

**THEORIZING ACCESS:  
FOREST PROFITS ALONG SENEGAL'S CHARCOAL COMMODITY CHAIN**

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## **Abstract**

Who profits from commercial forestry, and how? Through access mapping with commodity chain analysis this article examines the distribution of benefits from Senegal's charcoal trade and the multiple market mechanisms underpinning that distribution. Benefits from charcoal are derived from direct control over forest access, as well as through access to markets, labour opportunities, capital, and state agents and officials. Access to these arenas is based on a number of inter-related mechanisms including legal property, social identity, social relations, coercion and information control.

A commodity chain is the series of relations through which an item passes, from extraction through conversion, exchange, transport, distribution and final use. Access mapping involves: 1) evaluating the distribution of profits among and within the groups (villagers, producers, merchants...) along the chain; and 2) tracing out, or mapping, from that distribution the mechanisms by which access to benefits is maintained and controlled. Access mapping sheds light on the limited role of property, the embedded nature of markets, and the role of extra-legal structures and mechanisms in shaping equity and efficiency in resource use. It does so in a socially situated, multi-local manner, spanning the geographic spread of production and exchange. It also illuminates the practical issues surrounding establishment of community participation in benefits from and control over natural resources.

...if the market model treats the most important problems as exogenous factors to be invoked to explain why things do not work out correctly, perhaps the model and exogenous factors should change places. (Fredrick Cooper, 1993:89.)

## **I. Introduction: Commodity Chains and Access**

In Senegal the ensemble of activities and relations in and around the production, exchange, transport and distribution of charcoal are known to those involved as the charcoal market (*marché*) and as the charcoal commodity chain (*filière*).<sup>1</sup> A commodity chain is a series of interlinked exchanges through which a commodity and its constituents pass from extraction or harvesting through production to end use.<sup>2</sup> As such, commodity chains serve as conduits through which commercialized natural resources--such as Senegal's forest products--are ushered from the land, through fabrication, to their final users, whether rural, urban or 'international'. Commodity-chain analysis is a method for analyzing how and for whom such market conduits operate. It is a tool for understanding who benefits from natural resources, how they benefit, and how those patterns of benefit distribution might be changed. By tracing the chain of interactions along Senegal's charcoal *filière* or commodity chain, this article examines the dynamics of control and maintenance of commercial forest access: the ability to derive commercial benefits from Senegal's forests.

Bernstein and Amin (1995:2-3, cf Bernstein 1996:121-3) outline the distinctive features of commodity-chain analyses. First is an empirical, as well as theoretical focus on markets, in lieu of formal abstract neoclassical economic modeling (also see Bohannan and Dalton, 1965; Harriss, 1984; Plattner, 1985; J. Alexander, 1987; P. Alexander 1993; Mackintosh, 1990; Ribot, 1990; Ensminger, 1992; Hewitt de Alcantara, 1993; Dilley, 1993; Bernstein and Amin, 1995).<sup>3</sup> Second is attention to power: its sources, uses and effects in a socially differentiated environment. Third is an approach to politics and political institutions as endogenous to the existence and functioning of markets, with attention to differentiated market agents engaging in collective action. Fourth, and last, is the view that regulation (by which they mean both state and non-state forms of control) too is an endogenous feature of markets, hence shifting debates from their current focus on 'more vs. less' regulation to the study of 'better vs. worse' forms of regulation. I would add, this method of analysis broadens predominant focus on individual mechanisms of control and accumulation--such as prices or property--to include in the analysis of markets the whole repertoire of interacting mechanisms shaping their operation. Further, it locates production and exchange as embedded within social relations and hierarchies (Gereffi, Korzeniewicz and Korzeniewicz, 1994:2; cf Granovetter, 1985, and Platteau, 1996 writing on the 'market order' problem). It does so in a multi-local manner, spanning the geographic extent of production, distribution and exchange.

This article develops commodity-chain analysis, applying it to Senegal's charcoal market to make several interrelated points. First, it contributes to the empirical challenge to abstract notions of markets. Such empirical analysis puts the 'exogenous factors' of neoclassical-economics at the center of the picture. The article also aims to shift attention away from property as the privileged analytical focus in current analyses of economic efficiency, equity and environmental change. It puts property in place as one mechanism among many operating on access along the commodity chain. Further, by empirically examining the array of mechanisms shaping the control and maintenance of access, this analysis opens up the critical space beyond the prescriptions of law (whether property, as in permits, licenses and titles; the official structures of authority; etc.). It is in this space beyond and against idealized legal prescription and economic description that economic and ecological outcomes take shape. It is this space that such empirical enquiry illuminates.<sup>4</sup>

On the applied side, the article presents a method for identifying the distribution of benefits from natural resources, and the mechanisms supporting that distribution. Under the banner of participatory development, there are multiple calls to increase 'community' or 'indigenous' benefits from local resources and products.<sup>5</sup> But, most participatory approaches to forestry as well as property oriented environmental reforms are predicated on rather vague notions of local resource control. Commodity chain analysis illuminates both the location of benefits to be devolved and the tools that could be used to devolve these benefits to local populations. Insights from this approach could give some bite to the currently toothless 'participatory' approaches so popular in environment and development circles (see Ribot, 1995a;1996).

Section II, below, outlines a theory of access and its use with commodity chain analysis. Section III introduces the case study and provides a sketch of Senegal's charcoal *filière*--who the actors are and how they operate. Section IV examines the distribution of benefits from the charcoal trade. Section V traces out the mechanisms supporting access to those benefits for each set of actors within the *filière*. Section VI concludes.

## **II. Mapping Access along the Commodity Chain, Putting Property in Place**

### **A. Access: Encompassing Property**

*Access*, according to Merriam-Webster (1993:6), is the "freedom or ability to obtain or make use of." The term *access* is closely related to the term *property*, which MacPherson (1978:3) characterizes as "...a right in the sense of an enforceable claim to some use or benefit of something." One crucial difference resides in the terms *ability* and *right*. The term *right* implies an acknowledged claim that society supports (whether through law, custom or convention). The term *ability*, however, is broader than *right*, resting solely on the fact of demonstration without the need for any socially articulated approval. *Right* is a prescriptive concept. *Ability* is a descriptive term. *Property* is de jure. *Access* includes the de jure and the de facto or extra-legal.<sup>6</sup>

Extra-legal mechanisms, structures and relations governing resource use include: social identity (or status, based on gender, age or nobility, see Berry, 1993:16-7); social relations (as in friendship, family, lineage, historical ties among individuals and groups--often based on social identity--cf Granovetter, 1985; Coleman, 1988; Platteau, 1996); coercion and trickery (i.e. misinformation, threats of violence or even theft); material wealth (financial and material capital, etc.); or physical circumstance (location or stature). Individuals, for example, who have capital or a particular status can enter and use a given resource: even against the rules produced by society (state or otherwise). Theft and other rule breaking may go un-punished since culprits are not caught or because those in society who observe the rule-breaking differ with the authorities who make and enforce the rules. The rules themselves may be contested among co-existing legal systems (cf Peluso, 1992:13-19; also see the literature on legal pluralism: Griffiths, 1986; Moore, 1986; von Benda Beckmann, 1995, 1995a). The range of factors (de jure and de facto) governing resource use must include rules made by state and non-state groups, as well as the whole range of non-rule-based structural and relational factors.

Access is also not just gained via singular legal or extra-legal mechanisms. Powerful actors harness multiple mechanisms to produce structural complementarities that are also part of the ability to benefit. Forest villages that control direct access to forests (whether through threats of violence or formal property title), for example, may reap only a small portion of forest benefits if they do not also have access to markets and capital. While powerful merchants may have to maintain access to forest through the chiefs who control them, the merchants' profits are derived from direct forest

access, *plus* access to capital, *plus* access to the state for licenses, permits and quotas. Indeed, most of the benefits flowing from the forests derive from the resulting market control, not control of forests or trees. Direct control, and therefore even enforced ownership or property, does not automatically confer benefits. Access, or the ability to benefit, is based on a broader set of factors.

Mechanisms, structures and processes supporting access serve both its maintenance and control. Maintenance is about expending resources or powers keeping access open for one's self or others (cf Berry 1989; 1993). Control is the ability to mediate others' access (see Rangan 1997). Control is about power over others. These terms can loosely describe people and groups with different relations to the means of production, exchange and consumption. In this sense access can occur with or without control, or through some mix of control and maintenance, depending on the individual's place and powers within society. And, in this sense, access is akin to Ghani's (1995:2) broad notion of property as 'bundles of powers'--a step away from the widely used legalistic notion of 'bundles of rights' (Maine 1963[1861]).<sup>7</sup> The access approach outlined here disaggregates these bundles of powers and the mechanisms supporting them into their constituent strands (see Agrawal, 1996:3-5) as they shape not only ownership of things, but the overall flow and distribution of benefits associated with the whole trajectory of those things. Maintenance and control, are of course complementary aspects of related acts--they are about relations among actors vis-à-vis instances of appropriation or use.

