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8 Local Environmental Management in North Benin: Bright Spots in the Local Impasse

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INTRODUCTION

The Borgou is a vast province situated in North Benin roughly between latitudes 9°30'N and 12°30'N (Figure 8.1). Bordering Burkina Faso, Niger and Nigeria this area covers about 51 000 km² and has a population of more than 800 000 people.

This chapter draws upon a research project (De Haan, 1992a) that focuses on four survey areas, respectively from south to north, Kalalé, Kandi, Banikoara, and Karimama (Figure 8.2), which together represent a cross-section of the region.

Our surveys of soils and vegetation (De Haan, 1992a: 59–97) indicate that the natural environment in the Borgou is becoming seriously degraded. This chapter concentrates on the experience in the Borgou with organized local initiatives to counteract this degradation. We agree with Guèye and Laban (1992: 14) that environmental degradation should be combatted both at the individual and at the collective level; however, we will concentrate on the latter.

In this chapter we will deal with the following issues. First we discuss some elements from the land management discussion in West Africa that are useful to determine the most suitable form of future land management at the collective level in the Borgou. In the following section land use by peasants and pastoralists and related land degradation will be summarized. Then some successful experiences of local land management in the Borgou will be discussed and analysed within the framework of the results of the discussion about land management in West Africa. Finally, the regional and national context will be examined.

