ZONES IN THE PROVINCE

Gia Lai is a province, located in the center of central highlands. The province has a total natural area of 1,548,570 ha, of which forest and forestlands are 1,112,425.8 ha (account for 72% of total natural area). Gia Lai is the second largest forest covered province in the country, but it is the unique central highland province of the 8 provinces in the country, where special use forest area makes up 10% of the total natural area (Bird life, 2000). The Nature reserve area occupies 9.8% of the total natural area of the province; consist of 5 NRs in 7 districts and the city.

See Table 1: Current and proposed special use forests in the province.

2.1 Kon Ka Kinh Nature Reserve (NR).

Kon Ka Kinh NR was registered in the list of Special-use forests in 1986 (Based on Decision 194/CT, dated 9/8/1986 of the President of the Ministerial Council, with a total area of 28,000 ha, to conserve "tropical Asian high mountain forests with gymnosperm species"). Forest Institute for Planning and Inventory and Birdlife

International Organization have designed an investment project for establishment of Kon Ka Kinh NR. The project was appraised and approved by Gia Lai People's Committee and Ministry of Agriculture and Rural Development in 1986. Total area of this NR according to the investment project is 41,710 ha, Management Board of the NR was established on 8 March 1999. In 2000-2001, the Management Board conducted basic construction activities.

Kon Ka Kinh NR is located in areas of KonPne, DakRoong and Kroong communes of Kbang district, Ha Dong commune of Dak Doa district, Ayun and Ha Ra communes of Mang Yang district, Gia Lai province.

Kon Ka Kinh NR possesses 33,565 ha of natural forests, accounts for 80% of total NR area. The zone has forest species spread over mountains which are at a altitude of 700-1,748 m. There are 2,000 ha of mixed broad-leafed and coniferous forests. This is a new forest type, unique to Kon Ka Kinh NR in the system of nature reserve of Vietnam. There are 652 flora species, of which there are many valuable species such as pomu (*Fokienia hodginsii*). In the zone, 42 animal species, 160 bird species, 51 reptiles, frog species, and 209 butterfly species have been recognized, of which 5 bird species have narrow distribution areas, 3 mammal species which are endemic for Indo-Chinese peninsula with other species such as *Muntiacus truongsongensis*, which was discovered in 1997. In 1999, a sample of laughing-thrush bird species, which had not been described in *Garrulax* genus was collected. This species is related to reddish chin throated laughing thrush (*Garrulax rufogularis*). It may be a new species for science. Reptiles, frog and butterfly regional fauna have firstly been investigated and revealed some new findings (Le Trong Tai *et al.* 2000).

Table 1. Conservation type of Special use forests in Gia Lai province

Name of conservation zones	Area (ha)		Construction level	Management situation	Distribution areas	Protection Objectives
	Core zone	Buffer zone				
Kon Ka Kinh NR	40.710,7	119.300	Management Board (MB) was established in March 1999.	MB is under sub-department of forestry protection	- Core zone : Ha Dong /H. Dak Doa ; Ayun / H.Mang Yang ; KonPne , Dak roong , Kroong/ H.Kbang. - Buffer zone: Ha Dong /H.Dak Doa ; Ayun , Ha Ra/H.Mang Yang ; KonPne , Dak roong , Lo ku , Kroong/H.Kbang .	- Protect biodiversity of specially owned bird areas in North Central highlands -Protect evergreen broad - leaved forest and mixed forest ecology (pomu, hojung @jun , pine) Plei ku plateau.
Kon Ja Rang NR	15.900	56.000	The investment project was appraised by the Ministry of Agriculture and Rural Development	MB was not established yet. Kbang District Forestry Protection Department are responsible for protection	It is located Son lang commune / H.Kbang .	- Protect evergreen broad - leaved and broad-leaved and conifeous mixed forests -Protect typical fauna in central highlands
Chu prong NR	46.925	-	It was surveyed by Institute of forest Inventory and planning on biodiversity and proposed to establish NR	There isn't official establishment decision, the majority of the areas is managed by Chu prong II Forestry state farm - SFF	Communes : la Lau , la Mo / H. Chu prong .	- Protect Dry open forest of Dipterocarps forest ecology which belong to Tay Truong Son climate. - Conserve rare and valuable animals: Tiger, gayal, peacock.
Ayun Pa NR	42.268	54.190	It was surveyed by forest Inventory and Planning Institute on biodiversity and proposed to establish NR.	There isn't a official establishment decision, the majority of the area is managed by: Ayun pa, Chu Prong II State forestry Enterprise.	Communes: la tun, la Kdam, Ch- mè , la Bro, i/ H. ayun pa. laRrsai /H.Krong pa .	- Protect Dry open forest of Dipterocarps forest ecology which belongs to southern coastal climatic zone. - Conserve birds, especially peacocks
North Pleiku Cultural- Historical- Environmental park	12.941	-	It was surveyed by sub-institute of forest inventory and planning in southern-central region, and proposed for establishment of special use forest park.	It belongs to areas under Chu Pah district forestry protection Division's management.	Communes: la Khuon , Hoa phu, Nghia hung , Chu dang ya, Chuor / H. Chu Pah .	It is a site for scientific research on rare and valuable flora and fauna It is a Special-use forest, which has a high potential for tourism, It is also a green buffer zone of Pleiku city

Kon Ka Kinh NR plays an important role in the protection of the catchment of large rivers that provide irrigation water for thousands of hectares coffee, agricultural areas and drinking water for districts in Gia Lai and Kon Tum provinces. Furthermore, the western part of the NR is located in Yaly hydro-electronic plant catchment.

Natural resources of the nature reserve have an important role for the community in providing timbers, firewood, honey and rattan. In addition, the flora consists of 110 plant species, which can be used as traditional medicines in the community. However, the economic potential of these plants has not been evaluated yet.

Apart from that, Kon Ka Kinh NR is also a beautiful and attractive landscape for eco-tourists, and scientific research. At present, however, values of eco-tourism is still low because of accessibility to the zone and no regulation of management of eco-tourism in the NR (Le Trong Trai *et al.* 2000).

2.2 KonJaRang Nature Reserve.

KonJaRang NR was also established in accordance with Decision 194/CT dated 9/9/1986 of the President of Minister's Council, with a total area of 16,000 ha. In 1994, the Institute of Forestry Science designed an investment project for the reserve, but it was not approved by the Ministry of Forestry then. In 1999, Institute of FIPI designed a investment project for the zone with total area of 15,900 ha and it was appraised by the Ministry of Agriculture and Rural Development in Decision number 2648/BNN-KH. Where there is no Management Board, Sub-Department of Forestry protection assigned management tasks this nature reserve to Kbang District Forestry protection station.

KonJaRang NR is located in areas of Son Lang commune, Kbang district, with total natural forest area of 15.610 ha, accounts for 98% of total nature reserve area. The forest type in this zone is tropical evergreen forests, distributed on low mountains at a height of 900-1,000 m in the west of the zone. This forest type occupies 70-80% of the forest area in zone. The flora is dominated by plant species from chestnut family (Fagaceae re Lauraceae), magnolia (Magnoliaceae), which grow intermingled with coniferous trees like pine (*Podocarpus imbricatus*), boxwood tree (*Dacrydium elatum*). In some areas of low mountain areas in the zone, the forest was exploited by Tram Lap state forest enterprise. However, the forest has not been affected considerably.

In the zone, there exists low mountain evergreen forest type, distributed in area at altitude of less than 900 m. Apart from that, 2% of the zone area is bush savanna with dominant flora of che ve (*Miscanthus sinnensis*), Sam (*Memecylon fruticosum*), Mua (*Melastoma normale*), Alang grass (*Imperata cylindrica*), Lau (*Erianthus arundinaceus*), reed plant (*Phragmites vallatoria*), chrysopogon (*Chrysopogon aciculatus*), Chi grass (*Cynodon dactylon*) (Anon.1999).

Apart from that, 546 plant species, of 376 species from 122 families were inventoried. They comprise 201 wooden species, 120 medicine species and 48 can be used for bonsai production. Of those species, 7 species are threatened and are in the IUCN list of the world threatened species, 18 rare and valuable species are in the Vietnam red book and 9 special use plant species such as red maple (*Acer erythranthum*), Du moc (*Baccaurea silvestris*), Long hiep (*Bulbophyllum hiepii*), Song bot (*Calamus poilanei*), Hoang thao vach do (*Dendrobium ochraceum*), Xoay (*Dialium cochinchonensis*), Gioi (*Michelia mediocris*) (Anon. 1999).

The survey also revealed that there are 62 fauna species, 160 bird species and 161 butterfly species. Of these 8 fauna species are threatened to the world extent, and 17 species are in the Vietnam red book. Especially, 3 special use species in the Indo-Chinese Peninsula, such as red checked gibbon (*Hylobates gabriellae*), grey-shanked Douc's langur (*Pygathrix nemaeus cinerea*) and giant muntjac (*Megamuntiacus vuquangensis*), (Anon. 1999).

Among the surveyed bird species in the KonJaRang Nature Reserve, 6 species are threatened in the world, one water-bird species, the masked finfoot (*Heliopais personata*) and 5 other species, the crested argus pheasant (*Rheinardia ocellata*), black hooded laughing thrush (*Garrulax millati*), white-cheeked laughing-thrush (*G. vasali*), long-beaked laughing-thrush (*Jabouilleia danjoui*), Grey-faced tit babbler (*Macronous kelleyi*). It is clear that, KonJaRang is a segment of special use bird zone in Kon Tum plateau, It is noted that, the inventory revealed a butterfly zone, and 7 taxon were discovered (Anon. 1999).

Forests in Kon Ja Rang NR has a protection role for the catchment of the Kon River. The forest in the zone contributes to water resource protection and provision to hydroelectric works and irrigation water for thousands of hectares of rice planting areas in the Kon River valleys. Kon Ja Rang NR has potential for tourism and scientific research.

2.3 Ayunpa Natural Reserve.

Ayunpa Nature Reserve has not been approved by the Government to be in the list of special use forest system. In April 2000, Birdlife International and Institute of Forest Inventory and Planning Institute (FIPI) conducted a field survey and prepared a report "Feasibility study on

establishment of Ayunpa NR" with total area of 42,268 ha; and its buffer zone area of 54,190 ha. Based on the findings, Gia Lai provincial People's Committee wrote an official letter 1292/CV-UB. dated 19/5/2000 requesting Ayunpa NR to be placed on the list of Vietnam special use forests.

The field survey which was conducted by Birdlife and FIPI found that there are 439 high-level fauna species in the zone, of which 3 species are threatened globally: Dau bao (*Dipterocaropus baudii*), Lau con dao (*Psychotria condorensis*) and split-leafed tue (*Cycas micholitzii*). Besides that some Vietnam level special use species are also recognized, such as Ba dau dong (*Nancroton dongnaiensis*), Ba dau la tam (*C.maieutucus*) and trac (*Dalbergia cochinchinensis*)

Totally, 27 mammal species, and 147 bird species are recognized for this zone, of which 7 mammal species are threatened globally, such as pig-tailed macaque (*Macaca nemestrina*), Douc's langur (*Pygathrix nemaeus*), black bear (*Ursus thibetanus sumatraensis*) and porcupine (*Hystrix brachyura*). Three bird species are threatened globally such as Siamese fireback pheasant (*Lophura diardi*), peacock (*Pavo muticus*) and brown pigeon (*Culumba punicea*) (Tran Quang Ngoc *et al.* in prep).

The proposed Ayunpa NR has a nationally important role for peacock conservation. A recent study on situation and habitat preference for peacocks which was carried out in Dac Lak revealed that the highest peacock density appeared in the deciduous forest habitats, 2 km from water resources and more than 2 km far from people residence (Brickle *et al.* 1998). The proposed Ayunpa zone has 16,070 ha of deciduous forests, compared to 12,300 ha in Yok Don National Park. This is related to peacock abundance in the two areas, thus, the proposed Ayunpa NR also

plays an important role in peacock conservation (Tran Quang Ngoc *et al.* in prep).

Forests in the proposed zone have an important role in water resource protection for the community and the Ba River catchment protection. These functions become increasingly more important if irrigation systems are constructed on the streams that are coming from the nature reserve in order to expand agricultural areas, especially paddy rice in buffer zones.

2.4 Chuprong Nature Reserve.

Chuprong Nature Reserve has not yet been approved by the Government to be in the list of the special use forest system in Vietnam (MARD). However, In 2000, Birdlife International and FIPI conducted a field survey in west-south Chuprong district. The survey findings were used as a basis to prepare a Feasibility Study report on establishment of Chuprong Nature Reserve. In the report, a Nature reserve with area of 50,104 ha in La Mo and La Lau communes, Chuprong district is proposed. The proposed reserve is included in the list of proposed nature reserves that is being prepared by Forest Protection Department and FIPI.

