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Ministry of Environment and Habitat Burkina Faso

The Study on the Management of Forest Reserves in the Province of Comoe

BURKINA FASO

FINAL REPORT

July 2005

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Preface

In response to a request of the Government of Burkina Faso, the Government of Japan decided to conduct the study on the Management of Forest Reserves in the Province of Comoe and entrusted to the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched the study team headed by Dr. Junichi WATANABE of International Development Center of Japan and consists of International Development Center of Japan and Taiyo Consultants Co., LTD. between Sep 2002 and Jun 2005.

The team held discussions with the officials concerned of the Government of Burkina Faso and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Burkina Faso for their close cooperation extended to the study.

July 2005

Etsuo KITAHARA,
Vice President
Japan International Cooperation Agency

Letter of Transmittance

Mr. Etsuo Kitahara
Vice president
Japan International Cooperation Agency July, 2005

Dear Mr. Kitahara,

The Study for Forest Management Plan for Comoe Province in Burkina Faso has now been completed and the Final Report for the Study is submitted herewith.

This Study was conducted by a joint venture formed by the International Development Centre of Japan and Taiyo Consultants Co., Ltd. From August, 2002 to June, 2005 in accordance with a contract concluded with the Japan International Cooperation Agency. For the purpose of formulating a participatory forest management plan for five reserve forests in Comoe Province in Burkina Faso, pilot studies and other activities were conducted under the Study to examine the desirable roles of the Forestry Bureau of the Ministry of Environment and Living Environment which manages reserve forests from the standpoint of the administration and the organization of local villagers connected to these forest reserves (villagers' groups for forest management) and the desirable implementation mechanism for participatory forest management in a concrete manner. Based on the findings of the Study, this Report has been compiled, primarily featuring the participatory forest reserve management plans.

On behalf of the Study Team members, I would like to express my heartfelt gratitude for the useful guidance and assistance provided by officials of the Japan International Cooperation Agency and those of JICA Burkina Faso and Côte d'Ivoire Offices throughout the study period. The Study Team members also appreciate the valuable advice and guidance received in Burkina Faso from officials of the Ministry of Environment and Living Environment, the Department of Forestry (DF), the Cascade Regional Office and the Comoe Provincial Office of the said Ministry.

Finally, it is sincerely hoped that the participatory forest reserve management plans put forward in this Report will assist the restoration and conservation of forest resources in the forest reserves and will also contribute to the extension of the participatory forest reserve management plans in Burkina Faso.

Junichi Watanabe, Ph.D.
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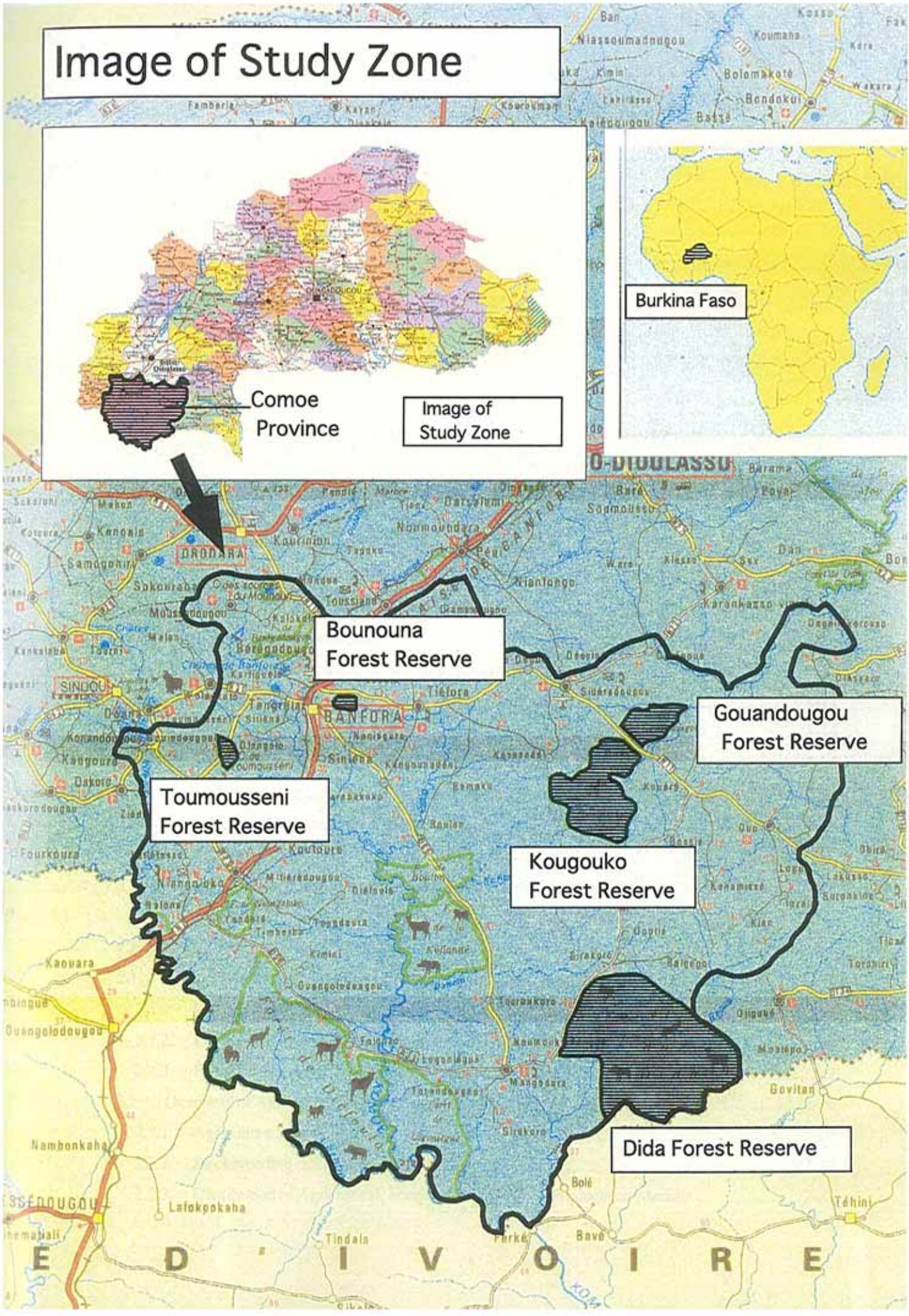
Image of Study Zone
Comoe Province
Image of Study Zone
Burkina Faso
Bounouna Forest Reserve
Gouandougou Forest Reserve
Toumousseni Forest Reserve
Kougouko Forest Reserve
Dida Forest Reserve
DIOULASSO
DRONARA
SINDOU
BANFORA
E D I V O I R E

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Summary of the Report

This summary describes the basic thinking of participatory forest reserve plans, important points in plan formulation, the basic concepts of the participatory management plans for the forest reserves, and future prospects, in particular focusing on the role to be played by the administration/Forest Service.

I. Background of the Study

Because of its location in the Sahel, the northern part of Burkina Faso is faced with a serious desertification problem. In addition, due to factors such as natural increase of population, migration from the north, slash-and-burn farming, and indiscriminate deforestation, etc., the area of forests fell by 1,260,000 ha from 15,420,000 ha in 1980 to 14,160,000 ha in 1992. It is also reported that, even in the southern part of the country, which was thought to be relatively rich in forestry resources, activities exerting demographic pressure (fuel wood collection, farming activities, overpasturage, bush fires, etc.) have provoked a significant degradation or disappearance of forests, consequently leaving only forest reserves as true forest environments.

The consequences related to the depletion of forests and progression of desertification are: 1) displacement of the agriculture and ecology belt toward the south, 2) depletion of soil fertility, 3) poverty of flora, 4) poverty of fauna, and 5) destabilisation of living conditions in terms of lifestyle and diet, etc.

Through national forestry policies, the Government of Burkina Faso is aiming to practice sustainable management of forest resources, while at the same time actively utilizing resources with a view to creating employment and stabilizing incomes. On the level of villages, efforts are being made to realize the optimum and sustained development of forest, agricultural and stockbreeding resources by switching from "sector approach" focusing only on forestry to a "program approach" aiming to harmonize forest development with agricultural and stockbreeding development.

In 1996, within the framework of this approach, the Ministry of Environment and Habitat (former Ministry of Environment and Water) formulated the National Program for Forestry Management establishing objectives of sustainable forests management

The implementation of this program under government initiative is always faced with difficulties linked to the financing and the implementation system. Also, the decentralisation process currently in progress in Burkina Faso presents further issues concerning the promotion of planning and implementation of forest management on the regional level. In such a context, it becomes necessary to establish practical forest management plans that can assure the conservation and the sustainable utilization of forest reserves.

II. Basic thinking of participatory forest reserve management plans and important points to take in account

II.i Basic thinking

Initially, the Study was initiated supposing to a certain extent the participatory approach to forest reserves management. Then, the management plans were formed based on discussions with the Forest

Service (counterpart) and inhabitants, the lessons learnt from the Pilot Study, as well as the "learning" shared by other donors etc. Although difficult to summarize in one word, the relations (trust) between villager groups and the Forest Service responsible for managing forest reserves, as well as the implementation capacity of the villager groups, are the essential keys for the participatory management plans of forest reserves. Definitely, the participatory management plans for forest reserves must be established and achieved based on relations between people (stakeholders). On this basis, the most important thing in compiling and implementing the participatory management plans is to learn in actual implementation and to build trust and norms in relations between people. The Pilot Study part of this Study played a part in realizing these goals.

Initially, the inhabitants were afraid of the forest officers, who are the "guardians of the law" responsible for managing the forest reserves. Some forest officers participated in the training and activities of the Pilot Study, and from there, discussions and exchanges took place with villagers. The future management of the forest reserves really began from there. In order to further promote the participatory management of forest reserves, it will be necessary to establish relations of mutual trust throughout exchanges between the forest officers and inhabitants, and flexible application of the management plans will be required.

The basic policies of the participatory forest reserve management plans are defined in Chapter 8. The government's policy regarding forest reserves management can be summarised by the two following points:

- Protection of the forest reserves "as forest areas worth retaining in Burkina Faso;" and
- On the basis of decentralization in Burkina Faso, sustainable management of forest reserves based on voluntary participation by local villagers

Forest reserves are under the protection of the administration/Forest Service, which is responsible for controlling violations in accordance with the law. Moreover, on the legal level, the management of forests owned by villages and forest reserves supervised by the government is different. The participatory management of forest reserves will be conducted somewhere between the two extremes defined by the diagram below.

In the first type, villagers conduct forest management and so forth upon receiving authorization regarding traditional rights of utilization from the government. In other words, this is forest reserve management based on passive local participation. Accordingly, this management remains passive. In the latter type, local villagers conduct the sustainable management of forest reserves as owners based on the understanding of forest reserves as their own assets.

The present positioning of the participatory management of forest reserves is determined by several factors. In chronological sequence, the following factors can be considered:

i) Policy and legal supports for promoting villager participation / survey for the forest reserves and villages

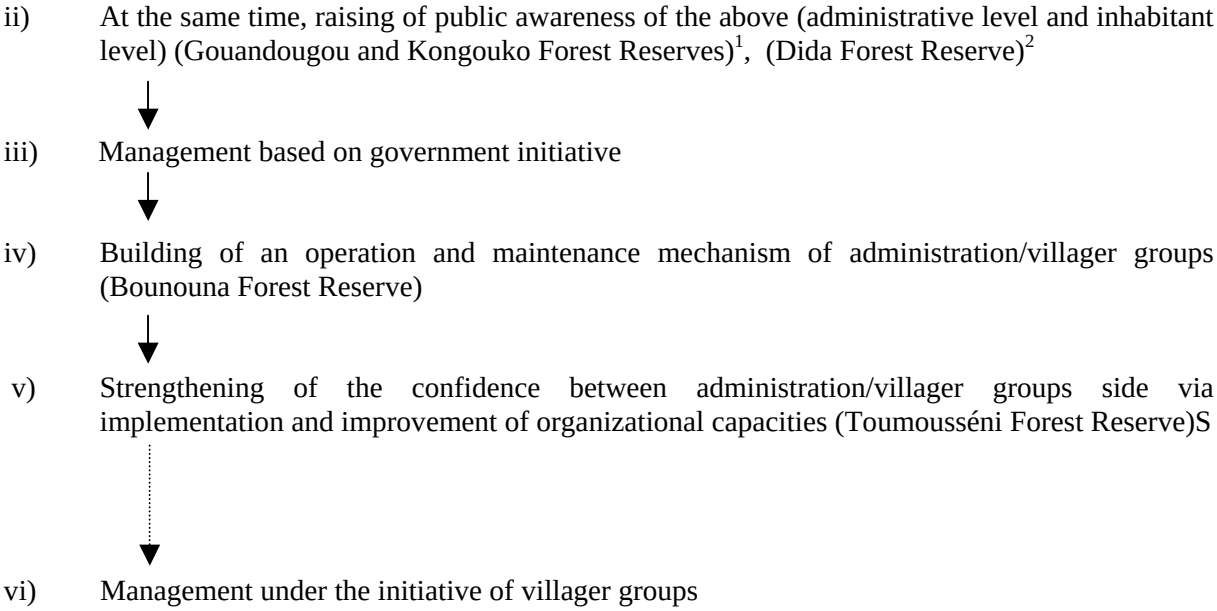


Figure 1 Process toward the management based on local organisations side

As shown in Figure 1, there are several stages towards realizing forest reserve management based on local initiative based on ownership by villagers. First, the policy and legislation must be defined for the participatory management plan of forest reserves. This legal planning is fundamentally implemented by the Government of Burkina Faso (see Chapter 1). Then, it is necessary to raise public awareness of it. The administration/Forest Service in charge of forest reserves understands this well. But at the level of the inhabitants, this is not well understood. For example, practically none of the inhabitants knew about the traditional utilization of forest reserves (dead tree cutting, fruits, food plants and medicinal plants collection). In the forest reserves of Gouandougou and Kongouko, the environmental education currently in progress concerning this traditional utilization corresponds to this level. Moreover, what is indispensable for the management of forest reserves at this level is their demarcation (setting up of panels and limits signboards) as in the case of Dida Forest Reserve.

In the following stage, it is essential to build villager groups trained for forest reserves management, while at the same time creating a system and an organizational mechanism to realize this. The villager groups considered here are the GGFs, Unions of GGFs, Farmers Groups, Stockbreeders Groups, Associations, NGOs and users groups. For such villager groups to be trained, the wish of the inhabitants should also be considered, but it is essential to consider the training conditions of the villager groups. For the training of a GGF, the exploitation of forest resources from the forest reserve (fuel wood or charcoal) must be implemented or be possible on a commercial basis, the organization must be autonomous, and the incentive of the GGF members must be promoted by cash income. Otherwise, if the creation of a GGF is difficult, one can think according to the objectives about the creation of a farmer group for farming activities in the forest reserve, or the creation of a stockbreeder group for pasturage in the forest reserve, or the creation of a users' group collecting and processing

[1] Approximate position according to the involvement of inhabitants of the forest reserves zones concerned by this Study
[2] Forest Reserve survey, demarcation boundary, and neighboring villages survey related to Dida Forest Reserve only were conducted.

karite, etc. For the creation of these villager groups, it is necessary to ask for the government's official approval (see Chapter 2) in accordance with the formalities of approval for the creation of an association or a group, and then stimulate its activities.

The population organizes a general meeting, elect their leaders and open a bank account, to legalize the GGF etc. and demonstrate that the organisation structure has been achieved. This signifies the establishment of the organizational form. The most important point concerns the manner in which the organization will be run. It is necessary for the group to participate in training like that implemented during the Pilot Study, and to implement actual activities. Confidence will be generated between the leaders and between the members through the implementation of these activities. It is important to provide cordial support such as related trainings and support to official authorization for this creation as a villager group. Self-management by the villagers would be ideal, but it is difficult to expect it from a villager group that has just been created, and in reality, the support of the administration/Forest Service is necessary as it was during the Pilot Study. This is an important role for the Forest Service in the participatory management of forest reserves.

Inherent to the participatory management of forest reserves is the need for the government side and villager groups to reinforce mutual trust while building results, and the need to steadily realize management of the forest reserve based on local initiative. The main roles that will be confided to the villager groups by the public administration/Forest Service are as follows:

- More autonomous reforestation and tree cutting in the forest reserve;
- Support for the supervision and control system in the forest reserve;
- Review and agreement on more autonomous monitoring, evaluation and activity rules;
- Autonomous resolution of the problems met.

II.ii Main points to take into account in the establishment of the plan

The Pilot Study, etc. revealed the importance of the following activities:

1) Survey of current conditions of the forest reserves,
2) Recognition of the related villages,
3) Recognition or organization of villager groups;
4) Concept of zoning,
5) Recognition of working areas; and
6) Monitoring and evaluation of activities, abd revision of activity rules.

Important points to take in account in the future definition of participatory management plans for the forest reserves have been compiled as follows.

1) Survey of current conditions of the forest reserves

Present conditions of the forest reserves will be gauged by inventory survey of the forest resources etc[3], and survey of the conditions of utilization of forest products; then the problems linked to forest resources in the forest reserves will be identified and targets for each forest reserve will be set. Surveying the conditions of utilization of forest products in the forest reserve will clarify the relations of the neighbouring inhabitants (related villages) with the forest reserves. When the inhabitants feared

[3] Survey concerning fauna in the forest reserve is strongly expected

the forest officers, it was generally difficult to get precise information concerning the utilization of forest resources, etc. in the targeted reserves. The results of these surveys will provide databases for the mastering of problems linked to the forest reserves. Besides, preparation of land use and vegetation maps in the forest reserves based on existing vegetation maps[4] is also necessary for the zoning. If controlled pasturage is possible in the forest reserves, it will be necessary to survey pasturage reserves and the numbers of livestock that can graze in the target areas[5].

2) Recognition of the related villages

There are a lot of villages around the forest reserves. Supposing that the villages located within 10 km of the forest reserves are concerned, it is necessary to study their position first. Some villages don't appear on the maps, or the Prefect of the department identifies only villages recognized by the administration; only investigation and recognition on the field will allow establishing the list of the related applicant villages.

The related villages are defined as being close to the forest reserve, having terroir in the forest reserve, and as using forest resources. Therefore, the villages filling the three following conditions will be recognized as related villages on the list of the related applicant villages:

i Proximity to the forest reserve;
ii Possession of (or declaration to possess) a terroir in the forest reserve, or the strong possibility that the inhabitants use the forest reserve (legally or illegally); and
iii Presence of a chief of village or a DAV (village administrative delegate)[6].

Besides, the relation between mother villages and sub-villages are very important in discussions with the related villages. The mother village has more rights concerning land use (allocation) of the sub-villages, and the relations are so close that the representatives of the mother village still participate in traditional events of the sub-villages. Therefore, upon holding discussions with the inhabitants, there may be cases where mother villages represent several sub-villages concerned. For example, the village of Gouandougou in the zone of Gouandougou Forest Reserve is the mother village of the sub-villages of Dakié, Ouratenga, Gouara, Tonga and Wenga, related to the forest reserve of Gouandougou, and currently, it is the representative (contact) for these related sub-villages.

3) Recognition or organization of villager groups

The present condition of villager groups of the different villages can be gauged from the socio-economic survey of the related villages. Currently, GGFs are the villager groups of the related villages of the forest reserves. As indicated before, the possibility of creating villager groups such as GGFs will be studied according to the wishes of the inhabitants. The lessons learnt from the Pilot Study concerning the creation of villager groups are as follow. It will be important to create villager groups such as GGFs while taking into account these lessons.

[4] Utilized upon partially revising in light of current conditions of forestry resources
[5] Complete study of forest reserve is ideal but it is also possible to test controlled pasturage in pilot zones.
[6] Temporary villages (hamlets) are not concerned. But in Dida Forest Reserve,it often happens that a hamlet has its own chief . This will be taken into consideration when recognizing the related villages in this forest reserve.

Creation of GGF and activities

- The creation of a GGF requires time because of the inexperience of the inhabitants in the establishment of administrative documents and the lack of staff of the departmental authorities.
- The legal formalities of GGF creation have the objective of creating a general group, and the rights and obligations of the GGF and the Forest Service must be clarified.
- The GGF Union is important for the mutual implementation of good practices between GGFs. But the other merits are not concretised, and currently the time required for the creation of a GGF Union and the incentives corresponding to the funds supplied are weak.
- During election of the union executive staff, it is not necessary to choose only on the basis of literacy, but also relations in the village, geographical conditions (contacts) and distribution of inhabitants in the villages should be taken into account.
- During the recognition of the utilization of the forest reserves by the GGFs, rights of utilization must be recognized while defining the working areas according to the obligations and responsibilities of the GGFs.
- Utilisation and the obligations/responsibilities of the GGF are effective for establishing mutually reinforcing relations.
- Concerning reinforcement of the GGF organization, at the same time as the training, strengthening by checking adherence to obligations and responsibilities in the real activities is required.

For example, the selling prices and distributions (previous prices) of one stere of fuel wood by the GGF of Toumousséni are as follow.

Woodcutters:	1.000 F CFA (1.000 F CFA)
Forestry tax:	300 F CFA (300 F CFA)
Village development fund:	150 F CFA (200 F CFA)
Management expenses of the Forest Service:	150 F CFA (150 F CFA)
Expenses of the GGF Union:	100 F CFA (New)
Total:	1.700 F CFA (1.650 F CFA)

GGFs and Forest Service

- The Forest Service must first create relations of trust (to eliminate the fear) while proposing useful activities and information to the inhabitants (technical training or education of the traditional utilization rights, etc.).
- The Forest Service must check the execution condition of the contract periodically with the GGFs.
- It is expected that the Forest Service will play the role of mediator in the activities of the GGFs (supply of information concerning micro-credits and the intermediaries etc.).
- It is necessary to systematically organize natural rules of forest resources management, to formulate an easy understanding manual and to conduct training for the forest officers.
- A system of reports concerning the conditions of execution of the contracts is necessary for the Forest Service. Some mutual reports are possible during round tables.

GGFs and the population

- In case of conducting a pilot study in a village, it is efficient for the members of the GGF to play the role of facilitator, and to establish a beneficiary approach for the whole village by the GGF activities.

- The management activities of forest reserves after creation of the GGF, for example reforestation and patrolling, will reduce the villagers' violations (supervision where one can see their face).
- The relations between farmers and stockbreeders vary according to the villages, but the involvement of stockbreeders in the GGF will be promoted as much as possible.

4) Concept of the zoning

Zoning entails determining the methods and contents of activities inside forest reserves according to sustainable utilization zones, protection zones, and so forth. When compiling plans for participatory conservation and management, it is essential to incorporate not only the viewpoint of natural resources but also the socioeconomic viewpoint (villager groups). For example, it is necessary to establish development zones (fuel wood and charcoal cutting, controlled pasturage) aimed at sustaining villager participation.

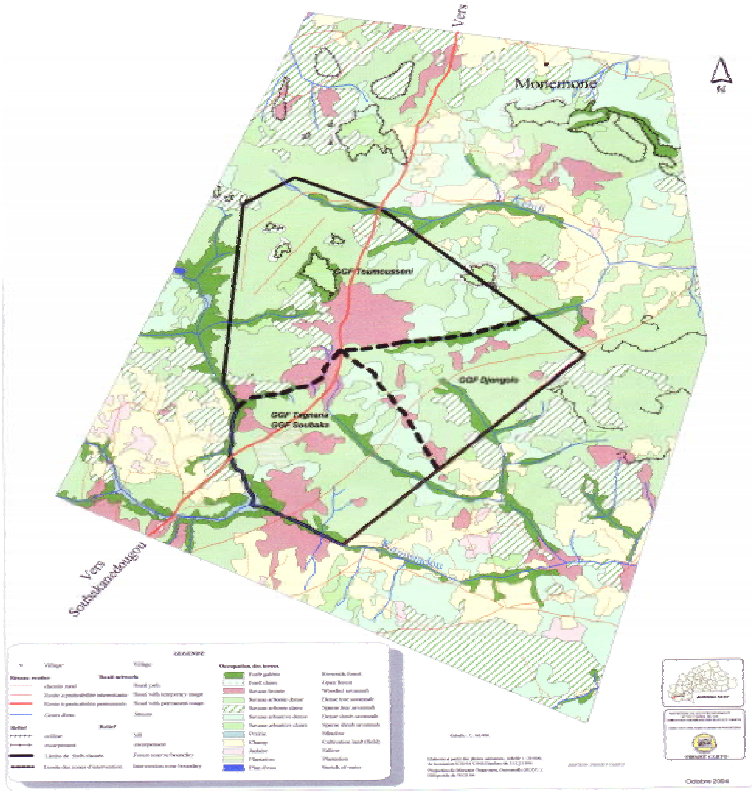
In specific terms, sustainable utilization zones, protection zones, livestock zones and so on are set on the map with a view to attaining the goals for the forest reserve, upon taking vegetation conditions and the state of villager groups (implementing agencies) into account. Then the activities in each zone are arranged as "Contents of zonal activities." Zoning is planned through the following procedure: 1) examination from the viewpoint of targets for the forest reserve, 2) examination from the viewpoint of natural and socioeconomic conditions, 3) examination of protection zones, 4) examination from the viewpoint of zone boundaries, and 5) overall review by related parties. Moreover, the zoning is determined in a manner that fully utilizes the terrain (undulations, rivers, mountains, etc.) of the forest reserve.

5) Recognition of working areas

Once the related villages of the forest reserves are predetermined, and the marketing of the fuel wood and charcoal is assured, the sustainable management by villager groups such as GGFs becomes possible. For the creation of a GGF, it is necessary to discuss with the Forest Service and to define the rights and obligations of the GGF. This discussion also materialises with the establishment of working areas (importance of activities) of the different GGF in the forest reserves.

If, as in Toumousséni forest reserve, the related villages are defined and a GGF is created in each village, the working areas will be recognized by the Forest Service and the GGFs. Otherwise, as a GGF is not created in all related villages of Gouandougou and Kongouko forest reserves, a limited number of GGFs discuss with the Forest Service and limited working areas are defined. For this recognition, the establishment of working areas on the basis of the forest reserve zoning map enables the activities of the different GGFs to be estimated.

