



Bi Doup Nui Ba National Park Management Assessment with emphasis on Collaborative Management with Neighbouring Farmers



[WWF Greater Mekong Vietnam Country Programme]

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Abbreviations

BDNB NP	Bi Doup Nui Ba National Park, a.k.a. ‘the park’
BZ	Buffer Zone (lies outside the park’s mandated area of control, except in the case of ‘to be’ designated Protection Forest under park Management Board control)
CNA	Conservation Needs Assessment
CM	Collaborative Management, a.k.a. co-management.
FIPI	Forest Inventory & Planning Institute
FMU	Forest Management Unit (the park is one such unit identified under the TFF project)
GoV	Government of Vietnam
NTFP	Non-Timber Forest Product
OMP	Operational Management Plan
PF	Protection Forest (in most cases within this report, refers to newly zoned ‘Highly Critical Watershed areas’ with the Buffer Zone)
PPC	Provincial People’s Committee
SSR	Social Screening Report
SUF	Special Use Forest
TTF	Trust Funds for Forests (in this case the Birdlife proposed Multiple Use Forest Project)
VCF	Vietnam Conservation Fund (a GEF project implemented by World Bank)
VDP	Village Development Planning (in this report refers mainly to participatory diagnosis of land use issues and application of appropriate farming techniques, not the more common extensive collection of PRA-style socio-economic data)
‘661’	GoV compensatory forest protection payments program for local residents. Areas may be extended and payments topped-up by local government
Blue book	Protection contract payment under ‘661’ program

Rate of Exchange US\$1 = 16,500 VND

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Executive Summary

1. This report is an assessment of the management of Bi Doup Nui Ba National Park with regard to providing managers, practical and applied options for collaborative management, particularly with neighbouring farmers who are forest resource users. From a second angle, 'management planning' itself is assessed in terms of how the management plan can be put into better operation.

2. The park management plan is centered around nine activities. These are listed below in the park's prioritized order:

- Protection contracts
- Fire control
- Forest restoration
- Research - rare pine; mushroom survey; fire
- Ecotourism / Eco-centre
- International Cooperation - VCF/TFF/JICA etc
- Environmental Education - schools/ local community
- Buffer Zone Plan (2008-2013) plus resettlement
- Infra & Capacity Building / Functional (Use) Zoning

3. Options for IIED / WWF intervention based on these nine activities are:

- Support protection contracts via Joint Patrol
- Support protection contracts via 'Blue Book Zone' Patrol
- Support participatory 'wildlife on farmland' monitoring (with a view to creating a sustainable wildlife club in Da Chais Commune)
- Support forest user collaboration on mushroom survey with a view to creating 'pass holders' for sustainable mushroom collection' within the buffer zone.
- Support Propaganda & posters on encroachment

These 5 direct intervention support options only, are recommended in terms of applied improvement in the operation of the management plan. A feedback seminar was held at the end of the mission with the park management board and these 5 options were the most strongly supported.

4. In terms of management information and its' use and the link with park operations, one further recommendation is made depending on project funds available. It is proposed that the organizational structure of the park be re-organized to put all external projects under a 'Projects Management Office' and create a basic management information system if donor funds allow funding the staff time involved.

1. Background and Context

Park management suffers from being over-extended in managing a high number of international projects and the fact that there is also over-lap, particularly in managing such projects. The management support solutions proposed are of two kinds. The recommendation is to focus on (i) providing a limited number of applied activities that are collaborative in nature and act as models; and (ii) to propose an organisational and management planning change.

1.1 Bi Doup Nui Ba Environment

There are 5 dominant habitat types:

- Middle mountain evergreen closed forest with 20,850 ha distributes in the altitude of 1,000asl – 2,200asl. It is the main forest type of Truong Son Mountain range. Tree composition includes broad-leaved species belonging to the following main families: *Fagaceae*, *Theaceae*, *Lauraceae*, *Ericaceae*, *Illiciaceae* and some gymnosperms. The structure of forest type, there are three stratum with the main storey is 20m - 30m
- Evergreen coniferous open forest: covers 20,614 ha area; is one of pure stand (*Pinus kesiya*) distributing 1,000-1,800asl. This type is the characteristics forest of Dalat Highland
- Evergreen coniferous – broad-leaved mixed and close forest covers 14,038ha and distributes at 1,700asl and over. Tree composition is the same with broad-leaved species in evergreen close forest but has some gymnosperms such as *Pinus dalatensis*, *Pinus krempfii*, *Keteleeria evelyniana*, *Dacrydium pierrei*, *Podocarpus imbricatus*, *Fokienia hodginsii* that make the dominant crown.
- Bamboo forest: with 1,821ha distributes in 800-1,000asl along branches of rivers and streams. The main tree type in this forest is *Schizostachyum zollingeri* Steud.
- Mossy forest (Mountain top dwarf tree) covers 402ha. It is located along slope, high mountaintop and distributes in 2000asl and over. The main composition of this forest type is broad-leaved species belonging to the families: *Fagaceae*, *Eriaceae*, and *Theaceae*. The others are about 4-8m, twisted, dense. Their growing in a hustle makes dense close forest cover.

(Extract from CNA (09/2008))

2. Bi Doup Nui Ba National Park

2.1 Bi Doup Nui Ba National Park Management

The National Park (NP) was designated in 2004 (and was a Nature Reserve from 1994), so it is a new park with 95 staff. The Park has an Investment Plan (2009 - 2018), which is its 'Management Plan'¹ as well as a Buffer Zone Plan (submitted with decision expected 18/12/08). The NP running costs and investment - within the Investment Plan - are budgeted at \$800,000 / year (rough estimate of 1.3 billion VND). The NP Management Plan² is configured into 9 key activities:

- Protection contracts – include patrol / report incidence / fire etc
- Fire control
- Forest restoration - 48 ha replanted
- Research - a/ re-introduce rare pine; b/ mushroom survey; c/ forest fire solutions
- Ecotourism - not yet – ADB FLITCH will do study \$202,000 - Eco-centre in park
- International Cooperation - VCF / TFF / WWF / FLITCH / JICA / others
- Environmental Education – schools/ local communities - 6000 people reached so far
- Buffer Zone Plan (2008-2013) + resettlement

¹ Operational Management Plan (OMP) is a different document created from GEF World Bank VCF Project and holds no goV mandate to be implemented, apart from its' drafting on paper, and 2 tranches of funding for limited activities.

² The full plan was not available for the consultant's evaluation.

- Infra & capacity building - 7 new stations / 2 renovations; 2 paths – 35 km. Functional zoning – [which follow regulations exactly on type of forest and use - protection, production & SUF

It specific 'Threat Assessment Report (2006-8)' provided information on law enforcement issues:

- 270 Encroachment cases ~ 70%; 39 Logging ~ 11%; 14 Fire ~ 4%; 21 NTFP collection violations ~ 6%; Hunting ~ 3%
- Hunting cases included: deer species ('nai' and 'mang'), serow goat, wild boar, other saleable meat + snakes and other small animals, one case of guar (sp. of wild cattle), plus primates – especially in the case of a large organised hunting ring caught in February 2002 on border between Chu Yang Sin and Bi Dup.
- The main encroachment areas are forest compartments: 124, 90, 91a, 91b (around / in WWF villages at Da Chais); and 114, 113 (also WWF pilot villages' location in Lat commune). The reasons for encroachment are: lack of farming land, immigration and poor boundary demarcation. Reasons for hunting are: habit to eat wildlife and catching wildlife for entertainment³.
- There is a fire risk problem and grazing is considered as a small problem.
- The lack of Land use Planning & Land Allocation (LUPLA) is a problem and has not been completed in Lac Duong District according to the park. According to the Department of Natural Resources & Environment (DoNRE), concerning the IED / WWF pilot communes, the last LUPLA activity was within the Year 2000 Plan with some further allocation of land under the 2006 update. DoNRE will re-allocate land again for villagers in 2011.

Further detail on threats are provided in the annex specifically for the description of the Operational Management Plan (OMP) and its' Conservation Needs Assessment (CNA).

The mushroom study is on-going with more than 10 possibly commercial species naturally growing within the park area. Mr. Minh is the relevant expert and determination of edible or non-edible status is being conducted first. The current expectation is that inoculation / mycelium growth can be encouraged within the forest in order to enhance collection for sale. During the feedback seminar the consultant suggested that once edible species were identified that on-farm production would be more lucrative for local farmers, if they could first master basic mushroom production techniques⁴.

2.2 Bi Doup Nui Ba National Park Zoning

A standard 'functional zoning' plan for the 3 permitted National Park zones (inside the park and excludes the buffer zone) has been submitted. Permitted 'construction' activities within the park's three zones are:

- Core – tourism trail only;
- Restoration Zone – 15% infrastructure for tourism including up to 10% for infra. / hotel;
- Administrative Zone – 20% of total park area

The planned new zoning for the park is to change the Special Use Forest (SUF) area from 64,000 hectares down to 56,000 ha with: Core 18,000 ha; Restoration 33,000 ha; and Administrative Zone. The 8,000 ha has gone mainly to Protection Forest (Highly Critical Watershed level⁵, as well as for newly demarcated agriculture land and construction / agri-tech zone). These proposed park boundary changes in the Buffer Zone Plan, which was commissioned and approved by the Lam Dong PPC, does not as yet have central government approval⁶.

³ While hunting is habitual and ad hoc (times of labour surplus and poverty etc), the culprits are often the same few limited individuals and need to be specifically targeted by the authorities.

⁴ Identification and supply of a cheap and sustainable substrate is often one of the sustainability problems as many mushroom species grow on wood.

⁵ One of the 3 standard FIPI (1984) sub-classifications for Protection Forest – Highly Critical, Critical or less Critical

⁶ However the plan is in line with the central government National forestry Strategy (2005-2020) and the specific Prime Minister's Decision on re-adjusting rational forest land use to increase Production Forest by reducing Protection Forest and reducing non-core SUF areas.

2.3 Bi Doup Nui Ba National Park Information Management

The National Park headquarters has recently been relocated from their permanent home on the border of the park to a temporary office within the confines of urban Da Lat City. The temporary offices are neither comfortable nor adequate for staff wishing to effectively manage a national park, let alone currently consider instigating a management information system for the purposes of planning. The problems are: the move from old offices, to what appear to be smaller offices has made all the rooms appear overfull with furniture. Working space, discussion space, planning space etc are all extremely cramped (apart from the TTF project section office). In virtually all offices, files and folders are piled high with what appears to be no data management or library system at all. Virtually no book cases or shelves exist, although there are a few filing cabinets. The staff appear overworked attempting to manage a number of projects by way of what appears to be a delegation method for a staff member per project, but with so many projects under operation, this has left the headquarters appear undermanned and struggling to cope with its' management mandate. Thus under these constraints one would expect very little ability to be able to manage the park and its' pressures holistically.