The move from a focus on formal property to a broader access approach is a shift from prescriptive back to empirical political economy--with access having similarities to Marx's concept of property and the political economy to which it relates (see von Benda-Beckmann 1995:2,5).<sup>8</sup> For Marx property is appropriation (Marx, 1964[1844];, 1977[1858]). It is the fact or act of obtaining. He traced that fact back to relations of production based on previous appropriations in an unfolding historical process. Like Marx's focus on appropriation, a focus on access allows us to derive the political economy of distribution: to identify those who benefit, and understand how they benefit. It allows us to derive from the fact of access to benefits, or of appropriation, the repertoire of mechanisms (structures, relations and processes, such as legal ownership, rents, coercion, identity, etc.)--that is, the political economy--supporting that access. Unlike Marx's property, however, the access approach does not privilege material relations of production in explaining distributive outcomes. It admits material and social factors as equal objects of inquiry, allowing them an importance proportional to their role (cf Berry 1993).<sup>9</sup>

Further, *access* is already often used as a broader term than *property* (cf Agarwal, 1994:19; Berry, 1993; 1989; 1988; Bruce, 1988; Mearns, 1995; Okali, 1993; Peluso, 1992). It includes the socially sanctioned and the illicit, the de jure and the de facto, the right as only part of the ability. While property can be broadly defined (see Marx, 1977[1858]:349, 1964[1844]:341; Meek, 1946:1; MacPherson, 1978; Okoth-Ogendo, 1989; Nugent, 1993; Ghani, 1995), it is implicitly linked to legalistic, or rights-based, concepts of ownership, title and tenure. But rights and laws only partly shape who benefits from things and how. Legal ownership, tenure and title are just a few mechanisms among many that people use to support their ability to benefit. An access analysis is empirical. It is concerned with who has the "ability to obtain or make use of" benefits--in this case from natural resources--and how. It does not presume any set of rights, structures, processes, etc. that confer this ability. Rather, it derives them from observed practice. 'Access' does not replace the term 'property'. Rather, it encompasses property, putting property (and other forms of) rights in their place among the whole array of mechanisms, structures and relations at work. "Possession," may be, as the old adage goes "...nine tenths of the law," but law may be only a fraction of access.

## **B. Mapping Access, Following Commodity Chains**

Access mapping consists of: 1) identifying the actors involved in the extraction, production, processing, exchange, transport, distribution, final sale and end use of the commodity in question, that is, identifying the actors along the commodity chain; 2) evaluating income and profit at each level of (or among groups of actors within) the commodity chain through the analysis of prices and quantities of the goods handled by the different actors; 3) evaluating the distribution of income and profit within each group along the chain; and 4) using the distribution of these benefits among and within groups to trace out, or map, the mechanisms by which access to benefits is maintained and controlled. This method provides two maps: one of profit distribution and one of mechanisms, structures and processes at work in the control and maintenance of that distribution.<sup>10</sup>

In access analysis the object of inquiry--the value of concern--must be specified by the researcher. So must the measures or indicators of this value. The access approach takes value to be implicit in any act of appropriation or use (access control and maintenance)--since without value, or some benefit, the object would not be of concern. Value can be embodied in things, currencies, other persons, concepts, symbols, utterances and so forth--any object of appropriation or use.<sup>11</sup> In this article I use cash income and profits as an indicator of benefit, since this is an inquiry into economic accumulation and marginalization in commercial woodfuel production and exchange. My analysis examines the distribution of forest-derived income and surplus, or profit, and how the actors along the commodity chain leverage these gains.

In an analysis of access to income and profit, the primary factors are prices, quantities, and expenses. Profits accrue in the form of rents, for example, to those with control over access to markets, funds, tools, forests, etc.<sup>12</sup> This control over others' ability to benefit from or use these factors shapes prices and market shares, hence income and profit. Rents in this case are the benefits leveraged upon control--a matter of the social underpinnings of that control and the aggregate and specific, direct and indirect demand for that which is controlled.<sup>13</sup> The exchanges and transfers through which commodities flow are multi-stranded events, as are the bundles of powers that shape their terms. Access mapping is a method for exploring the bundles of powers behind control and maintenance of those terms. It is about the careful tracing out of the social and political-economic relations in which a chain of inter-related instances of benefit or profit are located.

## **III. Senegal's Charcoal *Filière*<sup>14</sup>**

In Senegal households depend on woodfuels (firewood and charcoal) for virtually all of their domestic energy needs. Rural households consume firewood directly, while urban households consume charcoal, produced by the partial burning (pyrolysis) of wood. Given the energy losses in conversion from wood to charcoal, the urban 30 per cent of Senegal's population of 7 million consumes over half of the total woodfuels produced nationally. Ninety per cent of Senegal's charcoal is consumed in the capital, Dakar. The result is a well defined charcoal *filière* organized around cutting and carbonizing wood in Senegal's forests, and ushering it to Dakar for distribution and use.

Senegal's charcoal market is composed of migrant woodcutters (or charcoal makers), called *surga*, who are mostly Guinean Fulbe migrant labourers hired by a *patron* (merchant) to cut wood and convert it into charcoal.<sup>15</sup> The *patrons* are organized into cooperatives regrouped by the National Union of Forestry Cooperatives (UNCF). These predominantly urban-based merchants hire woodcutters, give them subsistence advances and return (about three months later) to buy the charcoal when the *surga* inform them that charcoal is ready. The merchants hire truckers to transport

the charcoal from the forests to the cities where it is consumed. Once in the city, merchants sell their charcoal to a *coxeur*, or *urban wholesaler*, who then distributes charcoal to the retail vendors, called *Diallo keriñ*.<sup>16</sup> There are also *outlet owners* who own and manage the kiosks from which the *Diallo keriñ* sell their charcoal. Based on 1986 and 1987 surveys, the charcoal market includes roughly 11,000 migrant woodcutters, 2900 merchants, 300 wholesalers and 2000 retail vendors.

There is some vertical integration within the market. A handful of merchant-patrons own their own trucks and act as their own urban wholesalers. A few wholesalers and merchants also own retail outlets. The economic analysis below first analyzes income and its distribution at each level of the market, ignoring vertical integration, later taking into account that there are some actors within the market collecting the profits of more than one level of activity.

National Forest Service agents are another set of actors involved in the market, regulating it at the levels of production, transport, and final sale. The main regulations include: merchant licenses; mandatory organization of merchants into cooperatives; annual determination and allocation among cooperatives of a national charcoal production quota; an identity card for woodcutters; permits for wood cutting (specifying place and quantity allowed), transport and storage; a tax; and a fixed retail price.

In Senegal forests are National Domain. They are officially owned by the state and managed by the Forest Service. Yet, while the Forest Service tries to allocate commercial rights over forests to urban-based wood merchants (through licenses, permits and quotas), village chiefs control direct forest access, ultimately deciding whether or not to allow merchants and their hired woodcutters into the forests. Despite their control, chiefs and villagers reap only a small portion of the profits from commercial forestry. More substantial profits accrue to merchants and wholesalers. The analysis below quantifies distribution of income along the charcoal *filière* and examines the array of means and mechanisms, structures and relations by which it is produced and reproduced.

The data presented in the case are based on fieldwork in five villages in the Tambacounda Region of Eastern Senegal (where most charcoal is produced for urban markets) in 1986-7, 1989 and 1994 (cf Ribot, 1990; 1995a-d). The data were gathered through hundreds of structured and informal interviews (in five villages) with villagers and woodcutters, and surveys and interviews with merchants, transporters, police, forestry agents and ministry officials along the *filière* from Tambacounda to Dakar.

#### **IV. Who Benefits from Commercial Forestry? Income, profit and distribution**

It is astonishing the wealth that can be extracted from territories of the poor,...provided that the predatory élite are limited in number and provided that the state and the law smooth the way of exploitation. (E.P. Thompson, 1975:245.)

A highly skewed picture of the distribution of the benefits from commercial forestry emerges from careful analysis of price margins, expenses, and quantities handled by different actors in the charcoal *filière*. This section examines price structures and income distributions. It examines profits along the *filière* as they are constituted between buying and selling prices, expenses and market shares. Section V, below, explores the maintenance and control of the structures and mechanisms behind these parameters of forest profits.

##### **A. Vertical Distribution**

The top section of 1 presents estimates of 1987 charcoal prices based on extensive surveys, and recent prices based on a spot survey conducted in June 1994. The middle section of the table shows per sack expenses, and the bottom section shows the resulting margins (gross per sack income minus per sack expenses, or net per sack income) for each actor. The table also shows how prices, expenses and margins have changed between 1987 and 1994. The disproportional increase in merchant margins, partly due to devaluation, will be examined in the discussion of merchant income.

1, based on the 1987 data, presents the vertical distribution of income and of profit among the different groups within the market.<sup>17</sup> This table further breaks down the retail outlet income among vendors and their patron outlet owners. The net (that is, all work expenses deducted) annual average income figures are presented in column A. The profits for each actor, presented in column B, are the net incomes minus a *minimum* subsistence cost of living.<sup>18</sup> The numbers show that on average the wholesalers and merchants profit most. Other actors' incomes are not far above the subsistence level. There is a total of 2.3 billion CFA (\$ 6.6 million)<sup>19</sup> in profits being reaped by those directly involved in Senegal's charcoal market. As 1 shows, the groups making the greatest individual profits are the wholesalers, merchants and outlet owners. Vendors and woodcutters make a bit above subsistence.