Figure 2 : Working areas of Toumousséni Forest Reserve



6) Monitoring and evaluation of activities, and revision of actvity rules

The Forest Service and the GGFs discuss and fix the content of activities in the different working areas in each forest reserve. The rules will be renewed every year, reflecting the benchmark approach to managing plans according to target achievement. However, the renewal period will be fixed by discussions between the Forest Service and the GGFs. In other words, the content of the following activities is defined in the definition process of the rules: implementation - > monitoring/evaluation - > revision of the rules. According to the situation there, this process can extensively contribute to the definition and the flexible execution of the plans.

But the expense of monitoring/evaluation, then of revising activity rules every year by the Forest Service and the GGF is not light, and must be fully taken into account. The block execution of the monitoring/evaluation and the revision of the rules is recommended.

III. Participatory management plan of the forest reserves

Problems of different forest reserves and basic policy of the management plans are compiled below.

III.i Forest Reserve of Bounouna F

III.i.i Problems

(1) Problems related to forest resources and their state of usage

As development pressure from Banfora, the nearby city, especially the pressure for fuel wood collection, is strong, the impoverishment of forest resources of Bounouna Forest Reserve is fairly advanced, and forest restoration (reforestation) is necessary. Moreover, forest fires are frequent, and measures against bush fires and reinforcement of the monitoring system are necessary.

(2) Problems related to the Government/Forest Service

Thanks to control by the Forest Service and monitoring by GGF members, illegal cutting violations are decreasing in Bounouna Forest Reserve. However, ongoing monitoring of forest fires is important.

The GGF of Bounouna village is relatively active, but since Labola GGF has just been established, the Forest Service also plays an important role in terms of support. As future actions, public awareness activities including environmental education of Banfora inhabitants will also be an important role.

(3) Problems related to socio-economical conditions of related villages

GGFs are created in the villages of Bounouna and Labola. These GGF and CACOSE, which has achieved some reforestation (with support of sawmills) in Bounouna Forest Reserve, have established the working areas in the reserve. In the other related villages, there is little possibility of GGFs being created, but it will be necessary to watch how the wishes of the related villages change.

According to the decree of 1955 on the forest reserves, the pasturage of livestock except sheep is allowed in the forests, but regarding the impoverishment of forest resources of Bounouna Forest Reserve, some measures must be taken to prevent pasturage in the reserve.

III.i.ii Basic policy of the management plan

Objectives:	Promotion of the management by creation of GGFs in related villages and regeneration of forest resources.
Concerned people (organizations):	Forest Service, GGFs of related villages, associations, sawmills, inhabitants of Banfora
Main activities:	Agroforestry (reforestation), measures against bush fires, monitoring of violations, measures against pasturage in the forest reserve, creation of recreational forests (zoning) in the future.
Incentives for inhabitants:	Distribution of incomes from the harvest of agricultural products by agroforestry, incomes from the harvest of planted trees (fuel wood) in the future

III.ii Forest Reserve of Toumousséni

III.ii.i Problems

(1) Problems related to forest resources and their state of usage

As forest resources in Toumousséni forest reserve are in good condition, the question is how to maintain their present condition. For that, it is important to manage in a planned way cutting and reforestation in the forest reserve that provides fuel wood resources.

As the chances of important erosion and destruction of soils are weak, quarrying of stones for construction is carried out in Toumousséni Forest Reserve. Moreover, since forest fires are frequent, reinforcement of the monitoring system of Toumousséni Forest Reserve needs to be tackled.

(2) Problems related to the Government/Forest Service

Except for the GGF of Toumousséni village, GGFs of the three other villages and the GGF Union are not active, and it is important that the Forest Service continues to provide support. Since part of the revenues from the sale of fuel wood are used to cover expenses for this support, the Forest Service should assure the smooth running of these groups.

(3) Problems related to socio-economical conditions of related villages

As indicated before, except for the GGF of Toumousséni, the stimulation of three other villages GGF and the GGF Union needs to be tackled.

A committee of conciliation has been established, formed of representatives of agricultural Turka ethnical group and stockbreeder group Peulhs living in a neighbouring camp, in order to clear up conflict. In addition to working to resolve the problems between both sides, it is examining the feasibility of controlled pasturage in the forest reserve with a view to appeasing the antagonism.

III.ii.ii Basic policy of the management plan

Objectives:	Promotion of participatory management by creation of GGFs in related villages and rational utilization of forest resources (maintaining of the present condition).
Concerned people (organizations):	Forest Service, GGFs of related villages, GGF Union, stockbreeder groups.
Main activities:	Management of tree cutting, monitoring of infrastructures, reforestation, early bush burning, controlled pasturage, modern beekeeping.
Incentives for inhabitants:	Distribution of incomes from trees cutting for fuel wood and benefits from forest products harvesting, and authorization of controlled pasturage.

III.iii Forest Reserves of Gouandougou and Kongouko

III.iii.i Problems

(1) Problems related to forest resources and their state of usage

The shrubby savannah (dense) represents about 70% of land in the forest reserves of Gouandougou and Kongouko. The distribution of riverside forests and sparse woods is limited. On the

whole, it is desirable, by maintaining the present state of the forest resources, not to decrease and if possible to increase the density of the trees in the zones with weak density.

The pressure of fuel wood and forest products collection in the forest reserves is very weak, except for the surrounding areas. But in the future, with the increase of the population, it is likely these pressures are going to increase. It is also necessary to take into account the importance of influence of forest fires on the vegetation and its renewal.

(2) Problems related to Government/Forest Service

Regarding the difficulty of covering the immense forest reserves of Gouandougou (9,500 ha) and Kongouko (27,000 ha) only by the forest departmental service of Sidéradougou and the traditional relationships (relationship between mother village and under-village) between related villages of the two forest reserves, it is realistic to manage these two forests in one block.

Although local organizations such as the GGFs cannot be expected to immediately become very active, it is necessary that the Forest Service strengthen control of violations in the two forest reserves.

(3) Problems related to socio-economical conditions of related villages

GGFs and so on have not been created in the related villages except for Dandougou, Fougangoué and Badé (measures to counter cultivation in the forest reserve). In the immediate future, the creation of groups of users leaning on the traditional use of the forest reserves will be aimed for. Considering the development pressure in the middle or long term, GGFs will be established in the future according to the needs.

Pasturage takes place in the two forest reserves, and some measures in this regard are necessary. Thus, the management of pasturage (management of livestock drinking water) on the terroir of Dandougou village located in the northeast of the controlled forest of Kongouko constitutes a problem to be solved immediately.

III.iii.ii Basic policy of the management plan

Objectives:	Maintaining of the vegetation in the present condition Increased encouragement for protection by promoting the utilization of forest resources by related village inhabitants and creation of a management system leaning on the involvement of the inhabitants in the middle and long term. General management system of Gouandougou and Kongouko forest reserves
Concerned people CVGT, (organizations) :	Forest Service (for the moment, the main actor), related villages, existing GGFs, harvesting groups of forest products, stockbreeders groups.
Main activities:	Promotion of forest products use, creation of local organizations, management of pasturage, environmental education, dissemination and public information, measures against cultivation in the forest reserve.
Incentives for inhabitants:	Increase of incomes by diversifying utilization of forest resources, authorization of agroforestry, authorization of pasturage in the forest reserve.

III.iv. Basic policy of implementation plan formulation

It is necessary to compile implementation plans that take into account the characteristic feature of participatory forest reserve management plans whereby the roles of the Forest Service and villager groups vary according to the activities of GGFs and so forth. Basically, rather than adopting the blueprint approach in which targets and invested resources are set for three-year or five-year periods, the benchmark approach, whereby plans are flexibly revised according to conditions, is preferred. In this approach, targets and resource investment plans for their realization are set for each phase, and the said targets must first be achieved before activities move onto subsequent phases. Also, it is also possible to amend phase targets and investment plans according to the state of progress.

The Phase I targets in each of the forest reserve management plans are feasible plans in consideration of the findings of the Pilot Study and the results of discussions with the administrative side/Forest Service. As for Phases II and III, it is hoped that the administrative side/Forest Service takes a flexible approach to planning upon taking conditions of implementation in Phase I into account.

As the benchmarks in each phase, the conditions of vegetation recovery and regeneration are important points. At the same time, it should not be forgotten that the implementing capacity of the GGFs and GGF Unions hold the key to the actual realization of benchmarks. Since any organization is untried and faced with confusion at the start, it is realistic to start off with small and simple goals. Also it is essential that the Forest Service provides support in the initial stage. As the said organizations acquire norms and social practices through such activities, they become capable of implementing larger scale and more complicated activities. In order to compile more feasible plans, it is important that the implementation plans for future phases are prepared upon carefully considering this kind of organizational evolution (organizational development).

Target zones are identified in the implementation plans, however, the respective plots need to be selected at each phase based on discussion and agreement by the Forest Service, GGFs and GGF Union, etc. [7] The Forest Service then identifies the selected plots by GPS and, together with the GGFs and so on, retains the related documentation stating the activity rules. Accordingly, the location and scope of plots are determined for each phase; however, since the GGFs and other villager organizations only have feeble implementing capability at the start, plot areas are initially small and are steadily expanded in proportion to the experience and organizational capacity.

Zoning entails determining the methods and contents of activities inside forest reserves according to sustainable utilization zones, protection zones, and so forth. When compiling plans for participatory conservation and management, it is essential to incorporate not only the viewpoint of natural resources but also the socioeconomic viewpoint (villager groups). For example, it is necessary to establish development zones (fuel wood and charcoal cutting, controlled pasturage) aimed at sustaining villager participation.

[7] Sub-plot I (plantation: agroforestry) in Plot I of the Labola GGF reforestation zone in Bounouna Forest Reserve was originally envisaged close to Labola village or alongside the road, however, land alongside the boundary of the working area with Cagose was selected.

In specific terms, sustainable utilization zones, protection zones, livestock zones and so on are set on the map with a view to attaining the goals for the forest reserve, upon taking vegetation conditions and the state of villager groups (implementing agencies) into account. Then the activities in each zone are arranged as "Contents of zonal activities". Zoning is planned through the following procedure: 1) examination from the viewpoint of targets for the forest reserve, 2) examination from the viewpoint of natural and socioeconomic conditions, 3) examination of protection zones, 4) examination from the viewpoint of zone boundaries, and 5) overall review by related parties. Moreover, the zoning is determined in a manner that fully utilizes the terrain (undulations, rivers, mountains, etc.) of the forest reserve.

Similarly, terrain of the forest area is utilized by each GGF for setting the working areas for conducting various activities in consultation with the Forest Service. Also, related persons confirm the positions of working areas by actually visiting forest reserve sites.

In consideration of the above points, the basic concept for compiling implementation plans for participatory forest reserve management plans can be summarized as follows.

- Implementation based on the benchmark setting of targets and tasks
- Setting of goals (benchmarks) for each Phase, and progression to subsequent phases after they are attained
- Setting of realistic plan contents in Phase I based on the findings of the Pilot Study, etc.
- Consideration of the state of development of villager groups such as the GGFs and GGF Unions, in order to compile more feasible implementation plans
- Preparation of zoning plans and identification of target zones within implementation plans
- However, selection of plots in each zone should be determined as the need arises in consultation between the Forest Service and GGFs, etc.
- Retaining by related parties of the documents describing the regulations of activities in the selected plots

IV. Future activities

The Government/Forest Service and the villager groups are the key to the implementation of the participatory management plans of the forest reserves. For the participatory management of the forest reserves, it is necessary that the villager groups act in an autonomous way, and to concretise them, the role of the Government/Forest Service is essential, in particular during the creation of the villager groups. The role of the Government/Forest Service has been studied from this point of view.

IV.i Role of the Government/Forest Service

The role to be played varies according to the forest reserve. First, discussions will be ordered according to that point of view. The roles to be played by the Government/Forest Service in the participatory management plans of the forest reserves are as follows:

- Control of violations (role of guardian of the law)
- Technical training (role of expert)
- Support to local organizations, monitoring/evaluation (role of facilitator)

For the participatory management plans of the forest reserves, the roles to be played by the Forest Service are various, and the importance of the three aforementioned roles varies according to the

objectives of every forest reserve and the condition of the targets of the related villages' villager groups.

Bounouna Forest Reserve

- Control of violations (weak)
- Support to monitoring by the members of the GGF
- In case of need, control of violations by the Forest Service
- Technical training (medium)
- GGF of Labola village (technical training for tree cutting, tree planting and reforestation, modern apiculture etc.)
- Support to the local organization, monitoring/evaluation (two related villages) (strong)
- GGF of Labola village (development of the organization etc.)
- Support to the GGF Union in medium and long term
- Monitoring/evaluation of the GGF activities etc. and measures
- Environmental education for the inhabitants of Banfora in medium and long term

Toumousséni Forest Reserve

- Control of violations (weak)
- Support to monitoring by the members of the GGF
- In case of need, control of violations by the Forest Service
- Technical training (medium)
- Each GGF (technical training for tree cutting, tree planting and reforestation, modern apiculture etc.)
- Support to the villager groups, monitoring/evaluation (three related villages[8])(strong)
- GGF of Djongolo, Soubaka and Tagnana villages (development of the organization, etc.)
- Simultaneously, support to the GGF Union
- Controlled pasturage (experimental)

Gouandougou and Kongouko Forest Reserves

- Control of violations (strong to medium)
- Monitoring mainly by the Forest Service (mainly pasturage, cultivation in the forest reserve)
- Technical training (strong)
- Each GGF or users group (technical training for tree cutting, tree planting and reforestation, modern apiculture etc..) (medium)
- Support of the villager groups, monitoring/evaluation (3 + 5 = 8 in total[9]) (weak > medium)
- Education in the related villages (in case of need, survey on the sectors of activities and support to the users groups)
- Simultaneous support to the GGFs or the users groups[10]
- Grazing in the forest reserve (while taking into account recognition of stockbreeders groups - agreement with rules, etc.)

[8] There are four related villages, however, since Soubaka and Tagnana are a mother village and sub-village, they conduct activities as a single village unit.

[9] There are 8 + 8 related villages (16 villages) but regarding relations of mother villages and sub-villages, 8 villages are concerned.

[10] As GGF, support to cultivation activities in the forest reserve by the GGF of Badé village, management of the water points of Dandougou village (livestock watering) and reforestation of Fougangouè village. One can think about support users groups mainly involved in the processing of karité etc. in the forest reserve

As only three GGFs, etc are created in the villages related to Gouandougou and Kongouko forest reserves, the role of guardian of the law of the Forest Service remains important. On the other hand, in Toumousséni and Bounouna Forest Reserves, GGFs conduct monitoring/evaluation of tree cutting and reforestation, and study the measures to take. Accordingly, the Forest Service needs to support the GGFs more as a facilitator.

IV.ii Government/Forest Service Implementation Capacity

Control of violations (role of guardian of the law)

As the Forest Service has up to now filled the function of guardian of the law, it is necessary for it to secure a budget in order to solve the problems of lack of staff, lack of transportation means like motorcycles, and lack of general expenses for gas, etc. If the budget is assured, it should not face such problem in terms of implementation capacity.

Technical training (role of expert)

The competence levels of the forest officers doing the technical training vary considerably according to their experience, and practical training in this domain is necessary. Concretely, forest officers could provide necessary complementary technical training to other forest officers who will then provide the same training to local organizations. In this case, it will be necessary to take into account the expenses of gas and lodging that can become necessary for the forest officers. One tends to consider the technical training for the villager groups like a simple transfer of technology, but as it is training for the GGF members, i.e. inhabitants, the role of facilitator is also required. The technical training offers the opportunity to gain experience as facilitator, which is really required for the support of villager groups.

In the organization of the forest officers of Burkina Faso, the role of guardian of the law is required, and this is fundamentally different from the nature of facilitator's role. It will be difficult to immediately fill this gap, but it will be realistic to deepen the knowledge of the forest officers as facilitators through technical training. In other words, the technical training achieved by the forest officers will act as bridge toward the facilitator's role (support of the villager groups, monitoring/evaluation), and support to this domain, where the forest officers will improve their technical levels, is extremely important. The Forest Service will provide the necessary technical training for the forest officers, which will provide practice for the technical training in the villages.

Support to villager groups, monitoring/evaluation (role of facilitator)

For the support of villager groups and the monitoring/evaluation, some activities are executed in a very dynamic process. In this environment, what is the more required of the Forest Service is the capacity to facilitate villager groups and judge conditions, as well as the flexibility to formulate and implement countermeasures. For these activities, the capability of individual forest officers is essential, although it is not realistic to expect them to acquire the necessary skills immediately.

It is realistic to develop the necessary capacities while accumulating facilitator experience via technical training. The training for these activities is equally important for the forest officers, but above all, “learning” in the field is needed.

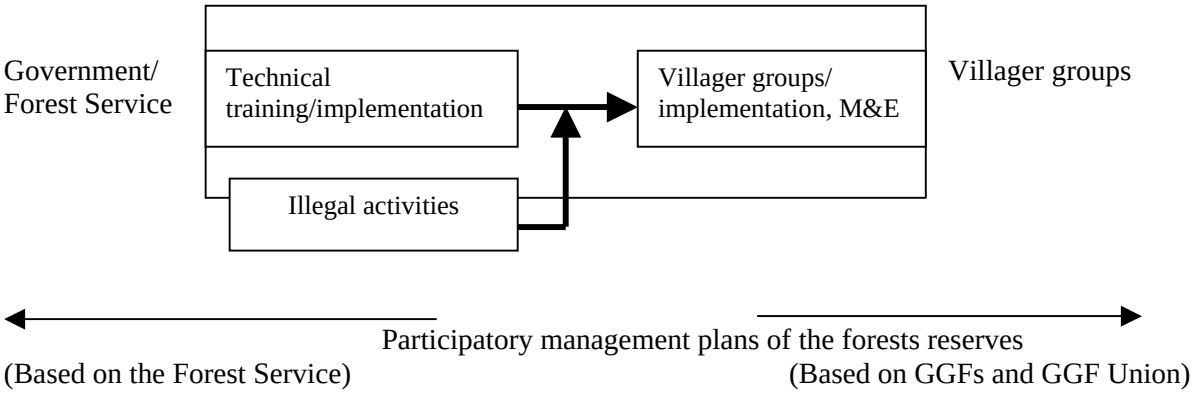


Figure 3 Concept of the Role of the Government/ Forest Service

Introduction

1. Background of the Study

Because of its location in the Sahel, the northern part of Burkina Faso is faced with a serious desertification problem. In addition, due to factors such as natural increase of population, migration from the north, slash-and-burn farming, and indiscriminate deforestation, etc., the area of forests fell by 1,260,000 ha from 15,420,000 ha in 1980 to 14,160,000 ha in 1992. It is also reported that, even in the southern part of the country, which was thought to be relatively rich in forestry resources, activities exerting demographic pressure (fuel wood collection, farming activities, overpasturage, bush fires, etc.) have provoked a significant degradation or disappearance of forests, consequently leaving only forest reserves as true forest environments.

The consequences related to the depletion of forests and progression of desertification are: 1) displacement of the agriculture and ecology belt toward the south, 2) depletion of soil fertility, 3) poverty of flora, 4) poverty of fauna, and 5) destabilisation of living conditions in terms of lifestyle and diet, etc.

Through national forestry policies, the Government of Burkina Faso is aiming to practice sustainable management of forest resources, while at the same time actively utilizing resources with a view to creating employment and stabilizing incomes. On the level of villages, efforts are being made to realize the optimum and sustained development of forest, agricultural and stockbreeding resources by switching from "sector approach" focusing only on forestry to a "program approach" aiming to harmonize forest development with agricultural and stockbreeding development.

In 1996, within the framework of this approach, the Ministry of Environment and Habitat (former Ministry of Environment and Water) formulated the National Program for Forestry Management establishing objectives of sustainable forests management

The implementation of this program under government initiative is always faced with difficulties linked to the financing and the implementation system. Also, the decentralisation process currently in progress in Burkina Faso presents further issues concerning the promotion of planning and implementation of forest management on the regional level. In such a context, it becomes necessary to establish practical forest management plans that can assure the conservation and the sustainable utilization of forest reserves.

2. Objectives of the Study

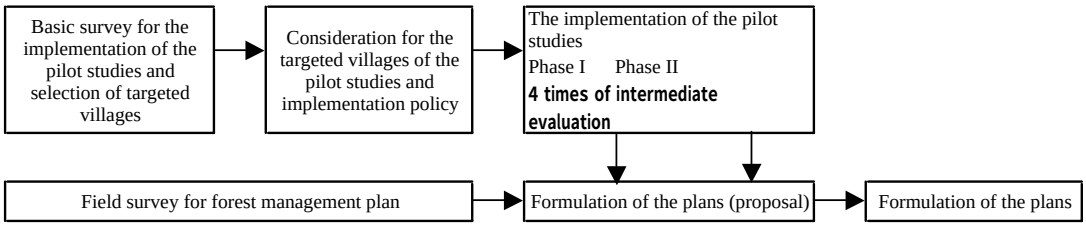
The current Study, on the basis of agreement, signatures, scope of work and minutes of meetings held between the Government of Burkina Faso and the Japan International Cooperation Agency (JICA) on the 31st of January 2002, will be carried out in a target zone with a surface area of around 118,000 ha and comprising five forest reserves in Comoé province (Gouandougou, Kongouko, Dida, Bounouna and Toumousséni), according to the two objectives mentioned below:

(1) To formulate sustainable participatory management plans for each forest reserve, also to be used as models for other forest reserves in Burkina Faso, in order to achieve sustainable forest resources management; and

(2) To transfer technology to the local counterpart through on-the-job training during the Study period

3. Schedule of the Study

The schedule of the Study consisted of four components is as follow:



4. Implementation of the Study

JICA Monitoring Committee

- AKAGI Toshiyuki, International Forestry Cooperation Office, Senior Officer in Forestry Agency (Chairman/ Forest conservation)

  (TAKAGI Shigeru, Forest Management Dep. Director for Planning in Hokkaido Prefecture as former Chairman)
- KOYAMA Nobihiro, Senior Adviser in JICA Institute For International Cooperation
- FUKUI Yoshinori, Graduate School of Human and Environment in Kyoto University

The Development Study

- WATANABE Junichi, International Development Center of Japan, Team Leader/ Capacity Building for Organizations
- SAKAI Isao, Taiyo Consultants, Forest Conservation
- YASUHISA Jotaro, Earth & Human Corporation, Village Forestry/ Pasturage
- TAKAGI Shigeru, Taiyo Consultants, Farming Improvement
- HAMADA Tetsuro, International Development Center of Japan, Participatory for Development I
- KUSUDA Kazuchiyo, Earth & Human Corporation,, Participatory for Development II
- OGATA Emi, International Development Center of Japan, Socio-economic
- Bhuwneshwar P. Sah, PASCO, Land Utilization/ GIS/ Interpretation of aerial photograph
- KITAGUCHI Masahiro, Sasaki Agency, Interpretation
- NAGAI Koji, Taiyo Consultants, Operational Coordination

Chapter1 Current situation and government policy related to Forests Reserves

1. Current Situation and Government Policy Related to Forest Reserves

1.1. Current Situation of Forest Reserves in Burkina Faso

1.1.1. Natural Environment

(1) Location, Area and Topography

Burkina Faso country is a landlocked country situated in the Sahel-Sudan region in the center of West Africa. It is located between Latitude 9°20' and 15° North and Longitude 2°30' East and 5°30' West. Burkina Faso is bordered by Mali to the north-northwest, Niger to the east, and Benin, Togo, Ghana and Côte d'Ivoire to the south, and it has a total surface area of 274,200 km² (about 70% the size of Japan) (see the location map).

Burkina Faso is a flat country. The average elevation is around 400m and more than half of the country is located between 250 and 350m. Two mains topographic domains occupy the territory of Burkina Faso: one a peneplain and the other a sandy massif. The peneplain, which occupies the three-quarters (3/4) of the national land area, is composed of a Precambrian massif with flat relief. The sandy massif, which occupies one-quarter of the national land area and is situated in the southwest of the country, has relatively higher altitude and more varied terrain than the rest of the country.

In Burkina Faso, land water resources such as rivers, lakes, marshes and groundwater are extremely important. In the south of the country especially, four major basins can be found around the Mouhoun, Nakambé, Comoé and Niger rivers.

(2) Climate and Flora

Burkina Faso is characterised in general by a tropical climate of the Sudanese-Sahelian type. The climate generally alternates between two seasons: the dry season from October to April and the rainy season from May to September.

Judging from the climate and flora, the border between the Sahelian and Sudanese domains is more or less situated on Latitude 13 degrees north.

Sahelian domain：occupying the arid northern part of the country, rainfall here ranges is 600mm~700mm or less. In general, the vegetation is divided into varied levels of grasses, shrubs and trees, but more forest with high density of bush and scrub can be found moving southwards.

Sudanese domain：occupying the major part of the country, rainfall here exceeds 600mm~700mm. This domain constitutes savannah and, compared with the Sahelian domain, vegetation here is denser and forms a mosaic of primary formations (open forests) and

secondary formations in degradation (trees or shrubbery savannas).

(3) Soil

The mains types of soils in Burkina Faso are presented in the following table.

