# Foreign Representations and Local Realities

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# Foreign Representations and Local Realities

## Agropastoralism and Environmental Issues in the Fouta Djalon Tablelands, Republic of Guinea





*Since the colonial era, environmental degradation in Fouta Djalon has been systematically described and denounced as a direct consequence of agropastoral practices. An extremely pessimistic scenario involving extensive farming practices, population increase, environmental degradation, and emigration has gradually emerged, without solid grounding in reality. Although regularly forecasted, the catastrophe is still to come. Elaboration of this crisis scenario is based on received ideas. These ideas have warped the initial diagnosis, led to an erroneous perception of local economic and social dynamics and of their potential for evolution, and ultimately account for the sometimes fantastic character of representations and predicted evolution of environmental dynamics. This misperception of reality is one cause of the low global efficacy of rural development programs.*

***Keywords:*** *Environmental dynamics; representation; rural development; farming system; agropastoralism; Guinea.*

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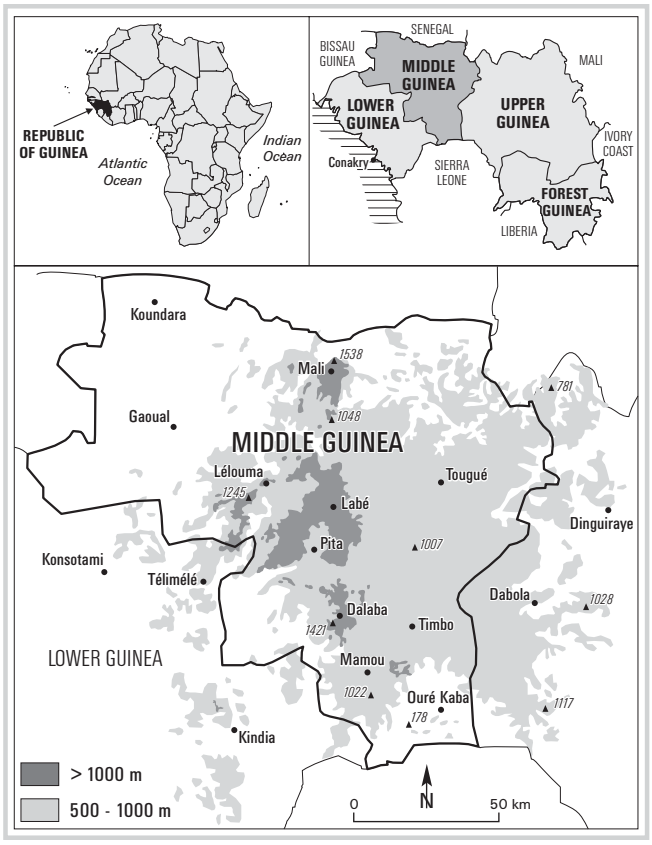



**FIGURE 1** Location of the Fouta Djalon in the "Région naturelle" of Middle Guinea, Republic of Guinea. (Map by Véronique André)

## Introduction

The theoreticians and supporters of anti-Malthusianism are a minority in the prevailing climate of neo-Malthusianism that pervades the ecological and developmental concepts and discourses, the leading ideas of which have become "common sense." Simon's theory (1985, 1989), Sen's (1981) and even Boserup's (1965, 1981) are less widely known. Yet, they demonstrate how population growth generates progress, creates riches, and fosters adaptation, thanks to which it becomes possible—and indeed compulsory—to take better account of the environment. It does not drag the world into an irreversible "vicious circle of degradation," a concept that one may be tempted to call a social construct. This question is particularly relevant in Africa (Leach and Mearns 1996), where colonial prejudice against local populations and their modes of development have strongly reinforced and perpetuated the "impending crisis" scenario.

