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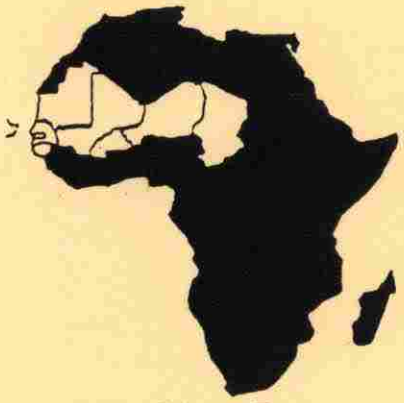

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The Environment and Sahelian realities: Potential for Improvement in Aid Policies and Project Management

Suggestions based on some twenty case studies

by

Roger Pons

November, 1992

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THE ENVIRONMENT AND SAHELIAN REALITIES: POTENTIAL FOR IMPROVEMENT IN AID POLICIES AND PROJECT MANAGEMENT

SUGGESTIONS BASED ON SOME TWENTY CASE STUDIES

by Roger Pons, Consultant, Club du Sahel, OECD

Key words: Environment; DC Techniques; Evaluation; Project management; Payment in kind; Land tenure questions; Reforestation; Stray animals; Land protection; Sustainability and extension; Training; Participation of women; Yields; Village approach / Sahel.

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SUGGESTIONS BASED ON SOME TWENTY CASE STUDIES

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In view of the poor results of many of their programs and projects, aid agencies are reviewing the basic reasoning behind these initiatives, wondering whether they are being implemented in the best ways and looking at possible improvements on current practices.

This document is an attempt to supplement the conclusions of the many studies already conducted by the major donors and by specialized organizations such as the OECD.

The scope of the document is deliberately limited to desertification control in the Sahel.

Fact-based methodology is used to analyze the case studies in this document, and in this respect the document has more to offer than many of the more general approaches that have been adopted in the past. By contrast, the result is rather fragmented. To help to palliate the shortcomings of this methodology, the twenty projects or initiatives examined in this document are presented in the form of specific data sheets (see attachments). The more general lessons that can be drawn from these different experiences are discussed in the body of the document. Three recapitulative tables are provided in appendix. It is hoped that in this way, readers will obtain a global picture from what is essentially a collection of case studies.

The study is based on serious, objective analyses of the projects in question. A few comments should nonetheless be made in this respect.

Ways of assessing projects have been discussed on many occasions, particularly by the OECD in 1989. The lessons that can be drawn from these experiences have also been analyzed at length.

The international symposium on integration and assessment of desertification control initiatives that was planned for October 14-18, 1991 in Niamey was to provide an opportunity for examining a proposed Sahelian methodology for socio-economic and environmental appraisal of desertification control (DC) and natural resource management (NRM) projects.

Earlier assessments are not always readily available, and it is thus difficult to incorporate all the valuable data these assessments generated. Although all the major aid organizations have introduced assessment procedures for past projects and programs, the results of these appraisals are not always published or accessible.

In addition, the value of such assessments varies a great deal. Some are clearer than others. Some appear very late in the day; others, it could be argued, appear too early. Some are openly critical about the projects or programs; others smack of self-satisfaction. Objectivity can suffer when assessors pander to their readers' expectations.

The importance of environmental parameters will continue to grow in preliminary analysis and project design. In 1989, according to OECD statistics, only three bilateral aid organizations (CIDA, KfW and USAID) have formal procedures to examine and classify projects in terms of potential environmental impact.

Fortunately, a number of publications and detailed studies have been produced by various organizations, and these sources overcome the lack of more direct information on desertification control projects that have been implemented in the Sahel in recent years.

Publications and studies by USAID, the Club du Sahel and the German CILSS program were the documents used for the present paper (sources are quoted in footnotes to each project data sheet).

Of a total of 84 projects examined by these three organizations, twenty were selected as a representative sample of the main aspects of the type of initiative involved. Clearly, the choice of twenty projects could be seen as arbitrary and subjective. The criteria for selection were as follows:

- representation of Sahelian countries: regrettably, projects in the smaller countries are not covered in this document as comments accompanying project assessments were not available (Chad is also in this category as a result of the difficult political situation in that country);

- representation of the major aid organizations and a few NGOs or missions;

- different types of desertification control initiatives: soil erosion, reforestation, yield and productivity, grazing and rangeland, social aspects (women, organization), land tenure problems, decentralization, etc.

- "normal", representative projects, i.e., those that were neither the resounding successes their advocates would have us believe, nor complete failures: the case studies are typical of the many types of projects currently under way or planned for the future.

Each operation is presented as objectively as possible. The experiences are classified as positive, favorable or negative to stress the basic objective of this review, which is to be able to learn from experience to improve aid policies and project implementation methods.

When observers have conflicting opinions on the same operation -- and this is the case with seven of the twenty presented here -- this paper attempts either to follow a median line between the different appraisals, or at least to qualify contradictory views.

Some authors can be carried away by their convictions that a given theory or method of development is the right solution to a given set of problems. Others are driven by the need to criticize. Overall, however, the different experts agree to a very large extent on the merits and shortcomings of these projects, and there is thus little doubt that much can be learned from these experiences.

It should be added that the assessments examined here were made in 1988 and 1989, and are thus based on projects that were implemented four or five years ago. Things must have changed since then. But systematic updating has not been possible as recent information on these projects is not available.

Finally, readers will notice that our basic concerns are reproducibility, applicability in a wide geographic area, and long-term sustainability of the techniques and practices analyzed -- for the long-term dimension is of fundamental importance in matters related to the environment.

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General lessons from specific experiences

A brief review of the many aspects of the environment in the Sahel -- particularly as regards desertification control -- is needed before practical pointers applicable on a general basis can be proposed.

The need for an integrated approach to project design and management is now widely accepted. Desertification control cannot be considered a sectoral initiative. As we will see, DC initiatives involve so many different players and techniques that they can only be implemented if a global vision exists.

This document has been produced for donors, and therefore addresses issues that concern donors directly. The lessons that other players -- such as government officials or administrations in the countries involved -- could draw from the twenty projects analyzed here are not specifically examined. The suggestion is not that these aspects are of secondary importance; they are quite simply outside the scope of the present paper.

THE TECHNIQUES used do not pose any major difficulties in terms of adaptability to the ecosystem and to the different types of desertification control objectives. Most of them are effective and there is no doubt that the most recent and most efficient techniques are coming into widespread use.

Two of the many innovations that have been introduced in the last twenty years deserve special attention, as they are likely to develop significantly in the Sahel.

The "half-moon" technique -- a semicircular excavation that helps to gather rainwater in regions where rainfall is generally deficient -- was first used by Catholic missionaries in Niger at Tchirozérine (Aïr) and Tahoua, and was adapted by Swissaid in the Ourihamiza valley (data sheet No. 11).

This simple technique can be assimilated by all local farmers and is being used increasingly in areas of Niger and some neighboring countries where annual rainfall is around 200 mm. The technique makes it possible to increase rainwater availability in the corresponding cropland by a factor of almost 2.5.

Similarly effective are "zays" (traditional water holes), which came back into use in Burkina Faso as part of the Projet Agro-Forestier (PAF) at Ouahigouya-Ranawa. A zay is a hole 20 cm in diameter and 15 cm deep, dug in the ground during the dry season at intervals of about one meter. The holes are filled with manure and then covered with earth. When the rainy season begins, the farmers sow millet or sorghum in the holes. The technique is particularly simple and offers a number of advantages: It allows for cultivation of sloping ground, can be carried out by women, involves preparatory work in the dry season, and is a productive use of manure (data sheet No. 2).

Other, more common techniques for protecting and reconstituting topsoil could also be developed: rock ridges (data sheet No. 2 and 13), semi-permeable ridges (data sheet No. 3) and lowland ridges (data sheet No. 10). Similarly, significant progress could be achieved through various methods for fixing coastal dunes and protecting basins that are threatened by sand encroachment (data sheet No. 16).

The progressive reclamation of new cropland is not generally a problem in technical terms. But land tenure issues are often involved (see below).

Wells and irrigation channels are fairly well developed in most countries where market gardening activities exist (data sheets No. 5 and 19), although improvement is possible in some cases. The same comment could be made about fruit growing activities.

In conclusion, the techniques used are relatively well understood and overall results are good. The main problem is one of maintaining the facilities or associated plantations, and protecting them from sand encroachment, damage, stray animals and excessive wood-cutting.

REFORESTATION involves a broad variety of operations ranging from reconstitution of depleted forestry reserves to rational, organized management of a classified forest (Guesselbodi, Niger: data sheet No. 15); agro-forestry as accompanying measures for more specific DC actions, which is the case of several of the projects analyzed; plantation of live hedges or windbreaks to control access to specific areas (data sheets No. 4 and 17); or plantation of trees in extensive areas of irrigated land (data sheet No. 14).

Here again, no major technical problems are involved, but disputes can arise about the ownership of the trees that are planted. Successful collective plantation schemes need high motivation on the part of the local community, and the advantages of the operation must be clear from the outset. Older farming communities with strong collective traditions are often more prepared to work on collective schemes than population groups that have recently become sedentary or that have grown accustomed to being paid for this kind of work (salaries, food for work, etc.).

In individual protection initiatives, the population groups involved are considerably more likely to maintain the schemes and fight against damage and deterioration. But here again, offering salaries or payment in kind -- a frequent practice by NGOs and other projects, sometimes creating competition between two projects in the same area -- can have negative effects on the economic autonomy of the projects and on the behavior of the people concerned. Many DC and reforestation initiatives are not sustainable quite simply because permanent assistance demotivates the people that are most concerned by them.

This assistance is undesirable when it lasts too long or is excessive, but it is not the only reason why many seemingly well thought out projects ultimately fail. However, it is one of the principle causes of the non-sustainability, in that it demotivates local population groups and is a financial burden on many projects.

STRAY ANIMALS are a major headache for all land protection projects. It must be said that many of these projects are incompatible with customary local or inter-zone practices.

Controlling access to an area either to enable natural vegetation to grow back or to encourage crop growing or tree planting inevitably involves restrictions for certain members of the population.

Prohibiting cattle from grazing in certain areas or in a forest that has traditionally been a refuge for animals during the rainy season, or is part of a transhumance route, is sure to create difficulties with herders, whether they are agro-pastoralists or semi-nomadic (data sheets No. 2, 12, 15 and 17). The solution would be to offer compensation, but sufficient resources are not always available.

Fining owners of stray animals is an efficient solution, but may be a little severe and unrealistic in view of the limited financial resources of the offenders.

CROP YIELDS and the growth rates of trees and hedges have improved appreciably in virtually every case. Many projects have brought spectacular, particularly encouraging results.

One example is the Keita integrated rural development project near Tahoua in Niger, a major undertaking financed by Italy with support from the FAO and the WFP (data sheet No. 13). This large-scale project in a vast region of degraded but potentially fertile land has produced sharp contrasts between the project area and the surrounding region.

Similarly, other operations of various types have brought significant progress in terms of crop yields, particularly with cereals. This is also true of lowland crops as well as crops on reclaimed or rehabilitated land (data sheets No. 1, 2, 7, 10, 12, 13, 14 and 17). Good results have also been achieved with trees in many cases.

The encouraging results with yields and growth rates were not achieved straight away. It should be stressed that many of the projects examined are actually remodeled versions of initiatives first launched back in the 1970s.

The operations discussed here have benefitted significantly from earlier experiences and errors. Overall, however, it cannot be denied that the results are favorable, even if only moderate increases in yield have been achieved in the most difficult cases. This is an important point in itself, for the better the project performs economically, the more motivated the population groups involved will be -- and therefore the more likely they are to spontaneously continue projects that were initially launched with donor assistance.

This point is illustrated quite clearly by several extreme cases. Two projects in particular were highly profitable: cooperative management of the national forest at Guesselbodi, near Niamey, involving sales of wood and forage (data sheet No. 15); and the cattle market built and run by the Sofara herders' cooperative in Mali, involving redistribution to cooperative members of the profits formerly generated by intermediaries in the cattle trade (data sheet No. 9).

With other projects, however, there are virtually no direct short-term gains for the people concerned. Examples of this kind of initiative include the autonomous dune fixing project at Gandiolais, Senegal (data sheet No. 16), which is necessary from the desertification control standpoint but generates no income for the local population; and the Southern Senegal forest protection project, which aims to prevent forest fires and as such is of vital importance for the region, but has no short-term material spin-offs for local individuals.