Table 1.1 Soil Types

No	Type of soil	Ratio of National Land Area (%)	Localisation	Characteristics	Potential for Agricultural Production
1	Mineral soils	3	Spread nationwide	Zero agronomic value	Grazing area
2	Undeveloped soils	26	Spread nationwide, especially in Poni, Sanguié, Mouhoun provinces	Due to rough texture, water content is poor, and nitrogen and phosphorous content is low.	Terraced farmland rich in calcium and manganese
3	Vertisols	6	Sourou, Oudalan, Sissili, Sanguié, Boulgou provinces	Heavy when wet, and hard when dry, it is deficient in nitrogen, phosphorous and calcium.	Good water retention and rich mineral content make this soil suitable for cultivation of maize, sorghum, millet, cotton and rice.
4	“Isohumiques” soils	-	Provinces of Sourou Oudalan (on fixed ergs and hollows)	No physical characteristics in particular, low water retention, and deficient in nitrogen, phosphorous and calcium.	Good water retention and rich mineral content make this soil suitable for cultivation of cotton, maze and rice.
5	Brownish soils	6	West, South-west and the Central part of the country	High water content	Rich mineral content makes this soil suitable for cultivation of cotton and sugar cane.
6	Soils rich in Iron and Manganese sesquioxydes	39	Scattered	This forms hard indurations and is deficient in nutritive elements	Suitable for cultivation of cereals, vegetables, and arboriculture
7	Tropical ferrugineuses soils	2	Houet, Kénédougou, Comoé , Mouhoun provinces	Poor water content, and deficient in molybdenum, nitrogen and phosphorous	Suitable for cultivation of millet, vegetables and arboriculture
8	Sodic or salsodic soils	5	Region of the Central-south, Central-north, and East	This forms structural blocks and is alkaline	Suitable for cultivation of cereals and commercial cash crops after improvement
9	Hydromorphic soils	13	Along streams and rivers	High water content	Suitable for cultivation of sorghum, rice and dry season vegetables

（Source：UNEP 1991）

1.1.2. Current Situation and Past Trends of Forests

(1) Vegetation Divisions

Because the northern part of Burkina Faso belongs to the Sahel, the country is faced with serious desertification. Moreover, due to demographic growth, internal migration from the north, migratory slash-and-burn farming and indiscriminate tree felling, etc., the area of natural forests decreased by 1,260,000 ha from 15,420,000 ha (56% of national land area) in 1983 to 14,160,000 ha (estimated figure) in 1992 according to the National Program of Forest Management.

According to Table 1.2 showing vegetation divisions in the country, the ratio of vegetated land to national land area is estimated at around 30% in the Sahelian domain and around 70% in the Sudanese domain. Meanwhile, in terms of timber biomass potential, assuming all forests in Burkina Faso to represent 100%, potential in the Sahelian domain is 6% and that in the Sudanese domain is around 94%. Accordingly, since forest resources are far more abundant in the Sudanese domain, it is also here that most forests are designated as protected areas.

Table 1.2 Distribution of Vegetation Types

Vegetation Type	Surface area (km^2)	Ratio of National Land Area (%)	Timber Biomass Potential (million m^3)	(%)
Sahelian Domain				
North Sahelian Sector				
Grass steppe	862	0.32		
Grass and shrub steppe	8,619	3.18	1.785	1
Shrub steppe	18,842	6.95		
Shrub and dense steppe	3,304	1.22		
Aquatic meadow	165	0.06		
South Sahelian Sector				
Shrub steppe	33,352	12.31		
Shrub and wooded steppe	7,237	2.67	8.361	5
Steppe and valleys tree savannah	6,765	2.50		
Tree savannah	287	0.11		
Sudanese Domain				
North Sudanese Sector				
Tree and wooded savannah	3,868	1.43		
Tree and shrub savannah	75,965	28.05	52.714	30
Agroforestry and parks savannah	11,835	4.37		
Tree savannah and Sourou flood plain	869	0.32		
North Sudanese Sector				
Shrub and tree Savannah	33,412	12.34		
Shrub, tree and wooded Savannah	43,891	16.21	114.534	64
Tree and wooded savannah and open forest	20,518	7.58		
Gallery forest and aquiprata	434	0.16		
Grand Total	270,225	97.00	177.394	100

Rearranged by JICA expert (M.Ono) from data of SP/CONEGESE (2001) and the Ministry of Economy and Finance (1998)

(2) Distribution of protected forests

Natural forests in Burkina Faso are divided into two types, i.e. non-designated forests, and protected forests. Protected forests are classified into six types, i.e. forest reserves, forest and livestock reserves, national parks, gaming areas, total game reserves, and partial game reserves, and there are 78 such forests in the country. Protected forests cover a total area of 3,906,647 ha, equivalent to approximately 25% of all natural forest area.

Table 1.3 Distribution of Protected Forests

Type of classified domain	Number	Surface area (ha)	(%)
Forest reserves	65	1,088,247	27.8
Forest and livestock reserves	1	1,600,000	41.0
National parks	2	390,500	10.0
Gaming areas	1	94,000	2.4
Total game reserves	4	297,700	7.6
Partial game reserves	5	436,200	11.2
Total	78	3,906,647	100.0

（Source：JICA Study Team, 2004）

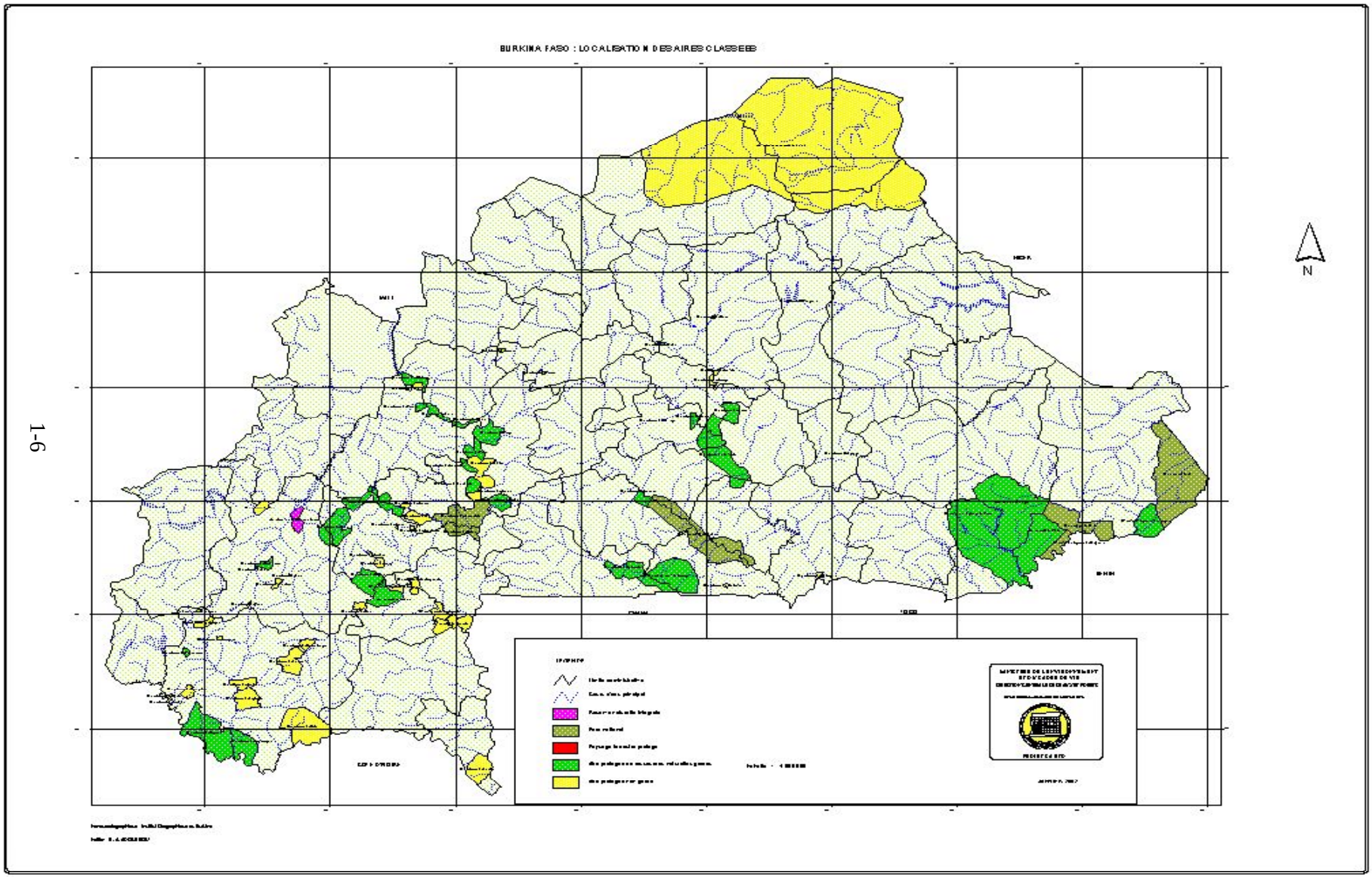


Figure 1.1 Location of Designated Areas

Protected forests are subject to direct government control because of the importance attached to them in terms of protecting and preserving the ecological balance. However, faced with burgeoning population pressure, even protected forests are being devastated due to felling of trees for fuel wood, cultivation, bush fires and livestock grazing. As a result, forest resources are being depleted every year. In response to this, Forest Service and villagers have implemented a system of joint management on a trial basis, however, this is confronted with the following two elementary problems according to Table 1.4.:

- 63% of protected forests do not have clearly defined boundaries. Moreover, the scope of designated areas remains undefined in around 50% of cases.
- Land utilization maps have not been prepared and vegetation surveys have not been implemented in 63% of protected forests. Furthermore, since eight years have passed since designation, re-surveying is required in 72% of protected forests.

Table 1.4 Past Activities in Protected Forests

Types of designation	Number	Activities		
		Demarcation and boundary marking	Land use map	Forests inventory
Forests reserves	65	38	41 (14)*	42 (20)*
Forest and livestock reserves	1	0	0	0
National parks	2	0	1	0
Gaming areas	1	1	1	0
Total game reserves	4	0	0	0
Partial game reserves	5	0	0	0
Total	78	39	43 (14)*	42 (20)*

( )* Renewed survey is required since eight years or more have passed since designation.

(Source：JICA Study Team, 2004)

(3) Forests Reserves

The Forest Law comprises the following provisions relating to forests, particularly forests reserves.

Table 1.5 Articles in Protected Forests

General Provisions		As forests are national assets, they are subject to government policies. While the government is responsible for the protection of forest resources, people also have a duty to respect as well as to protect them.	
Forest Area	Definition	Spaces covered by trees and shrubs, excluding vegetation resulting from farming activities, shall be regarded as forests. In addition to forest restoration areas and reforestation areas, products originating from trees and shrubs and all items existing inside forests shall be regarded as forest products and shall be subject to the Forest Law.	
	Forest Categories	All forests that are not privately owned shall be regarded as public forests. These public forests shall be classified as designated forests (forest reserves) and protected forests, and shall be owned by the central government or local governments respectively. Designated forests must have clear boundaries and signboards and shall be subject to restrictions concerning rights of use and management.	
Forest Management	Management Principles	The participatory approach shall be employed to pursue sustainable forest management. While national forests shall be managed by the national forest organization, their management may be entrusted to third parties under specific conditions. Their development may also be partially entrusted to third parties on a contract basis. Forest management shall be implemented in accordance with the “forest management plan”.	
	Forest Protection	General Provision	Forest protection means a whole range of activities to maintain, regenerate and preserve forests. The national forest organization shall have the authority to implement all necessary measures in line with the specific conditions of the environment, including the fixation of sloping land, protection of soil and structures against erosion, protection of rare species and fragile habitats, and conservation of water sources and rivers, etc. in all forests.
		Forest Clearing	The clearing of a forest area shall require advance permission; in particular, environmental impact assessment shall be required for the implementation of large-scale work.
		Burning	The burning of a low forest shall, in principle, be prohibited. Early burning or burning under supervision in a specified area may be conducted according to the relevant rules if it is conducted as a means of forest management.
(Forest Management)	Forest management	Definition	Forest management means all income-generating activities resulting in use of forest products. According to the purpose of use of these forest products, activities must be classified as domestic, commercial or industrial

		Household Use	In connection with household use, adjacent populations of forest reserves have rights of traditional utilisation not subject to authorisation and free of charge as long as forest products are used to satisfy personal, individual or family needs. In the case of forests reserves, approved rights for traditional utilisation include the harvesting of fruits, collection of medicinal plants, fallen dead branches/trees, and the usage of these rights concerning individual forests is submitted to an authorisation based on the Forest Management Plan
		Commercial/ Industrial Use	Anyone conducting forest management for commercial or industrial purposes is obliged to follow prescriptions related to the Forest Management Plan and to conduct this activity under the basis of a delivered authorisation or contract with an administrative organization. The implementation of this activity must be submitted to tax payment. The delivering of cutting authorisations should be conducted in accordance with the Public Finance Law. The storage and distribution of forest products for commercial purposes must be submitted to an advance authorisation.

1.2. Administrative Organisation Concerning Forests

1.2.1. Forest Administration

Burkina Faso has 26 central government ministries and agencies in addition to the Executive Office of the President and the Prime Minister's Office. Following establishment of the Decentralization Act in 1998, the country is divided into 13 regions (Region), 45 provinces (Province), 334 departments (Departement) and some 8,000 villages (Village).

The Ministry of Environment and Habitat (MECV) is in charge of forest administration. In 2004 it had a work force of 803 employees consisting of 168 forest engineers, 235 forest supervisors, 194 technicians, 203 agents, and 3 auxiliary staff (temporary employees and forest monitors, etc.).

Judging from the present organisation and duties of the MECV, it is clearly faced with a lack of personnel. Moreover, since priority and personnel are concentrated on the central administrative level, this further exasperates the personnel shortage on the regional level.

According to the National Forest Policy, problems relating to functions of the MECV are pointed out as follows:

- Successive and frequent organizational reforms over a short period of time
- Insufficient work execution capability and technical capacity of employees
- Absence of written administrative and financial procedures
- Absence of systems for following up projects following completion
- Even though sustained forest management requires overall monitoring and control, this cannot be implemented due to the diversity of partners
- Insufficient collection of taxes

The Direction General of Water and Forests (DGEF), belonging to the Ministry of Environment and Habitat is in charge of developing and managing plant and animal natural resources. The DGEF comprises the Direction of Rural Forestry (DFR), Direction of Forest Development (DAFor), Direction of National Parks, Wildlife Reserves and Hunting (DPRFC), Direction of Paramilitary Officers of Forest and Water, Regulation and Control (DCPRC) and 13 Regional Directions of Environment and Habitat (DRECV) supervising 45 Provincial Directions of Environment and Habitat (DPECV).

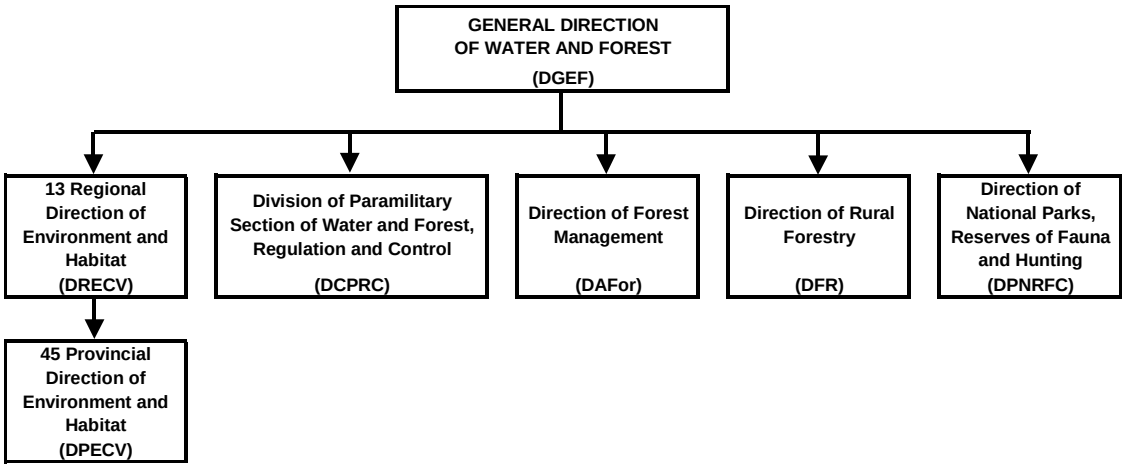


Figure 1.2 Organizational Structure of The General Direction of Water and Forest (DGEF)

1.2.2. History of Decentralisation of Forest Administration

Following approval of the Law concerning Decentralization (TOD) by the national diet in 1998, the Ministry of National Land Administration and Decentralization prepared the Political Document for Decentralization Development indicating the Guiding Principles for Decentralization in 2000. This made it necessary for provinces to elect provincial assemblies, and prefectural assembly elections were accordingly planned. Moreover, following decentralization, the provinces became responsible for finding their own budgets and implementing measures concerning protection of forests, control of bush fires, prohibition of cutting and wildlife protection, etc. However, even though it was scheduled for provincial assemblies to be established in 2003, elections for this purpose have not yet materialized.

Meanwhile, the National Program of Forest Development, which was formulated in 1996 to consolidate forest administration, proposed guidelines for the creation of forests by local governments for the purpose of promoting the organization and development of rural areas. The Forest Law adopted in 1997 defined the public forests to be managed by local governments and set up the legal framework for the protection and management of these forests under local government direction. However, since designation of local government-managed forests has not yet been implemented, no public forests exist apart from nationally owned forests. Furthermore, as was mentioned earlier, as may be gathered from the fact that regional and provincial offices of the Ministry of Environment and Habitat are placed under centralized supervision of the Direction General of Water and Forests, decentralization is not actually taking place within the Ministry of Environment and Habitat.

1.2.3. Implementing Agencies

(1) Implementing agencies on the central level

The Direction of Village Forests and Forest Development, which was the counterpart government agency for the Study, was split into the Direction of Forest Development (DAFor) and the Direction of Rural Forestry (DFR) in 2002 in line with the government reorganization described above. As a result, the Direction of Forest Development (DAFor) became a new implementing agency responsible for the protection of forest reserves. As the Direction of Rural Forestry (DFR) is involved in the formulation and implementation of the forest management plan in the Study, it participates in consultation meetings between the Study Team and the Government of Burkina Faso as a secondary counterpart agency.

The Direction of Forest Development (DAFor) consists of three departments, i.e. (i) the Service of Planning and Statistics, (ii) the Central Office of Forest Development, and (iii) the Service of Mapping and Forest Resources Evaluation. The Direction of Forest Development (DAFor) is responsible for the management and supervision of forest development projects. As part of the Study, assistance is provided for the Mapping and Forest Resources Evaluation Department with a view to preparing land use (vegetation) maps and maps for forest management plans in the Study.

The organization of the Direction of Forest Development (DAFor) is shown below.

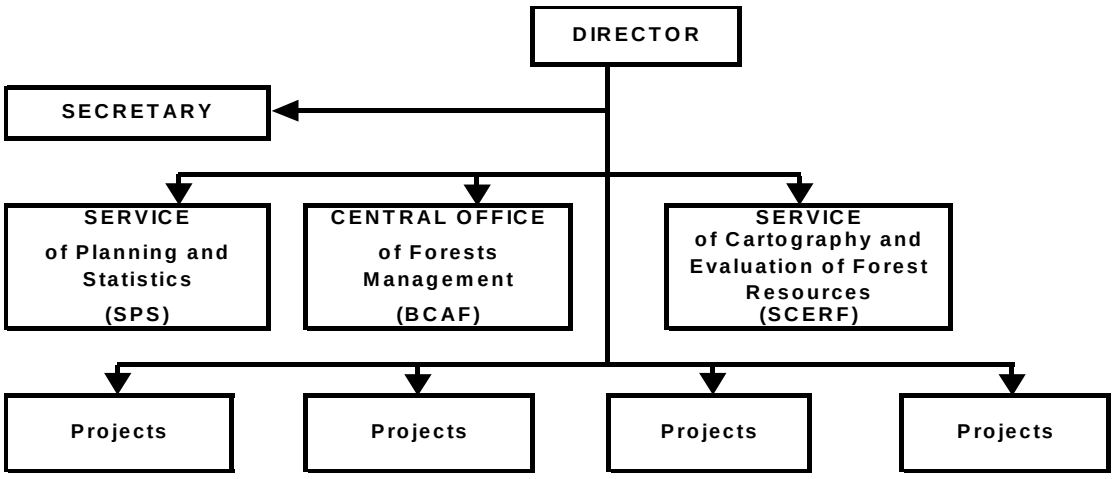


Figure 1.3 Organizational Structure of the Direction of Forest Development (DAFor)

The Direction of Rural Forestry (DFR) consists of four departments, i.e. (i) the Service of Planning and Statistics (SPS), (ii) the Service of Vulgarization of Forestry Techniques (SVTF), (iii) the Service of Natural Resources Restoration and Protection (SPRRN), and

(iv) the Service of Promotion of Alternative Energies and Non-Wood Forest Products (B-E/PRFNL).

The organization of the Direction of Rural Forestry (DFR) is as shown below.

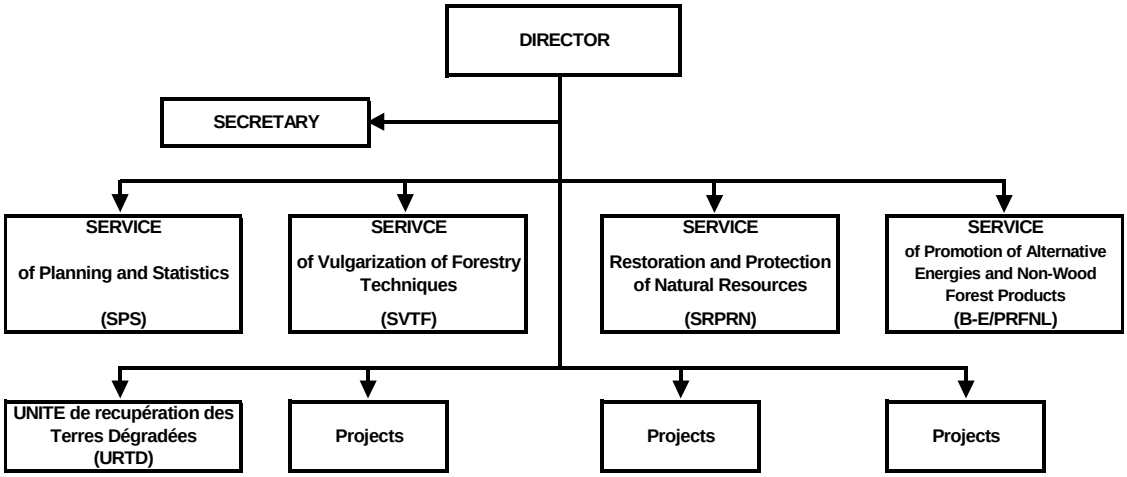


Figure 1.4 Organizational Structure of the Direction of Rural Forestry (DFR)[1]

(2) Implementing agencies on the local level

The reorganization of the national territory into 13 regions and 45 provinces in 2001 prompted administrative reorganization at the level of all ministries and agencies. As a result, Comoé Province, which is the target area of the Study, came to belong to the newly formed Region of Cascade together with neighboring Léraba Province. The newly established Regional Direction of Environment and Habitat of Cascade is located in Banfora City in Comoé Province. The Provincial Direction of Environment and Habitat of Comoé is also located on the same premises. The Director General of Water and Forests appoints the heads of these offices.

The organizational structure of the Regional Direction of Environment and Habitat is shown below.

[1] Figure 1.3-1.5 are formulated by the interviews with the counter part.

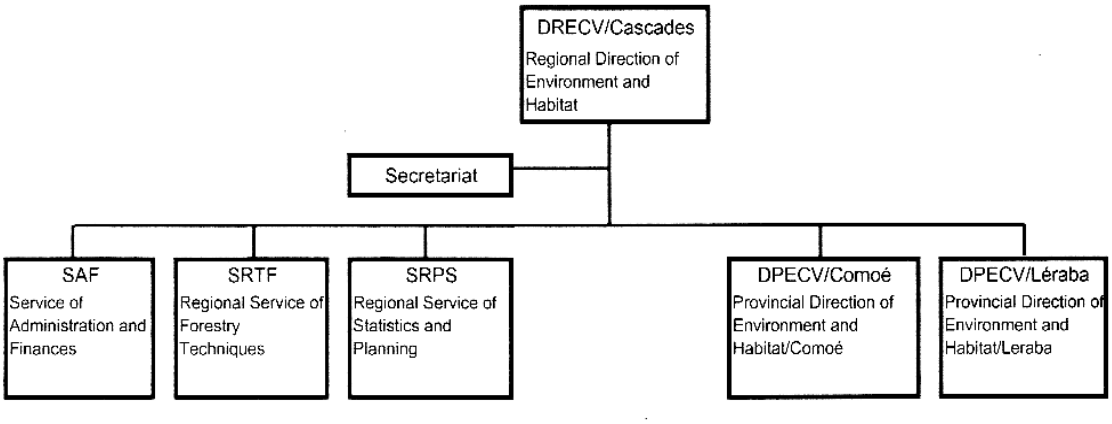


Figure 1.5 Organizational Structure of the Regional Direction of Environment and Habitat (DRECV)

The main missions of the Regional Direction of Environment and Habitat of Cascades (according to Decree No. 2002 – 457 / PRES / PM / MECV of October 28th, 2002) are as follows:

1) Conservation of biological diversity
2) Stabilization of forest resources and wildlife resources for economic development and the improvement of livelihood
3) Promotion of employment and higher incomes among the population
4) Planning, implementation, monitoring and post evaluation of forest management based on the population participation
5) Implementation of environmental education
6) Promotion of the landscape consideration
7) Implementation of environmental measures for controlling air pollution, etc.

The fiscal 2004 budget (provisional) for the Cascade Regional Direction of Environment and Habitat is as shown below.

Table 1.6 Fiscal 2004 Budget Allocation to the Cascade Regional Direction of Environment and Habitat (provisional)

Unit: FCFA

Supply		2,500,000
	Fuel and oil	0
	Office supplies	1,000,000
	Maintenance parts	500,000
	Specific supplies	1,000,000
Expenses, maintenance and repairs		4,500,000
	Building	2,000,000
	Stationery and office equipment	1,000,000
	Transport costs	1,000,000
	Computer parts	500,000
Budget total		7,000,000

Comoé Province has nine departments. The Cascade Regional Direction of Environment and Habitat is required to assign a forest officer in each department, however, due to budgetary constraints and so on, it has so far only deployed such officers in seven out of the nine departments. Departments that don't possess a forest officer are covered by the forest officers assigned to other departments (details regarding the Provincial Direction of Environment and Habitat are described in Chapter 2).

Forest brigades have been stationed in areas with rich wildlife resources to control illegal hunting. These brigades are separate organizations from the regional and departmental services mentioned above. Two brigades are stationed in the Cascade Region: one in the village of Massadéyirikoro in the Department of Mangodara, and the other in Folonzo Village in Niangoloko Department under the jurisdiction of the Comoé Provincial Direction.

1.2.4. New Organisation Chart of the Ministry of Environment and Habitat

As a result of reforms implemented at the end of January 2005, the Ministry of Environment and Habitat adopted the following organization from February 3, 2005.

