

**FROM EXCLUSION TO PARTICIPATION:  
A HISTORY OF FOREST ACCESS CONTROL  
IN EASTERN SENEGAL**

By Jesse C. Ribot

W.P. No 187

**History of Land Use**

African Studies Center

Copyright 1994 by the author

This paper was part of the History of Land Use in Africa project of the African Studies Center, Boston University, and the Forest History Society. It was presented at the panel, "Cultural and Political Influences on African Environmental Policy," at the African Studies Association annual meeting, December 4-7, 1993, Boston, Massachusetts.

**Working Papers in  
African Studies  
No. 187**

African Studies Center  
Boston University  
270 Bay State Road  
Boston, MA 02215

**FROM EXCLUSION TO PARTICIPATION:  
A HISTORY OF FOREST ACCESS CONTROL IN EASTERN SENEGAL**

**By Jesse C. Ribot**

**Daru Fall—an Introduction**

Daru Fall is a small peanut, millet, and sorghum farming village of 570 Serer and Wolof inhabitants, located in the forests of the upper Gambia River Basin in the Tambounda Region of Eastern Senegal. When I first visited Daru Fall in the dry season of 1986/87, there were over one hundred migrant Fulbe from neighboring Guinea, living in the village and producing charcoal in the surrounding forests. This not-so-unusual concentration of *surga*,<sup>1</sup> as the charcoal producers are called, represented a tremendous pressure on the village forests.

The villagers of Daru Fall were delighted when the charcoal producers first arrived in the dry season of 1984/85. They saw them as a source of extra income. Charcoal producers rented huts in village compounds and paid for meals cooked on a monthly contract. The villagers later learned, however, that the cost of this commerce was the decline of their forest resources. Villagers saw that charcoal production ate away at the forests in which they hunted, and in which they gathered firewood, fruit, herbs, and other forest products. The *surga* also drew down the village wells and caused numerous tensions within the village. But, when the village recognized these problems, they could not evict their tenants, who, they complained, often left after selling their charcoal without paying debts incurred for rent and food.

In Daru Fall and the four nearby villages I worked in, villagers consistently blamed charcoal producers for the decline of their forests and disappearance of products that had previously been abundant, especially firewood used for cooking and honey gathered in the forests as a cash crop. Researchers in other parts of Senegal observed similar village hardships associated with charcoal production (Bergeret and Ribot 1990; Dia 1985:43; Niang 1985:83).

This pattern of charcoal production surrounding villages and devastating village forests, and subsequently undermining forest village economies, is not unusual. Nor is the pattern of villagers welcoming and then trying to evict charcoal-makers—or trying to reject them in the first place, some succeeding and others not. In this paper I examine this

---

<sup>1</sup> The term *surga* usually refers to a dependent agricultural laborer.

imbalance between the ability of charcoal producers to enter and the ability of villagers to evict.

Charcoal is produced by the partial burning of wood and is used as a cooking fuel by Senegal's urban populations. Charcoal is a higher energy density and smoother-burning fuel than firewood burned directly. While 90 percent of urban households rely on charcoal for all of their domestic energy needs, rural populations consume firewood directly. The difference in fuel choice can be attributed to a mix of cost, convenience, and ease of transport. The downside of charcoal consumption is that energy losses in charcoal production, partly made up for by increased efficiency in cooking, mean that more than twice as much primary wood is required by those cooking with charcoal as those cooking with firewood. Hence, in Senegal, the urban 30 percent of the population consumes close to half of the primary wood used in cooking nationally (Ribot 1993a, 1993b).

In addition, urban charcoal is produced in a concentrated manner by cutting and carbonizing whole forested areas, while rural woodfuel use depends on the diffuse gathering of deadwood. Hence, the forest damage caused by urban uses far outweighs those caused by rural households. While the role of charcoal production in national deforestation is unclear—it is not known whether the clearing for charcoal production leads to permanent deforestation—Senegal's forests cover approximately 70 percent of the country and are slowly declining (Gonzalez 1992:38–39; Ribot 1990). Senegal's foresters are concerned that overall deforestation is a threat to woodfuel supply and other ecosystem functions, and that woodfuel demand plays a role in forest decline. Efforts to increase production and cooking efficiencies have not kept up with the growth in urban demand. Substitution with liquid petroleum gas has also been slow. For the foreseeable future charcoal will be the main household fuel in urban Senegal. Supplying urban areas and protecting forests for commercial and urban uses through replanting and forest management has been a central concern to foresters. This paper focuses on the villagers, however, who neither consume charcoal nor participate in its production, but whose livelihoods are affected by the intensive nature of urban-bound production in the forests in which they live.

To help explain how Senegal's village forests are continuously undermined by the axes of migrant charcoal producers, I trace the evolution of regulation of Senegal's woodfuel markets.<sup>2</sup> I show how a century of forestry and land-tenure policies have configured relations among the Forestry Department, charcoal merchants, migrant charcoal producers, and forest villagers. In short, villagers have been left with very little control over forests and forest resources. Urban-based merchants with their migrant labor force have Forestry Department-supported access to forests and forest product marketing.

Most villagers in Daru Fall experience the Forestry Service's "managed" charcoal production as destruction rather than maintenance of their resource base. In Daru Fall, as in many other villages, forestry management policies conceived in the name of resource conservation at the national level undermine the forests on which villagers depend. But,

---

<sup>2</sup>Woodfuels include firewood—that is, wood consumed directly—and charcoal.

this village-level damage has ramifications for national-level forest conservation, since villagers continue to subsist on the remaining forests, potentially compromising the regrowth that forestry management aims for. Neither local- nor national-level conservation is achieved and the value of forests is diminished for all involved. The overlap of village and commercial forest uses is a cause of forest decline in other forested areas around the world. Joint subsistence and production solutions, such as that found in the Joint Forest Management project of West Bengal, have increased both subsistence and production values of forests. Senegal's newly proposed Forestry Code places Senegal's forestry strategy squarely in the center of the worldwide trend toward participatory approaches to resource management. The new code recognizes the need to involve villagers in forest management. It is not clear, before implementation, whether this code will serve the needs of villagers or whether it is a continuation of a long history of centralization of control over the forest sector.

In concluding, I propose some checks on the participation—additions to the proposed new forestry code—that will help assure that participation can result in more equitable and/or ecologically sound forest management.

### **An Abbreviated History of Charcoal Production and Regulation<sup>3</sup>**

#### *The Earliest Concerns*

Concentrated commercial charcoal production in Senegal probably first began in the late 1800s when steamboat traffic, introduced in 1819, was heavy along the Senegal River. Vast areas along the river were cut to supply charcoal for steamboats and for the growing city of Saint-Louis at the mouth of the Senegal River, then the capital of French West Africa. As early as 1898, concerns that deforestation caused by charcoal burning was resulting in river siltation were expressed in a government memo setting up rotational woodcutting schedules. This rotational scheme was not enforced, however (Freudenberger 1992:194).<sup>4</sup>

Rail travel also facilitated development of large-scale woodfuel production and marketing. In 1885 the first railroad in West Africa joined Dakar and Saint Louis (Gellar 1982:14). The extension of a railroad from Dakar to Bamako was completed in 1923. The trains were fueled with wood and the railroad later became a conduit for charcoal from the interior to the coastal cities.

---

<sup>3</sup>For more detailed histories of West African forestry policy, see Freudenberger 1992 and Ribot 1990.

<sup>4</sup>Gritzner (1988:80) asserts that the woodfuel requirements of the steamboat traffic caused deforestation along the river bank.

Senegal's first forestry code was established in July 1900 by the Colonial Service of Agriculture and Forests (Service de l'Agriculture et des Forêts).<sup>5</sup> It was a simple code written by the French for the entire French West African colony. This code *gave* forest usufruct rights to local populations, while requiring permits for commercial exploitation of all forest products. The code included measures to encourage reforestation where "high value" species were cut, and forbade deforestation on steep slopes and in lands set aside by the governor (GGAOF 1916:3-7).

In 1904, following the French Civil Code, the colonial administration decreed that "lands that are vacant and without master (owner or lord) in the colonies and territories of French West Africa belonged to the state."<sup>6</sup> In 1906 the administration put into operation a system of registration for occupied lands, introducing private property into West Africa. According to Alain Bertrand, forester and scholar working in West Africa, the new colonial law eroded the legitimacy of traditional systems of land tenure and forest management, which some authors argue were attentive to forest conservation (Bertrand 1985:26-29; Chaumié 1985:20-21).