A LOCAL-LEVEL APPROACH AND THE INVOLVEMENT OF LOCAL PEOPLE are major factors in the success of any DC project. Aside from a few isolated cases, project designers and technical assistance teams have adopted a local-level approach and have endeavored to involve the local people in their initiatives. There are varying levels of commitment in these moves to involve farmers or agro-pastoralists in project design and implementation. In Burkina Faso, for example, where community life has always been highly organized, village associations have virtually taken over full responsibility for a number of significant operations.

NAAM groups, associations such as "Vive Le Paysan" at Sapone, village communities, local cooperatives and unions, inter-village associations and other forms of collective are commonplace in Burkina Faso, where rural communities have set up a plethora of organizations at the village or inter-village level.

This complex fabric of social and human relationships has often been closely associated with DC initiatives undertaken with the assistance of donors and NGOs and the support of the public services (ORD or others). This way of integrating projects offers better chances of success -- and, above all, better sustainability -- provided the village people are really involved in the action and understand the vital importance of the projects for the future of their ecosystems.

Data sheets 1, 2, 3, 4, 6, 9, 10, 13, 15 and 18 offer insight into this aspect of DC. The projects described in these data sheets are not only in Burkina Faso, but also in Mali, Mauritania, Niger and Senegal. The operation in Mauritania (data sheet No. 10) is of particular interest, and shows how local culture, customs, practices and land rights are eminently suitable for autonomous resource management.

THE PARTICIPATION OF WOMEN deserves special attention as women play a crucial role in a large number of desertification control initiatives.

First, it should be remembered that the poorest or most environmentally degraded areas of the Sahel are the most affected by the emigration of the male population. As a result, women in these areas have an increasingly important role to play in the day-to-day running of the community, inheriting some of the tasks that traditionally used to be the men's responsibility.

It is not surprising, therefore, that women are closely involved in almost all the DC projects analyzed, taking part in building rock ridges, zays, hedges, cultivating plantations, etc.

In addition, women have numerous "everyday" tasks -- gathering dead wood, watching goats and sheep, gardening -- as well as the traditional duties of fetching water, cooking, and looking after the children.

Various types of women's associations have sprung up at village or inter-village level. Like all local-level activities run by the different categories making up the population, women's associations benefit significantly from aid organizations or technical assistance teams working in the field, who are in close contact on a continuing basis with the local population (NGOs, volunteers, religious missions, Peace Corps, etc.).

In addition to Marie Monimart's irreplaceable book "Women of the Sahel: Desertification as a Way of Life" (Karthala and OECD/Club du Sahel, 1989), many of the analyses used in this document provide tangible illustrations of women's contribution to desertification control.

Further information on this point can be found in the source material used for the studies presented here. Various data sheets provide details of specific projects that illustrate women's involvement in DC: tree plantations at Namari-Goungou, Niger (data sheet No. 14); forest protection project in Casamance, Senegal (data sheet No. 18); and the dry season garden project near Kaolack, also in Senegal (data sheet No. 19).

Mention should also be made of the women's association at Sofara, Mali (data sheet No. 9), which assumed direct responsibility for producing the bricks needed to build the cooperative cattle market. In Burkina Faso, the many women's associations that exist in different parts of the country have played an executive role in numerous DC projects or programs, including reforestation and reclamation or rehabilitation of cropland.

Improved cookstoves are also worth mentioning here: Numerous attempts have been made to promote improved cookstoves -- mainly three-stone designs -- with varying levels of success. The lessons that can be drawn from the successes and failures in this area are above all linked to how practical and well adapted the cookstoves are. But the possibilities of manufacturing robust equipment locally and at affordable prices are of crucial importance in determining whether efforts to introduce these wood-saving cookstoves are effective at the local level.

<u>TRAINING, MANAGEMENT AND COMMUNICATION</u> hold the keys to acceptance, implementation and sustainability of DC initiatives in the Sahel, and many of the cases studied specifically address these vital aspects.

Experience has shown that unless appropriate measures are taken systematically in these areas, most projects run the risk of being badly received, or even rejected out of hand, by the local population. There is a very real risk that important, well designed projects that seem to have been well received by the rural population groups involved will fade into oblivion as soon as the outside partners leave -- taking with them their technical assistance, equipment, salaries and food for work -- simply because the financing needed to keep them operational is not available.

Sustainability should be considered just as important as technical success, and training and communication are extremely important ways of achieving sustainability. The Haute Vallée du Sud Mali project (data sheet No. 7) is a good example of the kind of action aid agencies should take in these areas.

SALARIES, FOOD FOR WORK AND PAYMENT IN KIND

These solutions can be ideal or disastrous, depending on the way they are put into practice. Undiscerning, excessive or permanent attribution of money of food in exchange for labor on DC projects has been heavily criticized on several occasions.

Broadly speaking, "food for work" schemes, wage labor or free distribution of plants, seeds, fertilizers, pesticides, fencing or equipment can be very useful, or even indispensable, in the initial phase of a project.

However, these solutions should never become standard practice. The most common effect of systematic hand-outs of this kind are that villagers cease to be motivated by DC initiatives. Permanent assistance can lead to social imbalance; and most projects that adopt this approach are economically unbalanced.

Illustrations of this issue can be found (i) in projects where aid is provided in a reasonable and carefully thought-out way (data sheets No. 1, 2, 3, 4, 6, 8, 12 and 19); and (ii) in other projects where it could be argued that certain aspects of aid attribution are risky or unreasonable (data sheets No. 5, 7, 11, 13, 16 and 18).

LAND TENURE QUESTIONS are probably one of the keys to the success or failure of DC initiatives in the Sahel. Land tenure issues are discussed in virtually all the analyses used in this review.

The allocation of reclaimed land is a problem except in those rare cases where the land is "free" because it is set aside for fallowing, or is of low fertility or has been abandoned for a very long time. In most cases, local customs are in conflict with official regulations; local awareness of these regulations is often low, and, above all, regulations are usually applied in a haphazard fashion.

In the poorest, least densely populated regions, rehabilitation of cropland or grazing areas does not cause too many allocation problems. Of course, the distinction must be made between allocation of common land to a village community or a cooperative, for example, and the allocation of individual plots to people in the village. Data sheets No. 8, 10, 11, 13 and 19 provide illustrations of the different situations encountered.

Reforestation or replanting shrubs generally involves questions of who owns the trees or shrubs and who has the right to use them (firewood, charcoal, posts, etc.). Here again, there is a need to make a clear distinction between woodland officially administered by the country's forestry ministry, and more ordinary plantations (windbreaks, hedges, trees, plantations on protected areas, plantation of protected trees).

In the case of forestry ministry woodland, the question must be settled formally by the village delegation responsible for forest management. The Guesselbodi forest management project, which is regrettably a relatively rare type of initiative, is a fine example of how to approach this kind of issue (data sheet No. 15). The Nigeran administration finally forced the forestry department to grant a concession covering the five villages concerned. This solution provided a formal response to the need to manage the rights and duties of all the parties concerned, and was a way of organizing equitable distribution of the not-insignificant income generated from the sale of wood and forage on the major market near Niamey.

By contrast, the severity and excessive demands of the forestry department all too often act as an obstacle to the local population, which tends to assume that any trees that are planted anywhere in the country automatically become State property. This popular belief is well rooted in the minds of villagers in many parts of the Sahel, and clearly detracts from the efficiency of reforestation initiatives, even when they are assisted by outside agencies. So long as this situation continues, we should have no illusions about the enthusiasm of the local people. Examples of this problem can be found in data sheets No. 6 and 17, and even No. 12, although in the last case the project is a good one and has been an undeniable success.

Other problems related to land tenure involve stray animals and grazing rights (data sheet No. 8). Similarly, members of village associations have been lent plots near Kaolack (Senegal) for gardening during the dry season (date sheet No. 19), and there is a risk of confrontation between these associations and the owners of the land, who use it during the rainy season.

All these examples demonstrate the extent to which land tenure issues dictate the success or failure of most of the environmental or land rehabilitation operations in the Sahel. Although aid agencies are not in a position to amend legislation in the countries concerned, they can take effective action in at least two areas. First, they should bring as much pressure as possible to bear on governments and, where applicable, help them to bridge the gap that often exists between local customs and other, more recent practices, on the one hand, and official legislation, on the other hand, which is too State-oriented in every sense of that term. Second, the donors that finance projects should also ensure that no operation that is liable to lead to land tenure problems is launched before all the delicate aspects of this issue have been carefully analyzed in the field, and solutions have been found.

<u>THE SUSTAINABILITY OF DC INITIATIVES</u> is often dependent on the motivation of local population groups, and this motivation is in turn dependent on the direct or indirect benefits that people of different levels of education and preparedness can expect from the projects. Unless the very principle of development aid is challenged, it is not surprising that farmers, agro-pastoralists and nomads living in the poorest areas will see projects as a chance for immediate profit (food aid, wage labor, equipment, fertilizers, plants, etc.). The moment of truth will only really come the day outside financing stops.

The extent of this <u>basic problem</u> is clear from the projects that have been analyzed here. Naturally, economically successful projects are in a strong position to remunerate those involved: the Guesselbodi project near Niamey, for example, is clearly profitable, and, in cases like this (however rare they may be), it is possible to pay decent wages to the villagers

and other service providers involved in the project. In other cases, however, the economic imbalance is so pronounced that there is little incentive to pursue the project on a long term basis without permanent financial support from outside.

Indeed, the very principle of permanent aid is synonymous with development policy failure. Permanent aid should only be considered in exceptional circumstances, for operations where conditions are really very bad. By contrast, every effort must be made on the other projects to maximize the involvement of the population groups that are directly concerned by protecting their ecosystems. There is no justification for extending initial aid attributions for too long -- be they in the form of food, money, equipment or other inputs. Similarly, technical staff or volunteers that have come to work for the donors that are promoting the project have no reason to stay on *ad infinitum.*

Clearly, there is no question of suddenly pulling out simply because the projects are supposed to end on a given date. The best solution would be to systematically plan for the progressive phasing out of direct aid and the progressive phasing in of responsible village communities and public services.

It is difficult to evaluate how autonomous projects actually are in relation to outside aid and technical assistance. Suffice it to say that only seven of the twenty projects analyzed could really be considered autonomous (data sheets No. 4, 8, 9, 10, 15, 17 and 19).

Eight of the twenty could be considered sustainable (data sheets No. 6, 8, 9, 10, 14, 15, 17 and 19) -- i.e., are liable to continue running alone in the long-term future.

Finally, it is useful to gauge the opportunities for REPRODUCTION OR EXTENSION OF SUCCESSFUL PROJECTS or techniques that work, for reproduction and extension will enable these successes to be applied on as large as possible a scale throughout the Sahel.

In fact, each project is tailored to a specific land or socio-ecological system. Although there are common characteristics, each integrated operation has its own specific features. It is rarely possible, therefore, to reproduce in one place a project that has been successful in another. Extension of operations, techniques or organizational approaches -- i.e., adaptation of general principles -- is generally all that can be hope for.

Eleven projects of the twenty analyzed here offer opportunities for extension work of this kind (data sheets No. 1, 4, 6, 8, 9, 10, 11, 12, 15, 17 and 19). Already several programs, some of which are examined in this paper, are benefitting from innovations or experiences generated by another program. This is the case with half-moons, for example.

It is reassuring that, despite the wide variety of players involved, and despite the enormous geographic and ecological diversity of DC projects, COMMUNICATION OF INFORMATION among the different projects is a fairly rapid and efficient process. This is mainly because project promoters (and operators) are in close contact with one another. Above all, it should be remembered that the conferences, seminars and other types of meetings that are organized are of great importance in this process. In this respect, the Ségou Encounter on local-level natural resource management in May 1989 is one of the most significant events in recent years, for it brought together all the players involved, including

delegates and representatives of village-level farmers' organizations. All the basic aspects of DC mentioned in this paper were discussed at Ségou. The title page of the final report of this conference gives a clear indication of the topics addressed: examples of sustainable development; successful natural resource management in the Sahel; women in desertification control; land tenure policy and natural resource management; water and soil conservation; outlook for improved sorghum and millet productivity; the livestock sector in the Sahelian countries; desertification control lessons and experiences; rural organizations as full-fledged partners, etc.