2.4 Bi Doup Nui Ba National Park Giang Ly Ranger Station Case Study

There are many small law infringements that are not formally punished concerning small collectors and small encroachment problems. There is a graded system of punishment for illegal land encroachment (which is ahead of hunting in terms of threats). The 3 steps are: warning; education - have to sign paper to say conducted illegal activity and receive a fine punishment; and /or more severe punishment if necessary. The fine is 2,000 - 4,000 VND / m² for illegal land conversion ~ 20 million VND / ha. Tools are collected.

The Blue Book (protection contracts) '661' patrols⁷ meet the ranger service twice a month to discuss route, assign tasks and verbally report back. Major incidents only are transferred to written report, in which usually only large wildlife carcasses reported and other major human damage verbally reported back.

There are normally 12 households in a '661' group. For example Group 66 have a 'forest land protection & management responsibility lease contract'⁸ for blocks within Compartment 91 under 661. The members also have individual signed household contracts for the payment part of the '661' program. '661' payments cover core zone compartments in Da Chais.

The ranger service often report snare traps found (which vary in size according to animal being trapped) – currently at ~15 traps / month, down from 100 traps / month a year ago which was prior to VCF added funding support for joint patrolling. Night patrols are also conducted, sign boards erected, propaganda undertaken as well as prosecutions. Mushroom and herb collection is not seasonal according to the rangers, but random by individual all year round. This would indicate villagers' habit to go to the forest whenever and obviously more difficult to make any resource-use agreement with any particular group. This should be noted.



A year's worth of snare traps collected at Nui Ba Ranger Station

2.5. Bi Doup Nui Ba National Park Buffer Zone Project Development Plan

The Buffer Zone plan was written by the Forest Inventory and Planning Institute (FIPI) on behalf of the Lam Dong PPC 'for' the National Park. The Buffer Zone Plan (39,000 hectares) focuses among other activities on cattle and pig production and mainstream horticulture production of commercial flowers, as well as some models of vegetable production. For Lat commune, cattle (improved Sind breed)⁹ and black pig production is set to increase by 40 and 110 units respectively, and for Da Chais

⁷ '661' is the name of the program that funds the protection contracts.

⁸ 'Ho So Giao Khoan QLBR' – this is the so-called 'Blue Book' system in Vietnam for forest protection contract, as opposed to the Red Book' which is for a land tenure certificate

⁹ The Zebu breed is also mentioned in the plan (cross of Sind, Brahman & Sahiwal)

to increase by 80 and 150 units respectively. For the IIED / WWF pilot villages in close proximity to the NP (specifically Da Chais pilot villages), most of these proposed developments are largely not suitable. More free ranging cattle in / near the park would not be advised as these villages have an acute land shortage and certainly not enough for on-farm fodder production or grazing. In summary, agriculture development options described within the Buffer Zone Plan unfortunately are not very well tailored to the specific communities near the park¹⁰, in fact to a certain extent as a result of these interventions, they could become more marginalised, income-wise. Admittedly GoV Plans are often general, but FIPI has failed to outline many specific development alternatives for the very people who use the park resources the most.

Total investment planned for the Buffer Zone is 72,939.32 million VND (27,990.32 million for investment planning; 30,178.4 million for household activities; 2,770.6 million for forest officers and household protection contracts; and 12,000 million VND for utilising / implementation of production).

The main impact of the Buffer Zone plan from an immediate biodiversity viewpoint is actually the re-zoning of 3 areas of previously conservation-designated park land into 'non-SUF' Protection Forest allowing for more options on benefit-sharing and resource use, but is probably detrimental to habitat maintenance in the short-term at least.

2.6. Operational Management Plan Assessment

The Conservation Needs Assessment (CNA), various versions of the Operational Management Plan (OMP) and the Social Screening Report in particular were assessed. The CNA (09/2008) flags the threats and the OMP is supposed to remove or mitigate those threats. Within the CNA and OMP, wetland and meadow valleys are missing from the description of biodiversity-rich habitats. Thus habitat (and species)-based conservation management should be directed towards the 5 forest types, plus wetland areas. Possibly as a result of 'missing' the wetland areas, one of the key wetland areas has now been annexed out of the park.

The pine forest is only threatened by fire if there is 'no fire' for a number of seasons, resulting in dry matter 'needle' build-up, thus causing possibly uncontrolled fires of a higher temperature which will kill trees and damage undergrowth and wildlife habitat / hides. Controlled back-burning is advocated by the consultant.

Annex 2 provides much detail of the CNA and OMP plus the consultants view on these documents. What is clear however is that threats and mitigation measures are usually managed in a general way. One should compare for instance the parks' 9 key activities within its' approved management plan with the OMP's very specific list of identified threats.

3. Synergies & Synopsis on other conservation projects at the National Park

3.1 Vietnam Conservation Fund (VCF)

It is important to understand from the NP point of view. VCF supports the writing of an OMP (not its' implementation) and 2 tranches of funding (~\$25,000 each) for specific conservation activities, preferably co-management based. The 1st tranche is over which was funding for 'Joint Patrols (team including forest rangers, police, army, local community representative). VCF Joint Patrolling has been successful as more illegal activities have been uncovered (pers. comm. Deputy Head of Station, Giang Ly). 6-10 teams have been funded - 10 times / year [each team has had 2 extended satellite camp patrols] although now the funding has ended, the park only funds 4 times per year. Allied to this is the fact that the OMP is not the GoV mandated 'Management Plan', just an exercise in producing a management plan and is treated as such by the NP.

For the 2nd tranche there is a list of proposals, which appear to be wrapped into 3 packages:

- Biodiversity assessment – key species¹¹; GIS; communication skills
- Conservation planning; landscape digital maps
- Benefit sharing¹² – 6/7 households plant vegetables

¹⁰ Particularly in light of the lack of land allocation and land grab (Agri-fish area in Da Chais) issues mentioned by the author but not by the plan.

¹¹ The VCF OMP actually mentions 'Habitat & Spp. Management' which is what is needed, not another 'find a key species' type survey. See later discussion.

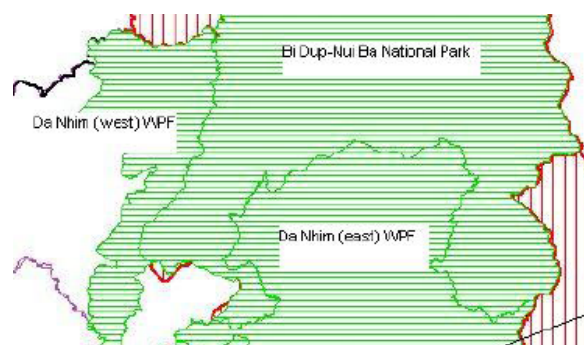
The term Benefit Sharing Mechanism (BSM) is widely used under the latest draft of VCF documents for the park (see also Annex 1), but refers mainly to benefit sharing of natural resources within the SUF, which is possible legally (just outside core zones) but politically not accepted to date. Benefit-sharing for Protection Forest in Buffer Zone (as per the new FIPI plan) is however a direction for the IIED / WWF project to move towards.

3.2 Trust Fund for Forests - Piloting Multiple Use Forest Management in Lam Dong

Under Trust Funds for Forests (TFF), the BDNB NP is listed as one of the 6 Forest Management Units (FMUs) – i.e. ‘Management Boards’ - to pilot new ‘management / protection / multiple-use’ contracts with local communities. Such areas include the two IIED / WWF project communes. Furthermore, these two communes are in or neighbour parts of the NP newly planned to become Protection Forest-classified Buffer Zone¹³ (See Annex 3: maps). TFF has the intent to develop ‘Collaborative management agreements for benefit sharing between BDNB National Park and local communities within the first year of the project’ (its’ Logframe, Output 3). The TFF project implementing & executing agencies are Lam Dong PPC and the park. The TFF project fits within a wider landscape approach and the ADB Biodiversity Conservation Corridors Initiative (BCCI) (part of its’ Common Environment Program) is aligned with this. BCCI signboards are up in Da Chais commune.

Summary information on the TFF participating FMUs relevant to IIED / WWF project area:

- Bidoup-Nui Ba National Park as the FMU in Lat and Da Chais communes (among other areas- communes – Da Sa, Da Nhim, Dung K’no and Lac Duong district town.)
- Da Nhim Watershed Protection Forest as the FMU in Lat and Da Chais communes (among other areas including Da Nhim, Da Sar Dung K’no communes, and Lac Duong district town)
- There are 4 others FMUs wider afield



Source TFF Project Proposal

There are 3 new Protection Forest areas demarcated by the Buffer Zone plan which will come under the management of the park FMU. In these locations, this will make resource use agreements less sensitive (as outside the park’s 3 zones) and more ‘easy’ to sign. Two of these 3 areas are within the IIED / WWF project mandated sites. Previously (and if the FIPI Buffer Zone Plan is not approved), these areas would have remained SUF within which co-management agreements on resource use especially core areas, would have been under Decision 186 and very difficult to establish.

3.3 ADB FLITCH

FLITCH will conduct Commune Development Planning (CDP), in some park areas including Da Chais Commune (but not Lat commune), however this is likely to be on a ‘commune’ level concerning infrastructure and mainstream agriculture. The main part of the CDP funds are to be as an ADB loan to Lam Dong government, thus the extent of ‘development’ interventions in Da Chais with its’ acute land scarcity problem are likely to be limited without highly tailored interventions. For this reason¹⁴ the NP director was wary of IIED / WWF conducting a Village Development Planning (VDP) exercise, although a targeted VDP is what is needed in order to identify and offer niche solutions to the local authorities in utilising the ADB loan. There is also a small Commune Development Fund at US\$20,000 per commune which could be ‘tapped’ into if good ideas are forthcoming. IIED / WWF could advocate on the use of this fund to partly mitigate national park use.

ADB FLITCH will fund an Ecotourism Development study. The total value of which is ear-marked at \$202,000 and is expected to be tendered by the province. This is expected to be linked more

¹² This consultant is not sure how the action can be interpreted as a BSM or direct mitigation action against park threats. It is however seen as an indirect threat mitigation action.

¹³ PPC Lam Dong Investment Project for Buffer Zone Bi Dup Nui Ba (2009 - 2013), FIPI, 8/08, approval expected 12/08

¹⁴ And the fact that villagers in Da Chais have had ‘their’ wetland taken from them to be replaced with new agriculture land (which is still largely forest and officially to date still NP).

towards a park-managed Eco-tourism centre and not community / cultural based ecotourism development.