Then, in 1908, the first law directed specifically at the woodfuel trade established a tax on firewood and charcoal and required permits for their transport (in addition to the already existing commercial exploitation permits). These permits were established explicitly to keep track of tax collection.<sup>7</sup>

As early as 1912, concerns about the productive capacity of Senegal's forests began to be voiced. Major export firms became concerned about the effects of deforestation when drought hit West Africa between 1910 and 1914. The governor of the colony held a meeting in Bordeaux in March 1912 to discuss halting deforestation along the Senegal River. One commercial pressure group lobbying for the government to pass legislation to conserve forest resources wrote, "The disappearance of forests . . . has not only deprived the colony of a valuable source of production, it has further had the most vexatious influence on Senegal's climactic regime."<sup>8</sup>

These same concerns were then elaborated in a February 1916 report to the lieutenant governor of the colony by the chief of the Colonial Service of Agriculture and Forests (SAF). The chief of the SAF included in the consequences of deforestation, which he attributed largely to wood-cutting for fuel and indigenous agricultural clearing: (1)

---

<sup>5</sup>For a listing of the major policies and historical events in Senegal's charcoal market, see Ribot 1990.

<sup>6</sup>"Les terres vacants et sans maître." République Française 1904:4.

<sup>7</sup>The tax on charcoal was originally set at 0.80 francs per quintal and that on firewood at 2.50 francs per stère in February 1908. In October of the same year, the tax was lowered to 0.75 francs per quintal for the charcoal and 0.75 francs per stère for the firewood. The tax was raised back up to the initial values in January 1917. GGAOF 1916:8, 17-22.

<sup>8</sup>Quote from a letter from the Union Coloniale Française to Governor General William Ponty, 5 October 1912, quoted in Freudenberger 1992:194, 234.

modification of flood regimes resulting in the reduction of the area flooded and hence in crops yielded, (2) salinization of the lower reaches of the Senegal River, (3) restriction of riverain navigation due to the collapse of banks and siltation resulting from the lack of tree roots to retain the soil, (4) land degradation via erosion, (5) the lowering of the water table, and (6) the establishment of desert-like conditions (GGAOF 1916:15). In July of the same year, the secretary general for current affairs reiterated these same concerns in an almost identical circular to the district commandants (GGAOF 1916:10).

Both the February report and the July circular also discussed forestry policy implementation problems. In his February report, the chief of the SAF wrote:

The lack of surveillance over wood cutting has caused a waste of the country's forest resources, which is making it more and more difficult to support the country's fuel needs. Better organization of production would permit, on the contrary, making easily available to the relatively sparse population all the wood and charcoal necessary (GGAOF 1916:15).

He goes on to say:

We are moved by the diverse repercussions of this situation. Regulations have been decreed, but their application to date has been very weak. It is now of utmost urgency to prevent the destruction of the remaining forests, the disappearance of which will not lack in the short term to have disastrous consequences for the future of the country (GGAOF 1916:16).

The secretary general also noted in his July circular that quantities of permits delivered were not limited and that production was taking place in zones where deforestation and degradation of forests were risks. He pointed out that more charcoal was being transported than permits allowed. The secretary recommended stricter enforcement of existing rules about the location of firewood and charcoal production. He also noted that "it is expected that rigorous application of these regulations will create difficulties in supplying wood and charcoal to the principal centers of the colony," and then suggested there were plenty of mangroves to use for making charcoal (GGAOF 1916:10-13; my translation).

Although the concern over forest decline had long been expressed, it was not until 1932 that an independent Forestry Service was established (Aubreville 1938:1; and Foury 1953:14). Problems of forest exploitation for woodfuels were perceived from at least the first decade of the century, and so were problems of enforcing conservation policies. Poor enforcement of forestry policy and the perception of worsening environmental problems have persisted to the present. Indeed, over time the tone became more urgent, and with the establishment of the new Forestry Service the focus of blame seemed to shift from discussions of the lack of policy implementation to the activities of indigenous groups.<sup>9</sup>

---

<sup>9</sup>Also see Mortimore's (1989:12) discussion of the 1920 report on the "progressive drying" of West Africa.

While recognizing indigenous dependence on forests, policymakers blamed indigenous forest-users for deforestation, then severely restricted local forest use. The governor of French West African, in the preamble to a 1933 circular, wrote:

It is necessary to consider above all the principal function that the forest fulfills in the physical and social economy of the land and which gives it public value. In French West Africa it must be safeguarded, protected and improved, not so much for extracting revenues as for being in condition for best fulfilling its indirect role in the inhabitability and development of the country. We must also consider that the natives live from the forests. In general they take the products needed for their nourishment, clothing, home construction, tool making, canoes, etc. (GGAOF 1933:143; my translation).

Immediately after this introduction, however, the governor wrote that forests are declining "as victims of the immemorial abusive use by natives," and that "the dense forest itself—if its very existence is not threatened—is senselessly being impoverished" (GGAOF 1933:143; my translation) He goes on to recommend a vast network of forest reserves and new rules of forest access to protect the forests from these abuses. This interpretation of causality stated directly and implicit in the recommendations led to further systematic exclusion of rural populations from the forests they depend on. Ironically, charcoal-makers at the time were almost certainly migrant laborers working for commercial charcoal merchants—charcoal-making was not an activity of local indigenous populations (Ribot 1990).

Nevertheless, the governor's recommendations were later enshrined in the 1935 forestry code. Based on codes designed for Indochina and Madagascar, this code was much more elaborate than that of 1900. It extended state ownership and control of the territory's forests and forest products. The code outlined limited non-commercial usufructuary rights for indigenous populations. It also specified penalties for infractions, permits required for commercial production, etc.<sup>10</sup> February 1937 legislation detailed the application of the 1935 forestry code. All producers making more than 160 sacks (80 quintals) of charcoal at a time were required to carry a production permit (GGAOF 1937:116). Then in October 1938, to regulate a greater portion of the charcoal trade, restrictions were tightened tenfold and only those producing under 16 sacks of charcoal were exempt from commercial permitting (GGAOF 1938:883).

### *Expanded Production*

During World War II, France could no longer provide fuel to the colony. In 1937 the colonial government initiated a campaign to increase charcoal production, as an "economic substitute for imported fuels" (coal and oil) (Aubreville 1938:5). Concerns over

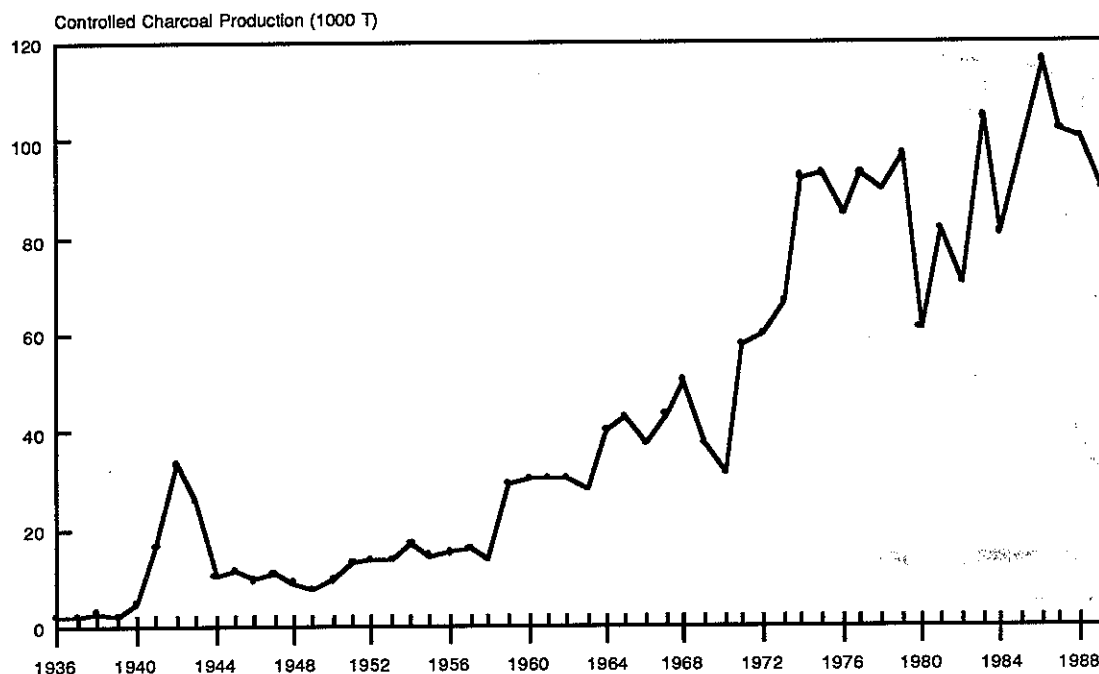
---

<sup>10</sup>GGAOF 1935a. The code was further elaborated in a subsequent decree, GGAOF 1935b.

deforestation fell into the background. This war-time effort launched the large-scale urban charcoal commerce seen today.