The Club du Sahel and the CILSS Secretariat organized this remarkable conference in Ségou and in this way provided an additional stimulus to efforts to adopt a better approach to desertification control. The two Secretariats did not stop there, and have since launched a large-scale program on natural resource management and decentralization (see extensive work on these topics coordinated by Michel Griffon (CIRAD) and James Thomson (ARD)). The decentralization aspect to integrated DC must not be overlooked, for the current state of excessive centralization that characterizes most Sahelian administrations is one of the main obstacles to the efficiency and smooth running of projects. If responsible population groups are to take desertification control into account effectively, they need real decision-making power and local-level management capacities -- and they are still a long way off achieving these objectives.

The Secretariats of the CILSS and the Club du Sahel play a vital role as catalysts and promoters in these areas. In addition, a large number of studies, reports and issue papers have addressed the questions in hand. Although it would be impossible to provide an exhaustive list of these publications here, the main reference documents used for this paper are listed below. The four primary source documents are mentioned on relevant data sheets. Three of these sources constitute crucial works:

- Desertification Control in the Sahel: Lessons and Experiences. Rochette, 1989.

- Ecology and Rural Development in Sub-Saharan Africa: Select Case Studies. OECD, Club du Sahel. August 1988. Broekhuyse and Al.

- Opportunities for Sustained Development. USAID. Asif Shaikh, october 1988. Vol. II.

The other reference documents are, in chronological order:

- Halte à la désertification au Sahel. Michel Bonfils. Karthala 1987. See chapter VII (conclusions on DC initiatives and measures), chapter VIII (case study at Tanout, Niger), and the general conclusion (vital parameters of desertification control).

- The Dynamics of Rural Organization in the Sahel, Club du Sahel-CILSS, Serge Snrech, October 1988. See Executive Summary (pp 41-46) and particularly Recommendations to Donors (pp 44 and 45).

- Comparative Study of Criteria and Procedures for Preliminary Assessment of Projects Implemented by Members of the DAC, OECD, Paris, 1989. See pp 1-2 (principles of the

DAC as adopted by donors in October 1988), pp 37-39 (donor attitudes to environmental issues), pp 51-55 (applying experience), p 65 (environmental issues), pp 75-353 (lessons from experience through country studies), p 366 (environmental aspects).

- Plan d'action forestier du Sénégal. Guidelines by Yves Pommeret, March 1990. See pp 28-29 (conclusions and recommendations).

- The Population, Agriculture and Environment Nexus in Sub-Saharan Africa, World Bank, Africa Region, May 1990.

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- Third Meeting of the Steering Committee on Natural Resource Management in the Sahel, CILSS-Club du Sahel, September 30-October 1, 1991. See references to Club de Dublin (p 13).

- Aid Agencies and the Environment: Towards Sustainable Development for the Sahel, J. Giri and G. Mandon, Club du Sahel, OECD and CILSS, November 1991. See analytical introduction (first 8 or 9 pages), main donor policies (p 16), conclusion (p 26).

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- Guidelines for Donors on Aid and the Environment, DAC, OECD, Paris, 1991.

- Report on Information Systems at the CILSS (Ecology and Environment Department) and on Natural Resource Management and DC Projects, Club du Sahel (J.E. Hecht), March 1992.

- Environment: Let the Sahelian Voice Be Heard, Editorial by J. H. Guilmette, Director, Club du Sahel, Club du Sahel Newsletter No. 11, March 1992. Note reference to an "environment charter".

Extensive comments could be made on all these many studies, articles and report, but this is not the purpose of the present document. Two of them, however, deserve particular attention.

The Plan d'Action Forestier du Sénégal (plan of action for the forests of Senegal) is regrettably out of step with reality. Several experts have criticized the authorities for having failed to apply the most elementary rules of forest conservation. Excessive cutting of trees, they claim, has been tolerated because of political pressure applied on the government and the administration.

In another, quite different type of approach, certain observers regret that the Nexus report by the World Bank (mentioned above), which is an undeniable step forward compared with earlier reports, focuses too exclusively on population growth, overlooking all the other social variables that are shaping the future of the continent -- presumably because these variables are difficult or impossible to quantify.

Although this paper is based on just twenty case studies and cannot claim to have covered all the many aspects of environmental rehabilitation and desertification control in the Sahel, a number of general comments can be made:

- Techniques are relatively well understood. Information about these techniques is available. Most methods can be assimilated by rural Sahelian population groups.

- Local population groups are usually involved in implementing and managing the projects. Many different types of local-level organizations participate effectively in these initiatives. Women play a significant role in DC and local-level natural resource management.

- Villagers are increasingly being consulted on project design. Similarly, the local-level and integrated-project approaches are making progress, avoiding the pitfalls that led earlier projects to failure.

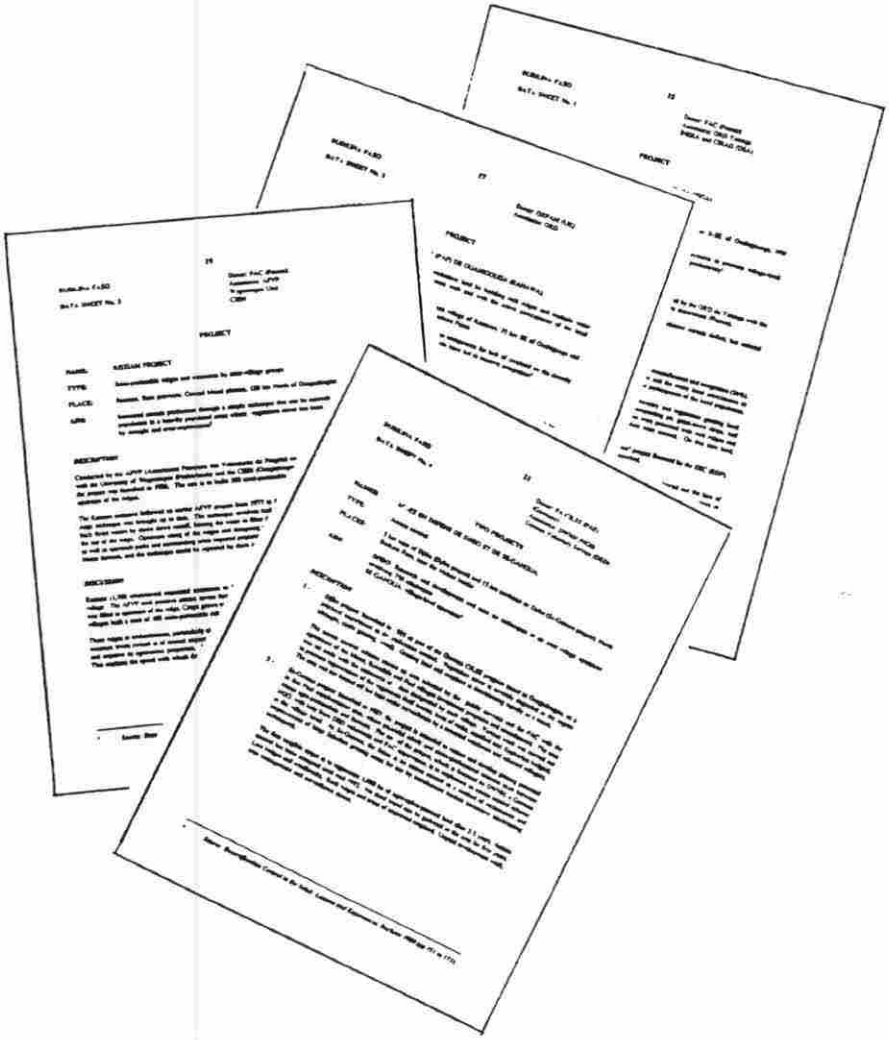
But further obstacles remain, especially if lasting protection is to be achieved.

- Stray animals. Allocation of reclaimed land, tree ownership and land tenure in general. Empowerment of local communities for natural resource management.

- Motivation of local people, which can be eroded by the permanent availability of aid or technical support. Economic imbalance on certain "difficult" projects. Recurrent costs should be examined particularly closely by aid agencies if autonomy and sustainability are to be achieved.

In short, the twenty experiences analyzed in this paper indicate that there is light at the end of the tunnel, even if many questions need to be solved before optimum management of environmental and desertification control projects is achieved in the Sahel.

DATA SHEETS



BURKINA FASO

DATA SHEET No. 1

Donor: FAC (France)
Assistance: ORD Yatenga
INERA and CIRAD (DSA)

PROJECT

NAME: RECHERCHE-DEVELOPPEMENT DU YATENGA (ZIGA)

TYPE: Erosion control and experimental land development

PLACE: Twelve villages in the Yatenga, particularly Ziga, 25 km S-SE of Ouahigounga, NW Burkina Faso

AIM: Specify diagnostic methods for agrarian and production systems to promote village-level strategies to restore land capacity and increase agricultural productivity[1]

DESCRIPTION

The project was launched in 1983 and is financed by France and implemented by the ORD du Yatenga with the assistance of the INERA (Ouagadougou) and the CIRAD's agrarian systems department (France).

The pilot village of Ziga, which is typical of the region, suffers from a chronic cereals deficit, but rational development and use of land resources could make it self-sufficient.

DISCUSSION

Insufficient rainfall and overpopulation (82 inhabitants per km^2) have led to desertification and emigration (26%). In 1986-87, intensive claims on land rights encouraged project managers and the many local associations to develop 107 ha of cropland at Bossomboré, 4 km from the village, with the participation of the local population.

Several techniques were used to limit rainwater runoff, develop agro-forestry and regenerate grazing land: contour ridges, planting of trees and shrub hedges, construction of a composting pit, grass-sown strips, half moons, individual reforestation, access control for 2 years. Thirty hectares were protected with rock ridges and vegetation, nearly 2,000 trees were planted, and more than 30 new plots were created. On this new land, improved hydrology has brought a 30% increase in crop yields.

Forage crops are to be developed in partnership with the "small ruminants" project financed by the EEC (EDF). An improved cookstoves program (three-stone cookstoves) has been launched.

Overall, the local population was cooperative, even if the increased yield only just balanced out the loss of cropland. Access control did not pose any particular problems among the Ziga villagers, but landowners in neighboring villages let their animals stray onto this land. The management committee responded by setting up a stray animal depot and fining offenders.

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1 *Source: Desertification Control in the Sahel: Lessons and Experiences. Rochette. 1989. (pp. 349 to 368).*

This pilot scheme at Bossomboré-Ziga is not reproducible, however. This research and development project was heavily assisted in terms of specialized outside staff, and had exceptional resources at its disposal. When all these project managers leave, village organizations are unlikely to be able to fill the gap.

By contrast, the practical and operational experience gained from the project could be applied elsewhere, provided the specifics of each land system are taken into account. By conducting a preliminary survey, potential land tenure problems could be pinpointed and solved beforehand.

Finally, research and development operations are interesting and instructive, but cannot be considered models for development.

BURKINA FASO

DATA SHEET No. 2

Donor: OXFAM (UK)
Assistance: ORD

PROJECT

NAME: PROJET AGRO-FORESTIER (PAF) DE OUAHIGOUGA (RANAWA).

TYPE: Protection and reclamation of productive land by building rock ridges and multiple water retention holes (zays), in association with and with the active participation of the local population.

PLACE: Yatenga province, particularly the Mossi village of Ranawan, 35 km SE of Ouahigouga and 150 km NW of Ouagadougou (NW Burkina Faso).

AIM: Land reclamation by rainwater collection to compensate for lack of cropland on the densely populated Mossi plateau, where poor harvests have led to massive emigration[2]

DESCRIPTION

The PAF has been operational in Ranawa since 1983 and is financed by Oxfam. It is being conducted by contractors working with their counterparts on the "Environnement et Tourisme" project and the ORD in Ouahigouga. In the three most recent phases of the project, the following work has been carried out: progressive development of techniques (erosion control rock ridges, zays) with the local farmers; extension of these techniques through training and follow-up; accompanying measures and farm management assistance.

Repeated crop failures (millet, groundnut) and the demise of cotton growing has forced the women to buy thread rather than spinning it themselves, and this has eroded local incomes.