Results of a field survey conducted by Birdlife International and FIPI in 2000, recognized 458 fauna species in the proposed zone, of which 8 species are in Vietnam Red book.

The proposed NR has 4 main floristic compositions: lowland deciduous forests; lowland semi-deciduous forests; riparian evergreen forest; and seasonal flooded grassland. This bioecology has a specially important role for large waterbirds and large animals which are threatened globally. There are 40 mammal species, 171 bird species, 36 reptile species, 11 amphibians species and 11 fish species.

Of the recognized species, 12 species are in the IUCN global list of threatened species (IUCN 1996) and 15 species are in the Vietnam Red book. Of the recognized birds, 8 species are globally threatened and vulnerable.

Of the recognized 47 reptiles and amphibian species in ChuProng, 16 species are in the Vietnam Red Book. Information provided by local villagers indicates that freshwater caiman (*Crocodylus siamensis*) may exist in Ya Lop River (Tran Minh Hieu *et al.* in prep.).

Chu Prong Nature Reserve is located in the Mekong River catchment. The forest in the proposed nature reserve contributes to catchment protection through water flow adjustment, flood prevention and erosion limitation in the rainy season as well as to drinking and irrigation water provision for local communities (Tran Hieu Minh *et al.* in prep.).

2.5 North Pleiku Cultural-Historical Zone

The proposed North Pleiku NR is located in Chu Pah district and Pleiku city, in the North of the province, between Pleiku city and Kon Tum Town.

In June 1997, in collaboration with the Sub-Institute of FIPI, Sub-Department of Forestry Protection of Gia Lai province have conducted a survey in North Pleiku Nature Reserve and prepared an investment project proposal, but it has not been approved yet. Based on the project proposal, Gia Lai Province People's Committee has submitted an official letter dated 15/9/2000 to the Ministry of Agriculture and Rural Development to propose North Pleiku zone to be in the system of national Special-use forests by 2010. The proposed area is 12,941 ha, of which forest and forest land are 11,438.1 ha, accounting for 88.4% of the total natural area. According to the preliminary

survey findings, flora resources in the zone are relatively abundant, diversified in species compositions, endowed with special features of central coastal areas and central highlands. In the zone, 189 fauna species, of which 4 rare and precious species are recognized. In addition, 61 flora species, of which 10 rare and valuable are acknowledged.

An established North Pleiku landscape protection zone will have an important ecological function in catchment protection and water resource maintenance for a great reservoir. The reservoir has area of 600 ha, which is located to the North of Pleiku city. The reservoir is the main fresh water resource for the whole city, as well as irrigation water for neighboring communes (Scott. 1989). In addition, the forest in the zone is a green belt for the city. This is a forest, which has high

economic values for nature protection and biodiversity conservation, as well as a research model for tropical forest. At the same time, this is a relaxation, and enjoyable place, attracting people from cities and adjacent communities during the weekend and holidays.

3. ROLES AND OTHER VALUES OF THE NR SYSTEM IN THE PROVINCE

The NR in the province play an important role in biodiversity, environmental conservation for animals and plants, as well as in preservation of different ecosystems. This is an important economic resource and attractive place for people. These features make NR an excellent place for improving awareness on conservation activities and strengthening international cooperation.

II. OBJECTIVES OF THE STUDY

1. General Objectives.

General objective is to provide a common understanding on the current situation of Nature reserve management and analyse solutions with a view to reach sustainable management of Special-use forest in Gia Lai province.

2. Specific Objectives.

- Assess management situation and capacity of the Nature reserves in the province
- Propose management and development solutions for the Nature reserves to strengthen management activities of the Nature reserves system in Gia Lai province.

III. CONTENT OF THIS REPORT

- Evaluate management structure and capacity of the nature reserve
- Identify relationship, cooperation and support level among nature reserve. local authorities, sub sectors and departments.
- Assess participation level of local communities to conservation activities and their efficiency.
- Assess funding resources for conservation activities
- Assess support for legal activities
- Assess forestry law violations in the province
- Establish solutions, recommendations on the basis of study results.

IV. RESEARCH AND ANALYSIS METHODOLOGY FOR THE NATURE RESERVE SYSTEM

The following methodologies were used to analyse the NR system in Gia Lai province.

1. RESEARCH AREA SELECTION

The nature reserves in Gia Lai are distributed over large area, which consists of 7 districts: Chu pah; Chu prong; Ayun pa; Konchro; Mang yang; Dak doa and Pleiku city. Thus, in order to identify representative nature reserve, the research team relied on the following criteria.

- Established Management Board (MB)
- Appraised Project proposal, and maybe not yet established MB
- Reflect the impact level to NR in Gia Lai
- Characterization of people's livelihood and economic situation of Gia Lai
- Represent the local situation of population and ethnic composition.

Based on the above-mentioned criteria, the research team has selected 2 nature reserve s: Kon Ka Kinh and Kon Ja Rang, which are distributed in 2 districts: Mang yang and Kbang, which later were split into 3 districts named Mang yang, Kbang and Dak doa and they are representative for the rest of the nature reserves in the province.

2. CRITERIA FOR SITE SELECTION, ANALYSIS OF NATURE RESERVES SYSTEM

In 2 nature reserve s, 6 communes and 4 state forestry farms were selected. The selection of communes and farms were

based on the following principles and criteria.

- There is common agreement between the Provincial working group and consultants.
- There are detailed discussions and high understanding in district leadership
- The selected communes and state farms are both located in nuclear/core and buffer zones of two-selected nature reserve s.
- There are many common characteristics of the nature reserve, local people are ethnic minorities, their livelihood related to forests, practiced shifting cultivation, other pressures could be representative for other localities in order to replicate analyzed results.

3. RESEARCH METHODOLOGIES

In order to collect information and analyze the system of nature reserves, the following main methodologies were applied:

- Collected secondary data, relevant document: Collected secondary data from bodies at Province, district and commune levels, from special use forest management board.
- Conducted discussions, exchange information and data collection workshops with stakeholders and communities
- Discussed with the province working group and consultants.
- Organized Village meeting, and workshop with stakeholders at the selected sites.

- Discussed with provincial departments, sub sectors, Management Board of KonKaKinh Nature Reserve, and departments, sub sectors of districts, communes and villages.
- Used different tools of PRA to collect and analyze information
- Designed 6 questionnaires for survey, questions in the questionnaires are normally open to guide interviewees to right topics and specific situation. The interviewees include:
 - At provincial level: Administration office of Provincial Party Standing Committee; Provincial Working Group; Department of Land Administration; Department of Agriculture and Rural Development; Sub-department of Forestry Protection; Department of Science, Technology and Environment; Committee of Ethnic, Mountains and Permanent Cultivation and Residence; Women's Union; and Sub-department of Statistics.
 - At district level: District People's Committee; Economic Department; Agriculture and Forestry Extension Station, Investigation Institution; Police; Women Union; Department of Finance; and State Forestry Enterprises.
 - At commune level: Commune People's Committee; Women Union; Village elders, Hamlet heads; Health care station; Schools, Veteran, and Farmer Association.
- Crosschecked information from different resources.

Utilizing participatory analyzing tools:

- Applied SWOT analysis to identify strength, Weakness, Opportunities and constraints in the system of the nature reserves. Use analyzing framework, which includes the following factors:

- (1) Current situation of the Nature reserves
- (2) Management capacity of nature reserves
- (3) Participation of local communities
- (4) Impact of legal systems and state policies
- (5) Linkage and cooperation level among departments, sub sectors, local authorities and nature reserves.

4. RESEARCH DURATION AND IMPLEMENTERS

a. Research duration: from 1/5/2001 to 31/10/2001

b. Research team

- Two consultants (one from Tay Nguyen University Dr. Bao Hung - Deputy Dean of Agricultural Forestry faculty; and the other one is from Tropical Forestry Research Center – Dr. Nguyen Van Con – Center's Director)
- Two field working groups, each group consist of 04 members, mainly from Sub-Department of Forestry Protection, Provincial Department of Planning and Investment, Provincial DARD, Department of Finance and pricing, Department of Land Administration, Department of Science, Technology and Environment, KonKaKing Nature Reserve and Tropical Forestry Research Center)
- Collaborators from provincial departments, sub sectors were participated with working group to synthesize, process data and draft report.

V. RESEARCH RESULTS

1. ASSESSMENT OF ORGANIZATION STRUCTURE AND MANAGEMENT CAPACITY OF THE NATURE RESERVES

At the present, Gia Lai province has 2 nature reserves recognized by the Gov. in the list of national special use forest system (KonKaKinh and KonJaRang Nature Reserves), their investment projects have been appraised by MARD. Gia Lai Province PC has issued a decision on MB establishment for KonKaKinh Nature Reserve, while PPC has delineated for the other 3 nature reserves (Ayun pa, ChuProng, and North Pleiku), and has submitted the official letters to MARD to request the Government to approve these zones to be National special use forest zones. Thus, when assessing organizational structure and management capacity of the provincial nature reserves, the research team (SPAM provincial project) focused the analysis and evaluation for KonKaKinh Nature Reserve. and concentrated on general issues for other Nature Reserves.

1.1 Kon Ka Kinh Nature Reserve (where MB is established)

1.1.1 Organization system of Kon Ka Kinh Nature Reserve

a) Projection of Kon Ka Kinh Nature Reserve

* Forest area and boundaries of KonKaKinh Nature Reserve:

Kon Ka Kinh Nature Reserve has an area of 40,719 ha, of which forest area is 33,565 ha, accounts for 80% of total area of the zone. Buffer zone area is 119,561.3 ha. The zone is located in the area of 3 districts:

- Kbang district includes 4 communes: Dak Roong, Kroong, Kon Pne, and Lo Ku.
- Mang Yang district includes 2 communes: Ayun and Ha ra.
- Dak Doa district includes 1 commune: Ha Dong

Area of each commune projected into nature reserve and buffer zones is shown in Table 2.

Table 2. Area distribution in KonKaKinh Nature Reserve by commune.

District, Communes	Area in nature reserve (ha)	Area in buffer zone (ha)
Kbang district	32,477.6	64,996.4
- KonPne commune	12,545.2	5,114.8
- Dak Roong commune	7,675.6	26,648.4
- Lo ku commune	12,256.8	14,021.0
- Kroong commune	-	19,212.2
Mang Yang district	5,070.0	38,420.0
- Ayun commune	5,070.0	15,878.8
- Ha ra commune	-	22,541.2
Dak Doa district	3,369.1	16,144.9
- Ha dong commune	3,369.1	16,144.9
Totals	40,710.7	119,561.3

- Functional subdivisions (compartment) and management and protection units.

KonKaKing Nature Reserve is divided into 43 sub-areas and 2 main subdivisions. Area of each sub-area is indicated in table 3.

Table 3. Area of functional subdivisions of KonKaKinh Nature Reserve.

Subdivisions	Area (ha)	% of total area
Strict protection I	11,026	26.44
Strict protection II	12,038	28.86
Ecological Rehabilitation I	3,706	8.88
Ecological Rehabilitation II	8,708	20.88
Ecological Rehabilitation III	6,232	14.94
Totals	41,710	100.00

b) Decentralized administration for nature reserves

Management Board (MB) of KonKaKinh Nature Reserve plays a role as a forest owner of the KonKaKinh Nature Reserve, which is assigned by Provincial PC (competent body for management of special use forest) for management and building KonKaKinh Nature Reserve in accordance with current management regulations for special use forests. At the same time, MB is under the technical direction of Gia Lai Sub-Department of Forest Protection.

c) Organization structure of KonKaKinh Nature Reserve

Based on Decision No. 19/1999/QD-UB, dated 8/3/1999 of the PPC “re MB establishment for KonKaKinh Nature Reserve”. MB of KonKaKinh Nature Reserve consists of 5-7 members, balanced with total regular staff of Sub-Department of Forestry Protection. Currently, MB of KonKaKinh Nature Reserve comprises 7 permanent staff and 2 contracted employees, of which 4 staff have university degrees, 3 own secondary technical school degree and 2 possess primary technical school certificates.

With the current number of staff, and MB is responsible for managing the special use forest area of 41,970.7 ha (on average 4,552 ha/staff) compared to an average norm of 1,000 ha/regular staff, stipulated in the management regulations of natural forest, which was promulgated

in Decision No. 08/2001/QD-TTg dated 11/01/2001 of the Prime Minister. Thus, current number of staff working in KonKaKinh Nature Reserve is deficient, and does not fulfill the tasks assigned.