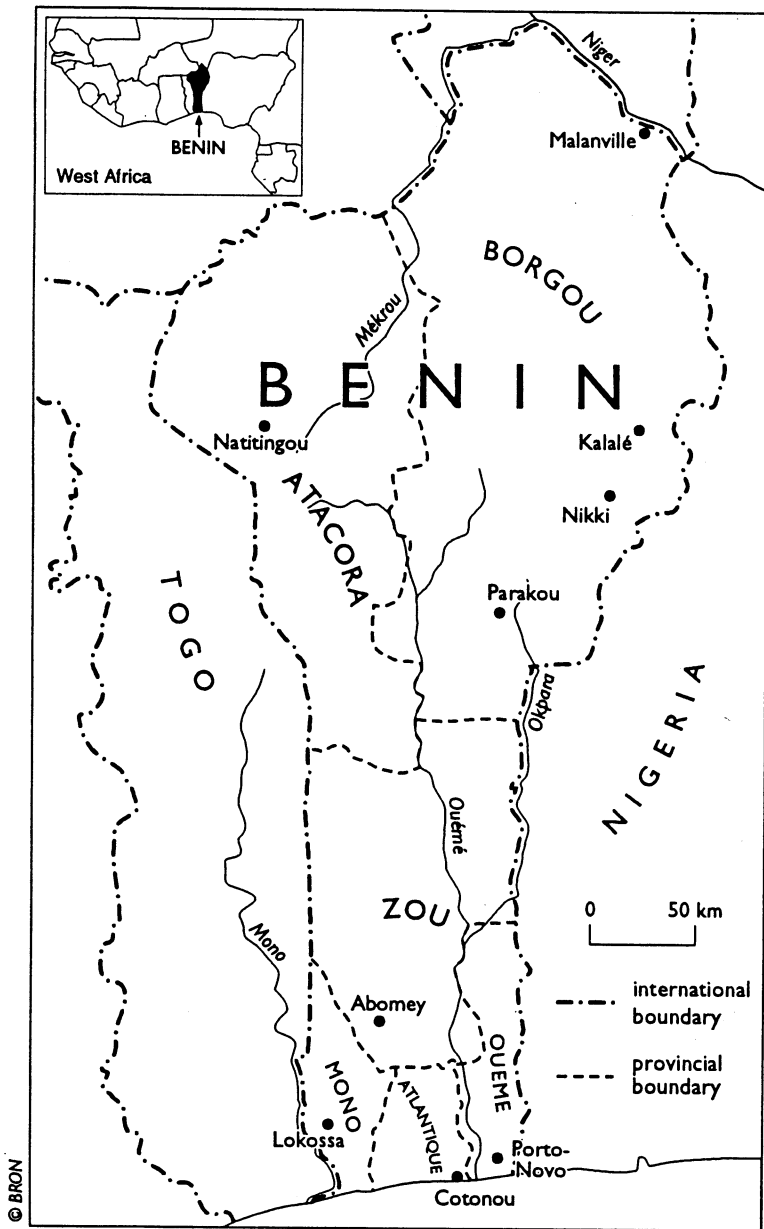


Figure 8.1. The Borgou province in Benin

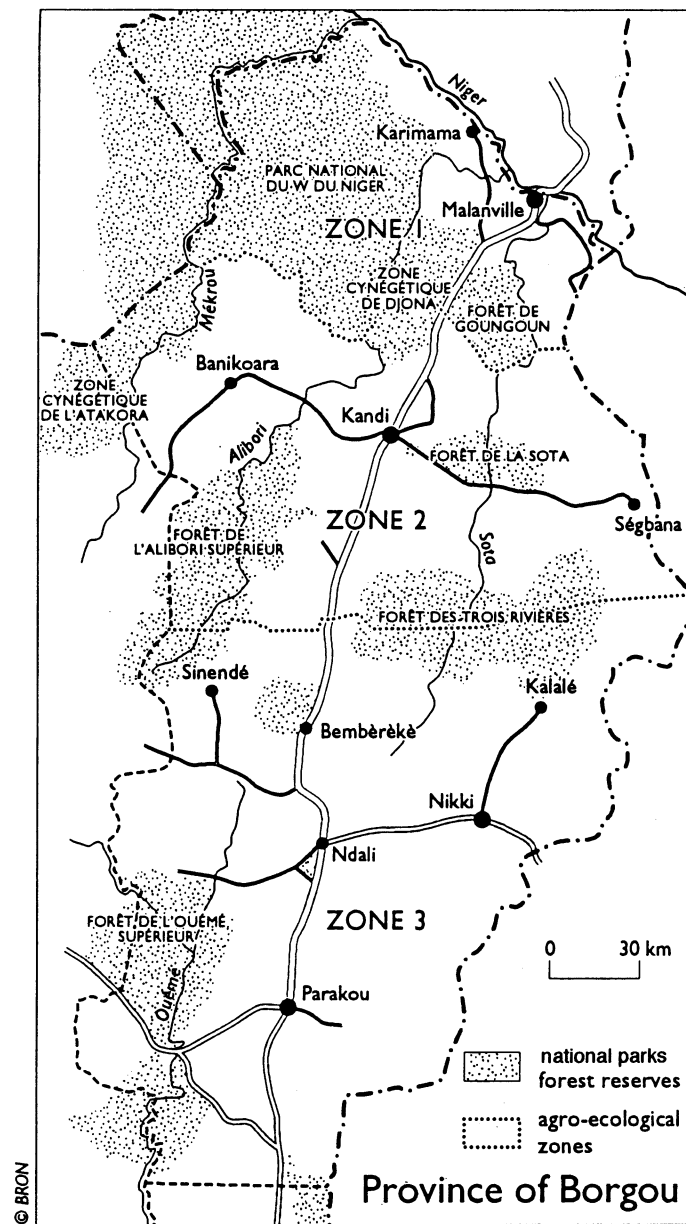


Figure 8.2. Borgou province: agro-ecological zones and national parks and forest resources

THE NOTION OF *GESTION DE TERROIR*

Growing concern about land degradation and deforestation in Africa has caused an increased interest in land management. For example, the 1985 US National Research Council Conference on Common Property Resource Management (BOSTID, 1986) marks an important shift from resources as such to institutional arrangements. Increased interest in traditional land management systems, such as common property regimes, accompanied this shift.

At the same time a new development strategy emerged in francophone West Africa as an attempt to reverse the failures of prevailing rural development programmes (Painter, 1993: 4–10). A combination of population pressure, drought and mismanagement at the central level urged the French development cooperation, the dominant donor in this region, towards measures to stimulate local initiative and to build up local capacity in terms of income generation and the exploitation and management of local resources. This is what has become known as the *gestion de terroir* approach. *Gestion de terroir* aims at the self-organization of rural communities in exploiting the resources of their territories in such a way that the renewal of the resources in the long run is assured (Barrier, 1990). Keeping in mind the past failure of central government interventions, it is anticipated that this land management initiative at the local level will be more successful.

It is often said in this respect that traditional resource management institutions can play an important role. They are thought to be able to mobilize people both individually and collectively to invest in resources. On the other hand, some of these traditional institutions may not function properly any more because they have been uprooted by colonial and post-colonial interventions. Moreover, others have not been able to control their members' actions because of changing social, economic or physical conditions (DGIS, 1990: 28).

Therefore, although local land management arrangements rooted in traditional systems might have an advantage, we think it is now more important to look instead at the incentives that successful local land management arrangements provide to the villagers. Murphree (1993: 3) hits the nail on the head when he writes: 'People seek to manage the environment when the benefits of management are perceived to exceed its costs.' According to Lawry (1989: 5–12) collective action is more likely to occur if the common resource is scarce and critical to local income generation. Collective action will be more difficult to achieve if interest in the resource as a source of income varies or resource use strategies of the different groups involved differ significantly.