DISCUSSION

Rock ridges to slow rainwater runoff and improve infiltration to increase soil productivity: The project attempted to bring farmers or groups of farmers access to a technique that they could practice themselves with local materials. In the collective field, the village association organizes the work and distributes tasks. In individual fields, heads of families are in charge of work. Rock ridges and water channels are generally well built, although quality is significantly higher in the individual fields.

The PAF regenerated the traditional practice of zays. Zays are holes 20 cm in diameter and 15 cm deep dug in the ground at one meter intervals. The holes are filled with manure and then covered with earth. When the rainy season begins, the farmers sow millet or sorghum in the holes. The technique is particularly simple and offers a number of advantages: It allows for cultivation of sloping ground, can be carried out by women, involves preparatory work in the dry season, and is a productive use of manure.

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2 *Sources: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989. (pp 221 to 238). Ecology and Rural Development in Sub-Saharan Africa: Selected Case Studies. OECD, Club du Sahel. August 1988 (pp 97 to 108).*

Other techniques were also used at Ranawa: village woodland, manure pits, three-stone improved cookstoves built with assistance from a facilitator that came specially for that purpose (little success despite the shortage of fuelwood).

Overall, the project was well received by the farmers, even if it did not generate any direct income except initial donations of equipment and temporary food stocks. The main remaining difficulties that could limit the reproducibility of the project and its sustainability at Ranawa are stray animals and, above all, restrictions linked to the current land tenure system. In addition, many of the numerous plots loaned to village people, particularly women, are still not developed.

Many local-level organizations exist in the Yatenga province. Mention should be made of the revival in two neighborhoods of Ranawa of the NAAM group approach (with support from the "Six S"), with its traditional flat organization model.

BURKINA FASO

DATA SHEET No. 3

Donor: FAC (France)
Assistance: AFVP
Wageningen Unit
CIEH

PROJECT

NAME: RISSIAM PROJECT

TYPE: Semi-permeable ridges and extension by inter-village groups

PLACE: Rissiam. Bam province. Central Mossi plateau, 120 km North of Ouagadougou

AIM: Increased cereals production through a simple technique that can be assimilated by the local population in a heavily populated areas where vegetation cover has been severely degraded by drought and over-exploitation[3]

DESCRIPTION

Conducted by the AFVP (Association Française des Volontaires du Progrès) on French financing (FAC), and with the University of Wageningen (Netherlands) and the CIEH (Ouagadougou) providing scientific back-up, the project was launched in 1986. The aim is to build 300 semi-permeable ridges and grow crops on 300 ha upstream of the ridges.

The Rissiam initiative followed an earlier AFVP project from 1977 to 1986, during which the semi-permeable ridge technique was brought up to date. The technique involves building a dry-stone wall that does not hold back flood waters by slows down runoff, forcing the water to filter through the stones. Excess water runs over the top of the ridge. Optimum siting of the ridges and designing the inclination and cross-section of each one as well as approach paths and surrounding areas required preparatory work that has been well assimilated by the Mossi farmers, and the technique could be repeated by them in the future.

DISCUSSION

Rissiam (1,700 inhabitants) requested assistance in 1980 to halt a ravine that was becoming a threat to the village. The AFVP took positive action: ravine formation was stopped by building a ridge, and then the ravine was filled in upstream of the ridge. Crops grown on the infill were highly successful. In the Rissiam area, seven villages built a total of 103 semi-permeable ridges between 1983 and 1985.

These ridges or embankments, particularly on low-lying land in the valley bottoms, reduce erosion, increase soil moisture levels (which is of crucial importance to compensate for a dry period of 2 or 3 weeks after the rains), and improve its agronomic properties. Sorghum yields have doubled or even trebled upstream of the ridges. This explains the speed with which the technique has spread in the area.

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[3] *Source: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989 (pp 239 to 260).*

The Rissiam inter-village group has thirteen member villages. Villagers pay subscriptions to cover 50% of the costs of a truck that transports the rocks (80% of subscriptions were paid up in 1985-86). Three more villages joined the group in 1986-87, 45 new ridges were built (38 ha), and 10 ridges were repaired (10 ha). Ten ridges were also built by private individuals, with no support from the Rissiam project.

Collective initiatives have not managed to sustain motivation; the farmers prefer smaller, individual projects. The good harvest in 1986 overcame the fear of famine and made the quest for money more urgent.

Ridge construction is hard work, and the project went through a difficult period when food distribution on the work sites ended, especially considering that other NGOs provide trucks and food aid free of charge. Neighboring gold mines are an additional distraction. The number of local development agencies in the region is probably excessive: 10 PPIL committees, 7 NAAM groups supported by "Six S", 2 Caritas committees, 1 Unesco committee, etc.

Overall, however, semi-permeable ridges now can be considered a tried and tested DC solution, both in technical and social terms. When local conditions are properly taken into account and the methods are well assimilated by a local population that is ready to help itself to meet its basic food requirements, the technique has been successful in the Yatenga and elsewhere in Burkina Faso as well as in Mali (AFVP project) since 1987. The Rissiam project also showed that, in rural areas of the Sahel, the quest for money becomes the No. 1 priority immediately after food requirements have been satisfied.

BURKINA FASO

DATA SHEET No. 4

Donor: PA-CILSS (PAE)
(Germany)
Assistance: DWHH (NG0)
German Voluntary Service (DED)

TWO PROJECTS

NAMES: MISES EN DEFENS DE DJIBO ET DE SE-GANOUA.

TYPE: Access control

PLACES: 5 km west of Djibo (Djibo project) and 15 km northeast de Djibo (Se-Ganoua project). North Burkina Faso, near the Malian border.

AIM: DJIBO: Research and development and tests on techniques in an inter-village operation involving 750 inhabitants
SE-GANOUA: village-level operation[4]

DESCRIPTION

1 - Djibo project: launched in 1985 as part of the German CILSS program based in Ouagadougou, as a practical experiment in desertification control. Vegetation cover is severely degraded in the region (drought, cattle grazing, wind). Grazing land and cropland is deteriorating rapidly as a result.

The access control scheme covers an area selected by the public services and the PAC with the agreement of the Mossi, Rimaïbés and Peul villages (awareness programs and consultation). The area was set aside with the assistance of elders designated by each village. Various work was carried out to promote regeneration of the vegetation (half moons, lines of rocks, scarified soil, Euphorbia hedges). The area was not fenced off but kept under surveillance by a mounted watchman and selected villagers.

2 - Se-Ganoua project: launched in 1987, the project is intended to restore and develop grazing potential in this Peul transhumance area, where potential ethnic and socio-professional tensions exist between Mossi agro-pastoralists and farmers. The aim of the project, which is financed by DWHH, a German NGO, with help from DED volunteers and PAC supervision, is to implement an access control scheme at the village level. At Se-Ganoua, the focus is on access control as a method of reclamation and improvement of large Sahelian grazing areas for use by transhumant herders (extensive stockraising techniques).

The first tangible target is to regenerate 1,000 ha of agro-sylvo-pastoral land after 2-3 years. Access control has been accepted until mid-1992. No dead wood can be gathered in the area for five years. Live hedges and windbreaks. Rock ridges and areas of improved cropland. Unpaid development work, area management and surveillance duties.

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[4] *Source: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 151 to 173).*

DISCUSSION

1 - Djibo: Access control was respected after 8-10 months, not because of self-restraint but because of the heavy fines payable on cattle found grazing in the controlled area. Conclusive results have yet to be achieved with the herbaceous cover, except on slopes with thick topsoil. Results with the tree and shrub cover, on the other hand, are encouraging. Effective access control for two years allows for sufficient regeneration for grazing to commence after 3-4 years, with viable forestry activities after five years.

But regeneration of severely degraded soils is very slow. It can be speeded up by preparatory work, needing motorized equipment when large surface areas are involved. Communities must be given guarantees to overcome the initial disadvantages of access control. At Djibo, the joint management of this inter-village access control scheme is very difficult because the most powerful community tends to exert pressure on the others.

2 - Se-Ganoua: The idea of access control came from the population itself, and, more specifically, from the two most influential members of the community, after having tried in vain to control excessive clearance, abusive wood-cutting and pressure from extra-village transhumant groups. From the outset, therefore, the local inhabitants had considerable confidence in the project, and vice versa.

Project leaders and the inhabitants of Se-Ganoua informed villagers and nearby herders that a controlled area was being set aside, and indicated where its limits were. At the same time, members of the agro-ecology project 1 (PAE 1) informed and lobbied the public services and the authorities. In June 1987, a framework agreement signed by the different parties was submitted to the prefect of Djibo. Work then began (boundary marking, surveillance, discussions on future use of the land and development of a support program by the public services and the PAE).

All these preliminaries and precautions made it possible to introduce access control without using fencing and without having to pay the local people. However, the future of the scheme is not guaranteed: Farmers eager to gain access to low-lying land, pastoralists from outside the village and professional wood-cutters are less determined than the villagers themselves to respect the rules. Disagreement and conflict are constant dangers. The authorities may be forced to divide the village into two autonomous entities so that Ganoua, which is an outlying settlement 5 km away from the village itself, can affirm its independence from Se.

To conclude, the two experiences of Djibo and Se-Ganoua are highly instructive, showing some of the positive points as well as some of the negative aspects of access control schemes, which are among the best ways of restoring the socio-ecological balance in the central and northern regions of the Sahel.

GAMBIA

DATA SHEET No. 5

Donor and Assistance:
Methodist Mission

PROJECT

NAME: ORCHARDS, NURSERIES, WELLS AND GARDENS (METHODIST MISSION)

TYPE: Encouragement of fruit and tree growing by local population groups as a means of increasing their incomes and protecting the environment

PLACE: Village near Brikama, where the Methodist Mission is based, 35 km south of Banjul (West Gambia)

AIM: Promote planting of fruit trees and other trees in a region containing approximately thirty villages around the mission by setting up gardens, tree nurseries and orchards and digging wells. Multiple sources of aid. Focus on women.[5]

DESCRIPTION

The mission has a central tree nursery at Brikama, four secondary tree nurseries in surrounding villages, and a number of other, smaller nurseries. Nurserymen and other employees are paid by the mission. The mission has set out gardens with cemented wells in 32 village and has made them available to women. The wells are donated and the fruit tree seedlings are sold at heavily subsidized prices. The villages pay one-half of the total cost of installing fencing around the gardens. The sale of fruit generates substantial additional income for the local inhabitants. The techniques used are generally traditional and the gardeners do not receive any form of training in new approaches.

DISCUSSION

The mission has generated extra income for the inhabitants of the surrounding area (sale of fruit). Environmental concerns are far from the main pivot of these initiatives, even if significant number of trees, especially fruit trees, have been planted. But this policy of promoting action through donations is worth closer examination. The project evaluator compared three types of operations implemented by charity organizations in the region:

- The Methodist Mission and Action Aid (Jattaba) adopt an approach based heavily on incentives (donations). Sustainability once the incentive schemes end is zero.

- The Church World Service adopts a totally different approach in Senegal. This organization provides technical assistance but very little financing, and encourages self-management. The villagers are aware of the benefits they can expect if they follow the technical advice available. Sustainability is relatively high because the local people are motivated by the results of their own investments, whereas the donations approach could lead to nothing (nothing risked, nothing gained).

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5 *Source: Opportunities for Sustained Development. Asif SHAIKH. USAID. Oct 1988 vol. II (pp 90 to 93).*

MALI

DATA SHEET No. 6

Donor: Netherlands
Assistance: IRRT/A
CMDT

PROJECT

NAME: LUTTE ANTI-EROSIVE (PLAE)

TYPE: Land development in a cotton-growing area

PLACE: Kaniko, 15 km SE of Koutiala. 3rd region (SE Mali)

AIM: Fight soil erosion by helping rural communities and creating favorable conditions for intensification of agriculture and increased farm output[6]

DESCRIPTION

The Projet Lutte Anti-Erosive (PLAE) is a section of the Compagnie Malienne de Développement des Textiles (CMDT). It has received research financing and assistance from IRRT/A of the Netherlands since it was launched in 1986. In its first three-year phase, this project covered two CMDT cotton-growing regions at Koutioula (center of project) and Sikasso. The project took action in ten villages in 1987 and twenty-two villages in 1988. The concrete example given here is the village of Kaniko, which has 1,200 inhabitants, 90% of whom are farmers. Overpopulation, extension of cropland and occasional problems of excess water after heavy rains are causing serious degradation of the soil and vegetation cover.