On the basis of the approved investment project proposal, staff number for MB of KonKaKinh Nature Reserve is 48 persons with directorate board (1 Director and 2 Vice-Directors), Forest protection station, Planning and Technique Division, Comprehensive Division. An initial organization structure consists of 9 staff (including 1 Director, and 8 staff members). The staff are arranged in 2 divisions: Planning and Technique Division, and Division of Administration and Comprehension, the remaining (5 staff) are in a forest protection mobile patrol-group. “The current staff arrangement is compelled in an initial period of nature reserve, organization structure is not appropriate to conservation needs and tasks. In the immediate future, staff should be increased: 2 Vice-Directors; 3 more staff for the divisions, and establish forestry protection station for the zone, which consists forest protection group capable enough to protect the nature reserve. This is prerequisite condition for success of conservation activities” (Mr. Nguyen Tien Thuc, Director, KonKaKinh Nature Reserve).

The status and analysis on staff organization of KonKaKinh Nature Reserve are shown in Table 4.

Table 4. Status and results of the situation analysis on organization structure and staff of KonKakinh Nature Reserve.

Organization Structure	Staff		Practical needs	Strength	Weakness	Opportunities	Challenge
	Based on proposal	Current					
- Total	48	9	Accordinging to the project proposal	*Staff is young, strong, experienced, willing to work in Nature Reserve *Sub-Dept. of Forestry protection pays proper attention for conservation activities	*Lack of staff professional level is not high, and staff are not trained on conservation and biodiversity *Inappropriate organization structure compared to national level of the zone	*Conservation activities are gained considerable attention from PPC, and its dept. *INGO (Birdlife) is willing to support	*Staff is not guaranteed as the approved project proposal - Contrast with the current labor force under the nature reserve scale and tasks.
- Directorate	3	1					
- Forestry P. Station	37	not yet					
+ Forest P. Groups	30	not yet					
+ Mobile patrol	7	2					
- Professional divisions	4	2					
+ Accountancy	1	1					
+ Technique	2	1					
+ Finance	1	-					
- Comprehensive division	4	1					
+ Personnel	1	not yet					
+ Admin. (receptionists; drivers, ...)	3	1					

1.1.2 Capacity on organization and management

- **For staff**

As mentioned above, current staff of the MB is deficient, compared to the real needs. This issues is very difficult to be solved, since staff of MB of the nature reserve is an integrated part of Forestry protection regular staff, which depends on general norms of forestry protection sub sector, stipulated by the Government. The current staff of KonKaKinh Nature Reserve MB is not capable to implement the scientific research program. The research results on the nature reserve are conducted by international organizations and specialized institutions. For small-scale research projects, such as monitoring changes of forest floristic compositions, monitoring forest restoration and regeneration which can be carried out by the MB, if a research budget is provided.

- **For infrastructure**

At the end of 1999, KonKaKinh Nature Reserve was provided a fund by PPC for construction of one house level 4 (100 million VND). This house is used as a residence and as working offices for the staff, which located in a projected area of 2 ha. A electronic transformer was built with capacity of 0.4 KV for serving the MB and villagers of 2 villages: Le Bong I and Le Bong II. At the beginning of 2001, the Provincial People's Committee provided fund for constructing a head office (house level 3). It has been constructed as planned.

For transportation means and other equipment: One Russian jeep (60 million VND), one motorcycle and other equipment, such as telephones, computers...were given. So, although the MB of nature reserve has just been established, proper infrastructure and equipment are provided for running activities. This represents attention of the PPC for conservation activities in the province.

- **For salary and other benefits**

Although staff is small, and operating in an extensive, and dangerous area, staff of the nature reserve is given a low salary (400,000 VND/staff/month), and have not received any other benefits. This issues should be paid attention to resolve in order to encourage staff to work with mind at ease and better fulfill assigned tasks.

- **Implementation of conservation tasks**

Having directed and supported by Sub-Department of Forestry protection, with assistance of local authorities and district forestry protection station, the staff (consisting of one Director and 8 members), of the zone has fulfilled forest protection tasks and have done the following activities.

- Educate and encourage villagers to participate in forest protection activities: 12 courses with 1124 participants.
- Track down forest violators twice a year
- Two workshops on forest boundaries were conducted
- Arrange staff to participate in professional training courses conducted by Sub-Department of Forestry protection
- Receive and release more about 2000 kg of rare and valuable animals to their habitats (KonKaKinh Report, 2000).

- **Financial capacity**

In Gia Lai province, there had not been budget item for nature reserves in the past in the province budget (Mr. Nguyen Bon, Provincial Department of Planning and Investment). So, in an initial stage, running budget of the NR relied on recurrent costs of the Sub-Department. At the beginning of the year 2001, the MB of Kon Ka Kinh Nature Reserve was given the first investment budget by the Government through provincial budget (1.5 billion VND) to build infrastructure facilities (working

offices, houses for forest protection station, and for investigation and design of botanical garden ... (In accordance with Decision No. 03/QD-UB dated 11/01/200, re. "assigning socio-economic plan figure, year 2001" to KonKaKinh Nature Reserve).

Thus, MB of Kon Ka King Nature Reserve has initial infrastructure facilities – gradually improve managerial capacity, ensure necessary facilities to well implement the conservation. At the present, Birdlife International and Gia Lai Provincial People's Committee (directly is Sub-Department of Forestry protection) have been investigating, proposing a conservation program, funded by Global Environmental Fund) for KonKaKinh Nature Reserve. As planned, the program activities will be implemented in 2002.

- **General comments**

The establishment of MB for Kon Ka Kinh Nature Reserve is an opportunity for overall development of conservation activities, and forest ecology, as well as sound protection of wild animals. This leads to reduction of pressures, threatened conservation activities like illegal forest extraction and animal hunting. MB has conducted education and communication campaigns to encourage villagers to participate in forest protection activities, and gained initial results, improved their consciousness on forest protection. This is also a good base for strengthening conservation.

Along with opportunities and achievements as mentioned above, MB has been facing obstacles as follows:

- Conservation activities are still new to the staff who are involved in conservation.
- There isn't an opportunity for improving training activities, updating knowledge

on conservation and some other specialized support conservation activities.

- Staff for conservation is too limited to fulfill tasks related to conservation.
- Current budget for conservation is very limited.

1.2 Nature Reserves where Management Board has not been established.

In Gia Lai, almost all of the nature reserves haven't got their own MB. Currently, the management of these nature reserves is facing difficulties, as there are inconsistencies. In some areas, state forestry farms are responsible for managing nature reserve, in the other area, local authorities (commune) or district forest protection station take a role of management of nature reserve. State forestry farms are mainly carrying on forest-related business, and cannot manage a large forest area, because of limited staff (on average 26 people/20.000 ha of forest). Commune People's Committee lacks specialized staff, as well as qualified staff to undertake functions of a forest owner in forest management and protection. The province forest protection force has a limited budget allocated for forest management and protection activities. Since the forest area is too extensive to manage, this results in low efficiency.

Therefore, the management of nature reserves where MB has not been established is an inextricable issue for local authorities at different levels and functional organizations in order to avoid pressure on nature reserves. This pressure reduces the values of biodiversity, natural resources and other values of nature reserves.

2. IDENTIFICATION OF LINKAGE, COOPERATION AND SUPPORT LEVELS AMONG NATURE RESERVE'S, LOCAL AUTHORITIES AND OTHER DEPARTMENTS AND SUB SECTORS

- In the province, the cooperation link and supports among nature reserves, local authorities, departments and sub sectors, especially for the area where the MB was established have initially had positive changes. The MB becomes a nucleus, linked with local authorities, departments, and units located in the area in collaboration for tracking down, preventing forest violators.
- Coordination, integration in the programme among nature reserves with agricultural and forestry extension centers, permanent settlement and cultivation divisions, state farms and land administration offices have also gained results. However, this link is still limited and passive, since there are no coordination mechanisms. They rely mostly on local authorities (District and Commune PC).
- Mass organizations such as Veteran's Association, Women's Unions, Farmer's Association and Youth Unions, all have organization structures from province to grassroots level. In the surveyed districts and communes, these organizations are very active, contribute to poverty reduction and hunger alleviation, and improvement of villager's knowledge in the area. MB of KonKaKinh nature reserve has not paid proper attention to cooperative linkage with the mass organizations in the area, so conservation operation efficiency is not high, especially in mobilizing, replicating forest protection models at the grassroots.
- Conservation and other activities aimed at preventing pressures on nature reserves are always socialized activities;

they are not characterized for a specific sub-sector, level or locality. In reality, some people, organizations, and units now believe that forest management and protection in general, and pressure prevention on nature reserves in particular are responsibilities of the forestry sub- sector and forest protection branch.

In nature reserves, where MB are established, most matters rely on the MB. If MB members are dynamic and active in conservation activities they will assist local authority, departments and sub sectors to participate in forest conservation and protection actively. This leads to formation of better linkages and collaboration among stakeholders. Decentralization of power, and responsibility to each stakeholder for conservation activities are not clear and are insufficient, for instance in Decision no. 245/1998/QD-TTg dated 21/12/1998 of the Prime minister "Re. practicing state management responsibility of different levels for forests and forestry land". In reality, local authorities, especially commune level lacks staff and qualified staff for implementing their power and responsibility while a force, which can assist commune authority in this matter is field forest protection (Decision 105/2000/QD-BNN-KL dated 17/10/2000) is very insufficient. In the province, total staff of this force is limited; there are only 51 persons, allocated in 147 forest-owned communes. Moreover, field forest protection force carry out their tasks in remote communes, where budget for allowance to this force is lacking for them to maintain their life and support the communes as stipulated in Decision 245 of the Prime Minister.

Therefore, for nature reserves, where MB are not formed, responsibility is assigned to state forestry farms and local authority (mainly commune level). The management, collaboration and support are extremely difficult.

* Diagram of linkage among nature reserves, local authorities and other departments and sub sectors.

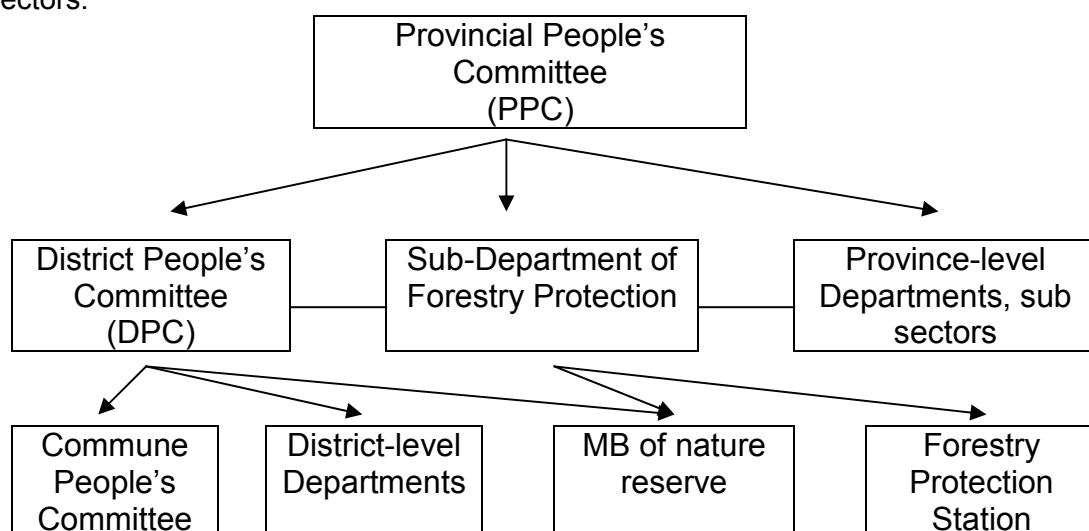


Table 5. Decentralization of power and responsibility for nature reserves.

Level	Power and responsibility in conservation activities stipulated in Decision 245/1998/TTg	Implementation levels
Provincial	<ul style="list-style-type: none"> *Set up special use forest zones after getting an approval from MARD *Establish forest protection network, and coordinate support force and formal forest protection forces in preventing any forest violations in the province. 	<ul style="list-style-type: none"> *Made decisions on establishment of 2 nature reserves: KonKaKinh and KoJaRang. *Steer provincial forest protection force to collaborate with other organizations/units to manage special use forest zones and protect primitive status of existing forests. *Pay attention on conservation activities and support the establishment of nature reserves
District	<ul style="list-style-type: none"> *Responsible to the PPC for forest protection, development, and use in the district area. * Arrange forest protection network in the district area 	<ul style="list-style-type: none"> *Usually support and participate in promotion of conservation activities in the district. *Steer forces in the district to collaborate with formal forest protection force in forest protection activities
Commune	<ul style="list-style-type: none"> *Responsible to the DPC for forest protection, development, and use in the commune area. *Collaborate with formal forest protection force in forest protection activities *Steer villages/hamlets in implementing state regulations related to forest protection activities 	<ul style="list-style-type: none"> *Coordinate with formal forest protection force, and MB of nature reserves *Participate in conservation programs i.e. encouraging, educating villagers, surveying and planning for conservation programs. Actively involved in conservation activities when needed
Village		<ul style="list-style-type: none"> *Participate in spontaneous conservation activities based on project activities *Assist MB directly in activities related to community.