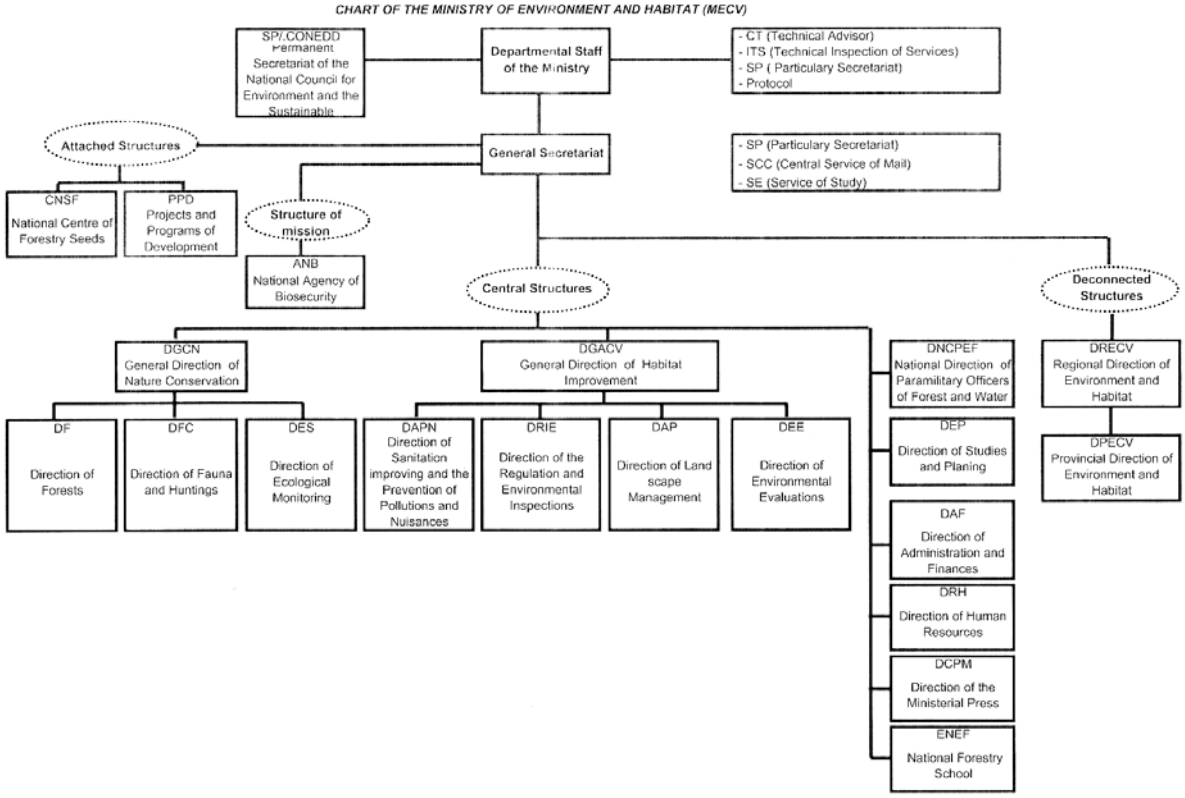


Figure 1.6 New Organizational Structure of the Ministry of Environment and Habitat

1.3. Forestry policy

Burkina Faso is faced with serious problems of ecosystem imbalance and accelerated environmental degradation. Sustainable development is conditional on the preservation of natural resources consisting of existing soil, water and vegetation, the promotion of balanced resources development, the improvement of living conditions for people living in rural communities, and so forth. The Government of Burkina Faso is aware of these points and has implemented various plans and projects with cooperation from development partners with a view to preserving the environment. Within these, the National Action Plan for the Environment (PANE) occupies a central role. The National Forestry Policy has also been

compiled to bolster implementation, and the National Program of Forest Development (PNAF) has been formulated as the implementation plan for this. The PNAF has also been incorporated into implementation plans of the Basic Program of National Assets Management (PCGPN) as defined in the National Action Plan for the Environment.

National Action Plan for the Environment (PANE), 1996

The National Action Plan for the Environment (PANE) is the document of reference at national level related to natural resources management and livelihood improvement. The PANE is the general plan concerning all areas of activity having an environment effect in the broad sense, and it is composed of the following three basic programs and two support programs.

Basic programs:

- The Basic Program of Livelihood Improvement concerns all kinds of contamination and pollution as well as beautification issues.
- The Basic Program of Farmland Management relates to prevention of degradation of natural resources, satisfying the basic needs of the rural population, and general management of farmland under the responsibility of the rural population with a view to realizing sustainable local development.
- The Basic Program of National Assets Management is an action plan for the management of common assets. This program was formulated because local communities are unable to directly manage common assets and the minimum degree of centralized coordination is required on the national and provincial levels.

Supporting programs:

- Strengthening of competences regarding the environment
- Management of environmental information

National Forestry Policy, 1998

The National Forestry Policy clarifies current conditions and roles and prescribes policy goals in the three areas of forests, wildlife and fisheries. Moreover, based on these goals, it shows the general strategy and implementation approach to supporting plans in each sector.

Common policy goals in the three sectors are as follows:

- Utilization of resources based on rational methods of management and exploitation
- Job creation and stabilization of incomes in rural areas
- Conservation of biological diversity, in particular the protection of endangered species
- Improvement in livelihoods through the development of green belts in urban centers and promotion of forestry development on the rural level

- Ongoing improvement of know-how and information concerning natural resources utilizing appropriate modern techniques

Concerning the forest sector in particular, the following policy goals have been established:

- Mitigation of the imbalance between supply and demand concerning fuel wood (fuel wood), service timber, building timber and forestry products for dietary and medicinal use
- Rehabilitation of devastated forests
- Demarcating of forest boundaries between villages and utilization of boundaries with a view to organizing and developing land use

The above forestry policy is justified by the fact that shortages of fuel wood are growing and that the results of conservation activities in the past have been inadequate. The utilization of resources based on conservation is obvious and essential from the viewpoint of preserving natural forests. This development approach generates more employment and incomes in rural areas, but at the same time it is also necessary to rehabilitate devastated forests in order to overcome the serious shortage in fuel wood. Furthermore, since it is anticipated that development of natural forests will lead to the realignment of land use and resolution of friction between the rural population and breeder groups, these activities are extremely important.

National Program of Forest Development (PNAF), 1996

The PNAF establishes targets and identifies strategies and actions to be implemented in the field of forest management. It is the basic policy document referred to when compiling forest development projects on the national, provincial and departmental levels. The PNAF undergoes review every five years based on the experience that is accumulated. Targets imposed on this program by the PNAF are as follows:

Effective utilization of forest resources based on proper development;

- Strengthening of knowledge on the current state and distribution of forest resources
- Satisfying domestic demand for fuel wood and timber for woodworking and building, etc. based on proper development
- Giving of priority to local villagers in the distribution of forestry products and distribution of profits

Rehabilitation of devastated forest resources;

- Conservation and restoration of devastated land and forests

Conservation of biodiversity;

- Formulation of a national strategy of biodiversity conservation based on accurate identification of problems

Job creation and securing of stable incomes in rural areas;

- Promotion of participatory development of forests
- Strengthening of participation by the private sector and NGOs in the management of forest resources

Contribution to the organisation and development of rural areas;

- Demarcation and management of forestry and livestock on the level of farmland
- Establishment of forests owned by local governments

The National Environmental Action Plan (PANE), National Forestry Policy and National Program of Forest Development (PNAF) are based on the following legislation.

Law concerning Reorganization of Farming Land (RAF)

This law, approved in 1995, defines the majors principles of lands utilization and aims to formulate and promote land regulation reflecting local socio-economic backgrounds so that producers, especially women and disadvantaged social groups are guaranteed rights of access to lands.

Forest Law

This law was formulated with technical and financial support from the FAO and was adopted in January 1997. It aims to encourage the joint management of forest resources through adapting forest regulations to local socio-economical and ecological contexts. Also, it prescribes the legal standing of conservation districts by encouraging citizen participation in forest utilization strategy and nurturing a sense of responsibility towards natural resources management.

Environment Law

Compiled under financial support from the Kingdom of Denmark, this law was adopted in January 1997. It stipulates the implementation of environmental impact assessments and environmental education in development programs throughout the country. Moreover, it aims to permeate basic principles of environmental management and conservation with a view to preventing all forms of pollution and contamination and improving livelihoods in consideration of environmental balance.

1.4. Forest-Related Budget

The General Direction of Forests and Water (DGEF) established the following five measurable objectives for the period 2003–2005 with a view to realizing the goals of "sustainable management of forest, wildlife and fisheries resources" and "satisfaction of rural and urban demand for forest, wildlife and fisheries products."

- Increase of forest plantation surface area from 68.000 ha to 100.000 ha
- Increase of artificially supported natural forests from 200.000 ha to 500.000 ha.
- Reduction of areas lost to bush fires from 30% to 20% of all the national territory
- Increase in numbers of wildlife by 5%
- Increase in annual revenue from forest resources from 821,000,000 FCFA to 1,100,100,000 FCFA
- The table below shows the forest-related budget for fiscal 2004 within the Ministry of Environment and Habitat.

Table 1.7 Budget Allocation to Forestry for Fiscal 2005 (provisional)

Unit: million FCFA

General Current Expenditures	Personnel Expenses	Not appropriated	
	Equipment and supplies costs	328.815.000	• Office supplies • Vehicles maintenance and repairs • Administrative printings • Documentation • Others
	Current transfer expenses	223.900.000	• Agriculture rehabilitation projects • Mapping materials project • Contributions to international organizations, etc. • Others
Investment Expenditures	Projects expenses	791.556.630	・ Support Fauna and Preservation Unit ・ PAGEN ・ Rehabilitation of nursery trees • Erosion and accumulated soil in the Niger river project • Sustainable natural resources management project in the southwest, east-central and east regions • Other
	Program expenses	384.000.000	• Village forestry program • "One district office, one forest" project • Forest management program (including updating of forest reserve boundaries in Cascade region) • Fauna and settlement management program • Internal management and support to the Forest Services paramilitary office program • Others

Total Expenditure		1.728.271.630
Revenues from forest resources		700.000.000

Source: Fiscal 2004 executive budget plan for the MECV

In regard to the budget of the DGEF, since public utility costs for telephone, electricity and water and the personnel costs of staff members are directly paid by the Ministry of Finance, the DGEF and the other organizations only request budget allocations to cover operational

costs (fuel costs, vehicle costs and activity costs, etc.) in the previous year. In reality, vehicle fuel costs account for more than 60% of the requested budget. In cases of national projects, costs are appropriated in the ministerial budget in the form of a national subsidy. Every foreign aid project is accompanied by counterpart expenses in the form of a subsidy. The DGEF directly manages expenses of national projects, and it provides related organizations with the goods necessary for project activities (fuel tickets, expendable products for seedling production, and travel expenses for training, etc.).

1.5. Other Related Ministries and Agencies

1.5.1. Ministry of Agriculture, Water and Fishery Resources

The Ministry of Agriculture, Water and Fishery Resources (MAHRH) conducted the National Program of Territory[2] Management (PNGT) from 1992 to 1998 with assistance from the International Development Association (IDA). The main purposes of the PNGT were: (i) the conservation and restoration of natural resources, (ii) the sustainable production of agricultural products, (iii) the restoration of biological diversity, and (iv) the preservation and management of forests and fauna. After the implementation of the PNGT, the MAHHR played a central role in the enforcement of the Joint Ministerial Ordinance Regarding the Composition of Village Territory Management Committees (CVGTs) (No. 0010 / 2000 / AGRI / MEE / MEF / MATS / MRA) on 3rd February, 2000. According to this, a CVGT set up in each village must be registered with the provincial governor.

PNGT II is currently in progress with the MAHHR acting as the competent ministry. PNGT II is being implemented over the period from 2001 to 2015 in three five-year phases and aims at achieving: (i) poverty reduction, and (ii) improvement in the livelihood of local populations and increase of production potential.

Phase 1 (2001 – 2005) :	Assistance for village organizations and for rural development in the process of decentralisation
Phase 2 (2006 – 2010) :	extension and progress of rural development in the process of decentralisation
Phase 3 (2011 – 2015) :	Reinforcement of PNGT2

PNGT2 consists of the following five components.

[2] A territory (terroir) is the area or space belonging to each village. It does not simply indicate the geographical boundary of each village but is a concept incorporating the socioeconomic background, culture and traditions of each community. It is the basic unit for the operation and management of rural development.

Table 1.8 Activities of PNGT2

Component (Budget Share)	Outline
(1) Strengthening of local capacity building (11%)	Promotion of territory management by local residents through provision of education and technical training for them
(2) Creation of Rural Development Fund (48%)	This fund will finance village as well as inter-village development activities and important construction work in provinces
(3) Capacity Building of Government Organizations (26%)	Implementation of trainings, etc. for the staff of government organizations at various levels
(4) Pilot operations for the secure of Land Ownership System (4%)	Clarification of the land ownership system and improvement of its operation
(5) Administration, monitoring and coordination of the program (11%)	(i) Decentralisation, (ii) project management and coordination, and (iii) monitoring and evaluation

Source: Presentation of the Second National Program of Territory Management (PNGT II), 2001 October.

The PNGT2 aims at establishing a CVGT in 2000 villages in 27 provinces that were not covered by the PNGT1 over the next five years. In Comoé Province, the target area of the Study, the Provincial Office of the PNGT2 has already been established and has been engaged in Project implementation since 2002.

1.5.2. Other Ministries and Agencies Concerned with Forest Reserves

(1) Ministry of Animal Resources (MRA)

The Ministry of Animal Resources is responsible for veterinary health (vaccinations, disease prevention and medical examinations, etc.), livestock production, management of pasturage and migrating pasturage, fostering of breeder associations, animal feed, development and promotion of technologies, and distribution of livestock products, etc. The Ministry of Animal Resources (MRA) has local offices throughout the country.

(2) Ministry for Promoting the Status of Women

The Ministry for Promoting the Status of Women was established in June 1997 and is responsible for the inter-ministerial coordination as well as the on-site coordination of projects implemented by various aid organizations, NGOs and associations regarding the roles of women in village communities, agriculture and forestry, etc. with a view to promoting the status of women (and their life conditions).

(3) Ministry of Territorial Administration and Decentralization

This Ministry is responsible for decentralization, which is an important national policy, and also for procedural matters and the supervision of organizations and associations formed by villagers.

(4) Ministry of Economic Development

The NGO Support Agency (BSONG) belonging to the Direction General of Cooperation of the Ministry of Economic Development was established in May 1984 and has since been responsible for the registration and monitoring of NGOs working in Burkina Faso. An NGO is recognized when the document for the establishment of the NGO is submitted to and approved by the BSONG while submitting other necessary documents to the Ministry of Territorial Administration and Decentralization. Once approved, an NGO is provided with such conveniences as tax exemption and so on by the Government of Burkina Faso. The main areas of NGO activities are: rural development, agriculture, reforestation and education, etc. The Sahel area in the northern part of the country is the main geographical area of NGO activities. All NGOs are required to submit an activity plan before implementing activities and also to submit a progress report of their activities to the BSONG.

Chapter 2　General situation of Comoé Province

2. General situation of Comoé Province

2.1. Natural situation of Comoé province

2.1.1. Geographical Location

Comoé Province is located in the southwestern part of Burkina Faso in Cascade region and covers an area of 15.826 km², equivalent to 5.84% of the national land area. It is situated between Latitude 9°25' and 10°37' North and Longitude 3°50' and 4°46' West. Comoé Province shares a border with Côte d'Ivoire and is located at around 500km from the nearest coast of the Atlantic Ocean. It is composed of the nine departments of Banfora, Bérégadougou, Mangodara, Moussodougou, Niangoloko, Ouo, Sidéradougou, Soubakaniédougou and Tiéfora, and contains 198 villages.

The location and Departments of Comoé Province are shown respectively in Figure 2.1. and Figure 2.2.

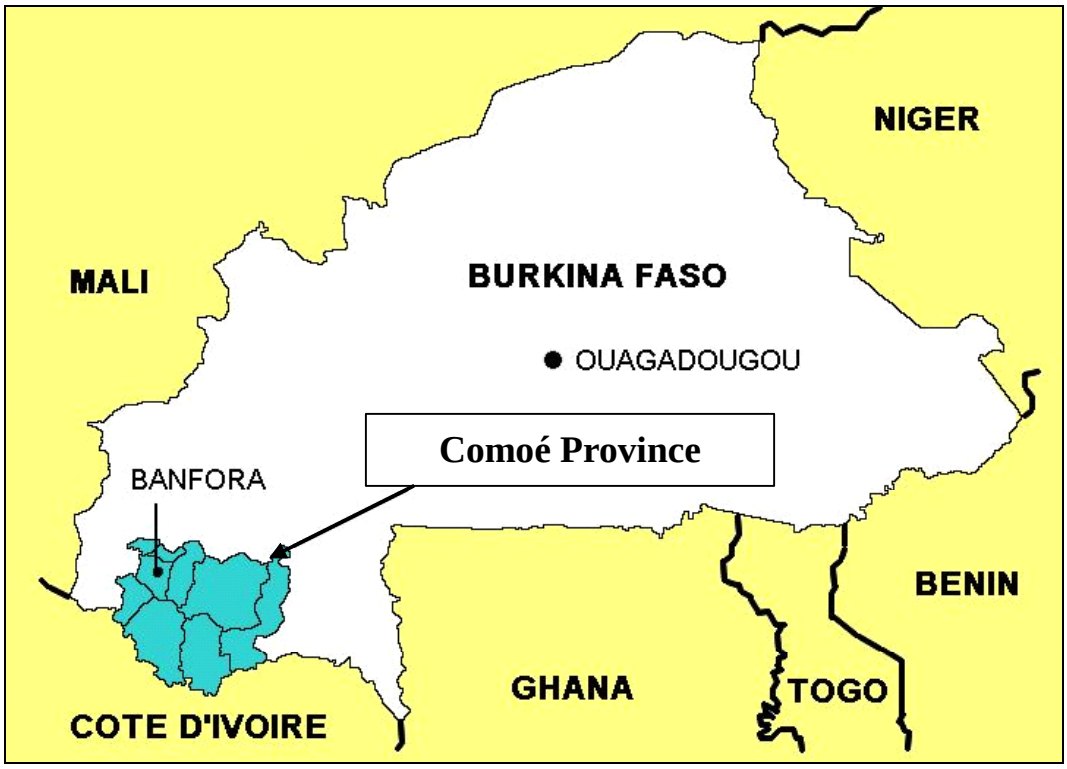


Figure 2.1 Comoé Province

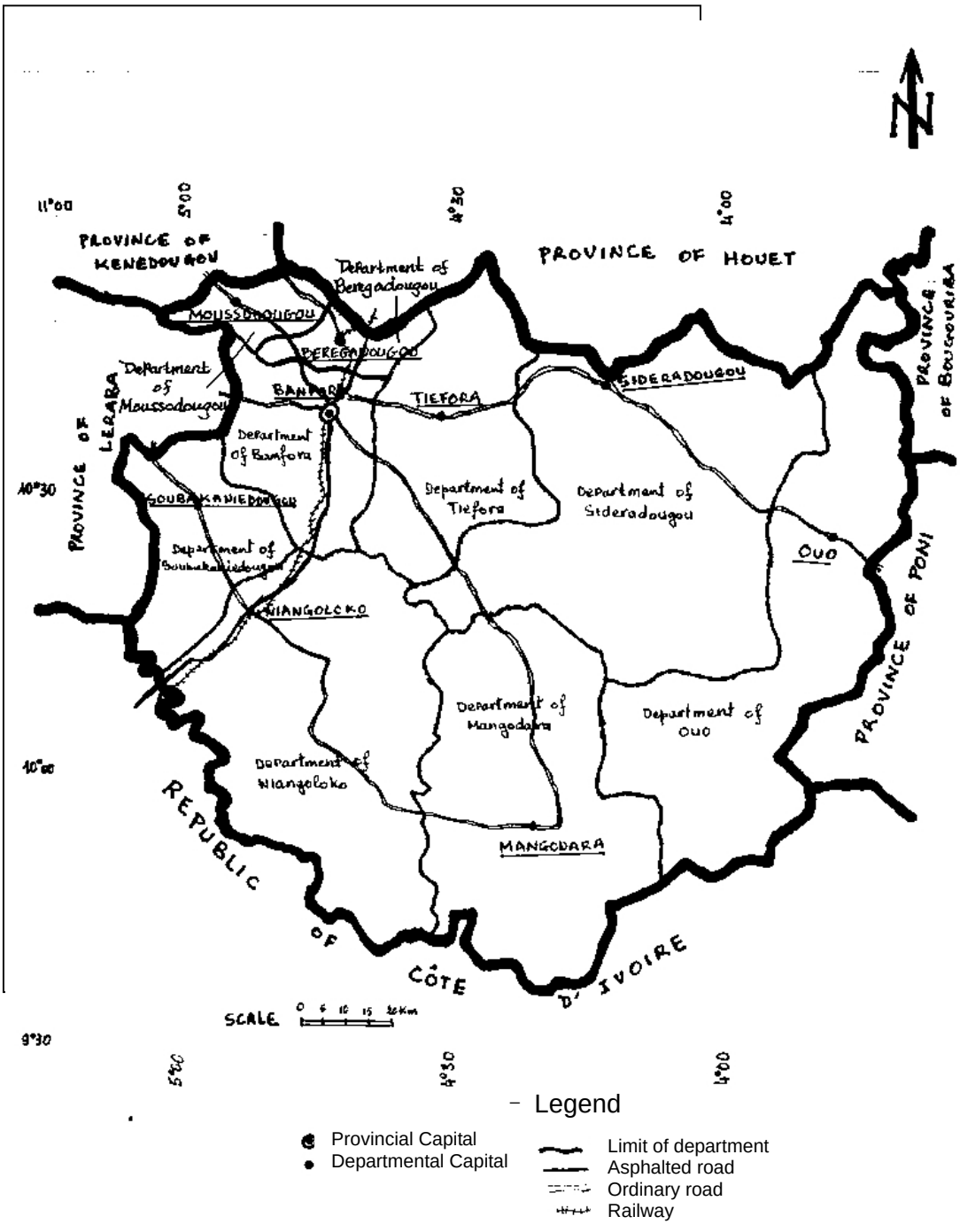


Figure 2.2 Departments of Comoé Province

Comoé Province has two important topographical features, i.e. plateaus and plains. On one hand, plateaus are the main components of the relief and have an average altitude of 450 meters. On the other hand, the plains have numerous rivers, in particular Comoé River and Léraba River, which flow permanently throughout the year, and are subject to widespread flooding during the rainy season.

Comoé Province is located in the South Sudan climate zone and has relatively high rainfall for Burkina Faso. The rainy season can last up to six months and annual rainfall can reach 1,300 mm. Accordingly, Comoé is regarded as an area with high agricultural potential[1] Average annual temperature varies between 17℃ and 36℃, thereby giving a disparity of 19℃. Moreover, rainfall and the number of rainy days vary a lot.

The climate in Comoé Province is broadly divided into two: the rainy season lasting from April to October and the dry season lasting from November to March.

The main type of soil in the southwestern part of Burkina Faso, where Comoé is located, is tropical ferrous soil. This soil has poor fertility due to low content of calcium, potassium and phosphorous, and it is vulnerable to erosion. Generally speaking, main crops in this province are millet, vegetables and cotton.

The local climate and natural features are referred to as the Comoé ecosystem, which is characterized by a high level of rainfall, a relatively long rainy season, rich fauna and flora due to the semi-humid climate, high productivity of natural resources, and the presence of many diseases and parasites. There are some rare plants but no rare animals.

2.1.2. Utilization of natural and forest resources

(1) Vegetation and land use in Comoé Province

The predominant vegetation in Comoé Province is tree savanna, where trees grow comparatively densely on grasslands. According to data in the national forest inventory survey carried out in 1980, over 70% of land is covered with forest type vegetation in Cascade Region. (*Inventaire Forestier National Haute-Volta; FAO, 1982*)

The Government of Burkina Faso compiled the nomenclature of land cover in 1996 (*National Nomenclature for the Constitution on Land Cover; 1996*). The legend and characteristics of vegetation appearing in this are summarized in Table 2.25. Some photos of typical vegetation landscapes are shown in Figure 2.9 and Figure 2.10.

[1] Ministry of Agriculture, Reginal Direction of Agriculture in Comoé (2000) «Project de Developpmment Rural ntegre de la Comoé: Rapport d'Evaluation de la 2eme Phase»

(2) Utilization of forest resources in Comoé Province

Many local people living in Comoé Province still make use of natural resources in their everyday lives. Here, the conditions regarding utilization of forest resources in Comoé Province are described mainly on the basis of interviews conducted in the survey of forest resources (see the appendices for the methodology).

1) Fuel wood collection

Almost all the local population of Comoé Province relies on fuel wood for their fuel needs. (Table 2.26 shows the findings of interviews on fuel wood collection. 37 samples in total).

Fuel wood is usually collected from adjacent bush and cultivated lands of each village. According to the hearings, the range of gathering are extends for 1 to 3km, and sometimes 5km from each village. Women usually do collection mainly in the dry season.

The period of collection varies from two to 12 months. On average, the frequency of collection is seven times per a month with two faggots being gathered per collection. The annual total amount of fuel wood collected is 69 faggots on average. (The annual total is calculated by multiplying "period," "frequency" and "amount in one collection" as shown in Table2.26). Moreover, in a separately implemented survey of related villages, most people (14 respondents out of 22) responded that each household consumes on average two or three faggots of fuel wood per week, which works out as 100~150 faggots per year.

In Comoé Province, the equations shown below are used to measure the volume of fuel wood, which is expressed in units of *cart*, *stere*, and *faggot*.

According to these equations, the annual consumption of fuel wood per household works out as 12.5 m^3 in bulk (cubic volume of 4.3 m^3) when it is assumed that annual consumption is 100 faggots per year. Of course, the answers in hearings contain some room for variation because the amount of fuel wood that can be carried (faggot volume) differs according to the physical strength of the collector, however, faggot volume of 0.125 m^3 is given below as a rough guide.