The aim of the project is to apply the findings of research and development and of practical experiments conducted by the CMDT's rural production research division (DRSPR), assisted by the Royal Institute for Tropical Regions, Amsterdam.

DISCUSSION

Techniques include rock ridges, live hedges, grass-sown strips and access control in an effort to offset the effects of erosion and control rain damage, overgrazing, excessive wood-cutting, bush fires, insufficient fallowing, etc.

All these initiatives rely on the CMDT, which is a vertically integrated company and in this respect differs from the approaches adopted by other cotton-growing countries, where two or three separate companies share the different tasks. The basic organization is the village association. The village-level approach to land development is well received. Villagers are cooperative, even if the usual problems arise here and there: ownership of trees planted, stray animals, excessive workload for maintenance, unwillingness to set aside grazing land to create protected strips of vegetation.

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6 *Sources: Ecology and Rural Development in Sub-Saharan Africa: Selected Case Studies. OECD, Club du Sahel. August 1988 (pp 129 to 142);*
Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 369 to 387).

The project has two major handicaps:

- Compared with the nearby Swiss forestry project, the PLAE merely halts erosion and exercises no real power, power to enforce the measures on a lasting basis being delegated by the Ministry of Livestock and Natural Resources to the village associations, which are liable to invest directly in natural resource management as and when funds are available. The Swiss project is in a better position as it is in a classified forestry region, unlike the cotton-growing area around Kaniko.

- Although the farmers are unanimously in favor of the DC initiatives, they will only invest if there is likely to be a noticeable effect on production levels. This is not the case at Kaniko, at least in the short and medium term (4% increase in output. Note: only 10% of total cropland is under cotton). Additional aid is therefore vital.

Project evaluators recognize the advantages that a cash crop represents for the people in the region as well as the excellent services provided by the CMDT: training, strict management, participation of local people, improvement in standards of living and technical skills, etc.). However, evaluators do not agree about the future of the region with respect to the natural resource base. One evaluator considers that economic, political and institutional problems must be solved before sustainable natural resource management can become a reality. For the other, the Kaniko experiment is a good illustration of how a village can manage its own infrastructure and prove its commitment to global land development. Cotton is replaced without disrupting the socio-ecological balance. Many other cotton companies could learn valuable lessons from the Kaniko experience.

MALI Donor: USAID

DATA SHEET No. 7

PROJECT

NAME: OPERATION HAUTE VALLEE (OHV)

TYPE: Integrated rural development

PLACE: Sud Mali: 2nd and 3rd regions. Cotton-growing and agricultural region.

AIM: Promote integrated rural development, first in the 2nd region of Mali (Phase I), and then in a broader area (Phase II), by using a wide range of techniques that can be assimilated by local farmers, with improved seed varieties. Focus on management and training.[7]

DESCRIPTION

This USAID-financed project is a large-scale undertaking in every aspect: financial ($20 million for Phase I, $11.5 million for Phase II); geographic (nearly 1,000 villages and a total of 450,000 people; duration (10 years); organization (6 main sectors subdivided into 27 rural zones and 130 smaller units, each with trainers and managers).

DISCUSSION

Many different types of action are planned in this project, including credit for village associations and farmers (fertilizers, machinery, harvests), animals for traction, roads and peripheral plantations, training for villagers, dissemination of improved cookstoves, reforestation in natural forests, bush fire control, and green belts.

Protection of natural resources is pivotal in all these actions. The basic idea is as follows: Although local population groups very rarely take spontaneous action to protect their ecosystems, they are ready to become involved in this kind of protection if they are shown the reasoning behind it and the benefits that can be gained. In this respect, the USAID project is following in the footsteps of the Catholic missions (Pères Blancs).

Training and follow-up are particularly important strands of this program. The approach is pragmatic and the methods used are tailored to the needs and capacities of the local people. Training modules, site visits and projections are organized on subjects such as soil conservation techniques (ridges, dams, plantations); preparation and use of fertilizers; pesticides; seeds; storage and preservation of harvests; and improved cookstoves. Field workers receive salaries and are trained in a specialized training center. The method involves using low-cost local resources and labor so that the ultimate benefits are as attractive as possible.

The project has successfully introduced improved sorghum seeds. Credits and income from cotton have made it possible to use fertilizers, and the surplus is used for cereals grown by the farmers. In this way, fertilizers left over from cotton growing have doubled millet yields in many regions (from 750 to 1,500 kg/ha).

In many respects, the Opération Haute Vallée is a success: pragmatism, integrated development, environmental conservation, long-term follow-up, training.

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7 *Opportunities for Sustained Development. Asif SHAIKH. USAID Oct 1988 vol II (p 4 and pp 18-19).*

MALI

DATA SHEET No. 8

Donor: UNICEF
Assistance: Vétérinaires Sans Frontières

PROJECT

NAME: HONDO BOMO KAINA

TYPE: Regeneration of bourgou beds (lowland grazing)

PLACE: Songhai village of Hondo Bomo Kaina and the Tell Emedess Tamacheq fraction on the left bank of the Niger River, at northernmost point of the interior delta, 20 km south of Timbuktu.

AIM: Regeneration of bourgou beds by growing seedings in nurseries, then planting out to stop disappearance of this species and safeguard the future of livestock activities in this crucial grazing area.[8]

DESCRIPTION

Bourgou is a grass that grows in the flood plains of the Niger River. The bourgou beds develop as the water rises, and form a complete ecosystem that provides the interior delta with enormous forage potential. Biomass production can reach 130 t/ha, which is sufficient to feed a substantial cattle population as soon as the water level falls and the bourgou beds are accessible (end-November).

These bourgou beds are seriously threatened. Because of rainfall patterns, the river is in spate for shorter periods, and water levels are lower than they used to be. Irrigated rice-growing, even inside the bourgou beds, and the development of market gardening are additional threats. For the herders, the loss of the bourgou beds means the loss of a second productive season for meat and milk.

DISCUSSION

The people involved in the Hondo Bomo Kaina project are Songhai agro-pastoralists (1,200), who have various activities (54 ha of irrigated rice; 54 ha of floating rice; market gardening; livestock activities with 200 head of cattle and 100 sheep or goats fed by bourgou beds renovated by the village); and Tamacheq herders (150), who have become partially agricultural since the loss of their herds. The Shongai population is growing and its members live fairly well through sales of rice. Life is tougher for the Tamacheq, with their 200 head of cattle, 3 ha of floating rice and virtually no market gardening, although the fraction settled around a well 5 km from the village has access to substantial land resources that would support rice.

This situation leads to serious land tenure conflicts. The two communities offer a good illustration of recent socio-economic change within the two riverside ethnic groups.

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8 *Sources: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 115 to 133). Un programme Vétérinaires sans frontières : la régénération des bourgoutières du cercle de Tombouctou. Fabrice LAINE. 1987. Lyon*

Regeneration of the bourgou beds became a vital necessity after the 1984-85 drought. Various projects were launched with the support of aid agencies, NGOs and the public services in the Timbuktu circle. Attempts were made to help local herders to adapt to current agro-climatic conditions, and to sedentarize nomads in recognized areas through food for work schemes at the same time as disseminating techniques for regenerating the bourgou beds (nurseries, planting out, surveillance, rational herd management). Plots of 0.25 ha (Hondo) and of 0.7 ha (Tell Emedess) were allocated to each person involved, who then assumes responsibility for planting out and managing the resource. At Hondo, it was decided to cut the bourgou for forage; Tell Emedess opted for direct grazing.

Three years into the project (17 villages and 20 fractions in 1987) observers concluded that the Songhai prefer an individual approach with cutting of the bourgou, while the Tamacheq prefer a collective approach with direct grazing. Maintenance and management are conducted better by the villagers than the herders. The villagers reimbursed the bourgou seedlings, while the herders reimbursed only 20%. Significant income from sales of forage has been of benefit to the people of Hondo. Both communities benefit from better fattening of the animals and increased milk production. The bourgou beds can thus be regenerated at low cost, to the benefit of the herders, and, above all, of the agro-pastoralists. Four thousand hectares could be regenerated in this way in this region of Mali. The keys to success are regular maintenance, good management and recognized rights on the reclaimed land. However, many Tamacheq herders have demonstrated a regrettable tendency to prefer hand-outs to self-help.

MALI

DATA SHEET No. 9

Donors: World Bank
Assistance: CCCE. FAC

PROJECT

NAME: SOFARA HERDERS' COOPERATIVE CATTLE MARKET

TYPE: Support for the creation of a cattle market built and managed by a cooperative of herders seeking to escape pressure and malpractice by intermediaries, traders and government employees

PLACE: Sofara, district capital on the right bank of the Bani, 70 km south of Mopti and 45 km east of Djenné.

AIM: This collectively managed cattle market project is part of larger livestock program, the Opération de Développement de l'Elevage de Mopti (ODEM), which was launched in 1985. Phase II of the program (1986-90) is financed by the World Bank, the CCCE and the FAC (France), and the government of Mali.[9]

DESCRIPTION

Sofara is an important interface between two pastoral regions: the winter grazing lands of Séno and the Dogon plateau to the east, and the flooded pastures (bourgou beds) of the interior delta to the west. It is the herds' main point of entry to the bourgou beds, generally at the end of November, and one of the major markets, where animals are sold in the Delta area and then exported.

The herders' cooperative was set up in 1983 and by 1987 had 133 members from 18 villages and Peul settlements. At the end of 1985, after visiting the market at nearby Fatoma, which was set up and is managed by the ODEM program, the Sofara cooperative decided to build the same type of cattle market there.

DISCUSSION

The market covers an area of one hectare and was built in the first half of 1986. It is surrounded by high walls and has a well, a hangar, a watchman's building, etc. It has been operational since July 15, 1986. Cooperative members, and women in particular, carried out the work and made the 100,000 mud bricks and 100,000 clay bricks needed, receiving financial assistance from the ODEM and food from the WFP. In all, the cooperative met 53% of the labor and other budgetary requirements. The market is run by a supervision and management committee, where all the parties are represented (herders, butchers, traders, brokers, administration, veterinarians). The committee acts under the authority of the cooperative executive.

Strict rules are applied at the market: Sick animals are not admitted, taxes are levied (in exchange for receipts), and no administrative agents are allowed to trade on the premises.

In the 16 months to end-1987, 13,000 of the 24,000 (55%) animals brought to market were sold for close to half a billion CFA francs.

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9 *Source: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 137 to 150).*

Operating accounts recorded net income for the cooperative of FCFA 1,600,000 in 1987.

This low-cost project (less than 10 million CFA) has thus been beneficial in several respects: It provides a guarantee that herders will find buyers and obtain a fair price for their beasts without going through abusive middlemen and greedy administrative agents; it safeguards animal health; and it generated significant revenues for the women's association (blacksmiths' wives) that made the 100,000 clay bricks. This successful collective project could be repeated in similar regions, provided advice and financial support are forthcoming.

MAURITANIA

DATA SHEET No. 10

Donor: GTZ (Germany)
Assistance: SONADER

PROJECT

NAME: PROJET DE DEVELOPPEMENT RURAL INTEGRE D'ACHRAM DIOUK (PDRI/AD).

TYPE : Modernization of embankments for lowland cropping

PLACE: Chelket Arkham basin south of Achram Diouk (2,100 km2) at the foot of the Tagant cliffs, south of the Route de l'Espoir, 500 km east-southeast of Nouakchott.

AIM: Integrated rural development (increased farm output, public hygiene system) to stop emigration and receive Maur population groups escaping difficult conditions in the Tagant plateau area[10]

DESCRIPTION

Diminishing rainfall has brought a halt to dry-season crop-growing in the Achram area. Lowland cropping is directly dependent on the quantity of water retained by dams and in the soil. Damming and infiltration techniques needed to be improved to safeguard the future of lowland cropping.

In view of this situation, efforts were made to improve cropping conditions upstream of water storage embankments. These embankments enabled former pastoralists whose herds had been decimated to settle and survive in the village of Leklewa (1,250 inhabitants) in the Cheklet Arkham from 1977-78. The PDRI/AD project is being conducted by the Sonader (Société Nationale de Développement Rural) with technical assistance and financing from GTZ (Germany).