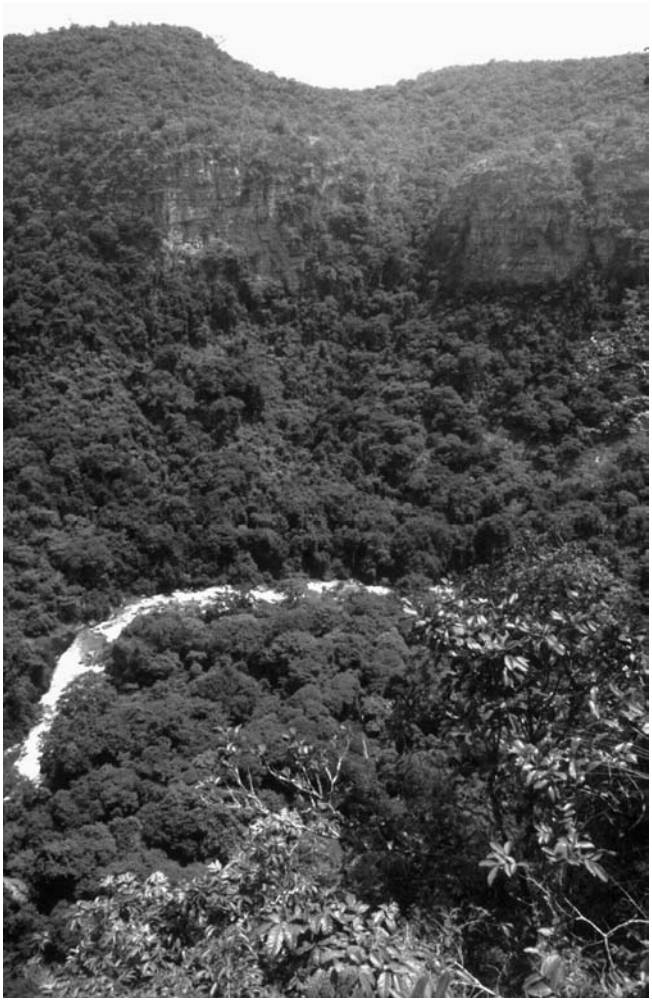
The mountainous Fouta Djalon—one of the 4 "natural regions" in the Republic of Guinea (Figure 1)—is a typical example. From the beginning, this area received particular attention from the colonial authorities. Its austere landscape, vast lateritic ferricrust plateau, the presence of shepherds and slash-and-burn agriculture, and, in some places, a relatively dense population compared with the neighboring areas, immediately gave rise to a Malthusian interpretation of the links between environment and society. Considered obvious and never challenged until now, the crisis scenario is widely accepted as valid by organizations and managers involved in rural development.

The present article will: (1) examine how the idea of a country threatened by its population was developed and perpetuated; (2) assess the reality of this threat, based on the 3 principal features of the crisis scenario: soil erosion, soil impoverishment, and deforestation; and (3) challenge the argument of overpopulation.

## The "vicious circle of degradation"

Fouta Djalon appears as a set of vast tablelands individually marked by sudden, often deep depressions. The rigid, tabular aspect of the relief is accentuated by the presence of very thick lateritic ferricrusts (*bowe*) rein-

**FIGURE 2** Vallée de la Sala in Fouta Djalon. (Photo by Véronique André)



forcing the plateau elements. Medium-high altitudes (500–1500 m) dominate the surrounding areas, making Fouta look like a veritable massif (Figure 2). From the 18th century onward, Fouta was the seat of the Peul theocratic Empire of Fuuta Jaloo, which gave it a strong cultural identity.

Farms are organized as a twofold system including outer fields (*n'guessa*) devoted to slash-and-burn extensive farming and compound fields (*tapade*) for intensive farming. Added to this is cattle breeding (*N'Dama*). The outer field system is based on a 1- to 3-year period of cultivation, mainly of *fonio* (*Digitaria exilis*)—an undemanding crop—as well as rice, followed by a 7- to 15-year fallow period. *Tapades* are marked off by hedges and characterized by the presence of a great number of planted fruit trees (mango, orange, avocado, etc) and mixed crops (corn, taro, manioc or cassava, peanuts, beans, peppers, okra, etc). The crops are fenced off because cattle is king in Fouta (Figure 3).

