Forest Pricing and Concession Policies

Managing the High Forests of West and Central Africa

Mikael Grut, John A. Gray, and Nicolas Egli
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Managing the High Forests of West and Central Africa

Mikael Grut, John A. Gray, and Nicolas Egli

The World Bank
Washington, D.C.
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The theme of this paper is that proper pricing supported by new concession policies can encourage and support sustainable management and conservation of the forests of West and Central Africa, reflect the values of the forest resources, and finance forest management. Valueless forests are the first to go.

Forest revenues are generally very low compared to what they could be, due to low forest fees and low collection rates. This puts a low price on the forests and encourages waste. The lack of concession fees encourages acquisition rather than management of concessions, and leads to the allocation of large areas of the tropical forests as logging concessions. The recommendations on forest fees and concession policies can help to improve utilization, reduce waste of wood and constrain the speculative acquisition of concessions.

Forestry departments in most West and Central African countries are weak, under-funded, and under-equipped. Without vehicles and per diems enabling them to do field work, staff are office-bound, under-employed, and unable to inspect concessions, enforce regulations, or supervise forest revenue collection. Until the forestry departments can be strengthened, a simpler system of forest fees that emphasizes bidding and concession fees is recommended. The forest revenue and concession policies proposed involve the following components (See Chapter 3.1):

1. An annual concession rent, which should be the major revenue source, to replace the present multiplicity of forest fees, that are often not collected.

2. Where competition is adequate, the level of the annual concession rent should be set by competitive bidding. The annual concession rent in other areas should be based on that established by bidding. Competitive bidding will help to reflect the values of concessions, collect revenues and discourage acquisition of large concession areas and speculative holdings.

3. Logging concessions should be replaced by forest management concessions. The forest management plan (working plan) for each concession area should be the main forest management tool. It should be prepared in consultation with local communities. Poor forest management performance should lead to fines or cancellation of the concession contract. Until forestry departments are strengthened, inspection of logging and forest management performance should be carried out by an independent "inspection service", perhaps a private firm, working on behalf of the government, selected by international competitive bidding.

These recommendations are developed from a review of the major issues in West and Central Africa forestry set out in Chapter 2. Identification of the issues was based on the authors’ experience, mainly in Ghana, Sierra Leone, Liberia, Zaire, Guinea and Indonesia, and on field work and case studies carried out specifically for this study in Cameroon, Central African Republic, Congo, Gabon and Cote d'Ivoire. The priority recommendations are developed in Chapter 3.1. The paper also identifies alternative recommended forest fees in Chapter 3.2.
Staff in the World Bank's Africa Region working on the preparation of forestry projects in Ghana, Côte d'Ivoire, Guinea, Cameroon and Gabon suggested in 1988 that the Bank's division "Africa, Technical, Agriculture" (AFTAG) undertake a study of the important but complex and controversial subject of forest revenue and concession systems in the tropical moist forests (TMFs) of West and Central Africa. A steering committee was established, consisting of Harry Walters, John English, Raymond Rowe and John Spears from within the Bank; and Robert Repetto from the World Resources Institute in Washington; Franz Schmithüsen from the Federal Technical University in Zürich; Chuck Lankester from the UNDP in New York; and Marc de Montalembert from FAO's Forestry Department in Rome. The senior author, Mikael Grut, was appointed study manager; Nicolas Egli, in 1989, undertook the field work for the country case studies. The financial support of the Canadian International Development Agency (CIDA) enabled John A. Gray to participate in the analysis and writing during May and June 1990. CIDA's financial assistance is gratefully acknowledged. Besides the AFTAG Division, the Bank's AF1AG Division also put much time into the study.

A draft of the study was widely circulated for comment and feedback, between June and October 1990. Within the Bank it was circulated to some twenty persons with technical and operational experience and interests in forestry, environmental management and taxation. Outside the Bank the draft was circulated to persons with international experience in environmental, conservation, and forestry organizations, and to independent experts and academics, altogether to some two dozen persons.

The members of the Steering Committee, and a large number of individuals both from within the Bank and from outside, contributed greatly to the development of the study with ideas, suggestions, comments and practical experiences. We appreciate their generosity of ideas and time. They are in no way responsible for the conclusions and recommendations, however, which are entirely those of the authors.
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<td>Africa, Technical, Agriculture Division (World Bank)</td>
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<td>AF1AG</td>
<td>Africa 1, Agriculture (and Forestry) Division, WB</td>
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<tr>
<td>Bank</td>
<td>World Bank Group (IBRD, IDA, IFC, MIGA, ICSID)</td>
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<td>CAR</td>
<td>Central African Republic</td>
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<td>CFAF</td>
<td>CFA Franc (CFAF 310/US$ in July 1991)</td>
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<tr>
<td>cif</td>
<td>Cost, insurance, freight</td>
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<tr>
<td>FOB</td>
<td>Free on board</td>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>ITTO</td>
<td>International Tropical Timber Organization</td>
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<tr>
<td>IUCN</td>
<td>International Union for the Conservation of Nature</td>
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<td>TMF</td>
<td>Tropical moist forest</td>
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<td>WWF</td>
<td>World Wildlife Fund</td>
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<tr>
<td>W&amp;C</td>
<td>West and Central (Africa)</td>
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<td>TECHNICAL TERMS</td>
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<td>Concession</td>
<td>Lease, e.g. of publicly owned forest to private concessionaire</td>
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<td>Concession rent</td>
<td>The annual fee paid for a concession</td>
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<td>Felling</td>
<td>Cutting, falling</td>
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<td>F. (cutting) cycle</td>
<td>The period between successive selection fellings, in Africa normally 20-40 years</td>
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<td>Forest management plan (working plan)</td>
<td>Plan dividing forest into areal management units, and prescribing treatment for each unit</td>
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<td>Forest reserve</td>
<td>US: national forest. Fr.: &quot;forêt classée&quot;. Area to remain under forest forever, but where logging is allowed.</td>
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<td>High-grading</td>
<td>Creaming (e.g. harvesting only best species)</td>
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<td>Logging</td>
<td>Cutting and extraction to roadside of timber</td>
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<td>Logging concession</td>
<td>Right to log a specified area for a specified time under specified conditions</td>
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<td>Scaling</td>
<td>Measuring of timber</td>
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<td>Selection felling</td>
<td>Felling of only a few (in Africa normally 1-2) trees per hectare. Opposite: clearfelling.</td>
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<td>Sustainable</td>
<td>Continuous, sustained</td>
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<td>S. forest management</td>
<td>Management for continuous yields of either timber, game meat, water or other benefits</td>
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<tr>
<td>Stumpage (royalty)</td>
<td>Fee paid for right to cut wood.</td>
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1. INTRODUCTION

1.1 SUBJECT OF STUDY

This paper deals with timber-related forest revenue systems and concession policies in the tropical moist hardwood forests (TMFs) of West and Central Africa. The design of such systems can considerably influence the state of forests. Fees payable for the forest's non-timber benefits like hunting, gathering, and the tapping of latex, gums and resin, are dealt with by other authors in other papers. The same goes for the very important problems of the dry forests and of fuelwood stumpage (see for example Openshaw and Feinstein in References).

Virtually all the forests of Africa are publicly owned, by central governments, state and provincial governments, or by local communities. Logging, on the other hand, is nearly always carried out by the private sector. Tracts of forest are leased to private sector firms under logging concessions which give the firm cutting rights to the area and impose operating conditions. The concessionaires pay fees to the public owner for the use of the forests. In this connection, the private sector's fees thus correspond to the public sector's revenues, here called either "forest fees" or "forest revenues". Commercial logging in the African moist forest is always based on selection felling, usually of only 1-2 trees/ha every 20-40 years, never on clearfelling. The latter system is suitable for light-demanding species like pines, but it is too brutal for the more complex TMFs.

"Forest revenue or pricing system" refers to the whole set of fees levied for the use of the forest, such as volume-based stumpage charges (= royalties), area-based silvicultural or environmental fees, concession fees, stamp fees, and so on. We use the term "forest fees" to include all of these levies on forestry. The term "tax" is a misnomer in this case, as we are here dealing with user fees for forest products and services. However, in connection with export and import duties on forest products, also dealt with in this paper, the term "tax" is more applicable.

"Concession policies" refer to the allocation, tenure, management and supervision of forest concessions, including the fees charged for such concessions (see Technical Terms). Although this paper often addresses itself to "forestry departments", implying ownership or at least control of forests by central government, normally in the form of legally designated (gazetted) forest reserves ("forêts classées"; US term: national forest), the reforms proposed here are as relevant for forests owned by local communities.

1.2 THEME OF THE STUDY – PROPER PRICING OF TROPICAL FORESTS

A major theme of this paper is that proper forest pricing policies can contribute to the sustainability of tropical forests both for timber production and for other uses. Yet, it is difficult to point to examples where rational forest pricing has been used to encourage sustainable forest management. There are, however, examples of the opposite. In Ecuador and Thailand, for instance, logging bans were introduced in order to reduce deforestation, but they had the opposite of the desired effect (Southgate 1991, and Gillis 1991), presumably because they drastically reduced the
financial value of forests and hence governments’ interest in protecting them against conversion to agriculture.

Little thought has been given to designing forest fees and prices to encourage efficient utilization or better forest management. Thus the potential of forest pricing policies remains unfulfilled. Forest prices that reflect the values of the forest and forest outputs can encourage conservation, forest management and forest renewal, efficient utilization and reduced waste. Properly set fees can discourage over-cutting. Minimum forest fees can reflect alternative and environmental values of forest land and timber, the opportunity costs of logging, and so prevent misallocation of forests.