DISCUSSION

The traditional technique used for building individual or collective embankments was improved, particularly through additional operations with mechanical equipment (bulldozers, etc.) for collective embankments with concrete outlet channels, weirs, etc. Areas under crop have been expanded significantly (more than 80 ha) and the 150 families in the area have each been allocated slightly more than half a hectare. Overall, embankment modification and extension work by the project has made it possible to grow crops on between 3,000 and 4,000 of low-lying land, depending on the year.

The three main positive results of this project are (i) increased, guaranteed sorghum production, (ii) increased cropland availability, and (iii) less year-by-year repair work.

Maur land laws and customs are unlike those of the other Sahelian countries in terms of land allocation. The land reclaimed by the collective embankments is under collective ownership, managed by the Djemaa (collective assembly of heads of families). Each family receives a plot of land selected by drawing lots each year. Individual embankments and reclaimed land are under private ownership.

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10 *Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 69 to 89).*

At Leklewa, the project has also set up a health center and a one-class school for 30 students (which is not open because there is no teacher), and created a post for an agricultural manager-facilitator. The manager-facilitator has launched an extension work program (donkey cart, hoeing, inter-season cowpea cultivation). A nursery has been set up and an improved cookstove promotion program has been launched (this would be easier with a metal cookstove than with the earth brick model proposed).

The PDRI/AD project can therefore be considered a success. Improved collective embankment techniques have had immediate effects and have helped to fix settlements in the area. The local land tenure and socio-political system helped maintain the motivation of the local population. The local people received no payment for their work; indeed, they helped to finance the project.

This type of project can be reproduced elsewhere as the techniques are inexpensive and easy to assimilate. The extension of cropland should nevertheless take local conditions into account (water reserves). Local customs and traditions (land tenure, social organization, irrigated cropping) are also particularly suitable in Maur societies.

NIGER

DATA SHEET No. 11

Donor: SWISSAID
Assistance: Catholic Mission

PROJECT

NAME: OURIHAMIZA VALLEY DEVELOPMENTS

TYPE: Half moons and fascines to compensate for poor rainfall and make cropping feasible in an area of sub-Saharan Africa

PLACE: Two village settlements (Ourihamiza and Enadoudjoun) 50 km northeast of Tahoua (Central Niger)

AIM: Reintroduce cropping activities in a desertified area where rainfed agriculture is destined to failure unless additional water is available. Provide a means of subsistence for a small group of semi-nomadic Tuaregs that have been sedentary since the droughts of 1973 and 1984.[11]

DESCRIPTION

The project is the result of an initiative taken by the Catholic Mission at Tahoua after the 1973 drought. Swissaid provided support from 1976 and set up a permanent technical assistance team in 1984.

The project is multi-sector. In particular, it involves two land protection and reclamation techniques: half moons on sloping ground, and fascines in the alluvial valley bottom.

DISCUSSION

This small agro-pastoral population has become sedentary but has nevertheless retained an attachment to the traditional way of life of the pastoralists. In addition to the construction of half moons to develop 300 ha of land in the valley, where 600 inhabitants grow millet and sorghum, three 10 ha areas of woodland have been planted with local and exotic trees and fenced off. An experimental access control plan has been launched on an 8 ha fenced-off area.

Fascines were installed in the main kori (oued), and windbreaks are due to be planted. Other achievements by the project include: seven micro-dams for watering cattle; a nursery and several gardens; four wells for market gardeners; an improved cookstove program; a shop to sell basic products; a cooperative store with meeting room and literacy center; and maintenance of 85 km of trails.

In addition to the benefits for the population group directly concerned (remuneration of 50% of the work provided in the form of food, production surpluses and reclaimed land: ½ ha (157 half moons) for each of the 600 farmers), the Ourihamiza project was one of the first applications of a technique that is liable to be repeated in other areas of this type, where annual rainfall is only 200 mm. The half moon is a semi-circle of 2 m in radius, 20-30 cm deep, built perpendicular to the slope and surrounded by a horseshoe of earth measuring 50-60 cm. Each half moon makes it possible to cultivate 6 m2 of land, which receives 2.5 times more rainwater because of this 16 m^2 receptacle.

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11 *Sources: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 34 to 52). Opportunities for Sustained Development. Asif SHAIKH. USAID. Oct 88 vol II (pp 29 to 31 et 43-44).*

This simple technique was invented by missionaries form Tchirozerine (north of Agadès) and Ourihamiza, and has already been used on many occasions in Niger and elsewhere in the Sahel.

Although the project promoters trained around fifteen managers from the village, the project faces the same difficulties as other initiatives: Everything works fine so long as the assistance team is there, but there is a real risk of laxism in maintenance work and animal surveillance duties when the project leaves.

NIGER

DATA SHEET No. 12

Donor: CARE International
Assistance: USAID
Peace Corps

PROJECT

NAME: MAGGIA VALLEY WINDBREAKS

TYPE : Tree plantations to control wind erosion

PLACE: Maggia Valley, 110 km southeast of Tahoua (Central Niger)

AIM: Soil restoration and conservation. Environmental rehabilitation by planting windbreaks and protecting banks of watercourses (koris). Production of wood and and improved cropping capacity in a former fertile valley with high population density (Haussas and some Peuls and Tuaregs).[12]

DESCRIPTION

In the early 1970s, Peace Corps Volunteers had some degree of success in environmental rehabilitation through reforestation. In 1973, CARE joined these forestry specialists, and in 1981, when more than 250 linear kilometers of trees (double rows of Neem or Acacia, 100 m apart) had been planted, USAID decided to finance 50% of the work. By 1986, more than 300 km of trees planted in the valley were acting as windbreaks (planted perpendicular to the prevailing wind). The project became well known throughout the world, and various prominent figures came to visit it.

The CARE agro-forestry project is implemented by the Forestry and Wildlife department with staffing and financial assistance. The villagers plant the young trees; seedlings are provided by CARE. Tree protection is assumed by guards paid by the project and is needed for six years. Animals are not allowed in the windbreak areas. In 1987, nearly 450 km of windbreaks had been planted, protecting a total of 3,500 ha of agricultural land in the Bouza district.

Crop yields (mainly millet) increased by 30%. Tree harvesting (pollarding every 4 years) is feasible after eight years and generates income (firewood, poles, etc.).

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12 *Sources: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 197 to 209). Ecology and Rural Development in Sub-Saharan Africa: Selected Case Studies. OECD, Club du Sahel. August 1988 (pp 83 to 94).*
Opportunities for Sustained Development. Asif SHAIKH. USAID. Oct 1988 vol II (pp 37 and 38).

DISCUSSION

Overall, this project is a major success: soil restoration, increased farm output, significant sources of wood and forage. Almost twenty years of experience have made it possible to fine-tune the windbreak operation technically and economically.

Unlike the FAO-Italy project at Keita, the local population took part in planting trees without receiving money or payment in kind.

The project is currently being repeated in Niger (Maradi department), and there are plans to repeat it in other CILSS countries. In 1985, CARE invited farmers from the 5th region of Mali to visit the Maggia Valley. When they returned to Mali, they launched tree planting operations (windbreaks) in more than 80 villages in their region.

However, a number of difficulties in the Maggia Valley should not be overlooked:

- Women were unhappy that they were no longer allowed to graze sheep and goats in the windbreak areas, where access was controlled. Gains in forage finally offset this loss of grazing land, but provisions should be made in future projects of this kind to cover the time lag and organize an effective compensation system.

- Neem is not necessarily suitable for all regions.

- The tradition whereby every tree planted collectively becomes the property of the State (forestry department) is a severe handicap to this model. Local people do not feel they have any guarantee that the trees planted in their fields actually belong to them. Unlike the Guesselbodi experience, no financial income was available to cover recurrent costs. A clear agreement between the government and the communities concerned would be extremely useful here. One wonders what will happen when CARE leaves.

NIGER

DATA SHEET No. 13

Donor: Italy - WFP
Assistance: FAO

PROJECT

NAME: PROJET DE DEVELOPPEMENT RURAL INTEGRE DE KEITA (PDRIK)

TYPE: Reclamation of degraded land, reforestation of desertified areas using ridges, bunds and trenches. Full set of socio-economic measures.

PLACE: One-half of the Keita district (2,500 km2), 100 km southeast of Tahoua; Ader Doutchi Maggia region, Keita Valley, Central Niger

AIM: Increased agricultural production in winter and dry season. Replenishment of water and soil resources to restore socio-ecological balance. Strengthening of village-level farmers' associations.[13]

DESCRIPTION

Major integrated program. Duration: 7 years (1984-91). Budget earmarked: $38 million (88% from Italy, 10% from WFP (Food for Work). A total of 60-80,000 inhabitants are concerned (Haussa farmers and Tuareg agro-pastoralists). The project relies on traditional village organizations as per government doctrine (Sociétés de développement): village chief, village development council, chief of the Samaria (youth), Association des Femmes du Niger, mutual group. Management committees with real powers (such as allocating reclaimed land) were set up in the main centers of settlement.

Techniques include: erosion control ridges and bunds, ditches planted with Prosopis and Acacia, agro-pastoral development with half moons, fascines and embankments in the koris (former riverbeds), stone filling, subsoiling with heavy machinery, nurseries and hole digging for replanting.

Widespread application of the food for work principle, with significant involvement of the local population.

DISCUSSION

This major project, which is competently and energetically run by the local project manager, has already produced spectacular results. Land has been reclaimed, reforestation is under way and the ecological balance has been restored.

A great deal of work has been accomplished by the local population, helped considerably by the availability of earth-moving machinery. Production of food, wood and forage has increased. The techniques used are well suited to the objectives sought, particularly the construction of a succession of small reservoirs and trenches starting on the high ground.

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13 *Sources: Ecology and Rural Development in Sub-Saharan Africa: Selected Case Studies. OECD, Club du Sahel. August 1988 (pp 297 to 322).*
Opportunities for Sustained Development. Asif SHAIKH. USAID. Oct 1988 vol II. (pp 31 and 47).

The local people are closely involved in the practical aspects of the project, in particular as regards the choice of degraded land to rehabilitate.

However, a number of comments or criticisms can be made:

- Results have been spectacular not only because the project has succeeded, but also because the land in question is some of the most fertile in Niger.

- The techniques can be reproduced elsewhere, but a lot of work is needed and individual initiatives would have limited results and no guarantee of success. No individual farmer has spontaneously dug trenches or built ridges in his fields. The chances of widespread reproduction of this approach are limited by high labor costs and the need for heavy earth-moving equipment.

- However good the results may be, the population is entirely dependent on the project and there is no guaranteed future.

- Allocation of reclaimed land did not pose tenure problems because the land in question was "free", and mostly abandoned.

NIGER
DATA SHEET No. 14

Donor: EDF (EEC)
Assistance: World Bank
FAC and CCCE.

PROJECT

NAME: NAMARI-GOUNGOU (1983-87)

TYPE: Tree planting in a large irrigated area

PLACE: Irrigated rice-growing area of 1,500 ha on left bank of the Niger River, 15 km west of Tillabéry and 125 km northeast of Niamey

AIM: Evaluate the effects on rice production of the large-scale introduction of trees[14]

DESCRIPTION

Land development project supervised by the Office National des Aménagements Hydro-Agricoles and managed by two cooperatives (26 producers' mutual groups).

The project was launched at the request of the cooperatives by the Projet Forestier du Niger to make use of 600-800 ha of land with a view to producing firewood and controlling evaporation and sand encroachment caused by the wind and thereby increase rice production.

Between 1983 and 1986, blocks of Eucalyptus and Acacia were planted in an unirrigated area of 102 ha; 48 linear kilometers of Eucalyptus and Prosopis were planted as windbreaks (equivalent of 15 ha of plantation); and 140,000 seedlings were grown in mini-nurseries.

DISCUSSION

The large-scale introduction of trees posed a number of technical problems: poor results in areas where sprinkler systems were used for watering; competition from unhoed weeds; indirect damage caused by rice growing and harvesting operations. The population was slow to become involved.

Overall, however, the project had positive results: Growing trees was shown not to be detrimental to rice production. The two annual rice harvests did not suffer; in fact, yields actually improved slightly.