The specter of the catastrophe was raised in the early 20th century (Nicolas 1914, in Diallo 1989). The basic premise—a mixture of Malthusian concepts and the then prevailing colonial prejudice against the incompetence and thoughtlessness of local populations—was never questioned: "Undoubtedly, bushfires currently bear most of the responsibility. Excessive grazing does not allow vegetation to renew itself, and overpopulation exacerbates all these destructive factors whose virulence becomes uncontrollable" (Pouquet 1956). "Whenever a tree burns in Fouta Djalon, the rate of carbon dioxide increases in the atmosphere and Timbuktu is bound to have run out of water by the end of the dry season" (MARA–EU 1995). It is difficult to regard such assertions seriously. Yet, such views can be explained by the fact that the defense of this common property justifies numerous and costly external interventions. Anxiety about the future of the environment in Fouta Djalon is becoming a source of revenue for Guinean administrations and their officers. The crisis, regularly predicted for a century but never actually witnessed, and the regular failure of the projects intended to prevent it, raise questions about its very existence.

## A threatened country?

### Eroded soils or inherited soils?

Consistently associated with observations about the poverty of the soil, which was blamed on farming practices, are descriptions of land subjected to catastrophic erosion. In the 1920s, a simple pattern of thought was already in place and the culprits were "known": shepherds had obviously burned down the trees that once grew in the region. Thus deprived of their "protective" forest cover and colonized by increasingly scant pyrophilous savannah the *bowe* were exposed to rain runoff, which led to soil erosion. However, an analysis of studies published on the subject leads to the surprising discovery that these studies are not based on any precise research. It was not until the 1990s that research was carried out on a few experimental plots. Although the rate of soil erosion was rather low, at 0.3–0.4 mm per year, it was nevertheless termed "dramatic" (FAO 1994).

The main problem is the validity of such measurements (Rossi 1998). An experimental plot, physically isolated from its environment, creates its own hydrosedimentary dynamics. It is impossible to reproduce the complex interactions between different types of soil use and agricultural practices on the slopes. The measurements taken on the plots over a few years are useful for determining the principles governing rain runoff and its effects under specific conditions of rainfall intensity and volume, slope, soil, mode of cultivation, and types

of crops grown. Extrapolating them to an entire river basin and to long periods of time represents a transfer of scale and complexity that makes the results meaningless.

Meanwhile, a study of a complex morphotectonic, morphopedologic, and paleoclimatic evolution (Rossi 1998; André 2002) shows that the hills overlooking the *bowe* are resistant, inherited reliefs topped by an extremely hard and thick (sometimes more than 8 m thick) ferralitic ferricrust dating from the tertiary era. The foot of the typical *bowal* consists of a system of glacis slopes created by erosion, with outcrops of ferruginized sandstone, partly hidden under decimetric sandy or silt-laden sandstone colluviums. On the basis of what we know about morphoclimatic evolution in this part of Western Africa (Michel 1973), we can assume that the main phase of this crusting process took place during the ancient Quaternary, the thin colluviums representing the sedimentary heritage of the quaternary morphoclimatic events. Morphologically speaking, it is therefore impossible that there were once any real soils on these erosion glacis. This environment, of great edaphic mediocrity, is what the Peul cattle breeders found 400 years ago when they settled in these vast uninhabited undulated crusted expanses, whose essential morphopedologic features had already been fixed for at least several hundred thousand years.

Morphological traces of the so-called catastrophic erosion taking place in the region today are hard to find. No significant colluvial accumulation is found at the junction of hillsides and glacis. No transit colluviums and very few signs of rain runoff can be observed on the crusted glacis slopes, mainly because these crusts are extremely porous. What is certainly more important is the fact that the rivers have a low capacity for debris evacuation, owing to their longitudinal profile characterized by a series of reaches and gently sloping mill courses, interrupted by rapids and waterfalls, and yet their waters are clear. If there is any erosion at all, it can only be responsible for a redistribution of the finer elements along the slopes down to the depressions. Finally, when asked what problems they encounter, peasants never mention erosion. In some cases they even say that they foster it: they arrange the lower part of the slopes so as to facilitate water penetration and decanting of the particles in transit, thus trapping and accumulating the mineral and organic elements carried off by rain higher up to improve the fertility of the detritic soils. Thus, the very few methodologically questionable quantitative studies (FAO 1994), morphological observation (Rossi 1998; André 2002), and the peasants' own perceptions do not confirm the idea that erosion is real and threatens the agropastoral farming system.