1 *cart* = 1.5 *stere* = 12 *faggot* (1 stere = 8 fagots)
1 *cart* = 1.5 m^3 in bulk (0.51m^3 in volume)
1 *stere* = 1 m^3 in bulk (0.34m^3 in volume)
1 *faggot* = 0.125 m^3 in bulk (0.0425m^3)

In addition to home consumption, fuel wood is also collected for selling. Popular fuel wood species are *Detarium microcarpum* (detarium), *Vitellaria paradoxa* (karité), *Parkia biglobosa* (néré), and *Pterocarpus erinaceus* (type of Indian rosewood). However, generally speaking, almost all tree species are used as fuel woods except for *Combretom molle* (smoke from which is believed to cause family discord) and *Gardenia sp.* (used for traditional magic), etc. The

diameter of fuel wood varies from 5 to 50 cm.

24 interviewees answered that the fuel wood resources are abundant, while 13 said the resources are nowadays rare. 30 interviewees responded that the amount of resources has decreased over the last 10 years, while six said that the amount has remained stable, and one that there has been a slight increase.

2) Logging

Logging is broadly divided into large-scale commercial logging and small-scale logging for domestic use (including some retailing) by local people. With respect to commercial logging, two large sawmills in Banfora largely dictate the flow of the local timber trade. The commercial logging of timber is described in the section on market distribution of agriculture, forestry and livestock products in 2.2.3.

Concerning small-scale logging by local people, timber is used for constructing and repairing houses and storerooms, and making tools for cultivation and cooking. Collection of timber for these purposes is regarded as men's work and is mainly conducted in the dry season.

According to the hearing (20 samples), the range for collection extends from 1 to 8km. Timber is collected a few times (1 to 5 times) a year, with each household collecting between 5 and 120 pieces in total. Species commonly used are *Pterocarpus erinaceus* (type of Indian rosewood), *Afzelia Africana* (lange), *Anogeissus leiocarpu*s (baobab).

11 of the interviewees answered that the amount of resources is abundant, while six said that wood is scarce (three gave no answer). Moreover, 17 interviewees said that resources have diminished over the last 10 years (three gave no answer).

3) Collection of other forest products

Besides fuel wood and timber, karité almonds (*Vitellaria paradoxa*), néré seeds (*Parkia biglobosa*), leaves of baobab (*Adansonia digitata*) and honey are considered to be important forest products by local people. Conditions regarding the usage of these products are described below.

(a) Karité almonds (*Vitellaria paradoxa*)

Karité almonds are used in almost all villages of the province (Table 2.27 shows the results of hearing survey on karité collection; 33 samples in total).

According to the hearing, the range of collection usually extends for 2 or 3 km, sometimes for 5 to 6 km, from the village.

Collecting is carried out by women mainly between May and August, although the period varies according to village. Similarly, the processing of karité butter is also recognized to be a women's task.

During the harvest season, karité almonds are collected almost every day, sometimes twice per

day. In a single collection, one or two cans (18 l per can) are usually collected. Therefore, each household collects anything between 40 and 100 cans per season.

Besides home consumption, karité almonds are often sold. The price of karité is usually around 1,000 to 1,500 francs per can, and each household sells roughly 20 to 40 cans per season on average. Retailing of karité almonds is not carried out an organized basis; rather they are traded by individuals or families.

24 interviewees said that resources still exist abundantly whereas nine thought not. Concerning the trend over the last 10 years, 22 interviewees said that resources have decreased, nine said they have remained stable steady, and two said they have increased.

Normally, karité trees are well protected in each village territory, and they are even saved when land is developed for cultivation. Having said that, the local people regard karité as a favorite species for fuel wood. Therefore, because people consider karité trees in forest reserves not to have any set ownership, karité trees are often felled for fuel wood.

(b) Néré seeds (*Parkia biglobosa*)

Although néré is used for various purposes, the most important product is "soumbala," which is a local spice made by fermenting néré seeds. The results of the hearing on néré seed collection are shown in Table 2.28 (25 samples in total).

According to these results, the range of collection is within 3km in most cases. Néré trees start to bloom from February to April, and the picking of the seeds generally takes place from May to June. In the same way as karité, women are responsible for collecting and processing néré (soumbala). Collecting is done about 12 times per month with one can[2] collected on average. As a result, each household collects around 25 cans of seeds in a season on average.

Even though a large proportion of seeds are used for private consumption, many seeds are also sold. The price of néré varies from 1,000 to 5,000 FCFA per can. Néré is traded by individuals or by families because there is no organized trading.

Concerning the present level of resources, 16 interviewees thought that levels are low, whereas nine others considered them to be abundant. Concerning changes during the last 10 years, 22 people said it had decreased, while three thought it had remained stable. Néré trees are one of the plant species saved at the time of reclamation in the same way as karité.

(c) Leaves of baobab (*Adansonia digitata*)

Baobab is regarded as one of the most useful tree species in the Sahel region. Almost every part of the baobab tree is used for food, medicine, animal feed, drink or fiber, etc. Moreover, in the

[2] Its diameter is roughly 10 cm, and its heigh is almost 15 cm.

Study Area, baobab leaves have traditionally been cherished as a cooking spice. (Table 2.29 shows the results of hearing on the use of baobab leaves; 21 samples in total).

Women pick the leaves from April to August. The range of collection reaches as far as 6km. Leaves are picked around 5 times per month on average.

Most baobab leaves are consumed domestically but some are sold. The selling price varies from 1,000 to 2,000 FCFA per bag, and 25 FCFA per heap. In the same way as karité and soumbara, since there is no organization for the trading of baobab leaves, products are sold individually.

11 interviewees out of 21 answered that baobab leaf resources are abundant, while 10 said they are rare. All the interviewees except one agreed that resources had decreased during the last ten years.

(d) Honey

Local people conduct traditional apiculture, making hives out of bundles of grass and putting them on tree branches a few meters from the ground. (The results of the hearing on apiculture are summarized in Table 2.30; four samples in total).

According to the interviewees, hives are set up within a few km (1 to 4km) from each village. The honey collection is done between one and four times per year mainly in the dry season. Around 20 litters of honey are collected in a year. This is normally recognized as men's work. In the hearing, three interviewees answered that they sell the honey in addition to consuming at home. The honey is individually traded for between 1,000 and 1,250 FCFA per litter. Three households out of four though that the resource is rare and all four households said the level of resources has decreased during the last ten years.

Fire is traditionally used for smoking bees out from hives when harvesting honey. The careless handling of this fire is suspected as one of the causes of bush fires.

(e) Others

Besides the products mentioned above, many other species are routinely utilized by local people. Such products are collected in and around the forest reserves, and most of them are domestically consumed. Examples of such products are shown in the table below.

From the viewpoint of gender, women play the main role in collecting most of these products. On the other hand, men mainly collect materials used for construction.

Table 2.1 Forest Product in Comoe Province

Species			Harvested part	Utilisations
Scientific name	**French name**	**Dioula name**		
Vitex doniana	Prunier noir	Koto yiri	Leaves, fruit, bark and roots	Home consumption Selling Traditional medicine Embellishment
Vitellaria paradoxa	Karité	Si yiri	Fruit, leaves, bark , caterpillars	Home consumption (butter) Selling of finished and semi-finished products Traditional medicine
Tamarindus indica	Tamarinier	Tomi yiri	Leaves, fruit	Home consumption (local vinegar) Selling of products
Bombax costatum	Kapokier	Boumboum yiri	Leaves, fruit, small branches	Home consumption, Selling of products
Andansonia digitata	Baobab	Sra yiri	Leaves, fruit, barks	Home consumption, Selling of products Traditional medicine
Saba senegalensis	Liane goîne	Zaban yiri	Fruit, resin	Home consumption, Juice and jam
Detarium microcarpum	Detarium	Tama koumba	Fruit, bark	Home consumption, Traditional medicine
Dichrostachys sp. macrostachya	Vitex gomphophylla Bak	Triki	Branches	Whips for domestic animals
Cordia mixa		Colle - yiri	Fiber	Construction
Cochlospermum tinctorium		Turu barani	Roots	Traditional medicine
Andropogon sp,	Variety of grass		Stems	Roofing, fences Traditional medicine
Landetia simplex, Cymbopogon pseudoprecus				
Landolphia hendelotu		Pompon yiri	Latex	Air chamber glue

4) Hunting

In the Forest Law of Burkina Faso, two categories of hunting are prescribed: sport hunting and small-scale subsistence hunting practiced by local people around villages. Only the latter is performed in and around the Study area, although the activity is not so prosperous. Small animals such as hares are hunted. It seems that setting fire for driving out game is one of the causes of bush fire. Hunting is prohibited from 1st June to 30th of November. Incidentally, in the Study area, “hunters” not only hunt animals, but they also have the job of protecting communities against outside enemies and evil spirits.

2.1.3. Forests Reserves in the Comoé Province

Comoé Province has 14 forest reserves that have been established with the purpose of conserving biodiversity (see Table 2.2). These forest reserves account for 22% and 25% of all forest reserves in Burkina Faso in terms of number and area respectively.

Table 2.2 Situation of Forest Reserves in Comoé Province

No	Forest Reserves	Department	Date of classification	Surface area (ha)	Land cover type
1	Bounouma	Banfora	02/03/1955	1,300	*Fallow *Shrub and tree savannah
2	Bérégadougou	Bérégadougou	04/11/1953	5,000	* Tree savannah, fallows
3	Babolo	Niangoloko	22/08/1943	550	*Open forest * Tree savannah
4	Boulon	Mangodara	31/05/1955	12,000	*Open forest
5	Diéfoula	Niangoloko	29/11/1937	85,000	*Open forest
6	Dida	Mangodara	04/08/1955	80,000	*Open forest, fallow
7	Gouandougou	Sidéradougou	03/03/1955	1,800	*Open forest
8	Kongouko	Sidéradougou	03/03/1955	27,000	*Open forest
9	Koflandé	Mangodara	04/11/1953	30,000	*Dry dense forest
10	Logoniégué	Mangodara	04/08/1955	29,000	*Open forest
11	Niangoloko	Niangoloko	05/07/1935	6,654	* Shrub and tree savannah * Open forest * Gallery forest
12	Toumousséni	Soubaka	05/07/1935	2,500	* Open forest
13	Source de la Volta Noire	Moussodougou	31/05/1955	100	*Tree savannah
14	Yendéré	Niangoloko	05/04/1934	700	* Tree savannah
Total				276,604	

(Source: DPECV/Comoé 1998)

* See Table 2.25 for vegetation classifications.

2.2. Overview of Agriculture, Livestocking and Forestry in Comoé Province

2.2.1. Agriculture

(1) Agricultural strategy of Comoé Province

Based on The Strategic Setting of Struggling against Poverty by the Government of Burkina Faso, a new policy of rural development (Ministry of Agriculture, 2004) has been set up. The principal strategies are as follows:

- Promotion of agriculture, stockbreeding, forestry, wildlife and fisheries through increasing production
- Increasing of incomes through the diversification of economic activities in the villages
- Selling of farm products, etc.
- Sustainable management of natural resources
- Improvement in the social standing of women and young people in villages and improvement of the rural economy.
- Responsibility of rural communities as actors in development

In accordance with the Orientation Texts about Décentralisation, the principal strategies on the provincial level for the new policy of rural development are as follows:

- Formulation and execution of a regional development plan and execution plan
- Formulation and execution of plans for managing natural resources in the terroir
- Coordination with related organizations
- Management of human and financial resources, and materials management
- Promotion of job opportunities and raising of income
- Monitoring of the implementation of projects

According to the Rural Development Policy, West Burkina Faso (including Cascade Region), the southwest, the Mouhoun River basin, the canter-east, and the canter of Burkina Faso are potential irrigation zones. The Government aims to encourage agriculture and stockbreeding in the east and west of the country where the climate is favourable for conducting such activities. It also intends to promote the exploitation of these potential zones by encouraging people to migrate internally rather than emigrate to other countries.

(2) Organization of agricultural administration in Comoé Province

The Cascade Regional Direction represents the Ministry of Agriculture, Water and Fishery Resources at the local level, and Comoé is one of two provinces that belong to this. The principal duties of the Cascade Regional Direction of Agriculture, Water and Fishery Resources are as follows:

- Coordination of projects and programs aimed at promoting agriculture
- Technical assistance for farmers
- Monitoring and implementation of projects, etc.
- Creation and execution of a strategy at the regional level
- Collaboration with related authorities, village organizations and NGOs, etc.

The Provincial Direction of Agriculture of Comoé, in accordance with the strategy of the Regional Direction of Cascade mentioned above, is the primary implementing agency and is especially active in disseminating agricultural techniques. The Provincial Direction of Agriculture of Hydraulic and Fishery Resources of Comoé has four departmental services:

- The departmental service of Tiefora (5 agents)
- The departmental service of Sidéradougou (6 agents)
- The departmental service of Mangodara (5 agents)
- The departmental service of Soubakagnedougou (1 agent)

(3) Overview of agriculture in Comoé Province

According to the national agricultural census of 1988, more than 85% of Comoé's population are engaged in agriculture, with women accounting for 52% of the agricultural work force. Production volumes of sugar cane, cotton and peanuts are respectively ranked 2nd, 1st and 2nd among all provinces in the country. As such statistical data indicate, agriculture is the main industry in the province but is primarily rain-based agriculture largely dictated by the rainfall level. In addition to sugar cane, cotton and peanuts as mentioned above, the typical crops cultivated in Comoé are grains (maize, sorghum, millet, fonio and rice), beans (cowpeas and banbara beans), root crops (yams and sweet potatoes), oil crops (peanuts and sesame) and vegetables (tomatoes, cabbages, okura and lettuces).

As the key industry, agriculture in Comoé is characterized by the following features.

- The planting ratio by crop is 48.1% for food crops (mainly sweet corn[3], sorghum and millet), 45.5% for cash crops (mainly cotton, yams, peanuts and sesame) and 6.4% for others (see Table 2.2).
- According to Table 2.2, the cultivated area of peanuts is increasing every year.
- The total cultivated area remained the same from 1998 to 2001 but increased by 13,388 ha from 2002 to 2003 due to the growing popularity of farming for home consumption (based on the Report on Socioeconomy in Comoé Province (Draft), 2004, Obersan Regional Economic Development Bureau)

[3] Surplus production is sold.

- 26.5% and 73.4%[4] of farmland is cultivated by independent farmers and collectives (including those of extended families) respectively.
- 75.7% of cultivation takes place on land owned by farmers, while sharecroppers conduct 4.3%. 19.8% takes place on borrowed land.
- Only 7.9% of the cultivated land is subject to some kind of erosion control measure.

Table 2.2 shows that cash crops account for a relatively high ratio of cultivated land and many farmers are said to find it difficult to meet annual family demand using only home-cultivated food crops. Presumably because of this situation, the prices of food crops conspicuously increase from August to September, which is the off-crop season. Some areas are said to have made it difficult to secure the supply of food crops and cultivation is centered on cotton and other cash crops. Nevertheless, the province as a whole is certified as a food secure area[5] where the supply of food is relatively assured.

[4] Addition of the other figures doesn't make 100%, but these are the figures given in the source data.
[5] Famine Early Warning System Project, USAID (2000) «Burina Faso, 2000: Current Vulnerability Assessment March 2000»

Table 2.3 Production Volumes by Main Crops

CROPS	Agricultural season 2001/2002 Comoé			Agricultural season 2002/2003 Comoé			Agricultural season 2003/2004 Comoé		
CEREALS	Superficie (ha)	Volume of production per ha (kg/ha)	Production (tons)	Superficie (ha)	Volume of production per ha. (kg/ha)	Production (tons)	Superficie (ha)	Volume of production per ha (kg/ha)	Production (tons)
Millet	2 666	880	9 439	1 395	1 084	7 183	255	520	3 395
White Sorghum	1 397	1 229	2 491	1 444	1 260	5 615	3 603	770	7 668
Red Sorghum	14 927	1 010	14 119	18 772	1 660	26 827	7 452	1 500	24 648
SORGHUM	**16 324**		16 610	20 216		32 442	11 055		32 316
Maize	26 346	1 522	60 010	35 525	1 486	79 012	46 545	1 377	62 796
Pluvial Rice	2 893	1 859	5 656	3 693	1 352	5 545	3 044	1 288	4 740
Irrigated Rice	434	4 557	1 979	434		1 892	441		
Irrigated perimeters Rice									
Rice	**3 327**	**6 416**	**7 635**	**4 127**	**1 352**	**7 437**	**3 485**		**4 740**
Fonio	0	0	0						
Sub total	48 663		93 694	61 263		126 074	61 340		103 247
CASH CROPS									
Cotton	13 781	1 145	15 785	15 720	1 069	16 802	21 719	1 015	21 965
Peanut	15 216	846	13 133	13 925	1 002	15 924	17 128	762	11 621
Sésame	1 003	750	891	1 042	649	676	202	333	67
Soya bean	0		0	0	0	0			
Sub total	30 000		29 809	30 687		33 402	39 049		33 653
OTHER CROPS									
Bean	1 357	260	2 092	2 106	444	6 498	1 118	580	1 542
Voandzou	1 498	890	3 210	1 971	705	2 212	1 455	797	1 712
Yam	1 235	8 431	9 944	150	15 593	2 327	364	15 477	5 632
Sweet potato	57	4 340	410	14	4 160	74	7	20 080	138
Sub total	4 147		15 656	4 241		11 111	2 944		9 024
TOTAL	**82 810**		**139 159**	**96 191**		**170 587**	**103 333**		**145 924**

(Source: Provincial Direction of Agriculture of Comoé 2004)

Yam being a cash crop, it is mainly cultivated in the departments of Mangodara and Niangoloko in the south of the province. The rapid spread of "l'Americain,"a variety with high yield introduced in Côte d'Ivoire around the end of 1980, has also reached Comoé, stimulating a lot of interest for this cash crop.

73.4% of the cultivated land in Comoé falls in the category of collective farming, which includes farming by the extended families of brothers and other relatives. The popularity of collective farming can also be gathered from the village survey, which found many producer groups (cooperatives) of cotton, vegetables and maize, etc. in villages along with many active village organizations. Reasons for this may be the need for grouping of women, easier securing of land for cultivation by groups, and the universal applicability of cash crop cultivation to

collective farming, etc. when cultivation is conducted on land that does not belong to family members. Mutual help during the farming season through a mutual aid system for independent farmers is very common. Farming by waged labourers is said to be uncommon in Comoé except for sugar cane cultivation.

Women mainly cultivate rice, peanuts, black-eyed peas, millet, sesame, and vegetables, etc. Peanuts are an important source of cash income for women. Since the cotton unions mainly handle cotton for which seeds, fertilizer and technical guidance are provided by the SOFITEX (cotton corporation), women do not take a leading role in cotton cultivation.

2.2.2. Stockbreeding

(1) Current situation of stockbreeding

Stockbreeding makes an important contribution to the public finance and economy of Burkina Faso. In particular, Comoé Province has good potential for stockbreeding because of abundant fodder resources and permanent streams, and stockbreeding the occupies an important position in the local socioeconomy. According to statistics on agriculture and stockbreeding, Comoé Province has 7.0% of all the cattle, 1.9% of all the sheep, and 1.3% of all the goats in Burkina Faso. Underpinned by abundant fodder resources, Comoé Province ranks third in the country in terms of head of cattle.

Numbers of livestock in Comoe Province and nationwide is shown in following table.

Table 2.4 Numbers of Livestock in Comoe Province and Nationwide (2002)

	Livestock		
	Cattle	Sheep	Goats
Comoé	508,853	129,163	127,077
All the country	7311,544	6702,640	10035,687

（Source:DPRA/Comoé）

A Tropical Livestock Unit (UBT) is estimated as 6.25 kg of dry feed (MS) per day for every 250 kg of animal weight. The average UBT for ruminants in the tropical zone is generally between 0.75 and 1 UBT for cattle, 0.20 UBT for sheep and 0.18 UBT for goats. Also, since the zebu is the most common type of stock bovine, 1 UBT is assumed per head. In 2003, the total UBT of ruminants was estimated as 18.7% for Banfora, 18.7% for Niangoloko and 21.4% for Sidéradougou compared to the total UBT of ruminants in the whole province. Accordingly, the total UBT of ruminants in the three departments is equivalent to 60% of the total UBT of ruminants in all Comoé.

The following table is to show numbers of livestock per Department in 2004.

Table 2.5 Numbers of Livestock per Department in 2004

Department	Livestock			
	Cattle	Sheep	Goats	Total UTB of ruminants
Banfora	21,000	17,500	16,000	27,380
Bérégadougou	2,000	1,550	1,000	2,490
Niangoloko	22,000	22,700	4,700	27,386
Ouo	10,000	8,200	12,400	13,872
Mangodara	12,000	10,500	15,400	16,872
Tiéfora	11,000	12,400	6,200	14,596
Sidéradougou	26,000	19,600	7,200	31,216
Moussodougou	1,500	1,550	3,600	2,458
Soubakanièdougou	6,000	1,000	20,000	9,800
Total	111,500	95,000	86,500	146,070

（Source :DPRA/Comoé）

(2) Activities and technical support system of the Provincial Direction of Animal Resources of Comoé (DPRA/Comoé)

The main activity of the DPRA/Comoé is livestock hygiene. It also supports the establishment of poultry breeding facilities as a means of strengthening and diversifying stockbreeding production. Activities related to livestock hygiene in 2003 were as follows;

① Contents of disease prevention activities :

- Accentuation of PPCB vaccinations
- Improvement of institutional management for vaccine inoculation against other infections
- Improvement of the epidemiological check network (RESUREP)
- Strengthening of the sanitary cordon along the country borders by the effective implementation of RESUREP activities at the three active control posts

② Content of education activities:

- Emphasis on the establishment of demonstration units
- Increasing the technical level of stockbreeders through training, support and advice

The Provincial Direction of Animal Resources covers six departmental services, two posts (Niangoloko and Mangodara) and one Pastoral Arrangement Zone (ZAP) in Sidéradougou. In 2003, it constituted 17 workers (17 stockbreeding senior technicians and 9 stockbreeding agents) in charge of technical instruction (see Table 2.6). On average each employee is presently in charge of around 17,000 head of livestock (ruminants). The service does not have enough employees to supervise livestock transfers, etc. and this is due to the insufficient budget for administrative services.

Table 2.6 Staff Arrangement of Comoé Provincial Direction of Animal Resources

Breeding Management Zone (ZEE)		Description			
		Veterinary doctors	Engineers in breeding	Senior technicians in breeding	Technical agents of breeding
Departments	Banfora	0	0	2	1
	Bérégadougou	0	0	1	0
	Niangoloko	0	0	1	1
	Ouo	0	0	1	0
	Mangodara	0	0	1	0
	Tiéfora	0	0	0	1
	Sidéradougou	0	0	0	1
	Moussodougou	0	0	0	1
	Soubakaniè-dougou	0	0	1	1
Posts	Ouangolodougou (Niangoloko)	0	0	0	1
	Koflandé (Mangodara)	0	0	0	1
ZAP	Sidéradougou	0	0	1	1
Total		0	0	8	9

（Source：JICA Study Team, 2004）

The reasons for the establishment of the branch offices and the ZAP are as follows:

Branch offices: There are many water sources and pasturelands in the area located between Niangoloko and Mangodara, and stockbreeding activities are practiced here in the dry season. Consequently the DPRA has established two posts (Ouangolodougou in the department of Niangoloko and Koflandé in the department of Mangodara) for administration and technical support.

ZAP: The Government of Burkina Faso established a ZAP as a pasturage zone covering the area of Tiefora-Sideradougou-Dramandougou in 1988 in response to the conflict between farmers and pasturage groups that killed and wounded people at Labola.

(3) Stockbreeding system

Stockbreeding in Comoé Province is broadly divided into the rough traditional system and, in recent years, an intensive peri-urban system. The differences between traditional stockbreeding and modern stockbreeding are indicated below.

(a) Traditional stockbreeding

Traditional stockbreeding is practiced by the Fulani, who treat it as a regular vocation, and a number of other indigenous peoples. This entails extensive pasturing on natural grasslands,

fallow lands and forestland. Stockbreeding and agriculture are closely linked, as may be gathered from the fact that residues of millet and sorghum crops are used for animal feeding during the dry season. However, disputes frequently arise during the harvest season, and these sometimes lead to violent and deadly conflicts.

- **Sedentary type:** Sedentary breeders and some farmers inside agriculture zones practice this type of stockbreeding. Small ruminant animals and poultry are bred in a close relationship with agriculture. Livestock animals are only allowed to move inside the village terroir, and they graze in post-harvest fields, fallow plots and nearby zones of villages not suitable for cultivation. In the rainy season, animals graze away from fields, in bush areas containing abundant pasturage and water (forest reserves, etc.), in order to prevent damage to crops, and they are kept in these areas until the end of harvesting.
- **Migratory type:** This refers to the stockbreeding practiced by Fulani migrants, but it does not include breeding of small ruminants. Most stockbreeders settle, however, this tends to be temporary settlement because of the humidity in the rainy season and difficulties in land acquisition. Large animals (ruminants) are kept to serve as savings for use in the event of unexpected expenses. Since the wealth of breeders is judged according to the number of livestock they have, they try to increase their head of stock. Migratory stockbreeding is characterized by large herds of large zebu cattle, moved towards Mangodara and Niangoloko departments where pasture zones are abundant and far from cultivated farms after the rainy season. The livestock are brought back to farm zones in November, after the harvesting season. During the dry season, the livestock are allowed to graze on the remains of crops left after harvesting. Some breeders migrate as far as Côte d'Ivoire during this period.

(b) Modern stockbreeding

Essentially, this type of stockbreeding is practiced in suburban areas in order to produce meat and eggs. Based around the market of Banfora and so on, milking stock, poultry and pigs are bred semi-intensively in suburban areas.

(4) Conflicts and illegal access to forest reserves by stockbreeders

Disputes arise in various places when stockbreeders move their stock. Disputes with farmers frequently occur in cases where livestock are brought to forest reserves in search of water, cases where stockbreeders are arrested and fined, or especially when livestock animals are mistakenly allowed to enter fields and eat crops before harvest. In almost all such cases, the stockbreeders and the notables of the village meet and discuss in order to find a solution through compensation for the farmer who is the victim most of the time, but sometimes arbitration is sought from the DPRA / Comoé.

According to data from the DPRA/Comoé, in 2003 around 39 conflicts were recorded, and four of these were resolved by an arbitration committee.