Table 6. Assessment of cooperation level and conservation support

Activities	Presided organizations/ units	Participating organizations/ Units	Results	SWOT				
				Strengths	Weaknesses	Opportunities	Challenges	
Set up economic-technical foundation for NRs	Gia Lai PPC	-Sub-Dept. FP -FIP -Concerned depts. in the province	Completed economic-technical foundations for 2 NRs:Kon Ka Kinh & Kon Ja Rang	Participating manpower is large and experienced.		Set up NRs		
Inform and encourage villagers to participate in forest management and protection activities.	- MB of Kon Ka Kinh NCP -Sub-Dept. FP	-DPC -FP station -District Dept. of culture and information	3-5 propagation campaigns conducted annually in buffer communes of 2 NRs: Kon Ka Kinh & Kon Ja R'ng	Participating org./units are enthusiastic and responsible	Not spacious, especially in distant communes.		Universalize conservation information with every villager in NR	
Go on a patrol, track down forest violators, protect forests	-MB of Kon Ka Kinh NCP -DPC	-Policemen -People office of Supervision and control -Army -Commune militiamen	Conduct enforcement campaigns every year, willing to support when needed	Strong force, high fighting capacity	Lack of funds for activities	Conduct large enforcement campaigns with participation with many stakeholders	Collaborate to prevent illegal actions at grassroots level	
Exchange information on conservation	-Sub-Dept. FP	-MB of Kon Ka Kinh NCP -Gia lai DARD	New species haven't been discovered	There is information collection network from province to grassroots' level	Staff specialized in conservation are lacking	Improve organization systems of NRs		
Community development	-DPCs	MB of NCPs, Dept. subsectors	Number of poor households reduces every year	It is a government policy,	In some areas, investment is not suitable to villager's aspiration, low investment efficiency	Cooperate in community development, assist villagers to increase income, and get benefits from forest	Some traditional customs are backward	

3. ASSESSMENT OF PARTICIPATION LEVELS OF LOCAL COMMUNITY TO CONSERVATION ACTIVITIES AND THEIR EFFICIENCY

3.1 Socio-economic situation of local community in Nature Reserve s Kon Ka Kinh and Kon Ja Rang:

3.1.1 Population and ethnic groups in study sites (Kon Ka Kinh and Kon Ja Rang)

The Special use forest system of Gia Lai province is established on the basis of forests, which are located in remote areas of rocky geography, and are little affected by human action. This is where ethnic minorities live a difficult life in every extent underdeveloped. In study sites (KonKaKinh and KonJaRang Nature Reserves) there are different ethnic groups living, totally 6069 households equivalent to 30,791 people. The majority of local population is Ba Na (accounting for 68.2 %) who mostly live in villages near and bordering the forests. The swidden cultivation and settlement makes them always poor. The

Kinh Peoples make up only 30,7% - mainly workers and their children from 4 SFF (Dak Roong, Krongpa, Tram Lap, Ha nung) and in Ayun Commune is 43% , Ha Ra Commune is 48% (Mang Yang District) in the area. Besides, there are other ethnic groups such as Tay, Nung, Tho, Mung, Day (only accounting for 1,1%) who are immigrant and free immigrant from North and Central areas living in the conservation areas.

Of 6 communes studied Kroong, Dak Roong, Son Lang (Kbang district), Ha Ra, Ayun (Mang Yang district) and Ha Dong (Dak Doa district), there are 4 special communes: Kroong, Dak Roong, Son Lang, Ha Dong, De Ktuk (Ayun commune), Cho Rong II (Ha Ra commune) belonging to Area III who are given preferred priority by the Gov. as specially difficult cases (Table 7).

During the fieldwork, the research team discovered that there are people living in the core area of KonKaKinh and did an additional study (Table 8).

Table 7. Residents living in Kon Ka Kinh & Kon Ja Rang natural conservation zones
(Upto 12/2000)

Natural conservation zone	Commune	Total number of households	Total number of people	Labour	Hunger and poverty rate (%)	The Ba Na people		
						Household	Head	%
Kon Ka Kinh	Kon Pne	213	1048	639	86,38	213	1048	100
	Dak Roong	572	2789	1716	81,19	521	2459	88,1
	Kroong	846	4023	2478	73,37	781	3614	89,0
	Lo ku	458	2378	1236	77,82	369	1917	80,6
	Ha Dong	446	2617	1804	76,87	446	2617	100
	Ayun	1.537	7430	5943	24,98	797	4229	56,9
	Ha ra	1.328	7237	5843	25,50	698	3704	51,1
KonJaRang	Son lang	669	3269	2185	14,06	284	1374	42,0
Total	08 communes	6.069	30.791	21.844		4.109	20.962	Mean = 68,2%

Table 8. Residents living in Kon Ka Kinh.

Sites	Household	Persons	Ethnic group	Poverty rate (%)	Cultivation type
BNghanh village/ KRoong commune	63	270	Ba Na	100	Shifting cultivation, semi-shifting settlement
New village separated from Ha Dung I/ Dak Roong commune	07	31	Ba Na	100	Shifting cultivation, semi-shifting settlement
Total:	70	301		100	

The majority of local people in research sites (including core and buffer zones) are all Ba Na people. Due to living near the forest, they are more or less isolated in terms of residential area and exchange with neighbouring ethnic groups. It is very difficult for them to access information so their understanding about conservation is very limited. Therefore when the team

conducted PRA interview on understanding about conservation, most of local people didn't understand anything about conservation. Some of them did but they are communal leaders and local people living near the commune's center where there is a high rate of Kinh people living.

Table 9. Results of understanding about conservation of local people in KonKaKinh and KonJaRang Nature Reserves.

Interviewee	Total number interviewed	Know about:				Total number of answers
		Establishment of the Management Board	Tasks of the Management Board	Activities of Nature reserves	Don't know about nature reserves	
Local authority, hamlet head, village Leader, and farmer household in 6 surveyed communes.	209	143	72	112	66	393
Workers and staff living near SFF (in 4 surveyed SFFs)	96	96	80	67	-	243
Total	305	239	152	179	66	582

Note:

- In communes: Son Lang, Kroong (Kbang district) and Ha Ra, Ayun (Mang Yang district), local people, authority, village Leader, hamlet's Head are aware of the establishment, some management tasks and operation of the nature reserves.
- Some communes Ha Dong (Dak Doa district) and Dak Roong (KBang district) have no awareness of conservation, only some staff and village Leader and hamlet's Heads have preliminary understanding and only heard about the nature reserve's establishment and operation from district information.
- SFF: Ha Nung, Tram Lap, KRong Pa vư Dak Roong. Their staff are aware of the nature reserve's establishment, activities and operation.

3.1.2. Social conditions

- Study sites (KonKaKinh and KonJaRang natural zones) belonging to 3 districts: Kbang, MangYang and Dak Doa including 8 communes and 7 SFFs of which there are 5 communes and 4 SFFs in Kbang; 2 communes and 2 SFFs in Mang Yang; 1 commune and 1 SFF in Dak Doa district. All of them are organized and operate in accordance with the Gov. institution and laws.

- For Ba Na minority, co-existing with the authority is village leader council, which has a power over the community in terms of custom and practice. This is a typical aspect which is needed to be paid special attention to otherwise the authority's action plans will not be effective.

- **Education:**

- According to the fieldwork data collected in 6 communes and 4 SFFs, the education and literacy level is shown in Table 10.

Table 10. Survey on education in buffer zones of KonKaKinh and KonJaRang Nature Reserves.

Commune	Primary education			Lower secondary school		
	No. of schools	No. of teachers	No. of pupils	No. of schools	No. of teachers	No. of pupils
Dak roong	01	21	246	-	-	-
Kroong	01	23	340	-	-	-
Son lang	01	26	508	01	06	125
Ayun	02	38	1302	01	13	296
Ha ra	02	36	1173	01	14	333
Ha Dong	01	20	685	01	02	15

- At the study sites, among the Ba Na primary pupils from 8 – 17 years old, up to 90% of them are illiterate or in Grade 1, not good at reading and writing.

- The condition of classrooms has many changes but there aren't enough pupils. There is a shortage of teachers in terms of quantity and quality, and there seems to be nearly no teaching equipment. Teachers' living standard is too poor – especially lacking local teachers. At the moment teachers are from other places so it takes time for them

to adapt to the local conditions. Therefore, the understanding and engagement between teachers and pupils is also very limited. On the other hand, pupils are mainly from remote areas and at the working age to help their family in production so they don't attend class fully, often stop schooling, so it is very difficult for universal education. Therefore the awareness about natural resource conservation by local People is still low.

Table 11. Survey on education in study sites.

Commune	Total no. of households surveyed	No. of literate persons (*)	Percentage	No. of illiterate persons (*)	Percentage
KRoong	15	39	35,07	70	64,3
DakRoong	16	29	29,5	69	70,5
Son Lang	15	35	43,7	45	56,3
Ayun	15	44	53,6	38	46,4
Ha Ra	15	63	63,6	36	36,4
Ha Dong	20	51	36,6	88	63,4

(*) People being regarded as the literate mean that they passed 1,2,3 and higher grades.

- **Health**

Each district has a health center. Due to remote villages, hamlets in KonKaKinh and KonJaRang nature reserves with bad roads, the treatment, vaccine injection, and disease prevention services are very limited for Ba Na People. Villages/hamlets are very far from communal health stations so it is very difficult for them to access health services. Moreover, the small team of health workers (1 health station per each commune with some health staff, most of them are nurses and junior doctors), lack funds, medicine and facilities so they only give first-aid to villagers. Local People still maintain disease treatment by worshipping a Giang (Saint). The common diseases here are cholera, plague, malaria.

- **Transport**

KonKaKinh and KonJaRang Nature Reserves are located in 3 districts Kbang, Mang Yang, Dak Doa – All 3 of them are connected to the centre of districts by asphalted road, some roads from districts to communes are improved and asphalted (Ayun, Ha Ra communes), the rest are bad roads – difficult for transporting in rainy seasons. The inter-commune, hamlet, roads are mainly soil roads so vehicles with engines can only run in the dry season, but totally not in the rainy season and residential areas are not concentrated. Poor roads, limited communication has negatively influenced the marketing of products produced by local farmers.

- **Markets**

Although each district has a market, Ba Na People rarely go shopping in far markets (only few times/year) to procure valuable things such as working tools, bicycles. They buy humanitarian things such as fish sauce, salt, MSG, clothes and tobacco, etc. from Kinh people buying by cash or by kind (agro-forestry products). It is because traditionally, Ba Na People have been engaged with hilly shifting cultivation and shifting habitation and harvest forest products in the forest to ensure subsistence at local level. These are green bean, sa nhan, bamboo sprout, medang bark, honey, etc., cattle, buffalo but these cases are very rare and only if local People live nearer the commune's center.

In the recent years, the agricultural forestry extension activities in the study sites (KonKaKinh and KonJaRang Nature Reserves) have been paid attention to and all the SFFs in their area implement the Program 327, and then 661 with a main focus on restoration-oriented protection, contracts for forest management and protection and support local people to develop garden based economies and raise livestock by taking out loans. Of these, most importantly, the contract of forest management and protection has added considerable contribution to increase income, stabilize lives of people living near forest, minimize the forest burning and clearing. As a result the forest has been protected effectively.

However, scientific technology transfer and guidance haven't met practical requirements (agricultural extension, veterinary, plant protection programs ... haven't reached villages/hamlets where swidden cultivation and settlement occur). Local people still face difficulty in approaches and changing methods of cultivation from hilly extensive agriculture into stable intensive cultivation. Credit service hasn't been effective. Many households don't dare to borrow loans supporting the poor because they don't know how to ensure paying loans and interest. The fixed cultivation and decentralization are still an unsolved problem for local Ba Na people who practice extensive agriculture.