ADB FLITCH will also fund on-farm 'NTFP' production for 3 species types. The budget for this contract model is set at US\$56,000, but is not planned for Da Chais, thus IIED / WWF could replicate it in the pilot communes without conflict. The identified model species are¹⁵:

- mushroom – 'Nam Tay Ban Nha' (Spanish Mushroom) – *Lactarius* sp. (Russulaceae)
- 'ginger-family' (ginseng-type tonic) species – 'Dang San' – *Codonopsis javanica* (Campanulaceae)
- perfume producing species – 'Huong Bai' – *Dianella ensifolia* (Pholmiaceae)

Benefit Sharing Mechanism (BSM) is a term also widely used under ADB FLITCH and it's GoV approved Project Implementation Plan. The Prime Minister's decision on this FLITCH policy is:

1. SUF - According to Decision 186/2006
2. Protection Forest - 20% harvest under various conditions
3. Production Forest assigned to community hamlets - According to Decision 106/2006

3.4 JBIC / JICA Project for Strengthening Community-based Management Capacity of BDNB NP

A number of activities are envisaged (10/2008 until 9/2011), although the level of collaboration and coordination with IIED / WWF project would need to be established. Activities are grouped into 5 baskets and cover:

- Park management with institutional co-ordination
- Training, biodiversity inventory and vegetation restoration along the new Da Lat – Nha Trang road through the park
- Mapping farm / swidden land and supporting land use contracts as well as market-oriented agricultural / agroforestry production
- Constructing ecotourism routes, community-based ecotourism
- Environmental Education

The budget and number of JICA experts is unknown, thus the extent of activities can not easily be determined, however one would expect that despite the budget title, the NP will prefer to focus on park-based activities, and not those in locations outside their mandate, which in fact are the most 'community-useful' interventions. The recommended key subject matter for IIED / WWF to concentrate on concerning co-ordination with JBIC / JICA is:

- VDP of pilot villages with the focus of WWF to be: Identification of options for productive use of the new agriculture land allotted for Da Chais pilot villages on the north side of the new Da Lat – Nha Trang '723' road (Lam Dong PPC wish to give the original villagers' wetland grazing area to the K'Long K'Lanh Agri-tech company)
- The park is not so keen on community-based activities such as VDP which lie outside their immediate mandate or control, thus the chance of overlap with the JBIC proposal is considered small and if it were to occur to be very complimentary in promoting higher efficiencies in use of the very limited land. The NP needs to move more to this 'thinking position' if the key encroachment threat is to be addressed once and for all
- Biodiversity survey – concerning villager participation in mushroom species collected and eaten and possibly cycads with a view to developing a community mushroom / cycad farm (with villagers as contract growers to the community owned-farm)
- Community & Cultural-based Ecotourism development – as per the community farm suggested above or concerning handicraft development in Lat Commune pilot villages (which IIED / WWF may struggle to establish)

The project proposal mentions 2 documents not reviewed by this consultant – the Lac Duong Socio-Economic Development Plan (SEDP) and the Lam Dong PPC Plan for Eco-tourism (under the Forest

¹⁵ It is not confirmed however that these species are present in the park

Canopy). Regarding roadside restoration – large trees even if fruit-bearing for wildlife food sources are not recommended to be planted close to the road in order to use the road as an effective fire-break line. The road has in some places been cut across a significant width, thus there is room for both larger tree planting away from the road and small tree / grass planting closer.

4. Pilot Commune and Village Assessment

4.1 Da Chais Commune

The area is a new administrative commune chosen by IIED / WWF for reasons of encroachment. The two villages are 'Nam (Long) Lanh' and 'Dung K'Si' both of which are located in or very close to the core area. The people rely on the forest, now via '661' payments. 5-6 households per group sign a contract to 'patrol and protect'. The areas for contracts are inside the park – forest compartments 91, 90 and 124 (see map in annex). The area contains the K'long K'lanh and Giang Ly Protection Stations.

The inhabitants are now coffee and maize farmers, with limited NTFP collection. The mushroom species 'nam sua' and 'nam moi' grow under conifer and broadleaf respectively. Orchids are now not collected in the area due to the law, however species present are both, live-tree and dead trunk or soil fungal symbiont species. Some 'ground' species are produced commercially by Kinh farmers in the Da Lat valleys. 'Dung dinh' tree from the forest is also grown on-farm for medicinal uses. The popular 'Ran Bep' vegetable can not grow in Da Chais area. Livestock kept includes the local black (pot belly) pig, but is usually not for sale due to cultural reasons, however one or two farmers would be interested in market-based production, including Mr. Ko' Dong Ha Quyen (CPC Leader Da Chais).

A Community ranger system has been in place for the last year. This is the VCF-funded 'Joint Patrols' comprising of the head or other of the '661' group, 2 commune police / army and 2 forest rangers. Patrols typically don't just range over Protection contract area, but wider a field in the park and take one week per month, but shorter in the rainy season. As the '661' group take turns, each member only goes 1-2 times / year, plus it is doubtful that all '661' groups are involved so there is limited community income from this, despite its' conservation value. Now that VCF funding has ended for this tranche activity, the park has taken over, but can only cover 3-4 joint patrols / year. For the villagers more income is from '661'.

Da Chais Farmer Interview, Mr. Kon So Ya Quack - Gibbons often 'call' at dawn on the hill behind his house, plus he has seen 3 times. He says it is one troupe. Wild pigs damage crops in the area – seasonal maize. The farmers use noise to scare away. Wild pigs forage in groups unless an old boar then it is single. He knows the wildlife, their tracks & scats. Squirrel and porcupine cause the most damage to farmland and crops. He has attended previous WWF workshops and would be interested in farmland wildlife monitoring under the WWF project. The area behind his house contains the gibbon forest and K'long K'lanh wetland planned for 'fish-farm' development.

4.2 Xa Lat Commune & Villages

Lat Commune villages were chosen by the IIED / WWF project for eco-tourism reasons. The commune is part of Lac Duong District (as is Da Chais commune) where 80% of inhabitants have 'ethnic peoples' status. The villagers are coffee farmers with some income from Protection Forest '661'-funded contracts. Generally income is from: 30% coffee; 30% '661'; 30% labour/other. There is limited NTFP collection. Orchids are present but collection prohibited. Fungi grow under both conifer and broadleaf. LUPLA was conducted in 1999 and again in 2004. The pilot area is situated within the Dan Kia – Suoi Vang Management Board Ecotourism Area (BQL Khu Du Lich Dan Kia – Suoi Vang). The pilot village of Ben-e-Si is situated 13-14 km away from NP, with half the distance reached by motorbike.

Forest contracts and use are in Compartments 113b and 113c. 113a¹⁶ is situated in the new Buffer zone area to be administered by the NP under Protection Forest classification. Funds for these contracts are under the national '661' program for household / group of household Protection Contracts. Alternate turns of group members protect 661 areas inside the NP forest.

It is useful to understand that 661 Protection Forest contracts are awarded for most state forest, as compensation for traditional use and poverty reduction. The scheme is used for virtually all types of

¹⁶ 113a compartment will remain NP SUF if buffer zone plan not approved.

state forest except SUF core zones and even then it is understood that certain reserves / parks will provide 'nominal' payments for SUF core zones according to classic forest office compartment / block system even if strict 'no-use' is in force. From the forest office viewpoint, contracts are for fire control purposes only in these cases. Thus '661' in many ways over rides all forest treatment and use for all non-production forest¹⁷. If '661' stopped, the villagers would cut forest and plant coffee.

However as the Lat commune is within an Eco-tourism area, it is thus proposed that a focus group is set-up in each pilot village to develop an alternative income source in order to indirectly alleviate pressure on the park.

4.3 K'long K'Lanh Agri-Tech Zone

Limited information is known about this area. The Buffer Zone map demarcates it as 'to be invested'; DoNRE said that an EIA¹⁸ had been conducted and approved and that land allocation certificate had been issued. A zone of 600 ha has been mentioned, but not confirmed. This author doubts that a Land Tenure Certificate could have been issued as there are smallholder land plots within this area and it would be expected that individual plots of farmland would have to be demarcated for the local farmers or bought by the investing company prior to large scale development. It is a wetland site close to a known gibbon area (see Annex 3: map), and obviously is a classic area under conservation / development conflict. It would make a very nice small nature reserve (in the 'England' sense) with a river, marshland, reed beds, broadleaf forest with primates etc) – a tourist walk round it or across it on elevated boards etc with high scenic and bird-watching value. On the other hand, it would make a good fish-farm investment if partially drained and excavated for breeding pools, or cattle meadow grazing area, again with drainage channels and limited seasonal inundation (which actually could accommodate local development and a nature reserve if properly planned and invested).

VDP and / or a wetland wildlife survey is one option for this area, but to initially focus on the villagers' alternative land uses due to political sensitivity of this area. The development model for these Da Chais - closely neighbouring villages to the park needs to be refined. This is an area where the IIED / WWF project could step in.

5. Recommended Operational Activities (for IIED / WWF Intervention)

5.1 Joint Patrol

Vietnam Conservation fund (VCF) has drafted a new version of the Operational Management Plan (OMP) and has piloted Joint Patrol Teams under its' first tranche of activities. Importantly this first tranche funding has now ended and the same activities can not be funded again by VCF. This is a major opportunity for WWF. The park budget having attempting to continue this process is only sufficient for 3-4 Joint Patrols a year as opposed to the monthly long-range patrols previous being conducted under VCF.

A limited continuation of the 'Joint Patrol' system for 661 group heads in the pilot villages is advocated. VCF tranche can not fund the same activity twice.

The recommendation is for WWF to fund 8 such patrols / year in total, inclusive of both commune pilot sites (for each project village). The rangers now have good equipment courtesy of TFF. WWF can focus on payments for community involvement and some logistics / running costs and data input to Excel sheet of monthly patrol findings, plus annual report production. This should be co-ordinate with the park. An annex of the existing patrol report record is provided.

5.2 'Blue Book Patrol' with enhanced Template Record Keeping

Protection Contract Forest Blue Book - WWF could support a payments to the patrol teams in return for a written template which covers all wildlife evidence (spotted, tracks, marks/ dens, scats, remains etc) and human evidence (encroachment, evidence of collecting, camping, other etc). This is not

¹⁷ Despite some discussion on closing the scheme in 2010, in this consultants opinion, it will not because there are few schemes proposed in its' place on a national level

¹⁸ The EIA is a public document and should be available upon written request to the WWF Project staff to read. I recommend this, if VDP is to be conducted in this area.

done at the moment. IIED / WWF would need to prepare a draft template for discussion with the selected '661' group heads in the 4 pilot villages and the park / ranger stations involved.