Villages also profit from the charcoal trade. Village profits derive from payments of about 5000 CFA (\$14) to village chiefs for each truckload of charcoal coming out of the forests.<sup>20</sup> They are

**Table I: Price Structure of Charcoal Delivered to Dakar from the Tambacounda Region  
CFA/42 kg Sack**

<b>PRICES:</b>	Prices/ Expenses/ Margins Derived from Surveys 1987	Prices/ Expenses/ Margins Derived from Spot Checks June 1994
Woodcutter Price to Merchant	537	615
Merchant Price to Urban Wholesaler	1796	3250
Urban Wholesaler Price to Vendor	1940	3400
Retail Outlet (or Final) Price	2329	3990
<b>EXPENSES:</b>		
Forest Tax (Paid by Merchant)	75	250
Cost of Transport (Paid by Merchant)	663	900
Truck Unloading Labor (Paid by Merchant): <sup>a</sup>	35	50
Diverse Costs:		(1987 Extrapolations)
-Paid by Migrant Woodcutters	67	91
-Paid by Merchants	103	140
-Paid by Urban Wholesalers	0	0
-Paid by Retail Outlet	57	77
Total:	227	308
<b>MARGINS:</b>		
Migrant Woodcutters	470	524
Merchants	383	1295
Urban Wholesalers	144	150
Retail Outlet	332	513

SOURCES: Ribot, 1990; 1995d.

<sup>a</sup>Truck Loading cost 25 and 65 CFA in 1987 and 1994 respectively. Loading costs are paid by merchants to woodcutters and are therefore included in the woodcutter price.

Note: In this analysis transport and truck unloading are counted simply as expenses for the primary actors in the charcoal *filière*.



essentially rents that village chiefs can charge on access to surrounding forests. The total profits accruing to village chiefs across Senegal amount to 72 million CFA (\$200,000). This can be as much as 600,000 CFA (\$1700) per chief depending on the amount production the given village--but, it is usually much less. In total this is three per cent of the total profit within the charcoal trade. Villagers also gain significant indirect income (some of which is profit) by renting out huts and providing meals to migrant woodcutters (discussed below).

### B. Horizontal Distribution

While average profit figures show stratification among different groups or classes in the charcoal trade, they do not reveal intra-group stratification. Income among the retailers and the migrant woodcutters is relatively evenly distributed. Among the outlet owners, income distribution may be skewed, but the data are insufficient to evaluate this. Within the merchant and wholesaler classes and within villages income distribution is highly skewed. Retailer and woodcutter incomes are generally just above subsistence--the cost of room and board. Few woodcutters or retailers make twice the average income of their group. While their incomes exceed the cost of living, the members of these groups are usually in debt or without savings. Their additional income goes to other basic needs, including remittances to support their families.

There is, however, considerable concentration among the merchants and wholesalers. More than 4000 merchant licenses

**Table II: Vertical Distribution of Income from Commercial Charcoal Production in Senegal 1987**

Groups Directly Involved in Charcoal Market	Group Size	(A) Avg. Net Income (1000 CFA/ person) <sup>a</sup>	(B) Avg. Net Profit (1000 CFA/ person)	Distribu- tion Within Group
Retail Vendors	1,850 <sup>b</sup>	270	56	even
Retail Outlet Owners	1,850 <sup>b</sup>	375	161	skewed
Urban Wholesalers	300	1,700	1,486	skewed
Merchants	2,870	480	266	skewed
Migrant Woodcutters	11,650	145	57	even
<b>Totals</b>	<b>16,670</b>			
Comparisons:				
Annual GDP/capita		145		
Legal Minimum Wage		595		
Min. Cost of Living				
-Urban		214		
-Rural		88		

SOURCE: Ribot, 1990.

<sup>a</sup>Net incomes are based on the volume of charcoal handled, the numbers of actors and margins from Table I.

<sup>b</sup>This is the number of retail outlets in Dakar plus other cities, it is not the number of vendors nor outlet owners. Some outlets have several vendors and some owners have several outlets. In dividing the income between vendors and owners, the income of vendors is derived directly from surveys while that of outlet owners (per outlet) is a residual. The number of outlet owners is not known.

are registered with Senegal's Forest Service. Over thirty per cent of these 'merchants' are registered simply to fill cooperatives with dummy members, justifying larger quotas for the cooperative. They make nothing from the charcoal trade. Less than 2900 registered merchants actually work in charcoal. The range of profit among merchants is enormous, with most making very little (under 35,000 CFA, or \$100, per year) from the occasional trade in production permits while others are engaged more directly in the financing of production and trade. The approximately one-hundred-and-seventy presidents and treasurers of the market's eighty-five cooperatives take most of the quotas allocated to their cooperatives. Most of these merchants make anywhere from 350,000 to nine million CFA (\$1000 to \$25,000) annually. Only fifteen to twenty of these merchants control over fifty per cent of Senegal's charcoal commerce. Similarly, most wholesalers are small operators, while only about twenty five control half of urban wholesale. Many of the larger wholesalers and a handful of merchants also own vending outlets, hence they collect an outlet owner's income in addition to the income from wholesaling and trade.<sup>21</sup> In the analysis of 1987 data the top twenty largest merchants and twenty-five largest wholesalers bring in profits on the order of twenty million CFA (\$60,000) and ten million CFA (\$30,000) per year respectively.

A similar analysis, assuming the 1987 horizontal distribution of income in the market and using 1994 price structures, shows that the income gained from the sale of charcoal in Dakar<sup>22</sup> for the wealthiest twenty merchants and the top twenty five urban wholesalers would average approximately 105 million CFA (\$300,000) per year for the merchants, and around 11 million (\$33,000) for the urban wholesalers (Ribot, 1995d).<sup>23</sup> This extreme concentration is in line with other recent observations. In August 1994 the single largest merchant in the market was allocated a supplementary quota (above his initial annual quota) of over 250,000 sacks of charcoal for his private enterprise (Sarr, 1994; personal communications with Forestry Officials, 1994).<sup>24</sup> The profits from selling the charcoal from this supplementary quota alone are on the order of 280 million CFA (\$500,000).<sup>25</sup>

In stark contrast to the income of the large wholesalers and merchants, minimal direct benefits remain with village populations. These benefits accrue to the village chief, who can charge a rent on forest access. In 1987, for example, in Daru Kimbu, a Tambacounda village of 500 Serer and Wolof inhabitants, 100 migrant Fulbe woodcutters living temporarily in the village, produced 35,000 sacks of charcoal in surrounding forests. Charcoal merchants, the woodcutters' patrons, paid the village chief 1250 to 5000 CFA per 300-sack truckload, or between 200,000 to 600,000 CFA (\$600 to 1700): about 400 to 1200 CFA (\$1 to \$3.50) per person within the village (were it evenly distributed). Per truckload payoffs go directly to the village chief--it varies greatly how much chiefs spend on behalf of their village.

These village figures do not account for the subsistence costs of women's labour or direct losses of forest stock, nor the indirect benefits of having migrant woodcutters temporarily in the village. For example, the 100 woodcutters in Daru Kimbu spent a total of about 7.2 million CFA (\$20,000) to rent a hut and "bowl" (or meals), at 6000 CFA per month per head, from village households. (The actual total would be somewhat lower than this since woodcutters often left without paying debts upon the sale of their charcoal.) On average, if this income were evenly distributed, each villager would have a gross income of 14,000 CFA (\$41) per year, but this income is concentrated in the hands of about thirty male heads of households annually grossing on the order of 200,000 CFA (\$600) each.<sup>26</sup>

Direct profits accruing to the village from the charcoal trade equal about three per cent of total profits along the charcoal *filière*. Indirect gross income is about ten per cent of gross market

revenues (I use gross revenues here since expenses cannot be netted out). By and large, however, villagers experienced the charcoal trade as an uncompensated loss of the forests which supplement subsistence needs of most villagers. But, those who do benefit--male heads of households and the village chief--have power over the decision as to whether to allow woodcutters into the village. Distribution of the few benefits from the charcoal trade remaining in the forest villages is skewed along gender and authority lines.

I examine the underpinnings of this distribution in the section below.

## **V. Means of Access Control and Maintenance**

Access to commercial benefits from Senegal's forests is controlled and maintained through different mechanisms at each level of the market. Villagers, migrant woodcutters, merchants, wholesalers and the vendors are all drawing on different means of access maintenance and control. Below I examine the means by which those who benefit from the charcoal trade maintain their access to income and profits.

### **A. Villagers**

Forest village income derived directly from the woodfuel trade is obtained through village control over direct access to forests--it is the rent village chiefs can charge by dint of their control of forest access. Indirect income comes from village households providing room and board to migrant woodcutters. Very few villagers work in woodfuel production or exchange.