In 1941, to stem fuel shortages, the governor of the colony encouraged all forest workers to produce charcoal for the cities. Later in the same year a law was passed requiring forest producers, under the threat of losing their right to produce, to convert at least 5 percent of their produce into charcoal during the period from December through April and then 30 percent during the months of May through November (GGAOF 1939:1, 12; GGAOF 1940:30-34, 56-60; GGAOF 1941: 443-45). The charcoal was loaded into trains and brought directly to Dakar, where it was distributed to public institutions including the army, port, hospitals, schools, and power plants (Baldé 1974:289-91). During the war years charcoal production went from under 5,000 to more than 35,000 tonnes per annum (GGAOF 1939:1, 12; GGAOF 1940:30-34, 56-60). The figure below shows the evolution of controlled charcoal production in Senegal since 1936, just after the establishment of the Forestry Service and the new forestry code.<sup>11</sup>

### Controlled Charcoal Production in Senegal Since 1936



Sources: République du Sénégal, 1981:12; and GGAOF, 1940: 31-41.

<sup>11</sup>Controlled charcoal production refers to production that has been permitted and taxed by Senegal's Forest Service. These figures generally represent charcoal consumed in urban centers. While they do not cover all of the charcoal produced commercially in Senegal, they give a rough indication of trends in urban-bound charcoal production (which constitutes close to 95 percent of the charcoal produced nationally).



In July 1941 further legislation was directed at charcoal and firewood production in a few newly created "managed" forests not far from the major centers of consumption. These forests—eventually denuded—were to be rigorously managed to provide fuel to Dakar. These management restrictions, specifying and limiting quantities to be produced and designating production plots, were not applied in other zones (GGAOF, 1941:143–44, 444). The decree also specified the right of the state to fix the price of charcoal (GGAOF, 1941:443–45). In addition, the 1941 decree restricted production permits to French citizens. In effect, since by law the only Senegalese granted French citizenship were those living in the urban centers, this decree gave special privilege to urban merchants.<sup>12</sup> In essence, the 1941 legislation set the stage for many of the current regulations of Senegal's charcoal market, such as the limited quotas and assigned production plots discussed later in this article.

Auguste Aubreville, the forest inspector for French West Africa, was sent by the French to tour the West African colonies from February through April 1942. His mission was to examine options for making the colonies self-sufficient in energy. In his notes, Aubreville estimated that Dakar's consumption of charcoal was already rising rapidly as households, vehicles, and industry (including a new cement plant) were all converting over to charcoal. His recommendation was to expand the use of *gazogènes*, charcoal-fired engines ("producer-gas" engines), for cars and trucks. In 1940 there were eighteen *gazogènes* in French West Africa, and by 1941 there were 2,285. Aubreville called for still more. A charcoal-fired truck was estimated to consume 1 kilogram per kilometer driven. Because of the short range of the trucks, 130 distribution posts were created on the major routes throughout French West Africa. Villages were encouraged to produce charcoal to supply these distribution posts. Overall, production increased so much during these years that Senegal exported 1,000 tonnes of charcoal to Morocco and other colonies (Baldé 1974:290; Aubreville 1942).

In 1943 the arrival of petroleum fuel in the colony caused charcoal demand to fall. After the war fuel supplies stabilized and charcoal demand dropped further. Charcoal production, nevertheless, remained at over twice its pre-war level. In 1946 the woodfuel regulations were returned to their pre-war status by decree. All production management was dropped. This did not mean that charcoal production would be discouraged. Indeed, in 1947, the chief inspector of Senegal's forestry service, P. Bellouard, argued (as was done at the beginning of the war) that increased production of charcoal would save scarce foreign exchange and expressed his hope that charcoal production would increase (Bellouard 1947:41).

The return in 1946 to un-managed charcoal production intensified woodfuel production pressures on forests near Dakar, Thiès, and Kaolack. In response, the government put in place a rotational system of forest management in these areas. The long rotational periods obligated producers to move out into other regions such as the Sine

---

<sup>12</sup>The distinctions between urban and rural citizenship were abolished in 1946; Gellar 1982:17.

Saloum, between 70 and 200 kilometers outside of Dakar (Bellouard 1947:42; République du Sénégal 1981). Since 1949, as can be seen in Table 1, there has been a clear and steady decline in charcoal production in the regions closer to Dakar, and a steady increase in the regions farther from the city (République du Sénégal 1981). (See Map 1, showing current charcoal production zones in Senegal.)

*Post-Independence—Growing Demand and Tighter Regulation:*

In June 1964, four years after independence, the governing party passed the Law of National Domain, nationalizing all lands not registered or occupied prior to the date of institution of the law (Le Roy 1985). With the implementation of the law, 97 to 98 percent of all lands in Senegal were officially brought under the management of the state (Guèye 1985:615; Le Roy 1985:669). The law provided continued usufructuary access to villagers (Le Roy 1985:683-685; République du Sénégal 1981:12-14). The law also gave rural councils the *responsibility* of managing their usufruct. It did not, however, give them the ability to protect the forests they used from commercial exploitation. Under this new law, the entire forested domain and all commercial forest exploitation fell under the auspices of the Forestry Service.

Events in 1969 conspired to depress charcoal production. Labor became scarce because diplomatic problems between Senegal and Guinea forced many Guineans—who constitute the migrant work force in the charcoal market—to return to Guinea. In addition, the government closed charcoal production in the managed forests of Thiès and Diourbel, in which deforestation had reached extremes (Tall 1974:29). Production continued to move into the farther regions.

In 1972, a law was passed requiring a "professional license for forestry production" for all commercial forest activities. The law specified that each year the maximum number of licenses distributed in each region would be fixed by the director of the Forestry Department, now called the Direction des Eaux, Forêts et Chasses (DEFC, Department of Water, Forests and Game) (République du Sénégal 1972:1539). This "professionalization" of commercial forestry further restricted access to charcoal marketing, with access now mediated and limited by the Forestry Department in addition to the existing citizenship restrictions. The law was not applied until 1987, however.<sup>13</sup>

The government of Senegal again began to discourage charcoal production in the early 1970s due to concern over the effects of the drought, which had begun in 1968. In 1974, the respected French forester, P. L. Giffard, wrote:

Conscious of the degradation of forest vegetation in Senegal, and of the magnitude of natural forest exploitation for the supply of fuels to urban centers, those responsible for the economy wish to restrain the consumption of charcoal in the cities, in particular in the capital and in its suburbs where

---

<sup>13</sup>Forestry Inspector, Personal communication, Thiès, 1989.

the cost of charcoal is a greater and greater constraint in the worker's budget due to the increasing distance of production sites (Giffard 1974:216).

This second wave of concern over West Africa's forests followed directly on the second great drought of the century.

The first measure to reduce urban charcoal demand occurred in 1974 when bottled liquid petroleum gas (LPG) was advertised as a substitute (CTS 1987:12-13). In the same year, the Forestry Department began to encourage firewood and charcoal merchants to organize into cooperatives, to help bring the market under regulation and to bring the forestry sector into line with other rural sectors integrated into the cooperative movement—established to promote market production in agriculture.<sup>14</sup> In 1977, the use of charcoal in bakeries (the only remaining large commercial charcoal-users) was banned as a move to reduce charcoal demand (CTS 1987:9). This was the first law directly restricting the quantity of charcoal production or use.

Then in 1980, an annually set national charcoal production quota was first systematically applied, and a limited season during which firewood and charcoal production were permitted was created (République du Sénégal 1980). The national quota was fixed below the quantities previously "controlled" or taxed by the Forestry Department, in an attempt to reduce charcoal production and use. In addition to regulating who could engage in charcoal commerce, the Forestry Department could now specify how much charcoal could be marketed.

In Figure 1, production appears to fluctuate from 1980 through 1989 because production figures were based on the quotas. Why the fixed quotas varied so much during the 1980s is unclear. Actual production was probably continuously rising. Although the quotas are designed to specify and limit the total annual production, they do not reflect actual production levels. End-use surveys on Senegal's urban household charcoal consumption in 1987 indicate that the national quota covers only about one half to two thirds of urban demand.<sup>15</sup> That is, actual production appears to continue the growth trend, rather than the leveling-off implied by controlled production figures. This difference between controlled and actual charcoal production reflects the partial implementation of, or perhaps the impossibility of implementing, the national quota. From 1987 to 1989, these quotas—already unenforced and far below demand—were further decreased on the argument that such reductions are necessary to help reduce charcoal production and protect the environment.

---

<sup>14</sup>Guèye (1985:613) quotes the president of the Council of Ministers in a 1962 circular as saying "It [the cooperative movement] must be such that each cooperative constitutes the fundamental locus of responsabilization for men in their economic management."

