

**Agriculture Sector Development Grant, Phase II**

**Natural Resources Management in Niger:  
Lessons Learned**

submitted by:

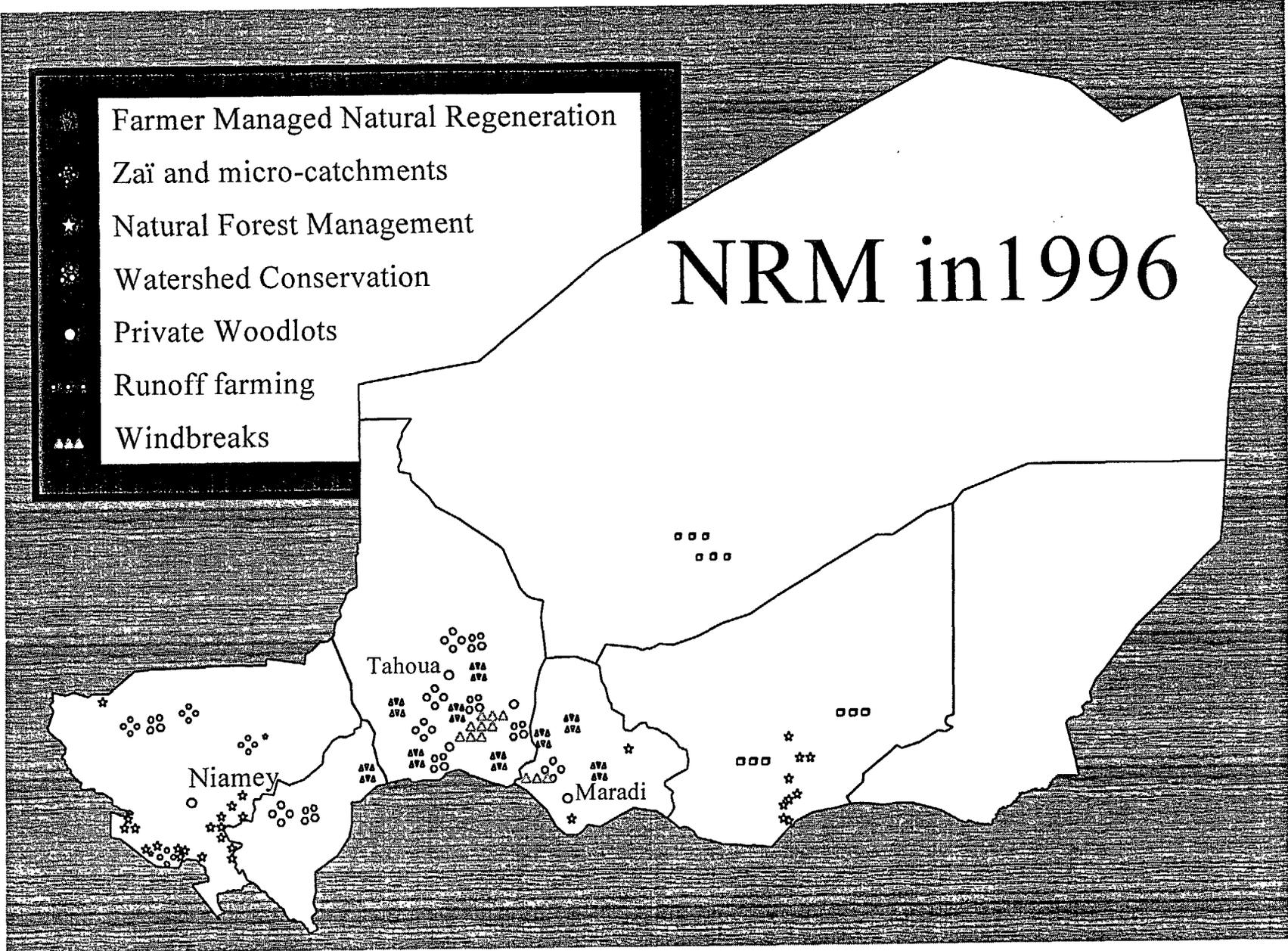
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## ***INTRODUCTION***

This report is based on observations, interviews and discussions conducted over a three week period in Niger from September 23 to October 12, 1996. A more detailed report of observations made during a September 30 to October 6 field trip can be found in "Trente Années de GRN dans les Départements de Dosso, Maradi et Tahoua" by Moussa Saley.

The goal of ASDG II was to promote the widespread adoption of natural management practices by rural producers in Niger. An NRM practice is understood to be undergoing "widespread adoption" when rural producers across Niger are employing and maintaining the practice on their own. The program attempted to do this by setting up or enhancing the enabling conditions for this process to take place. The purpose of this report is to provide a long term perspective on the adoption of NRM practices in Niger based on the my past experience in the Sahel (PSC NRM Specialist for USAID/Niger from 1989-1994, NRM technical advisor and project manager for World Vision Mali 1986-89) and current observations. The approach taken in this report is to provide an overview of four popular NRM practices that are currently in the phase of being adopted in a widespread manner as intended by ASDG II. The report briefly describes each of these practices, presents evidence of and reasons for their widespread adoption including linkages to the enabling conditions promoted by ASDG II, and then concludes with some general observations and suggested areas for further attention.

