

The Dynamics of Sustainable Land Management and the Geo-Information in Burkina Faso

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1. Abstract

Sustainable land management can be understood as management of the land maintaining the services and quality of the environment over the time. Geo-information is a tool, to support operationalization of sustainable land management.

Burkina Faso is a drought-prone country where 60% of the population depend upon substance agriculture for their livelihood. The drought years between 1968 and 1973 exacerbated his economic equilibrium. Earlier attempts to develop rainfed agriculture and animal husbandry in the country had been frustrated by its poor soils, its characteristically erratic rainfall and the limit level of education of its population. Opportunities to develop irrigated farming also are quite limited. In this context, sustainable land management seems to be one of the solutions for the populations to improve its socio-economic situation.

2. Different Rural Development Strategies

Different rural development strategies have been implemented since the independence of the country in 1960.

2.1 The top-down «technician» approach.

The aim of this approach was to increase the production without ecological consideration.

The techniques that had some success are characterized by their simple concept. The population can manage these techniques. Also they present short term advantages. This approach gives the opportunities to the population to adopt an individual work rather than collective. The logistic problem can limit the diffusion of their techniques. In certain cases the population adopt a collective system of matériel location.

We can distinguish during this period:

- The protection of forests against the population of the villages.
- The influence of the agronomist who is convinced that the population does not know anything.
- In the other sectors, serious constraints. This first period was still influenced by. This period lasted until the beginning of the 1970s.

2.2 -The integrated rural development approach (19970-1980).

In this approach some socio-economic actions are incorporated but it was not really integrated. It was an association of new activities to sectorial projects.

But we note an improvement relative to the preceding period. Indeed, during the drought of 1968-1973, some rural organizations were created and the NGOs were installed in the country. The population needs more and more consideration. But it is in this period that the country and its cooperation partners have chosen to launch the big cooperation program like the regional development organizations of development (ORD: Organisation Regional de development). We adopted more a technician approach in which the cash crops such as cotton are developed. The dominant idea was that the major constraint is the money. The meeting of Ouagadougou with its 612 projects of more than 1.300 milliards CFA in Sahel countries is an illustration.

2.3 -The village land management approach is the last finding (1986).

It is a participatory approach aiming at local development through real integration of socio-economic activities. It combines comprehensive land use planning for agriculture, livestock and forestry based on the natural potential of the areas with voluntary implementation of these programs by the population.

The objective of the first two approaches was the quantitative increase of production without some regard for of natural resources. These approaches of development were solely based on transfer of technology. It is the reason that this strategy did not allowed the sustainable development but caused the destruction of ecosystems.

Land management approach at the village level must take into account all components of the development and integrate them.

3. The AVV Land Management Model

During the implementation of the first strategy, land management was limited to some isolated actions. The first attempts to achieve sustainable land management started with the creation of the Volta Valley Authority or AVV¹ (Autorité des Aménagements des Vallées des Volta) in 1974. The official mandate of the AVV was to study, promote, coordinate and execute (or control the execution of) the operations necessary for economic and social development of the land. The agency's goal was the optimal development of natural resources (soil, forest, pasture, water and wildlife) in the under-populated areas of the Volta Valleys and their major tributaries. Special emphasis was put on the conservation of soil resources in connection with the area's best land use.

3.1 The AVV model

3.1.1 Creation

A complex planning process in which the project conducted comprehensive topographic, hydraulic and sociological surveys was central to the preparation of AVV-planning model. On the basis of these surveys each valley was divided into five broad categories of land use (AVV 1985C: 17)

- areas suitable for dryland agriculture with high proportion of good soils suitable for settlements
- areas suitable for irrigated agriculture and dam construction
- areas suitable for intensive livestock programs
- areas most suitable for natural wildlife parks and tourism development; and forest reserves areas , including areas for commercial wood production near major population centers.

¹ The newly reorganised AVV is known as ONAT (Office National d'Aménagement des Terroirs, or National Office for Land Management). The author of this paper is working there.

3.1.2 Orientation of national AVV planning

From 1981-1983, the AVV donors and administration reorganized the agency's administrative structure and programs. Priority changed to:

- interacting harmoniously with the indigenous people
- increasing the project's integration with regional development organizations ;
- shifting the earlier emphasis on agriculture to the more balanced development of all available resources in a region ;
- collaborating with the local people and settlers to develop an infrastructure that would serve a much wider zone ;
- reducing the amount of infrastructure to be implemented by the project ;
- (6) de-emphasizing long distance
- shifting the responsibility for infrastructure and development programs to settlers groups (AVV 1981a,1981b) .

3.2 Alternative models for managing village land

A four-step village program was presented:

Step one: information and election. A series of information sessions to inform villagers of the goals and the necessity for this type of collective program precedes the selection of a « land management » committees possible for determining land allocation and dealing with outside authorities. The land management committees include representatives of the major social groups living in the village - recent immigrants, the indigenous population, and pastoralists.

Step two: delineation of the village frontiers. The right of each group -pastoralists; agriculturists, recent immigrants , and long- time residents -must be represented in the delineation of the village frontiers . These boundaries are derived on soil and topographic maps that are usually based on aerial photos. The delineation is organized by the local land use committee working in cooperation with regional authorities and neighbouring village.

Step three: The village contract. This step involves the negotiation of a signed contract between the community (represented by the land management committee) and the State. The community agrees to respect certain themes for soil and forestry conservation, improved pasturage and suppression of bush fires. In return, the state agrees to help the village with the realization of basic infrastructure and land improvements. In theory, the village contract and land survey guarantee official recognition of the villagers' rights to the land and to any future improvements that they make.

Step four: Realization of the Terms of the contract by the villagers and the relevant state agencies. A national Coordination Unit (Cellule de coordination) was created in 1986 to help ministries implement a series of pilot projects following the village land management model. The unit, which provided some limited assistance with conceptualization of the pilot projects, was attached to the Ministry of Planning.

4. The Village Land Management Model

By 1983 it was clear that top-down projects like the AVV were almost certainly doomed to failure. Without voluntary collaboration from local inhabitants, it was too

expensive to enforce either the boundaries or the proposed land use practices. But the extensive experience of the AVV model in land management influenced the themes and approach during the conception of alternative models for village land management approach. Although it is still in experimental stages in several projects in Burkina Faso, they are quite successful in introducing more sustainable land management.

5. Geo-Information

In the dynamic development of the sustainable land management, the role of geo-information became more important. Indeed, during the first step of the AVV land use model, series of aerial photos were widely used. In the village land management approach, the preliminary planning and zoning step is based on soil and topographic maps that are usually based on aerial photos. As this approach involves the population, the delineation is organized by the local land use committee, working in cooperation with regional authorities and neighbouring villages. Satellite images also are used in some projects but their use is still limited by lack of human resources and the high cost of the images.

The village map, the land use maps, the zoning and the director management schemes are very important in the village management approach. Most projects have maps of large-scale (1/10.000 - 1/25.000) based on photo interpretation. But thematic maps of small scale and topographic maps (1/200.000 - 1/50.000) are only used in a few projects.

6. References

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