Finally, according to (Guèye and Laban, 1992: 14) some important observations should be made with regard to *gestion de terroir*. Firstly, it has to be remembered that the spatial organization of the village territory is not

uniform but is, in fact, generally made up of fields, pastures, woodlands, etc. Secondly, the spatial organization is not static but involves regular patterns of change over time: seasonal differences in grazing areas, fallow land used for grazing that is taken into cultivation again, etc.

We have to add another observation following Bonnet (1990: 61). Where semi-nomadic pastoralists are concerned, the village territory is not the only geographical entity which should be examined. In their case the regional level gains importance because of their seasonal search for fodder and water, a practice known as *transhumance*, usually at large distances from the village territory.

With reference to the above-mentioned review, in the section 'Experiences with local environmental management' we will pay attention to traditional arrangements, incentives and spatial organization when discussing local land management in the Borgou. *Ergo* we need to examine the land use and related land degradation by peasants and pastoralists.

LAND USE AND LAND DEGRADATION

Peasants and pastoralists

When Fulani herdsmen penetrated into the Borgou more than a century ago it was already populated by various ethnic groups: Bariba peasants in Banikoara and Kandi, Gourmanche peasants and Dendi peasant-fishermen in Karimama and Boko in Kalalé. The Gando used to live in servitude to the Fulani and the Bariba. Nowadays, however, they are a group of peasant-herdsmen, involved both in herding and crop cultivation. They can be said to operate in 'two worlds': although they are often called *agro-éleveurs*, their two main activities are hardly integrated. Interaction between peasants and pastoralists has ensured the best living conditions in the fairly capricious climate. It has included the bartering of goods and services and—something very interesting from our point of view—land management in the form of an alternate use of space. Relations between farmers and herdsmen until the 1960s and 1970s can be reconstructed as follows. The Fulani pastoralists used their period of space-sharing in the farmers' crop cycle as an opportunity to feed and water their herds. They settled in relatively permanent camps. Families stayed there during the dry season with one or two head of cattle and food crops were grown there during the rainy season. In the driest months, the herds left for pastures further south where grass and water were still available (*transhumance*). At the beginning of the rainy season, they returned. During the rainy season they always kept away from the fields to avoid damaging the crops, preferring to graze a few kilometres outside the villages.

When the harvest was over, the cattle entered the stubble-fields, meanwhile depositing their dung. Occasionally, on the request of a peasant, flocks stayed

overnight on certain fields, depositing large quantities of dung and thus manuring the field. For this service the peasant paid cereals in return ('manure contracts'). As soon as the stubble had been eaten, other fodder had been used up too and the water pools had dwindled, so the herds went again to the southern pastures. The peasants used to ask the Fulani to look after their cattle, and, therefore, this livestock also joined in this transhumance. In exchange the Fulani kept the milk and some of the calves ('keeper contracts').

The fact that this herding system helped preserve a physically vulnerable environment is of vital importance from the ecological point of view.

Modes of existence, farming by peasants and herding by pastoralists, have been subject to rapid change since the 1970s (Breukers and De Hon, 1988; De Haan et al., 1990; De Haan, 1992b).

In the 1980s tensions between the two groups emerged and this consequently affected land management arrangements. On the one hand, this tension was caused by a period of relative drought affecting the herdsmen in particular. Over time the number of foreign pastoralists, migrating from the Sahel to the Borgou with their flocks, has increased considerably. They graze their cattle in places that the local Fulani have already left by that time of year. As a result the vegetation is overgrazed. Furthermore, successful livestock health programmes under the auspices of the government of Benin and the European Development Fund have also resulted in an increase of local cattle, which are an additional burden on the land.

On the other hand the peasants' increasing incorporation in the market, accompanied by technological changes like the introduction of draught animals and motorized pumps, has led to a considerable extension of the acreage under cotton and irrigated market gardening. Since the Fulani depend on the peasants for the right to cultivate the land, these peasants did not feel obliged to consult the Fulani when they extended their fields towards the pastures and cattle trails. This means that less grazing land is now available and that a number of watering points have become inaccessible. As a consequence the two groups' traditional space-sharing arrangement has been seriously upset. As a consequence the Fulani now use the National Park of the W and the forest reserves like the Cygenetic Zone of Djona and the Forest Reserve of Goungoun (Figure 8.2) as grazing areas too.

Environmental degradation

Our survey (De Haan, 1992a) revealed three important processes of land degradation which have occurred in recent years, i.e. soil erosion, topsoil deterioration and depletion of nutrients.

Depletion is caused by the way most crops are cultivated, i.e. without giving nutrients back to the soil in one way or another. As a consequence all soils in the Borgou are in fact exhausted. Moreover, the soil structure is deteriorating by a process of reduction and related biological activity caused

by frequent bush fires. Bush fires, causing volatilization of nutrients, can reach extremely high temperatures, especially at the end of the dry season when vegetation is very dry. A deterioration of the soil structure hinders the quick regrowth of plants and facilitates crust formation.