Legally forests are 'National Domain' administered by the National Forest Service. In an annual meeting, the Forest Service specifies the regions where woodcutting will be legal. Within these zones, forestry field agents provide permits to migrant woodcutters who work under the license of their merchant-patrons. The permits specify the quantity to be produced, the duration of production and the exact location of the woodcutters' production parcels. Parcel location is officially chosen on ecological criteria. In practice, however, village chiefs and merchants, rather than Forest Service agents, shape the spatial distribution of charcoal production. Merchants pressure foresters to give them production parcels in areas close to villages for easy access to roads and other village infrastructure. Foresters usually capitulate, pressing villages to accept.

But, the ultimate decision to allow migrant woodcutters into a forest around a village is in the hands of village chiefs. Village chiefs not wishing to host woodcutters assigned to their area by the Forest Service exclude the woodcutters by threatening violence or by refusing to provide them with room and board. Woodcutters need village infrastructure to operate. They need housing, food, water from the village well, and roads to bring their charcoal to urban markets. The decision to exclude woodcutters from the village helps assure their exclusion from the forest.<sup>27</sup>

The chief's decision is shaped by both the wishes of villagers and by the outside influences of forestry agents and woodfuel merchants. Based on surveys and interviews in five forest villages in Eastern Senegal's woodcutting zones the majority of villagers (women and men) do not want cutting in surrounding forests, since for most villagers woodfuel commerce is a net loss. The loss of forests--given their economic and subsistence value--is a burden for the community as a whole and for women in particular (cf Bergeret and Ribot 1990). The presence of woodcutters in village households also creates extra work--cooking and cleaning--for the women, and leads to conflicts over limited well water, roads destroyed by charcoal trucks, sexual liaisons and unpaid rents. Most villagers object to woodcutting by the migrant woodcutters because of these losses and hardships. Many villagers also, however, object strongly to the fact that they cannot themselves cut and sell forests for their own direct profit. Thus, resistance to woodcutting is not simply to conserve the forests--

something that is a concern to many. It is also in objection to exclusion of forest villagers from lucrative charcoal production and trade. There is in essence a moral economy of vertical integration (e.g. of access to market profits) in which villagers feel entitled to a share of the profits being reaped from 'their' forests in the processes of production as well as exchange (cf Scott 1976).

Despite its negative consequences and widespread villager objections, chiefs often allow woodcutting by migrants. This is partly because the chiefs, along with those heads of households collecting woodcutters' rents on their huts, benefit greatly from the woodfuel trade. In addition, chiefs experience pressures from outside merchants. A merchant may be a politician or religious leader, or may bring the influence of such notables to bare on the chief. Chiefs find it difficult to turn down requests of these powerful figures, whom they often need to turn to in difficult times. Further, the Forest Service aligns with merchants pressuring chiefs to give merchants forest access, and the merchants routinely pay the chiefs off. Foresters intervene with ideological proclamations concerning the 'national good' and 'environmental management' which they argue necessitate the forest service to direct forest use (cf Peluso, 1992). It is no surprise that chiefs often give merchants access to village forests, contrary to the wishes of most villagers. But, those chiefs deciding to exclude woodcutters can and do--despite merchant pressures and the Forest Service's legal control.

In short, direct forest access is controlled by village chiefs. The chief's decision is itself shaped by the chief's relation with villagers and their embeddedness in a broader set of extra-village social and political-economic relations. Village chiefs have effective control over direct access to village forests. The tools by which they exercise their control include: 1) threats of violence to woodcutters and 2) withholding of access to essential village infrastructure.

### **B. Migrant woodcutters--the charcoal makers**

Migrant woodcutters find work through merchants (discussed in the next section) who control labour opportunities through allocation of production permits, subsistence loans and control over marketing. The woodcutters gain access to their merchant patrons through long-standing relations. Woodcutters are also tied to their merchant patrons through interlocking credit-labour arrangements and other historical economic and extra-economic ties.<sup>28</sup>

Merchants are mostly Guinean Fulbe from a class of 'former' nobles. They work with 'former' Captive Fulbe migrants coming from their home region.<sup>29</sup> These migrants are attractive labourers for merchants since they are very poor, have been able to find no work elsewhere and are dependent if not cheap. They are also free of obligations to the forest villages in which they work. Whereas migrants depend on their merchants, villagers are more tied to the village than to the merchant. A villager is less likely than a migrant to continue to produce charcoal in the forest surrounding his village if other villagers object (even when the chief allows it). Hence, merchants work with migrants whose historical vertical ties to them are stronger than their horizontal ties to the village in which they work, and whom they can trust with advances.

It is also difficult for any woodcutters to work without a merchant patron since the merchants protect illegal and legal woodcutters from fines or extortion by forestry agents. When forestry agents fine or confiscate charcoal from woodcutters whose permits are expired or who have no permit at all, the merchant patron will step in and resolve the problem on behalf of their worker. Those without strong merchant patrons risk losing income to fines and payoffs--even if they are working perfectly within the bounds of the law. So, ties to the merchant class are necessary to work safely and profitably in the forests.

Stigma and taboo also help explain why migrants dominate this profession. Due to the caste nature of charcoal production (usually associated with blacksmiths), most villagers will not

participate. Charcoal production is generally viewed as lowly and dirty work. Senegalese say that even the money made from charcoal is dirty. Guinean migrants, however, are less influenced by these constraints. As one migrant now living in Senegal explained: "There are things you don't do where you live. If you ask me to take a broom and sweep the streets of Koumpentoum, forget it! But, if I go to Europe and you ask me, I would have no problem." (Guinean Woodcutter, November 1994.) In recent years, however, due to partly to widespread economic crisis, some non-Fulbe villagers have expressed interest in working in this lucrative trade. They have not been able to because, as they describe it, merchants are not willing to provide them with permits and subsistence loans, nor will they buy their charcoal.

Technical knowledge also makes entry difficult for other non-Fulbe. The building and firing of a charcoal kiln is a highly technical matter (see Bergeret and Ribot, 1990:163). Among the Fulbe woodcutters there are expert kiln builders who attend work parties at which the woodcutters gather to arrange a given woodcutter's wood into a kiln configuration before firing. This technical knowledge constitutes an entry barrier for other ethnic groups. In 1994, however, some Fulbe charcoal makers (woodcutters) taught the technique to Sarakholé villagers in the Tambacounda Region, but these villagers stopped producing because they could not find merchants willing to advance them subsistence loans for the production period and to buy their charcoal at the end. This may partly be due to the migratory nature of the work, making it less attractive to cultivate relations with and hire sedentary laborers.

Woodcutter-villager relations, stigma, technical knowledge, and movement all help explain why non-Fulbe merchants (mostly Wolof who entered the market in the 1960s) also choose to continue working with Fulbe woodcutters. In sum, migrant Guinean Fulbe maintain access to merchant-controlled labour opportunities in charcoal through Guinean Fulbe social identity, the establishment and maintenance of direct social ties with merchants, and stigma and technical knowledge that constitutes barriers for others.

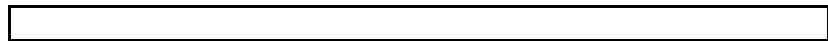
### **C. Merchants**

Merchants control access to marketing and to labour opportunities through control over quotas, identity cards and permits. To become a merchant, that is to obtain a merchant's professional license, cooperative membership is required by the state. When the Forest Service first made cooperatives mandatory in 1983, to keep the forestry sector in line with the socialist government's agricultural cooperative movement, the official aim was to develop producer cooperatives.<sup>30</sup> But, merchants organized into cooperatives rather than producers, since producers did not have the social or economic means. Cooperatives were and are difficult to form due to high entry barriers in the form of social relations as well as official and unofficial payments that make entry prohibitive. It is also very difficult to enter existing cooperatives without close social ties with the member merchants. Further, merchant licenses are allocated by the Forest Service in limited numbers. This effectively holds the total number of merchants operating in the market constant, making entry into the merchant class even more difficult. Without cooperative membership and a professional license, a merchant cannot obtain quotas, identity cards for their woodcutters, production permits, storage permits or circulation permits, making trading in the charcoal market extremely difficult.<sup>31</sup>

Within the merchant class, access to quotas is the main factor shaping the great differences in income. The distribution of quotas is officially predicated on a formula. Each cooperative receives its annual quota from a commission of Foresters and Ministry personnel, based on how much they produced the pervious season and whether they used up their quotas early or had leftover quotas at the end. Within a given season the Forest Service allocates supplementary quotas to those who use their quotas early. To obtain these quotas relations with ministers, Forest Service officials, union leaders (of the National Union of Forestry Cooperatives and the National Federation of Cooperatives of Senegal), powerful *marabouts* (Islamic religious leaders), and/or political figures is essential. Merchants eke out supplementary quotas through social ties to these powerful personalities who pressure the Forest Service to deliver extra quotas. Supplementary quota delivery has little to do with the actual rate at which a cooperative uses its initial quota. Those merchants with the closest ties within the state control the largest share of the quotas, and hence of the market's profits. 1 illustrates the channels by which merchants eke out 'supplementary' quotas from the forest service. (Ribot, 1993.) Note that there is no parallel market in charcoal. There is only one road entering Dakar (which is on a peninsula), and official papers are required to enter the city. One large merchant explained: why would we risk

circumventing the control points and getting our charcoal confiscated when getting quotas is so easy. The risks are simply too high for merchants to try sneaking this bulky product into the city.