<sup>15</sup>Madon 1987. The exact amount by which urban demand exceeds the quota is unclear. In the first analysis of the data Madon found the urban consumption to equal approximately 180 percent of the national quota. After protest from the forestry department and a re-evaluation of the data, this figure was lowered.

In 1984, individual professional licenses for forestry production were eliminated, and forestry merchants were required to join or form cooperatives in order to obtain their professional licenses. Like individual professional licenses, the cooperative professional licenses were also limited in quantity by the Forestry Department.<sup>16</sup> By 1987, the market was constituted of 85 cooperatives averaging 40 (from 30 to 100) members each (Ribot 1990:289-94). Distribution of quotas, licenses, and permits are now through cooperative presidents.<sup>17</sup> Members of each cooperative are allocated a portion of the cooperative's quota by the cooperatives's president. They are then allowed to hire producers (migrant laborers), for whom they obtain a production permit from a local Forestry Service (regional Forestry Department branch) office under their license. Each permit designates the duration of validity, the maximum quantity of charcoal, and the location of their production plot. After production, the merchants pay taxes and stumpage fees to the Forestry Service in order to exchange a portion of their quota for a transport permit. With transport papers being checked by police and at forestry checkpoints along the route and at the city gate, off to Dakar they go.

In 1987 the tax on charcoal was raised from 150 to 500 CFA francs (FCFA) per quintal as a condition for a World Bank loan. While the new tax was put on the books and the bank was told it was in place it still had not been implemented in 1989 (République du Sénégal 1988; Ribot 1990:251).

### **Policy and the Politics of Access: Commerce vs. Village Life:**

Over the century, state policies have shaped the relations among villagers, state agents, and the charcoal market. Forestry policy progressively separated commercial from subsistence forest uses through control over access to forest products and over entry into commercial charcoal production and trade. First, the state claimed forest ownership, via the 1904 colonial land legislation and then by the 1964 post-independence Law of National Domain. In this same period, the right to use forest products was limited through a series of ever tighter forestry codes. Land law and forest codes excluded villagers from the use and sale of commercially valuable forest products. Second, the rights to use forest resources were separated from the rights to market them—villagers were excluded from commerce while the rights to trade in forest products were allocated to urban merchants and then to members of difficult-to-enter cooperatives. Control over access to usufruct and marketing became progressively more centralized and more elaborate.

---

<sup>16</sup>Ndao and Ruche 1985:15. Due to the number of forestry cooperatives by the early 1980s, Senegal's National Union of Forest Cooperatives (l'Union Nationale des Coopératives Forestières du Sénégal—UNCF) was founded in 1982 (CTS 1987:23; Ndao and Ruche 1985:15).

<sup>17</sup>Quotas are also distributed to the handful of private firms remaining in the market. One high forestry official explained that he simply did not have the authority to force these firms to join or form cooperatives.

Control over entry into charcoal production and trade was built up over the century, starting with commercial production permits in 1900, transport permits in 1908, and merchant licenses available only to urban-based French citizens in 1941. In 1941 decrees were issued giving the state control over the *price* at which charcoal could be sold. While earlier policies restricted *who* could enter, the 1972 law creating a limited number of professional licenses allowed the Forestry Department to also restrict *how many* people were entering the market. This was then followed in 1980 by the quota restricting *how much* charcoal could be produced nationally, giving the Forestry Department the role of allocating the quota among merchants. To facilitate this allocation, merchants were then required to form or enter cooperatives, reducing the task of allocation and simplifying market control. As entry to the market became more difficult and more centralized, the prospect for rural populations to independently market forest products became more remote.

Charcoal production, too, was separated from local control. While the Forestry Department controlled entry into commerce, merchants controlled entry into production. Rural populations could extract and market forest products only under the license of, and within the quota of, a charcoal merchant. Hence, these policies removed control over charcoal production from the hands of local populations. Indeed, local populations rarely participate in charcoal production. Charcoal is produced by migrant laborers. This additional split between rural populations and the charcoal trade may be a result of policies or of other factors. Production, as well as marketing, has historically been dominated by single foreign ethnic groups—Malian Bambara before World War II and Guinean Fulbe thereafter. The use of foreign migrant labor in charcoal is often attributed to taboos against charcoal production and the caste nature of charcoal producers (blacksmiths) among most ethnic groups in Senegal. Most villagers consider charcoal production dirty and lowly work and many Wolof (the second-largest ethnic group among merchants after the Fulbe) say that money earned in the charcoal trade is dirty or brings bad luck. It is also conceivable that using migrant labor was a deliberate move by merchants to avoid conflicts within villages between charcoal production and subsistence forest uses. Migrant laborers would be less concerned with local needs and less swayed by village resistance. In addition, their vertical ties to merchants—who are by and large of the same ethnic and national origins—are much stronger than their horizontal ties with local populations or their ties to local chiefs—usually of different ethnic origins.<sup>18</sup> This use of migrant labor has further separated subsistence from commercial forestry, given that villagers neither control access to production and marketing nor do they engage in production themselves.

Another dynamic further wrests control of forest access from village hands: the manner in which policies are partially applied, circumvented, and transformed. The commercial, large-scale, and geographically concentrated nature of charcoal production, transport, and marketing make the charcoal trade highly visible, and physically accessible

---

<sup>18</sup>See also Alavi 1973.

to taxation and other government controls. But while the commerce in charcoal commerce appears easy to regulate, the results of regulation are not evident. Charcoal production continues to grow. Controls continue to be applied and circumvented—by those in and out of government. This incomplete enforcement may seem to contradict the above arguments about progressive control and centralization, and ease of regulation. On closer examination, non-enforcement can itself be an important aspect of access control.

Early complaints of policy non-implementation and non-enforcement are similar to those heard today.<sup>19</sup> In the past, they were probably due to a mix of high enforcement costs and the power of merchants to appeal to multiple levels of authority to gain entry into the markets, access to restricted areas, state-controlled resources, and exemption from prosecution. Today, most of Senegal's forestry policies are only partly implemented. Some policies are simply difficult to monitor, such as the cutting and carbonizing of protected species; others are selectively unenforced, due to the social, economic, and political difficulties and values associated with implementation and non-implementation (Ribot 1990;1993a;1993b).

Policy non-enforcement can serve a number of purposes. It allows a free supply of the commodity in question, serving the needs of merchants and end-users, as well as politicians who take the heat in times of shortages. Additionally, the higher the commodity flow, the larger the tax base as well—in Senegal's charcoal market, even illegally produced charcoal is taxed (Ribot 1990). The illegal allocation of licenses, permits, and quotas, as well as exemption from prosecution for those not within the legal controls, has political, economic, and social value for those who allocate, and those to whom allocations are made.<sup>20</sup>

The ability to control and allocate resources may provide reasons to maintain policies that are not serving their nominal ecological functions. For example, the value of non-enforcement helps explain the simultaneous lowering of the national charcoal production quota while not enforcing it. In recent years the quota, set at only 60 to 75 percent of demand, has been lowered on ecologically based arguments by officials who know it is unenforced at its current low level. The lower the quota, the bigger the difference between the quota and demand, the more resources—as in extra quotas—are available to allocate. At present extra quotas are being allocated—mostly to a small group of powerful merchants—and the supply of charcoal continues to meet the growing demand. Ten percent of the national quota is reserved to be allocated to those merchants who use their initial quota efficiently. Indeed, the largest merchant in the market received reserve quotas to the tune of seventeen times his initial quota just three weeks into the season (not enough time to have used his initial quota). Most merchants receive no reserve quotas. Excess reserve

---

<sup>19</sup>For examples, see Ribot 1990.

<sup>20</sup>In theory, government agents and officials can collect what Robert Bates (1981) calls "administrative rents," by allocating state-restricted resources. Bates 1981,1983; Krueger 1974.

quota allocation (beyond the legally prescribed ten percent) is the primary mechanism by which the national quota is exceeded.

Non-enforcement is by no means random. Selective allocation along social or political-economic lines adds to these benefits the ability of state members to cultivate alliances. It is not clear in these cases whether government officials and agents, merchants, or both benefit from excess allocation. Agents and officials gain through control over allocation while powerful merchants gain through more exclusive control over marketing. This mutuality indicates that control over resources (of the state and of nature) is located somewhere in an affiliation of state and market members—some mix of conflict and cooperation over resource access and control.