It should be remembered that the NP and state forest ranger service still consider state forest and all wildlife as their mandate to protect from the inside and that villagers should remain outside not only these forest areas, but outside of responsibility for monitoring which is seen as a technical task. This situation is sometimes compounded by conservation NGO's that advocate and conduct highly scientific biodiversity surveys which require lots of money, equipment and technical know-how. Collaborative management in terms of participatory monitoring of wildlife is thus not traditionally supported by government officers, only fire protection tasks by the communities. The proposal here is to focus discussion on collaborative (human impact) patrolling and not on highly scientific methods.

WWF to focus on added payment to 4 standard '661' monthly patrol teams – 2 in each pilot commune with an emphasis on payment based on the template record sheet being completed and handed in to the park. Small payment to the NP to input the data into an Excel sheet and complete an annual report. Co-ordinate with the park and selected ranger stations.

Enhanced 'Blue book' ('661') group patrol methods encompassing improved Wildlife and Human activity written 'template' Record-keeping inside their allotted forest area (with & without ranger support) – WWF funded

5.3 Farmland Wildlife & Crop Damage Monitoring (Da Chais only)

A participatory wildlife crop damage monitoring group (with template monthly form to fill in for selected wildlife focus group farmers) is advocated. One 'strength' would be in developing village pride in wildlife in their village. The project could offer rewards /certificates for best monitoring group etc. The proposal is for IIED / WWF to: fund 1-2 groups only in Da Chais area that include farmers that have wildlife on the farm and have a crop damage problem. Record-template to be completed by farmers involved and provided to WWF staff for Excel data input.

5.4 Propaganda (against encroachment)

Encroachment is a problem. Propaganda specifically against encroachment could be in many forms. To fund a limited number of ranger out-reach days may be the most simple idea.

5.5 Mushroom survey (and pass-holder agreement and / or on-farm production)

There are a number of possible steps here. The initial activity would be to support villager collector involvement in the park survey, which is not happening at the moment. The second stage would be to either support 'pass-holder' agreement for sustainable collection or for technical support for on-farm production of the identified species.

WWF to fund collector participation in the wild mushroom survey with payment also to the head of the survey team to identify which species would be best for on-farm production; WWF to secondly fund a mushroom growers group initially providing start-up costs to 1-2 farmers and utilising a common 'current' market-sold variety. It is important that payments are also made to an existing grower in the Da Lat valley to help the new farmers set-up. A cross-visit should first be organised.

For any market-based on-farm NTFP product demonstration by a farmer focus group, the key usually is collaboration and communication and allowing the farmers to decide which species to grow. The park intend to conduct a mushroom survey and this needs to be allied to the local collectors being engaged in the survey and then together identifying a species for on-farm trial. There is also the Buffer Zone plan with demonstrations (not all identified) to be funded and the agri-extension service to support such demonstrations. Lastly, TFF expects to pilot 20 groups with a revolving fund. The role of WWF would be to provide added support on developing the 'mushroom' focus group, communication, information dissemination.

5.6 Projects Management and Information System Establishment

The park requires improved management. This can only be achieved if its' organisational structure fits its' management requirements. Firstly the organisational and staffing structure needs to be considered. All projects should be put under a 'Projects Office' to package them all, so that they can not adversely affect the implementation of approved GoV plans. Staff should be assigned to

implement GoV plans as a priority. One or two key staff then need to head up a 'Projects Office', with its' own space. This office should have a section head and manage all projects funds. As a priority, these projects' funds should be assessed to identify where the project is making demands on the park staff time, without providing a contract value or stipend for the hire of such services to conduct the activities that are taking the salaried staffs' time. With 7-8 projects taking staff time away from their official duties, this is thus one of the key problems.

In addition for data management to be improved, the 'Projects Office' new section head needs to canvas all the individual projects to provide part of their funds (from M&E budget lines or elsewhere) directly for a 'park and projects' database management and planning system. The cost should include the medium term contract employment (5 years) of a database management and planning clerk and sufficient equipment to conduct the work. The clerk could be housed within the 'Projects Office' although not essential.

Projects' data and M&E systems unification should be undertaken through a 2-stage procedure. An international and national consultant should be hired to produce a comprehensive plan and data channelling requirement report for the park. The objective would be to identify information suitable for the management information system (with database storage / retrieval). This would be according to entering data only if it could meet pre-selected and agreed management planning criteria and recurrent cost of data update and management.

6. Other possible options, but not selected for IIED / WWF further involvement

6.1 Collaboration with the TFF project concerning resource use agreements

Certain buffer zone areas for NP Management Board (FMU) control are proposed to change from SUF to Protection Forest 'Highly Critical'¹⁹ designation. IIED / WWF project area covers forest compartment 113, 114 in Lat commune, although the newly proposed Buffer Zone in this area includes 5 or 6 additional forest compartments.

There is the opportunity for WWF to suggest to the NP and the TFF project (Lam Dong PPC), that it would like to be responsible for developing specific agreements under the NP FMU mandated area and other park SUF (Restoration &/or Administrative Zones) areas and TFF can focus on multiple use agreements for the other 5 FMUs²⁰. Whilst TFF are unlikely to say yes, the fall-back position is that resource-use agreements are extremely difficult to formulate and administer and that 'WWF would wish to focus on mushroom survey, mushroom 'pass-holder' licensed collection as the demonstration of resource use agreement.

Thus in summary, concerning New Resource-use Agreements for NP Buffer Zone sectors, there is an opportunity for IIED / WWF to suggest to NP & TFF project, that it would like to be responsible for:

- Piloting specific (and limited) Resource-use agreements within the 4 project communes / villages under the new NP Forest Management Unit (FMU) control in the Buffer Zone
- Piloting non-Core (Admin Zone NP areas within the park) specific resource use agreements

Piloting would mean the following:

- Village-based (participatory) resource-use survey on fungi (and possibly herb) collection in these 4 new BZ/PF areas as well as within non-core areas of the SUF
- Estimation of key species type / volume collected
- Estimation of value to collectors
- Agreement on 'limited' collection level for identified 'pass holders' &/or incentive funds for on-farm production

Close collaboration and agreement with TFF is required for such piloting

¹⁹ Chuyen doi rung DD sang rung Phong Ho Xung Yeu. Other Protection Forest areas under other FMU / Management Boards have 'critical' Protection Forest classification.

²⁰ Da Nhim Watershed Protection Forest; Don Duong Police Watershed PF; Don Duong SFE; Lam Vien Landscape Protection Area; Forest Seedling Enterprise

6.2 Village Development Planning

One intervention by the IIED / WWF project could be instigate Village Development Planning (VDP) for the 4 pilot villages in order to highlight the poverty / marginalisation of these 4 communities and to attempt to gain the maximum possible benefit from the Buffer Zone Plan, including for example identifying new coffee production land and black pig breeding options. The VDP should encompass land issues and the fact that 'general' land use planning has already been drafted for the Buffer Zone area. The 4 new planned LUP zones demarcated²¹ here are²²:

- To be National Park Buffer Zone (converted from Special Use / Core area to Protection Forest – High critical watershed) (a)
- To be Forest land converted to Agriculture Land Use (b) (includes the new fish farm and what was the old administrative zone head-quarters of the NP) – current land use is planted forest (although maybe young and scattered and partly seasonally farmed but officially still state forest land)
- Other 'to be' investment project (including the state / private K'Long K'Lanh Agri-livestock-fish Zone) (c)
- Land as non-forestry purpose. (d)

VDP – this is important in terms of land issues which are likely to come to a head just prior to the end of the current LUPLA 5-Year plan (2010) and the expected allocation of land in and around the K'long K'Lanh agri-business enterprise zone. It would also improve the villagers' ability to organise to their farming systems' capacity and ability to make a stake for involvement in the K'long K'Lanh proposed development and / or a stake in terms of receiving part of this land area.

WWF to initiate a farming systems analysis (base first on a desk review of existing data) for the 'compensation land' to be given to the Da Chais farmers and what to do with it. To hire a local institute to do this and investigate the existing land use issue within the Da Chais pilot villages and claims for conservation-based development in the specific location]

VDP is important in terms of land issues

- Likely to come to a head prior to end of current LUPLA 5-Year plan (2010) and expected allocation of land in/around the K'long K'Lanh agri-business enterprise zone
- It would improve the villagers' ability to organise their farming systems
- Improve ability to make a stake for involvement in the K'long K'Lanh proposed development &/ or a stake in terms of receiving part of this land.

The "K'long K'Lanh Agri-tech (fish farm) Zone is on land that has been taken away from the park and villagers and is a sensitive subject. The questions are: (i) Should a WWF VDP be undertaken for the two WWF pilot villages to outline involvement in this development and /or focus mainly on what to do with the new land provided in compensation; (ii) Should the EIA be assessed again; (iii) Should the investors be made aware of the area's conservation status (wetland and neighbouring known gibbon locations; (iv) Should WWF / NP do anything, or work up from the bottom with a VDP and new conservation habitat assessment?

K'long K'Lanh Agri-tech Zone is mentioned with GoV Aquaculture Research Institute No. 3 as the department involved – thus as scientists they may be more amenable to multiple-use of this 600 ha. of land as advocated by this consultant. Seasonal cattle 'Bo Sind' grazing of the wetland would be complementary with conservation as gaur and serow also use the wetland meadow for grazing. If it was fenced and completed converted to fish farm, this will not be possible.

6.3 Lat Commune Ecotourism

Lat commune eco-tourism focus group in each pilot village. Support should be simple and direct. It is suggested that the project spends most time just to identify a focus production product / group, for

²¹ The Buffer Zone Plan was commissioned by the Lam Dong PPC, contracted to FIPI – the main GoV official institute mandated to undertake forest land use planning and zoning, and awaits national government approval.

²² See Annex 2: top left / right zoning maps provide a map of these 4 areas with the key: (a) green check; (b) lime green diagonal line; (c) lavender; (d) cream colour.

example via the women's union. The project should communicate with the Dan Kia – Suoi Vang Eco-tourism Management Board regarding grants available and advocate funds be channelled towards the pilot villages. The key is developing a product / idea / group, and not so much on direct resource use mitigation. Without a product, funds will go elsewhere. WWF could liaise with the Eco-tourism Board in order to develop and collaborate on an idea.