Topsoil deterioration in the Borgou is mainly characterized by such crust formation. A mixture of factors underlie this process: a lack of organic matter and the first heavy rains in the beginning of the rainy season, directly followed by sun and wind, hardens the top soil. This is aggravated by human activities like clearing, grazing or setting fire to the fields just before the rains start. As a result, uncovered soils are exposed to subsequent heavy rains. The pruning of trees during the dry season by herdsmen to provide the cattle with fodder (called 'aerial grazing') also contributes to this exposure. Subsequently the topsoil structure deteriorates. Finally, the cumulative effect of cattle hoofs along cattle trails contributes to topsoil deterioration.

The most common type of soil erosion in the Borgou is sheet erosion. It results in the loss of the top layer and therefore in a loss of nutrients. Sheet erosion is caused both by farming and grazing and is found all over the Borgou. As yet, sheet erosion is not very serious but will be so in the near future if land use continues at the same rate of intensification without improving the organic matter content.

Apart from land degradation, the vegetation of the large, uncultivated areas, including the National Park and the forest reserves, is also rapidly deteriorating in the Borgou. Tree crowns cover maximally 20–50% of the soil, but in the Kandi, Banikoara and Karimama survey areas, this cover was less than 20%. Real forest areas, with more than 50% of the soil covered, are rare. Increased grazing is an important factor contributing to the degradation of vegetation.

Analysis of SPOT satellite images (Goossens, 1992) showed that especially in the National Park of the W, tree cover is declining fast. Between 1986 and 1990 only 40% of the observed area of the park did not degrade. Grass savannah has conquered large areas because extensive bush fires and roaming cattle have prevented the regrowth of trees.

EXPERIENCES WITH LOCAL ENVIRONMENTAL MANAGEMENT

From the previous section, it is clear that both the environment and traditional land management arrangements in the Borgou are deteriorating. This situation demands countervailing measures. As explained in the section on *gestion de terroir*, these measures should be executed both at the individual level and at the collective level. However, this chapter does not enter into a discussion of individual measures such as rotation systems, contour ploughing or alley cropping by peasants, and destocking, fodder cultivation or hay storage by herdsmen. Instead, we will concentrate on

collective measures and the institutional framework accompanying them, focusing especially on two cases that involve both peasants and pastoralists.

Prevention of bush fires in Karimama

As explained in the section above, bush fires have a devastating effect on soil and vegetation. However, villagers have good reasons for this practice. Many bush fires are deliberately started at the beginning of the dry season to stimulate the growth of young offshoots. These young offshoots are more palatable and contain more nutrients for the cattle. Because at that time of the year the vegetation cover is still living, these fires do not produce very high temperatures and are considered to be less harmful than the bush fires later on in the dry season. The latter are started to clean grazing areas from old herbs, to clear new fields in the bush or for hunting.

Fortunately, in some villages in the Borgou bush fires are already a thing of the past. In the case of Mareguinta, in the district of Kalalé (which will be discussed extensively below) both peasants and pastoralists agreed upon a ban on bush fires in a zone around the artificial pool in order to protect the vegetation. This will prevent erosion in the catchment area and thus prolong the serviceable life of the pool.

In the district of Kandi there are certain villages where the *groupement villageois* (often a group of farmers organized to trade the inputs and output of cotton production with the marketing board) tries to convince peasants not to start bush fires in areas reserved for grazing.

Even more striking is the example of the district of Karimama. Since 1984 at the actual instigation of the local population, especially the Fulani, bush fires were completely banned by the *sous-préfet* (district commissioner). The population of the district acknowledged the fact that in this way more fodder (though admittedly not of superior quality because of drought-induced desiccation) remained for the cattle. The local support was so obvious that when a national Bill was passed in 1987 to limit bush fires, permitting only the less harmful fires at the end of the rainy season, an exemption was made for Karimama. In that district all bush fires, even the ones at the end of the rainy season, were banned.

The formal bush fire ban was obeyed. Of course, government officials of various departments enforced this ban by stimulating local chiefs to motivate their people to refrain from starting bush fires. An additional reason for the population to comply with this instruction was the surveillance of the area by government local officials, and high fines. However, it was the above-mentioned advantage in the field of fodder that was the most important incentive (personal communication, A. Van Driel).