In 1986, an individual dispute between a Fulani stockbreeder and farmers in the village of Labola escalated into a big conflict involving the Karaboro ethnic group and Fulani people and led to numerous fatalities and injuries. In response, the Government of Burkina Faso decided to establish a ZAP in this zone in 1988. Such disputes, which have the potential to become major conflicts, frequently occur in Mangodara, Ouo and Sidéradougou departments where official missions have been dispatched in order to solve them.

The main causes of these conflicts are the insufficiency of watering places, the lack of cattle paths and the mentality of the stockbreeders.

Sedentary Fulani breeders use the ZAP in the neighbouring area of Sidéradougou, and the stockbreeders' group (Fulani) of Tiéfora that has been established in the ZAP controls water sources (water supplies). In spite of this, several problems are still provoking new conflicts. On one hand, these are triggered by illegal cultivation inside the ZAP by repatriates from Côte d'Ivoire, while on the other hand, occupation of watering holes by prospectors searching for recently discovered gold in the area is creating new problems.

According to data on collection of fines by the DPRA/Comoé regarding illegal access (see Table 2.7) to forest reserves by stockbreeders, illegal access by migratory stockbreeders from Mangodara and Niangoloko is extremely common. Fines collected from these two departments account for more than 50% of fines in the whole province. Reasons for this are: 1) large numbers of livestock, 2) migration from other areas in search of water sources, and 3) existence of numerous forest reserves in the said departments.

Out of departments that possess forest reserves, dispute problems have not occurred in Sidéradougou and Moussodougou.

Table 2.7 Fines Collected by the Comoé Provincial Direction of Environment and Habitat (DPECV) in 2003

Departmental Service	Forest Reserves	Penalization (FCFA)
Banfora	Bounouna	29,750
Bérégadougou	Bérégadougou	65,000
Niangoloko	Babolo	490,000
	Yendéré	
	Diéfoula	
	Niangoloko	
Ouo	-	-
Mangodara	Boulon	215,000
	Dida	
	Koflandé	
	Logoniégué	
Tiéfora	-	-
Sidéradougou	Gouandougou	0
	Kongouko	
Moussodougou	Source de la Volta Noire	0
Soubakaniedougou	Toumousséni	80,000
Total		1147,500

（Source： JICA Study Team in 2003）

(5) Pastureland

Stockbreeding is carried out in almost all Comoé Province; in particular Niangoloko and Sidéradougou are considered to be stockbreeding centers. However, in these zones, breeders migrate from area to area in search of pasturage zones and watering places.

- **Niangoloko department:** surrounded by Léraba and Comoé Rivers and containing numerous lakes and reservoirs, this areas is blessed with water sources. Migratory Fulani breeders lead big herds of large-size cattle to this area in search of water sources during the dry season.
- **Sidéradougou department:** one ZAP covering Tiéfora, Sidéradougou and Dramandougou has been established and is used by Fulani breeders from Banfora, Tiéfora and Sidéradougou. This ZAP has two wells used by both the local population and livestock, one well reserved for livestock only, and a dam reservoir in Tiéfora. There are also two dam reservoirs to the north of Kongouko forest reserve and these are used as watering spots for livestock.

The situation of water resources in Comoé Province is shown in Table 2.8.

Table 2.8 Situation of Water Resources in Comoé Province

Departments	No	Water resource	Type	Surface area (ha)
Banfora	1	Bounouna	Water reserve	5
	2	Lemouroudougou	Lake	150
	3	Tengrela	Lake	100
Moussoudougou	4	Comoé	Water reserve	600
	5	Lobi	Water reserve	120
Niangoloko	6	Dangouindougou	Water reserve	75
	7	Koutoura	Water reserve	15
	8	Tounoura	Water reserve	15
	9	Mittiédougou	Water reserve	5
Soubakanièdougou	10	Damana	Water reserve	-
Sidéradougou	11	Gouandougou	Water reserve	60
	12	Dandougou	Water reserve	75
Tiéfora	13	Tiéfora	Water reserve	20

（Source: DRECV/Hauts Bassins）

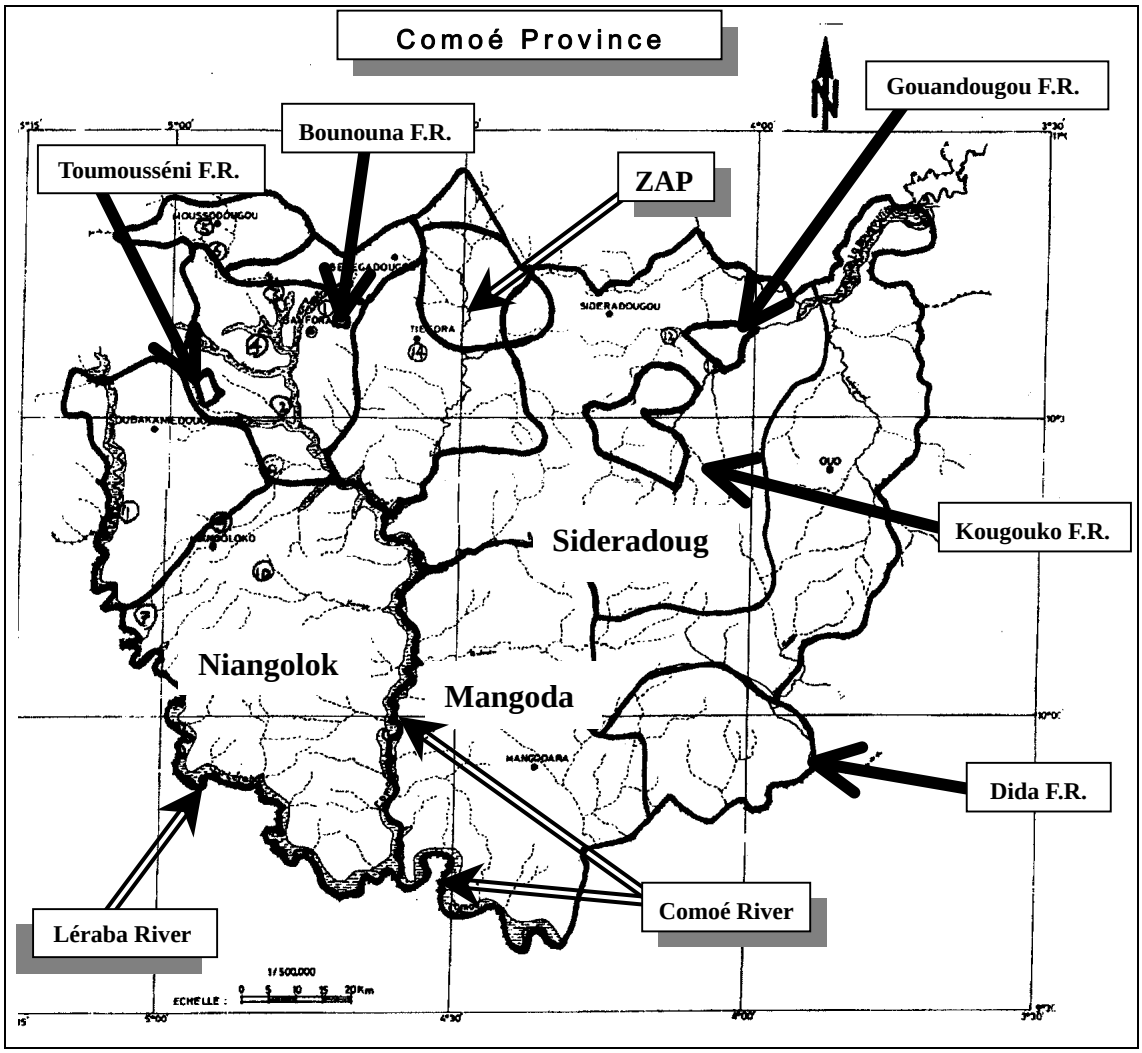


Figure2.3 Situation of Water Sources and Pastoral Arrangement Zones (ZAP)

2.2.3. Distribution of Agricultural, Forestry and Livestock Products on Markets

Roads infrastructure is essential for the distribution of agricultural, forestry and livestock products on markets. However, because most of the roads in Comoé Province are covered by laterit paving, roads become eroded and are severed during the rainy season, thus making it difficult for traffic to pass. Moreover, the roads that link villages are too narrow for vehicles to travel with ease.

Cash crops such as cotton and peanuts are sold outside of the province. Concerning cotton, the SOFITEX grants seeds and fertilizer on credit with the objective of securing stable production. The advantage for cotton producers is that they can conduct production safe in the knowledge that the SOFITEX will purchase products. Generally speaking, almost all goods except for agricultural, forestry and livestock products are consumed domestically or sold at local village markets or markets in local cities like Banfora, etc. It is necessary to upgrade these markets, in particular to establish slaughterhouses, in order to activate distribution at the level of markets in the region.

Concerning the distribution of agricultural, forestry and livestock products on markets, the relationship between producers and sellers who strongly influence prices is also important. It is necessary to form groups of producers to conduct joint collection and selling (also, to conduct collective buying of agricultural materials in the future), because producers do not have sufficient information on market prices, are unable to benefit from collective bargaining and frequently have to accept prices fixed unilaterally by middlemen.

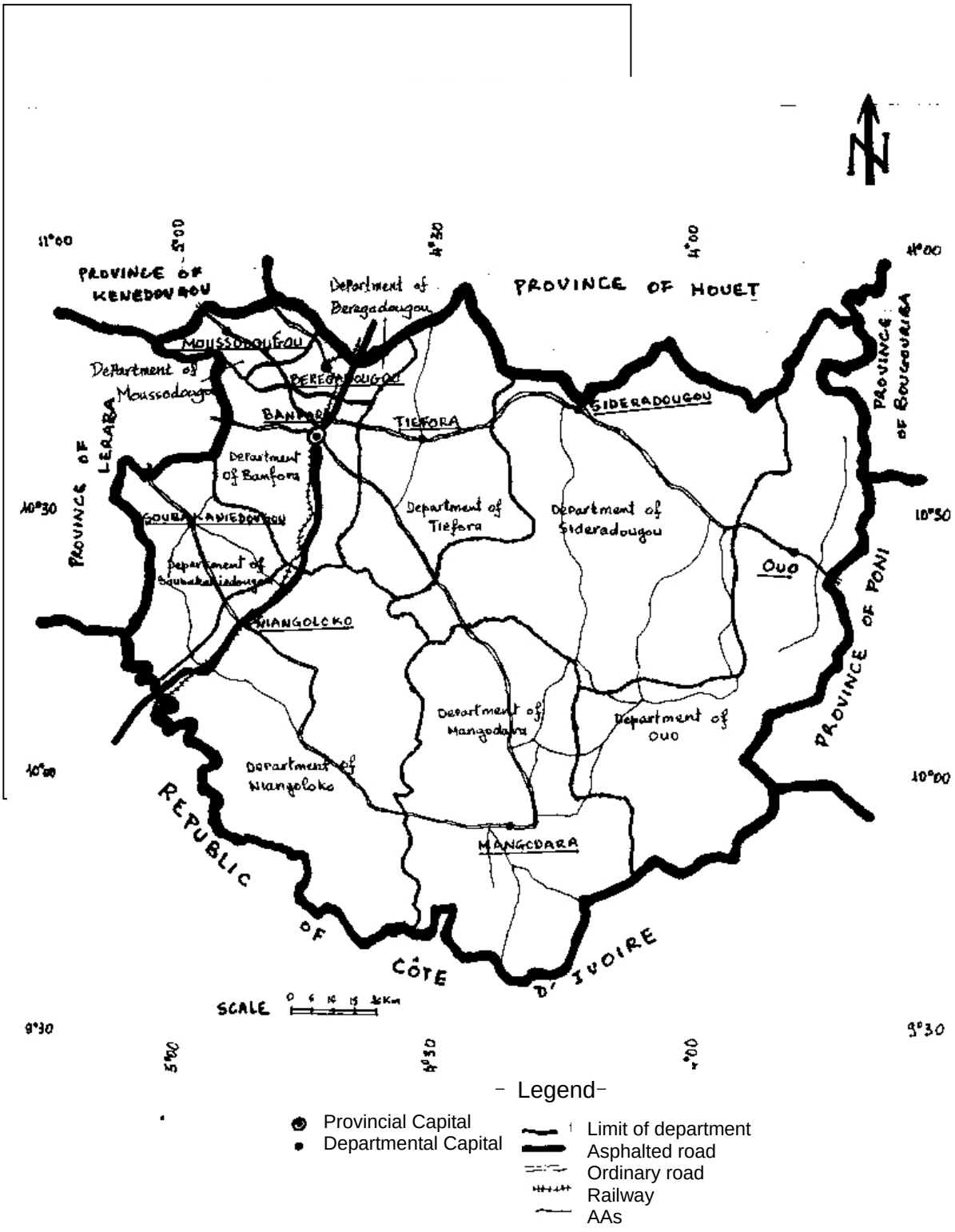


Figure 2.4 Map of the Road Network in Comoé Province

(1) Agriculture

1) Principal agricultural products

Agriculture has an important place in the socio-economic activities of the province. Agricultural products essentially consist of the following three types of crops:

① Cereal crops: mainly cereals (millet, maïze, sorghum, rice, etc.)

② Cash crops: cotton, peanuts, sesame, and soya beans

③ Other crops: beans, vouandzou, yams and sweet potatoes

2) Distribution of agricultural products

Comoé Province ships surplus production of cereals and dry season crops to neighbouring countries like Côte d'Ivoire and Mali. Production of main agricultural products increased from 2001 to 2002, and the said favourable geographical conditions are currently providing an incentive for agricultural production.

Table 2.9 is to show principal agricultural products.

Table 2.9 Principal Agricultural Products (tons)

Years	Production			Total
	Food crops	Cash crops	Other crops	
2001 - 2002	93,694	29,809	15,656	139,159
2002 – 2003	126,074	33,402	11,111	170,587
Evaluation	32,380	3,593	-4,545	31,428

(Source: DRAHRH/Comoé)

Comoé Province is self-sufficient in food because of the abundance and diversity of its agricultural production based on its food plan. In order to improve the incomes of villagers and to stabilize pries for market gardening products, the following three factors have to be reinforced: 1) organization of farmers, 2) organization of traders, and 3) conservation of agricultural perishable goods.

Organization of farmers: Table 2.9 shows cereal production in Comoé Province from 1992 to 1999. Concerning infrastructure, 36 cereal stores were constructed to deal with surplus production; however, cereal stores alone are insufficient to solve the problem. The root cause of this is abundant harvesting, however, this is primarily caused by deficiencies in structural functions and operating organization.

Organization of traders: cotton distribution is very well organized by the SOFITEX. There is currently one factory for processing cottonseeds and this is helping to promote cash crop farming.

Conservation of agricultural perishable goods: cash crops such as peanuts, yams and

sesame can easily be marketed when demand is superior to supply. Technology for desiccating fruits and vegetables has been introduced as a means of solving storage problems.

Table 2.10 Supply and Demand Data for Cereals

Year	Population	Needs (t)	Availability (t)	Production (t)
1992	321,602	61,104	70,555	9,451
1993	331,894	63,059	87,837	24,778
1994	342,215	65,078	79,316	14,238
1995	347,035	65,937	55,128	-10,809
1996	345,697	65,682	66,942	1,259
1997	354,823	67,416	72,252	4,836
1998	357,225	67,879	66,135	-1,738
1999	368,168	69,952	80,870	10,918

(Source: DRAHRH/Comoé)

(2) Stockbreeding

1) Principal stockbreeding products

Stockbreeding plays an important part in terms of the socioeonomy and society because the number of livestock kept determines a family's prestige (wealth). Stockbreeding, which is integrated with farming with the aim of earning income and so on, is practiced mainly using traditional methods by farmers and Fulani (nomadic, sedentary and migratory). The livestock is composed of cattle, sheep, goats and pigs, and stockbreeding products such as meat and milk are locally consumed.

2) Distribution of stockbreeding products

The distribution of livestock constitutes a major problem in Comoé Province. Apart from urban consumption, stockbreeding products are exported mainly to Côte d'Ivoire. Table 2.10 shows the numbers of livestock that have been exported in recent years. Export quantities fell between 2001 and 2002, however, this was mainly due to the change of government that took place in Côte d'Ivoire at this time. In the field of local distribution, large animals are slaughtered and sold on the spot by butchers.

Livestock animals are traded by bargaining, however, breeders often have little choice but to accept low prices from middlemen because they don't have sufficient information. On the other hand, small-size meat products and dairy products are almost always traded directly between producers and consumers.

Table 2.11 Numbers of Livestock Exported from Comoé Province

Species/years	2000	2001	2002
Cattle	6,416	6,472	5,991
Sheep	6,451	47,823	38,812
Goats	1,984	18,317	6,365
Total	14,851	72,612	51,168

(Source: DPRA/Comoé)

(3) Forest products

1) Main forest products

Since forest products are mainly harvested within forests, forest development is very important for the socio-economic activities of the local population. On one hand, demand for timber is high because of the high value placed on building timber, charcoal, fuel wood and woodwork products, etc. On the other hand, villagers harvest forest products such as karité almonds, néré seeds and tamarind within forest areas. The collected karité almonds are sold in their raw state or transformed into butter for local consumption or marketing at other consumer centers in Banfora and Bobo- Dioulasso. Also, local people frequently harvest medicinal bark, leaves and roots in forests.

2) Distribution of forest products

(a) Fuel wood

Fuel wood constitutes the main source of energy for local people and also the urban population. According to a study conducted in 1988, 98% of the population of Banfora consumed fuel wood and 61% charcoal. In 1999, the demand for fuel wood in Banfora (with a population of 46,967) alone was estimated at 70,450 steres. Therefore, fuel wood consumption per year and per person (including adults and children) is around 1.5 steres according to a survey of 20 households conducted in Banfora.

At the provincial level, the quantity of fuel wood consumed in 1999 was estimated as 552,252 steres. There is concern that such high demand will have harmful consequences on the environment.

Fuel wood consumption in Banfora was estimated as 70,450 steres in 1999. In Table 2.13, the number of authorizations delivered by the DPECV of Comoé totals 102,648 steres, equivalent to 145.7% of demand. As a result, the demand for fuel wood in Banfora is currently satisfied.

Table 2.12 Estimated Demand for Fuel Wood in Comoé Province (steres)

Year	Population	Needs
1992	321.602	482.403
1993	331.894	497.841
1994	342.215	513.323
1995	347.035	520.553
1996	345.697	518.546
1997	354.823	532.235
1998	357.225	535.838
1999	368.168	552.252

(Source：DPECV/Comoé)

On the basis of cutting permits granted by the DPECV of Comoé, Table 2.13 identifies quantity of fuel wood exploited per year.

Table 2.13 Fuel Wood Supply to Banfora (steres)

Year	1999	2000	2001	2002
Quantity	102,648	173,388	193,248	182,340

（Source：JICA Study Team, 2004）

Local residents collect fuel wood for private consumption outside of the forest reserves (in their own cultivated fields, etc.), and citizens in Banfora purchase it from town retailers. Table 2.14 shows the sale price (in November 2002) of fuel wood in Banfora. Generally speaking, households purchase fuel wood every two or three days when their stock is used. In Banfora, there are three routes of fuel wood supply. They are:

- Tree cutters → middlemen (transporters) → retailers → consumers
- Tree cutters → retailers → consumers
- Tree cutters → consumers

Table 2.14 Sale Price, etc. of Fuel Wood in Banfora

Unit	Quantity	Price (FCFA)	Duration of fuel wood consumption per one (01) household
Pile	3 pieces of fuel wood (length: 1m)	150	1day
Bundle of fuel wood	10 to 15 pieces (length: 1m)	600-1,000	1week
Stere	Around $1m^3$	1,500-3,000	1month

(Source：JICA Study Team 2003)

Fuel wood operators obtain supplies either by directly recruiting laborers or by purchasing wood collected by local residents. Fuel wood is mainly collected in the dry season because in the rainy season, humidity detracts from the quality of wood and it is difficult to recruit laborers during the busy farming period.

(b) Charcoal

Djongolo village neighboring Toumouséni forest reserve is well known for procuring charcoal, which is delivered to Banfora.

Almost all the charcoal produced in Comoé Province is transported to Banfora and sold by retailers, some of whom travel from Bobo-Dioulasso to Banfora in order to obtain supplies.

Table 2.14 shows charcoal sales in Banfora over the past four years.

Table 2.15 Charcoal Sales in Banfora in the Past 4 Years (tons)

Year	1999	2000	2001	2002
Sawmills	21	21	47	115
Others	30	122	237	102
Total	51	143	284	217

(Source: JICA Study Team 2003)

The main users of charcoal are restaurant managers and coffee sellers. Retailers sell the remaining quantity to housewives. Charcoal produced by sawmills is sold at 1,500 FCFA per sack of 50 kg. Retailers sell charcoal at grocery store fronts and so on for 100 FCFA and 50 FCFA, etc.

(c) Timber

There are two sawmills in Banfora (the sawmill belonging to Ghassoub and the sawmill belonging to Coulibaly). The sawmills only exploit trees that have a chest-height diameter of 50 cm or more. The Regional Direction of Environment and Habitat of Cascade allows the sawmills to cut trees over approximately 30,000 ha outside of forest reserves. The exploited trees are processed and sold by the sawmills in Banfora. Processed woods are then distributed throughout the country. Table 2.15 shows the number of trees cut according to trees species from 1999 to 2002.

Table 2.16 Number of Trees Cut by Sawmill

Especies	1999		2000		2001		2002		Total
	Ghassoub	Coulibaly	Ghassoub	Coulibaly	Ghassoub	Coulibaly	Ghassoub	Coulibaly	
Khaya senegalensis	1,194	276	1,977	756	1,517	901	1,745	1,175	9,541
Pterocarpus erinaceus	325	77	171	76	133	136	369	50	1,337
Diospyros mespilifomis	80	62	16	126	42	314	79	85	804
Afzelia africana	244	39	195	74	391	154	317	46	1,460
Others	553	8	261	11	202	20	129	3	1,187
Total	2,396	462	2,620	1,043	2,285	1,525	2,639	1,359	14,329

(Source: Scope of Work of JICA Study Team 2002)

According to Table 2.15, approximately 66% of the exploited species are *Khaya sénégalensis* because this can be put to numerous uses in furniture and timber, etc. Table 2.16 shows the sold volumes of posts, poles, rafters etc. by the sawmills during the past four years.

Table 2.17 Volume of Timber Sold in Sawmills (m^3)

Year	1999	2000	2001	2002
Volume(m^3)	1,751,023	4,086,843	4,660,052	5,752,311

(Source: JICA Study Team 2003)

There are around 400 furniture workshops in Banfora that make desks and chairs etc. from timber produced at the sawmills. Almost all these workshops conduct all processes from receiving orders and procuring materials to manufacturing and retailing. This job is a source of income for their family. Furniture made by workshops is cheap because the price of wood is low. As a result, Banfora furniture is well known and orders are even received from the capital Ouagadougou.

(d) Other forest proudcts

In addition to wood, other forest products such as karité, soumbala, leaves of Baobab and honey etc, are sold in Banfora. For example, traders buy karité almonds from village women for around 500 CFA per can (or approximately 700 CFA per can when sellers come to Banfora) and retail them for 1000 CFA during the harvest season or 1200 CFA at other times. The village women use this cash income to purchase foodstuffs and other groceries that are hard to acquire in the villages.

2.2.4. Calendar of Agricultural, Stockbreeding and Forestry Activities

Each village has its own unique lifestyle calendar. However, Table 2.17 shows a typical village calendar prepared based on profile surveys at 30 villages, in order to give us a general picture of villages in Comoé Province.

Agriculture: during the rainy season, local communities are busy with farming activities. The main activity of men is cotton growing and cultivation of cereals. Women help them by taking food out to the fields and assisting with the work in the fields. The main activity of women is market gardening, which mainly takes place during the dry season.

Forest products: the activity of women is the collection of karité almonds, néré seeds and fuel wood. In general, fuel wood collection can be done all year round. But according to the village surveys, women collect and store fuel wood only in the dry season because they are too busy in the rainy season. In general, apiculture is rarely practiced throughout the year, and honey tends to be harvested from March to April.

Stockbreeding: in the dry season in almost all the villages, breeders move with their livestock in search of grazing places and water. Generally, they move toward Niangoloko, Mangodara or toward neighboring countries like Côte d'Ivoire and Ghana. There are some villages where livestock are not moved in the dry season because they have plentiful grass and water. In the dry season, local communities consign their livestock to Fulani breeders, while in the rainy season, animals are frequently kept in and around the villages close to feeding and watering spots. Farmers patrol cultivated fields from sowing through to harvest in order to prevent livestock from entering, and animals are sometimes set free in forest reserves.

Habitation: in Comoé Province, since the average rainfall is approximately 1300 mm per year, this leads to the collapse of houses in the rainy season because houses are constructed with traditional sun-dried bricks. As a result, men are busy repairing damaged houses during the rainy season. After the cereals and cotton harvest, the men start to make bricks with a view to implementing full-scale repairs or building new houses.

Incomes: after the harvest, generally from October to December, the men start trading their agricultural products inside and outside of villages to obtain incomes. For example, taking the case of cotton, men are extremely busy carrying products to collection points, guarding their products and selling to the SOFITEX.

In consideration of the business of villagers performing the above jobs throughout the year, when it comes to preparing the forest reserves management plan, it will be necessary to hold ample prior discussions with villagers in order to realize sustainable activities backed up by local participation.

Table 2.18 Activities Calendar of Local Communities

		1	2	3	4	5	6	7	8	9	10	11	12
		Dry season				Raining season						Dry season	
Agriculture	Millet / Sorghum					Ploughing	Sowing	Ploughing / weeding			Harvesting		
	Bean				Ploughing / Clearing		Sowing		Weeding		Harvesting		
	Peanut				Ploughing/ Clearing		Sowing		Weeding	Fertili-sation	Harvestin g		
	Cotton				Ploughing / Clearing			Sowing / Manuring/ Weeding/ Fertilising		Weeding / Bringing of manure		Harves-ting	
	Market gardening	Manuring / Pulverising		Harvesting							Preparation of lands	Sowing	Manuring /Planting
Sylviculture	Karité					Collection							
	Néré				Collection								
	Apiculture			Harvesting									
	Fuel wood	Collection										Collection	
Breeding	Movement	Ouside the village (grazing)				Around the village							
Social life	Habitation	Construction				Rehabilitation						Making of bricks	
	Incomes										Selling		

2.3. Social Conditions of Comoé Province

2.3.1. Population and Ethnic Groups

(1) Administrative divisions and population

The number of households and population by department in Comoé Province in 1996 are shown in Table 2.19.