6.4 Buffer Zone Project Collaboration

- Buffer Zone plan has demonstrations (not all identified) + Agri-extension service support
- Local breed of 'Black' pig should be encouraged with improved pig-sties construction design
- TFF to pilot 20 groups with a revolving fund which could be utilised
- Focus group, communication, information dissemination

Market-based mitigation demonstration – The Buffer Zone plan will initiate local black pig production among other activities, but probably only provide cash or cash for piglets. WWF could fund the construction of 2-3 improved pig-sties, even with biogas if possible.

The Buffer Zone Plan considers 'Sind' breed cows and flower demonstrations which may not be suitable for the four WWF pilot villages due to lack of land and skill. The plan for local black pig is considered more suitable, however specific demonstrations are recommended such as pig sty construction, not just provision of piglets. The Buffer Zone plan could also be utilized to consider village-based orchid / mushroom farms with out-growers supplying product for commercial (Da Lat and HCM City sale, as well as the tourist trade (Da Chais villages along the new Da Lat – Nha Trang road)

The villages are also made up of mainly ethnic peoples who have tried improved (large white hybrid) breed pig production which has failed due to lack of adaptation of the introduced breeds and probably lack of understanding on livestock health and nutrition. Added to this local pot bellied black pigs are not usually market-traded for cultural reasons. The ethnic villagers also lack the land, investment and knowledge to grow and market commercial flowers. Such flowers are grown under netting with irrigation, complex fertilizer, pesticide and management techniques (hormone inhibitors to stop flowers opening etc) such as any flower nursery business in England for example. The vegetable (Sup lo, Artichoke, An la, chilli pepper) production models for Lat and Da Chais offer better opportunities, however this is a limited intervention of two models funded per commune. Other planned interventions include: supporting the Agriculture Extension service via 'plant / tree' production (which will probably end up being training on fertilizer regimes for coffee production) techniques; cold water fish farming²³; buffer zone ecotourism development; cultural houses including in Da Chais Commune – Village Dung K'Si and Lat Commune – Village Dan Kia; rural roads; general agriculture & livestock production including rice, maize, garden production system, coffee). According to the Plan, coffee production is set to increase by 50 hectares each in Lat and Da Chais Communes (1,400 million VND investment for each) between 2009 – 2013 at 10 hectares / year increase²⁴.

Regarding VCF farmer demonstrations (memo sent to WWF by VCF, Oct. 08), the following VCF activities are planned for Lat commune:

- selection of poor households in 4 hamlets partly dependent on forest resources
- groups of 6 households with one as 'key farmer trainer / demonstrator
- Vegetable plots of >20m² each
- Agri-extension centre to be responsible
- 8 Vegetable species selected (during hamlet meetings) – local cabbage, capsicum pepper, amaranth, aubergine, Chinese pea (*dolichos sinensis*), Beijing cabbage, *Basella alba* (Mong toi – 'Buffalo spinach'), & Chinese cabbage

²³ This is being mainly undertaken by larger companies with significant investment and ability to receive land at the expense of local people – in particular the K'Long K'Lanh Agri-fish production zone of 600 hectares now taken away from NP management and the local inhabitants of Da Chais pilot village. – see also wetland & gibbon area notes

²⁴ According to DoNRE, LUPLA will not be conducted again in the pilot communes until 2011 at the earliest, so with the IIED / WWF areas under acute land availability, it is difficult to see how these villages will benefit much from this coffee production.

- Livestock models – 25 local chickens or ducklings – pen and fencing to be constructed, vaccinations via La Duong Agri-extension office. Target groups same size as for vegetables

Thus the proposed WWF option of 'black pig' doesn't conflict with VCF small livestock activity. The local black pigs are a strong local breed with low susceptibility to 'foot and mouth' or 'porcine blue ear disease'. Production is traditional. A new aspect would be to encourage production for market-sale. In Da chais, the NP and the Central Highland region, wild boar is hunted. It fetches a high price on the illegal meat 'restaurant' market, thus local black pig is seen as the next best thing.

The recommendation is for a Pig sty demonstration to be funded for 1-2 families in each of the 2 pilot villages in Da Chais. The demonstration is also possible for Lat commune if the ethnic peoples are interested, but needs to be determined according to budget and interest.

This activity complements BZ plan which envisages 150 pig Live Stock Units (LSUs) for Da Chais. Thus if WWF were to demonstrate improved sty designs, this would be seen as a tangible and permanent action. In the case that the IIED / WWF project wishes to further improve the villagers' situation (and as mentioned to the NP during the feedback seminar), installing a sty, human toilet and biogas reactors together could be attempted. A decision on as to whether the winter Da Lat temperature is mild enough should be taken (thought to be OK) and the volume of waste matter required to make sufficient electricity and cooking gas attractive enough for installation. A large family (6-7 members) plus 6-8 pigs is thought to be sufficient.²⁵ A breeze-block' pig sty with concrete floor, waste matter / urine drainage channel and feeding trough (to keep food matter general separate from manure) is suggested.

Cycad and orchid production are also possible, but not so easy, especially if technical support and funds are limited.

²⁵ NB. Local black pig is often free-ranging during the day time.

Annex 1 Existing Joint Patrolling Report Format

Example from October / November 2006.

[Report as translated with format and contents of two actual patrols with summary]

Page 1- Summary

Patrol Team Members:

Emergency Response Team Member (and Joint Patrol Team Leader), Officer, Vice-head of Forestry Office of Da Chais commune, Officer of Forest Protection Station at Hon Giao, Officer of Forest Protection Station at K'long K'lanh, Vice-leader of Da Chais Commune, People's Participatory Monitoring Member (2 of).

Activities:

- Patrol to unbind snares and rescue animals
- Re-check area of encroached (by vegetation clearance for agriculture) forest land
- Night patrol on Highway 723
- To note wildlife evidence and location
- To record all signs of illegal activities

Page 2 – Results summary continued

Result:

- In block 91, 124: 9 households have encroached forest land via clearance, of which 2 households have heeded reprimand, but 7 households have encroached again with coffee planting.
- In block 125A, 85: Found 6 old snares
- In block 88,86: Found 13 old snares (not newly set)
- Detected footprints of wild boar, weasel / fox, 'mang' (small deer sp.)

Recommendation:

- Joint GoV – community ranger forces, committee and partners to regularly associate in communication / propaganda concerning forest protection and management
- Reinforce patrolling, restrict law breaking including that of land encroachment, especially forest land encroachment.
- The Commune Forest Protection Committee should synthesize forest land encroachment law breaking in the area for which it is responsible (list, area, ref etc) (a)

(a) Not an active organisation, but on paper as per various forestry directives from central government.

Page 3 & 4 – For each forest office patrol (2 were conducted with information as per the summary)

Appendix 3- Forest Patrol Activity template sheet – Forest Office (Hat Kiem Lam)

Noted: Forest Station, location, date, method (e.g. group patrol), patrol leader, members, signed

Code No.	Activity	Co-ordinates	Location	Time	Record	Notes
1			E.g. forest compartment, road number & sector	Date, time		
2						
etc						

Page 5 – Additional template example / followed

Forest Patrol Report format

Forest Station, patrol method (walk, car, bicycle, boat; day / night etc, date

Patrol Information – Station / Forest Management & Protection Hamlet / Location / coordination
 Leader, Time start / end
 Patrol Area transect line opinion of the plan:
 Every 30 minutes record of Forest Compartment No. and Co-ordinates

Time	Co-ordinate	Forest Compartment	Time	Co-ordinate	Forest Compartment
00.00					
00.30					
01.00					
etc					

Illegal activities in the patrol area:

No.	Type of illegal activity	Location	Record / documented
1.			
2			
etc			

Observation of Wildlife

No.	Spp.	Manner of observation	Location / co-ordinate
2			
etc			

Signatures - Team Leader / Station Chief / Legal officer

Consultant's observations

- The writer's comment is that in this case, for the 2 patrols, only 2 members of the team were non-officials, thus the benefit (income-wise or conservation-learning wise) for local community members was limited on this occasion.
- The role of Forest Protection staff is to monitor illegal forest activity within 'forest' compartments. As a result, non-forest biodiversity rich areas such as wetlands may receive less attention.
- Standard reporting format which is 'incidence-based' (~ police incident report) as opposed to attempting to gain more information for management purposes

Annex 2 Operational Management Plan Discussion

Selected Threats

Cycads are collected from the park for ornamental purposes – on-farm propagation from leaf / root cuttings is recommended for pilot demonstration for sale to the eco-tourism trade (and along the new road routes). The CNA suggests the opposite in producing seedlings for re-introduction to the park and other protected areas. This is not advocated here, just plain and simple, stop collecting whole / live specimens, obtain cuttings from a sustainable source, grow and sell to tourist trade.

Orchids are another option for production as well as or instead of cycads, however orchids are symbionts and require a substrate inoculated often with another species of fungi, thus they are difficult to grow. (and the reason why they are often collected and not grown on-farm). However, these days there is commercial orchid production for selected species on the Da Lat Plateau.

Mushroom collection – affects serow, pig-tailed macaque, and terrestrial turtle in the park – see recommendations on community involvement in fungi survey and sustainable collection permits for pass-holders.

Grazing issues by domestic cattle – overgrazing obviously leads to reduction in meadow quality and reduced grass for wild bovine, sheep / goat species in the park. There is no known occurrence of 'Foot & Mouth', although it does occur in the Central highlands, more notably with other bi-ungulates such as pig (due to poor husbandry & hygiene techniques).

Encroachment of land – this is a slow and insidious practice in terms of settlers (Kinh people as well) and local villagers often now for coffee production. It is also a larger problem in terms of state appropriation of park land, which is a bigger problem: for fish farms; new land for park administrative building; resettlement zones (Dinh canh dinh cu); for new highways (722 to Ban Me Thuot and 723 to Nha Trang) for example.

Wildlife crop damage – the CNA mentions 'monkeys' – thought to be macaques raid maize crops. This is discussed in more detail by the consultant elsewhere.

The Poor often lack farming land or family members as labourers to farm and as a result may continue to hunt. Snares are the common method used at the park. The importance of mechanisms to enhance community utilisation of Protection Forest in the new Buffer Zone (protection contract payment, pass-holder mushroom collection, grazing permit holder etc) and the equitable new allocation of land in 2011 should not be underestimated. IIED should support the former via payments for enhanced monitoring, support for involving mushroom collectors in the mushroom survey and develop the VDP for example.