Firewood and wood for building, fencing, etc. is a precious resource. It is difficult to gauge the effect of the windbreaks, but the signs are that this aspect of the project was also successful (shading, wind, evaporation). Plantations handled by the women in areas where they grow a variety of crops (mainly cassava) were a resounding success.

Tree survival rates (Eucalyptus, Acacia, Prosopis) were finally high, although the pre-1983 attempt to plant a belt of Eucalyptus and Prosopis around the irrigated area failed because of stray animals.

Technically speaking, this relatively simple experiment was a success, but it has limited chances of being reproduced unless other irrigated areas can count on outside financing to meet the high costs involved.

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[14] *Source: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 107 to 117).*

NIGER

DATA SHEET No. 15

Donor: USAID
Assistance: Peace Corps
CLUSA

PROJECT

NAME: COOPERATIVE MANAGEMENT OF THE GUESSELBODI NATIONAL FOREST

TYPE : Regeneration of a degraded forest of 10,000 ha, cooperative forestry management by five villages

PLACE: Guesselbodi classified forest 20 km east of Niamey

AIM: Pilot natural resource management program in a national forest that was serious degraded by poaching, lack of maintenance and stray cattle. Pilot operation by the FLUP project (Forest and Land Use Planning).[15]

DESCRIPTION

After a resource inventory had been conducted, the FLUP project launched this pilot operation in late 1980 despite reticence on the part of the Nigeran forestry department. Nearby Niamey is a guaranteed outlet for fuelwood and building materials, forage and various other agro-forestry products. Ten blocks of 1,000 ha each were identified, protected from stray cattle and kept under surveillance by Tuareg guards. Stray animals were impounded and their owners fined for the first 4-5 years of the operation.

Local tree species were planted, the undergrowth was cleared and the bases of the trees were protected. Certain villagers were hired and paid salaries.

The cooperative obtained an exclusive concession from the government to exploit and maintain the forest. This was the first time a concession of this kind had been granted, even if the forestry department still ultimately controls the operation. The villagers that were allocated sections of forest (40 ha in all) are obliged to sell the wood and forage to the cooperative, which then sells it on. Three-quarters of the profits go to a forestry account to cover recurrent forest management costs. The remaining quarter goes to the cooperative.

The cooperative was set up with assistance from the Cooperative League of the USA (CLUSA). Members of the Peace Corps assist the villagers and the forest agents.

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15 *Sources: Ecology and Rural Development in Sub-Saharan Africa: Selected Case Studies. OECD, Club du Sahel. August 1988 (pp 65 to 80).*
Opportunities for Sustained Development. Asif SHAIKH. USAID. Oct 1988, vol II (pp 36, 37 and 41 to 43).
Sahel Development Program :1986-88. Report to Congress. USAID. June 1989 (pp 23).

DISCUSSION

The Guesselbodi operation is an undeniable technical success: The forest is no longer degraded, production is good, and the ecological balance has been restored. Income more than covers expenses, and all the different players -- administration, cooperative members, hired labor -- are satisfied.

The experience could be repeated around the capital (market). The projet has published a 140-page guide called "Forest Restoration and Management" to pass on its know-how to other interested parties. The project has identified 80,000 ha of unusable brushland in units of 100 ha or more in a 10 km radius of Niamey that could be managed on the same model as Guesselbodi through cooperative agreements between groups of local inhabitants and the forestry department.

The only cloud on the horizon is that all forms of grazing in the forest are forbidden. The surrounding villages have therefore sent their herds elsewhere. Transhumant herds have been diverted. The forest no longer plays its traditional role as a wet-season grazing area. To overcome this disadvantage for the villagers, there are plans to issue grazing permits and organize controlled grazing inside the forest. Transhumant herders could be penalized in this scheme.

SENEGAL

DATA SHEET No. 16

Donor: CIDA
Assistance: Canada

PROJECT

NAME: PROJET AUTONOME DE FIXATION DES DUNES DU GANDIOLAIS (PAFDUGA).

TYPE: Coastal dune fixation. Protection of market gardening areas. Reforestation managed by women.

PLACE: The Gandiolais: coastal area of northern Senegal, south of the river estuary.

AIM: Like the nearby projects at Kayar (USAID) and Lompoul (UNSO), the Gandiolais project, which is financed by the CIDA, aims to stabilize the dunes running along the coast between Dakar and Saint Louis. The project was launched and is managed by the government with limited participation by the local people. In addition to dune fixation, which began in 1980, the project has launched various other activities since 1985 with a view to protecting the niayes (market gardening basins between the dunes) and the roads, and to demonstrate a reforestation scheme managed by women.[16]

DESCRIPTION

The Northeast alize blows incessantly, shaping this very peculiar coastal dunescape, where depressions (niayes) are increasingly used to grow vegetables, like mini-oases.

As a result of population growth (Wolofs and Peuls), land clearance for agricultural purposes, and diminishing rainfall, the dunes had started to advance. The project launched a systematic fixation operation (nguer panels or wire netting, planting of filaos, etc.). Soil conservation and reforestation agents (DCSR department) supervised by the Senegalese nature protection ministry conducted the work. A total of 1,170 ha of coastal dunes have been planted and fixed in this way (total length planted: 58 km in strips of 200 m). The niayes have also been protected with shelter bands and windbreaks: Costs were the same as for coastal dune fixation (FCFA 245,000/ha). In the central part of the Gandiolais, former indigenous species (including Prosopis and medicinal species) were reintroduced on an experimental basis by the women's associations in two Wolof villages.

DISCUSSION

Protection from sand encroachment was generally successful, with clearly observable effects.

This kind of action is never-ending, however, so continuing efforts are needed -- and costs are high. The government will have to take over from CIDA one day. An attempt to get people with direct interests in stopping the dunes to take part in the work on a voluntary basis ended in failure.

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16 *Sources: Desertification Control in the Sahel: Lessons and Experiences. Rochette 1989.(pp 175 to 196). Opportunities for Sustained Development. Asif SHAIKH-USAID. Oct 88 vol II (pp 54 to 58).*

Bringing in contractors to conduct the work without voluntary assistance from the local people has been criticized by managers of similar projects. The PARCE project at Kaffrine, for example, has complained about the new USAID policy on reforestation aid in Senegal, claiming that villagers will not be motivated to plant trees is somebody decides to pay them to do it. The same kind of criticism is sometimes made of food for work practices in DC projects.

Whatever approach is finally adopted, a minimum level of coordination between donors seems indispensable.

Finally, as regards the technical success of the project, some experts wonder what influence the development of the Senegal River could have on the hydro-geological balance of the delta area.

SENEGAL

Donor: Germany
Assistance: GTZ

DATA SHEET No. 17

PROJECT

NAME: PROJET SENEGALO-ALLEMAND DE REBOISEMENT ET D'AMENAGEMENT SYLVO-PASTORAL DE LA ZONE NORD

TYPE: Agro-sylvo-pastoral land management

PLACE: Ferlo region of northern Senegal

AIM: Long-term improvement of local resource utilization by widespread introduction of proven forest and grazing land development models that are suitable for prevailing economic, socio-political and ecological conditions in the region[17]

DESCRIPTION

Project launched in 1985. In the 1987-91 phase, agro-sylvo-pastoral land development initiatives were as follows: improved hedges; improved marketing and prices for cattle; limitation of cattle population size. Other activities planned include collective nurseries and gardens, training, research, documentation, buildings, etc.

The project is active in many villages in the vast Ferlo region. Its main achievements are as follows: 6 nurseries; 2,700 ha of reforestation around wells; 3,900 ha of village-based agro-forestry; 1,060 ha subject to access control; 80 ha of experimental plantations, and 15,400 ha of managed pasture zones.

Substantial technical assistance from GTZ staff is provided on site.

DISCUSSION

Methods were changed in 1980 in an attempt to increase the involvement of the local people. After restoring the ecological balance through access control schemes, the project started to concentrate on restoring vegetation around water points at the same time as using the areas for productive activities. Plots of controlled grazing land were subdivided and fenced off. Family units with animals were installed, with water provided on site.

Only a limited number of simple technical tasks were required: access control by installing low-cost fencing; planting Acacia senegal., live hedges, testing of agro-forestry techniques on fenced-off plots with a rotation system.

The benefits of the project include a one-third improvement in agricultural production (thanks to fencing) and renewed production of gum arabic (gum trees had disappeared due to over-exploitation).

At the village level, the problem of fences (or live hedges) is crucial to the success of the model. Grazing management is also important. Controlled grazing improves forage production and animal health. Curiously, the Peuls, who are individualistic nomads, accepted this collective, sedentary practice. Economically speaking,

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[17] *Source: Ecology and Rural Development in Sub-Saharan Africa: Selected Case Studies. OECD, Club du Sahel. August 1988 (pp 151 to 166).*

results are clearly positive. The Wolof farmers were more certain of benefitting from the model than the Peul herders, who are constantly threatened by price collapse in the cattle market and the need to sell stocks in the event of severe drought. Aside from the need to find ways of overcoming these problems (reserve fund to avoid destocking), land tenure remains a problem (uncertain ownership of land used for enclosures).

Senegal reformed its land tenure system in 1972. The Conseil Rural which represents the population groups in the project area now has the capacity to take decisions on land distribution and types of use. But this solution still seems rather formal.

The project illustrated how agro-sylvo-pastoral land development should be conducted in the Ferlo region. A number of questions remain, however: Will sedentarized Peuls accept controlled grazing as a long-term solution? If the model was extended to the whole of northern Senegal, the region would stop acting as a refuge for cattle escaping drought in Mauritania, and most Senegalese consider that impossible for the time being. Politically, historically and culturally, it would be difficult to subdivide this region into self-managed units, for the viability of those units depends on protection from stray animals from the outside. In addition, costs and aid requirements would be very high. So the project has its limits, however successful it has been. Important lessons have been learned, and there are grounds for repeating the approach elsewhere in the Sahel.

SENEGAL Donor: CANADA

DATA SHEET No. 18

PROJECT

NAME: SOUTHERN SENEGAL FOREST PROTECTION

TYPE : Prevention of forest fires

PLACE: Casamance Region, southern Senegal

AIM: Stop forest fires turning a region of dense tropical forest and increasingly extensive fallow land into fast-eroding savannah[18]

DESCRIPTION

Casamance is Senegal's woodstore. The area is extensively forested, but also has fields and fallow land, particularly in Lower Casamance. Burning fallow land is a traditional practice. The result is progressive deforestation and the loss of a natural resource that would be detrimental to the local inhabitants and dangerous in the long term.

The Canadian government started financing a project in association with Senegal in 1976. Senegal initially intended to take over in 1979, but postponed to 1985 due to lack of funds. In 1985, Senegal was still unable to finance the project, and Canada continued to provide aid, but modified the project, which now focuses on techniques that are better suited to the Senegalese context.

DISCUSSION

Initially, the Canadians planned to transfer the techniques used to fight forest fires in Canada (aircraft, heavy equipment, sophisticated detection and information systems). This plan was abandoned, however, because of excessive costs and the lack of Senegalese specialists. The modified plan is based on brigades of paid agents, volunteer committees, watch towers and radios. Twenty fire-fighting brigades have been set up, each with a specially fitted-out truck (unit cost: FCFA 30 million). Brigade members are hired for eight months of the year and paid by the project. In addition, a volunteer committee in each village helps to protect the forest. The committee received training, tools and seeds from the forestry department. Committee members also receive food aid from the WFP. Women are very active in these committees.

Local Canadian project staff based at Ziguinchor are disappointed that forestry department agents in the field are replaced so frequently. This practice hampers training and prolongs the need for expatriate instructors.

The Senegalese are very concerned about the future of the project, as they know that their government will not be able to take over financing when the Canadians finally hand over the project.

In several respects -- unsuitable initial technical solutions, need for external financing, etc. -- the project is a typical example of environmental protection initiatives in the Sahel.

However, one major positive spin-off is that the villagers who are involved in efforts to prevent or fight fires and forest degradation hopefully will have learned effective techniques and become more acutely aware of the serious threat hanging over their region.

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[18] *Source : Opportunities for Sustained Development. Asif SHAIKH. USAID Oct. 1988 (pp 64 and 65).*

SENEGAL

DATA SHEET No. 19

Donor: USAID
Assistance: AFRICARE

PROJECT

NAME: DRY SEASON GARDENS: AFRICARE

TYPE: Village-level assistance in creating gardens and wells.