### Impoverished soils or poor soils?

The extreme soil poverty of the central tablelands (*dantari* or *hollandé* type) is systematically cited as a direct consequence of farming habits (Sudres 1947). The *dantari*, of an ochre or beige color, laden with sand and silt and heavily leached, is found on gentle slopes of siliceous sandstone. This ferralitic soil is extremely acidic and permeable, chemically poor, with a fragile structure due to its lack of organic components. Most often associated with *dantari*, *hollandé* is found in shallow depressions. It is an acid colluvial, silt-laden or silt- and clay-laden soil, poorly structured and temporarily hydromorphic. The low potential of these soils is due to the poverty of the parent rock, which consists mainly of siliceous sandstone, more or less recrystallized. The scant plant regrowth (Gramineae and Rubiaceae) during fallow periods can be explained by the soils' poor chemical quality and sensitivity to leaching due to their lack of depth, lack of bases, and permeability. This feature also partly explains the pre-

**FIGURE 3** Agropastoral farming system in the Fouta Djalon. (Sketch by Véronique André)

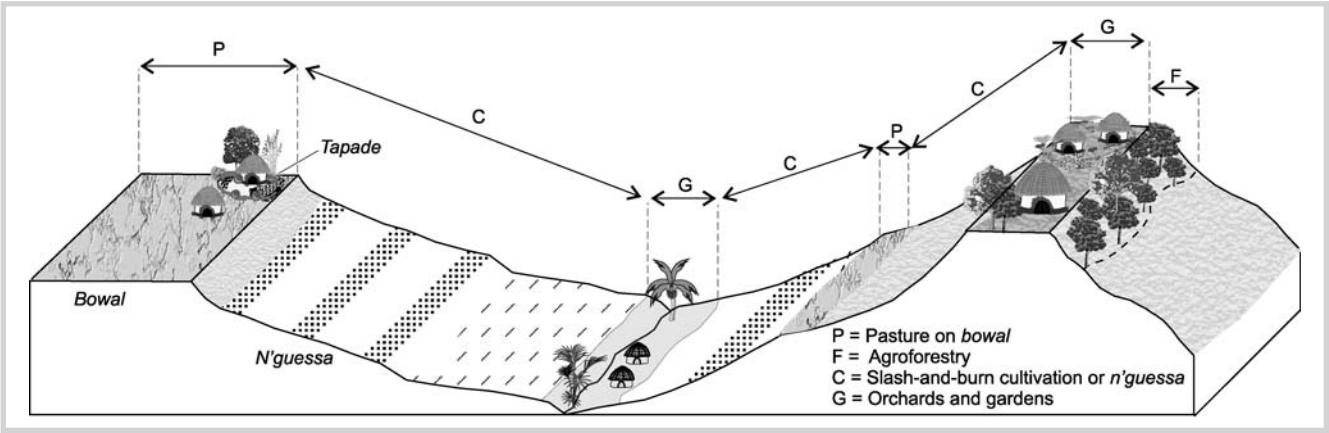


**FIGURE 4** A Peul village with its afforested *tapade*s during the rainy season. (Photo by Véronique André)

dominant growth of undemanding *fonio*, blamed by many for soil exhaustion. In view of available soil resources, it seems fair to assume, though, that farmers grow the only possible crop on these soils (André 2002; Pestaña 2003).

If anything symbolizes the traditional Peul farming system, it is the *tapades*, verdant islets studding the bleak high plains with green, where trees are virtually nonexistent. The *tapade* includes not only the compound plots but also the fence that encloses the whole unit. This fence—usually made of a quickset or mixed hedge (wooden fence covered with plants)—delimits a garden-orchard devoted to intensive farming. Soils, regardless of their very poor original potential, are heavily enriched and their remarkable fertility is carefully maintained by using the family's organic waste: ashes from the hearth and animal and human manure. Thus, thanks to this patient and monotonous fertilization work, the poorest *dantari* soils have been turned into real "anthroposoils," capable of high yields—in fact, the most productive soils in the whole farming system.

## Deforestation: still on the agenda?

The vast bare expanses of *bowe* are traditionally blamed on ancient and intense deforestation. The Baga people, Dialonkés farmers, and Peul shepherds are said to have destroyed the forest by fire (Hasson 1988). However, there are no historical descriptions and no data that testify to the presence of forest cover, and we have demonstrated (Rossi 1998, 2000; André 2002) a different evolution of the landscape: the *bowe* already existed, in their current state, when Peul shepherds settled in Fouta in the 17th century. It seems highly probable that the notion of "galloping" deforestation was born of the fact that fire was used in slash-and-burn agriculture as well as in pasture maintenance.