## ***OBSERVATIONS FROM THE FIELD : FOUR PROMISING NRM PRACTICES***

The four practices discussed in this report are :

- Farmer Managed Natural Regeneration (FMNR)
- Zaï (and demi-lunes)
- Community-based Natural Forest Management (CBNFM)
- Watershed Conservation

These four were chosen for several reasons. First of all, as noted above, they are NRM practices that are being adopted by Niger's rural population in a relatively widespread manner. I say relatively because none of the four are practiced to the widest extent possible and the sustainability of the last two without project support remains questionable. Nevertheless, they have proven themselves to be effective at decreasing resource degradation while increasing productivity and are being adopted by an increasing number of Niger's rural inhabitants. As such, they are representative of the types of NRM practices that ASDG II sought to promote.

A second reason for their selection is that they are practices that have relatively strong linkages to some of the policy and institutional reforms supported by ASDG II. There are other NRM practices that may have a greater degree of widespread adoption, such as the use of manure on croplands, but their linkages to NRM policy is less apparent. The third reason is that I am sufficiently familiar with these practices to analyze and discuss them comfortably.

### ***FARMER MANAGED NATURAL REGENERATION (FMNR)***

**History and Description :** FMNR is the practice of encouraging and managing the natural regeneration and growth of woody plant species (especially trees) by farmers in their fields. FMNR has its roots in traditional conservation practices, but it wasn't until the early 80's that it was developed and promoted aggressively as an NRM practice by *Projet Gao* (Montagne, 1992) in Dosso Department and in Maradi Department by the Maradi Integrated Development Project (MIDP). Up until that time, the conventional practice for establishing trees was to raise them in nurseries and plant them out in woodlots or windbreaks.

The practice of FMNR has undergone some evolution as farmers and technical services (both government and NGO) use and adapt the practice to meet their needs. *Projet Gao* promoted protection of natural regeneration for the establishment of *Faidherbia albida* in the early 80's, but a recent study reveals that farmers in the project zone are now using the practice to establish other trees in their fields as well. Tony Rinaudo, MIDP director and one of FMNR's chief proponents, is now encouraging farmers to allow 5 stems to grow from each managed tree, thus permitting the



Trees are now more commonly found in Niger's millet fields due to the widespread practice of FMNR

selective harvesting of one or two stems without significantly diminishing the positive impact of having the tree on the land. For more information on FMNR, see Rinaudo (1994) or Taylor (1992).

**Evidence of Widespread Adoption :** FMNR is currently among the most widely practiced NRM innovations in Niger. Prior to field trip observations, several Nigerien cadres mentioned that the technique is now widespread and practiced throughout the country. The field trip confirmed this to a certain extent. We observed several fields in the Dosso department that contained a variety of managed trees. Though practice of FMNR is not visibly widespread in this area, it is a marked improvement from several years ago when the Dosso department

appeared to have very few “dirty fields”<sup>1</sup>. Continuing east into the Tahoua department, evidence of the practice became much more widespread, with an estimated 20% adoption rate appearing near the town of Yaya and increasing as one travels east.

If spread of the practice of FMNR is slow to the west, such is not the case to the north. FMNR was observed being practiced intensively all along the major roads of the Tahoua department. Several projects in the area have integrated FMNR into their NRM programs with a resulting acceleration of the already rapid dissemination and adoption of the practice. Tahoua Vert, for example, is actively promoting FMNR by taking farmers from their project zone to visit farmers in Maradi where the practice was first popularized. The practice is now one of the more popular activities promoted by the project. When asked where they procure fuelwood for their daily needs, women in the project area always listed FMNR trees on their fields as a prime source.

**Reasons for Widespread Adoption:** Perceived benefits is the main driving force behind the widespread adoption of NRM practices. In the case of FMNR, the windbreak effect is often cited as the primary benefit realized by farmers. Farmers in north Maradi department are quick to recount how, in the past, young millet plants were desiccated and cut off at the base by blowing sand, forcing them to replant their fields during the course of the season. Another farmer tells how they had become used to eating sand in their food. Now that so many people have allowed trees to grow in their fields, fiercely blowing sand is a thing of the past. When he visits villages where FMNR is not practiced, he chides them if he notices sand in the food!



Until recently, farmers could be fined for trimming trees in their own fields

Another perceived benefit of FMNR is that it can provide a source of income from the sale of wood, a product that, unlike millet, is much less dependent on good rains. Such was the case this year in the Maradi department where a one month drought in July virtually decimated the millet crop. Those that have significant standing tree volume will have the opportunity to make up for some of that loss by selling some of their wood production.