Hence, non-enforcement and enforcement can be quite selective, and can serve as another handle on control over access to usufruct, production, and marketing of forest products. For example, directly relevant to Daru Fall, merchants having the appropriate relations with the Forestry Service can influence the location of charcoal production plots around a village or the amount of charcoal to be taken, while villagers may have little recourse (official or unofficial) vis-à-vis state agents.<sup>21</sup>

In short, local populations participate in neither production nor marketing of charcoal. Over the history of charcoal production, those doing the cutting have been migrant laborers working for urban or externally based merchants and selling to urban, industrial, or government users. While regulations have not limited production, they do serve to tax the market, centralize control over production and marketing, exclude rural populations from commerce, provide a handle on resource allocation, and provide oligopsony conditions for those merchants with access to state officials and agents—and, hence, to state-controlled resources. Officials and agents allocate access to forests and to marketing, while non-local merchants control access to production.

### Return to Daru Fall

Since the mid-1970s, the Forestry Department, along with a number of international aid organizations, has been actively attempting to reduce the impacts of woodfuel demand, through efficiency improvements, substitution away from woodfuels, tree plantations, and natural forest management. All of these policies, with the exception of natural forest management, attempt to reduce the *magnitude* of charcoal production in natural forests, but such production has continued to rise.<sup>22</sup> Village woodlots and plantations, cook-stove and kiln efficiency improvements, and substitution with bottled gas have had only limited success. Natural forests, it appears, will remain the most important source of domestic

---

<sup>21</sup>Selective allocation of policies can be within the legal framework of the policy—as in specified entry criteria such as French citizenship or literacy. It can also be illegal, as in the allocation of the national quota (or of quotas in excess of this legally specified amount) or of permits and licenses by officials and agents based on social and political relations or on economic transfers.

<sup>22</sup>See Ribot 1990 for a discussion of why magnitude-reducing measures have had little effect.

energy in Senegal for the foreseeable future. Hence, natural forest management will remain at the core of forest policy. The natural forest management component of forestry policy affects the experience of forest villages such as Daru Fall, and relations between producers and forest village communities.

Senegal's natural forest management has many components, most aimed at regulating charcoal marketing. We have seen how market regulations in conjunction with forest ownership and usufruct delimitations have configured relations among the Forestry Department, merchants, migrant charcoal producers, and forest villagers. Within this context of village/market separation, the spatial management of production through the assigning of production plots also shapes village/charcoal producer relations. The Forestry Department designates production regions on a national scale, based on the condition of each region's forests. The Forestry Service (the local Forestry Department offices) assigns production parcels at the local level for each producer, as specified on production permits. As part of the management of charcoal production, the forestry agents of each Regional Forestry Service choose plots, called parcels, where charcoal production is permitted. They assign each *surga* (charcoal producer) a parcel. According to forestry officials, zones and parcels are chosen based on the availability of standing dead wood and the ecological sensitivity of the forest and soil.<sup>23</sup> Although the ultimate decision is the responsibility of foresters, the *patrons* (charcoal merchants) also influence where these parcels are located. *Patrons* prefer them to be close to a village for easy access to roads and so that their *surga* can have a place to live and get provisions. Hence, parcels are usually placed around villages.

Villagers do not, however, experience this as managed forest conservation. They experience it as the progressive distancing and destruction of their forest resource base. In the Tambacounda Region, I surveyed and interviewed men and women in Daru Fall and four other nearby villages. The women told me that before the arrival of charcoal producers, firewood had been available just outside the compounds, whereas after the first two years, firewood had to be gathered at distances of several kilometers, taking from a couple of hours to half a day to collect. More than half the women saw the distancing of the firewood resources as a direct result of charcoal production; many expressed resentment. They also described other effects of the presence of charcoal producers, including the disappearance of game birds and animals and the destruction of fodder. The women often complained that the presence of migrant charcoal producers created water shortages and water quality problems, causing tensions in the village. In addition, men and women recounted how charcoal producers leave with debts unpaid, fight with women gathering firewood, and "chase women." Numerous conflicts between villagers and charcoal producers have been recounted by villagers, charcoal-makers, and foresters. Some have

---

<sup>23</sup>Forest potentials in Senegal, however, are very poorly understood. Only recently has there been a rigorous study of regeneration after charcoal production (Arbonnier and Faye, 1988).



been violent.<sup>24</sup> In most cases, the villagers wanted the charcoal-makers to leave or to pay debts they had incurred, and fights broke out. In other instances (which I have witnessed) underlying tensions have emerged over other issues such as theft and adultery. Well over half the women interviewed wanted the charcoal-makers out of the village and out of their forests, so that their forests could grow back. One woman told me: "They will leave when there is no more wood. That will be soon."

In a village 60 kilometers from Daru Fall ethnobotanist Anne Bergeret found that several species of trees and shrubs used by villagers have disappeared or become scarce. Villagers there too attributed species disappearance and forest degradation largely to the charcoal trade. According to Bergeret, the charcoal producers, being migrant laborers, paid no attention to the value of the species to local villagers (Bergeret and Ribot 1990).

Experiences in other regions are much the same. The chief of one village in the Casamance (Department of Bignona) told me that honey bees had disappeared from their region after the arrival of charcoal producers who were cutting the trees where hives were found. Honey had been an important cash crop for this village. In other regions villagers complained of the disappearance of game birds and animals. Another researcher, in the upper Casamance, also points out that at the rate the five villages he studied consumed forest products on their own, the forests were not threatened. But, when charcoal production began in the villages, the forest resource was undermined (Dia 1985:43).

The charcoal trade has other effects as well. Charcoal-makers use green trees, leaves, and grasses in the charcoal production process. While cutting green trees is illegal, and is damaging to the forest, they do so with impunity (Niang 1985:83). Using leaves for covering the kilns and bark for tying the sacks closed kills saplings and bushes, thus destroying fodder (Tall 1974:68). In addition, the heavy truckloads of charcoal evacuated from the villages during the rainy season tend to tear up and rut the dirt roads so badly that villagers cannot negotiate them by horse cart, car, or minibus, making it difficult for them to bring their products to market or to get to market for the products they need.

Little research has been done on forest impacts of charcoal production. Studies of regeneration in the Sahel have found that much regeneration does take place. Hence, charcoal production does not necessarily spell permanent deforestation, although it can change species mix.<sup>25</sup> These studies have focused on biological and economic characteristics, rather than subsistence functions of forests. This focus reflects a view of forests without people, and obscures the importance of forests for rural populations. Foresters' use of "scientific" forestry management practices—ecologically based production citing, etc.—have further reduced village ability to make claims on the forests

---

<sup>24</sup>Also see PARCE 1983:17.

<sup>25</sup>See for example Giffard 1974; Clément 1982; République du Sénégal 1984; Arbonnier and Faye 1988.

they depend on.<sup>26</sup> The studies presented earlier give a glimpse into the impacts of charcoal production on village economies.<sup>27</sup> The ecological and social consequences of the overlap of charcoal production and village use, however, has yet to be systematically studied.

In the early 1970s, due to frequent conflicts between charcoal-makers and villagers, the Forestry Service adopted an informal policy obligating charcoal *patrons* to gain the consent of the village chief before carbonizing in the area surrounding a village.<sup>28</sup> This policy is no longer practiced due to the role of the foresters in assigning parcels. While assigning parcels is not new, it is only recently that it has been practiced outside a few isolated managed forests. The choice of location is now considered a professional decision for the forestry agents to make. The agents do not generally ask the village chief for consent. Consent is usually, nonetheless, arranged informally between *patrons* and village chiefs, involving a payment of about FCFA 5,000 to 10,000 (US\$14–28) on each truckload of charcoal produced in their area.<sup>29</sup> But location of charcoal producers is now officially decided upon by foresters.

In the past, conflicts between *surga* and villagers had some chance of pushing charcoal production out of a village forest. Assigning of parcels by the Forestry Service now tends to support the presence of charcoal producers. Conflicts still arise between villagers and charcoal-makers. Some are arbitrated by the village chief, some settled by payoffs to the village chief, and some are arbitrated by the forestry agents. Unfortunately, with charcoal producers having official sanction, villagers have little if any recourse when foresters are behind the charcoal-makers and the merchants behind the chief. Thus, *patron* and *surga* (writ commercial or urban) access to village forests is facilitated, and villagers are ultimately left with forest resources degraded by charcoal production.

While the Forestry Department may conceive of its parcels policy as a move toward "rational" forest management—production organized in assigned ecologically based rotations—the location around villages may make these practices ecologically or socially undesirable. Because villagers cannot wait for a twenty-year rotational cycle to gather firewood for their next meal or to collect other essential forest products, regrowth after cutting is hampered by continuous village use—that "immemorial abusive use by natives" (GGAOF 1933:143). The temporal scale of regeneration combined with the extensive spatial scale of urban-bound production leaves villages at the center of a degraded forest, unable to sustain themselves without maintaining a now damaging pressure on the greatly

---

<sup>26</sup>On scientific forestry, see Peluso 1992; and Banuri and Marglin 1993.