As explained, in the Borgou the lack of water and fodder in the dry season in the village territory is the reason for pastoralists to practise transhumance. In this connection, on average, herders in the Borgou leave for fresh pastures

Table 8.1. Length of transhumance per survey area in the Borgou, North Benin (until 1992)

		≤3 months	4-≤6 months	≥7 months
Kalalé	n=55	-	96.4%	3.6%
Kandi	n=76	15.8%	68.4%	15.8%
Banikoara	n=64	35.9%	57.8%	6.3%
Karimama	n=68	72.1%	27.9%	-
TOTAL	n=263	31.9%	61.2%	6.8%

Source: De Haan (1992a: 131)

between December and February and return between May and July. The specific period depends on the local conditions, the amount of precipitation in the preceding year and the start of the new rainy season.

However, during the last few years the Fulani herders of Karimama have not left their home village before March or even April. They usually did not return before July. The late return is explained by the start of the rainy season which, because of Karimama's more northern position, begins later than in the rest of the Borgou.

The relatively late yearly start of the transhumance in this district was striking. Herders explained this entirely by referring to the larger amount of fodder available for cattle since bush fires in the district belonged to the past. Table 8.1 shows the contrast with other areas in the Borgou.

It is clear that more than two-thirds of the flocks of Karimama only left for a period of three months or less. The contrast with Banikoara is interesting. Normally an area situated further south such as Banikoara should run out of biomass later in the season as compared with Karimama. However, though Karimama is situated 100 kilometres further north, the prevention of bush fires there made more biomass available resulting in shorter transhumance periods.

However, from 1989 onwards this land management success has become marred by new bush fires, culminating in district-wide fires in 1992. As explained in the section above, the tension between peasants and pastoralists in the Borgou arose during the 1980s. In the Karimama district, jammed between the river Niger and the forest reserves and invaded by pastoralists from the Sahel, conflicts are severe and not only between peasants and foreign pastoralists. The recent bush fires are a clear sign of polarization between peasants and pastoralists. They are started by peasants to deliberately damage the pastoralists and to drive them out of the area, even though they risk high fines and admit that they themselves run into difficulties in finding fodder for their own cattle this way (pers. comm., A. Van Driel).

From the perspective of combatting environmental degradation, this temporary success with the prevention of bush fires has had two important

positive effects. Firstly, it has counterbalanced soil and vegetation degradation. Secondly, the increased availability of biomass has temporarily relieved the burden of cattle in the adjacent National Park of the W and the overburdened grazing areas to the south.

From the perspective of local land management, it is clear that the initial prevention of bush fires did not emerge from arrangements rooted in the traditional system. In fact, the bush has long been common property where its use for grazing and hunting is concerned; only clearing for new fields, especially by newcomers, is subject to permission by the *chef de terre* (land chief) of the area concerned. Nevertheless, the new regulation, which emerged from the local need for more fodder, was initiated locally and successfully accepted by both peasants and pastoralists. In addition formal sanctions, i.e. surveillance and fines by local authorities, definitely contributed to its initial success.

Following Bonnet (1990) we already explained that where herding is concerned the village territory is not the only geographical entity to consider for successful land management arrangements, because often grazing areas in other village territories are used too. The acceptance in Karimama of bush fire prevention was initiated as a district-wide action instead of only in a few pilot-villages, and this approach definitely contributed to its initial success.

In order to explain this case further we have to turn to Lawry (1989) and look into the incentives provided to the people by this local land management arrangement. According to the author collective success depends on the scarcity of the common resource and its importance to local income generation. Collective action will occur more easily if interest in the resource as a source of income is shared by many. This was precisely the case in Karimama. Both peasants and pastoralists have cattle and thus profited from the increased availability of biomass.

The difference in the degree to which both groups depend on cattle for their income generation and thus on the common resource explains why the initial success did not continue. Increased tensions between both groups made the peasants employ bush fires as a weapon against the pastoralists. However, by doing this they burnt their own fingers too. An increasing number of peasants herd their own cattle in the vicinity of their villages instead of arranging keepers' contracts with the Fulani. Since they do not practise transhumance they are confronted by the precarious fodder situation in the dry season too. Eventually this unsatisfactory situation may lead to a new consensus among peasants and pastoralists about bush fire prevention.

Gestion de terroir in Marequinta

Another success in local environmental management in the Borgou is achieved in the district of Kalalé in some villages where small dams with

artificial pools have been constructed under the 'Projet de Développement d'Élevage dans le Borgou-Est' (PDEBE), financed by UNDP and FAO. We will discuss the case of the village of Marequinta.

In Marequinta the percentage of head of cattle involved in transhumance has already been reduced to 50% as compared to an average of 70% in the area as a whole. The reduction of transhumance has become possible because of the permanent availability of water in the local pool. This enables cattle owners to profit from the biomass which is available in this area during the dry season. Some cattle owners have even made modest attempts to grow fodder and to store hay. The reduction of transhumance movements has to be judged positively because it reduces losses, both in heads of cattle and in weight, and thus enlarges productivity. Moreover, since many permanent streams in the Borgou are to be found in forest reserves, artificial pools help to get pastoralists out of these protected areas in the dry season.