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<sup>1</sup>Dirty fields are those which are not “cleaned” by the cutting and removal of all trees and shrubs prior to planting crops. These are roadside observations. The field trip did not visit the site of the former Projet Gao. It is reported that Dosso farmers in the project area continue to protect and maintain Gao and other seedlings and trees. (see Montagne, 1992)

We saw one farmer that has turned one of his millet fields into a tree farm and were told of others that are doing the same. With the proximity of Maradi providing a readily accessible market for wood products, one wonders if the formerly barren fields to Maradi's north may one day become a primary source for the city's fuelwood.

Other benefits noted by farmers include increased availability of fodder and soil organic matter (Wild, 1996).

Another factor that has played a major role in promoting the widespread adoption of FMNR is the new latitude given farmers in the management of on-farm trees. Although the current version of the forestry code does permit private management of planted trees, naturally occurring trees, whether on private or public land, have long been considered the protected property of the state. Strict enforcement of this policy meant that farmers had to obtain permits (or face being fined) prior to pruning their own trees. Consequently, most farmers opted for "clean fields" rather than have trees on their farms that they couldn't manage. When the MIDP started promoting FMNR, however, the project negotiated with the forest service for a less strict interpretation of the forest code, allowing farmers to prune and otherwise manage trees without fines or need for permits. Wherever applied, this new policy has proven to be very effective in the establishment of trees on cultivated land. Unfortunately, this policy is still the exception rather than the rule. In the Maradi department, tree management policy needs to be renegotiated every time there is a change in personnel within the forest service. On the positive side, it does appear that the "Maradi exception" has found its way to other parts of the country.

It often takes two or three years to begin realizing the benefits of FMNR. Because of this, FMNR was slow to catch on. Now that some farmers have been practicing FMNR for a decade, however, there are plenty of sites that offer excellent examples of the longer term impact and benefits of the practice. Today, one of the most effective ways of introducing FMNR into a new area is when farmers from that area visit their peers in Maradi that have been doing FMNR for a few years. Much of this peer-to-peer exchange has been taking place spontaneously, but many projects have been organizing farmer-to-farmer visits with great success.

Because FMNR is practiced by individuals on their own land, it does not require much in the way of community organization. Widespread adoption, therefore, is not hindered by a community's inability to organize itself. FMNR does require, however, that the community agree to respect the right of individuals to benefit from their tree management practices. In the Maradi area, that respect is not only extended by the local community, but by transhumant herders as well. One final element that has contributed to the spread of FMNR is the fact that the practice is really quite simple. Unlike tree planting schemes that require nursery establishment, supplemental irrigation, and a means of transporting seedlings, FMNR requires little more than a keen eye to watch out for and protect the trees that nature has already provided.

## ZAI (AND DEMI-LUNES)

**History and Description :** Zai is a traditional agricultural practice used by Burkina farmers that corresponds to the modern rainwater harvesting technique known as soil pitting. It consists of digging an array of small pits throughout one's field in the dry season, then planting millet in those same holes after the first rains. The pits act as microcatchments, not only for rainwater, but also for windborn silt and organic matter that partially fill the pit prior to the rainy season. Most farmers also add manure, crop residue, or compost to the pits in the dry season to further increase nutrient availability to the plants.

Hausa farmers of Niger have a similar traditional practice called tassa. Demi-lunes are similar to zai in that they serve as microcatchments for nutrients and water. The major difference is their larger scale which does a better job at harvesting rainwater, but requires greater level of effort and technical control. Demi-lunes were first introduced to Niger in 1974 (Rochette, 1989) as a water harvesting technique for growing crops, but were used more extensively in the past decade for planting trees on common lands.



Zai under construction near Badaguichiri. Landowners pay 40,000 CFA per hectare to have this work done.

Field research plots for monitoring the effectiveness of zai and demi-lune techniques were established at Badaguichiri under the auspices of an IFAD project in 1992. Records show that zai is more effective than demi-lunes at increasing millet and sorghum yields in average or better rainfall years, while demi-lunes perform the best in low rainfall years. In good rainfall years, such as was experienced in 1994, yields in the some of the zai plots approached 2 tons per hectare, but the longer term (over 4 years) average yield is closer to 400 kg/ha. Unimproved control plots have yielded less than 100 kg/ha over the same period.

**Evidence of Widespread Adoption:** Four years ago the practices of constructing zai and demi-lunes on agricultural lands was limited for the most part to areas under project influence and then only practiced where incentives such as Food-for-Work were provided. Today, zai and demi-lunes can be found in farmers fields from Tera to Gouré, both within and outside of project boundaries. During the field trip, zai and demi-lune promotion was found to be a component of virtually every project that we visited, and even more impressive was the evidence of adoption outside of project boundaries. In Goubeye, we visited a farmer who was in the process of digging some zai in his field. He had dug some zai earlier in the year and these pits had been planted and were producing what looked like a very good crop of millet. By the farmers own

estimation, he figures he gets 5 times the yield on zaï-treated land as compared to the rest of his field. When asked why he was already preparing zaï for the next season, he said that it was simply a matter of taking advantage of the softer soil conditions during the rainy season.