Forest pricing can also contribute to the financial sustainability of tropical forestry, generating revenue to finances the management and protection of the forests. It is the abandoned forests which are first invaded by small farmers in search of land, which is by far the main cause of tropical deforestation. Logging bans in Ecuador and Thailand therefore had the opposite of the desired effect, increasing instead of decreasing deforestation, by setting the financial price of the forests equal to zero.

Regeneration of tropical forests can often be achieved at minimal direct silvicultural investment, by a light cut of the existing stand and careful logging to minimize damage. Under such “low investment cost” forest management, tropical forest management can be economically and financially viable even at low growth rates, as well as sustaining the protective value of the forest. It does require the enforcement of a light cut, efficient planning of the logging, and the policing of the forest to prevent over-logging, premature re-logging, or the invasion of the forest for farming. Even under these conditions the biodiversity of logged forests is likely to be less than that of unlogged forests (although enormously greater than that of destroyed forests). That is why examples of different forest types should be designated (gazetted) as nature reserves. See section 2.2, sub-section dealing with protection forests.

These themes are expanded upon in the analysis of issues and options in Chapter 2, and in the strategies and alternatives recommended in Chapter 3.

1.3 FOREST FEES AS PRICES

Forest fees are the prices at which standing timber, logs, poles, fuelwood, and other wood and non-wood forest outputs are sold to the forest industry or other users. Much can be gained from proper pricing of tropical forest outputs. Forest pricing policies can guide the behavior of concessionaires in harvesting, utilization and land use. Forest prices are not just a source of revenue.

Especially - but not only - in tropical countries, stumpage fees are generally low relative to the value of the wood. This statement is explained, and the reasons for this situation are examined, in Chapter 2 below. In addition, fees often go uncollected. As a result of this double underpricing, the forest resource itself is undervalued and wastefully used by industry and other forest users. Similarly, forest concessions are commonly allocated at minimal fees, with the result that large areas are sought and acquired, the forest is treated as a "free good", held for speculation, and exploited rather than managed. The circumstances which encourage and perpetuate these problems are elaborated below. The point is that the forest pricing incentives are pointing the wrong way, signalling abundance rather than future scarcity. In addition, with low forest fees "informal" collection (= corruption) may take place. The values may at least partially be reflected in payments,
but the distribution of the revenues is different. This will direct people’s efforts towards "rent seeking", collecting bribes and side payments, rather than toward productive activities.

1.4 OBJECTIVES FOR FOREST PRICING AND CONCESSION SYSTEMS

The objectives of a country’s forest pricing and concessions system will necessarily vary in importance and weight from country to country, but will probably include the following, though no priority is implied:

a. **Revenues** - an obviously important objective to finance governments and national development, to balance the budget and match revenues against expenditures;

b. **Improved and Sustainable Forest Management** - to provide incentives for efficient forest management, forest renewal and environmental management, and to minimize damage to the residual stand and the forest;

c. **Improved Utilization** - to provide incentives for increased utilization in the forest (of species and trees), in logging (fuller utilization of trees felled), and in processing plants (increased recovery). Improved utilization can generate an increased supply of wood products, value-added and employment from the forest, or supply the same volume of products from less forest area;

d. **Finance Sustainable Forest Management** - to finance forest management of areas managed for timber production, to finance the production of non-market, non-commercial forest outputs from managed forests and to finance forest protection of areas not managed for production.

e. **Development Goals** - including:

   i. industrial development and diversification through domestic processing;

   ii. increased foreign exchange earnings to offset import demand, or to pay for imports of technology, capital and services, or to reduce foreign debt;

   iii. development of low-income, underdeveloped or remote regions; and

   iv. employment, not only in the forest industry, but also in forest management and reforestation activities.

   v. income generation in the country or the region.

f. **Equity and Distribution Goals** - of benefits and costs, between government, local communities, and forest users.
1.5 THE STUDY

Background

During the last four years the World Bank has increasingly been involved in financing forest conservation and management in Africa. Projects with such components are now either in place or under preparation and appraisal in Rwanda, Madagascar, Ghana, Guinea, Cote d'Ivoire, Central African Republic, Cameroon, Congo, Gabon and Zaire. Experience has been gained in developing and implementing these projects.

A need was felt for a study of the forest revenue systems and concession policies in the main TMF countries of West and Central Africa, to provide an understanding of these revenue systems and concession policies, and as a basis for consistent and reasoned advice when asked for by borrowers. A regional study would allow countries to harmonize forest revenue policies. Such a study was produced by the Bank in the mid-seventies (World Bank 1976), but since that time the forestry situation throughout the region and the economic situation in individual countries have changed, and a new study was considered desirable.

Study Objective

The objective of this study of forest fee and concession systems is to produce a technical paper setting out issues, current practices, options, recommendations and alternatives, both for use by Bank staff involved in lending to the TMF countries in Africa, and to provide guidance to the countries themselves in revising their revenue and concession policies.

Implementation of the Study

The study was guided throughout by the steering committee, drawn from people from within and outside the Bank. Mikael Grut developed the framework for the study, identified the key issues from his own and Bank experience in Africa, planned the field work for the four case studies, developed the priority recommendations, and supervised the project throughout. Nicolas Egli carried out and wrote the case studies. John Gray was primarily responsible for analysis of the issues and options and for writing the major part of the report. Together the authors drew on their combined experience in the ten major West and Central African TMF countries.

1.6 MAIN FINDINGS OF STUDY

The following findings, and others, are discussed in greater detail in the next chapter, which examines the issues in and explores the options for forest revenue systems in West and Central Africa.

Complexity of Forest Fee and Concession Systems

In most countries concessionaires are faced by a multiplicity of forest fees. A study (IIED 1988) in a Central African country identified 53 procedures required before a log could be exported, resulting in much paper work, delays, unofficial payments and evasion. The complexity of many forest revenue systems in West and Central Africa make them unmanageable, generate inefficiencies and open up opportunities for abuse.
Low Forest Fees

Generally governments sell their timber to concessionaires for far less than the latter would be willing to pay. One reason is inflation - see below. Another is that politicians do not like to increase forest fees, because it would affect their popularity, and because it would make concession allocation less of a favor. Low forest fees encourage wasteful use of forests.

Lack of Inflation Adjustment

In many countries forest fees are legislatively set and in nominal (i.e. money) terms. Often they have not been changed for years, and inflation has eroded the real value of these fees. Introducing new schedules of fees is legislatively time consuming and often meets resistance of interest groups.

Low Collection Rates

Especially in the case of stumpage fees, the revenue actually collected by governments is usually less than a fifth of what it should be (e.g. World Bank 1988 a and b). One reason is that forestry department staff generally do not have the vehicles and equipment needed to go out into forests and measure the logs which the concessionaires have felled, and on the basis of those measurements to calculate the stumpage fees due. Forestry departments therefore tend to accept the volume figures given by the concessionaires. Even when forestry departments can calculate the fees due, the collection system itself may be inefficient.

Arbitrary Allocation of Concessions

The transparency of the concession allocation process is highly inadequate. Instead of allocating forest concessions to the highest bidder, or according to some rational and transparent formula, concessions are mostly allocated in an arbitrary way. The resulting possibilities of abuse are obvious.

Lack of Market Mechanisms

Forest fee systems in Africa are nearly always examples of command economies, i.e. fees are administratively set. Generally, as mentioned above, they are set too low. Occasionally an effort is made to set the "correct" prices, which requires complicated and therefore expensive studies in an effort to approximate what the market could often do better. Some bidding is used in Cote d'Ivoire, and envisaged in Ghana, but these are exceptions.

Lack of Forest Management

Most forestry departments are too weak to control logging operations, to apply even minimal forest management, or to prevent entry by cultivators who often follow in the footsteps of the loggers.

Wasteful Logging

Sometimes half the volume felled is left in the forest. It should be possible to reduce this waste substantially, e.g. by making loggers pay per tree or cubic meter felled rather than removed. However, the full opportunities may be limited without better on-the-ground supervision.
Financial Irregularities

Even in developed countries forest theft is quite common: buyers of standing timber fell more trees than they have paid for, felled trees are not reported, logs are not scaled, etc. The dispersed nature of forests makes law enforcement in them difficult. It is therefore not surprising that in developing countries, including those in West Africa, with their much weaker law enforcement services, that the forestry sector is particularly prone to corruption.
II. ISSUES AND OPTIONS IN FOREST PRICING AND CONCESSION POLICIES

Examination of the forest revenue systems and concession policies of West and Central African countries has identified a number of important issues common to many countries of the region. These issues are also important in other developing countries, in Asia and Latin America. Indeed, they are world wide issues (Repetto and Gillis 1988).

Some of the issues discussed below are more important in one country than another, yet a high degree of commonality prevails. The countries of the region can benefit from each other's experience. In a number of cases they can also benefit from joint action on common problems. By nature, almost every issue is also an opportunity, in that action to deal with the issue can yield considerable benefits.

Many of the issues are interrelated. However, for clarity each issue is best discussed by itself and its relationship with other issues identified. In this way options and alternatives appropriate to different countries can be identified, and the inter-dependencies among issues accommodated in the final choice among options and in the recommendations.

2.1 LOW FOREST REVENUE ISSUES

Low forest revenues are a central issue in the management and conservation of forests. Referring to both tropical and temperate forestry, Repetto and Gillis conclude: "Governments have typically sold off timber too cheaply, sacrificing public revenues and the undervalued non-timber benefits of the standing forest while encouraging rapid logging exploitation. The terms of many timber concession agreements and revenue systems have encouraged wasteful, resource depleting logging." (Repetto and Gillis 1988).

In Cameroon the total of all forest revenues collected from all forest fees (all area- and volume-based fees) in 1987 averaged CFAF 1,603/m$^3$ (US $5.40/m^3$). This represented only between 2% and 4% of the FOB price of export logs (Egli 1990).