Selective access to state agents for state-allocated resources, such as licenses or quotas, and for exemption from prosecution for infractions is another important mechanism by which merchants concentrate wealth within the merchant class. Merchants well connected to state agents--foresters or ministers--can both obtain extra quotas through their relations and avoid prosecution for infractions, such as expired permits, overloaded trucks, un-inspected vehicles, expired permits, off-season production, etc. Policy circumvention and the allocation of favors by state agents is by no means random. It runs along specific social lines. Some merchants can use



**Figure 1: Channels of Access to State Officials and Agents**

state access to increase their benefits from the charcoal trade, and others cannot. Hence, both entry into the merchant class and concentration within it are supported by the strength of a merchant's social ties. Selective policy non-implementation or circumvention, is another tool of access control and concentration.

Credit is another barrier to market entry. To operate as a merchant requires cash: 1) to advance woodcutters subsistence loans; 2) to pay the taxes on charcoal; 3) to pay the woodcutter price of charcoal; and 4) to pay the price of transport. In addition, since retailers in Dakar rarely have cash to pay for a whole truckload of charcoal, someone in Dakar must be able to advance them the charcoal and return to collect payments in periodic installments. For this arrangement to work, merchants must build up a clientele of trusted urban wholesalers to whom they can sell, or at times advance their charcoal. This network of 'social capital' is essential, since merchants or would-be merchants need to trust those to whom they often must advance their product. Hence, operating as a merchant requires both monetary and social capital (cf Bordieu 1977:185; Coleman, 1988).<sup>32</sup>

Merchants control access to the benefits that flow from charcoal production and commercialization through control over the terms of trade. The woodcutter price of charcoal is fixed collusively among the merchants, who organize through their union. This collusive collective action by merchants seriously limits the ability of woodcutters to increase their share of income from the charcoal trade. The merchant's union also lobbies to keep up the final price of charcoal in Dakar, gaining a major increase just after the devaluation of the CFA in 1994. In this manner they maintain their large profit margins.

Indeed, after the CFA was devalued by from 50 to 100 CFA per French Franc, the merchants argued that they were disproportionately burdened by increased expenses in transport (fuel and spare parts), and that their buying power was severely compromised. Using such arguments they managed to convince the Forest Service and Ministry of Commerce to raise the official fixed price of charcoal from forty<sup>33</sup> to ninety five CFA per kilogram. This was in the face of popular protests against increasing charcoal prices. As can be seen in 1 (above) the merchants margins went up more than three fold from 383 to 1295 CFA per sack. While the devaluation was used as a lever, the large price increase can hardly be justified by the devaluation. No other portion of the price structure changed so drastically. Retail incomes went up by fifty per cent, as did the price of transport (discussed below). Woodcutter and wholesaler incomes went up on the order of ten per cent over the same period. Devaluation, or rather economic arguments based on the fact of devaluation, served as a lever for merchants to drastically increase their profit.

Information control and distortion is another way merchants maintain access to their share of forest benefits. In the mid 1980s the Forest Service (with international Donor support) introduced an efficient charcoal kiln offering woodcutters direct access to quotas in order to entice them into using the new kiln. Merchants were threatened by the new arrangements--quotas going directly to woodcutters. The forest Service arranged a workshop to teach the new charcoal making technique and cut wood in advance so as not to waste time the day of the workshop. Mysteriously, someone set fire to the wood the day before the workshop was scheduled to begin. The local agent hired to teach the technique panicked and confiscated wood (at gunpoint) from a group of woodcutters in the forest. After the workshop the merchants spread aspersions about the kiln, saying that anyone using it was a thief. They also fought with the Forest Service to change their incentive policy. The kiln never caught on since most woodcutters did not want to be associated with the negative image that the merchants had successfully dispersed. The kiln project fell apart after several years. The merchants had succeeded in plugging a leak in their otherwise hermetic control (via quotas) over market access.

In addition, the merchants use misinformation to help keep woodcutter price down. Merchants routinely lie to woodcutters about urban prices, claiming that they are much lower than is the case.

In short, it is through social ties, credit arrangements, permits and woodcutter identity cards that merchants control access to labour opportunities. It is through social ties with other merchants, distributors, retailers and state agents, as well as credit, misinformation, licenses, quotas and circulation permits (as well as their selective exemption from the strict application of these laws) that merchants maintain and concentrate control over access to marketing. As a class, merchants use these mechanisms to maintain a high income. Within the merchant class these mechanisms serve a small group of merchants who reap enormous profits.

#### **D. Wholesalers**

Entry into the urban wholesale markets is different from the rural end of marketing and production in that few policies directly touch this portion of the market. As in the relation between merchants and woodcutters, retail vendors depend on their wholesalers. They cannot afford to purchase charcoal on their own. They must buy it on credit from their wholesalers. Like merchant-woodcutter relations, wholesaler-vendor relations are embedded in interlocking credit-labour relations. Like merchants with their woodcutters, the wholesalers who are a source of loans for their retail vendors, set the terms of trade.

The wholesalers have tight control over urban charcoal distribution. This is due to their access to financial capital, knowledge of the urban market, and social links to their retail vendors. Retail vendors lack the finances necessary to purchase large amounts of charcoal. Simultaneously, few merchants have the capital necessary to advance charcoal to retail vendors. If they did, merchants would have to advance their truckload to several vendors, returning repeatedly to collect payments. Most merchants cannot tour the city frequently enough to collect on such debts. Wholesalers on the other hand are able to purchase whole truckloads of charcoal (or several truckloads at a time) from merchants. They then distribute the charcoal to their retail vendors on credit. They frequently collect payments on the debts and keep close track of the vendors they supply.

Information about where charcoal is needed is also crucial for urban sale. There are over 1500 charcoal kiosks or outlets in the city of Dakar alone. Transporters and merchants cannot afford the fuel necessary to drive around Dakar looking for vendors who need charcoal and can afford to pay for it. Wholesalers know exactly where charcoal is needed, how much and when. They can purchase a truckload of charcoal from a merchant, lead the merchant's truck directly to vendors, unload the charcoal and let the merchant and the trucker leave with their money.

Finally, the wholesalers retain control of urban distribution via social ties to their vendors. Each wholesaler supplies a set of vendors with charcoal. They will not sell to the vendor of another wholesaler, an 'understanding' among wholesalers, and vendors rarely buy directly from merchants--a form of loyalty, or maintenance of their relation with their wholesale suppliers.

The wholesalers' control of information, financial capital and access to retail outlets also gives them an effective monopoly on urban storage. Access to urban storage would allow merchants to wait until the price of charcoal was high rather than being forced to sell their charcoal to the wholesalers upon arrival in Dakar. Since there are no urban storage facilities other than the retail outlets themselves, and because wholesalers control access to these retail outlets, wholesalers also control access to urban storage.

A few reasons why profits among the wealthiest wholesalers are considerably lower than those of large merchants is at least twofold. First, since charcoal is legally under a merchant's license,



wholesalers are still dependent on merchants if there is a legal problem with their charcoal once it enters the city. If a truckload of charcoal in the city is stopped without a circulation permit, the wholesaler must appeal to the merchant for assistance in arranging things with state agents since the merchant holds the licenses and the merchants have developed much closer ties with state agents through years of regulation. Second, there may be some information a-symmetries, since it is easier for the merchants (who have generally unknown expenses) to hide their profits than it would be for wholesalers who's gross margin is what they take in.

In short, urban wholesalers maintain control over access to distribution via credit arrangements, information control, social relations, and control over access to vendors. Note that while merchants use state policies (licenses, quotas, etc.) in conjunction with social relations and inter-locking factor market arrangements to profit from the charcoal trade, wholesalers also reap enormous profits, but without the aid of any state policy instruments.

#### **E. Retail Vendors and Outlet Owners**

Retail vendors and outlet owners maintain their access to charcoal and credit through ties with wholesalers (as described above), while they maintain the final price through the manipulation of weights. They also maintain their market shares through control over vending space.

The price of charcoal in Dakar is fixed by the state. So, the weight of charcoal varies with time--there is a kind of weight elasticity of supply. In 1987, for example, the 'kilogram' of charcoal in Dakar fluctuated between 740 to 770 grams. Ironically, those vendors owning scales systematically sold lighter 'kilograms' than those without scales. Presenting the scale's judgement, there is little room for buyers to quibble over the size of their packet. While scales may be symbols of justice in Europe, they may also be symbols of injustice in Senegal (Personal Communication, Donna Perry, 1996). Here the profits are kept up through misinformation and manipulation of legitimacy through a mediating technology.

Access to space for retail outlets in the city is politically controlled (allocation of public urban space). Space can be obtained through relations with state agents or officials. It also requires payments for the rental of the space (even when public) and the payment of municipal taxes. Villagers or others wishing to rent or purchase an outlet to sell their own firewood and charcoal cannot. In this manner the retailers control vending space.