The most striking example of the adoption of a NRM practice during our field trip came after we had seen some of the IFAD sponsored research work near Badaguichiri. In a field across the

road from one of the research plots was a man in the process of digging zaï. He was being paid to do this work by the owner of the land at a rate of 40,000 FCFA per hectare. Although he admitted it was hard work, he said that it makes it possible for him to make a living and feed his family without having to do the customary migratory work in Nigeria. As we were talking to the worker, the owner of the land appeared. He was from the Badaguichiri town and had purchased the piece of land (estimated at 0.8 ha)



from a local villager for 70,000 FCFA. This is only one example of people making monetary investment in the land, but it is an example that is becoming commonplace. As Niger's rural population masters the techniques that can restore land to productivity and increase crop yields, property that was formerly worthless is now becoming a target for investment capital.

The demi-lunes on this farmer's field near Tahoua will greatly increase his sorghum yield. Demi-lunes are best adapted to the arid north.

In the western part of the country, Peace Corps volunteers have been demonstrating and promoting zaï since 1992, primarily in and around the AFSI centers (Torodi, Ouallam, Balayara, and Gothey). Dan McCormick, a PCV in Torodi in 1992, says that the villagers laughed at him when he first started digging holes on a hardpan field in the dry season. But when the rains came and his fields produced more than anyone else's, people took note and have been copying his example ever since. Current PCVs in Torodi say that zaï have become part of the general cultural practices in that area and the technique is rapidly taking hold in other areas.

*Projet Agro-Sylvo-Pastoral*, operating in the northern Tillaberi Department, is also aggressively promoting zaï in private fields. The project offers no incentive other than demonstrated results of higher production. The local population is reportedly avidly adopting the practice.

**Reasons for Widespread Adoption:** The primary benefit of zaï is increased yield, which in some cases can be as much as 500%. Farmers also report that zaï with compost or manure is less risky than using chemical fertilizer, which can burn a crop undergoing moisture stress. Another

important factor is that results are immediate, yet the positive impact continues for several seasons. Because zaï construction is laborious, many farmers do not dig zaï on all their fields, but prefer to treat only the most degraded portions first and treat the remainder as time permits.

There are several alternatives to zaï, including demi-lunes and rock dikes. Zaï has found wider acceptance than these other conservation practices for several reasons. One reason is the minimal skill level required. In the case of demi-lunes and especially contour dikes, determination of slope and contour lines is very important. Though simple technologies exist for such determination, those technologies are not yet mastered by or available to every farmer. Furthermore, because of the technical simplicity of zaï construction, minimally skilled manual labor can be hired to do the job when a landowner would rather pay to have it done than do it himself. Rock contour dikes also require a source of stones and a means of transport. Donkey carts are used widely for this purpose in Burkina Faso, but are not yet commonplace in Niger. In the case of zaï, manure transportation is necessary, but farmers are able to haul small amounts directly on the backs of their donkeys. It should be noted, however, that manure supply and its transport appear to be constraints to wider use of this NRM practice.

As was mentioned in relation to FMNR, the fact that zaï is practiced on private land by individual farmers is also a factor in its rapid adoption. Demonstrations and farmer-to-farmer visits have also proven effective in rapid dissemination of the practice.

### ***COMMUNITY-BASED NATURAL FOREST MANAGEMENT***

**History and Description:** Community-based natural forest management (CBNFM) is not easily defined as a single NRM practice because it is actually a set of forest management practices that differ in their composition from one forest to another. The principle is generally the same, however, in that the goal is to achieve a sustainable level of production from a given forest through the practice of rotational harvesting of wood forest products. Activities to promote regrowth and regeneration of the forest is also part of the management plan. Natural forest management concepts are not new, but the idea that local African communities should acquire both the authority and the skills to manage natural forests was a radical change of policy in the mid 80's. Up until that time, conventional wisdom dictated that the state was the sole protector of the nation's forests. And the best way to protect forests was to keep people out.

USAID's Forestry and Land-Use Project (FLUP) turned that idea on its head, demonstrating in the 5,000 hectare Guesselbodi forest that involvement of local communities in forest management could not only enhance the forest resource base, but could generate sustainable incomes for the participating communities as well. The success at Guesselbodi spawned numerous reproductions of the original model, but experience proved that carbon-copies did not always fit in other cultural and environmental conditions. Time also proved that some aspects of the original model could also benefit from some modifications. *Projet Energie II*, a major project whose principal aim is to assure a long term supply of energy (fuelwood and otherwise) to

Niger's major urban centers, picked up on the Guesselbodi model, made a number modifications, and promoted the establishment of community based NFM sites all over the country.