3.2. Economic characteristics and cultivation mode influencing the natural resource nature reserves.

Along with the common features of ethnic groups in the highland area, Ba Na people's economy depends mainly on hilly cultivation, shifting cultivation and habitation, harvesting forest products using simple tools, so they mostly slash, burn and thin forests without technical care. They don't put fertilizer into the soil but totally depend on the fertility of soil saying that rainy or sunny weather is given by God. In the past, there were still large areas of forest; low density of residents, abundant forest products so the forest seemed secure. However today when the population has increased too much and the forest area is reduced, this cultivation approach is no longer appropriate. There should be improvement on new land use technology, which ensures long-term sustainability, especially for those living in the core of KonKaKinh Nature Reserve, who rely nearly totally on forest. According to the survey by the research team, if the weather is bad resulting in failed rice crop, they live on bamboo shoots and different vegetables harvested in the forest.

Therefore, Ba Na people living in KonKaKinh and KonJaRang mostly depend on the forest.

3.3. Benefits from forest for community life.

Life of local community people (both core and buffer) in 2 Nature Reserves KonKaKinh and KonJaRang directly use forest products where they live, including :

- Construction log, alany (straw) grasses; small bamboo shoots;
- Fire wood and non-forest products can be used to exchange for goods such as : Sa nhan, rattan, wild cane .
- Products for survival: alany (straw) grasses; small bamboo shoots, different kind of vegetables, honey, wild animal meat...
- Cultivate more forestland, do agro-forestry cultivation, increase species of cereals (cassava, corn, bean...) for subsistence food.

As well, the payment from forest management and protection contracts has helped to increase income of local community living near the forest. In addition to the above-mentioned material benefits, the forests also bring social and environmental benefits that local people have never or are only primarily aware of. They know that if the forest is all cut, there will be no field, no 2 crops, soil will become drier and drought and floods will come. Thus forests play an important role in communities living near and bordering forest.

However, Ba Na people think that benefits from forest they enjoy, are "obvious", like a fortune inherited from their ancestors" so their sense of responsibility for forest protection and conservation is very low. Survey results on using forest products of local communities are showed in Table 12.

Table 12. Demand for using forest products of local communities in buffer areas of Kon Ka Kinh & Kon Ja Rang Nature Reserves.

No	Types of products	Harvest period (solar calendar)	Areas		Average number (household/yr)	Objective		Quantity	
			Core	Buffer		Sale	Use	Before	Now
1	Wooden tree	12-5	+	++	7-10 M3		++	+++	+++
2	Bamboos	3- 6	+	++	100-200 plant		++	+++	+++
3	Broom grass	12-3		++	200-300 bunch	+++		+++	+++
4	Bamboo sprout	7-9	+	+++	500-700 kg	++	+	+++	+++
5	Honey	4-7	+	+	2-4 litter	+		++	+
6	Boi loi bark	Whole yr.		+	20-25 kg	+		++	-
7	Wild animal	Whole yr.	+	+	2-3 head	+	++	+++	++
8	Rattan	11-4	+	+	100-200 piece	++	+	+++	+
9	Canarium fruit	8-9	+	++	400-600 kg	+++		+++	++
10	Sa nhan nut	6-8	++	++	10-15kg	+		++	+

Note :

* Many : +++
* Average : ++

* Few/little : +
* Rare : -

3.4. Role of customary laws in forest management-protection and conservation.

The Ba Na ethnic minority is matriarchal, all the family's property is controlled by the women (wife). Men on behalf of women do the social contacts with community but all decisions are made only when the wife's ideas are added. Surveying the labor allocation in a family, we realize that women make the decisions for all of the important things such as: direction-oriented work (choosing field); income-generating activities for the family (sub-forest products harvesting), housework (fire-wood collecting). In the Ba Na community, fire - wood is regarded as one material property along with gongs and wine jars as a measure of prosperity and formality of a family. In Ba Na traditional villages, there are many generations living in the same house until the cultivated land area of the extended family no longer fits the labor force, when they will separate into small families. Therefore, the hilly field continues to be expanded, population increases. The larger the field is, the more forest is lost.

For local Ba Na ethnic people, along with local authority is Village Leader (old, experienced man highly respected and nominated by villagers) and the Village leader council is a powerful organization for the community in terms of custom. Under such organization, all of the activities within the village are managed under a self-monitoring mechanism, which is very democratic but also very effective through customary laws approved and strictly followed by community's members/villagers. This is a feature, the forest management and protection needed to pay special attention to, otherwise conservation programs will not be effective.

The hilly cultivation, swidden cultivation and settlement, customs of local people have long been closely linked with forest. They live from forests bearing in mind that land and forest presently is common property as regulated in customary laws. Therefore, land allocation and land use certificates are strange for local community because right of ownership of Ja Rai and Ba Na people depend on matrilineal basis in which the landowner is always women. Land use rights are left for children who are daughters from generation to generation. Forest and forestland including cultivated

land and fallow land are under the ownership of each line and of each village. This right of ownership is not defined but recognized by local individuals and communities. Therefore, most of the land in each village, recognized by law or not, all have their owners recognized by customary law. (Tran Van Con - Report on community forest management research in Dak Tover Commune, Chupah District, Gia Lai Province).

3.5. Significance and levels of community participation in conservation activities.

The community participation in the conservation activities play an importance role, is one of the deciding factors for success or failure of the conservation activity. Since villagers living in the nature reserve mostly rely on forests. Every activity relates to forests and while the forest is managed by the Government, public ownership exists and it is owned "by nobody". Therefore, exploring forest resources for personal purpose has always occurred. This management mode is not suitable for encouraging villager's participation, so, the commitment for not

logging forest is only a situational method. Therefore, levels of community participation are still limited and face some difficulties and challenges (Table 13).

The trend for forest resource management based on community participation is a key for success. Villagers should be involved in the planning process to implement activities in nature reserves. Villagers should have income generated from conservation activities, other benefits should be shared within their community. By doing so, the community would participate in conservation activities.

*** General comment and assessment:**

Highland ethnic groups in general and Ba Na group in particular all practice shifting cultivation and habitation, forest-based slash and burn cultivation. Their material and spiritual life impose many limitations. Therefore the conservation activities here are not attractive enough to draw their interest in forest management-protection and conservation so the local community's participation in conservation has many constraints and its effectiveness is not high.

Table 13. Assessment of local people's participation in conservation.

Item	Result	SWOT			
		Strengths	Weaknesses	Opportunities	Threats
Joint forest management and protection contract	481 households in buffer zones assigned contracts of 13.500 ha forest from SFF: Tram Lap, Dak Roong, Kroong, Ha Ra .	Desire to be assigned with forest management and protection contract	The assignees haven't ware of requirements and tasks they have to handle	Use local labor force for forest protection	Contracted areas do not meet villager's needs.
Cooperate in information exchange	-	Good understanding about forest.	Lack scientific information	Survey to discover species	Lack of real participation of villagers, and benefit shared by community is not paid proper attention.
Join forest protection team/force, discover and identify criminals.	The commune's militia, police and forest protection (under the requirements of forest protection Sub-Dept).	Strong forces with thorough understanding of forest	Some defense of forest hijackers rarely declare where criminals are hiding, afraid of revenge.	Use the in-service forces of forest protection forces	Lack of social network in conservation activity-an important potential supporting sustainable management of conservation parks has fallen into oblivion.

4. ASSESSMENT OF BUDGET FOR CONSERVATION ACTIVITIES

Annual budget for conservation mentioned in part 6.1.1.2 of this report.

(Result of investment in Kon Ka Kinh since its establishment to 9/2001- see table 14.a, next page).

Up to 1/ 2001, the provincial people's Committee (PPC) issued Decision No. 03/ 2001/ QD - UB " socio-economic targets for 2001 " for KonKaKinh's management board. However in the previous years, budget was allocated to authorized agencies such as Forest Protection Sub-Dept., Fixed cultivation and settlement Dept... to ensure the organizational mechanism, strengthening the activities of forest management and protection, support to improve the sense of responsibility of communities for forest conservation.

(Result of survey on provincial budget spending for socio-economic development and forest protection activities in buffer communes 2KBT over 3 years 1999- 2001- see annex 14. b, next page).

Different investment fund resources have a very important significance for conservation. Thanks to that people's living standard is more and more stable and improved in all aspects, especially for ethnic people living near and bordering

forest, help to reduce pressure on nature reserves.

All of the efforts by Gov. and other local and foreign organizations have made the custom of shifting cultivation and habitation, subsistence to be changed into exchanging goods, replacing plant types, knowing how to raise paddy rice field because they have water system or they can plant coffee, fruit trees, and other food crops such as cross-breed/hybrid corn, bean, cassava... Besides, they are assigned with forest management and protection contracts from SFF, supported with loans for agricultural production and livestock production.

In the future, nature reserves will attract domestic and international investment dealing with biodiversity, abundant natural resources and global environmental protection. These investments may be good if managed carefully and if they avoid conflicts with conservation objectives.

However, programs and projects have been approved by too many levels, third administrative units so funds have not been used very effectively, sometimes not close to local people's requirements and customs, not attracting the labour force from among local people at those sites. This is the issue that needs to be noted in the implementation of later conservation activities.

Table 14a. Investment results in Kon Ka Kinh since its establishment date up to now (9/2001)

Year	Activities	Investment fund (mill. dong)	Implementation	SWOT			
				Strengths	Weaknesses	Opportunities	Challenges
2000	Build temporary offices	100	Completed and be taken into operation	Being interested and supported by local authority.	<ul style="list-style-type: none"> - Gov.'s investment fund for the conservation zone is still limited; the progress is not as far as project's expectation. - Local fund for conservation is very poor - duplicated procedure of fund withdrawal affects the progress. - Investment fund is cut to be lower than the approved fund. 	NGOs have desire to invest in Gia Lai conservation zones	Ensure enough funds for the operation of conservation zones.
	Build a permanent office for the management board	500	Procedure being finalized				
2001	Build support works and stations	427	Being implemented under plans				
	Conduct conferences on bordering + milestone + and regulations	80	On going				
	Electricity capacity of 0,4 Kv	100	Being taken into operation				
	Transportation means: Uwat car, motobike	78	Being taken into operation				
	Office equipment + telephone installation	65	Being taken into operation				
	Establish flora gardens	250	Sites been investigated and being initiated to be carried out				
	Total	1.500					

Table 14.b. Inventory results on spending fund allocated from provincial budget for economic development and forest protection in communes of 2 buffer zones of Kon ka Kinh & Kon Ja rang conservation zones (from 3/1999 to 2001).

Investment item	Investment amount (mill. dong)						Total	Note
	Ha ra	Ayun	Ha dong	Kroong	Dak roong	Son lang		
Fixed cultivation and settlement	-	-	300	60	60	900	1.320	
Stabilizing free immigrants	-	-	-	-	-	1.100	1.100	
Invest in specially disadvantaged communes	-	-	-	200	-	-	200	
Hunger elimination and poverty alleviation	-	-	-	500	532	-	1.032	
Support ethnic minorities	-	-	-	10	10	-	20	
Program 135:	2557	-	1410	910	600	1270	6.687	
- Transport road, utilities	557	-	1320	670	560	150	3.197	
- Irrigation/water resource	2000	-	90	-	-	132	2.222	
- Communal market	-	-	-	-	-	221,5	221,5	
- Support with coffee tending	-	-	-	-	-	325,5	325,5	
- Assist building houses for local people	-	-	-	240	40	98	343	
- Build village schools	-	-	-	-	-	-	378	
5 million hectare Forest replantation program:	3.422,2	2528,5	-	365,6	314,7	746	7.377	Investment for State forest farms (SFF)
- Forest management and protection	535,4	448,6	-	-	314,7	736	2.034,7	
- Plant protection forests	2.023,4	1.403,9	-	365,6	-	-	3.792,9	
- Restoration-oriented protection	336	252	-	-	-	-	588	
- Build up fire-protection headrows	205	150	-	-	-	-	355	
- Management fee	322,4	274	-	-	-	10	606,4	
Total	5.979,2	2.528,5	1.710	2.045,6	1.456,7	4.016	17.736	

5. ASSESSMENT OF THE SUPPORT BY LEGAL ACTIVITIES

The administration structures in 3 districts of study sites are well organized in line with the Gov.'s constitution and laws of the Socialist Republic of Vietnam. The Gov.'s legal document on conservation are implemented by district authority, social and politic organizations such as: Women's union, Youth union, Veteran's union, Farmer's union... and organizations operating in the area such as : State Agriculture – Forestry Farms, stations, so the guidance is carefully introduced to local communities through educational avocation/communication such as :

- Establish forest protection regulations.
- Organize information campaign on forest management and protection and conservation for villages, hamlets.
- Organize signing ceremony to commit to strictly follow forest protection and safety against forest fire.
- Mass media (radio, newspaper).
- Pictures, panel...