In Ghana the World Bank Staff Appraisal Report of the Ghana Forest Resource Management Project found that forest revenues collected from all forest fees were some Cedis 100 million (US $0.5 million), equal to about Cedis 75/m$^3$ (US $0.38), and less than 0.5% of the delivered price of logs at processing plants (World Bank 1988b). This was only about one-sixth the forest revenues that should have been collected even at the existing low levels of forest fees (World Bank 1988b).

In Guinea the World Bank Staff Appraisal Report of the Guinea Forestry and Fisheries Management Project in 1989 found forest fees to be low, almost minute. Stumpage fees for "white" woods were GF 300/m$^3$ (US $0.50/m^3$) and for "red" woods GF 400/m$^3$ (US $0.68/m^3$), less than 1% of the value of the sawnwood on the local market (World Bank 1989) (Harou 1989). Stumpage fees had not been adjusted for six years.
In Côte d'Ivoire the Staff Appraisal Report of the Forestry Sector Project found that stumpage fees were low, fixed administratively, updated infrequently, and that they bore no relationship to the value of the standing timber (World Bank 1990b). Stumpage fees are also easily evaded. In 1986, the total amount of stumpage fees collected was about CFAF 750 million, or about CFAF 200/m³ (US $0.58/m³) logged (World Bank 1990b).

Low forest revenues can result either from low forest fees, or from low collection rates — weak and inefficient collection systems. It is not just a matter of money, of increasing government revenues. Low forest fees distort forestry decisions. They encourage inefficiencies in utilization, forest management, silvicultural investment, and conservation. Low forest fees mean that timber is underpriced, and low prices encourage waste. Low forest fees make forest management uneconomic. Low collection rates distort forestry decisions, direct effort into avoidance and evasion activities and away from productive forestry. Low forest fees and low collection rates encourage unproductive "rent seeking" activities, "bribe taking" and other "unofficial" forest charges. Low forest revenues, low forest fees, and low rates of collection also affect other issues: the sustainability of tropical forestry, forest management incentives and utilization, industrial processing and utilization, and concession management.

**Issue 1 — Low Forest Fees**

In most African countries the forest fees (stumpage rates, area-based fees, export taxes) are considerably below the value of the standing timber. This is shown by the fact that considerable "unofficial" payments are made in order to secure forest concessions. (See also Repetto and Gillis 1988.) Although logging and processing can be very profitable, not all of this difference between stumpage values and stumpage fees ends up as profits. Much of it is dissipated in inefficiencies. Low forest fees allow inefficient, wasteful logging and processing, and can also encourage unproductive "rent seeking" activities in acquiring concessions or other timber rights. The point here is that higher official forest fees leave less room for "unofficial" forest fees and for unproductive "rent seeking" activities.

There may be several reasons for the forest fees being too low. Often they have been set years ago, and inflation has made their real value fall to a fraction of what it was. In Ghana new schedules of forest fees, introduced in 1983 and 1986 were already out of date by the time they were adopted. Inflation averaged 46% per year between 1980 and 1988 (World Bank 1990a). New forest fee schedules require approval of the governing council and face long legislative delays. Sometimes governments want forest fees to be considerably less than what the concessionaires would be willing to pay, so that concessions can be handed out as favors.

In Congo forest fees are in theory revised every five years, but in 1989 they had not been revised since 1982 (Egli 1990). In Cameroon the "valeur mercuriale" - posted export log and product prices upon which volume-based fees are based - had not changed since 1984 (Egli 1990). In Gabon and a number of other West and Central African countries, forest fees are set by presidential decree, but in spite of this seeming ability to change them easily, they remain low and unchanged for years.

Whatever the reasons, low forest fees mean that governments lose revenue and concessionaires tend to use wood wastefully. We expand on these reasons as separate issues below and identify options to counter their effects.
Issue 2 – Inflation Impacts on Forest Fees

The value of tropical timber rises as a result of: (a) price increases in the market value of logs and processed products, and (b) general inflation. Fixed, unchanging, or inflexible forest fees will not keep up with increases in values. Inflation is the most direct and explainable cause of low forest fees. In most countries, forest fees are established in legislation, so that revisions require amendment, or new legislation. Since revision of the fees can always "be left until next year", they get low priority in a clogged legislative pipeline, and revision is postponed, perhaps a year or two, often more. In addition, even the calculations based on the latest available data will themselves be one or two years out of date. Thus new fees, when implemented, will be two or more years behind inflation.

If inflation is 5 percent per year, legislatively set fees that are revised every 10 years (plus a 1-year data lag and a 1-year legislative lag) would be reduced in real terms by 45 percent through inflation, to 55 percent of their original level by the end of the decade. With inflation of 10 percent per year, fees would be reduced in real terms by 70 percent, to only 30 percent of their original value.

Inflation and irregular adjustment of forest fees generate another problem. After 10 years of inflation, the increase in the nominal, money values of fees will have to be sizable. This commonly raises outcries from the industry, which has quietly enjoyed declining real fees. Political pressures may prevent fees being adjusted, even to their original real values.

Options for Inflation Adjustment

Procedures for automatic annual adjustment of fees according to the inflation during the previous year can be written into the legislation establishing or amending forest fees. Published price indices for the country (consumer price indices, wholesale or industrial price indices, or the GDP price deflator) can be used, whichever is most appropriate, reliable, readily available and current. Since for most countries fees are established in domestic currencies, domestic price indices should be used for adjustment.

Some countries, especially those with weak currencies, have set fees in international currencies such as US dollars, Deutschmarks, or Belgian or French Francs, hoping to avoid inflationary depreciation of revenues. But inflation affects these currencies too. From 1980 through 1989 US inflation averaged 4.4 percent per year, which reduced the real value of fees set in US dollars by one third over the decade. Thus all fees will require annual adjustment, based on the inflation rate of the currency in question.

Fees could also be adjusted using international forest product commodity prices published annually by the World Bank or FAO, or based on published timber trade prices or indexes.

Forest fees levied at ad valorem (percentage of value) rates will automatically respond to inflation in product prices. As the log or forest product prices on which they are based rise in response to supply and demand market forces and to inflationary pressures, inflationary adjustments will be automatically taken care of. For volume-based fees on logs or products, this is a simple and straightforward way to adjust for inflation. Such ad valorem fees based on FOB prices, "valeur mercuriale", or other posted prices, are applied in a number of West African countries for export fees on logs and processed products. However, in some countries posted "valeur mercuriale" prices do not fully reflect market prices, lag market prices, or are changed infrequently.
Issue 3 — Setting The Level of Forest Fees

A key issue is the appropriate level of forest fees for the timber sold on the concession allocated. The forest industry, of course, would prefer low forest fees. However, the government should seek forest fees which reflect the value of the resource. Governments may chose to give up some revenue, setting fees at a lower level in order to make exploitation of the forest more profitable, and so encourage development of the industry. But this should be done deliberately. The government should understand the costs of such a policy in terms of the amount of revenues given up.

Stumpage Values (Royalties or Values of Standing Timber)

The value of standing timber, stumpage value, is often termed the "economic rent" of timber. It represents the maximum price a buyer would be willing to pay for the standing timber, and approximates the price which would prevail in a competitive market.

Stumpage values can be estimated, for example from the market price of the logs produced, less costs of log transportation and logging. Costs should include depreciation on capital equipment and a normal profit or opportunity cost rate of return on the capital invested. Costs should be based on averages of costs of operations of normal efficiency, so as not to reward inefficiency. If there is not a competitive market for logs, it may be necessary to determine stumpage values from the prices of processed products, less the cost of processing. Thus stumpage values are residually determined by deducting costs from market prices of logs or products.

Although conceptually stumpage values are simple, in practice they are not easy to estimate. Log prices vary considerably with species and grade. Thus stumpage values will also vary widely with species, grade, and distance from market. The stumpage value of higher-priced species or grades can be several times that of lower-priced species or grades. In some cases stumpage values can be zero or negative.

Logging costs and hence stumpage values will vary with location, stand conditions and terrain. Stumpage values of nearer, more accessible, forest areas and stands will be higher, reflecting the lower transport costs. Stumpage values of stands with high volumes per hectare and those on dry ground and easy slopes will be greater than for stands in adverse situations. Finally, where stumpage values are derived from processed products, stumpage values will be influenced by the efficiency of product recovery from logs. If processing is efficient and recovery high, stumpage values will be greater.

Practical Problems of Stumpage Value Estimates

In addition to the above variables, there are other practical considerations in estimating stumpage values. There are inevitable problems of price and cost data. Log or product prices may not be accurate, or they may not be competitive. Prices may reflect market power of buyers or sellers. Under-invoicing or transfer pricing may be common, or other non-competitive factors may distort prices. Given the variability in processing efficiencies, costs, and recovery rates, processing cost estimates may be inaccurate. Logging cost estimates may be uncertain because of the variability in logging conditions, stand conditions, weather, etc.

Costs may also be higher than they should be and more variable because of low forest fees which shelter inefficient logging and processing operations. Because of the residual nature of
Stumpage values, variabilities or uncertainties of log or product prices and costs will be magnified in the estimates of stumpage values. Stumpage values are greatly affected by the level of market prices of logs or products, and by the level of costs deducted.

The residual nature of stumpage values, the diversity of factors affecting them, and the practical problems of price and cost data make reliable estimates of stumpage values difficult. Solutions to these problems in setting fees rest on the introduction of more competitive processes for the allocation of concessions and for the sale of timber, and on the development of log markets. These are explained below; see especially Chapter 3.

Concession Values

Timber concessions, which represent a guaranteed access to publicly owned timber, have value in addition to the stumpage value of the timber. Concessions confer rights to the annual allowable cut on the concession area. The security of timber supply provided by the concession has value. Concessions may also involve an additional value when forest fees are low and understate the value of the timber cut. This additional value will represent the discounted present value of the extra (above normal) profit generated annually from cutting the timber.