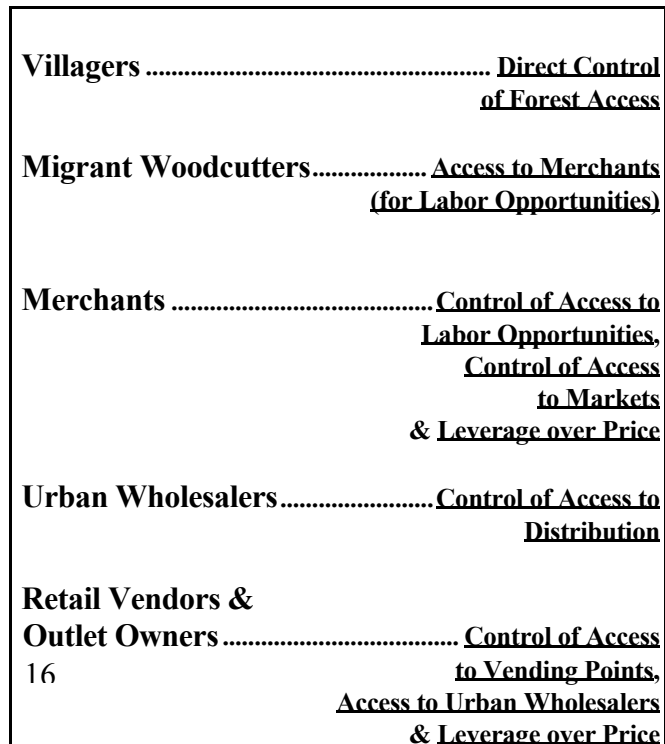
#### **F. Transport**

In this article I count transport simply as a cost, hence transporters do not show up in the distributional analysis. But, since some merchants own trucks, their interests are aligned with the transporters. Because of this, the price of transport has been collusively fixed with support of powerful merchants. The price of charcoal transport in Senegal is about fifty per cent higher than the price of transport of other goods. One sack of charcoal is transported to Dakar for 900 CFA. About 300 CFA of this is collusively established rent. This transport price is fixed in an agreement among the largest charcoal merchants, all of whom own their own trucks, and the transporters, who are otherwise not involved in the charcoal market. Hence, the largest merchants gain an extra 300 CFA per sack through this agreement. Access to this rent on transport is maintained through oligopolistic price collusion. Like the rents that village chiefs can charge for forest access, these are rents that truckers can charge on access to transport, which is tantamount to access to urban markets.

**G. State Institutions, Officials and Agents**

In examining the charcoal *filière* in this article official and un-official state income from the charcoal trade are, like transport, counted as expenses. The focus here is on the actors for whom charcoal production and exchange is central to their livelihoods. Nonetheless, the state coffers, as well as forestry agents and officials, benefit from the charcoal trade through taxes, fines, and payoffs. The tax on charcoal was 3.2 per cent of gross market revenues in 1987. The tax rate was recently more than tripled (see Table I). In addition to taxation, bribes and payoffs--often in the form of gifts--are another source of state income. From interviews of woodcutters and merchants, as well as observations of trading and prices, the total expenditure on payoffs to forestry agents amounts to under one tenth of one per cent of market revenues. At the level of Dakar, the allocation of quotas does not appear to be in exchange for cash. Rather, it seems to be allocated for social and political reasons along social and political-economic lines (*a la* Robert Bates, 1981).

The state plays multiple roles in shaping profit distribution along the *filière*. The most direct is through the policies whose effects on distribution can be seen in the earlier discussions. The Forest Service also employs ideological arguments of 'national good' and 'environmental protection'--with highly questionable justifications in either national development or ecological conservation--to cajole villages into cooperating with the Forest Service and merchants (Ribot, 1995b).



**Figure 2: Access Map  
(How to Appropriate Nature's Bounty)**

Further, by refusing to create locally accountable rural representation (see Ribot, 1995a:1596), the state impedes the ability of local populations to voice their concerns in the policy arena or to organize in their own interest. Since, as Watts and Bohle (1993) argue, enfranchisement is one channel by which people shape the political economy that in turn shapes local material wellbeing (entitlements), the lack of accountable representation and the lack of substantial powers and resources even for appointed 'representatives' undermines local resource control and local benefits.

Clearly, the state not only maintains its own income stream from charcoal, but also supports the pattern of gain found elsewhere along the *filière*. A fuller discussion of these issues cannot be developed here. In short, regulatory policies, the structure of representation, taxation, fines, bribes, extortion, gifts, and propaganda shape state and other incomes from the charcoal trade.

**H. Summary: Mapping Access**

Commercial profits from Senegal's forests are reaped through maintenance and control of access at different levels of the charcoal *filière* (see 1). These benefits are derived through 1) direct access to the forest itself, 2) access to forest labour opportunities, 3) access to markets (rural and urban wholesale, and retail), and 4) leverage over price-- which works only in conjunction with the other forms of access control. This access is in turn supported by differing repertoires of mechanisms operating on price and market shares at each level of the *filière*.

2 shows the structures, relations and mechanisms that different actors use to support their access to forest profits. These mechanisms include laws such as fiscal and regulatory policy tools such as taxes, licenses, permits and quotas. They include direct control over access to essential production infrastructure, housing, water and roads (akin to informal property); forms of collective action (from lobbying to collusive price and market controls) through unions, cooperatives and social networks; social ties of dependence, trust and

<b>Villages.....</b>	<b><u>Forest Access Control</u></b> -Threat of Violence -Control of Village Infrastructure
<b>Migrant Woodcutters..</b>	<b><u>Maintenance of Access to Merchants</u></b> -Social Ties w/Merchants -Social Identity -Technical Skills
<b>Merchants .....</b>	<b><u>Control of Access to Labor Opportunities</u></b> -Permits -Credit/Capital -Control of Access to Markets <b><u>Control of Access to Markets</u></b> -Quotas -Licenses -Cooperative Membership -Collusive Collective Action -Social Ties w/State <b><u>Leverage over Prices</u></b> -Collusive Price Fixing -Inter-locking Credit Arrangements -Misinformation
<b>Urban Wholesalers.....</b>	<b><u>Control of Access to Distribution</u></b> -Credit Arrangements/capital -Knowledge of Demand -Social Ties w/Venders -Social Ties w/Merchants
<b>Outlet Owners .....</b>	<b><u>Control of Access to Vending Points</u></b> -Social Ties w/Municipal Authorities -Social Ties w/Vendors
<b>Retail Vendors.....</b>	<b><u>Maintenance of Access to Urban Wholesalers</u></b> -Social Ties w/Wholesalers -Relations w/Owners -Relations w/Clients <b><u>Leverage over Price</u></b> -Manipulation of Symbols -Manipulation of Weight

Figure 3: Access Map:  
Mechanisms of Access Maintenance and Control

loyalty (based on social history, friendship, collegiality, reciprocity, social identity and status) with other actors in the market, religious leaders, political figures, and state agents; misinformation; and threats of violence. They include structural factors such as: credit arrangements; relations of production; and capital. They include informational mechanisms such as control of price knowledge, technical skills, belief, ideology or propaganda, and symbolic manipulation. Others not discussed in this article--and there are of course many--also play a role. These include spatial relations, such as urban concentration of power or rural diffuseness as it poses organizing problems. The structure of authority itself--as in why chiefs have the power to decide forest disposition--must also be examined in a full account of access control and maintenance.

In short these are the mechanisms, that is 'market mechanisms', shaping distribution in Senegal's charcoal *filière*.

## **VI. Conclusion: Markets, Property and Ecology**

### **A. Controlling the Market**

Access mapping along the commodity chain is a powerful tool for exploring the gap between policy prescriptions and actual practices or outcomes. Forestry policy, for example, helps shape forest use, production practices and woodfuel trade. But policies tell only part of the story. The other part is told within the space between policy (or law) and outcomes: the space in which a whole array of non-policy mechanisms shape the dynamics of production and exchange--not just attenuating policies (such as property), but operating in parallel to and interacting with policy mechanisms. There is not just one 'market mechanism', rather there is a whole array of mechanisms integral to production and trade (see 2).

This case illustrates, as Bernstein and Amin (1995) argue, that control (they use the term 'regulation') is endogenous to markets. At some levels of the market, as among merchants, skewed distribution is directly supported by forestry and other policies. At other levels, however, as among wholesalers, it is shaped primarily by non-policy mechanisms. State interventions are not the only form of market control. 'Liberalization', therefore, would not create the imagined 'free market' of neoclassical theory. Eliminating quotas and licenses, for example, would certainly change the distribution of benefits within the market, and probably in a more equitable direction. But merchants and wholesalers would continue to use their whole repertoire of means (legal and extra-legal) to recapture at least some of the rents now in their grasp. People in markets--state agents and others--do, and would continue to, actively engage in strategies to shape the whole chain of production and exchange.