However, it is not only the reduction of the transhumance which makes Marequinta an interesting example but rather that the artificial pool made possible a successful start of a *gestion de terroir* approach.

There has been some debate in North Benin as to what kind of watering points were preferred. There was a theoretical choice between the construction of large dams to create a lake, the digging of artificial pools and the construction of small dams to create a pool. Most important concerning these options is the difference in scale, which has serious consequences both for the environmental sustainability of the project and for the institutional success.

Large (earth) dams, the first of these options, are constructed in the lower course of a semi-permanent stream. In this way quite a large amount of water can be captured. However, this demands an extra strong construction and special concrete work in the middle of the dam that allows for the evacuation of surplus water.

To construct such a dam, heavy equipment and qualified manpower is needed. On the one hand, costs are usually therefore too high for one village. On the other hand, the large amount of water impounded makes it possible to service cattle from surrounding villages too. As a consequence costs can be shared.

However both environmental and institutional problems will arise in such a case. The environmental problem can be illustrated by referring to the case of Sakabansi, southeast of Marequinta. Here a 150 000 m³ lake has been created by the construction of a large earth dam. Such an amount of water can service roughly between 20 000 and 25 000 head of cattle, i.e. on average seven or eight villages. And this is, in fact, what has occurred in reality, for the lake attracts a large number of herders from all over the district. As a result the degradation of the pastures in the surroundings of the dam has been accelerated. Moreover, there has been a marked increase of parasitic diseases because of the stagnant water.

On the institutional level there is the problem of costs, accountability and

responsibility. The costs associated with this kind of water storage are the highest of the three possible options mentioned above. In theory they can be shared by a larger number of people originating from a number of villages. However, this creates another set of problems. To organize the cattle owners of so many villages to maintain the dam and to regulate the entry to the lake through corridors is likely to provoke social conflicts.

Considering the other possibilities, the digging of artificial pools tends to be expensive in practice, because most of the time a clay coating has to be made to reduce leaking to the groundwater. The third option, i.e. the construction of small dams to create artificial pools, is more viable.

These dams are constructed in the upper course of semi-permanent streams. In those cases water volumes captured are limited and a simple earth dam is sufficient. Moreover, this method allows a distribution of small pools over an area, preventing large movements of cattle. Furthermore, management can be organized on a local scale which seems more appropriate with regard to accountability and responsibility.

The pool at Mareguinta, containing water the whole year round, is the result of a mixture of constructing a dam and digging. Because of its modest storage capacity of about 20 000 m³, its service area is limited to the immediate surroundings.

The construction was initiated by the PDEBE, but did not start until every cattle owner, Fulani and peasant, had contributed 25 FCFA per cow. The *groupement villageois*, mainly involved with cotton marketing on behalf of the cotton growers, paid the contribution for the peasants. Moreover, every household provided one person during one month to help with the construction. The PDEBE delivered materials and machines (Dirven and Mahieu, 1993).

In Mareguinta the management of dam and pool is in the hands of a small committee of cattle owners, with representatives of the three ethnic groups of the village. The assigned men, who are not chosen by election but rather put forward by their ethnic group, can therefore be considered as well-respected members of the village community; however, none of them hold a traditional post in the field of local land management, as for example *chef de terre*.

The committee employs a guard who looks after the dam and the pool. He is paid from a collective account. Cattle are not allowed on the dam; bush fires as well as crop cultivation around the pool are forbidden; men and women are not allowed to wash or to take a bath in the pool and there is only one means of access to the water. After the rainy season, the villagers must clean the area and repair the fence. Finally, farmers ploughing in the catchment area of the pool are required to follow the contour lines to slow down erosion in order to prevent the silting up of the pool. A cattle market and a shop, selling fodder and agricultural inputs, were also set up. The proceeds are paid into a collective account.

Interviews with different peasants and pastoralists indicated that the rules

are obeyed and that, although sometimes annoyance occurs, all groups are able to defend their interests in the small committee. At the moment this committee only manages land use in the surroundings of the pool. However, though the PDEBE has left day-to-day management to the committee, it is nevertheless still active in the village and aims eventually to extend the land management mandate of the committee to a collective management of all pastures in the village territory.

It is true that motivation and social control are not yet strong enough to prevent free-riding; for instance in 1992 there was not enough money to repair the fence surrounding the dam because not everyone had paid his contribution. However, the committee is esteemed by the villagers. Its judgement is increasingly requested and followed in matters of land management not directly related to the pool and the dam, such as in cases of damage to crops by cattle. On the basis of this acquired authority a comprehensive *gestion de terroir villageois* is a perspective now within reach.