(See Table 15: Statistic of educational information in forest management and protection in buffer zones of Kon Ka Kinh & Kon Ja Rang).

In that way, local people begin to understand laws on conservation and legal lobby is more and more improved, gradually weakening local customary laws' impact. They are aware that forest destruction for hilly cultivation is wrong, illegal and in time they inform the local

authority and Forest Protection Sub-Dept. about illegal actions on forestry.

If anyone slashes forest for agricultural cultivation or removing logs by themselves, he/she will be criticized before the public and if this action is repeated, the communal authority will document the situation and send it to concerned bodies for trial. By this approach, Ayun Commune have educated and guided many villagers in the past. *(Mr. Phuoc – Vice-chairman of Ayun CPC).*

*** General comment:**

In the past, local authorities, concerned agencies and mass organizations have made a lot of effort to help local people have an early sense of responsibility for conservation. Legal activities combined with customary laws of local people living near and bordering forest have created integrated strength, strongly supporting conservation activity at the locality.

However, due to too low education level of the local people living near and bordering forest, living in remote areas where cultural light hasn't reached, their understanding and use of legal documents are still very limited. On the other hand, the linkage between the Gov. legal system and local customary laws hasn't been applied uniformly; the coordination is not good so the actual effectiveness of legal documents is not high yet. As this is a sensitive issue, it should be carefully considered for proper integration, which will bring about necessary effectiveness of the legal support for conservation and forest management and protection.

Table 15. Statistic of educational communication activities on forest management and protection in buffer zones of Kon Ka Kinh & Kon Ja Rang

Year of implementation	Forms of operation	Sites (commune)	Number of participants	SWOT			
				Strengths	Weaknesses	Opportunities	Challenges
1999	Conferences informing about forest management and protection.	-Son lang : -Dak Roong: -Kroong : -Ha Dong :	120 80 96 150	Be a leading task of Forest protection force, directedly instructed by Sub-department of forest protection's leaders. Local people participate enthusiastically with good sense of responsibility.	Low education, very few people can understand Kinh language Large distribution area.	Improve the sense of responsibility of local people	Socialize the education, Improve the sense of responsibility of local people They understand and participate in conservation.
2000	Conferences informing about forest management and protection, mobile introductions in villages and communes.	-Kroong; -Dak roong; -Ha Dong: -Ayun	60 104 92 102				
2001	Conferences informing about forest management and protection, mobile introductions in villages and communes.	-Son lang : -Dak Roong: -Kroong : -Ha Dong : -Ayun : -Ha ra :	80 68 60 43 30 40				
Total			1.124				

Table 16. Statistics of illegal cases from 1999 to 6/ 2001 in Khang, Mang Yang, Dak Doa districts.

Year	Areas	Total illegal cases	Violators					Types of violations					Forms of punishment		
			Local people	Without permanent residential registration	People coming from other places	State org., agencies	Illegal forest exploitation	Illegal transportation and trade of forest products	Illegal hunting of wild animals	Forest destruction for cropping	Others	Trial	Administrative fine	Others	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1999	Kbang	401	21	60	320	-	9	103	-	289	-	08	08	271	122
	Mang yang (cò)	117	100	-	17	-	22	84	-	10	01	03	57	57	
2000	Kbang	376	25	125	226	-	37	148	01	182	08	12	334	30	
	Mang yang	29	29	-	-	-	04	24	01	-	-	-	29	-	
	S'k @oa	132	120	-	12	-	47	85	-	-	-	02	70	60	
2001	Kbang	107	10	22	75	-	10	35	-	62	-	04	91	12	
	Mang yang	103	31	-	72	-	27	72	-	-	04	-	103	-	
	S'k @oa	66	62	-	04	-	23	42	-	-	01	-	39	27	
Total		1331	398	207	726	-	179	593	02	543	14	29	994	308	

6. ASSESSMENT OF BREAKING FORESTRY LAW VIOLATIONS AT THE LOCALITY (ORIGINATED FROM SPECIAL USE FOREST)

6.1 Forestry law violations

During recent years, the sites allocated for SFFs and units operating in the locality (as managed by owners) are all exploited according to annual target plan and other forest related business... The illegal exploitation of forest, special forest products and wild animals especially degraded the forest.

At the moment, forest natural resources of KonKaKinh and KonJaRang are still abundant with the concentration of valuable and rare woods such as Pomou, Hoang dan, Solokeling, Huong...and other special forest products and animals. The Management Board of KonKaKinh has been established since 1999, and that of KonJaRang hasn't. Previously these two zones used to be temporarily called "without owners" so they were managed by local forest police and a local authority (communal authority). The local forest police and communal authority included too small a number of people who were weak in expertise and managerial capacity. Therefore, no matter how hard they tried, they couldn't manage the forest. As a result, wood and forest product exploitation had been happening a lot (Table 16).

i. Causes.

The research team studied the main reasons causing forestry illegal actions at the localities:

- Due to too low educational level of local people living near and bordering forest with no access to information, they always live in a poverty circle and need support. Therefore the illegal exploiters and traders of forest special products have made use of this weakness in

order to acquire their friendship and they happen to become these lawbreakers' employees.

- Free immigration has increased the population and put pressure on nature reserves.
- The custom of swidden cultivation and settlement, forest slashing for hilly rice fields of local people living near the forest – with a traditional habit of subsistence also result in forests being invaded and hilly field expanded to ensure living needs.
- In KonKaKinh, there are varieties of woods of high economic value in markets, attractive for forest exploiters.
- Communes haven't fulfilled their responsibilities in terms of forest management and protection as stipulated in the Decision No. 245/1998/ TTg by the Prime Minister.

ii. Protective and preventive measures applied.

Under the direction of the PPC during recent years, local authorities and local forest police collaborating with relevant agencies have taken many protective and preventive measures such as:

- Conduct information dissemination/ session to educate local people living near and bordering forest so that they will understand the benefits and importance of forest as well as harm caused by forest destruction... in order to increase the sense of responsibility for forest protection of local people.
- Initiate movements on forest protection among the public by preparing regulations (by commune's members), signing agreements on forest protection and forest fire security...
- Collaborate with authorized sectors to deal with pressing forest destruction

sites and illegal special forest products exploitation.

- Regularly patrol, monitor and reinforce forest police for the sites in time and rationally prevent forest destruction.
- Through programs and projects of fixed cultivation and habitation and hunger elimination and poverty alleviation..., local people's life has started to stabilize and the forest is being protected.

- **General comment and assessment.**

During the past years, although the breaking of forest laws breaking in the localities was very complicated (originated from Special use forest), local authority and local forest police took effective measures and started to prevent and gradually get rid of forest destruction and illegal forest special products trading. In Kon Ka Kinh Nature Reserve the establishment of the Management Board, the forest protection

activity has not been implemented well, timely and effectively preventing forest law breaking. However, in reality the decentralization of forest protection was unclear. There was poor managerial capacity with small number of staff, and insufficient equipment, so the efficiency of forest management and protection is limited.

The material and spiritual life of local people living near the nature reserves is low. They are poor and hungry so it relatively influences forest conservation, management and protection.

Forest management, protection and conservation require determination and responsibility of the whole society. However, settlement of all the remaining problems, it seems to be a forestry sector task. Therefore violation of forestry laws in localities has not been completely controlled.

VI. RECOMMENDATIONS ON MANAGEMENT MEASURES FOR NATURE RESERVES IN GIA LAI

Through the results analysis and practical problems of conservation facing the forestry sector, the research team has collected management solutions and development orientations for local nature reserves till the year 2010.

1. DEVELOPING AND SYSTEMIZING SPECIAL-USE FORESTS IN THE PROVINCE

1.1 The basis of Special-use forests planning.

The Gov. and MARD's objective is to protect the biodiversity resource and important eco-systems with many of the rare and valuable plant and animals of Vietnam and the world, which are at risk of being threatened and killed all over the world. (Plan of biodiversity protection and target of 2 mil ha Special-use Forest of the government).

Socio-economic development strategic project; Agro forestry development protection; land use protection project of the province for the period of 2001-2010.

Characteristics of current situation and forest ecosystems located all over the province to select sites for survey with an aim to identify range of conservation types.

Criteria regulated by the Gov. on establishing Special-use forests (Decision No. 08/ 2001/ Q§- TTg dated 11/ 01/ 2001 by the Prime Minister).

Survey results in selected forest areas to be compared with the criteria regulated by the Gov. on establishing Special-use forests.

Apart from above-mentioned documents, in order to identify suitable nature reserves, the other factors such as topography, climate, soil, population, diversity of forest eco-system for each region as well as cultural, social and environmental needs are also important.

1.2. Project, establish and develop Special-use forest system of Gia Lai in the coming time

Based on the objective of establishing and protecting the existing biodiversity resource including important eco-systems with many of the rare and valuable plants and animals of Vietnam and the world, which are at risk of being threatened and killed all over the world, we recommend to protect, establish and develop the Special-use forest system of Gia Lai with 5 natural conservation parks, of which 2 parks are included into the list, and the other three are being proposed to be in the list of special use forests in Vietnam.

KonKaKinh: Covers an area of 40,710.7 ha (of which 33,227.5 ha is forest, and 7,643.2 ha without forest), located in the bordering area between East and West of Annamite mountain range, in the North East of Gia Lai; belonging to the administrative area of 3 districts: Kbang, Mang Yang and Dak Doa.

The objective of conservation is to protect the closed forest's eco-systems which are moist evergreen with tropical humidity on highland Kon Ha Nung, where importantly there is 2,000 ha of mixed broad leafed and coniferous forests (this type of forest is only seen in KonKaKinh in the Vietnam Special-use Forest system). In this place, there are 873 different species of animals and plants including 34 species of plants and

29 species of animals recorded in the Red Book of Vietnam and the world.

KonKaKinh has been recognized as a special use forest since 1986. The investment project for the nature reserve has been appraised by MARD and approved by the PPC. PPC established a MB of the NR in 1999.

KonJaRang: Covers an area of 15,900 ha (of which 15,600 ha is natural forest accounting for 98% of total area, located in the North East of Gia Lai bordering Kon Tum, Quang Ngai and Binh Dinh, belonging to the administrative area of Kbang district.

The objective of conservation is to protect the close forest's ecosystems, which is moist evergreen with tropical humidity on low mountains. There are variety of animals in the zone, especially different kinds of rare and valuable birds, animals being threatened globally such as web-footed species (*Helio pais persovata*), Grey-shanked Douc's langur (*Pygathik nemaesus cinereus*), Giant muntjac (*Megamuntiacus vuquagensis...*). In this place, there are 938 different species of animals and plants including 98 species recorded in the Red Book of Vietnam and the world.

KonJaRang has been recognized as a Special-use Forest since 1986. The investment project for the nature reserve has been appraised by MARD and approved by the PPC. However, a management board hasn't been established.

Chuprong: Covers an area of 46,925 ha (tentatively projected) of which 42,486 ha is forest and 4,457 ha is without forest, located in the South West of Gia Lai bordering Cambodia, Dac Lak, belonging to the administrative area of Chuprong. The objective of conservation is to protect dry open forest of Dipterocarps, Semi-

deciduous, evergreen forests in the climate of West Truong Son, especially big water birds and large animals being threatened globally such as pheasant Hong tia (*Lophera diardi*), Peacock (*Pavo muticus*), Red dog (*Cuon alpinus*), Sambar deer Ca tong (*Cervus eldii*).... In this place, there are more than 661 different species of animals and plants including 24 species recorded in the Red Book of Vietnam and the world.

The FIPI and Birdlife International surveyed this Special-use Forest's biodiversity and evaluated the threatened level for nature. Gia Lai PPC is proposing with the Government to add it to the list of Vietnam's Special-use Forests for development by the year 2010.

AyunPa: Covers a total area of 44,268 ha (tentatively projected) of which 40,138 ha is forest and 4,148 ha is without forest, located in the South East of Gia Lai bordering Phu Yen, Binh Dinh, belonging to the administrative area of AyunPa and KrongPa districts.

- Conservation objective is to protect biodiversity of the dry open forest of Dipterocarps, belonging to the climate of Central coastal area and rare, valuable animals especially birds, animals being threatened all over the world such as : pig-tailed monkey (*Macaca nemastina*), Grey-shanked Douc's langur (*Pygathix nemaesus subsp*), pheasant Hong tia (*Lophera diardi*), Peacock *Pavo muticus*), Brown pigeon (*Calumbapinucea*).... In this place, there are more than 569 different species of animals and plants including 28 species recorded in the Red Book of Vietnam and the world.
- The FIPI and Birdlife International have surveyed this special use forest's biodiversity and evaluated the threatened level for nature. Gia Lai PPC is proposing with the Gov. to add it into the list of Vietnam's Special-use

Forests for development by the year 2010.