Table 2.19 Local Administrative Divisions and Population in Comoé Province

Departments	Area (km^2)	Number of Villages	Number of Households	Population (1996)		
				Male	Female	Total
1. Banfora	934	25	13,450	39,490	41,014	80,504
2. Bérégadougou	265	4	1,769	4,981	5,426	10,407
3. Moussodougou	296	3	955	3,116	3,749	6,865
4. Mangodara	2.658	34	5,071	16,020	15,966	31,986
5. Ouo	2.856	29	1,047	3,301	3,841	7,142
6. Sidéradougou	3.788	40	4,593	15,267	16,109	31,376
7. Soubakanièdougou	847	14	2,745	8,411	9,579	17,990
8. Niangoloko	2.880	14	5,161	14,812	15,544	30,356
9. Tiéfora	1.073	26	3,492	11,613	13,137	24,750
Total	15.597	189	38,283	117,011	124,365	241.376

(Source: INSD-RGHP,1996)

The shaded columns represent departments containing the five forest reserves in the Study Area.

(2) Characteristics and trends of demographic structure

According to statistics for 1996[6], Comoé Province had a total population of 241,376 in 1996. A projection made in 1998 put the population in 2002 at 304,416, indicating an increase of 30% over a six-year period[7]. Comoé's population density of approximately 15 persons/ km² in 1996 was much lower than the national average of some 38 persons/ km². The 1998 projection put the population density in 2002 at 20 persons/ km². The total fertility rate in Burkina Faso is as high as 6.9 (births per woman) and Comoé shows a comparable rate, which is believed to be one factor for the rapid increase of the provincial population. The northwestern part of the province in which Banfora is located has a high population concentration while the southern part consisting of Ouo department and Mangodara department, etc. has a low population density, suggesting disparities between different areas in the province.

74.1% of the provincial population is concentrated in rural areas, and the urbanization rate[8] is

[6] INSD (1996): Village File General Census of the Population and Habitat of 1996
[7] Ministry of Health (1998) «Enquete Demographique et de Sante 1998»
[8] Ratio of the urban population in the national population

25.9%. This rate is the third highest after 75% for Kadiogo Province where the capital is located and 46% for Houet Province where Bobo-Dioulasso (the country's second largest city) is located and is much higher than the national average of 15.5%. Table 2.20 shows the characteristics of the demographic structure of Comoé Province.

Table 2.20 Demographic Features of Comoé Province

	Comoé	Burkina Faso
Total Population (1996)	241,376	10,312,609
Population Density (persons/km^2) (1996)	15	38
Female Population (% of total) (1996)	124,365 (51.5%)	5,341,727 (51.8%)
Rural Population (% of total) (1996)	178,828 (74.1%)	8,711,441 (84.5%)
Female Ratio in Rural Population (% of total) (1996)	93,357 (52.2%)	4,552,414 (52.3%)
Estimated Total Population in 2002 (1998)	304,416	NA
Estimated Population Density in 2002 (1998)	20	NA

(Sources: INSD (1996): Village File General Census of the Population and Habitat 1996, Ministry of Health (1998): Demographic and health Survey (1998)

There has been much migration to Comoé Province from other provinces (mainly those in the Sahel area and the north of the country) and the province is ranked eighth in terms of the number of settlers accepted. Banfora department and Niangoloko department in the province are the most popular destinations for settlers after Ouagadougou (the capital) and Bobo-Dioulasso. The reason behind Comoé's popularity for settlement is that people either seek fertile land in rural areas or employment opportunities in urban areas[9]. Even though the estimated population density of the province in 2002 was still low, the high birth rate and inflow of settlers are expected to rapidly increase the provincial population, further intensifying the population pressure on forest reserves.

The outflow of the population from the province is predominantly accounted for by rural youth seeking employment in Mali or Côte d'Ivoire[10]. This outflow of youth from the province is likely to cause a manpower shortage in the farming season, in turn affecting the productivity of local agriculture.

(3) Ethnic composition

The main ethnic groups in Comoé are Karaboro, Turka, Gouin, Sénoufo and Dioula. Apart from Dioula, all of these ethnic groups are natives of the area. In contrast, Fulani, Mossi,

[9] Ministry of Agriculture, Regional Direction of Agriculture in Comoe (2000) «Projet de Developpmment Rural Integre de la Comoé: Rapport d'Evaluation de la 2eme Phase»

[10] Ministry of Environment (1990) «Etude sur Socio-Ecologique dans Cinq Villages a Comoe»

Dagara and Lobi, which are the leading ethnic groups in Burkina Faso, are minority settlers in the province. There is tension between farmers and Fulani, who are traditionally nomads regarding access to water resources and pasture (or, more precisely, the damage caused by animals due to such access)[11]. This tension should not, however, be interpreted as conflict between natives groups and settler groups. Fulani rarely integrate with local villagers as they live in different areas. Nomadic groups tend not to mix with other groups in villages, however, in some villages, there is a good relationship between the two groups based on agreements.

2.3.2. Social Conditions

(1) Standard of education

The general standard of education in Burkina Faso is very low as shown in Table 2.21 (as only 20 out of 100 people are literate). Another characteristic regarding education is the huge gap between different social groups. The gap between urban people and rural people is very serious as is the gap between men and women. More than 90% of the rural population does not receive any formal education and the literacy rate among rural women is less than 10%. A possible gap between different ethnic groups is something to note even though there is no official data on this. One of the reasons for the low standard of education in rural areas is child labor with children supporting the family finances instead of attending school[12]. The standard of education in Comoé is higher than the national average, presumably because of the advancement of urbanization. However, careful attention should be paid to the situation in rural areas.

[11] Ministry of Environment (1990) «Etude Socio-Ecologique dans Cinq Villages a Comoe»
[12] INSD (2000), Results Analysis of RGPH ’96, Tome I, II

Table 2.21 Education Indicator

	Comoé	National Average	Urban Areas	Rural Areas
Literacy Rate (%)	20.5	19.5	56.6	13.2
Net Enrolment Rate of Primary Schools (% of relevant school age children)	38.9	31.3	NA	NA
Gross Enrolment Rate of Primary Schools (% of relevant school age children)	48.3	38.4	79.0	23.5
Net Enrolment Rate of Secondary Schools (% of relevant school age children)	11.1	9.7	NA	NA
No Experience of Formal Education (%)	78.4	82.8	66.2	93.5

(Source: INSD (2000), Results Analysis of RGPH '96 Tome I,and II,
INSD, Education and Poverty in Burkina Faso 1997)

(2) Health Care

The situation of health care in Comoé is very poor as illustrated by the low life expectancy, the high infant mortality and the high adult mortality. (See Table2.22) While there is again a gap between urban areas and rural areas, the general situation of health is considered to be poor throughout the province. The main diseases in the province are malaria, TB, skin diseases, parasitic diseases and diarrhoea[13]. Malaria is still the largest cause of the death of children and pregnant women. Increased cases of measles, rubella and meningitis are expected to occur in the province in the coming years.

Table 2.22 Health Indicators

	Comoé	National Average	Urban Areas	Rural Areas
Average Life Expectancy (at birth)	NA	53.8	56.3	52.2
Infant Mortality Rate (per 1,000)	111.4	115.3	101.2	133.3
Child Mortality Rate for (up to Five Years Old) (per 1,000)	181.3	174.2	141.9	199.4
Adult Mortality Rate (per 1,000)	15.0	14.8	11.6	15.3
Access to Clean Water (% of population)	NA	65.0	93.4	58.1
Access to Suitable Sanitation Services (% of population)	NA	18.1	55.3	9.1

(Sources: INSD/2000, Results Analysis of RGPH '96 Tome I and II, Ministry of Health Demographic and Health Survey 1998, Ministry of Economy and Finance;2000, Poverty Reduction Strategy Paper)

There is a considerable gap between urban areas and rural areas in regard to the access of provincial residents to health and medical care facilities. The province has 31 such facilities at present, out of which only 13 have a maternity ward and an operating theatre(s)[14]. Many of

[13] Ministry of Health, General Direction of Health, Banfora (2002), Action Plan 2002
[14] Ministry of Health, General Direction of Health, Banfora (2002) «Action Plan 2002»

these facilities are concentrated in urban areas that enjoy overwhelmingly better access to clean water and suitable sanitation services compared to rural areas. Access to health-related services in rural areas is very limited.

(3) Poverty

According to the poverty ratio[15], More than 40% of the population is below the poverty line both nationwide and in Comoé Province. As shown in Table 2.23, the poverty ratio was much the same in 1994 and 1998.

Table 2.23 Poverty Ratio (1994 and 1998)

	Southeastern Part (including Comoé province)	National Average	Urban Areas	Rural Areas
Poverty Ratio(%) (1994)	40.1	44.5	10.4	51.1
Poverty Ratio(%) (1998)	40.8	45.3	15.9	50.7

(Source: Ministry of Economy and Finance, Priority Survey I and Priority Survey II)

There is a huge gap between urban areas and rural areas because of the difference in terms of cash income and more than half of the rural population is classified below the poverty line. When compared in terms of each economic activity, the poverty ratio is the highest in the case of self-sustaining farming households that have hardly any cash income at all because of the lack of cultivation of cash crops. In rural areas, where 85% of the provincial population is engaged in agriculture and where many households are self-sustaining, the level of food security is high but many households have hardly any extra cash income. Nevertheless, the province is classified as a food secure area[16], where the food supply is secured, among the provinces of Burkina Faso. The average annual grain production volume in the province has steadily shown a surplus against the local consumption need, ensuring food supply for average households in the province[17]. According to the Ministry of Agriculture, the food security of average households in the province is said to be enhanced by cash income from cotton and other cash crops and wages earned in urban areas compared to the Sahel area.

[15] The head count index is used for the poverty ratio (the ratio of population of the group living on or below the poverty line). The poverty line is designated by the Ministry based on basic needs. (This was 41,099 FCFA in 1994, and 72,690 FCFA in 1998 ; the difference arising from devaluation of the currency).

[16] Famine Early Warning System Project, USAID (2000), Burkina Faso, 2000: Current Vulnerability Assessment, March, 2000

[17] Ministry of Agriculture, Agricultural Statistics Service

(4) Gender

Information on gender is very limited. Among the various ethnic groups, a large gender gap is reported in the case of natives ethnic groups (Karaboro, Turka and Gouin). The main economic activities performed by women in Comoé Province are listed below.

- Agricultural production (rice, grains, sesame, peanuts and cotton, etc.
- Collection and sale of karité almonds and néré seeds and sale of their processed products
- Dying and weaving
- Retailing
- Sale of fuel wood and charcoal (mainly for home consumption)
- Manufacture and sale of such handicrafts as baskets, mats and ceramics

Women do not traditionally have the right to be involved in the decision-making process, land ownership and asset management. Because of this, even though many women are engaged in farming, they can seldom consider farming to be a source of income. In some villages, women are not allowed to grow fruit as land is required to do so and they cannot be landowners. Even if women have their own plots for cultivation, the yield from these plots tends to be lower than that of land cultivated by men because of women's limited access to such agricultural inputs as labor and fertilizer, etc. Meanwhile, rice cultivation and the production of karité butter and doro (sorghum beer) are approved income sources for women. Because of the lack of proper storage and distribution systems, however, the profit from these sources is limited. The access of women to loans, which are necessary for retailing and micro industrial activities, is also limited despite the existence of loan system for women. The weak autonomy of women causes concern in regard to fair distribution within households and the welfare of women and children.

Regarding social aspects, the literacy rate and health indicator values for women are greatly inferior to those for men in rural areas. For example, the literacy rate of women in Comoé Province is 14.7%, much lower than the 29.0% for men. There is a gender gap in terms of access to health care, partly because women cannot buy medicine because of their lack of funds. The situation described so far is believed to be a reflection of the social status of women.

(5) Land Ownership System

The land ownership system in Burkina Faso is based on the Land Ownership and Land Reorganization Law, which was promulgated in 1984 and has since been revised three times. According to this law, land is a national asset and there are rules for land management involving various committees. Accordingly, traditional landowners in rural areas are in the ambiguous position of continually using land that does not belong to them. There are no legal provisions for a government guarantee of traditional land ownership and the right of traditional

owners to compensation when their land is expropriated. In 1996, the Law Concerning the Reorganization of Farming Land (RAF) was enacted. This law stipulates the primary principle of land possession and targets the formulation and promotion of rules for land control which are appropriate for the local socioeconomic background by guaranteeing the right of access to land for producers in various categories, particularly women and the socially deprived. To enforce this law, the National Land Development Committee (CNAT), Regional Land Development Committees (CRAT) and Provincial Land Development Committees have been established. Within this institutional framework, provincial governors are assigned to conduct land management.

In rural areas of Comoé Province, the traditional land ownership system is maintained as customary law. While the village chief represents the traditional authority, the chief of land (Chef de terre), who is a landowner, has jurisdiction over the land[18]. While the authority vested in the chief of land is a religious authority, it also includes overseeing land arrangements, mediating in land disputes and the leasing of land. It is, therefore, important to identify whether or not a particular form of land use falls under the jurisdiction of the chief of land. As traditional land management links land to the sacred ancestors of the community, people or families entrusted to keep the land by their ancestors cannot, in principle, abandon or sell the land and have an obligation to manage the land for worship, burial or cultivation. The head of the community acts as the keeper of the land inherited from the ancestors.

Under the traditional land distribution system, if new settlers agree to abide by the village customs and rules, the chief of land must automatically distribute land to these settlers. However, the chief of land remains the owner of the distributed land and the settlers are simply given possessor title to the land. Meanwhile, women do not basically own land. For example, among the natives groups of Turka, Gouin and Karaboro in the province, a nephew (the eldest son among the sons of sisters) inherits the entire assets (land, cash and animals) of an uncle[19].

[18] Ministry of Agriculture, Agricultural Statistics Service
[19] Ministry of Economy and Development (2003), Monograph of Comoé Province, Bobo Dioulasso

2.4. Outline of Study-Related Organizations in Comoé Province

2.4.1. Organizations Related to Forestry Service

(1) Comoé Provincial Direction of Environment and Habitat

The Comoé Provincial Direction of Environment and Habitat is controlled by the Cascade Regional Direction of Environment and Habitat and its organizational structure is as shown in Figure 2.5.

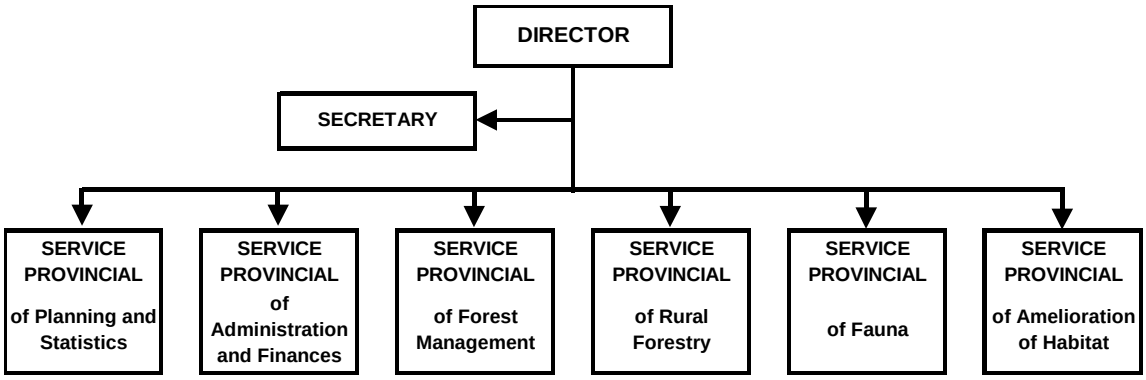


Figure 2.5 Organizational Structure of Comoé Provincial Direction of Environment and Habitat (DRECV/Comoé)

The principal missions of the Regional Direction according to Decree No. 2002-457/PRES/PM /MECV of October 2002 are:

- Organization, monitoring and control system-building concerning forest management (the population participatory forest management),
- Monitoring and support for the GGF concerning utilization of forest resources,
- Organization of fuel wood distribution channels,
- Authorization work,
- Monitoring and support of resident organizations,
- Technical support for planting and agroforestry, etc.
- Restoration of vegetal cover and prevention of soil erosion,
- Formulation of forest management plans (formulation of plantation zones and protection zones, etc.)
- Promotion of controlled cutting and plantation in order to sustain fauna, etc.,
- Organization of hunting groups,
- Nursery building and promotion of internal fisheries, and
- Maintenance and restoration of vegetation (bush fire control, protection of banks of rivers,

control of illegal clearing, introduction of improved cooking stoves).

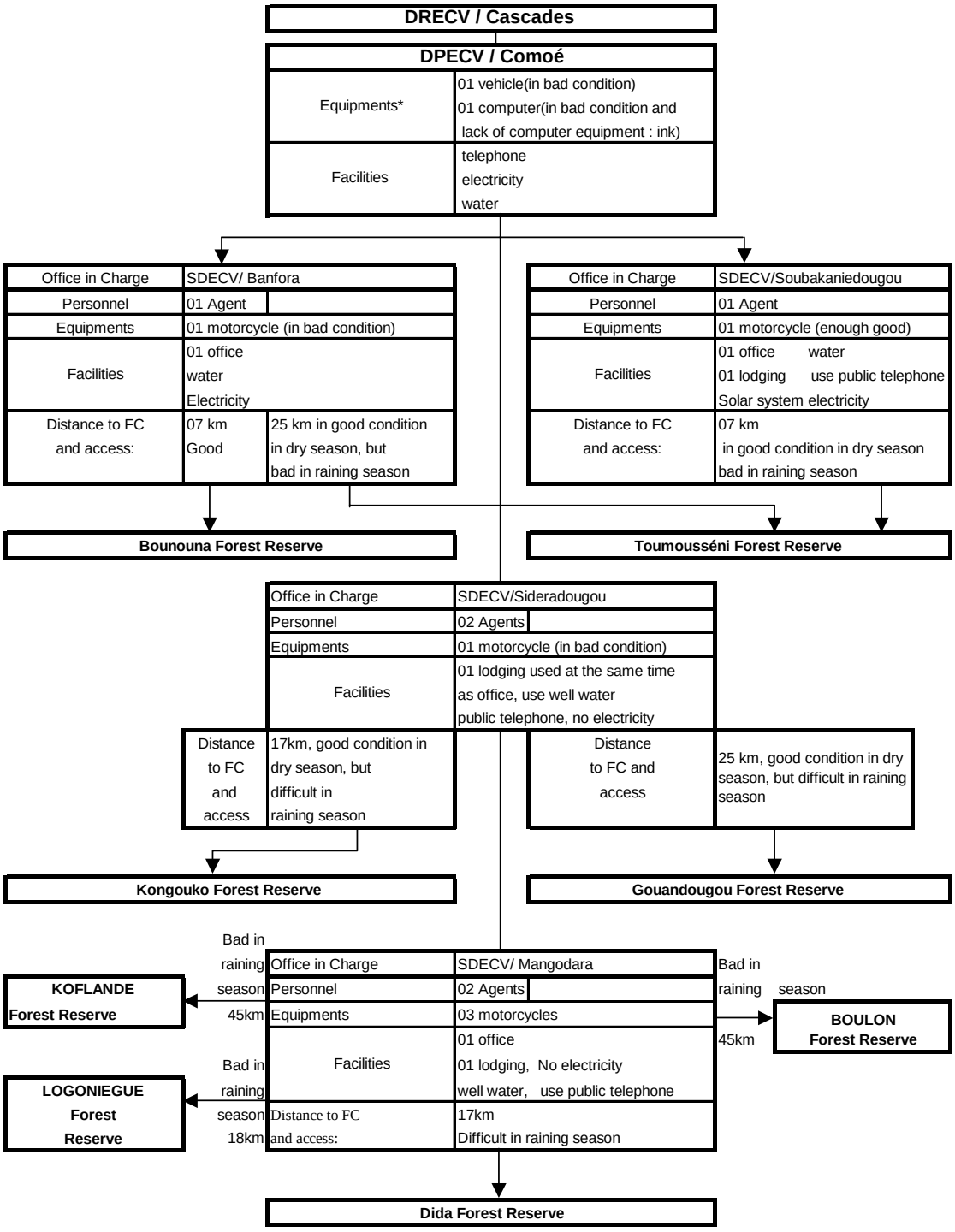
The Provincial Direction of Comoé is required to send forest agents to each of the nine departments under its jurisdiction. However, only seven departments have a forest agent; Banfora, Soubakanièdougou, Sidéradougou, Bérégadougou, Niangoloko, Mangodara and Tiéfora. These forest agents also look after the two other departments (Ouo and Moussodougou).

Figure 2.6 shows the management system for the five forest reserves of the Study in the geographical area controlled by the Provincial Office.

(2) Nurseries

In Bobo-Dioulasso, there is a nursery managed by a branch of the National Center of Forestry Seeds (*Centre Nationale des Semences Forestières: CNSF)*. The center has three permanent staff and some other workers for tree nursery management. In the nursery, which produces potted seedlings, seeds are sown around February and seedlings are forwarded roughly six months later. Seedlings can also be produced to order. The price is 100CFA per seedling (pot), although it varies according to the species. One grafted mango sapling costs 400 FCFA.

There is only one permanent public nursery in Comoé Province, established in the Forestry Office in Banfora. Seeds are sown in January and February and nurtured for four to six months. In 2002, a total of 15,000 seedlings of *Khaya senegalensis*, *Eucalyptus camaldulensis, and Tectona grandis* were produced in total. Seeds were obtained from the CNSF Bobo-Dioulasso. In addition, there are around 30 private nurseries in the province, producing an average of 100,000 seedlings during the recent years (Source: DRECV/ Cascades).



PS: These equipments allow to facilitate all the activities and missions in charge of the DPECV / Comoe included those which will be conducted in the five forests reserves.

Figure 2.6 Management System for Five Target Forest Reserves in the Area Controlled by the DPECV/Comoé

2.4.2. Local Administrative Organizations

(1) Study-Related Administrative Organizations

Five departments, i.e. Banfora, Soubaka, Sidéradougou, Tiéfora and Mangodara, are related to the Study. The administrative organizations in four departments excepting Banfora are shown in Figure 2.7.

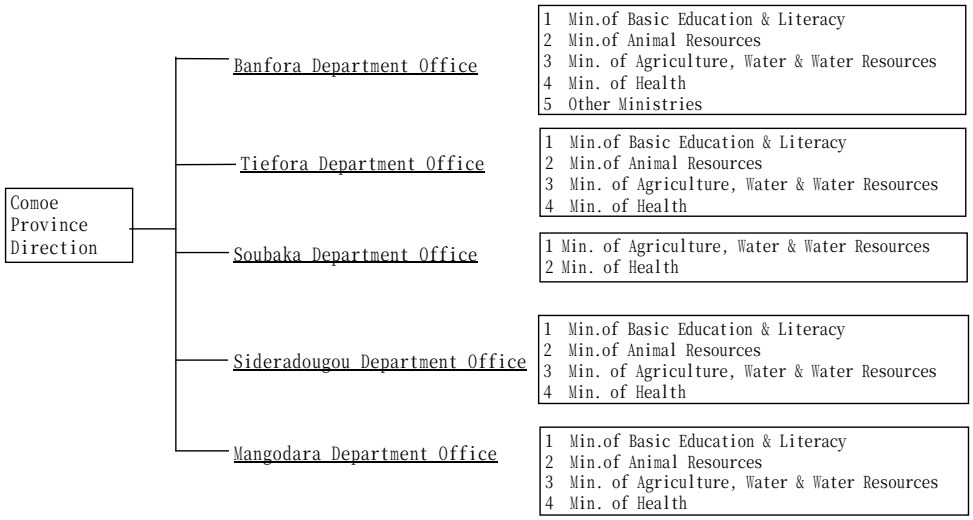


Figure 2.7 Management System for Target Forest Reserves in Areas Controlled by Comoé Provincial Direction

(2) Provincial Technical Consultation Council (CCTP)

Pursuant to the Law concerning the Reorganization of Farmland (RAF) in 1996, the establishment of a Provincial Committee for National Land Management (Commission Provinciale d'Aménagement du Territoire: CPAT) in each province is necessary. Moreover, the Ordinance for Conditions and Form of Application of RAF (Ministry of Economy and Finance) of 1997 stipulates that a Provincial Technical Consultation Council (CCTP) should be established under the CPAT. The main roles of the CCTP are examination of the plans for development projects and the coordination of various development projects in the province. The positions of CCTP chairman and secretary are filled by the provincial governor and the head of the Regional Economic Planning Bureau respectively while ordinary members include the heads of the provincial offices of various ministries, other government officials, project

leaders, NGO representatives and village representatives. Meetings of the CCTP are held every three months, but there is also extraordinary meetings. The fees of the meeting are covered by PNGT II, PAGEN and PADL. One of most recent meetings dealt with the issue of pasturage in forests in connection with the GEPRENAF Project (a participatory management project for natural resources and fauna) of the World Bank. Another meeting was held on the use of groundwater in connection with the irrigated production of sugar cane by SOSUCO using sprinklers. At the local resident and association level, a meeting was held on rice production at a buffoon (depressed ground acting as a stagnant pool) with the cost being met by local residents.

(3) National Terroir Management Program Phase 2 (PNGT2)

A PNGT2 office has been set up in Comoé province and has four professional staff members, i.e. provincial coordinator, forest officer, agricultural officer and economic officer, and a secretary. Since 2002, this office has been conducting the full-scale implementation of the PNGT2. The target villages of the PNGT2 in the province are selected by the CCTP every year. A study under the PNGT2 is conducted on these villages and assistance is provided to establish a Village Terroir Management Committee (CVGT). With such assistance, each village establishes a CVGT in accordance with the criteria and procedure set forth by the Joint Ministerial Ordinance Concerning the Structure, Authority and Organization of the CVGT enforced in 2000 (No0010/2000/AGRI/MEE/MEF/MATS/ MRA). The documents required to establish a CVGT are submitted to the departmental authority for approval. Once approved, they are then sent to the competent Comoé provincial authority. If approved by the provincial authority, the Comoé Provincial Governor issues a decree for the establishment of a CVGT in the village in question and this CVGT is placed under the control of the provincial governor.