Community Objectives – link between the OMP and park threats

Community objectives are listed as:

- land to grow crops and land tenure - IIED / WWF could support identification of productive land uses for the newly assigned land, via VDP / advocating Land Tenure Certificates (LTC)²⁶ for this new area of land
- advice on crops / livestock – IIED / WWF can support this via funding activities (on-farm mushroom production, black pig stys etc) and involving the Agri-extension service with small 'service-provider' contracts
- access to loans – FLITCH, TTF and possibly the BZ Plan will address this
- an allowance for forest management and protection and to collaborate on forest restoration activities of the NP – IIED / WWF can support:
 - Joint patrolling
 - Blue book forest compartment patrol and monitoring
 - Participatory farmland wildlife monitoring
 - Seasonally controlled back-burning fire exercises

²⁶ Often also used in Vietnam as collateral for bank loans

Benefit Sharing Mechanisms

Benefit Sharing Mechanisms are mentioned in the CNA, with the following list for 'rational and limited use' – fungi, chestnut, medicinal plants, ferns, fuelwood, charcoal. The Consultant in this report advocates only mushroom and wild vegetables beginning with participatory mushroom survey.

- Sustainable wild vegetable collection (which are in effect likely to be mostly flowering plants), if permitted should be based on the following criteria for herbs / flowering plants:
 - o Annual / biannual / perennial and part collected root / leaf / flower / seed
 - Root +annual or biannual = species 1.....species 2.....etc ...
[Can't reproduce if over collected]
 - Flower +annual or biannual = species 1.....species 2.....etc
[Need to limit collection as the flowers are being collected before seed dispersal]
 - Leaf +annual or biannual = species 1.....species 2.....etc
[if leaves are cut too early in the season, then the plant can't flower.]
 - o All 3 cases have impact on reproduction and therefore on biodiversity.
- 'BSM' regarding limited cattle grazing away from core and key habitat zones is supported
- 'BSMs such as limited collection of mushroom are advocated within the CNA, however for example the park's planned mushroom survey, to date, has no involvement of traditional local collectors envisaged, nor any transfer of 1-2 species for on-farm trial. Thus the purpose is not applied or directly linked to threat reduction (unless as mentioned by the park that they are trying to increase in-forest production). This is despite the acute land shortage (which is increasing due to provincially approved business endeavours as well as re-settlement needs – relocation away from the two new roads), the acute poverty needs (1-2 months food shortage a year) and community priorities to maintain limited access to NTFPs for example. The OMP advocates that mushroom species density is determined using 4 meter radius circle sampling plots and that future collection is timed and adjusted in order to allow spore set. – Thus probably would mean not starting collection early in the season, requiring intermittent collection periods with 'no-collection' breaks, ending the collection season before all mushrooms have disappeared – to be developed.

Merits of other activities suggested by the CNA

Rattan collection is not advocated due to its' habitat and fruit value for certain bird species such as crested pheasant.

Fuelwood collection is not advocated except from limited park-managed 'brashing' of pine trees in order to reduce uncontrolled fire risk.

Fern collection is not advocated unless a particular known species is identified and limited sustainable collection by pass-holders can be regulated – ground species, not bromeliads. Over collection may limit spore set, although vegetative reproduction may occur making species presence more durable. Conflict with ground bird nesting periods should be avoided and location of collection outside core and in Protection Forest.

Wildlife species distribution is not clearly known. This is accepted, however the advice is to focus on habitat and particular species – such as gibbon (and / or other primates) and location of its' seasonal food sources. In such a specific case it may be possible to conduct a population or troupe study. Other topics could concern ungulates. Such work should clearly be directed with applied management solutions to be the key outcomes of such work.

The study of small carnivores is not considered a priority before the mentioned examples as park and key species viability is less dependant on small carnivore numbers which inhabit many protected areas in Vietnam.

Hunting is still a threat from snares, but the solution is prohibition, punishment and awareness, not general biodiversity surveys which are not specifically applied to management of the main 5-6 forest / wetland types.

Local communities do indeed burn undergrowth during December / January to encourage new grass growth. This practice should be park managed not attempted to stop as the CNA says.

Hunting hotspots do exist such as on the border between the park and Chu Yang Sin where a large organised ring was caught during Tet in 2008. The '10' hunters, including a person from Thailand possessed modern high velocity hunting rifles with telescopic / night sights among other paraphernalia and had killed numbers of wild boar, deer, muntjac and monkey. This is in contrast to the lone local hunter with a 1940's French musket rifle with the stock re-constructed with bits of old wood.

VCF advocated the following alternatives for communities with the community view and consultant's view added:

Resource use	Community View	Consultant View
Fruit & vegetable production	Need capital & technique	Fruit trees not advocated, due to acute land shortage and the more profitable use of land for coffee; vegetable gardens OK.
Fuelwood plot plantation	Land shortage	Land shortage; Pine area thinnings should go to the local communities as should brushings
Dry grass production	OK	No land for silage production unless meadow land managed for such use
Orchid, ornamental plant, mushroom production	OK – give technique	Keep it as simple as possible with plant that can be propagated from leaf cuttings; and/or start with a common edible mushroom, then apply technique to wild variety later

Monitoring System advocated by the CNA

The proposed system being - minimum-training based, little equipment and limited-cost based, participatory with villagers, and strengthening of local systems already in place – is fully supported. The CNA system is proposed to monitor and determine – habitats and ecosystem degradation levels, threatened species population levels, identification of causes of damage, evaluates impact of management interventions on the ecosystem, and lastly assesses if local residents have increased benefits from limited resource use. The proposed IIED / WWF covers these aspects in terms of its proposed:

- Continuation of the Joint Patrolling System (an extensive amount of patrol equipment has now been provided under TFF, thus only funding the staff is required)
- Enhanced template recording of Blue Book area patrols
- Participatory wildlife on farmland and crop damage monitoring
- On-farm mushroom (and possibly cycad / orchid) production

Other 'monitoring' interventions to support 'putting into operation' the parks Management Plan / OMP would include:

- Targeted habitat and wildlife survey work

Indicators proposed by CNA

The number of sightings are partly based on frequency and place of patrols, thus more patrols are likely to uncover more wildlife. However, this should not stop the park establishing an 'Excel'-type database of recorded wildlife and incidents. The usual expectation in Vietnam is for an outside company to come and install a 'fancy' piece of software to log the data within and to interpret the data. The actual need however is to be able to use a simple piece of software, such as 'Excel' that the data-input person can manipulate him/herself according to required decision-making and presentation needs. It only takes one decision, for the director to insist that all monthly patrol / incidence reports of the ranger staff are forwarded to the scientific section for data logging. The data logger should have the responsibility to issue an annual table set. If the previous years' of patrols could also be logged, this would provide a 'time-change' chart.

The recommendation is not to initially alter what the patrols record, (apart from the recommendations given in this report regarding template design of monitoring). Neither is the recommendation to follow the CNA to the letter, which advocates for example, sightings of mushrooms in plots, bird sightings

(?), hornbills, gibbon, gaur, quantity / distribution of bird sounds in the breeding season, numbers of free-ranging cattle, rattan disturbance along transects. This again is a partly academic exercise and goes immediately against the CNA's previous statement on the monitoring system being 'minimum-training based'. Transect lines are 'research-based'. Patrolling has the aim to find and catch illegal activity. Unless the park is going to be completely divided into transects, then the value is limited. The existing patrol system which utilises the forest compartment system (and GPS if available is perfectly adequate). The skill in patrolling lies in not using fixed patrol routes (which are often advocated, again for research reasons), but rather to include a random and surprise element to the route.

What to monitor?

Monitoring of human activity should be balanced with that of wildlife sightings.

Research type tasks should be clearly separated out from ranger patrol tasks

Patrol-type monitoring data

Hunting evidence

No. of free-ranging cattle in compartments

Area of land encroached

Forest floor disturbance

Forest canopy disturbance – orchid / bromeliad collection

Primate locations (e.g. gibbon calling areas)

Research-based monitoring

No. of wild cattle / sight / footprint / other - specify

Primate seasonal food sources- Fruiting tree frequency

Hornbills carrying food to nests – OK

Identification of 'salt-lick' areas

Management Planning - There is a need for habitat-based maps with the 5-6 key habitats overlaid with forest compartment grid lines and main features – to be used in conjunction with a topographic (best Gauss Kruger (GK) or UTM map available at 1:50,000, but preferably 1:25,000 or even 1:10,000 scale) map. Plastic Map cases should be supplied.

Management Effectiveness Tracking Tools (METT) as described in the CNA are sometimes questioned due to their subjective nature and the way that they are 'imposed' from outside projects. The park's Management Board comments on the METT scorecard were:

- Management board of NP wants to demarcate the boundary along functional lines (delineating the core zone from the rehabilitation zone, etc);
- Protection systems are only partially effective in controlling access to NP resources. Although there is a forest protection station in each commune surrounding the reserve, the guards can only prevent encroachment and illegal logging, they do not focus on assessment of use resource
- Many survey and research missions has been done but were not directed towards the needs of protected area management. Because of this, very few of the requirements for active management of critical habitats and species can be implemented. (a)
- Relative guarantee in basic expense for permanent activities but when extending need outside funded.
- There is good budget management but need to improve managing capacity for NP staffs to manage NGO projects.
- Have equipment but not enough so limited management missions.
- Budget for research and speciality activities must rely on outside funding.
- The local community joins in discussions that relate to management but they do not have a direct management role.
- Strengthen education and interest in management.

(a) confirms the 'research' method of 'spotting' wildlife as opposed to applied research of linking habitat type (mosaic map) to management action

The CNA describes conservation needs for key conifer species. Concerning the conifer species (29% of park forest cover), it is recommended to develop a conifer management plan which ensures that in selected instances, re-planting of the common *Pinus kesiya* (and to a lesser extent *Pinus merkusii*) is replaced with the rare *Pinus krempfii*, *Pinus dalatensis*, *Fokenia hodginsii*, and *Keteleeria evelyniana*, especially in the park's restoration zone and other broadleaf / conifer margin areas.

A 'controlled burning' plan for pines is also recommended for practical reasons, contrary to the 'conservationist' view that all fire affects wildlife negatively. Such a plan should be linked with the wider Buffer Zone, neighbouring SFEs, Watershed Zones and Protected Areas and any corridor restoration work. It has been written (Eames, 1995²⁷) that the conifer forest is in a seral succession stage, which is being maintained by burning (and would otherwise change to broadleaf), however with (endemic?) species such as *Pinus dalatensis*, and the fact that the area is described as the largest natural conifer habitat in Vietnam, it would seem that continued 'fire' management would be justified. The OMP within its' issues section includes the statement:

'However, while forest fires are viewed as a major threat to biodiversity, the coniferous forest in BDNB NP is a seral vegetation type which depends on periodic, low-intensity surface fire to maintain its open structure and ecosystem functions. Suppressing the fires may result in the loss of the open evergreen forest and grassland ecosystems, as plant succession may lead to replacement by broadleaf evergreen forest.'