In Fouta, as in Forested Guinea (Leach and Mearns 1996), forests are globally stable in terms of surface area, which means that one cannot clearly establish a continuous process of deforestation. This was demonstrated by a comparative study of aerial photographs taken in 1959 and 1986 (MARA-EU 1995). This does not mean that forest cover is not locally mobile, depending on farmers' strategies. Hydropedologic factors do exert major control of space, yet the forest is not exclusively conditioned by physical features. Its distribution and dynamics are also the result of the history of the agro-ecological management of space. Preserving and replanting forest islets, creating and maintaining them around the villages (Figure 4), and clearing them are all parts of a reasoned strategy that also takes into account fires and the use of fallow land during the process of reforestation. This mobility, which is continuously adapted to agroecological requirements, has been erroneously interpreted as proof of deforestation. Finally, if Peul shepherds do have a reputation for devouring forest areas, they are also remarkably skilled in the creation of hedges and orchards. For vegetal fences, peasants usually use the live stakes supplied by their gardens, which are of great botanical variety. Lauga-Sallenave and Sibelet (1998) have recorded over 20 different species that play a major part in daily rural life. Yet, the prevailing idea is that fences consume a great deal of wood and represent a serious threat for the environment.

### An overpopulated region?

Demographic pressure in Fouta Djalon is one of the major arguments in the crisis scenario. It is based on reputedly high population densities. Basically, a meridian-oriented demographic ridge corresponding to the central tablelands can be distinguished, where population density often exceeds 50 inhabitants/km$^2$ and is sometimes as high as 100 inhabitants/km$^2$ (Figure 5). In fact, except in the central tablelands, population densities are much lower, which accounts for the unexpectedly mediocre average regional figure of 22.5 inhabitants/km$^2$. But for the OAU (1984), this is "a strong population pressure that has triggered off the process of environmental degradation." All the more so because the high densities observed in the central tablelands are by no means proof that the demographic pressure is "excessive" or that a sort of "carrying capacity," seen as an absolute value, has been exceeded. In fact, this could only be interpreted within the context of an interactive dynamic between a given biophysical environment and its use within a given social and technical context. The nature of the agricultural production system in Fouta, based on areas of highly intensive farming, gives the population densities, whether gross or net, a totally different meaning.

It is true that rural exodus is worse in Fouta Djalon than in other regions of Guinea. Men have a stronger tendency to emigrate temporarily or definitely. In the subprefecture of Timbi-Madina, 48% of the husbands are absent and 79% of the young have left (Beck 1990). Most observers have interpreted this as the last stage of a "vicious circle": "once the fallow period has been reduced and the soil exhausted, the only thing left to do is to leave" (Vieillard 1940). Emigration is more often the consequence of traditional strategies of multiple activities than the consequence of a presumed shortening of the fallow period.

Let us compare Vogel's recent study (1990) with an older study (Richard-Mollard 1944): in the Timbi plains, although the population nearly trebled over a period of almost 50 years, the shortening of the fallow period cannot be established. In many villages, the fallow period remained constant (4–5 years) between 1955 (Mission Démographique de Guinée 1955) and 1998 (unpublished data). Farmers claim to have reduced the surface of the outer fields where slash-and-burn agriculture is practiced to refocus on the *tapades* and lower areas, where the return on work investment is much higher. The elders even say that the fallow period has grown longer (personal communication 1997). The fields used to be left unseeded for 7–9 years, whereas today the farmers claim that they let them lie fallow for 10–15 years. In their eyes, fertility has never decreased; the real problem is lack of manpower.

This means that the reduction of the fallow period is by no means systematic, even in those areas where population density is reputed to be high. In Fouta Djalon, land shortage is far from being a widespread problem; where it does exist, it is more a matter of social inequality (between master and captive, especially) than of demography. In fact, the mechanistic process in which demographic pressure is held responsible for the lack of arable land and the shortening of the fallow period has not taken place because farmers have modified their strategies and because the rural systems they operate have undergone very rapid structural changes.