Thus concession values reflect, in part, the extent to which forest fees understate stumpage values of the timber. It is suggested below that, where possible, concessions be allocated by competitive bidding, e.g. by sealed tenders or by open auction. If so, the bids for concessions will provide both a measure of how closely forest fees reflect stumpage values, and a measure of concession values themselves.

Proposals for Setting Forest Fees

The problems of obtaining reliable price and cost data in estimating stumpage values and setting forest fees can be partly alleviated by a number of small steps.

Stumpage values can be derived from the market prices of logs, or from the market prices of the processed products (sawnwood, veneer, plywood, etc.). Stumpage values derived from log prices, rather than from processed product prices, will be considerably simpler and therefore more reliable. Starting from processed product prices requires additional data, more calculation, and thus greater uncertainty and potential for error. Wherever possible, log prices should be the starting point. There are several benefits from encouraging the development of competitive log markets within the country. First, the development of internal log markets, where feasible, will provide improved information on log prices and facilitate setting forest fees that better reflect forest values. Second, the development of log markets can bring market efficiencies to the allocation of logs among processing plants and uses. Given the diversity of species, sizes and log qualities in tropical forests, there are potential gains in utilization and economies in processing in encouraging development of log markets, especially where there is a concentration of processing plants. Finally, the local log markets will allow local processing to expand, making logs available to smaller plants geared to domestic markets.

Log transportation cost and logging cost estimates can utilize contractor and sub-contractor prices and rates for rafting, truck hauling, logging, skidding and felling. Such rates, if competitively established, provide reliable measures of costs, including normal profit allowances.
Sale of small volumes of timber by short term competitive sales, by sealed tender or oral auction, can provide market-based measures of stumpage values, based on people’s willingness to pay. Such sales should be made in areas where there are sufficient buyers to achieve competition.

Allocation of concessions by sealed tender or oral auction is proposed below both to improve the allocation of concessions and to capture the security of supply value of the concession agreement. But the value and the bid price of the concession will also be a measure of the extent to which forest fees fall short of reflecting stumpage values.

**Issue 4 — Minimum Forest Fees**

There is a strong case for minimum forest fees. Minimum fees for concessions are appropriate to ensure that the benefits to the country of cutting timber cover the costs involved. These include the costs of forest protection, administration, and sale; regeneration costs, if any (natural regeneration is generally adequate); environmental costs, e.g. possible increase in erosion; social costs, if any (generation of unskilled jobs may make logging positive rather than negative from this point of view); possible loss of non-timber forest outputs like game meat or fruits; and possible revenue foregone if stumpage values increase in real terms in the future. Yet, in many cases forest fees are too low, and the opportunities foregone have not been properly considered. For example, in the United States, the U.S. Forest Service has come under fire from a number of sources including studies by the U.S. Congressional Research Service and the Government’s General Accounting Office for “below cost” timber sales (Repetto and Gillis, 1988), i.e. for subsidizing logging.

Environmental costs of logging may be temporary, or can be minimized if logging is properly planned, controlled and managed to reduce logging damage and erosion, to ensure prompt regeneration, and to prevent agricultural conversion of logged areas. The fact that trees may increase in real value if left uncut represents another type of opportunity cost. A number of species previously left behind as unmerchantable are now highly valued. It is likely that many uneconomic and lesser known species of today will become valued species of tomorrow. Minimum forest fees ensure that trees which will become valuable tomorrow are not logged today for next-to-no forest revenue. A relatively small increase in log or processed product prices can raise the residual stumpage values of lesser known species from near zero to significant values. A 5 percent increase in log or product prices can result in a 50 percent increase in stumpage value or more. Minimum forest fees provide an economic incentive to preserve such species until they attain a higher value. This opportunity cost can be calculated as the present discounted value of projected future stumpage values. This is exactly the "user cost" concept applied, for example, in mining economics.

The Central African Republic levies a "deforestation tax" on land clearing of public forest areas (Egli 1990). It is CFAF 50,000 (US$ 170) to CFAF 150,000 (US$ 500) per ha depending on the category of public forest land (Egli 1990). Although far from ideal, the concept of a deforestation tax can serve to reflect the opportunity cost of logging an area and, if enforced, can be a financial instrument to slow deforestation.

**Issue 5 — Low Forest Fee Collection Rates**

Low forest revenues can result either from low forest fees (examined above) or from low rates of collection. The reasons for low rates of collection are many, complex and diverse, but stem from weak or inefficient forest administration and revenue collection systems. Inefficient revenue
collection systems generate two forest management problems. First, if forest fees are avoided or evaded and go unpaid, then timber is, in effect, taken for free. Under such circumstance there will be no opportunity to use forest fees as price incentives for forest management or conservation. Second, if forest fees are widely avoided or evaded with the present low rates, the opportunities for increasing forest revenue by raising rates will be severely limited. As rates are raised, the incentives for and private gains from avoidance and evasion are increased, and collection rates are bound to fall further, unless the collection system is improved.

Governments do not or cannot collect even the present low forest fees. Total log use, by the local industry or for export, in a country during a year is usually fairly accurately known. If this volume is multiplied by the weighted average stumpage rate, one invariably arrives at a figure much higher than the government’s actual revenue from this source. In Ghana it was found that the government was receiving only about a sixth of what it should be receiving based on the estimated stumpage value of the standing timber (World Bank 1988b). In the Congo about one fifth of volume-based forest revenue is collected. Between 1979 and 1982 the Philippine government collected only about $140 million of potential $1.5 billion in stumpage fees (World Bank, 1988a, page 53). Such enormous leakages are normal. In other countries the collection rate is even lower. In public utilities like water or power authorities, such low rates of fee collection would be considered abysmal, although it is of course more difficult to guard a dispersed and often inaccessible resource like the forests.

Projects which assist forestry departments to improve the collection rate and/or increase the stumpage rates normally give a very high financial rate of return (World Bank 1988b). Such measures result in the transfer of resources from "unofficial payments" (bribes) and abnormally high logging profits, to official government revenues. They also discourage inefficient "rent seeking" behavior, and they encourage more efficient use of the wood by putting a proper price on its use (World Bank 1988b).

The institutional management, the organizations, the incentives, the procedures, the accounting processes, and the auditing and procedures are weak or inadequate in most tropical countries, including those of West Africa. Forestry departments are not "mobile", in the sense that they often do not have vehicles enabling the foresters to go into the field. There is also little or no incentive to go the field. In some countries daily subsistence allowances are barely sufficient for a bowl of rice. In other countries expenses may not be fully reimbursed, payment may be delayed, or may never materialize. At the other extreme, travel allowances may be paid whether the person visits the field or not.

Salaries are commonly so low that people must work at other jobs just to survive. Salaries are then viewed as retainers rather than as payment for performance. Under such circumstances, people are vulnerable to monetary payments to verify scaling (timber measuring) records which they have not checked in the field, to approve logging plans they have not seen nor inspected, etc.

Without mobility and incentives for field work, field inspection of concessions, monitoring of logging operations, and scaling of production, will be weak and ineffective or non-existent even though people may wish to claim otherwise. The result, in many countries, is that concessionaires complete their own reports on logging activities and do their own scaling of logs. This might be adequate if inspections and verification were adequate, but they are not. These problems of supervision and inspection affect scaling of logs, measurement of processed wood products, and measurement and control of log or product exports. Each is examined in turn.
Log Scaling (Measuring) Problems

Log scaling may be done by forestry department scalers, or by company scalers and checked by the forestry department. If scaling is done by the forestry department in the forest or at some central point in the log transport system, the government employees are usually dependent on the concessionaire for transportation and accommodation. They are often on their own with infrequent supervision. Being isolated, dependent on the concessionaire and poorly paid, makes the scalers vulnerable to pressure, persuasion or bribery. They may be influenced to under-measure logs, to give generous allowances for defect, to classify species in lower royalty classes, or to ignore some logs. If the scalers are not at their positions, they may be persuaded to sign scaling volume returns filled out by company scalers.

Scaling may also be done by company personnel and checked by forestry department scalers. Similar problems of under-scaling, misclassification of species, under-reporting or unscaled logs can occur. Usually the checking of company scaling involves the verification of log measurements in the company scaling records, and the pressures on and incentives for the forestry department scalers will be to accept the figures, perhaps without bothering to remeasure. A better way would be to require independent measurement by forestry department scalers who would not see the original company scaling records, or by a third party independent of the forestry department and the concessionaires. Third party scaling could be costly and dissipate forestry values, especially if it involves an external, international agency. It should therefore be limited to system development, training of departmental or nationals, and auditing activities.

In the Central African Republic scaling is done by the companies. "Due to the lack of field control, the Ministry relies entirely on the information supplied by the companies." (Egli 1990). In Cameroon the company scaling volumes are checked at the log yard only two or three times per month (Egli 1990). On paper the allowable margin of error on inspection is 5%. In practice forestry department officials have little incentive to remeasure the timber. In addition, they will be under strong pressures, of persuasion and otherwise, to accept the company’s figures. This dependency on company records is common throughout West and Central Africa.

Unreported Logs and Illegal Logging

Concessionaires may not report all of the timber cut from their annual cutting area, may illegally cut timber from outside the annual cutting area, may re-enter logged areas, or may even log outside the concession. This timber is likely to go unreported. Other companies or individuals may cut timber from logged-over areas of others concessions, or timber outside concession. Most of this cut is also likely to be unreported.

Under-Measurement of Processed Products

Forest fees are sometimes based on the output of processed products such as sawnwood, veneer and plywood. Often this is because of the difficulties of scaling in the forest. But forest fees based on processed products discourage improvements in the recovery of such products, retard improvements in utilization, and penalize the more efficient processing plants. These discouragements to utilization are examined below, under Issue 12.