**Evidence of Widespread Adoption:** To this date, over 400,000 hectares of natural forest land are currently being managed by local communities, all with the goal of maintaining or improving the forest resource base while generating revenues from forest products for the communities involved in the management plans. Most of that expansion beyond the original 5,000 hectares at Guesselbodi is directly tied to *Projet Energie II*, and most of the other sites have some form of project support. When questioned about the sustainability of CBNFM without support from projects such as *Energie II*, project director Pierre Montagne was cautiously optimistic. Although the project has put in place the necessary fiscal policies and a self-financed administrative structure, there are powerful forces that are opposed to CBNFM. At this point in time, he feels that without the clout of a well-financed project, the opposing forces would win out.

Our team visited the original site at Guesselbodi where project support had discontinued in 1991. Forest management activities were no longer taking place, the reasons for which are described in a report by Kristofferson et al. (Kristofferson 1993). It is my impression that Guesselbodi's troubles are not insurmountable. Visionary leadership in the community could make it work. But as long as the same leaders that rode the forestry cooperative into the ground are still in place, the success story that was once Guesselbodi will remain a lesson of history.

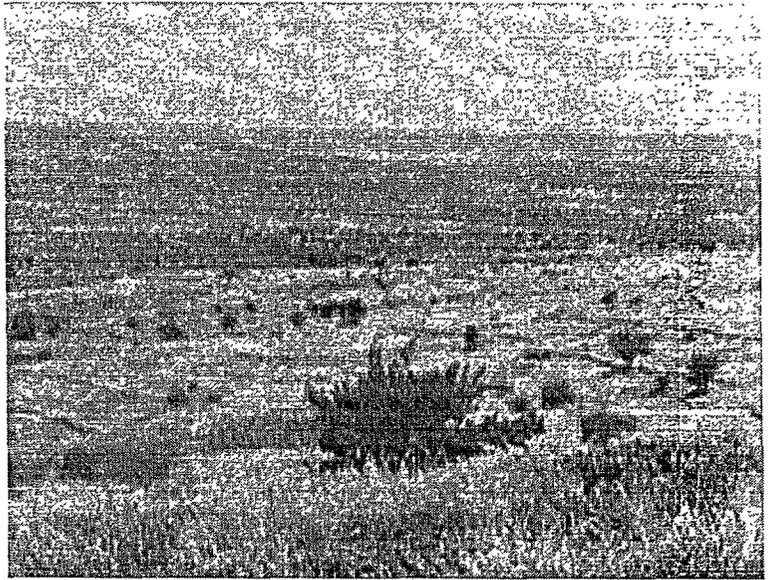
**Reasons for Widespread Adoption:** Policy reform has clearly been the leading factor in the popularization of CBNFM. Until communities bordering a natural forest could legally exploit its resources, they had very little incentive to protect or conserve those resources. The experience at Guesselbodi paved the way for communities across the nation to set up management plans that assure both conservation and sustainable productive use of the forest resource. The legal decree that made this possible (known as the "*Guesselbodi Arrêté*") appeared in early 1990, and it wasn't long afterwards that communities put the new policy to work. Most if not all existing forest management plans have been put in place with the help of donor funded projects, but conditions are now in place for well organized communities to develop and implement forest management plans with minimal outside assistance.

Further impetus for CBNFM was generated when a new fiscal policy was adopted in 1992 that gave financial incentives to wood merchants who procured wood from community managed sites. Another reform in this domain was the recent creation of a new operating account for the forest service that allows financial independence of the government administrative structure supporting CBNFM. Prior to this, all revenues from fuelwood taxes entered the general government treasury and the forestry services had to compete for scarce operating funds. If these fiscal and policy reforms can be upheld, favorable conditions for the continuation and expansion of CBNFM will be maintained.

Forest management involves setting up a structure for the collection and marketing of cut wood. At first, these structures used a cooperative format for this purpose. As the history of cooperatives in Niger has not always been positive, alternative structures were tried. The organizing of rural markets (*marché ruraux*) was made possible by special legislation in 1992. Other legislation liberalizing the creation and operation of other forms of rural organizations has been helpful to CBNFM. Communities now have the flexibility to set up a structure and system that works instead of being forced to adapt their activities to an inappropriate organizational form.

## ***WATERSHED CONSERVATION***

**History and Description:** Watershed conservation is a general term that covers NRM practices that are undertaken on public lands for the purpose of controlling runoff and erosion in the upper reaches of watersheds. Regeneration of silvo-pastoral vegetative cover is always a complementary goal and is sometimes more important than controlling erosion. A wide variety of techniques are used, from very elaborate engineered gabion structures in waterways to simple hand dug trenches on hillsides. Various forms of rock dikes are also commonly employed, especially where there is a plentiful source of stones.