<sup>27</sup>See Ribot 1990; Bergeret and Ribot 1990; Dia 1985; Niang 1985; 1989.

<sup>28</sup>Director of Forest Production of the Forestry Service, Personal Communications, May 1987. Freudenberger 1992:265 reports instances of government taking note of conflicts over gum arabic trees at about the same time. Also see PARCE 1983.

<sup>29</sup>Average annual income in Senegal at the time was US\$420. The exchange rate was FCFA 350/US\$1(1987). World Bank 1987.

diminished forest resource. Clearing takes place, but regeneration may not, due to the continuous pressures of local use.

The seemingly obvious clash of temporal and spatial scales is not taken into account in forestry management policymaking. Clearly, the overlap of national-scale production rotations and continuous village need is incompatible. This incompatibility is not a surprising result of the long history of village marginalization by the production-oriented policy process combined with production-, rather than subsistence-oriented, research.

The exclusion and invisibility of villagers is shaped by the long history of land and forestry policies and research developed in response to commercial, urban and state constructions of forestry problems, rather than village concerns. But the result is not just that villagers are powerless—this is nothing new. The result is that villagers made invisible in the shadow of state and market interests are hindering the very productivity in which these interests are concerned. The very invisibility that facilitated market-oriented forest exploitation in the past may be undermining productivity today. Perhaps we have reached a point where villagers can no longer be ignored if forest productivity is to be maintained—one type of social limit to ecological capacity under the current management system.

### **The New Code—Enlisting Village Participation**

There is now a new forestry code under consideration that recognizes the need for—or at least the efficacy of—including villagers in forest management. Perhaps this has been inspired by the recent rise in popularity of participatory approaches within the international and donor communities. Perhaps it is a response to the limits to production that exclusion appears to present. The new code could be a large step in the right direction. It transfers some control over and responsibility for local forests into the hands of villagers, under the supervision of the Forestry Service. The Forestry Service maintains considerable control over the forests and the sale of forest products. Indeed, usufruct rights are essentially the same as before—with the added obligation to replant—and the sale of all forest products must be approved by the Forestry Service. But villagers, under the stipulation that they agree to maintain the forest, can sell off those forest products that the Forestry Service permits (République du Sénégal 1992:Ch.1).

According to the new plan, villagers will be able to sell plots of national domain forest in their locality if they agree, by drawing up a forest management plan with the Forestry Service, that they will reforest and protect regeneration "using silvicultural techniques" (République du Sénégal 1992:Ch.2, article L10). Every village is obligated to draw up such a management plan. Every village will be responsible for maintaining its forests.

The costs and benefits of this arrangement to villagers are not clear. All forest products will be taxed as before. In addition, part of the tax and part of the revenues from that sale must be contributed to a national forestry fund. This fund will support replanting and forest protection. The question remains whether the revenues from sale plus the return from the forestry fund will balance the labor and materials necessary to replant and protect

regeneration in those forests sold off and cut. It is also critical to examine the distribution of those costs and benefits within the village.

If the poor performance of most reforestation efforts in the Sahel is any indication of the difficulties involved in reforestation, then the responsibility being given to villagers is a large one.<sup>30</sup> The revenues from sale and from the Forestry Fund may also be less than sufficient. Revenues from sale of charcoal, for example, are still constrained by a low final price of charcoal fixed by the Ministry of Commerce to protect the budget of wage laborers in Dakar. If the price in Dakar is not substantially raised, there will be little room for villagers to charge for their forests—forests that are currently a free good.<sup>31</sup>

There is nothing to prevent villagers from agreeing to sell forest plots for much less than it will cost them to replace them, because: (1) most villages have little experience with tree planting and may underestimate the time and resources required for reforestation; (2) like the inhabitants of Daru Fall, they may not realize the negative consequences of the charcoal trade until well after they have agreed to let producers in—once a village or village chief enters into a formal agreement, they may be unable to change their minds when they see the extent of the damages that charcoal production represents; (3) immediate need for cash by villagers may skew their cost-benefit calculus; (4) competition from other villages willing to sell off plots for very little, having underestimated the cost of reforestation or desperate for immediate revenues, may bring sale prices down; (5) pressures from charcoal merchants and the Forestry Service may push villagers to enter into contracts that are not in their own best interest; and (6) relations of patronage may preclude villagers from declining to allow production in their area if the merchant requesting access is an important social, religious, or political figure from their region.

Furthermore, unequal distribution of costs and benefits within the village may also skew decisions to enter forest production agreements. Those in the village making the agreement—the village chief or the men, for example—may not be the ones who will bear the burden of replanting and of watering or guarding these planted forests, or for that matter cooking, cleaning, and drawing water for the charcoal-makers during production. There are already splits within villages over the current situation. Women collect firewood, bring water from the wells, cook, and keep house for the charcoal producers living in the villages. Men, on the other hand collect the rent. Sometimes the village chief will invite in the charcoal-makers while most villagers don't want them there. For a payment on each truckload of charcoal, the chief will allow this commerce to continue. These payments were part of the dynamic in Daru Fall. Outcomes will depend largely on how much, with whom, and on whose behalf the Forestry Service intervenes in the making and implementation of

---

<sup>30</sup>See for example Fortmann and Bruce 1988; Lai 1986; Leitmann 1987; Gritzner 1988:82; Tibesar and White 1985:19; Laurent 1985:29.

<sup>31</sup>There is a tax of FCFA 75 per 50 kg sack. It was raised to FCFA 250 per sack in 1988. The new code does not specify changes in this tax.

village plans. It will depend largely on how participation in planning and implementation is arranged.

The new code does give villagers the right to prohibit charcoal production from surrounding forests. On paper, it gives them more control over their forests. Whether they can exercise this right—by, for example, making a plan with *no* commercial development of the forests—will again depend on the amount of control the Forestry Service takes in developing management plans. The new code also gives unprecedented control to the Forestry Service for enlisting the labor of villagers in forest conservation and management. It remains unclear whether net benefits to villagers will be positive or equitably distributed, and it is also unclear how the Forestry Service will use its new role. The consequences of this new role will depend largely on how the code is implemented.

## Conclusions

A century of land and forest regulations has shaped relations between forest villagers and commercial charcoal producers. Daru Fall does not evict its unwanted guests partly because the institutional environment provides no basis for villagers to make claims on the forest resources they rely on. Villagers have legal access only to subsistence forest products that can be gathered with a minimal impact on trees or on the forest. But merchants and their producers are given license to cut and sell the very forests that yield these subsistence goods. While villagers must not diminish the commercial value of the forests, commercial interests have no obligation to compensate villagers for the loss of their usufruct.

Villagers are neither the producers nor consumers of commercial forest products. Yet they experience prolonged deprivation due to the environmental consequences of commercial production, while reaping only a few payoffs to the village chiefs and some payments for room and board during the process. When most villagers no longer wanted the charcoal producers in Daru Fall, they had no legal means to have them removed, nor did the village have the internal cohesion to evict them. The chief and those families renting out their huts paid little attention to the constant complaints of the women whose burdens were multiplied by the presence of charcoal producers. With policies protecting the forests from those suffering its loss while licensing the presence of the charcoal trade, along with internal village splits, Daru Fall did not resist.

The systematic exclusion of villagers from control over commercial forest use, an exclusion by default if not design, has undermined village economies across Senegal. The Forestry Service assigns migrant charcoal producers plots in large-scale production management areas. Villagers, whose villages are in the middle of these plots, are left with diminished forests after the production process is done. But for the villages this "managed" production is far from ecologically or socially sound. They cannot wait out a twenty-year rotation. Their needs for some forest products are relatively constant over time. The villagers are left to glean what they can from the remaining forests, compromising

regeneration as they do. Forest regrowth is hindered and so too is the larger-scale vision of a rotational management scheme.

The Forestry Department now recognizes that if villagers are ignored the forests may vanish. To halt forest decline, the Forestry Department has proposed a new forestry code for Senegal that attempts to incorporate villagers into the management of the nation's forests. The proposed forestry code certainly includes the participation of villagers. It is not yet clear, however, that this participation will be either voluntary or worthwhile for the villagers involved.<sup>32</sup> It is also not clear whether this policy is really a break from the past. Perhaps it is just a continuation of the long evolution of tighter controls over the charcoal trade, adding a handle on village labor (for replanting and maintaining the forests) to current controls over who can produce charcoal, where and when they can produce it, who can market it, how many merchants can enter the market, how much they can market, and at what price they can sell—not to mention selective control over when and for whom these policies apply.