The OMP in its' implementation plan section currently includes 'controlled burning to maintain pine forest in seral stage'

Other Comments

- SUF regeneration areas and new road-side rehabilitation areas could focus on planting a proportion of large fruit and nut-bearing trees for primates and bear in particular
- Gaur (*Bos gaurus*), deer species – *Cervus* sp. (Nai) and 'Mang' (muntjac?) – small deer sp. – all recently hunted in the park.
- NTFPs – on-farm – cycads / orchid / mushroom – community farm – ecotourism sales as on road to Khanh Hoa province through park. Villagers as owners and contract growers
- IIED to focus on implementing 2-4 activities with advocacy / collaboration on other activities
- Fire issue is poorly dealt with by 'conservationists' or the park. Back-burning of pine stands is a standard and good management practice. The pines are partly fire-resistant and fire causes 'seed-crack' for germination. This is also natural process caused by lightning. The conifer needles if left to reach 50- 60 cm depth become a serious fire hazard (due to higher volume of combustible material and greater heat generated), thus controlled burns stop the build up of pine needles. The second point is that many of the local minority peoples who traditionally keep free-ranging cattle conduct seasonal winter (Dec / Jan) under-growth burning in order to remove dead material and stimulate fresh grass growth for cattle (domestic and wild²⁸) in the Spring. This practice has been and still is traditionally widespread unless controlled. The management solution is not to attempt to stop all fires, but rather to organise limited and controlled burns in a collaborative manner with the concerned communities, especially within pine areas of the new NP Buffer Zone - Protection Forest which may develop some CM agreement on seasonal livestock grazing (IIED /WWF or TTF projects for example may support the creation of a 'fire control and utilisation plan'.)

²⁷ Bird Conservation International 5(4): 491-523

²⁸ Gaur, banteng and wild buffalo bovine species as well as serow (a wild goat) would benefit for example.



Left - '3-needle' pine (*Pinus kesiya*) having undergone controlled burning in the Nui Ba Ranger Station area of the NP; Right – regeneration of 3-needle pine nearby

- Cattle production near protected areas are usually not advocated by 'conservationists' mainly for reasons of possible disease transfer, however if domestic breeds are inoculated, the risks are considered low by this consultant, even for bovine TB or Foot & Mouth disease.
- Biodiversity surveys are mentioned in the NP Management Plan, the VCF OMP the JICA proposal, and the IIED / WWF project design, however all fail to adequately direct such survey work. Biodiversity surveys in Vietnam traditionally and still those conducted today by most conservation NGOs focus only on presence / absence of a species and a few hunting pressure hotspots to direct ranger attention. What is needed for wildlife management at the park, is for any future biodiversity survey to be habitat-based. This means for instance identifying why particular animal groups are present and if their habitat is under the appropriate management to enhance their survival. For example in the park:
 - o Primates (gibbon / langur and macaque) and bear (Black and Sun) among other animal groups require large broad-leaf fruit-bearing (e.g. fig)²⁹ tree species. Are the seasonal requirements of these 2 groups in particular sufficiently met in each of the 4 seasons – e.g. bear needs bamboo and other shoots in the Spring, berries / fruit in the summer, and nuts (chestnut, beechnut? walnut? etc.) in the autumn for bulk protein / fat prior to winter hibernation.
 - o Wild cattle, goat and deer species among other herbivore species require an adequate supply of Spring grass production as well as secluded breeding areas. Is the park protecting sufficient meadow land?
 - o Pheasant habitat requirements.
- There is much existing data (Birdlife surveys, SSA, CNA and VCF OMP) as well as data contained within the various project proposals (BZ plan, TFF), however in most cases the information is used to outline the problems, but much less so to target specific solutions

In the event that certain habitats lie outside the NP (e.g. K'long K'lanh Zone in particular – see Annex 3: regarding its' meadow and 'gibbon-hill' importance), then Species / Habitat Conservation Areas (SHCAs) could still be designated along one of the existing models in Vietnam (in Yen Bai - Mu Cang Chai or Bac Can - Nam Xuan Lac). The purpose would be to institutionalise community and non-Protected Area stakeholder involvement in the management of the particular area via the Commune PC or Commune Forest Protection Office for example.

²⁹ Persimmon trees are medium size and grown quite extensively in the area as a marginal value crop. They may / may not be native to the park though, but could still serve as a food source if cluster planted during road-side vegetation regeneration works.

Annex 3 Buffer Zoning Situation in IIED / WWF Project Area



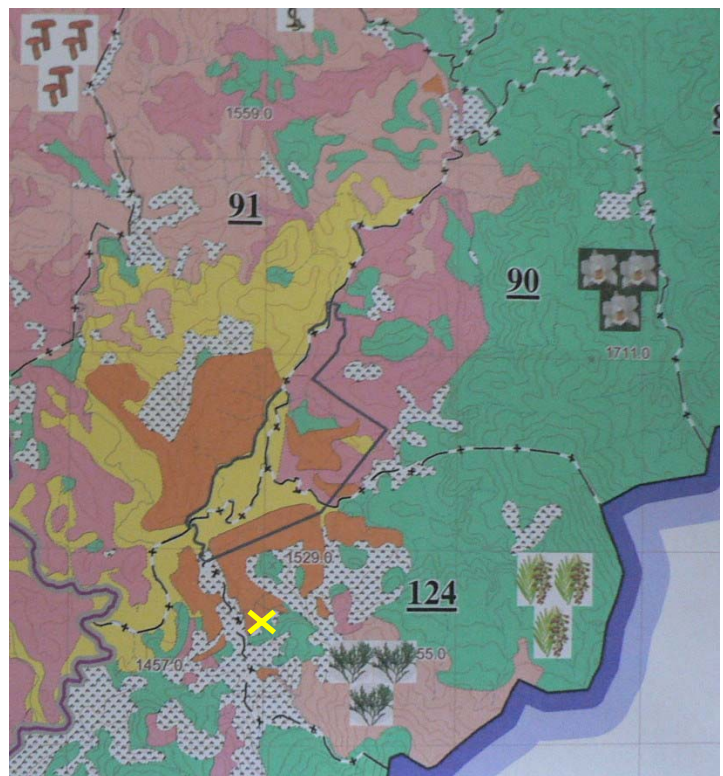
Top left: Lat commune - New Protection Forest (Highly Critical Watershed) designation within New Buffer Zone (113A, 114A, 102A, 102B). Pilot villages situated in 113B / 145B.

Top right: Da Chais commune – New Protection Forest within Buffer Zone

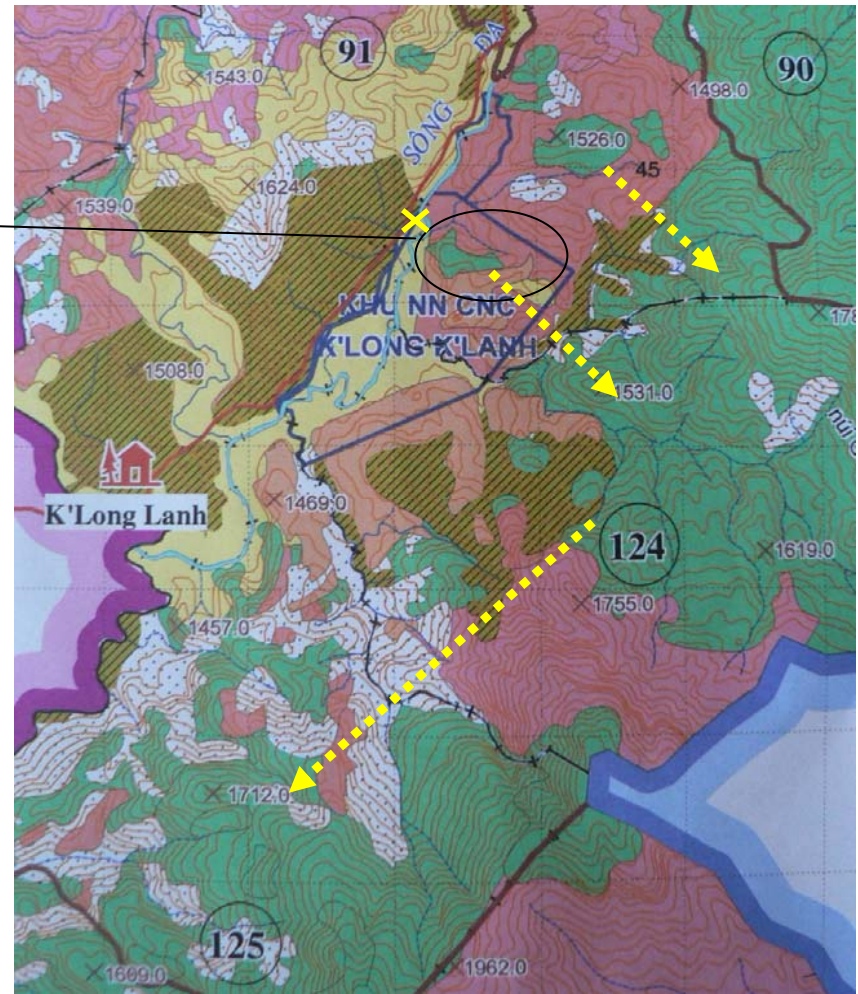
Colour key: Green check – to convert to Protection Forest (highly critical) from SUF; lime green diagonal. – to convert to agriculture from forestry land [includes land given in compensation for Agri-tech zone]; mauve Agri-tech Zone; blue – Protection Forest (highly critical); off white – non-forestry land; grey – remains as NP (SUF); red – to change from growing forest to agroforestry/fruit

Middle right: Da Chais commune - NTFPs in IIED / WWF Pilot site (Compartments 90, 91, 124) with fungi, orchid, rattan & *Dacrycarpus conifer* sp.)