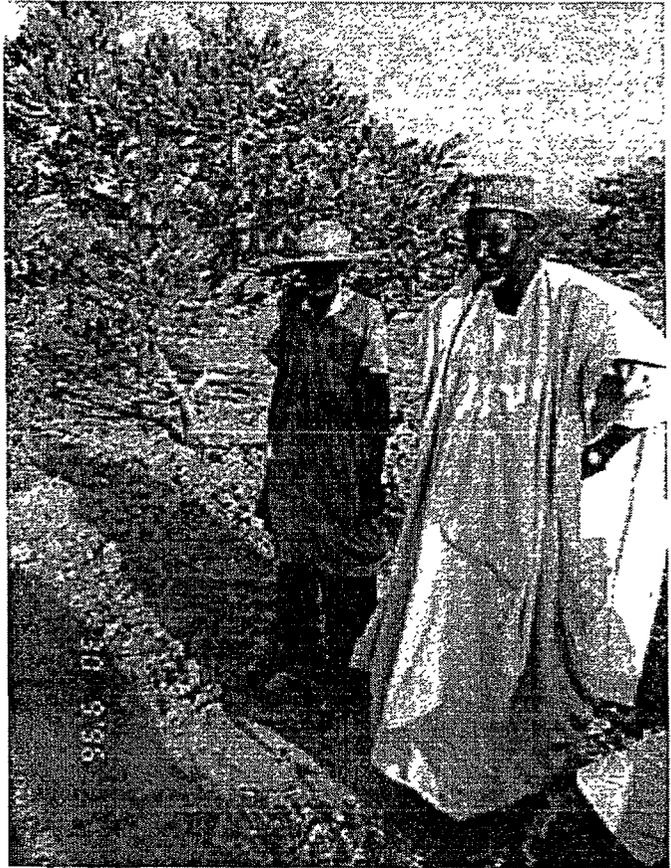


Many of the techniques used in watershed conservation are not new to Niger, but it wasn't until the mid 1980's that they were implemented on a massive scale to treat entire watersheds. Several projects in the Tahoua department are well-known for their work in this area, including Projet Keita, Projet Basse Vallée de la Tarka, and Projet du Développement Rural Tahoua (PDRT). They are responsible for treating over 30,000 hectares with various conservation measures. The impact of this work is striking. We observed vast areas covered with trees and vegetation that were virtually barren only a few years ago. Some of the formerly barren land is now even suitable for agriculture. In most cases projects have helped communities in the watershed to develop land use plans for the newly productive resource.

The formerly barren hillsides surrounding the Tarka Valley are now covered with vegetation after years of watershed conservation work

**Evidence of Widespread Adoption:** Tens of thousands of hectares of degraded land have been reclaimed, mostly in the Tahoua department, but almost all watershed conservation works have been realized under project sponsorship. Food-for-work is commonly provided as compensation for the manual labor provided. In the case of Keita, manual labor is supplemented with earth moving equipment.

There was little evidence that rural communities are implementing large scale watershed conservation activities without project sponsorship, but the development community is divided as to whether or not Niger's rural population should ever be expected to shoulder that responsibility. Some say that watershed conservation should be a subsidized public works activity much the same as construction of a road or other infrastructure. Others feel that subsidies take away from community initiative and responsibility and that duly organized and empowered rural communities are capable of undertaking much more than we think. In any case, large scale projects such as Keita have certainly proven that it is possible to reverse land degradation on a massive scale. Widespread expansion of these activities will take a lot more time and effort. Either the international donor community will have to commit to subsidizing these efforts for a long time to come, or greater emphasis must be placed on empowering communities to take on the task themselves.



Villagers at Goubeye have successfully controlled flooding and reclaimed a large section of an upstream plateau.

**Reasons for Widespread Adoption:** It would be an oversimplification to say that communities have engaged in watershed conservation solely because of food-for-work or other such incentives. At Goubeye, villagers were genuinely interested in curtailing the flooding and erosion that was damaging their millet fields. Their conservation efforts on the upstream plateau were so well done that they were given a monetary reward for their accomplishments. They turned around and invested the prize money into paying to extend the conservation works to the east.

Another factor that creates enthusiasm for watershed conservation is the hope that reclaimed land can become suitable for farming. Such land is usually attributed to those that contribute their labor, but some projects found out after the fact that the supposedly public land under reclamation was actually privately owned. Land tenure issues need to be dealt with prior to breaking ground in order to avoid such problems.

The advent of the *Gestion de Terroir Villageois* concept has also increased enthusiasm for watershed conservation. As villagers are given more authority and responsibility in the

management of the public lands in the neighborhood of their villages, they are also more likely to invest in the conservation of those lands.

### ***FACTORS CONTRIBUTING TO THE WIDESPREAD ADOPTION OF NRM PRACTICES: A GENERAL REVIEW***

Though reasons for widespread adoption have been offered for each of the four NRM practices above, a general overview of these and other factors is in order.