Restrictions on charcoal production and the planning and management of forest use are essential if maintaining forests is important. Restrictions, planning, and management, however, will have to be constructed to allow effective barriers to commercial, not just subsistence, forest use. It is clear that commercial charcoal production is a major cause of village forest destruction. Giving villagers the right to sell their forests may not improve the situation.<sup>33</sup> Indeed, it could make things worse. But, giving them the absolute right to exclude commercial uses and users from the forests on which they depend would certainly contribute to forest conservation and to the well-being of forest villagers. This strategy may face opposition by the charcoal producers, merchants, or charcoal-using urban populations. But to continue along the current path may eliminate the forests on which the charcoal trade depends. If villagers are allowed to exclude commercial producers from their usufruct areas, then merchants, producers, villagers, and the urban charcoal-consuming populations will cope in different ways, while the forests with their ecological and subsistence and commercial functions will have a chance to remain intact.

To maintain forest productivity for subsistence and commercial ends, forest management will have to be based on both ecological characteristics and social uses of the forests. Mechanisms to avoid the spatial overlap of urban production and village forest use will have to be developed. Giving villagers the right to evict producers is not sufficient. Perhaps this right, combined with a planning process as delineated by the new code, would

---

<sup>32</sup>The notion of coerced or involuntary "participation" in participatory development projects is by no means new. See Cohen and Uphoff 1977:16, 91.

<sup>33</sup>There is a prevalent assumption in the literature that villagers' natural relation to forests is more conservative than those of commercial interests. However, in the case at hand, villagers seeing the resource as the standing trees may be the mere result of them never having been allowed to use the resource in any other way since woodfuel markets first developed in Senegal. That is, villagers may use the resource only for subsistence ends because they are not permitted to do otherwise.

be a step in the right direction. That is, villagers could enter into contracts, but with the right to stop production when they see it is no longer in their interest. That is, more flexible contracts are needed that allow for an incremental assessment of whether the enterprise is worthwhile for all involved. Because there is no infrastructural investment, charcoal-makers lose very little when villagers ask them to leave—they have only to pick up their axes and go. Hence, there is little justification for making a rigid arrangement. But even more flexible arrangements must also be accompanied at least by three other stipulations. Villagers must be fully informed of their options and of the ramifications of charcoal production. They must have *multiple* channels of redress within and outside the Forestry Department to insure they can exercise the rights they are granted. And attention must be paid to the distribution of costs and benefits within villages. Those who labor to make forest management work must reap the benefits and must also be the ones with ultimate control over the management plans.

Transferring to villagers the right to protect and gain access to village forests, currently under national domain, may improve resource conservation and use. This is currently the popular (and populist) belief and trend in development thinking (Banuri and Marglin 1993; World Bank 1992). Such an option, however, is very complex. The basic idea is that policies that shift control among groups with different relations to or interests in the forest resource may result in different patterns of resource management and use. The result of this type of shift, however, depends on the incentive structures, historical social relations, and the structure of new policies circumscribing local uses. Supporting local management is by no means an automatic way of assuring equity or resource conservation.

Local resource use is neither inherently conservative nor equitable. Local populations may well use the resource more conservatively by dint of their exclusion from all, more damaging, commercial uses. The resource for them may consist of the fruits, barks, and roots rather than the trees themselves due to legal, social, and technical barriers to other uses and to market entry. The romantic construction of the conservative forest villager may be more part of the policy—as simultaneous justification and result—than a result of the villagers' worldview. In addition, village institutions are structured around unequal relations of production and exchange. Local resource control is highly skewed. Just as villages are embedded in exploitative relations with merchants, producers, and the Forestry Service, villagers are in unequal and exploitative gender-, caste-, ethnic- and authority-based relations with each other. These inequalities, with long historical roots, will shape forestry policy outcomes at every level of analysis, and they will do so all the more if ignored.

Why did a "participatory" plan emerge? Was it because the contradictions between commercial and subsistence forest uses led ineluctably to change? Was it because of the global spread of notions of participation in the donor and NGO communities and through government officials and agents? I would suggest that both were necessary. I would also suggest that what we are observing is not "participation," but rather collaboration. It is an agreement by those in power, upon recognizing the efficacy of including local populations

in forest management, to restructure incentives in a way that provides benefits to both villagers and production interests.

The overlap of village use and urban-bound production is not new. It has been progressing across the countryside for the better part of this century. What is new is the fortuitous confluence of two social movement from above—that of populist participatory development and global environmental concerns—with an ongoing village-level crisis. The movements made this crisis more visible to outsiders. The analysis of the destructive overlapping of production and subsistence uses provides justification for a collaborative, win-win solution. The challenge is to guarantee that practice on the ground reflects the rhetoric of the movements that ushered in these long-needed changes.



## BIBLIOGRAPHY

- Alavi, Hamza. 1973. "Peasant Classes and Primordial Loyalties." *Journal of Peasant Studies*, 1, no. 1: 23–98.
- Arbonnier, M. and B. Faye. 1988. "Étude de la forêt classée de Koumpentoum." *Projet d'Aménagement et de Reboisement des Forêts du Centre Est, République du Sénégal, Ministère de la Protection de la Nature, Direction de la Conservation des Sols.*
- Aubreville, Auguste. 1938. "Le Service des Eaux et Forêts en Afrique Occidentale Française, 1937." *Annual Report to the Forestry Department, Centre Technique des Forêts Tropicales, Nogent-Sur-Marne, France.*
- . 1942. "Rapport de Mission AOF de M. Aubreville, Inspecteur des Forêts de l'Afrique Occidentale Française, Conseiller Technique pour les Forêts du Secrétariat d'Etat aux Colonies." *Archives Nationales du Sénégal, 3R53.*
- Baldé, Mamadou Saliou. 1974. "Changements Sociaux et Migration au Fuuta Jalon: Les Peul du Fuuta dans le milieu rural sénégalais." *Doctoral thesis (3<sup>e</sup> Cycle) in Sociology, University of Paris V.*
- Banuri, Tariq and Frédérique Apffel Marglin. 1993. *Who Will Save the Forests? Knowledge, Power and Environmental Destruction.* London: Zed Books.
- Bates, Robert H. 1981. *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies.* Berkeley: University of California Press.
- . 1983. *Essays on the Political Economy of Rural Africa.* Berkeley: University of California Press.
- Bellouard, P. 1947. "La Question Forestière au Sénégal." *Colonie du Sénégal, Office des Eaux et Forêts, Saint-Louis, 15 September 1947.*
- Bergeret, Anne and Jesse Ribot. 1990. *L'Arbre Nourricier en Pays Sahélien.* Paris: Editions de la Maison des Sciences de l'Homme.
- Bertrand, Alain. 1985. "Les Nouvelles Politiques de foresterie en milieu rural au Sahel: Réglementations Foncières et Forestières et gestion des ressources ligneuses naturelles dans les pays de la Zone Soudano-Sahélienne." *Bois et Forêts des Tropiques*, no. 207, (first trimester):23–39.
- Chaumié, J. 1985. "La Gestion de l'environnement dans les pays sahéliens." *Les Cahiers de la Recherche-Développement* no. 8:17–24.

- Cohen, John M. and Norman T. Uphoff. 1977. "Rural Development Participation: Concepts and Measures for Project Design, Implementation and Evaluation." Rural Development Monograph No. 2. Ithaca: Rural Development Committee, Center for International Studies, Cornell University.
- Clément, Jean. 1982. "Estimation des volumes et de la productivité des formations mixtes forestières et graminéennes tropicales: Données concernant les pays de l'Afrique francophone au nord de l'Equateur et recommandations pour la conduite de nouvelles études," *Revue Bois et Forêts des Tropiques*, No. 198 (1982): 35-59.
- CTS. 1987. "Rapport de Synthèse des Groupes de Travail Interministériels: Définition d'une Politique des Prix de l'Ensemble des Combustibles Domestiques, et Intégration de la Tourbe dans le Circuit Traditionnel de Commercialisation du Charbon de Bois." République du Sénégal, Comité National de l'Energie, Dakar.
- Dia, Ibrahima. 1985. "Des Hommes et leurs forêts: Le Cas de Sare Lamine en Moyenne Casamance." Mémoire présenté pour l'obtention du Diplôme d'Etudes Approfondies en Sciences de l'Environnement, Institut des Sciences de l'Environnement, University of Dakar, July 1985.
- Fortmann, Louise and John W. Bruce. 1988. *Whose Trees? Proprietary Dimensions of Forestry*. Boulder: Westview Press.
- Foury, P. 1953. "Politique forestière au Sénégal," *Revue Bois et Forêts des Tropiques*, No. 30 (July/August 1953): 8-21.
- Freudenberger, Mark Schoonmaker. 1992. "The Great Gum Gamble: A Planning Perspective on Environmental Change in Northern Senegal." Ph.D.thesis, University of California, Los Angeles.
- Gellar, Sheldon. 1982. *Senegal: An African Nation Between Islam and the West*. Boulder: Westview Press.
- Guèye, Massata. 1985. "Comportements énergétiques des ménages à Dakar: Le Cas de la guêpe tapée," Mémoire présenté pour l'obtention du Diplôme d'Etudes Approfondies, DEA, en Sciences de l'Environnement, University of Dakar.
- Giffard, P. E. L. 1974. "L'Arbre dans le paysage sénégalais: sylviculture en zone tropicale sèche." Dakar: CTFT.
- Gonzalez, Patrick. 1992. "New Directions and Old Lessons of Internationally Financed Natural Resource Projects in Senegal." Berkeley: Energy and Resources Group, University of California, Berkeley.