North Pleiku: Covers a total area of 12,941 ha of which 6,019.5 ha is forest and 6,921.5 ha is without forest, located in the North of Pleiku, belonging to the administrative area of Chupah.

Conservation objective is to protect forest biodiversity and rare, valuable animals and plants, and the environment, to establish green belt in the North of Pleiku town. In this place, there are more than 240 different species of animals and plants including 14 rare, valuable, highly scientifically and valuable for conservation.

Gia Lai forest police in collaboration with the Central South and Highland sub- FIFI surveyed the North Pleiku nature reserve and submitted their proposed special use forest proposal to Gia Lai PPC.

According to the above-mentioned proposal, if five nature reserves are approved, the special use forest system of the province will cover an area of 160,744.7 ha, accounting for 9.8% of total natural area of the province. This proportion satisfies the IUCN's recommendation for percentage of special use forest and is suitable for forest resource biodiversity conservation in Gia Lai Province.

2. DECENTRALIZATION OF MANAGEMENT RESPONSIBILITIES FOR THE PROVINCE'S NATURE RESERVES

At the moment, the decentralization of management responsibilities for the province's nature reserves is very uncoordinated. Some is managed by forest police, other managed by local authority. Therefore, it is necessary to reorganize the management system of nature reserves. Decentralization of management responsibilities for the province's nature

reserves should be agreed from central level to local level, specifically implemented in line with Decision No. 08/ 2001/ QD- TTg dated 11/ 01/ 2001 by the Prime Minister.

At central level

MARD manages the Special-use Forests system in the whole country (Point a, Item 1, Article 9, Decision no. 08/ 2001/ QD - TTg, dated 11/ 01/ 2001 by the Prime Minister)

Forest Protection Department guide and instruct local levels to manage and protect the system of special use forest in the whole country as regulated in Article 3, Item 4 Decree 39/ CP dated 18/ 05/ 1994 by the Gov.).

At provincial level

PPC manage all the special use forests in the locality through authorized agencies.

Sub-department of Forest Protection will be an advisory agency for PPC in terms of conservation, and also directly involved in management and guidance with expertise for local MBs.

DARD advise PPC in establishing and protecting the province's Special-use forest system and appraising investment projects for Special-use forests.

At local level

The MBs of nature reserves will be the lowest level agencies of the system as a part of the local level for "tidy" management with enough full-time staff (1.000 ha/ 1 full time staff) who are capable of implementing the necessary work on conservation.

3. IMPROVE THE ROLES AND RESPONSIBILITIES OF COMMUNITIES, AUTHORITIES, AND OTHER MASS ORGANIZATIONS IN CONSERVATION

Conservation management is an integrated work of the whole society, so local people's participation needs encouragement from the period of establishment, planning to implementation period. Changes are needed for reform in terms of land use projection, making maximum use of community factors of each ethnic group to carry out forest land and forest allocation, forest management and protection contracts. It is to strictly follow the policy "taking people as the root" (or in another word, it is participatory) in the conservation implementation. By doing that, the protection and development of nature reserves will be highly feasible.

New approach in nature reserves should be paid more attention. This is, establishment of network of nature reserves, formulate conservation mechanisms based on community needs and the benefit from conservation activities should be shared by the community.

Community benefit generated from conservation activities should be paid proper attention in order to create a force for strengthening community participation in conservation activities. To ensure activities made by the community relate to sustainability of nature reserves, the community, local authority and mass organization should join into a social network for forest management and utilization.

Bring the role of Village Leader, Hamlet Head into full play, as they are the people guiding households to follow village/hamlet regulations and forest protection, forest-fire security commitment between management boards and each household, group of households, extended family/line or hamlets...with a totally voluntary sense.

Local authority and concerned agencies will be the nucleus linking mass organizations and communities, creating a close combination between the Gov.'s policies and laws and local customary laws in order to generate an integrated strength for conservation activities.

For agencies, divisions, schools,..., first of all their heads still have to understand correctly about forest management and protection in general and conservation in particular to educate and advise their staff/members to participate and cooperate with the management boards to implement conservation.

4 IMPROVE AWARENESS, STABILIZE LIVES OF LOCAL COMMUNITIES LIVING IN AND SURROUNDING THE NATURAL RESOURCE CONSERVATION AREA

Promote education for the public, improve their educational level and plan to train local staff dealing with conservation activities. Get rid of backward custom and practice, create chances for people to access and get familiar with advanced production methods.

Strengthen managerial capacity for local community organizations through training, short/long - term as they will be a key force in conservation in the long-term.

Focus on fixed cultivation and settlement for local minority people whose production and living activities closely link with the forest nature reserve. Build up forest gardens, guide to develop household economy in the commodity- oriented business and help them with crop restructuring. Besides, local authority should issue special policies to support local people in difficult conditions through

support loans for hunger elimination and poverty alleviation, long term preferred loans for agro-forestry production, generating stable jobs, ensure food security, gradually reduce pressure on Nature Reserves.

Initiate projects on buffer zones development, highlight experience of advanced farmers who did good conservation, good forest cultivation and also produce proper favored policies. Often think about the in-service labor force training, especially for local minority people whose life has been linked with the forest for generations.

5. INVESTMENT CAPITAL

The fact shows that for effective conservation, problems in many fields must be solved such as economic-social-cultural-environmental. This is not simply the task of forest management and protection so it is necessary to mobilize funds such as:

- Funds from local budget.
- Combine with funds from programs 135, 661, Agro-forestry Extension, fixed cultivation and settlement and investment fund for buffer zones.
- For the central fund, MARD should deliver annual investment fund directly to nature reserves on the basis of the projects approved through the provincial budget. Only by doing that will the fund will be ensured to implement conservation. (Because

most of highland provinces face economic difficulties, funds are allocated from the limited provincial budget).

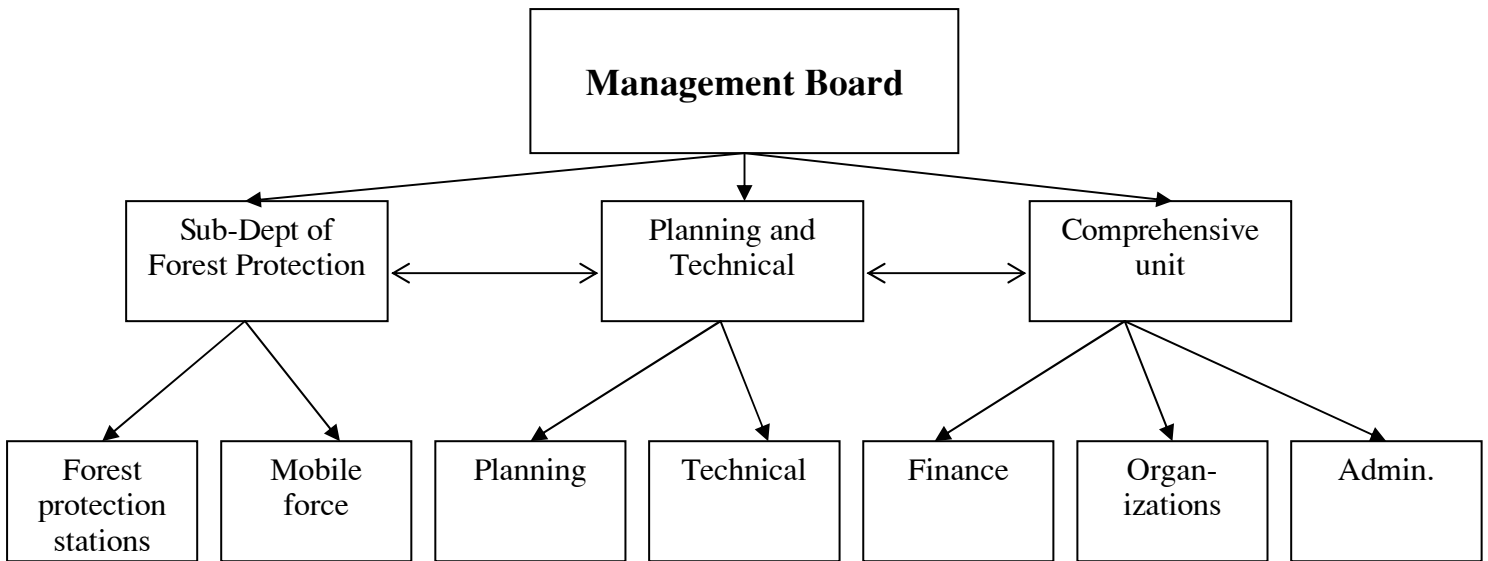
- For the funds supported by international donors, MARD should help provinces with necessary advisory activities to call international donors for investment support for conservation.

Apart from investment for nature reserves with approved projects and established MBs, it is necessary to support investment for projected areas approved by authorized agencies. First of all, there should be support for an operation fee for management boards, and their activities. By doing that, conservation objective of these forests will be achieved.

6. ORGANIZATIONAL IMPROVEMENT AND STRENGTHENING MANAGEMENT CAPACITY OF THE NATURE RESERVE'S MANAGEMENT BOARD

- The finalizing and strengthening capacity is one of the issues need to be noted to create favorable conditions for nature reserve's management boards with enough official full-time staff to set up a full management mechanism, and also to improve knowledge, expertise and sense of responsibility so that the management mechanism of nature reserves will be relevant to what tasks you are assigned under the following diagram:

Diagram of organization structure of the nature reserve



In terms of organization, special priority should be given to ethnic minority and local people to be admitted and employed, they are those who well understand the situation and natural geography. They fully understand customs and practice and live closely with local people. It is they who will be the link to unify MBs and local people.

Initiate MBs for nature reserves: KonJaRang, Chu Prong, Ayunpa and North Pleiku. In special case where a MB can't be established, PPC should authorize the Sub-department of Forest Protection – specifically the Forest Protection Station to directly advise local authorities (at district, commune level) in organization, management and protection in line with current laws.

7. ORGANIZATION AND IMPLEMENTATION OF MONITORING ACTIVITIES

PPC directs the provincial management agencies of Special-use Forest through local authorized agencies, local authorities and Sub-department of Forest Protection itself.

Sub-department of Forest Protection is an upper body and also a administration agency of Special use forest MBs responsible to the PPC and MARD. Forest Protection Department implements instructions, and provides expertise and technical guidance and monitoring for the operation of the nature reserves in line with the current regulations for Special-use forests as well as implementation of other related law regulations or of investment projects (if there are any) and settles or reports illegal cases to upper-level agencies for settlement under their mandate. In special cases, the Sub-department of Forest Protection will collaborate with local authorities and relevant agencies for guiding and monitoring, supervising operations of the nature reserves/parks.

8. CONSOLIDATE AND FINALIZE POLICIES, AND RELEVANT LEGAL DOCUMENT RELATING TO SPECIAL-USE FOREST MANAGEMENT, PROTECTION, DEVELOPMENT AND USE

Currently the Gov. has issued some policies and legal documents relating to

conservation but lacking agreement on content to some extent. There are even contradictions, often changing contents in different documents. Therefore, the application and implementation of those faced a lot of difficulties. On the other hand, there are many items not regulated or are regulated but not suitable with the current condition, especially that of policies, for favorable treatment for staff working in conservation. When local communities living in or around the nature reserves take part in conservation work it is the time

when they have to get rid of harmful activities for the nature reserves. Therefore there should be proper policies for them to live stably and participate actively in conservation work.

For sustainable development, there should be sufficient, strict, and fixed/stable legal requirements as well as for other fields, which have their regulations or laws for implementation.

VII. CONCLUSIONS AND RECOMMENDATIONS

1. CONCLUSIONS

On the basis of collected issues and analysis of results based on reference documents relating to conservation, the research team primarily makes some conclusions on the system of Nature Reserves of Gia Lai as follows:

Gia Lai has established a system of 5 nature reserves, 2 of which have been recorded in the list of Special-use forest of Viet Nam, 3 being proposed for listing in the list of national special use forest for 2010. This is an important precondition for the protection and maintenance of biodiversity and abundant natural resources with rare and valuable animals and plants being at risk of extinction in the country and in the world. Therefore, additional baseline studies should be conducted for the nature reserves proposed for protection, and new surveys for expanding nature reserves in the province.

The Gov.'s legal documents on conservation and clear management decentralization created a sound legal framework, creating favorable conditions for local conservation activities and also for strengthening managerial capacity at provincial level. There should be a system of agreed policies which is specified from central to local levels, creating a linkage between laws and local custom regulations, producing real effectiveness of legal document on conservation; also the collaboration and support by local authorities and relevant agencies, mass organizations has built up an integrated strength for highly effective conservation.