From the perspective of combatting environmental degradation the small water reservoir is successful because it reduces transhumance movements and keeps cattle away from the natural watering places in the forest reserves.

However, the case of Mareguinta is most important from the perspective of local land management. If we turn again to Lawry (1989) and consider the incentives these local land management arrangements actually provide it is quite clear that again the success is explained by scarcity of the common resource, in this case water, and its importance to local income generation. Collective action occurred because interest in the resource as a source of income is shared by both peasants and pastoralists. An important factor operating in this area is the presence of the Gando, who form a majority of the population. This ethnic group, involved in both agriculture and herding, may be considered as taking an intermediary position between Boko and Bariba peasants, on the one hand, and Fulani pastoralists, on the other. This strengthens social cohesion and undoubtedly facilitates the success of local initiatives.

Following the observations of Guèye and Laban (1992), as stated in the section on *gestion de terroir*, the perspective of a comprehensive *gestion de terroir* may seem within reach but there is still much to be accomplished. Indeed, the spatial organization of the village territory of Mareguinta is not uniform but made up of fields, pastures, woodlands, etc., but in this particular case local land management originates primarily from a cattle-keeping perspective and will consequently be preoccupied at first with the regulation of pastures. On the other hand, the case of Mareguinta demonstrates successful regulations in the field of water and land use too. Although we have to admit that these regulations are limited to the immediate surroundings of the pool they set an important precedent.

Moreover, Guèye and Laban (1992) stress that apart from collective action individual action is needed. Fortunately, on the individual level the case of

Mareguinta shows some interesting advances too. Farmers around the pool do practise contour-ploughing to slow down erosion and herdsmen do experiment with fodder cultivation and ensilage of grass.

THE REGIONAL AND NATIONAL CONTEXT

Population growth, increased commercial crop cultivation and greater numbers of cattle, because of both animal health programmes and the immigration of pastoralists, have resulted in increasing pressure on the environment in the Borgou which has led to degradation of both land and vegetation. This means that though in the past these two modes of existence may have been able to prevent environmental degradation, it is clear that at present this is not the case.

The most important mechanism in both modes to prevent a build-up of too much environmental pressure in one place, i.e. mobility of, respectively, farming and animals, is still common but does not function properly any more. Due to shortage of land and application of chemical fertilizer, fields are cultivated much longer than before, fallow periods are shortened and soil fertility is not restored even after long periods of fallow, because bush fires and grazing cattle constantly put a burden on those fields lying fallow.

The mobility of the herds of the pastoralists is hindered by increased areas under cultivation, conflicts with peasants about damage to the crops, disappearing cattle corridors (due to encroachment by new fields) and officially protected zones such as the National Park and the forest reserves.

Moreover, even if the mobility of farming and herding could function as before it is very doubtful whether it could avoid causing environmental degradation any longer. The Borgou has already reached its limits of land exploitation when traditional technology is taken as the point of departure.

Although such degradation in the Borgou can clearly be observed, both peasants and pastoralists still manage to find ways to escape from the current pressure of environmental degradation (resulting in decreasing yields and insufficient grazing lands) by turning to other areas. Although they will soon run into the same problems, it gives them a break. This reduces their motivation and willingness to implement conservationist practices and to organize land management institutions. We could call this 'the local impasse'.

Can a breakthrough perhaps be realized at the national level? The *Plan d'Action Environnemental* (PAE, 1992), the National Environmental Plan of Benin, indicates that rural and urban environmental management, centralization of information about the environment, education and extension facilities, the incorporation of environmental considerations in economic planning and finally legislation and institutional frameworks should all receive priority in the environmental policy of Benin. The first and the last aspect, management and institutional framework, are in our opinion crucial

to achieving a breakthrough in the local impasse. We will turn again to this below. But first we want to evaluate the feasibility of environmental considerations in economic planning.

The economic crisis in Benin of the 1980s has led to the acceptance of a Structural Adjustment Programme (SAP) by the government of Benin. The main goals of this programme are restructuring external debts, reducing government expenditure, increasing and diversifying exports, restructuring the banking system, strengthening the country's productive capacity, stimulating the private sector and substituting imports. Although large numbers of government employees have already been fired, the balance of payments is still negative.

Within this context it is very hard to believe that the government of Benin will be able to give priority to environmental considerations in economic planning. For the Borgou this means, in our view, that cotton production, one of the few export products of the country, will keep on receiving priority and that in the final event conservation will be subordinate to export income. The success in promoting a more sustainable land use will depend on world market prices for cotton, and similarly for meat.