GGAOF [Gouvernement Général de l'Afrique Occidentale Française]. 1916. "Réglementation forestière." Colonie du Sénégal, Service de l'agriculture et des forêts, Saint-Louis: Imprimerie du Gouvernement.

\_\_\_\_\_. 1933. "No. 26 S.E.—Circulaire sur la Politique Forestière." *Journal Officiel du Sénégal*, 16 February 1933:142–43.

\_\_\_\_\_. 1935a. "No. 1704 A.P.—Arrêté promulguant en Afrique occidentale française le décret du 4 juillet 1935, sur le régime forestier de l'Afrique occidentale française." *Journal Officiel du Sénégal*, 24 July 1935: 599–606.

\_\_\_\_\_. 1935b. "No. 2195 S.E.—Arrêté Définissant la Limite sud de la zone sahélienne et réglementant l'exploitation des forêts." *Journal Officiel du Sénégal*, 28 September 1935:791–3.

\_\_\_\_\_. 1937. "No. 295 AGR.—Arrêté fixant certaines conditions d'application du Décret du 4 Juillet 1935, sur le régime forestier en Afrique occidentale française, et réglementant l'exploitation et la circulation des produits des forêts dans la colonie du Sénégal." *Journal Officiel du Sénégal*, 1 February 1937:114–20.

\_\_\_\_\_. 1938. "No. 3151 FOR.—Arrêté modifiant l'Arrêté No. 295 AGR du 1 Février 1937. Fixant certaines conditions d'application du Décret du 4 Juillet 1935 sur le régime forestier en Afrique occidentale française et réglementant l'exploitation des produits des forêts dans la colonie du Sénégal." *Journal Officiel du Sénégal*, 19 October 1938:883.

\_\_\_\_\_. 1939. "Rapport du Service des Eaux et Forêts pour l'année 1939." Direction Générale des Services Economiques, Inspection Générale des Forêts, Dakar de l'Afrique Occidentale Française, 6 January 1941.

\_\_\_\_\_. 1940. "Rapport Annuel des Eaux et Forêts pour l'année 1940." Direction Générale des Services Economiques, Inspection Générale des Forêts de l'Afrique Occidentale Française.

\_\_\_\_\_. 1941. "No. 2092 FOR—Arrêté fixant les modalités d'application dans la colonie du Sénégal de l'arrêté général no. 3782 du 15 novembre 1938, réglementant les exploitations industrielles de bois de feu et de charbon, Saint-Louis le 28 juillet 1941." *Journal Officiel du Sénégal*, 7 August 1941:443–5.

Gritzner, Jeffrey A. 1988. *The West African Sahel: Human Agency and Environmental Change*. Geography Research Paper No. 226. Chicago: University of Chicago, The Committee on Geographical Studies.

- Krueger, Anne O. 1974. "The Political Economy of the Rent-Seeking Society." *The American Economic Review* 64, no. 3.
- Lai, Chun K. 1986. "Forestry Planning: The Senegalese Experience." *Rural Africana* no. 23-24 ( Fall 1985/Winter 1986): 87-94.
- Laurent, D. 1985. "L'Economie de l'utilisation des produits ligneux dans les pays participants à COMIDES 2 — Situation et perspectives." Deuxième Conférence Ministérielle pour la Lutte Contre la Désertification et la Sécheresse, République du Sénégal, Ministère de l'Environnement et de la Protection de la Nature, Dakar, 1 through 9 November 1985.
- Leitmann, Josef. 1987. "Draft Report on Household Energy Strategies for Senegal." Unpublished paper, World Bank.
- Le Roy. 1985. "La Loi sur le Domaine National à vingt ans: Joyeux anniversaire?" *Mondes en Développement*, Special issue on Senegal 13, no. 52:667-85.
- Madon, Gérard. 1987. "Note sur le contrôle des flux de charbon de bois," Report ENERDOM/SEN/87, DE-MIDA/World Bank, DEFC-MPN.
- Mortimore, Michael. 1989. *Adapting to Drought: Farmers, Famines and Desertification in West Africa*. Cambridge: Cambridge University Press.
- Ndao, Birane and Alain Ruche. 1985. "Approche économique du développement forestier au Sénégal." Ministère de la Protection de la Nature, Direction des Eaux, Forêts et Chasses, Cellule de Planification, Suivi et d'Etudes Economiques (Projet PARCE), Dakar July 1985.
- Niang, Seydou. 1985. "Régénération naturelle après exploitation forestière pour le charbon de bois et le bois de chauffe dans la Zone de Dialinkine (Moyenne Casamance)." Mémoire présenté pour l'obtention du Diplôme d'Etudes Approfondies, DEA, en Sciences de l'Environnement, University of Dakar, Dakar, July 1985.
- \_\_\_\_\_. 1989. "Impact de la production de charbon de bois sur l'écosystème forêt," *Proceedings of Colloque Forêts et Environnement*, Institute Sciences de l'Environnement, Dakar.
- PARCE. 1983. "Sénégal Etude des prix des combustibles ligneux (Version provisoire)." Projet d'Aménagement et de Reboisement des Forêts du Centre-Est, Dakar: Ministère de la Protection de la Nature.
- Peluso, Nancy Lee. 1992. *Rich Forests, Poor People: Forest Access Control and Resistance in Java*. Berkeley: University of California Press.

- République Française. 1904. "Rapport au Président de la République Française, suivi d'un décret portant organisation du Domaine en Afrique occidentale française." Ministère des Colonies, Direction de l'Afrique; 1<sup>er</sup> Bureau: Afrique, 23 October 1904.
- République du Sénégal. 1972. "Arrêté interministériel no. 10003 du 4 septembre 1972 créant la carte professionnelle d'exploitation forestière." *Journal Officiel de la République du Sénégal*, 23 September 1972.
- . 1980. "Arrêté portant organisation de la Campagne d'exploitation forestière pour l'année 1980/81." Decree no. 2277 of 4 November 1980, Secrétariat d'Etat aux Eaux et Forêts, Direction des Eaux Forêts et Chasses.
- . 1981. "Plan Directeur de Développement Forestier, Phase de Diagnostique: Economie de bois, 1<sup>ère</sup> et 2<sup>ème</sup> parties." Ministère du Développement Rural, Secrétariat d'Etat aux Eaux et Forêts, Paris: CTFT/SCET-International.
- . 1988. Décret No. 88.582, du 15 avril 1988, Modifiant les dispositions de l'article 4 du décret No. 87.316 du 14 mars 1987 portant relèvement des redevances en matière d'exploitation forestière."
- . 1984. "Conférence ministérielle sur la désertification," MPN, DAKAR 18-27 July.
- . 1992. "Projet de Loi Portant Code Forestière." Ministère du Développement Rural et de l'Hydraulique, Dakar, November 1992.
- Ribot, Jesse C. 1990. "Markets, States and Environmental Policy: The Political Economy of Charcoal in Senegal." Ph.D. thesis, University of California, Berkeley.
- . 1993a. "Market-State Relations and Environmental Policy: Limits of State Capacity in Senegal." In *The State and Social Power in Global Environmental Politics*, ed. Ronnie D. Lipschutz and Ken Conca. New York: Columbia University Press.
- . 1993b. "Forestry Policy and Charcoal Production in Senegal." *Energy Policy* 21, no. 5: 559–85.
- Tall, Siriff. 1974. "L'Economie du charbon de bois à Dakar." Mémoire présenté pour l'obtention du Diplôme d'Etudes Approfondies, DEA, Département de Géographie, University of Dakar, Dakar, October 1974.
- Tibesar, Arthur and Rodney White. 1985. "An Analysis of Household Energy Use in Dakar, Senegal." Dakar: Project Econville, Working Paper No. 27, Institute of Environmental Studies, University of Dakar.
- World Bank. 1992. *World Development Report*. Cambridge: Cambridge University Press.