PLACE: Area of 1,000 km2 comprising 15 villages near Kaolack (Central Western Senegal)

AIM: Generate additional income to population groups that have been partially assisted until now, by setting up market gardens for the dry season. Encourage development village organizations, with particular reference to women.[19]

DESCRIPTION

Project evaluation was based on three typical villages 20-30 km south of Kaolack, where normal activities are agriculture (60%), livestock (20%) and forestry (20%). The water table is 20 m below the surface. USAID mandated AFRICARE to set up and co-manage a project ultimately aimed at promoting market gardening. The concrete objective is to create a plot of 0.8 ha in each village, laid out as market gardens, with wells, reservoirs and concrete channels to grow vegetables for sale on the nearest urban markets.

DISCUSSION

AFRICARE provides assistance to local village associations. The men dig the wells, erect fences and do the heavy work. Each of the women is allocated a mini-plot that they cultivate individually. The project meets 60% of the cost of the development work. The remaining 40% is covered by the village association, of which 35% comes from advances that are paid back through the sale of vegetables.

Each village can only cultivate two types of vegetables to avoid competition between the villages on the markets. Each village association must be composed of 40 members: 25 men and 15 women.

In addition, the population is trained in the use of pesticides. Literacy training is in Wolof. Basic training in arithmetic and health care is provided. Instruction in livestock activities and animal nutrition is also available. Training in basic financial and administrative skills is provided for villagers, particularly members of the association who manage the association's bank account.

The project is of interest in that it focuses on the basic activities involved in simple, concrete and harmonious development of villages and their inhabitants. Certain experts criticize the rigidity -- or rather the directive attitudes -- of the members of AFRICARE, but this could be the price to pay for practical success in this context.

In addition, real involvement by the local people in line with their capacities has produced good results. In this project as elsewhere, success can only be achieved when the local population feels concerned.

By contrast, major land tenure problems could arise as the land used to set up these individual gardens was loaned by an owner who uses the land during the rainy season.

Finally, sales of vegetables had not begun when the project was evaluated in 1988, and it is difficult to assess how successful this aspect will be. But the villagers were enthusiastic at the prospect of any form of additional income in the dry season.

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[19] *Source: Opportunities for Sustained Development. Asif SHAIKH. USAID Oct 88 vol II (pp 73 to 75).*

TABLE No. 1

CHARACTERISTICS AND LESSONS OF THE 20 STUDIED PROJECTS

COUNTRY	PLACE OR REGION	NAME OF PROJECT	TYPE AND MAIN OBJECTIVE	SECONDARY OBJECTIVES	DONOR	ASSISTANCE	Payment in kind/cash	Scale	SUSTAINABILITY	EXTENSION POTENTIAL	Data Sheet	Page
BURKINA FASO	ZIGA (YATENGA)	Recherche-développement du YATENGA (ZIGA)	Erosion control and experimental land development	Land tenure problems	FAC (France)	ORD du Yatenga INERA et CIRAD	Only small items of equipment	Medium	Provided aid and management stays	Land tenure only (preliminary survey)	1	15
	RANAWA (YATENGA)	Projet forestier (PAF) de OUAHIGOUYA (RANAWA)	Protection and reclamation of land with rock ridges and zays (water holes)		OXFAM (UK)	ORD	Limited (equipment and food stocks)	Small	Provided land tenure and stray animal problems can be solved	Unclear	2	17
	RISSIAM (Province of BAM)	RISSIAM project	Semi-permeable ridges for increased cereals production.	Extension through inter-village group	FAC (France)	Ass. Fr. Univ. WAGENINGEN CIEH	Temporary and limited. Competition from nearby NGO	Medium	Provided nearby NGOs harmonize practices	Yes outside Burkina (Mali)	3	19
	DJIBO (North Burkina Faso)	Mise en défense de DJIBO	Access control technology (tests)	Inter-village operation	Prog. Alle. CILSS (Germany)		No	Medium	Yes: good technical and social assimilation	Possible in central and northern Sahel	4	21
	SE-GANOUA (North Burkina Faso)	Mise en défense de SE-GANOUA	Village-level approach to access control	Access control	DWHH and DED (Volont.)	Programme allemand CILSS	Very limited: food, guards	Small	Unclear: tension between farmers and pastoralists	Possible in central and northern Sahel	4	22
GAMBIA	BRIKAMA and surrounding area	Orchards, nurseries, wells and gardens (Methodist mission)	Promotion of fruit cropping to increase income	Environmental protection through tree growing	Methodist Mission		Yes (donations, subsidies, salaries, etc.)	Medium	Dependent on donations and assistance	Technically possible with modernization. Economically difficult without donations	5	23
MALI	KANIKO near KOUTINA 3rd region (SE MALI)	Lutte anti-érosive (PLAE)	Erosion control and land development in a cotton-growing region	Village-level land development approach	Netherlands	C.M.D.T. (cotton)	No	Medium	Yes: cotton-growing infrastructure	Only in similar contexts	6	24
	2nd and 3rd regions (southern Mali) cotton-growing and agricultural area	Opération Haute Vallée (OHV)	Integrated rural development	Natural resource protection	USAID	Catholic Mission	Yes	Large	Possible after initial phase with substantial aid	Unlikely except in favorable regions (cotton)	7	26
	Hondo Bomo Kaina (20 km south of Timbuktu)	HONDO BOMO KAINA and TELL EMDESS	Regeneration of bourgou beds (lowland grazing)	Settlement of herders	UNICEF	Veterinaires sans frontières	Yes at beginning (FFW)	Small	Provided maintenance assured and land rights granted	Yes in interior delta of Mali	8	27
	SOFARA (70 km) Central Mali interior delta	Sofara herders' cooperative cattle market	Creation of a market managed by a herders' cooperative	Management by cooperative	World Bank CCCE-FAC	ODEM (Technical Mission)	47% of total cost including FFW	Small	Yes	Yes in similar region provided aid available	9	29
MAURITANIA	CHEKETARKHAM basin (TAGANT) 500 km E.S.E. of Nouakchott.	Projet de développement rural intégré d'ACHRAM-DJOUK (PDRI/AD)	Integrated rural development (ridges to increase agricultural production and improve sanitation)	Receive Maurs from Tagant	GTZ (Germany)	SONADER and GTZ	Very limited (only hire of heavy machinery)	Small	Yes	Yes if traders participate commercially	10	31
NIGER	Village settlements at OURIHAMIZA and ENADOUDJOUY, 50 km NE of TAHOUA	OURIHAMIZA Valley Developments	Cropping on desertified area of sub-Saharan Africa using half-moons and fascines	Means of subsistence for sedentarized Tuareg nomads	SWISSAID	Catholic Mission at TAHOUA	Yes (FFW, 1/2 labor)	Small	Provided managers stay	Yes for the half-moon technique	11	33
	Maggia valley, 110 km SE of TAHOUA, Central Niger	Maggia Valley Windbreaks (Projet Agro-Forestier - PAF)	Restoration and conservation of topsoil by planting strips of trees	Wood and forage production	CARE Inter. and USAID	Peace Corps	No	Medium	Provided CARE assistance stays (costs)	Technically possible, impossible from land tenure and economic viewpoint	12	35
	KEITA valley (2,500 km2), 100 km SE of TAHOUA, Ader Douchchio Maggia	Projet de développement rural intégré de KEITA (PDRIK)	Restoration of water and soil resources. Land reclamation and revegetation for agricultural production (2 seasons)	Strengthening of village associations	Italy WFP	FAO	Yes (FFW and heavy machinery)	Large	Provided heavy machinery is available	Technically possible, economically difficult	13	37
	Irrigated rice-growing area 15 km west of TILLABERY, 125 km NW de Niamey	NAMARI GOUNGOU (Projet Forestier du Niger)	Plantation of trees in large irrigated rice-growing area to gauge effects on rice production	Fuelwood	EDF (EEC) WB (IDA), FAC, CCCE	ONAHA INRA Niger DNF	Water. Various investments divers	Medium	Technically feasible but high costs	Not reproducible without outside financing	14	39
	GUESSELBODI (Classified forest) 20 km east of Niamey.	Cooperative management of the GUESSELBODI national forest (pilot operation of FLUP project)	Regeneration of a degraded forest (10,000 ha) and exploitation by 5-village cooperative	Wood supply to Niamey	USAID	Peace Corps CLUSA (Cooperative)	Project costs more than covered by wood harvest	Medium	Yes: good techniques, healthy economic balance, concession granted	Yes around main centers of wood consumption	15	40
SENEGAL	Coastal area of northern Senegal: GANDIOLAIS, south of river estuary	Projet autonome de fixation des dunes du GANDIOLAIS (PADFUGA)	Fixation of coastal dunes. Protection of market gardening basins (niayes). Reforestation by women.		CIDA (Canada)	Canada	Contract work. All paid by project	Medium	Not without substantial project aid	Technically possible (cf. nearby USAID and UNSO projects)	16	42
	FERLO. (especially the north) Central and NE Senegal	Projet sénégalo-allemand de reboisement et d'aménagement sylvo-pastoral de la zone nord.	Agro-sylvo-pastoral land development, access control, hedges, grazing land	Gardens, training, building, nurseries	Germany (GTZ)	GTZ	80% of costs including labor	Large	Provided the local people accept the new management approach	Yes for this kind of ecosystem	17	44
	Casamance (South Senegal)	Southern Senegal Forest Protection	Prevention of forest fires	Fire-fighting brigades and volunteer committees	Canada	Canada, WFP Senegal	Salaries of firefighters (+ food aid from WFP)	Large	No (except for reforestation)	Certain techniques repeatable but not model	18	46
	KAOLACK area Central West Senegal	Dry season gardens: AFRICARE	Assistance to 15 villages to create gardens watered by wells for dry season market gardening	Training of villagers in village association context	USAID	AFRICARE	60% of cost of well construction only	Large	Provided land tenure problems can be solved	Yes (particularly well integrated aspect of project)	19	47

Table 2

SUCCESSFUL TECHNIQUES

TECHNIQUES / Data sheet No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Observations
Soil (half-moons, ridges, zays, fascines, wells)	X	X	X			X				X	X	X	X			X	X			Techniques well assimilated in general and produce good results, but problem of maintenance and protection from fire, animals and over-cutting
Crops, gardens, yields	X		X		X		X			X	X	X	X			X	X		X	
Reforestation: trees, fire-fighting	X			X	X		X				X	X	X	X	X	X	X	X		
Access control, hedges, fencing, grazing land	X			X		X		X				X			X		X			
Improved yields	X		X				X			X		X	X	X			X			
Land development		X				X	X			X			X				X		X	
Village approach		X	X	X		X							X					X		
Involvement of local population	X	X	X	X									X		X			X		
Food aid (FFW), salaries, fertilizers equipment, plants	X	X	X	X		X		X				X							X	
Participation of women, improved cookstoves														X				X	X	Women play a dominant role in these projects
Self-management - Cooperatives						X			X	X					X					
Allocation of reclaimed land								X		X			X						X	
Forestry rights															X					
Land tenure procedures Conflicts settled or avoided	X							X		X			X		X		X		X	
Training, management							X													
Sustainability						X		X	X	X				X	X		X		X	Often dependent on continued financial aid and/or technical assistance
Extension	X			X		X		X	X	X	X	X			X		X		X	

Table 3

SOURCES OF CRITICISM AND PROBLEMS

TECHNIQUES / Data sheet No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Observations
Soil (half-moons, ridges, zays, fascines, wells)																				
Crops, gardens, yields																				
Reforestation, trees, fire-fighting																		X		
Access control, hedges, fencing grazing land																				
Stray animals, grazing rights		X										X			X		X			
Land development																				
Village approach																				
Involvement of local population																X				
Food aid (FFW), salaries, fertilizers equipment, plants					X	X	X				X		X			X		X		
Participation of women, improved cookstoves																				
Self-management																				
Allocation of reclaimed land											X								X	
Forestry rights												X								
Land tenure procedures		X																	X	
Recurrent costs. Need for financing or outside technical assistance	X	X	X		X	X	X				X	X	X	X		X		X		
Sustainability	X	X	X	X	X						X	X	X	?		X		X		Handicapped by financial dependence and need for expatriate managers
Extension potential	X	?	X		X								X	X		?		X		
Other				X																Ethnic conflicts, administrative opposition