Nevertheless, in the field of environmental management and institutional framework the government has already taken some initiatives with regard to the local level. Every village should now have a *comité de transhumance* (transhumance committee) that should plan and monitor the movement of cattle within its territory. Village committees should be supervised by district committees and on the regional level a special committee should settle conflicts. Because these committees have been founded only recently we cannot yet report on their activities, but we feel that they could play an important role in regulating land use by farmers and herdsmen especially in periods when there is particular tension between both groups. They could become a springboard for *gestion de terroir*.

In that respect we should also mention the *comité de gestion du terroir* (land management committee). These committees are established in many villages on the initiative of the Ministry of Agriculture but are still in an experimental phase. Obviously both institutions should merge: the *Comité de Transhumance* might develop into a fully-fledged *Comité de Gestion du Terroir*. Both cases presented in this chapter suggest that eventually the breakthrough of the local impasse may be achieved at the local level itself.

CONCLUSIONS

This chapter has examined the environmental effects of land use associated with two related modes of existence, the peasant mode and the pastoralist mode, in North Benin. Population growth, increased commercialization of crop cultivation and increased numbers of cattle, because of animal health programmes and immigration of foreign pastoralists, have all resulted in

increasing pressure on the environment which has led to degradation of both land and vegetation.

Although environmental degradation in the Borgou can clearly be observed, both peasants and pastoralists still find ways to escape from the current pressure of environmental degradation by turning to other areas. This reduces their motivation to organize land management institutions. We have called this the 'local impasse'.

On the national level the government of Benin will not be able to give much priority to environmental considerations because of the Structural Adjustment Programme. However, the government has already taken some initiatives with regard to an institutional framework for environmental management at the local level. This may facilitate a *gestion de terroir* approach.

Two cases of environmental management at the local level have been discussed at some length from the point of view of such a *gestion de terroir* approach, i.e. the prevention of bush fires in Karimama and the management of an artificial pool in Mareguinta. Both cases represent examples of our proposition that a *gestion de terroir* in the Borgou can only be accomplished successfully if the two modes of existence, farming and herding, are incorporated.

In that respect we fully agree with Guèye and Laban (1992), who draw attention to the spatial organization of land use within the village territory. In addition, the case of Karimama showed that where pastoralists are concerned Bonnet (1990) is right in suggesting that environmental management arrangements should really be settled at higher levels of geographical scale. Moreover, we could not determine a direct relationship between the success of the environmental management arrangements discussed in the two cases and their link with traditional arrangements.

Finally, we agree with Lawry (1989) that collective action in connection with the management of scarce resources may provide incentives in the field of income generation that will result in effective environmental management. However, the case of Karimama shows that in the Borgou the degree of polarization in relationships between the two groups involved influences the perception of these incentives. Rancour between peasants and pastoralists may frustrate environmental management arrangements even if such arrangements have positive effects on income generation.

We are inclined to postulate therefore, that reduction of conflicts between the two groups as is being pursued by the government in creating the comités de transhumance, may serve as a point of departure for *gestion de terroir*. With respect to the question of the (highly appreciated) incentives we are perhaps usually much too concerned with increased revenues. However, if Murphree (1993) states that benefits should exceed costs, we could also profitably explore the alternative route of cost reduction. Arrangements about the use of space in a certain territory will reduce conflicts and consequently will reduce costs with regard to crop damage, long-distance trekking to

remote pastures and watering places, fines, etc. The cases discussed illustrate that conflict reduction is in principle an attractive alternative to motivate the local population to adopt a *gestion de terroir* approach.

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9 With a Little Help from Our Friends: The Gouzda Case of Local Resource Management in Cameroon

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INTRODUCTION

International and national organizations have played a dominant role in the design and implementation of most development projects. At the same time, many of these more or less top-down projects have failed to meet local socio-cultural and environmental requirements. The three phenomena are not automatically linked, but we have become used to this combination. It was consequently fascinating to come across a locally based initiative that has grown without external organizations having any say at all and that seems to be successful in improving the natural resource base as well as in stimulating socio-economic development. During our first meeting with the local initiator, a former schoolmaster of the village of Gouzda, we realized we had met a special person. Not only had he conceptualized by himself an approach of local management that was in line with the so called 'process approach' (Zevenbergen, 1985); he was also a successful practitioner of this approach, showing true commitment and remarkable personal skills. No wonder we were enthusiastic (and still are); however, we realized that only a critical mind would be able to gain a more in-depth understanding of this example of the development of a new local resource management system.

Based on a five-month field study, this chapter takes a look behind the scenes. First the stepwise development of ideas, activities and organizations in the mountains around Gouzda are described. Where necessary, these are related to trends in the ecological, cultural and socio-political context. Next we analyse a number of achievements and problems. Finally we look beyond the case-study level and discuss what can be learned for the promotion of local resource management elsewhere.