- **Economic benefit** : Whether it be revenues from the sale of wood or increased millet production, rural producers are clearly enthusiastic about NRM practices that give them an economic benefit. Especially appreciated are the NRM practices that increase economic benefit while reducing or spreading risk. For example, zaï and demi-lunes help to ensure reasonable yields, even in years of poor rainfall. FMNR helps to spread risk by diversifying the source of agricultural revenues.
- **Demonstrations and visits** : Another common denominator found wherever NRM practice have taken off is the influence of demonstrations and farmer-to-farmer visits. Years ago if you wanted to introduce a new NRM technology in Niger, one had to either set up an on-site demonstration and wait one or more years to see the results or travel to other countries such as Burkina Faso to show villagers the impact of improved NRM practices. Not so today. Rural producers now commonly report having observed NRM practices in Niger either during their own travels or in visits arranged as part of a training program.
- **Taining/human resources development** : Sometimes a demonstration or visit is sufficient to instill enthusiasm for a new practice, but more in depth training is often required for rural producers to master the new activity, especially if the activity requires some form of community organization. It was encouraging to see the number of training opportunities now available for all aspects of rural development, especially in the area of management of community based organizations such as cooperatives, credit unions, and other village level development institutions.
- **Rural Credit** : Our mission observed a tremendous expansion of rural credit schemes in Niger. Though direct use of credit to pay for NRM related investments is not widespread, some instances have occurred, as in Boboye and Dorobobo. In Boboye, farmers are using credit to pay for wells that will make their fields attractive to herders in the dry season so that a ready source of fertilizer can be obtained. In Dorobobo, farmers are using credit to purchase donkey carts for transporting manure and rocks. Rural credit can also be an indirect incentive for better NRM. Poverty sometimes forces people to over exploit the natural resource base. As rural credit provides more economic choices, less pressure is exerted on the land.

- **Role of the change agent** : Some of the most impressive NRM sites are linked to development workers who have a long term commitment to their work and more importantly to the people with whom they work. Whether it be El Hadj Daouda in the Majjia, Carucci in Keita or Rinaudo in Maradi, their dedication and perseverance has left an enduring mark. Daouda's people-friendly role in starting the first tree plantations in the Majjia leaves an example that all development agents can learn from. The current trend within Niger's forest service to enhance their development facilitator role and to downplay their role as the nation's forest police is a move in the right direction.
- **Replicability of practices** : NRM practices that are technically sound but simple to master have proven to spread the fastest. Zaï construction and FMNR are the best examples of this principle. Farmers can learn the required skills from other farmers without having to be trained or seek expert advice.
- **Targeting private lands** : Many NRM projects started out with activities aimed at combating desertification and degradation of public lands. In the case of the Keita project, for example, its technical approach to watershed management mandates that erosion problems at the upstream extremities of the watershed be treated prior to working on the farmlands of the valley floor. As the project began working in the flatter areas of the valley, they soon found out that what was thought to be unproductive common property was indeed private land that had been abandoned because of degradation. When the project restored its productivity, however, the owners returned to reclaim their traditional rights. Many projects have taken advantage of this enthusiasm to develop private land and have captured the interest of rural producers. In a two hamlets outside of Tahoua, villagers were asked what components of the Tahoua Vert project were most appreciated. In both cases, men affirmed that the promotion of zaï and demi-lunes for agricultural production were their favored activities because it enabled them to increase their millet production. Of the many components of the Basse Vallée de Tarka project, including some very impressive large scale land regeneration activities, the support for small-scale irrigation on private land is the most appreciated by rural producers. Projects that have targeted NRM on private lands have increased participation in and adoption rates of NRM practices.
- **Increased participation** : Almost every project officer and village groups that we interviewed talked about the evolution of the project towards a more participatory approach. Participation can mean widely different things to different people, but it was clear that the tendency is for projects to encourage participation at all stages of the development process, even to the extent of financing all or part of the activities. Where communities "owned" the development process, NRM practices were not only being adopted, but also improved and adapted to individual needs and desired outcomes.

One cautionary note needs to be made, however. In the desire to enhance participation, projects are encouraging rural populations to make their own choices as to what activities they want to see promoted in their communities. This is a valid approach, but development

workers should be aware that people will generally choose activities that they are already familiar with. Unless members of the community have become aware of innovative NRM practices through demonstrations and/or field visits, they most likely not choose to undertake them.