Colour key: Crimson - for forest production / restoration; yellow – agriculture land; polka dot – production land; green - broad leaf; pink - conifer forest

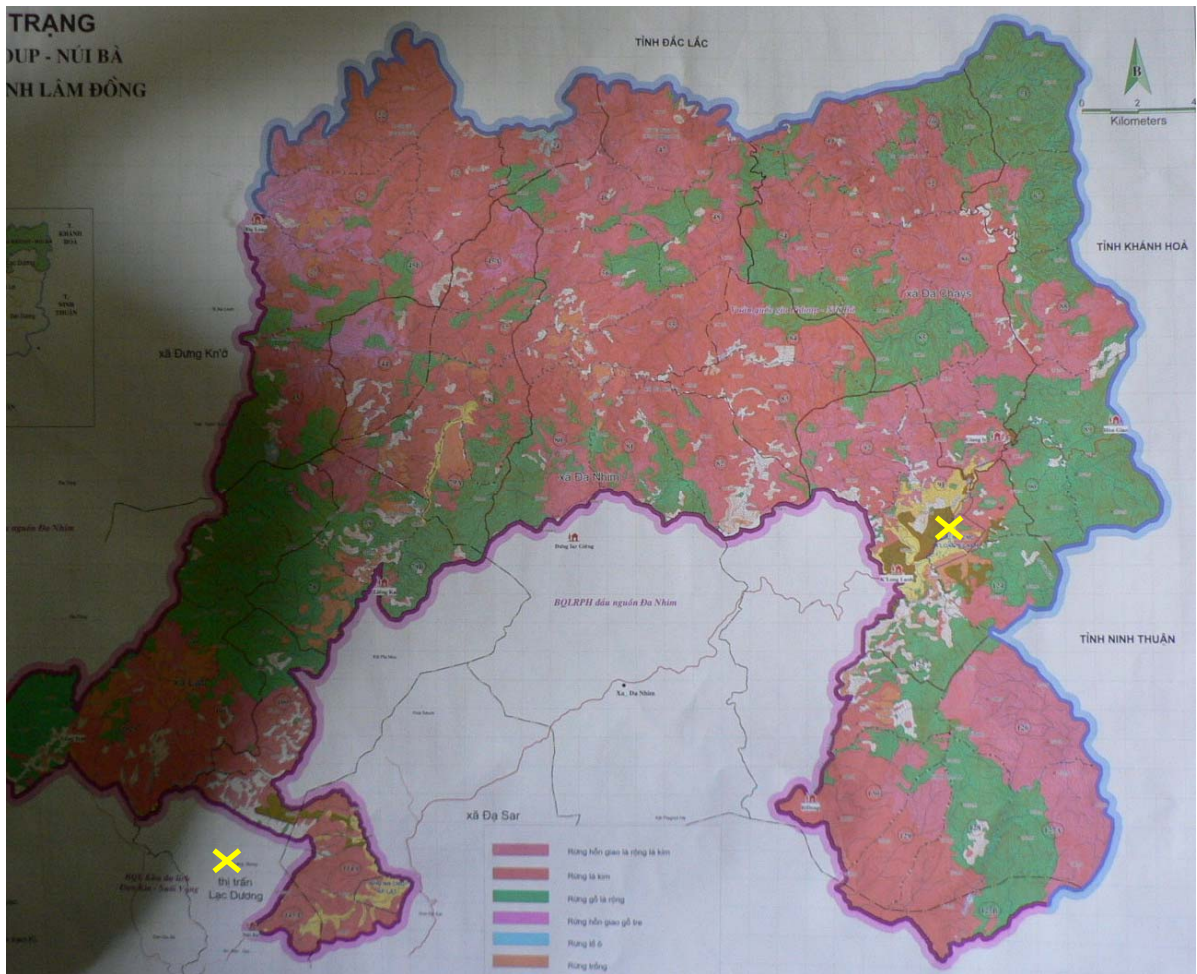


Annex 4 Gibbon Corridor



Gibbon travels from compartments 90 and 124, but will have difficulty to get to compartment 125. Circled – the hill behind Mr. Quack’s house in Da Chais commune and within the Fish-farm Development zone, for which an EIA has apparently been approved. Key: green – broadleaf; pink – conifer / pine – Should the WWF Project fund Participatory Wildlife Monitoring / Wildlife Watching Club and Advocacy for a Conservation Corridor in this Wetland & Gibbon area?

Annex 5 National Park Map (pre Buffer Zone gazetted exclusion areas)



Lat Commune Ecotourism Area



Annex 6 New Biodiversity Law

No. /2008/QH12 (Sept 08) - relevant clauses

With reference to the wetland area within Da Chais (behind Mr. Quack's home and near the gibbon area:

Article 32. Management for buffer zone of the conservation area

1. Location, area of the buffer zone shall be stipulated in the decision on the conservation area establishment and defined in the land-use status map or the co-ordinate on the sea-surface.

2. All activities carrying out in the buffer zone shall be obeyed the general regulations of the buffer zone.

3. Owners of projects investing in the buffer zone of the conservation area must elaborate the environmental impact assessment report; the representative of the management board or organization who is authorized to manage the conservation area must be the member of Appraisal Council for environmental impact assessment report of the project investing in the buffer zone.

If the project potentially causing environmental accident or dispersing toxic waste, the decision on approving the environmental impact assessment report must to define the safe distance in order to eliminate the negative impacts to the conservation area.

4. The Prime Minister promulgates the general regulations of the buffer zone.

Article 35. Sustainable development of natural wetlands

1. Natural wetlands shall be areas of swamps, peat, or permanent or temporary water area including seas with the depth of less than 6 meters during low tide.

2. Statistical, inventory surveys on natural wetlands shall be carried out in line with the regulations of the laws on land.

3. The Ministry of Natural Resources and Environment shall guide the provincial - level People's Committee on statistical, inventory surveys, setting up the mechanism for sustainable development of ecosystem, and locating the position, area on the land-use status map.

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Annex 7 References & documents consulted

Investment Project for Lam Dong PPC, BDNB NP Buffer Zone (2009-2013), FIPI 08/2008

Operational Management Plan BDNB NP, 2nd Draft for VCF, FSDP, 10/2008

Conservation Needs Assessment BDNB NP, VCF, FSDP, 09/2008

Social Screening BDNB NP, VCF, FSDP, 04/2008

VCF SRTA - Package 1 - Capacity Building for BDNB NP

TFF Project proposal - Piloting an approach to Multiple Use Forest Management in Lam Dong Province

Tracking Tool Data Sheet & Assessment form; Worksheets 1&2, Birdlife, 10/2003

Darwin Proposal for the Co-management of Forests & Wildlife BDNB NP (This IIED / WWF Project)
IIED / WWF Project Plan 2008

Field Assessment report on Co-management at BDNB NP , Swan 04/2008

Selected local project consultant reports on PRA.

FLITCH – selected documents

Decision No. 186/2006/QD-TTg of August 14, 2006, promulgating regulations on forest management. Article 20 of this Decision grants PPCs (or MARD for centrally-managed national parks) the powers to 'approve designs of, and permit the rational use of natural resources in, [the ecological restoration zones of] special-use forests...' This could enable management boards to develop CM arrangements and plans and have these approved by PPCs (or MARD for centrally-managed national parks)

Earlier IIED / WWF project documents provide a fuller review of legislation, thus it is not deemed necessary to repeat again here.

Annex 8 Terms of reference

An assessment of the management of the BiDoup – Nui Ba (BD – NB) National Park with particular emphasis on improving collaborative management with neighboring farmers.

Introduction: Bi Doup-Nui Ba (BD-NB) National Park was decreed in 1986. It is one of the larger protected areas in Vietnam, encompassing 72,573 ha. It is mountainous and forms a vital watershed to three distinct water catchments. It falls within a landscape which has been independently identified by leading national and international scientists as one of the highest conservation priorities within the Greater Annamites eco-region.

The human population in the buffer zone surrounding BD-NB is growing with concomitant pressure on land and natural resources both inside and adjacent to the protected area. In addition, the integrity and the bio-diversity of BD-NB is threatened by infra-structure and potentially uncontrolled tourism development.

The Bi Doup-Nui Ba Management Board identified that encroachment into the Park was an important threat and was in part a failure of the collaboration between the Park Management Board and the ethnic communities in the buffer zone. Through IIED and WWF-GMS, the project is taking steps to develop and implement collaborative approaches to working with such communities that succeed in providing incentives for sustainable landuse both in the buffer zone and the protected area.

Problem statement: The core role of the protected areas has changed dramatically over the last 50 years. Initially, protected areas were generally proclaimed in order to protect bio-diversity. Over the last 50 years, expectations have evolved and protected areas are often required to play an important role in economic development, provide recreational opportunities for neighbouring population centers and generate benefits for the people living on their boundary. Often protected area managers and their management plans are poorly equipped to deal with these complex and possibly conflicting challenges.

In particular, developing effective collaborative management between stakeholders requires both parties to work together towards a common goal. In BD-NB National Park, the two primary stakeholders are the Board of Management and the farmers in the communes that live on the boundary. By assessing the management of the protected area, the facilitating organisations (WWF and IIED) hope to learn more about the challenges facing the protected area, its current management plan, the translation of that plan into daily / weekly, monthly and annual activities.

Qualifications of the consultant: In order to successfully complete this consultancy contract the consultant will require:

- A strong understanding of the management of protected areas. Ideally the consultant will have experience from international best practice, other regions as well as from Vietnam.
- A strong understanding of process and objectives of collaborative management
- Good experience in developing appropriate monitoring systems for the management of protected areas.
- Demonstrated ability to communicate in Vietnamese or strong working partnerships with Vietnamese nationals.

Consultant's activities: The activities that are listed below should only be considered as a guide to the expected activities:

- Will search for any other previous assessments of the management of BD - NB National Park conducted either by national, regional or international organisations.
- Will work with the Board of Management and other senior staff to identify and rank the threats to the bio-diversity and integrity of the BD-NB.
- Will review the operationalisation of the management plan in terms of the daily, weekly, monthly and annual activities undertaken by the staff. In this review the consultant will pay special attention to the following three areas

- law enforcement,
- bio-diversity monitoring
- collaborative management activities
- spatial planning and the development of infra-structure (for example tourism)
- Will document how important information is collected, stored and analyzed.
- Will assess the extent to which management information is collected and then used in the modify and improve the management of BD – NB National Park.
- Will make recommendations into the changes in the management of BD – NB National Park that will improve the its performance in the following areas:
 - law enforcement,
 - bio-diversity monitoring
 - collaborative management activities
 - spatial planning and the development of infra-structure (for example tourism)

The outputs: The output of this consultancy will be a single concise report on the management of the BD – NB national Park in Vietnam with clear and explicitly recommendations as to how this can be improved particularly with respect to the improvement of law enforcement, bio-diversity monitoring, collaborative management activities with the farmers living in the buffer zone and spatial planning.

The consultant will present his / her findings to the workshop that will include the BD -NB management board and other appropriate stakeholders.

The report will be produced in English. The translation costs, from English into Vietnamese will be borne by the WWF and IIED Project.

Timeline: November 2008

- 2 travel days (1 traveling days = 0.5 working day)
- 8 field days
- 2 report writing days

The final report shall be submitted 1 week after the field trip which means by 19 November 2008

Back cover



Cobra caught in Nui Ba Station area, later apprehended by the ranger staff



Resettlement land at Nui Ba Station