Forest fees based on processed products involve their own problems of measurement. Reported production may be below actual production as a result of under-measurement. Production may be classified to species groups with lower fees. Production may be slipped without being
measured. Illegal logs may be processed and the output shipped without paying fees. Production of illegal sawmills can go totally unrecorded.

Under-invoicing

Under-invoicing is endemic in the tropical woods export trade. Logs or finished products are ostensibly sold at one price, but the buyer in the importing country actually pays a higher price, and deposits the difference, or part of it, in the exporter's foreign bank account. Two ways to control this have been attempted. In Ghana there is a Forest Products Inspection Bureau, which inspects timber which is to be exported, and compares the declared prices with the current FOB prices (World Bank 1987). In some of the French-speaking African countries the "valeur mercuriale" posted prices, derived from the FOB values, are used as the basis of revenue collection.

However, the use of posted prices does not solve under-invoicing problems. In Congo, the FOB prices at Pointe Noire, from which the valeurs mercuriales prices are derived, are commonly below international levels (Egli 1990). In addition, "most of the exported timber shows an abnormally high percentage of lower grades (BC grade logs), especially for logs exported by companies linked to a foreign holding company." (Egli 1990).

Under-invoicing and under-grading are used by timber exporting firms both to accumulate illegal funds of foreign exchange, and to export profits to a parent or related company in another country. They both result in under-pricing of timber and therefore wasteful use, lower forest fee advantages for foreign owned or controlled companies over domestic companies, as well as an obvious loss of revenue to the government. Under-invoicing also means that the domestic subsidiaries of these foreign owned companies will become less profitable, at least on paper, with less profits for investment and modernization.

Scaling Options and Alternatives

These problems of wood measurement and administration, supervision and control are complex. Such institutional problems are not easily solved. Yet there are several options for at least modest improvements.

Scaling System Options: A reliable system of numbering and marking logs can provide a basis for improvements in scaling and revenue collection. Given the availability and cost of micro and mini computers, a computer-based scaling and forest fee billing system is now feasible. Equipment to record log measurements directly for electronic transfer to computers is also now available. Thus scaling could involve the direct recording of field data such as log number, species, top and but diameters, and length, for automatic calculation of volume and the billing of forest fees.

Such a system would facilitate the independent cross-checking of scaling. Logs would be remeasured without knowing the original measurement and the data entered into the program for recalculation of volumes and comparison with the original measurements and volume of the same logs. Under-reporting of logs could be controlled by checking for missing log numbers in the volume calculation procedures and forest fee billing procedures. Other simpler, less technical and less systems-oriented improvements are possible.
Using Sub-Contractor Production: Fellers (fallers), skidding crews and sub-contractors are commonly paid on a piece rate basis, often on the scaled volumes of logs at roadside. These people are concerned that the scaling should reflect the full volumes. If the same measurements and volumes are used for payment to sub-contractors and for forest fees, then the forestry department will have an ally in the forest looking out for their mutual interests.

Incentive Payment of Scalers: Scaling, check-scaling and inspection could be improved by paying scalers based on performance. They could be paid on a piece rate basis per cubic meter scaled, or check-scaled. To provide a proper incentive, payment would have to be based on the volume of logs actually scaled, not just on the volume signed for. If scalers were paid based on the log volumes scaled or a percentage of the forest fees collected on the log scaled, they would have an incentive to measure the full volume of the logs. This incentive would help to counter company pressures for under-scaling, generous defect allowances, or missed logs.

The incentive payments would have to reach the scalers in the field. In Indonesia a percentage of the scaling fee is paid to the scalers and distributed among them. But only a small part reaches those in the field, so the incentive is dissipated.

Contracting-Out of Scaling: Instead of paying forestry department staff incentives based on the volumes of logs scaled, the government could choose to contract out the entire scaling operation to an independent third party. The third party contractor would be paid a scaling fee per cubic meter and thus would have an incentive to ensure that logs were fully scaled and none missed. Scaling contracts for individual concessions, groups of concessions, or a province, could be put out to tender. Bidding could be on the scaling fee to be paid. Potential bidders would need to be screened for technical and managerial competence prior to bidding. It is recommended that contracting out be tried in one or two areas to test its success, and to refine procedures and methods.

Scaling of Logs at Processing Plants and Export Ports: If accurate and reliable scaling of logs in the forest is difficult to achieve, scaling of logs before they enter the sawmill or plywood mill is an alternative. Basing forest fees on log inputs is better than basing them on processed wood outputs. As will be explained below, fees levied on log inputs provide incentives to use these inputs more efficiently and to improve the recovery of wood products. Where logs are exported, they could be scaled at the port.

Scaling of logs at processing plants or at port facilities could be contracted out to a third party as described above.

Issue 6 -- The Sale of Timber, and Alternatives

It is the timber, whether standing or as logs, which is of commercial value to the forest industry. Thus it is the timber, standing or as logs, which should be priced and sold. However, given the practical problems of wood measurement (scaling), it is appropriate to evaluate alternative bases for forest fees.
Standing-Volume Fees

A forest fee based on the inventory volume of merchantable trees within the annual cutting area has advantages, but it would require an accurate operational inventory and very close control of logging operations. It has advantages for plantation forests, but is not necessarily appropriate to natural tropical forests.

The total forest fee for the annual cutting area is derived by multiplying the inventory merchantable volume of each species by the per cubic meter fee. Thus the total fee can reflect differences in species, stand density (volume per hectare) and other characteristics affecting values.

Scaling would not be required for revenue purposes. Scaling might still be required to be sure logs came from areas on which the standing volume fee has been paid, for forest management purposes, to monitor and control the flow of logs, and to control illegal logging.

To apply this type of fee requires, as mentioned, a reliable inventory. Given the diversity of tropical moist forests in species, diameters, stocking, etc., reliable operational inventories are difficult to achieve. The inventory would have to be done by the department of forestry or an independent organization; the incentives for under-inventory of the volume, species, or merchantability are too great to leave the inventory to the concessionaire. A standing-timber based forest fee has strong incentives for the concessionaire to harvest all merchantable timber, having paid for the trees.

However, these incentives may not be compatible with the selection cutting silvicultural systems practiced in the tropics, nor with the harvesting of only marked trees. The incentives may be too strong to fell more trees than silviculturally warranted, to cut trees below the diameter limit, or to take unmarked trees.

A standing-timber fee will also require inspection of logging to control that it does not go beyond the cutting area boundaries. Until forest management and inspection capabilities are strengthened, standing-volume sales of timber should be reserved for plantation forests where their utilization benefits are strong, and where inventory supervision and control is easier.

Area Fees Based on the Annual Logging Area

A per-hectare fee based on the annual logging area, on its accessibility class, and on the forest type, is an alternative to a standing volume fee. It is simpler and avoids the problems inherent in an inventory of the standing volume. It also avoids scaling for revenue purposes.

An area-based fee on area logged will still require inspection to ensure that logging does not extend beyond the boundaries, and to ensure that, if diameter limits apply, they are respected; or that, if trees are marked for felling, only marked trees are cut. Nevertheless, in situations where inspection of scaling is weak and unreliable, a fee on the area of the annual logging plan may be a practical option.

Area-based fees should also be adjusted, annually or at least regularly, to reflect changes in timber prices and general inflation. This adjustment could be done by means of automatic indexing for inflation, or based on an index of timber or forest products prices.
Per-Tree Fees

A stumpage price per tree is another alternative which does not require scaling for revenue purposes. The stumpage fee per tree is usually constant irrespective of tree diameter or volume. Fees can be varied by species. In Ghana a “royalty” per tree is levied on trees cut on all concessions, both those inside and outside forest reserves. The royalty schedule gives per-tree fees which differ by species (Gray 1983, Gray 1986).

In Nigeria, a stumpage fee per tree is applied to timber from natura forests and to plantation timber in almost all 22 states (Gray 1981, Gray 1983, Skoup 1989). Stumpage fees per tree vary between species classes and among states. For Class I species, stumpage fees in 1989 ranged from Naira 7 in Soko State to Naira 264 in Cross River State, averaging Naira 52. For Class II species, stumpage fees averaged Naira 26 (Skoup 1989:61).

Per-tree fees have the advantage of simplicity. They avoid the above-mentioned problems and difficulties in scaling. All that is required is to count the trees cut. It is easily verified by counting the stumps. However, it does require field supervision and inspection of the logging area. The fees can be varied by species to reflect differences in value. The per-tree fees will be based on the value of the larger trees, above the minimum legal diameter. They will discourage the felling of smaller trees. This can reinforce diameter limits and support silvicultural systems that call for leaving smaller trees.

If the per-tree fee is charged on all trees felled, whether utilized or not, it will discourage the wasteful felling of trees that are then left non-utilized, and thus it will benefit forest management. A per-tree fee will encourage fuller utilization of trees felled. Having paid for the entire tree, the concessionaire is more likely to utilize whatever is merchantable.

Thus for practical reasons of revenue collection and for silviculture benefit in the management of tropical moist forests, a per-tree fee may be a useful fee to consider.

Volume-Based Fees

Volume-based fees, based on scaled volumes measured at the stump in the forest, at roadside landings in the forest, at riverside log dumps, or other central points in the log transportation network is the traditional approach to selling wood. It is the method most widely used in tropical Africa and Asia.

In Cameroon volume-based fees, including volume-based log export taxes, account for 90% of forest revenues, area-based fees for only 10% (Egli 1990). In Gabon volume-based fees and log export taxes account for 95% of forest revenues, area-based fees for only 5% (Egli 1990). In other West and Central African countries the proportions are similar.