- **Community organizations** : Though some of the most popular NRM activities are not dependent on community organization, the existence of a functioning village development organization does enhance participation. Where NRM activities require village organization, such as CBNFM and watershed conservation, a poorly functioning organization can ruin the best laid plans. Community based organizations can not only play a significant role in promoting NRM, but can be instrumental in overall economic development of the community.
- **Targeting women's interests** : Women clearly want to be involved in NRM issues and activities, yet find it hard to do so. Obstacles such as traditional constraints to women's ownership of land, their subordinate role in rural society, and an already heavy daily workload are not easily overcome. We did observe instances where women were nevertheless engaged and were doing a good job. Programs that make it easier for women to participate in NRM activities are finding enthusiastic participation.
- **Land Tenure** : Though it was clear from our observations that people were most likely to undertake NRM practices on land over which they were sure of ownership, it did not appear that insecurity of tenure was a widespread problem. Most villagers rely on traditional systems to assure tenure and appeal to local leaders when conflicts arise.
- **Promotion by projects** : It was clear that NRM practices are being adopted most rapidly where projects are aggressively promoting and supporting NRM. It was also clear that projects that paid attention to the above contributing factors were most likely to see their activities extended beyond project boundaries and sustained after project closure. On the other hand, projects that simply funded the running costs of local technical services had minimal impact.

### ***GENERAL OBSERVATIONS AND CONCLUSIONS***

In reflecting on the progress to date of natural resources management in Niger, I would like to conclude with the following observations and suggestions for further attention:

**NRM continues to flourish:** In the late 80's a number of books and reports were published that documented some of the NRM success stories in the Sahel (for example see Shaikh et al. 1989; Rochette, 1989; and Harrison 1986). Those reports concluded that local solutions indeed exist for some of the Sahel's critical natural resource problems. They also concluded, however, that most if not all success stories were isolated and by and large confined to "project" interventions. Today, in 1996, we see continued progress on several fronts. Not only has the number of success

stories multiplied, but several successful NRM practices have now become routine operations in the forests and fields of rural Niger.

1. **ASDG II played a significant role:** An oft asked question is "Is ASDG II having any impact?" ASDG II had some very ambitious goals that it did not have the time to fully realize. Nevertheless, ASDG II raised all the right issues and brought them to the forefront of the national debate concerning NRM. Without ASDG II's emphasis on coordination of NRM planning, Niger probably would have had a half dozen conflicting national plans and programs related to conservation and management of natural resources. Without ASDG II's emphasis on the decentralization of decision-making regarding NRM, villages in Gouré arrondissement probably would have continued to let the technical services call the shots and never attained the degree of self-directed development that they now experience. ASDG II's support for reflection on the role of forest agents in the development process assured that the topic was studied and debated by foresters in field offices and national forums. ASDG II support for these and other policy reforms at the national level was having an impact in the way government was doing business. The longer term impact of ASDG II remains to be seen, but there is little doubt that ASDG II helped to shape and encourage the trend that we are now seeing: more and more people are taking responsibility for conserving and improving the natural resource base and are enjoying the benefits from doing so.
2. **The role of NRM "infrastructure" projects :** The participatory approach taken by many projects has meant a greater focus on small scale operations that can be managed and even financed by local communities. This is a sound approach and an excellent way to assure that local communities take ownership of the development process. However, there are some land degradation problems that are so vast in scale that it would take small communities many years to address. Some would argue that the best way to approach large scale land degradation problems, such as reclamation of an entire watershed, is to implement a national or regional level project to address the problem. These projects would be seen as "infrastructure" projects, much the same as building roads, communication systems, or other such programs that serve the national interest. The Keita project is a good example of this approach. The project has recovered thousands of hectares of degraded land and has provided public-works type of employment for members of the local population. Much has already been said about the pros and cons of this approach, but it seems to me the fundamental question is this: What is this approach teaching the local population about the development process? If the people involved are learning that development only happens with outside assistance, then we have a problem. Infrastructure projects may have an impressive positive impact on the land, but their impact on the attitudes and perceptions of the communities they serve cannot necessarily be assumed to also be positive.

3. **We need a NRM "tour guide":** When dining out in a large city, you can usually trust the ratings of the "Guide Michelin" or other similar restaurant guides to steer you to an establishment that has what you are looking for in terms of price, atmosphere, cuisine, and so forth. Wouldn't be nice to have the same type of guide for NRM practices? A NRM tour guide would have a listing of all project and non-project sites where successful NRM practices are active. Furthermore, it would also have qualitative rankings of their strong (and weak) points. For example, if you are looking for good examples of zaï, the guide would give you not only a list of where it is being practiced, but would also make some judgments on how well the practice is being implemented. Factors such as widespread adoption, increased yield, participation of women, etc. could all be included in the rankings. This guide would be ideal for setting up farmer-to-farmer training visits, for orienting newly appointed development workers, and assisting the cross-fertilization and exchange process between development projects. On our brief trip to the interior, we visited some familiar places, but also discovered some new ones. It would be great if there was some way that we could forward our observations to a central agency that would be in charge of publishing and updating the NRM project field guide. Given the important role that demonstrations and exchange visits have played in the extension and widespread adoption of NRM practices, a NRM tour guide could be a valuable tool in enhancing that process.

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