This case also illustrates the critical role of selective access to the state and selective access more generally. In addition to policy interventions, selective exemption or preference that state officials and agents can deliver to their superiors and allies--friends, relatives, associates, powerful persons, patrons, or clients--also heavily influences outcomes. This special treatment is based on selective access by market actors to state agents and officials. Both the formal and informal market-state relation shape the implementation and ultimate effects of policy. Of equal importance, entry into forests, marketing and labour opportunities that are controlled by non-state actors, such as village chiefs and merchants, are also allocated along selective lines of social identity and status. Thus, both state and non-state controls are socially selective devices. In the policy realm, this selective process forms another part of the gap between idealized legal formulations and actual practice.

In short, real markets are highly structured by a whole range of policy and non-policy, legal

and extra-legal mechanisms. Examining the dynamics of access illuminates these mechanisms.

### **B. Putting Property in Place**

Property has been at the privileged analytic center of many development and environmental policy debates. Access mapping, however, shows that 'property'--as in ownership or title--is located among the many other mechanisms of access control discussed in the summary above. Senegal's villagers have one major strand of effective forest 'property': they have control of direct access to forests. However, such forms of direct control (whether through state law, 'custom', 'convention' or extra-legal coercion) are only a few mechanisms among many shaping who benefits from forest resources. If villages held collective legal title to the surrounding forests (or even if chiefs or others held private titles), the price they could get for that forest would still depend on their relations with merchants, on their access to the state, and on access to labour opportunities and marketing. Property, title or ownership rights alone are simply insufficient to guarantee that any individual or group can or will benefit from forests, pastures or farmlands. Analysis of access puts property rights, ownership and tenure in place among the other mechanisms of access control that shape who benefits from natural resources. Their relative importance in a given place and time is an empirical question.

Access mapping through commodity chain analysis is an effective approach to tracing out the social and political-economic hierarchies and networks in which extraction, production and exchange are embedded. This very aspect introduces seeming ambiguities into the use of the term *access*. For example, access to benefits from forests is itself the product of access to both things (as in forests and tools) and markets (that is, exchange), which in turn are predicated on access to people (merchants) whose control itself is predicated on access to others (state agents and officials) and to things (capital). The hierarchy of producers depending on merchants who depend on the state falls directly out of this analysis. If examined historically, changes in these hierarchies become evident. In the charcoal market there was a switch from a two tiered system of nobles and captives to a three tiered system of producers, merchants and the state. While captives cultivated relations with nobles for access to land, now producers cultivate relations with merchants. The merchants in turn must develop relations with state agents to maintain their control over access to jobs and markets that the producers seek. These nested levels of access constitute the arenas we seek to understand. Access mapping is one means of sorting them out.

In short, access mapping along the commodity chain locates property in its social and political-economic place, in addition to its place among the multitude of other mechanisms of access control and maintenance.

### **C. Ecological Links**

The findings of this commodity chain analysis also have ecological ramifications. First, they undermine the search for a systematic relation between property forms and ecological (or economic) outcomes (cf von Benda-Beckmann, 1995). Formal property ostensibly confers the ability (via rights) to benefit (e.g. a strand of access itself), security (via control), and the internalization of costs (as in creating local control to bring cost and benefit decisions together). These are the aspects of formal property on which assumed ecological and economic outcomes are predicated. This paper shows that these ostensible functions of property rights--benefits and control--are also served by, strengthened and weakened by the multiple other mechanisms at work. The importance of property among these mechanisms is an empirical question, so a systematic relation could, at best, be expected in those cases where legal property is the overwhelming force at work.

Second, the findings undermine some assumptions about the relation between local control (where solidly established via property and/or other mechanism) and the associated benefits assumed to provide incentives to better manage the land. While local control may increase security, and perhaps the desire to maintain the resource base, it may not provide the economic means needed to do so--witness Bernstein's (1979) simple reproduction squeeze which is independent of any form of local control of land or products. So, control without benefits is insufficient to incite maintenance. Further, collective local control--as in participatory popular or community environmental management efforts--will also not automatically internalize external costs unless the political representation of the community is locally accountable (Ribot, 1995a:1596). Unfortunately, accountable local governance is rare.

Third, this analysis helps illuminate how decisions over the disposition of forests--that is how they are managed or used--are embedded in a hierarchy of social and political-economic relations. This analysis indicates the contours of power by showing who controls benefits and how. These powers related to benefit control play a role in ecological change. Foresters, merchants and chiefs shape the spatial distribution of production by control over proximity of production plots to village commons and decisions as to whether production will or will not take place around a given village. Production in village commons produces a direct overlap of village forest uses and commercial woodfuel production, leading to conflicts and to village hardships when surrounding forests are cut down. Access analysis can help identify who is involved and how. Different decisions over forests are concentrated at the various nodes of social aggregation along the charcoal *filière*. This type of analysis helps identify these nodes of control and decision making and how they relate to forest use. It also helps locate forest commons and their local user groups in the multi-layered political economy in which they and their every day decisions are embedded (cf Blaikie, 1985).

At the most applied level, commodity chain analysis is itself a policy tool. Because it identifies who benefits from the forests, and how, it can be used to evaluate whether new policies, such as proposed participatory forest management, can reshape distribution. For example, it becomes readily apparent that policies prescribing local property rights in forests are incomplete. They must be accompanied by the opening of access to exchange and labour opportunities. By illuminating the distribution of benefits from forests, this analysis provides a basis for evaluating the potential for devolving profits to local populations. It shows where the profits are concentrated and how, providing a sense of what can be devolved while identifying the tools with which to leverage devolution.

#### **D. Links to Past and Future**

This article identifies the mechanisms underpinning the given political economy at a given time, but does not explain the historical origins of these mechanisms. To explain the existing distributions requires tracing back through time the place-based processes of differentiation and stratification that have concentrated the mechanisms of accumulation in the hands of one group rather than another. While presenting such analysis is beyond the scope of this article, it was part and parcel of deriving the materials presented herein (see Ribot, 1990, 1993; 1995b). As Dilley (1993:10) writes:

The definition of markets as related either to the geographical spread of one particular item or to the process of integration must be seen as attempts to capture a market essence in a static or synchronic manner. A means of resolving the problem is to incorporate a historical dimension which provides 'genealogical' definitions of particular, socially situated markets.

Clearly, a critical part of a commodity chain approach is to spin out its historical dimension.

Another extension of commodity chain analysis would be to link it with Peluso's (1992) analysis of resistance. In her analysis of 'Resource Control and Resistance in Java', Peluso points out that local resistance to state forestry is in response to the various mechanisms the state uses to exercise control over the forests. In her analysis the four components of access control are: control of land, control of species, control of forest labour, and ideological control. She posits that: "...forms of forest resistance parallel or complement the four forms of forest access control...." Respectively, these are: re-appropriation of forest lands for cultivation; "counter-appropriating" species through damaging mature or sabotaging young trees; striking, slowdowns and migration; and "...developing and maintaining cultures of resistance" (1992:17-9). The approach taken in this article adds another dimension to Peluso's framework. The state is not the only locus of control against which resistance can take place. This analysis could be extended to examine how varying degrees of resistance form in response to the whole range of actors and their repertoires of access control along the *filière*.

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### **NOTES:**

1. Commodity chains have long been called *filières* (strands or lines) in the French literature. The term *filière* was used as early as 1829 to mean "the succession of states to go through, levels to achieve, formalities to complete, before arriving at a result" (Robert, 1967:783).
2. For discussions of *filière* or commodity-chain analysis see: Ribot, 1990; Bergeret and Ribot, 1990; Thrupp, 1991; Bernstein and Amin, 1995. The definition used here, implicit or explicit in the above works, differs from Hopkins and Wallerstein's (1994:17) (used by Gereffi and Korzeniewicz, 1994:2) commodity chain characterized as "a network of labor and production processes whose end result is a finished commodity." The concept used in this article is closer to the French concept and the Spanish and Portuguese concepts of commercial circuits (*circuito comercial*), since it follows the commodity through production, exchange and final use.
3. In contrast to these authors, the 'conduct, structure, performance' school of empirical market analysis rarely ventures beyond prices and quantities. See Farruk (1970), Lele (1971) and Timmer (1974). See Harriss (1984) for a critique of this literature.
4. This latter formulation concerning the space beyond law emerged from conversations with Arun Agrawal on Ashraf Ghani's (1995) notions of property as bundles of power. It is power itself that ultimately shapes (and is shaped by) appropriation (property)--some of those powers shape and are shaped through law, some act on and against law. Understanding distribution therefore requires examination of both as they act and interact on the ground. Meek

(1946:1,fn1) also points to the need to look beyond law for an understanding of 'property'.

5. See, for example, Banuri and Marglin, 1993; Schmidt, 1994; Gerson, 1994; World Bank, 1994. These calls are based largely on the notion that increasing local benefit retention will provide these groups with means (and incentives) to better manage their natural resource and to invest in local development--as opposed to being forced by economic circumstances, *a la* Blaikie (1985) or Bernstein (1979), to mine their resources. The participation literature also provides a litany of equity and efficiency arguments for increasing local benefits (Cohen and Uphoff, 1977; Schmidt, 1994; Banerjee et al., 1994; Gerson, 1994; World Bank, 1994).