Selling timber based on log volumes is an ideal basis. However, the administrative and institutional problems of scaling and revenue collection, discussed in Issue 5, make volume-based charges much less attractive as a practical basis for forest fees until forest administration inspection and control is strengthened.

Given the practical problems of scaling in the forest at perhaps hundreds of scattered locations, volume-based fees may be collected more reliably at some central points in the log
transport system; at road junctions, at riverside log dumps, at railway or other internodal transfer points, at main junctions of river systems, at processing plants or at log export ports.

At central points supervision and scaling is easier to organize, supervise and control. Training of scalers is easier. It is also easier and cheaper to contract out scaling if it is done at central points. Finally, it will be easier to control illegal logging where scaling is at central points in the transportation system.

In many of the African countries visited, scaling is done at central locations, often the log export ports. For landlocked countries it is usually border points. Considering the present weaknesses in forestry administration, log export ports, border points, or other central points are the only practical control points.

Fees Based on Processed Products

In some countries, because of the problems of scaling logs at roadside in the forest, forest fees are instead based on the output of processed products, such as sawnwood, veneer, plywood, etc. This has been done in Indonesia, partly to financially assist the industry by postponing payment of forest fees until the products have been produced and are ready for shipment. It is also done for small sawmills in several Canadian provinces in order to simplify scaling.

However, basing forest fees on the processed output rather than on log inputs distorts input and output prices, leads to inefficient log use and low recovery of processed products, and penalizes efficient log utilization. These effects are explained more fully when we discuss forest industry issues below, under Issue 12.

Export Taxes

Volume-based export taxes on logs can serve as substitutes for volume-based forest fees at roadside in the forest. In this situation they are the export equivalent of a volume-based charge on the log inputs entering domestic processing plants. In Congo log export taxes account for 95% of total forest revenues (Egli 1990). They remain an important revenue source in those West and Central African countries that have not banned or restricted log exports.

Export taxes on processed products used as substitute for volume-based forest fees at roadside in the forest are equivalent to fees based on processed products; same criticisms apply. Export taxes are examined more fully in the discussion of forest industry issues, under Issue 13.

2.2 FOREST MANAGEMENT, SILVICULTURE AND FOREST UTILIZATION ISSUES

Forest fees can have important effects on logging, utilization and waste in the forest, on forest management and on silviculture. Pricing policies can be an important tool of forest management, encouraging efficient utilization, proper logging, and regeneration. In short, pricing policies can become a tool of forest management. They have not been used as such until now in most countries because they have been too low to be effective. In fact low forest fees have encouraged inefficiency in forest utilization and forest management.
Of the hundreds of species that reach timber size in the African moist forests, only a few dozen are currently marketable. Of these, some are more valuable and sought after than others. These valuable, sought after species tend to be over-cut. By the next utilization in 25 to 40 years’ time, other species will have become marketable. In fact new species are continually being discovered by the market.

One way to discourage over-cutting of a few species and to encourage use of a wider spectrum of species is for the forestry department to mark the trees which it wishes the concessionaire to cut, then to inspect and enforce the cutting of marked trees. This is the regulatory approach. In many countries it is not successful, and it is not likely to work in West or Central Africa. Another way is to use economic incentives, to increase the stumpage prices charged for the high valued, over-cut species, and to reduce the stumpage prices of the neglected, undercut species.

**Issue 7 — Stumpage Fee Differentiation by Species**

Forest fees can be differentiated by species, (a) to reflect differences in values among species and thus capture a greater proportion of the value of the timber, and (b) to influence harvesting and utilization for forest management objectives. Per-tree or volume-based forest fees as well as export taxes and fees on processed products can all be varied by species. Stumpage rates which vary according to the value of the species reduce creaming. On the other hand, "flat" stumpage rates, set according to the most valuable species, will reduce the total volume cut.

In most countries there are considerable practical problems in applying forest fees differentiated by species. First, there are the difficulties of distinguishing among species once they are in log form at roadside. It is even more difficult after logs have been debarked or been transported in muddy rivers to processing plants or export ports. These difficulties lead to errors in classification and encourage abuse in misclassification of species to lower value classes at lower fees.

If forest fees are differentiated by species, the grouping by value classes should be based on recognizable wood characteristics, rather than on the leaf, flower, fruit and bark characteristics used for biological classification. Only limited number of groups should be used, perhaps three to five. Second, differentiating fees by species groups can encourage bad practices and abuses in scaling, concession reporting and export declaration. Company scalers and graders will find themselves under strong pressures from their employer to classify logs, processed produce and exports to low forest fees groups. Government scalers and graders will face similar pressures as well as financial inducements. Where inspection and control is weak, misclassification might reduce forest revenues below what could be obtained by uniform fees for all species. Misclassification of species can also result in wrong information on species cut, and thus to misleading forest management decisions.

**Issue 8 — Minimum Diameters, and Fee Differentiation by Size**

For different groups of species, different West African countries specify different minimum breast-height diameters below which trees may not be harvested. These diameters usually vary from about 50 to 110 cm. Often these rather high diameter limits were set when harvesting began in these forests, when only the large trees were merchantable, and the immediate concern was to remove the very large trees before they began decaying. Today, the marketable minimum diameters are considerably smaller.
There are considerable pressures for loggers to cut below the diameter limits. To take all merchantable diameters could seriously damage the stand in many cases. Higher stumpage fees per cubic meter or per tree can raise minimum marketable diameters and so narrow the gap between legal minimum diameters and the marketable diameter.

The minimum economic size, or marginal tree, will vary by species, location, distance and logging cost. The higher the value of timber, the smaller the marginal tree. On the other hand, the higher the stumpage fees and the logging costs, or the more difficult the logging conditions, or the more distant the stand, the larger will be the marginal tree. Forest fees can serve to support, although not ensure, minimum diameter limits. These diameter limits are usually not enforced, and are frequently ignored. Per-tree fees provide the strongest incentive to leave the smaller diameter trees, as explained above under Issue 6.

**Issue 9 – Fee Differentiation According to Accessibility**

In tropical countries accessibility is difficult, transport costs are high, and timbers are heavy. Thus location is an important factor in the commercial values of standing timber. Accessible stands with low transportation costs will be of high value, profitable and attractive. Over-cutting of accessible areas will result. In accessible areas even some lesser known species will be of value and thus utilized. On the other hand, distant stands, facing high transport costs, will be of lower value, and lesser known species there may be of minimum value or uneconomic.

In many West African and others tropical countries, forest fees are not differentiated by distance. In others the differentials do not fully reflect difference in transport cost and timber values. This has been the situation in the Congo and Gabon, for example, with the result that logging was concentrated in more accessible regions, which became over-cut. Remote areas were left, or logged for only the most valuable species. In the Congo the structure of fees has now been changed to incorporate regional differences in fees, with eight fee zones (Egli 1990). However, the differentials in fees do not yet fully reflect differences in transportation costs, so that the incentive to over-cut accessible areas remains. And, for locally processed log there are no fee zones, the same fees applying throughout the country. In Cameroon the log export tax is differentiated into three zones (Egli 1990), but again the differences do not fully reflect transportation cost and timber value differences.

Uniform forest fees generally do not capture the full value of the more accessible timber. As a result forest revenues will be less than their potential. It is true that uniform forest fees may provide some benefits by preserving distant, less accessible areas. Thus incentives to log distant forests should be very carefully examined for their environmental impacts. However the preservation of distant, inaccessible forests will be achieved at the expense of the more accessible ones. Also, the main threat to the TMFs is not logging but conversion to agriculture, and rational logging may prevent that.

A competitive market would generate forest fees that are differentiated by distance and accessibility (as well as by species). Whether forest fees are based on residual value or on bidding, they will be lower in isolated areas than in areas situated close to markets. The difference in price will equal the differential cost of transport. This is how the free market would work. Some economists and environmentalists see the stumpage price differentiation which would develop in a free market as something undesirable, and see the uniform stumpage rates which are generally in force in West Africa as a desirable price distortion. Environmentalists argue that the system of uniform
stumpage prices will save distant forests, while economists argue that it will ensure that accessible forests are logged first, which means that timber transport uses less of the country’s scarce resources in the form of means of transport.

The present authors, however, are of the opinion that it is more realistic to accept the free-market tendency towards forest fees differentiated according to stand accessibility.

**Issue 10 — Wasteful Logging**

Of all the trees cut by loggers in the African moist forests, about half the volume is typically left on the ground in the forest. Sometimes an entire tree is felled, but then, for various reasons, left. Wasteful practices are encouraged by the fact that concessionaires normally pay only for the wood taken to roadside. Of the wood removed, 50 to 60 percent is then lost in the saw and veneer mills, whereas it is technically possible for the logs to be processed at a loss of as little as 40 percent. Much of this waste in logging can be reduced by improvements in logging operations, by changes in the way the wood is priced, and by concession allocation policies which generate appropriate conservation policies and reflect the scarcity value of wood.

Poor utilization in the forest results from, (a) expansionary concession policies that make timber artificially abundant and discourage conservation and, (b) low concession fees that encourage acquisition and holding of concessions beyond company needs, and (c) low forest fees that allow firms to survive even with inefficient logging practices.

Concession policies in most West and Central (W&C) African and other tropical countries respond to and accommodate the demand for concessions. Granting concessions is seen as a way to bring industry and development to remote and underdeveloped regions of the country. The Treasury and many individuals benefit from granting of concessions. As a result, concession fees are low, and virtually all of the forest is under concessions. Companies are encouraged to accumulate areas beyond the needs of their processing plants, or the capacity of their logging equipment. In Congo, for example, some concessions are so large that the annual allowable cut would be four or five times the company’s capacity. Under such circumstances, there is not scarcity of timber as far as the concessionaire is concerned. Log production is only constrained by the capacity of the logging equipment and the supply needs of the processing plants. The logger will take only the best trees and the best quality logs. If, for example, trucking capacity is a constraint, he will load only the best logs, leaving defective and lower valued logs behind.