One of the important factors contributing to successful conservation is local people's participation; especially those living in the core area who need special treatment. It is impossible to marginalize or evacuate them

to another place but necessary to regard them as members of the nature reserves. It is necessary to create jobs, stabilizing livelihood, help them to become active conservation workers. For people living around the nature reserve, mainly local ethnic people in remote areas and whose life is closely engaged with forest, forest is a basic natural resource for their survival. Its is necessary to build up buffer zone projects with an aim to help indigenous communities gradually change the custom of shifting cultivation and habitation/settlement and dependence on forest, contributing in reducing pressure on nature reserves.

Besides, investment of resources for conservation activities insurance also plays not less important role. Especially there should be consultancy activities on conservation to attract investment support funds from local and foreign donors.

2. RECOMMENDATIONS

1. That MARD, Forest Protection Department and FIPI need to conduct additional surveys and expand North Pleiku Nature Reserves and add it in the proposed list of Vietnam's special use forest in 2010 which is being finalized by Forest Protection Department and FIPI to be submitted to the Gov. for approval.
2. That MARD considers classifying Kon Ka Kinh Nature Reserve as a national park in order to create better conditions for conservation of biodiversity in the area, improved ecotourism opportunities and it will be an important factor in assisting other conservation parks in the region.

3. That MARD agree with PPC to initiate the establishment of management boards for nature reserves projected in the province's area as soon as possible for management and protection (Actually, Gia Lai special use forest system had 2 nature reserves called Tieu Teo in Chu Prong and Trang Thu in La Grai District. As without management boards, these 2 zones have been destroyed, losing element of conservation so now they are not standard enough with required criteria to be established as a nature reserve). For the zone, where approved investment projects are planned, it should allocate enough full-time staff for the Management Board under the Decision No. 08/2001/TTg dated 11/01/2001 by the Prime Minister and timely deal with financial difficulties for the operation of the nature reserves.
4. That MARD directs the implementation of buffer zone projects, improve the local community's living standard, and avoid pressure on the nature reserves.
5. That there be a focus on training, strengthen management capacity for staff working in conservation and local community organizations, plan to conduct training courses, short/long-term training, especially consider the recruitment and training for local staff to do conservation work for the long term.
6. That the SPAM project (Viet Nam-Denmark) continue its supporting fund for the research team to implement the next steps of the province's nature reserve system through typical demonstration models.

VIII. PRIORITIZED ACTIVITIES AND SITES

Gia Lai is one of 4 Central Highland provinces of which the forestland is 2nd largest in the country with a variety of ecosystems, enriching the fauna and flora population existing in the forest. KonKaKinh is regarded as one of the province's, and Central Highland's, nature reserves abundant with biodiversity. So far 625 species of plants have been recognized. Importantly 2000 ha of mixed forest of broad-leafed and coniferous species including Pomu (*Fokienia hodgsii*) occur. This is a new type of forest only seen in KonKaKinh of Vietnam's protected area system (Le Trong Trai *et al.* 2000). There are 42 species of mammals, 160 species of birds, 51 species of reptiles, frogs and 209 species of butterflies. Of those, 5 species of birds have narrow distribution, 3 species are endemic to Indochina and there are other endemic species like Truong Son Muntjac (*Muntiacus truongsonensis*), laughing thrush *Garrulax* sp.

In terms of biodiversity, Gia Lai has many types of forests, ranging from thick closed evergreen forest to deciduous forest in different altitudes from lowland, area near the mountain, mountain, and area near high mountain. KonKaKinh is characterized by closed evergreen tropical rain forest.

Gia Lai has done too little in the course of biodiversity protection and nature reserve establishment. In 1999, PPC established KonKaKinh's MB and submitted a proposal paper to MARD to add into Vietnam's special use forests 4 more nature reserves. The primary survey results of these 4 zones showed their biodiversity and ecological characteristics. Up to now the MB of KonKaKinh has a fixed organization structure, primary facility and initiates the managerial capacity strengthening activity

and carries out some basic activities for conservation.

Finally, Gia Lai has accepted and demonstrated conservation. Especially thank to the SPAM Project's assistance, Gia Lai has been helped to analyze and understand clearer the current situation of the nature reserve's management organization and also finding out solutions for promoting forest management and protection, establishing and developing the province's special use forest system.

Based on the results analyzed above, the team recommends to focus some solutions in order to develop Special-use forest systems in Gia Lai province.

1. PRIORITIZED AREAS FOR DEVELOPMENT OF SPECIAL USE FOREST SYSTEM IN GIA LAI PROVINCE

• Capacity strengthening

- Improve capacity of technical staff involving in conservation activities by means of training and retraining in the country and abroad.
- Educate communities on environment, citizen's responsibility in natural resource conservation.
- Strengthen planning ability and management for technical staff.
- Improve ability of using communication tools for field workers to organize, promote local communities in forest management.

• Research

- Conduct baseline surveys on biodiversity and values of conservation parks.

- Carry out participatory research on development of community-based forest management models.
- Organize study tours to exchange experience between local and international conservation parks.
- **Infrastructure and equipment**
 - Invest in transportation means, equipment necessary for conservation activities.
 - Establish a system of guard stations in the nature reserve.
- **Strengthening management capacity**
 - Establish management boards for nature reserves.
 - Train to improve management capacity, planning, implementing, monitoring and conservation planning for managers.
- **Enforcement of socio-economic development policy in buffer zones**
 - Review and monitor village-level projections.
 - Enforce policies on management decentralization and forest land allocation.
 - Develop community forest management models.
 - Carry out trials on participatory agro-forestry technology development to assist the community to improve mountainous field farming techniques and participate in management process and getting benefit from conservation activities.

2. Priority site

KonKaKinh Nature Reserve.

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APPENDIX

I. List of participants

* Consultants

1. Dr. Bao Huy, Vice- Dean, Faculty of Agro-forestry, Tay Nguyen University
2. Dr. Tran Van Con, Director, Tropical Forestry Center.
3. Mr. Tran Quang Khanh, Director, Sub-Department of Forest Protection, Gia Lai.

* Provincial working group

1. Mr. Tran Van Thieu, Vice-Director, Sub-Department of Forest Protection, Gia Lai.
2. Mr. Nguyen Huu Long, Head, Division of Forest Management and Protection, Member
3. Mrs. Nguyen Thi Kim Huong, Vice-Head, Division of Forest Management and Protection, Member
4. Mr. Nguyen Ngoc Cu, Staff, Division of Forest Management and Protection, Member
5. Mr. Nguyen Van Thanh, Provincial Department of Finance and Pricing, Member.
6. Mr. Tran Quoc Khanh, Chairman, District People's Committee of Kbang, Member.
7. Mr. Tran Vinh Hung, Vice-Chairman, District People's Committee of Kbang, Member.
8. Mr. Vu Tien Thuc, Director, Kon Ka Kinh Conservation Park, Member.
9. Mr. Nguyen Danh, Director, Department of Science, Technology and Environment, Member.
10. Mr. Nguyen Van Phong, Vice- Director, Department of Science, Technology and Environment, Member.
11. Mr. Nguyen Van Tuong, Vice-Director, Department of Land Administration, Member.
12. Mr. Nguyen Bon, Director, Department of Education and Training, Member.

* Field worker group. It is divided into two teams; each team consists of 4 members

1. Mr. Nguyen Huu Long, Head, Division of Forest Management and Protection, Head of team 1.
2. Mrs. Nguyen Thi Kim Huong, Vice-Head, Division of Forest Management and Protection, Member
3. Mr. Nguyen Ngoc Cu, Staff, Division of Forest Management and Protection, Member
4. Mr. Nguyen Van Hoan, staff, Division of Forest Management and Protection, Member.
5. Mr. Nguyen Khac Tam, staff, Division of Forest Management and Protection, Member.
6. Mr. Nguyen Van Phu, staff, Division of Forest Management and Protection, Member.
7. Mr. Dinh Huynh Vuong Vu, Technician, Kbang Forest Protection Station, Member
8. Mr. Nguyen Phuoc Hai, Technician, Kon Ka Kinh Conservation Park, Member.

* Collaborators

1. Mrs. Trinh Thi Lan, Vice Head, Department of Science Research, Tropical Forestry Center.
2. Mr. Vo Nguyen Hoang Buu, Officer, Technical Department, Department of Agriculture and Rural Development.
3. Mr. Tran Ngoc Thach, Officer, Division of Interment Management, Department of Science, Technology and Environment.
4. Mr. Nguyen Thanh Son, Officer, Division of Agro-forestry planning, Department of Planning and Investment.
5. Mr. Vu Thu, Officer, Planning Division, Department of Land Administration.
6. Mr. Ha Quang Tuyen, Forestry Engineer, Dak Doa Forest Protection Station.
7. Mr. Nguyen Van Dzung, Forestry Engineer, Kbang Forest Protection Station.
8. Mr. Truong Vu Tuong, Forestry Engineer, Mang Yang Forest Protection Station.

- **Participants involved in providing services**

1. Mr. Nguyen Ngoc Ni, Kbang Forest Protection Station. (Guide)
2. Mr. Dinh Grik, Lang Son Commune, Kbang district, (Guide)
3. Mr. Ksor Min, La Der Commune, La Grai district, (Interpreter)
4. Mr. Ro Mah Hyel, Tropical Forestry Center, (Interpreter)

II. Institutions, organizations where the field working groups conducted interviews

- Kbang District People's Committee and its departments.
- Mang Yang District People's Committee and its departments.
- Dak Doa District People's Committee and its departments.
- Son lang Commune People's Committee, and representatives of hamlet elders, hamlet heads, Women Unions, Farmer Association, Veteran Association of the commune.
- Dak Roong Commune People's Committee, and representatives of hamlet elders, hamlet heads, Women Unions, Farmer Association, Veteran Association of the commune.
- Kroong Commune People's Committee, and representatives of hamlet elders, hamlet heads, Women Unions, Farmer Association, Veteran Association of the commune.
- Ha Dong Commune People's Committee, and representatives of hamlet elders, hamlet heads, Women Unions, Farmer Association, Veteran Association of the commune.
- Ha Ra Commune People's Committee, and representatives of hamlet elders, hamlet heads, Women Unions, Farmer Association, Veteran Association of the commune.
- Ayun Commune People's Committee, and representatives of hamlet elders, hamlet heads, Women Unions, Farmer Association, Veteran Association of the commune.
- Leaders of Tram Lap State Forestry Farm and its staff members.
- Leaders of Dak Roong State Forestry Farm and its staff members.
- Leaders of Ha Nung State Forestry Farm and its staff members.
- Leaders of KrongPa State Forestry Farm and its staff members.
- 15 representative households of Dak Roong Commune.
- 15 representative households of Kroong Commune.
- 15 representative households of Son Lang Commune.
- 15 representative households of Ha Ra Commune.
- 15 representative households of Ayun Commune.
- 15 representative households of Tan Lap State Forestry Farm's workers
- 15 representative households of Dak Roong State Forestry Farm's workers
- 15 representative households of Krong Pa State Forestry Farm's workers
- Director of Kon Ka Kinh NCP and its staff.
- Provincial Departments: DARD, DPI, DOSTI, DFP, DLA, WU.

III. Forms and Questionnaires

- Interview of Hamlet elders, hamlet heads (06 questionnaires)
- Questionnaire for interviewing farmers.
- Questionnaire for interviewing CPC (06 questionnaires)
- Interviewing staff members of Kon Ka Kinh NCP.
- Questionnaire for interviewing Provincial departments.
- Questionnaire for interviewing District departments.

IV. Legal important Documents related to Special Use Forests in the province

- Official letter No. 1292/CV-UB dated 19/5/2000 of PPC of Gia Lai for proposing the provincial special use forest into the list of special use forests of Vietnam.
- Official Letter No. 4512/BNN-KH dated 09/12/1999 of MARD for verification of Kon Ka Kinh NCP project.
- Official Letter No. 2648/BNN-KH dated 04/8/2000 of MARD for verification of Kon Ja Rang NCP project.
- Decision No. 19/1999/QD-UB dated 08/03/1999 of PPC of Gia Lai for the establishment of MB of Kon Ka Kinh NCP.
- Decision No. 430/QD-CT dated 01/06/2000 of chairman of Gia Lai PPC for Approving investment project of Kon Ka Kinh NCP.
- Decision No. 570/QD-UB dated 22/6/2001 of PPC of Gia Lai for withdrawing forest land allocated to MB of Kon Ka Kinh NCP for management and protection in Mang Yang, Dak Doa and Kbang district.