6. Like MacPherson in his definition of property, Schlager and Ostrom (1992) focus on rights and rules (based on law, custom or convention) when analyzing the use and management of natural resources. Schlager and Ostrom (1992:254) define *de jure* property rights as the *formal* legal rights enforced by formal legal authorities, and *de facto* rights as those based on rules made among resource users. "Such rights are *de facto* as long as they are not recognized by government authorities" (254). Schlager and Ostrom's *de jure* and *de facto* rights combine to present the universe of social factors guiding resource use. Rights (whether government or other enforced) are always based on rules (Schlager and Ostrom, 1992:250) condoned and enforced at and by some level of government or society. But, socially condoned and rule-driven actions are only part of what shapes resource allocation and use, or for that matter collective behavior. By focusing only on rights (since rights are based on rules and rules are agreed upon by society) these authors preclude or side-step the analysis of the structural and relational forces shaping resource use. MacPherson's and Schlager and Ostrom's definitions define the world of action as emanating from human will--from within only those parts of the world prescribed by collective choice. But, the world is also constituted of structures that shape use patterns prior and parallel to the rules supporting and justifying those patterns.

7. The problem arises in determining how those relations and bundles are to be observed--how power is to be measured (see Ribot 1990:361). Cf von Benda-Beckmann's (1995:3) who defines 'property regimes' as structures of economic power relations.

8. von Benda-Beckmann (1995:2,5) indicates the need to move back to an empirical "more strongly descriptive-ethnographic" approach, from the current policy oriented prescriptive approach.

9. See Berry (1993:13) in whose analysis "...culture, power and material are of equal importance, acting in mutually constitutive ways to shape the course of economic and social change." The importance of their actual role, however, is an empirical matter.

10. To understand peasant political economy, Deere and de Janvry (1984) provided a model of the ways the larger economy extracts surplus from peasant households. The household is at the center of their model, which examines how household income is extracted through taxation, usury, terms of trade, sharecropping, *corvée*, and ordinary labour exploitation. Commodity chain analysis can be natural resource centric (although it can be applied to any commodity). This article uses it to empirically identify the whole range of mechanisms (such as those cited by Deere and de Janvry) that different actors use to extract, maintain and concentrate benefits from the production and exchange of charcoal--a commercial forest resource.

11. I use the term benefit and value interchangeably. For a more nuanced inquiry into the origin-of-value problem see Appadurai, 1986.

12. I use rents to mean charges on control over access to things, as well as on access to labor opportunities, authorities, markets (Tawney 1978[1920]; Bates 1981), etc. In this sense, control over things, markets or authorities differs little--all can be controlled and rents can be charged on that control. Things may be controlled through legal ownership or threats of violence, markets may be controlled through oligopoly, legal permits, etc. Rents can be leveraged on all of these forms of control.

13. As Appadurai (1986:17) argues, "...the flow of commodities in any given situation is a shifting compromise between socially regulated paths and competitively inspired diversions." Rents emerge somewhere between the ability to control and demand. Both must be taken into account.

14. I use the terms *filière*, market and commodity chain interchangeably.

15. Foremen called *kontrapalaas*, coordinate groups of woodcutters into various working parties during the production process, and act as intermediaries between woodcutters and their *patron* merchants. *Kontrapalaas* come from among the *surga*. They are simply *surga* favored by their patrons. They cut and carbonize wood, while playing the role of foreman.

16. For a more detailed social and political-economic history and description of this market see Ribot, 1993; 1990.

17. This figure does not include income and profits for the transporters since transport is considered here as an exogenous cost.

18. The rural cost of living, 88,000 CFA, is subtracted from the woodcutters' net income and the urban cost of living, 214,000 CFA, is used for all other actors. In 1987 room and board for *surga* in the villages was 6000 CFA per month. The cost of food was 5000 CFA, while 1000 CFA covered the cost of



lodging. I estimate that an additional 1500 CFA per month (18,000 per year) is required for other basic expenses such as soap, clothes, medicines, tobacco and transport. In Dakar, the capital city, a room cost roughly 10,000 CFA per month while board cost 6000 CFA, making the minimum cost of living around 16,000 per month. I add 2000 per month for additional expenses in urban areas. (Ribot, 1990; Personal Communications, Masse Lo, 1994).

Subtracting the subsistence cost from the net income renders the surplus, profit or disposable income. I take off the cost of living to reflect the fact that the reproduction of labour is an expense--even for the merchants reproduction of themselves.

19. CFA is the Franc of the Francophone African Community. All CFA presented in this paper are in current CFA. Most are from 1987, except where otherwise specified. In 1987 the conversion rate was 350 CFA/\$.

20. Based on surveys, village chiefs were paid for only one of every four truckloads. I use a higher estimate here--that is payments on every truckload--since 'one out of four' could be the result of chiefs hiding that they are being paid off. The only risk in using this higher figure is the overestimation of village income. Further, all of these payments are counted as profits--no expenses are subtracted off. But, since village income is so small, this potential overestimation does not change the economic picture that this analysis presents.

**Table Error! Main Document Only.: Vertical Distribution of Income from Commercial Charcoal Production in Senegal 1987**

Groups Directly Involved in Charcoal Market	Group Size	(A) Avg. Net Income (1000 CFA/person) <sup>a</sup>	(B) Avg. Net Profit (1000 CFA/person)	Distribution Within Group
Retail Vendors	1,850 <sup>b</sup>	270	56	even
Retail Outlet Owners	1,850 <sup>b</sup>	375	161	skewed
Urban Wholesalers	300	1,700	1,486	skewed
Merchants	2,870	480	266	skewed
Migrant Woodcutters	11,650	145	57	even
<b>Totals</b>	<b>16,670</b>			
Comparisons:				
Annual GDP/capita		145		
Legal Minimum Wage		595		
Min. Cost of Living				
-Urban		214		
-Rural		88		

SOURCE: Ribot, 1990.

<sup>a</sup>Net incomes are based on the volume of charcoal handled, the numbers of actors and margins from Table I.

<sup>b</sup>This is the number of retail outlets in Dakar plus other cities, it is not the number of vendors nor outlet owners. Some outlets have

several vendors and some owners have several outlets. In dividing the income between vendors and owners, the income of vendors is derived directly from surveys while that of outlet owners (per outlet) is a residual. The number of outlet owners is not known.

21. Around 12 per cent of the outlet owners are also wholesalers, 5 per cent are merchants and 22 per cent are both owners and vendors. The remaining 60 per cent are not otherwise involved in the charcoal trade.
22. Using a figure for consumption in Dakar of 3,500,000 sacks per year (World Bank, 1994a:22).
23. These estimates are based on spot prices taken in June 1994. Caution must be taken since these latter figures are extrapolations over the whole year for prices and quantities that vary with the seasons.
24. Note that while it is mandatory to be in a cooperative (there are eighty five cooperatives, two of which are pre-cooperative *groupements*), a eight private firms remain in the market. Ironically, one of these is owned by the president of the National Union of Forestry Cooperatives.
25. This figure does not include the income that this same merchant--who also owns trucks--makes from transporting the charcoal at a price fixed (between transporters and merchants) at around 30 per cent above the market price for transport. The fixing of the transport price alone adds an additional 75 million CFA to his profits.
26. Unlike the figures presented above, the expenses are not yet subtracted from these due to the difficulties in estimating the value of the housing, food and women's labor that villagers supplied. In other words, these are over-estimates of the "benefits" that remain in the village. Actual benefits are much lower.
27. In Eastern Senegal, a large group of chiefs recently began to exercise their powers of access control (see Ribot, 1995b).
28. The 'cost' of credit in this market shows up in trading prices, since under Islamic law interest is forbidden. The markets are interlinked by the need for producers to sell their product to the patron from whom they took their advance.
29. The noble-captive system dates back to the jihads of the 1720s when Islamic Fulbe took upland Guinean populations as slaves. Both nobles and captives migrated to Senegal where they re-found each other in the charcoal market. Aspects of historic dependent relations came with them from Guinea (Ribot, 1990).
30. To do this Senegal's Forest Service channeled quotas and licenses through cooperatives. Prior to 1983 there were merchant cooperatives in the market, but there were also a large number of independent operators.
31. Entry to the market can also be obtained by the purchase of confiscated charcoal sold at auction by the Forest Service. This option for market entry costs almost the entire merchant's margin. It is a very un-profitable route of entry. It probably accounts for only a small portion of charcoal commerce.
32. Bordieu writes: "The strategies of honour are not banished from the market: though a man may enhance his prestige by tricking a stranger, he may also take pride in having bought something at an exorbitant price, to satisfy his point of honour, just 'to show he could do it'; or he may boast of having managed to strike a bargain without laying out a penny in cash, either by mobilizing a number of guarantors, or, better still, by drawing on the *credit* and the *capital of trust* which come as much from a reputation for honour as from a reputation for wealth. ... The trust in which they are held, and the connections which they can mobilize, enable them to 'go to the market with only their faces, their names, and their honour for money'--in other words, the only things which can take the place of money in this economy--and even 'to wager [to make an offer], *whether they have money on them or not*.'" (Bordieu 1977:185, emphasis and square brackets in original.)
33. The price in practice was 56 CFA/kg by vendors adjusting the weight of the kilogram downward.

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