The solution proposed in section 3.2 below is to raise annual concession rent (fees), e.g. by introducing bidding on concessions. These policies would put a value on concessions, introduce a scarcity value to timber, and so stimulate better utilization.

**Forest Fees to Improve Utilization in the Forest**

There are alternative types of forest fees which can encourage improved utilization. However, they will not overcome the utilization problems stemming from inappropriate concession policies or inefficiencies in the forest industries induced by low forest fees.

**Per-Tree Forest Fees:** Per-tree forest fees provide a strong incentive to utilize the whole tree, as explained in Issue 6 above. Having paid for the tree, the concessionaire will be inclined to use as much as is economically merchantable.
Standing-Volume Fees: Forest fees based on the volume of merchantable trees within the annual cutting area provide an incentive to utilize as many trees and as much of the trees as are economically merchantable. This fee alternative was examined in Issue 6.

Volume-Based Fees which Vary by Diameter: Volume-based fees could be varied, not only by species, but also by other characteristics such as log diameter. This is how plantation-grown softwood is marketed, the bigger logs fetching higher prices per cubic meter. However, the practical problems of enforcement and the dangers of evasion or abuse are significant.

Who Should Decide what Trees to Remove in Each Cut?

In thinning in temperate forests, a forestry technician usually marks the trees which are to be removed. In the tropics, however, this decision is usually left to the concessionaires, as long as the latter do not cut any trees below the specified minimum diameters. Forestry departments usually do not have enough staff and vehicles to undertake the marking of trees. However, if forestry departments want more control over the harvesting process, or to encourage utilization of a wider range of species, they may need eventually to do the tree-marking themselves. An alternative is to continue to require concessionaires to undertake tree making, but strengthen management planning, require logging plans, introduce auditing of logging plans and forestry operations (perhaps initially by an independent organizations), and strengthen post-logging surveys (perhaps also initially by independent organizations).

Who Should Do the Inventories?

If bids are invited for a long-term concession, it is most rational that forestry department should do at least an approximate timber inventory of the forest for the guidance of prospective bidders, rather than each bidder doing his own inventory. Then, when harvesting of a specific timber stand is being planned, a very detailed inventory is normally made, perhaps even of 100% of the harvestable trees. This is usually done by the concessionaire, mainly because the forestry department does not have enough staff to do it, but perhaps also because the concessionaire may not have confidence in somebody else's inventory. However, if forestry department wants to sell its wood standing rather than as now on roadside, in order to reduce logging waste and encourage a wider use of species, it should build up its inventory capacity so that it can undertake this task itself. As generally only one or two trees per hectare are sold and removed, the task of measuring them is not too onerous.

Who Should Build Logging Roads?

Roads are a mixed blessing in the tropical forests. They provide access, but they cause erosion and encourage invasion by illegal woodcutters and slash-and-burn shifting cultivators. Forestry departments should therefore only build the minimum of roads necessary for management and protection of the forest, and leave the building of the logging tracks to the loggers. If the value of the available wood is not sufficient to cover the cost of building the logging tracks, then it is better that the wood in question remains uncut. There is no reason for forestry departments to subsidize the private sector through road-building, as is done by for example the US Forest Service in its much-criticized below-cost timber sales.
Silvicultural Systems

The silviculture of the African moist forests varies the minimalist case, like in Ghana or the Central African Republic, to the maximalist case like in the Yapo forest of Cote d'Ivoire. In the minimalist or zero-silviculture case, the forestry department prescribes the minimum diameters that may be cut, but does no improvement felling or even silviculture, natural regeneration of tree gaps and logging tracks being generally adequate. In Ghana, for example, the more interventionist systems of stand improvement applied in the past proved to be expensive and harmful. On the other hand, the improvement felling practiced in Yapo today appears to be more sophisticated than those which were practiced in Ghana in the past, and it is apparently profitable. This subject could fill volumes. Here it will merely be noted that there is no agreement among tropical foresters regarding the silviculture to apply to the TMFs. This subject is relevant here because the cost of silviculture, if any, is one of the costs that should be covered by the minimum forest fees (Issue 4).

Felling (Cutting) Cycles

The felling cycle, or the interval between selection felling, varies from 25 to 40 years. Whatever the cycle, the average volume cut per hectare and year is more or less given. If the cycle is shorter, each cut will thus be smaller, and vice versa. Say that an average of 1 cubic meter per hectare per year of marketable wood can be removed. We can then take out either 25 cubic meters per hectare every 25 years, or 40 cubic meters per hectare every 40 years. The concessionaire may prefer the latter, as there will be economies of scale, but the former alternative of lighter but more frequent felling may be environmentally preferable.

Logging Damage

Concessionaires sometimes cause unnecessarily much logging damage. They may carelessly fell more trees than they eventually decide to take out. They may not fell the trees in the directions in which they will cause the least damage when they fall. When the stem has been cut into logs, they may haul out different logs along different routes, crashing through the vegetation in various directions. Concession contracts should certainly contain a clause providing for fines or even cancellation of the contract in the case of excessive harvesting damage, however defined.

Production Forests, Protection Forests, and Forests to be Converted to Agriculture

The tropical forest is a growing, dynamic community of plants and animals and man, which under the right management can yield timber and non-timber, market and non-market, benefits in perpetuity. Parts of the forests, however, may need to be closed to all harvesting, or at least to all timber harvesting, either because it is biologically unique and fragile, or because the soils are very erodible, or because harvesting would affect water quality, or for other reasons. Although most tropical moist forests grow on leached infertile land, some might grow on fertile land suitable for sustainable agriculture, like some volcanic soils in Java, or the island of Bioko in Equatorial Guinea, which were once under forest, and it may be in the national interest to convert such forests to farmlands.

It is unrealistic to try to defend all forests, but it is appropriate to defend key forest areas, for the reasons mentioned above, and to guard against unsustainable use of forests set aside for timber production. It is therefore rational to determine, country by country, which forests should be completely protected, which ones may be used for sustained production of timber (the subject of this
study) or other products (also very important), and which ones may be converted to sustainable agriculture. An enormous amount of work has been done in this respect in W&C Africa, where vast areas have already been given legally protected status as national parks, nature reserves, hunting reserves, forest reserves, and so on. But much still needs to be done. Projects of this nature are underway or planned in Central African Republic and Congo.

2.3 FOREST INDUSTRY ISSUES

Forest fees can influence the utilization of the timber cut in processing industries (sawmills, plywood and veneer factories, pulp and paper mills, and as minor forest products). They can be used to encourage the use of species, to encourage domestic processing, or to encourage more efficient utilization and recovery. Low forest fees encourage increased supply of raw material (logs) and low log prices, leading to waste of wood, poor utilization and sheltering inefficiency in the forest industry, as explained below.

Issue 11 – Forest Fees and Processing Efficiency

Low forest fees are commonly used to help the processing industry. Certainly low forest fees benefit the processing industry financially, providing cheap log inputs to the industry, but a subsidy of cheap log inputs does not help the industry achieve efficiency and better utilization. Quite the contrary, low priced logs will encourage sawmills, veneer and plywood mills to substitute cheap logs for other inputs, labour and capital. With low forest fees and cheap logs, recovery will be lower, labour productivity will be lower, and there is little incentive to improve the utilization of the capital invested. Low cost log inputs is an important but not often considered factor in the low recovery rates of sawmills and plywood plants in tropical countries. Mills in Europe, Japan, Korea, or Taiwan face considerably higher log prices, which include freight, and achieve much higher recovery and utilization.

Increased forest fees, if gradually introduced, will, in the long run, encourage a gradual shift toward increased efficiency in utilization and improved recovery of sawnwood and plywood. In the short run, the forest industry will not welcome higher forest fees because higher forest fees reduce the profitability of the domestic processing industry. But low forest fees are the wrong way to subsidise domestic processing. They lock-in inefficiency. In the long run, higher forest fees and higher log prices will make maintenance expenditures and investments to improve recovery financially attractive. Investments in new machinery with higher recovery will be warranted. The experience in industrialized countries has been that higher log prices have forced the forest industry to invest in new equipment to survive. Higher forest fees will also encourage the substitution of labor for the now more valuable log inputs by encouraging the use of labor to increase recovery, and make better working methods and training to improve labor productivity more attractive. Log butchery would no longer be financially attractive.

In Africa local markets are sometimes considered as dumping grounds used to increase processing capacity of export quotas are based on and tied to local processing capacity or output. Such requirements introduce their own distortions and inefficiencies. Instead, domestic processing to serve local markets should be based on local needs, rather than using local markets as a dumping ground to support log or product exports.
**Issue 12 — Charges on Processed Products**

In some countries, forest fees are levied on the output of processed products: sawnwood, veneer, plywood, or their processed products, instead of on logs. A charge on processed products instead of logs is often advocated because of problems in scaling logs, or to overcome abuses and evasion in scaling, and to capture illegal logs (Gray 1990). However, shifting fees from groundwood to processed products can generate an incentive for greater waste. In addition, fees based on output of processed products introduce inequities. Companies that improve their efficiency and recover more sawnwood or other products will be penalized. Those that waste wood are subsidized. Logs that are wasted, thrown away or used as boiler fuel are not paid for.

The overall effect of a switch of fees from logs to processed products will be that the forest will yield less sawnwood, veneer and plywood from the allowable cut, and will generate less value added. Cheaper logs, free of forest fees will substitute for labor and capital in processing. Forest fees on processed products are therefore not recommended. If collecting fees in the forest is difficult, or subject to avoidance, evasion and abuse, then fees should be collected on log input entering processing plants, not on the processed products produced.