The CVGT members are selected by an election or recommendation by villagers. The general meeting of the CVGT is the supreme deliberative organ, is held at least once a year and its minutes are sent to the department authority. The main roles of the CVGT are to establish the territory of its own village based on consultations with other villages and interested parties, to conduct land management, various types of planning, management of basic infrastructures and management of natural resources and fauna within its territory and to coordinate the development activities of various actors and partners, including government organizations.

To be more precise, each CVGT implements terroir management promoted by the PNGT2 and acts as the responsible organization for the implementation of micro projects using the development fund established for the PNGT2. These micro projects feature, among others, management of natural resources, small-scale construction and repair, socioeconomic infrastructures, rural water supply system, investment projects in renewable energies and

technical training (theory and practice).

In addition to technical training, these micro projects demand the contribution of local residents in terms of cash and/or labour as shown in Table 2.24.

Table 2.24 Ratio of Contribution of Beneficiaries by Project Type

Project Type	Minimum Contribution in Cash (Ratio to the Total Amount)	Minimum Total Contribution (Ratio to the Total Amount)
Natural Resources Management	None	50 %
Social Infrastructure	1 %	20 %
Economic Infrastructure	2 %	20 %
Rural Water Supply	1 %	20 %
Small-Scale Construction and Repair	1 %	10 %
Renewable Energy	1%	10 %

2.4.3. Other Related Organizations

(1) NGOs

According to information obtained from the NGO Support Bureau of the Direction General of Cooperation, Ministry of Economy and Development, several NGOs as listed in Table 2.25 are operating in Comoé Province and at Bobo-Dioulasso. Many NGOs are operating in the Sahel area to the north where considerable environmental degradation is taking place.

Table 2.25 List of NGOs Operating in Comoé Province and at Bobo-Dioulasso

Name	Assisted by	Country	Contact /Address	Fields of Assistance
International Ondotologic Aid	AOI	France	01 BP 2618 Ouaga 01, 20.97.27.53	Health and hygiene
Children Aid	Save the Children	Canada	01 BP 406 Ouaga 01, 50.36.41.87	Children's rights; health and hygiene; informal education
Association Solidarity of West Africa	ASAO	Local	06 BP 9908 Ouaga 06, 50.36.11.01	Water supply; education; environment; agriculture; health and hygiene; women's social activities
Economic and Social Study Centre of West Africa	CESAO	Switzerland	01 BP 305 Bobo 01, 20.97.10.17	Institutional aspects (participatory)
Dutch Organization of Development	SNV	Netherlands	01 BP 625 Ouaga 01, 50.34.25.23	Agriculture; stock raising; environment; decentralisation (participatory)
African Institut e For Socio Economic Development	INADES	International	01 BP 1022 Ouaga 01, 50.30.20.70	Institutional aspects (participatory)

(2) Associations

As of 2003, 321 associations were registered with the Comoé Provincial Office, and most of these were based in Banfora. The administrative procedure for the authorisation of an association is stipulated by the Law Concerning the Freedom of Association (Law No. 10/92/ADP) of Burkina Faso. Depending on the level of activity of an association (for example, at the provincial level), the levels of their administrative approval differ. The description below is the administrative procedure for the authorization of associations that work in the province.

< Step 1> The initiators prepare status and internal regulations of the association and hold a constitutive general assembly, and then compile the minutes. The minimum number required to create an association is at least 15 members.

< Step 2 > Three copies of the above-mentioned documents are submitted to the nearest police station for approval.

< Step 3 > Together with the application form, three copies of internal regulation, three copies of minutes, and three copies of status are submitted to the provincial authority. Depending on the purpose and activities of association, the certificate of opening of bank account and documents for background of the establishment may be required. Furthermore, the application for establishment of association is authorized based on the results of evaluation of the technical ministry (or technical ministries) in charge of the objectives and activities of the association.

(3) Groups

There are many groups established by villagers. Some are officially registered with the administrative authority while others are not. For registration with the administrative authority, groups must follow the law enacted on 15th April, 1999 (Law No.14/99/AN, Regulations Concerning Cooperatives and Group Organizations in Burkina Faso). In Comoé Province, the authorization procedure is conducted according to the following steps.

< Step 1 > People with common interestinstablishing a group prepare the internal regulations. It is necessary to hold a constitutive general assembly and prepare the minutes.

① For establishment of group, requirements for the minimum number of members are different depending on the type of group as described below.

- Consumers' group : 15 members
- Producers' group : 10 members
- Other types of groups : 05 members

② A group has the following organizational structure.

- Constitutive general assembly (obligatory requirement is twice a year)
- Executive board (as a minimum requirement, chairman, secretary and treasurer must be selected at the constitutive general assembly)
- Auditors' committee comprising 2 - 7 members

< Step 2 > The above documents are examined for approval at the branch office of the competent technical agency (which supervises the group activities) in which the group headquarters are located.

< Step 3 > In the case of Comoé Province, since the Ministry of Agriculture unitarily manages the group activities, documents regarding the establishment of groups must be submitted once to the regional office of the Ministry of Agriculture.

< Step 4 > Together with an application form carrying revenue stamps of 500 FCFA, the documents listed in the box below are submitted to the district authority. At this time, the approved document from the district technical agency is attached with them. Documents other than those of the standard format, including the certificate for the opening of a bank account (with the minimum deposit and required papers following the rules of the bank concerned), may be required depending on the objective and type(s) of planned activity of the group.

Required Documents

1. Two dated copies of the rules of the group with either the signature or thumb impression of each group member. These rules must clearly indicate the structure, places of activities, location of the office, objectives and activities (as set forth by Articles 84 and 85 of the relevant law).
2. One copy of the minutes with the thumb impression of each founding members of the constitutive general assembly
3. One list giving the name, address and title of each executive board and auditors committee member
4. The registration certificate of the signature or thumb impression of the group representative
5. A document certifying the collection situation of the enrolment/membership fee as set forth by the rules

(4) Sawmills

Two sawmills operating in Banfora have an obligation to plant an area of 5 ha per year in exchange for the cutting of trees in natural forests outside forest reserves. Since 1988, these sawmills have been conducting supplementary planting in the southwestern part of the Bounouna Forest Reserve. An association (CACOSE) conducts the actual planting and the annual planting area has been approximately 10 ha since the introduction of agroforestry in 1996. The total planted area as of December 2003 was approximately 55 ha as the annual planting work includes some supplementary planting to replace previously planted trees not growing well. When a sawmill is found to have conducted illegal cutting, it must plant another 5 ha as an additional measure.

(5) SOFITEX

The SOFITEX is a semi-governmental organization that grows cotton, a major industry in Comoé Province. The activities of the SOFITEX range from the distribution of seeds and guidance on cultivation to the provision of loans to farmers, the organization of farmers and the collection, processing and sale of the products. Cotton cultivation is an important source of income for farmers. The SOFITEX establishes cotton producers' groups in each village, collects cotton from these groups and provides these groups with various conveniences, including the deposition of the sales income at a nearby bank on behalf of the groups.

(6) SOSUCO

The SOSUCO is a privatized sugar company having sugar plantations near Banfora. It has its own sugar refining plant. It employs villagers as sugar cane workers in the area around Banfora including Bounouna, a subject village of the Pilot Study, providing a precious opportunities for

waged labor during the dry season.

(7) SOPROFA (Société de Promotion des Filières Agricoles)

The SOPROFA operates nationwide to promote and stabilize the distribution of such agricultural products as grains, vegetables and oil crops through joint operation with the Ministry of Agriculture. In Comoé Province, the operation of this corporation has just commenced and is currently unstable, partly because of competition with private distributors.

2.4.4. Village Organizations

The modern administrative system exists side by side with the traditional system of villages. At the lowest echelon of the modern administrative system, the Village Administrative Delegate (DAV) [20] is appointed by the departmental authority to play the role of linking the administrative system to villagers. In Comoé Province, CVGTs have been established in some villages under the PNGT2 or other aid programmes (for example, the GEPRENAF or PAGEN[21] of the World Bank).

Meanwhile, the traditional system is responsible for all aspects of the daily life of villagers and is headed by the hereditary head with the chief of land and the chief of each district working under the village head. An assistant chief of land may exist depending on the village and each district may have its own chief of land. A council of wise men may be formed as the decision-making body for a village. Decisions may be collectively made by the elders acting as district chiefs, advisors and counselors. No women, however, are involved in decision-making. Some villages have an Imam to preside over Islamic affairs. In most villages, there is one person in charge of traditional events.

One interesting aspect of traditional village rules is that while customary rules exist for trees, rivers, animals, fish and land, no such rules exist for bush fires, which pose a problem from the viewpoint of protecting natural resources.

Some of the positions under the systems described above may be held by the same person. For example, the chief of Toumouséni Village also acts as the village's "administrative delegate." The chief of Fougangouè Village acts as the chief of land while the administrative delegate of the village also acts as the chief of land[22].

Basically, no women hold such senior positions under either the modern administrative system

[20] DAV is basically selected by means of election. A villager with a high educational background and the ability to speak French is, however, often nominated by the village head.

[21] GEPRENEF (Gestion Participative des Resources Naturelles at de la Faune (Participatory Management Project for Natural Resources and Fauna) Fougangoue Village has two chiefs of land but this is an exceptional case.

[22] Fougangoue Village has two chiefs of land but this is an exceptional case.

or the traditional system. Accordingly, there are great expectations that the CVGT as a body will improve the situation for women. The PNGT2 emphasizes the roles of women in development and promotes the participation of women. As a result, young people and women participate in the general meetings of the CVGT where decisions by the CVGT are made.

Villagers' organizations include groups or associations related to agriculture, women, youth, stockbreeding, bee keeping, hunting and fishing, etc. Among these, particularly numerous are groups/associations involved in farming and marketing. As the cultivation of cotton as a cash crop is especially popular in Comoé Province, there are a large number of cotton producers' groups. Groups or associations that meet certain criteria (availability of the rules of the organization and the number of members, etc.) and procedures are approved as official organizations by the administration.

The basic structure of a village is shown in Figure 2.8.

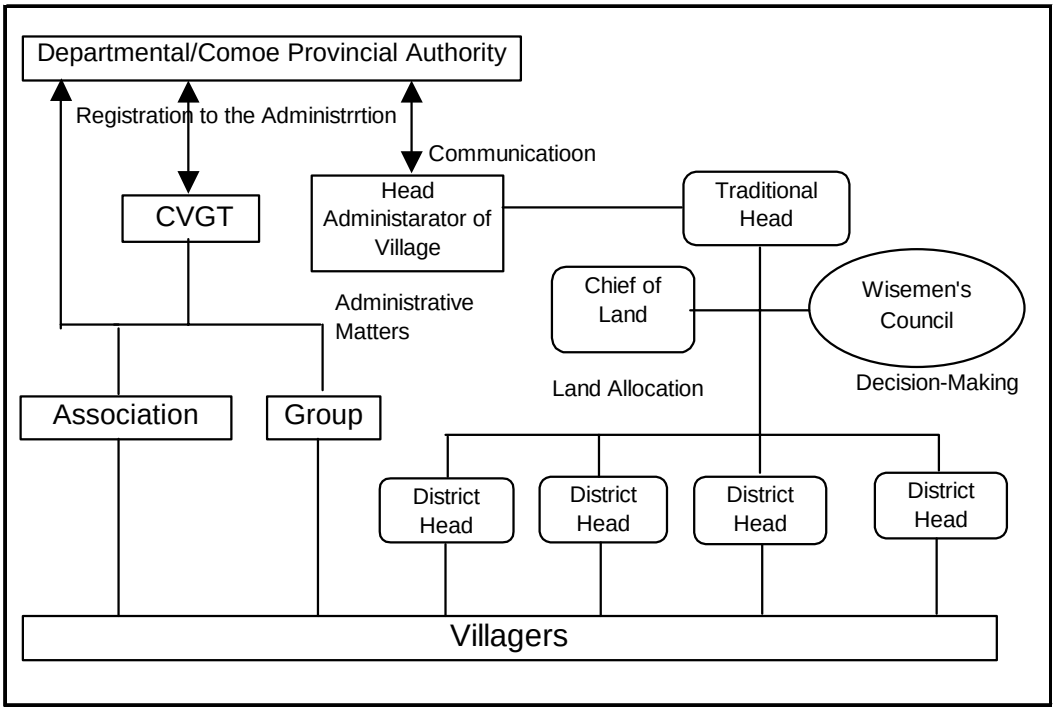


Figure 2.8 Basic Structure of a Village

Table 2. 26 Land Use/Vegetation Categories in the Study Area

(a)	Riverside Forest (*Foret Galerie*)	Forest established alongside the river and on riverbanks. It forms continuous crown cover. Trees grow well as this forest is mainly supported by muddy soil with high moisture, which is recognized as the best soil for tree growing in the area.
(b)	Riverside thick forest (*Fourre ripicole*)	Forest with thick under-layer established alongside streams.
(c)	Open Forest (*Foret Claire*)	This forest has more or less continuous canopy dominated by trees with 7m in height or more. Under-layers are not well developed, and grass layer is also rather scarce. The distribution of Open forest is limited in the Study Area.
(d)	Wooded savanna (*Savane Boisée*)	Ground coverage with trees and shrubs is over 50 percent. Grass layer is well developed because the tree canopy is open. It is considered that the extent of disturbances on vegetation such as fire and cutting are comparatively little comparing with other savanna vegetation.
(e)	Dense/Sparse tree savanna (*Savane Arborée Dense/Claire*)	This is savanna in which the coverage with tree is between 20 and 50 percent, but high trees (over 7m in height) are dominant among the tree coverage. It is further classified into Dense tree savanna and Sparse tree savanna in accordance with their tree density. In many cases, it is thought that Sparse tree savanna is established under the strong influence of fire.
(f)	Dense/Sparse shrub savanna (*Savane Arbustive Dense/Claire*)	Grass dominated savanna in which the coverage of trees is between 10 and 50 percent. Shrubs (under 7m in height) are dominant among the tree coverage, and the coverage of high tree (taller than 7m) is usually less than 10 percent. It is further classified into Dense bush savanna and Sparse bush savanna. It is considered that Bush savanna is strongly under the influence of fire and tree cutting in the Study Area.
(g)	Grass savanna (*Savane Herbeuse*)	Grass dominated savanna with spotted trees and shrubs. The crown coverage of trees and shrubs is less than 10 percent.
(h)	Grassland (*Prairie*)	Land covered with grassy vegetation.
(i)	Planted forest/ Orchard (*Plantation / Verger*)	Plantations for timber trees or orchards. Main species are *Khaya senegalensis* (a kind of African mahogany), *Tectona grandis* (teak), *Gmerina arborea* (Gmerina), and *Eucalyptus camaldulensis* (Eucalyptus) for timber plantations, and *Mangifera indica* (mango) and *Anacardium occidentale* (cashew) for orchards.
(j)	Cultivated area or fallow (*Champ/ Jachere*)	Fields under cultivation at present or fields lying fallow.
(k)	Bare ground / Eroded area (*Zone Nue /Sol Erode*)	Areas hardly covered with vegetation. Sometimes bedrock is exposed.

Table 2. 27 Situation of Fuel Wood Gathering

Villages	Distance (Km)	Period	Frequency (times / month)	Amount per Collection (fagots)	Total Quantity per year (fagots)	Selling
Bounouna	3	Dry season (6 months)	6	8	288	Yes
	3	Dry season (6 months)	6	8	288	Yes
	3	*Dry season (6 months)*	*8*	*1*	*48*	
	3	*All season (12 months)*	*9*	*1*	*108*	Yes
Toumouséni	2	Dry season (4 months)	8	1	32	
	2	All season (12 months)	(32/year)	1	32	
	4	*Dry season (4 months)*	*12*	*1*	*48*	
	4	*All season (12 months)*	*4*	*1*	*48*	
Gouandou.	2	Dry season (6 months)	4	2	48	
	3	Dry season (6 months)	2	8	96	
	2	*Dry season (6 months)*	*8*	*4*	*192*	
	2	*Dry season (4 months)*	*8*	*4*	*128*	
Gouara	2	Dry season (6 months)	4	2	48	
	2	Dry season (6 months)	4	2	48	
	2	*Dry season (6 months)*	*4*	*2*	*48*	
Pima	-	All season (12 months)	(100/year)	1	100	
	-	Dry season (-)	(20/year)	4	80	
	1	*All season (12 months)*	*(30/year)*	*1*	*30*	
Kassandé	2	Dry season(4 months)	8	2	64	
	2	Dry season (4 months)	8	2	64	
	1-5	*Dry season (6 months)*	*8*	*1*	*48*	
Kadio	1	Dry season (2 months)	12	2	48	
	1	Dry season (7 months)	4	1	28	
	3	*Dry season (2 months)*	*6*	*1*	*12*	
	-	*Dry season (2 months)*	*7*	*1*	*14*	
Niambrigo	1	All season (12months)	5	1	60	
	3	Dry season (4months)	16	1	64	
	2	*Mar. – Jun. (4 months)*	*2*	*1*	*8*	
	2-5	*Mar. – Jun. (4 months)*	*2*	*1*	*8*	
Diarakoros.	1	Dry season (3 months)	10	1	30	
	1	Dry season (4 months)	10	1	40	
	3	*All season (12 months)*	(15/year)	*1*	*15*	
	1-2	*All season (12 months)*	*5*	*1*	*60*	
Noumoukiè.	3	All season (12 months)	10	1	120	
	3	All season (12 months)	10	1	120	
	2	*All season (12 months)*	*2*	*1*	*24*	
	2-3	*Dry season (-)*	*10*	*1*	*24*	
Average			7	2	69	

Table 2.28 Situation of Karité Harvesting

Village	Usage of F.R.	Distance (km)	Period	Frequency (times / month)	Amount per Collection (tins)	Selling	Unit price (FCFA / a tin)	Sold qty (tins)
Bounouna	Yes	0- 2	Jul. – Aug.	20	1	Yes	1250	20
	”	0- 3	Jun. – Jul.	20	1	”	1250	18
	No	*0- 2*	*May – Jun.*	*25*	*0.5*	”	*1500*	*17*
Toumousséni	No	0- 3	Jul. – Aug.	20	1	Yes	1250	18
	”	0- 3	Jun. – Jul.	8	2	”	1500	28
	Yes	*0- 6*	*May – Jun.*	*30*	*1*	”	*1250*	*30*
Gouandougou.	Yes	0- 3	Jul. – Aug.	4	0.5	No		
	No	0- 2	Jul. – Aug.	20	1.5	Yes	*1250*	35
	No	*0 -3*	*Jul. – Aug.*	*16*	*2*	”	*1000*	*20*
	”	*0- 2*	*Jul. – Aug.*	*20*	*4*	”	1000	*30*
Gouara	No	0- 2	August	24	2	No		
	”	0- 2	Jul. – Aug.	12	1.5	Yes	1000	20
	”	*0- 2*	*Jul. – Aug.*	*20*	*2*	*No*		
Pima	Yes	0- 1	May – Jul.	25	1	Yes	750	25
	”	*0- 2*	*May – Jul.*	*30*	*1*	”	*1250*	*25*
Kassandé	No	0- 2	Jul. – Aug.	12	1	Yes	2500	5
	”	0- 2	Jun. – Aug.	16	2	”	2000	75
	”	*0- 2*	*Jul. – Aug.*	*30*	*1*	”	*1000*	*36*
Kadio	No	0- 1	May – Jun.	60	2	Yes	1200	120
	”	*0- 2*	*Jul. – Aug.*	*30*	*1*	”	*1000*	*30*
	”	*0- 4*	*May – Jun.*	*20*	*2*	”	*750*	*25*
Niambrigo	No	0- 2	May – Jul.	56	1	Yes	1500	30
	”	0- 2	May – Jul.	10	1	”	1500	30
	”	*1- 5*	*Mar. – Jul.*	*4*	*2*	”	*1000*	*40t*
	”	*1- 5*	*Mar. – Jun.*	*8*	*1*	”	*1250*	*20*
Diarakorosso.	No	0- 2	May – Jul.	40	1.5	Yes	1500	90
	”	0- 2	May – Jul.	30	1	”	1250	75
	Yes	*0- 3*	*May – Jul.*	*7*	*2*	”	*1250*	*30*
	No	*0- 5*	*May – Jul.*	*50*	*1*	”	*1500*	*100*
Noumoukièdo ugou.	Yes	0- 3	May – Jul.	40	1	Yes	1250	25
	”	0- 2	May – Jul.	25	1	”	1500	50
	Yes	*0- 2*	*May – Jul.*	*10*	*2*	”	*1250*	*60*
	”	*0- 4*	*May – Jun.*	*10*	*1*	”	*1250*	*15*

Table 2.29 Situation of Néré Harvesting

Village	Usage of F.R.	Distance (km)	Period	Frequency (times / month)	Amount per collection (tins)	Selling	Price (FCFA / tin)	Sold quantity (tins)
Bounouna	Yes	0- 2	Apr. – May	8	2	Yes	2500	16
	”	*0- 2*	*May*	*20*	*0.5*	”	*1250*	*7*
Toumousséni	No	0- 3	Mar. - May	8	1	”	3250	10
	Yes	*0- 6*	*Apr. - May*	*30*	*0.2*	”	*2500*	*6*
Gouandougou.	No	0- 2	May	12	0.4	No		
	”	0- 2	Mar. – Jun.	4	0.7	”		
	”	*0- 2*	*May*	*8*	*0.25*	”		
	”	*0- 2*	*May*	”	*1*	”		
Gouara	No	0- 2	May – Jun.	16	0.4	No		
	”	0- 2	May	12	1.2	”		
	”	*0- 2*	*May*	*24*	*0.6*	”		
Pima	Yes	0- 3	May – Jun.	30	2	Yes	2000	100
Kassandé	No	0- 2	May	3	0.5	”	3500	1,5
	”	0- 3	May	4	0.5	”	5000	”
	”	*0- 2*	*May – Jun.*	*16*	*1*	”	*2000*	*8*
Kadio	No	0- 2	May – Jul.	30	2	Yes	2500	150
	”	0- 3	May – Jul.	10	2.5	No		
	”	*0- 1*	*May – Jun.*	*12*	*1*	”		
	”	*0- 3*	*May – Jun.*	”	*1*	”		
Niambrigo	No	0- 2	Mar. - May	3	1.5	Yes	2500	10
Diarakorosso.	No	0- 1	Mar. - May	4	0.5	Yes	1000	5
	”	0- 1	Apr. - May	10	0.5	No		
	”	*0- 3*	*dry season (3 months)*	*2*	*0.5*	*Yes*	*1200*	*3*
	No	*NA*	*Mar. - May*	*4*	*0.4*	*Yes*	”	*6*
Noumoukièd ougou.	Yes	0- 1	Apr. – Jun.	2	1	Yes	1500	3

Table 2.30 Situation of Baobab Leaves Picking

Village	Usage of F.R.	Distance (km)	Period	Frequency (times / month)	Amount per collection	Selling	Unit Price	Sold quantity
Bounouna	Yes	0- 3	Jul. – Aug.	12	1 heap	Yes	25F/heap	20 heaps
	No	*0- 3*	*Jun. – Jul.*	*4*	*1 bag*	*No*		
Toumoussé ni	No	0- 3	Jul. – Aug.	12	1 heap	No		
	Yes	*0- 6*	*Rainy season (4 months)*	*4*	*1 bag*	*Yes*	*1000F/bag*	*10 bags*
Gouandoug ou	No (Purch ase)	NA -	Jul. – Oct. -	4 -	1 pan -	No -		
	” ”	- -	- -	- -	- -	- -		
Gouara	*(Purc hase)*	-	-	-	-	-		
Pima	No	0- 1	May – Jun.	4- 8	1 bag	No		
Kadio	*No*	*0- 1*	*Apr. - May*	*12*	*0.5 bag*	*No*		
Niambrigo	No ”	0- 3 0- 4	May – Aug. Apr. – Jul.	4 2	1 heap 1 bag	No Yes	2000F/bag	3 bag
	” ”	*0- 1 0- 5*	*May – Aug.* ”	*1* ”	*Not determined* ”	*No* ”		
Diarakoros so.	No	0- 1	May – Aug.	4	0.5 tin	No		
	” ”	*0- 2 0- 5*	*Apr. – Aug. May – Aug.*	*2 5*	*0.5 bag 1 pan*	” *Yes*	*2000F/bag*	*10 bag*
Noumoukie - dougou	Yes	0- 5	Apr. – Aug.	1	1 bag	No		
	” ”	*0- 2 0- 3*	*Apr.– May May – Aug.*	*2 4*	*1 tin 1 pan*	*Yes No*	*1500F/tin*	*3 tins*

Table 2. 31 Apiculture in the Study Area

Village	Distance (km)	Period	Frequency (times/year)	Total harvest	Selling	Price/Liter (FCFA)	Sold quantity
Bounouna	0 - 2	All year round	2	24 liters	Yes	1000	15 liters
Pima	0 - 1	Dry season	1	1 box	No	-	-
Kadio	0 - 4	March-May	2	10 buckets	Yes	1250	15 liters
Noumoukie.	0 - 3	Dry season	4	20 liters	Yes	1000	10 liters

Riverside Forest (Toumousséni F.R.)

Wooded Savanna (Toumousséni F.R.)

Tree Savanna（Gouandougou F.R.）

Tree Savanna（Kongouko F.R.）

Tree Savanna（Kongouko F.R）

Shrub Savanna (behind) & Grass Savanna
（Bounouna F.R.）

Figure 2.9 Field Photos of Typical Land use/Vegetation (1)

Cultivation area (after harvested)
(Bounouna F.R.)

Bare ground with exposed bedrock
（Toumousséni F.R.）

Tectona grandis plantation
(Bounouna F.R.)

Khaya senegalensis plantation
(Bounouna F.R.）

Bush fire （Bounouna F.R.）

After fire （Kongouko F.R.）

Figure 2.10 Field Photos of Typical Land use/Vegetation (2)