## Environmental projects: theory versus practice

One of the key ideas common to all foreign interventions since the mid-1980s has been to let peasants "become aware" of the "tragic consequences" of their habits with respect to their resources (FAO 1994). This is probably enough to explain the impressive rate of failure of such projects. The farmers felt no concern for the fight against erosion, reforestation, or western environmental education. For donors and operators, Fouta Djalon thus became a synonym of passiveness and peasants' resistance to "change and modernity." They concluded that intensified action was urgently needed

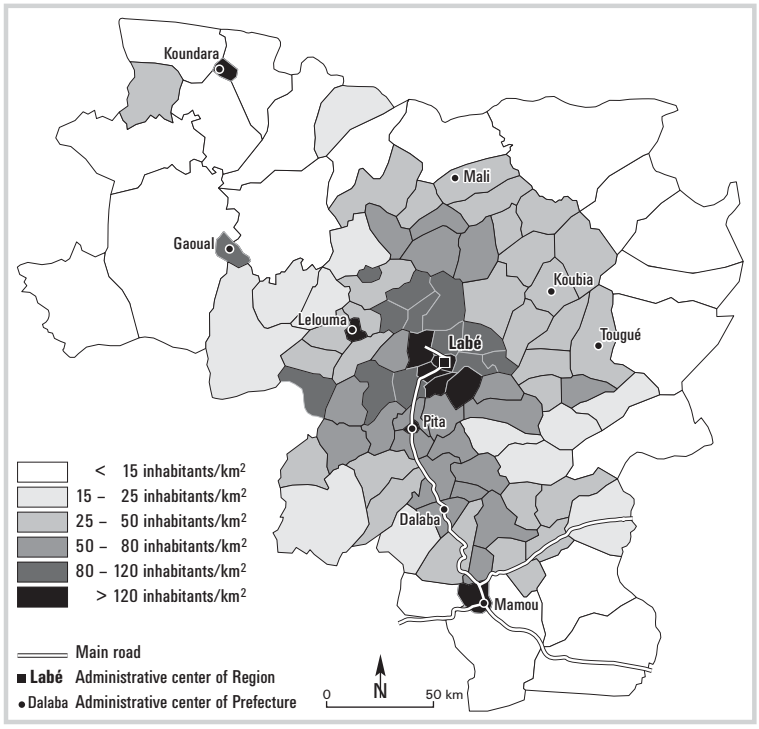



**FIGURE 5** Population density in Fouta Djalon. (Map by Véronique André; source: MPCI 1989)

**FIGURE 6** A *bowal* during the dry season. Recent scientific analysis of the morphopedological features of these traditional grazing areas shows that little erosion has occurred over several hundred thousand years, contrary to widespread assumption in the development community. (Photo by Véronique André)

(André and Pestaña 1998). They never once considered that the peasants had an excellent knowledge of their environment and may have excellent reasons for not devoting time or labor—both of which are rare and precious—to something they considered neither a realistic view of their problems nor a priority. Leach and Fairhead (2000) report a similar situation in the area of Kissidougou, in the North of Guinea.

It appears that the mechanistic construction of the "crisis scenario" and its regular updating over the last 100 years are open to challenge. Its elements—deforestation, soil impoverishment, reduction of the fallow period, and overpopulation—appear fragile and belong more to the history of ideas than to scientific reality (Figure 6). Portrayal of a devastated and still threatened land obviously continues to ignore farmers' capacities for technical and spatial innovation and their ability to develop their own strategies. One may wonder whether these views have survived or are blossoming anew some 40 years after decolonization.

The first reason is probably that the spin-offs of financial support have become necessary, and for the poorest, indispensable to the working of the state apparatus. The second reason is that development organizations are fighting for a lucrative market. More or less consciously, they will lobby to defend their own interests by defending the received idea that shapes the object of their activities or at least by avoiding asking themselves whether this idea is really pertinent. If they did, profound questions would arise about the supposed efficacy of actions taken and their very legitimacy, as well as about the purpose and existence of the organization itself. This allows one to understand the inertia effect revealed by the persistence of such beliefs and "crisis scenarios," whose foundations are highly subjective and linked to the social, political, and historical context from which they have evolved.

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