**Issue 13 — Export Taxes**

Export taxes on logs and processed forest products are widely used throughout West and Central Africa. In Cameroon, export taxes on logs generate 57% of forest revenues; in the Congo, over 95%; and in Gabon, over 90% of forest revenues (Egli 1990).

Export taxes serve two main purposes:

1. export taxes on logs and processed products can substitute for stumpage prices collected in the forest, at roadside or elsewhere; and

2. export taxes on logs serve as incentives to domestic processing.

Export taxes as substitutes for volume-based stumpage prices are discussed here. Export taxes to encourage domestic processing are discussed under Issue 14.

**Advantages of Export Taxes as Substitute Stumpage Prices**

It is usually easier to measure logs or processed products at export ports or at border points than in the forest. Centralized measurement is easier and supervision and control is easier, and independent checking is possible. Revenues are also easier to collect. Export document can be withheld until the export fees are paid.

**Disadvantage of Export Taxes as Substitute Stumpage Prices**

Export taxes are levied on a tax base far removed from the forest. Thus they can not take into account differences in timber values with stand conditions, distance, transportation costs, or other forest factors.

Export taxes only apply to logs or processed products which leave the country. Logs consumed within the country, unless exported as processed products, will be free of forest fees. This
can result in a loss of revenue. It can also encourage inefficiency in utilization in domestic processing from low cost logs free of forest fees as explained in Issues 11 and 12.

Ad Valorem Export Taxes

Export taxes are most commonly levied at ad valorem (percentage of value) rates based on the FOB prices of the logs, or, better, based on independently established "posted" prices or "valeur mercuriale" prices.

Ad valorem export taxes are far from perfect vehicles to capture the value of the standing timber. Such taxes are a fixed percentage of log prices at the border (e.g. 5, 10, 20 percent). The values of standing timber, i.e. stumpage values, are derived from export prices less costs of logging and transport. For logs with low export prices the derived stumpage value can be very small, even zero if export prices are very low or costs high. The tax on the export value captures a larger proportion of the stumpage value when the export value is high than when it is low. This can make logs with low export prices unprofitable to log, whereas on the other hand in the case of logs with high export taxes the tax will collect only a small proportion of the stumpage value, leaving the concession holder with much profit from logging high priced species. To better and more fully reflect timber values, ad valorem export tax rates would need to vary, from low rates on low priced logs, to high rates on high priced logs, a complex rate structure. Such a structure has been established in Congo. However, it does not fully reflect the differences in transport costs, and it has not been updated adequately.

At low rates an ad valorem fee will have some modest effect on utilization, discouraging logging of only the lower valued marginal trees or lesser known species, marginal logs, or distant stands. However, if ad valorem rates are raised to capture a larger share of the value of the high and medium valued timber, they will have an increased impact on utilization of the lower valued timber.

These effects are exactly analogous to the impact of ad valorem petroleum royalties (based on well head prices of oil or natural gas) on the capture of the value of the petroleum resources (economic rent) and on the operation of marginal wells or fields.

Export Prices and Posted Prices (Valeur Mercuriale)

Basing export taxes on declared FOB prices of shipments of logs is likely to generate problems of under-reporting or misrepresenting FOB prices. To overcome this problem, francophone African countries commonly established "valeur mercuriale" or "posted" prices on which the ad valorem export tax rates are based. However, it is important that such posted prices be adjusted regularly — quarterly or annually. It is also important that they approximate the correct FOB prices, which are regularly published in tropical timber trade journals. There are benefits and economies from cooperation among W&C African countries to establish and up-date a common set of "valeur mercuriale" prices.

Alternative Export Fees

The Malaysian State of Sabah utilizes a forest revenue system based on posted export prices, adjusted quarterly, and a royalty formula (Gray 1983, Repetto and Gillis 1988). Royalties are set quarterly for 10 log classes. Sabah's royalties are among the highest in the world (Repetto and Gillis 1988). These high royalties are achieved with a royalty formula which taxes 90 percent of the posted FOB log prices, after allowing an "Industry Operation Cost" of US$46/m3 (Gray and Hadi 1990).
For the first quarter of 1990, the formula yielded log export royalties of US$ 89/m3 on the highest value species, and US$ 52/m3 on meranti, the major species cut (Gray and Hadi 1990). Royalty rates on logs processed domestically are substantially lower, between 20 percent and 50 percent of those on export logs. By deducting an "operating cost" allowance the royalty formula is better able to capture the value of the high priced species than an ad valorem export fee, without discouraging the logging of the lower valued species.

However, there is one side effect of Sabah’s high fees per cubic meter. They are said to result in marginal logs, tops and butts being left in the forest. Certainly, high fees charged on a per cubic metre basis will provide an disincentive for removal of timber or logs of marginal value, but this is counterbalanced by low logging costs of removing marginal timber and logs. Roads and tracks are already in and equipment is already on the site, so marginal logging costs involve only labor, machine time and fuel. The problem of logging waste in Sabah is more likely to result from policies that continue to make concessions and timber available without reflecting future scarcity.

**Issue 14 — Incentives for Domestic Processing**

Domestic processing can be encouraged by log export taxes, domestic processing requirements, export quotas, or by log export bans on some or all species.

Export taxes on logs are widely used in West and Central Africa, and elsewhere, to encourage domestic processing. High export taxes on logs and low or zero export taxes on processed products can provide a strong incentive for domestic processing. They divert logs to the domestic market, lower domestic log prices below world market prices, and provide domestic processors with cheap log inputs. Only if the country is a major supplier to the world log market, or if countries act together, will it raise world prices.

The trend in West and Central Africa has been to supplement log export taxes, first by domestic processing requirements (usually as a given percentage of log production), or export quotas, and finally by log export bans on selected species or on all species. Export taxes provide better domestic processing incentives than log export bans, quotas, or other quantitative controls, as is explained below and in Issue 15.

**Domestic Processing and an "Optimal" Export Tax Policy**

Economists who criticize export taxes or other policies designed to stimulate domestic processing often ignore (a) the tariffs and trade barriers against the processed products and manufactured goods of developing countries, and (b) the dynamics of development and industrialization (the infant industries argument).

In the real world, a "second best" world, with import duties imposed by developed countries on processed goods and manufactures, the developing countries might never be able to establish processing and manufacturing industries, even if they could operate at lower cost than in industrial countries. An export tax on raw materials such as logs can serve to offset the duties or trade barriers of the industrialized countries. The export tax can put the processing industries in developing countries in an equal position to those in the industrialized countries protected by import duties, the so-called "level playing field".
Clearly the ideal or "first best" solution from an economic point of view would be a reduction in import duties by industrialized countries. This would increase efficiency worldwide, increase world trade and provide opportunities for all countries. Some environmentalist have suggested that, in an effort to reduce tropical deforestation, the import duties on tropical forest products in the industrialized countries should be increased, not decreased. However, that might have the opposite of the desired effect by reducing the revenue from the tropical forests, and hence the interest of their public owners to prevent their conversion to agriculture, which is by far the main cause of tropical deforestation.

The "second best" policy of an export tax on logs or rough-sawnwood products, may be the only option available to developing countries (Takeuchi 1983). In a development framework there may be an additional case for an export tax on logs or rough-sawnwood products. In a dynamic model an "optimum" export tax policy would maximize the net development benefits from further processing (benefits in terms of employment, value-added, diversification benefits, etc.) less the costs (in terms of lost output, employment, etc.) coming from the change. The net development benefits would be maximized in present discounted value terms. This could imply an export tax on logs, even where not called for by a static analysis.

The Development of the Plywood Industry in Indonesia: An Example

Indonesia introduced log export restrictions beginning in 1980, culminating in a complete log export ban in 1985. Although a log export tax might have done so more efficiently, this policy has, within ten years, established Indonesia as a major producer of plywood and sawnwood, and as the world's largest plywood exporter. This policy has been criticized for dissipating the economic rent of the forest resources (Repetto and Gillis 1988), but domestic processing might not have been achieved without incentives of some kind.

In the early 1980's import duties on plywood in Japan, Indonesia's largest importer of plywood logs, stood at 20 percent of the CIF value. This represented an effective protection of over 60 percent for Japanese plywood producers on Indonesian log exports to Japan (Takeuchi 1983). In the early 1980's the United States and Europe imposed import duties on plywood at 14 percent and 12.6 percent respectively, not much different than Japan's. The Japanese import duty has since been reduced to 15 percent, which would still represent effective protection of 45 percent for Japanese plywood producers. The General System of Preferences (GSP) provides duty free access up to a quota, but in the case of Japan, the annual GSP quota for plywood is filled very quickly, after which the regular import duties apply.

Import Duties on West and Central African Forest Products

Fortunately, industrialized country import duties have very little distortionary impact on the domestic processing of forest products in W&C African countries. Most of forest products exports from those countries go to the European Community (EC), where they enter duty free under the Generalized System of Preference (GSP). Under the Lomé Convention most African countries receive unlimited duty-free access as ACP countries (60 African, Caribbean and Pacific Ocean developing countries). Consequently, for exports to Europe, there is no need for export duties on logs to counterbalance European import duties on processed forest products form West Africa. However, West African forest products may still face trade distorting import duties in other countries.
Side Effects of Domestic Processing Incentives

In spite of the benefits of a log export tax in developing further processing of forest products, there are some inevitable side effects. As with any policy, the objective should be to minimize the adverse side effects.

A log export tax will divert logs to the domestic markets, and thereby lower domestic log prices. Low priced domestic logs are the vehicle through which domestic processing is encouraged. However, the resulting lower domestic log prices will discourage fuller utilization in the forest and in processing plants. Lower log prices will mean that some species, especially "lesser known species" will be left in the forest. They will result in more "marginal" logs or trees, top, logs, defective logs, and potentially usable wood being left. At higher log prices more species, logs and trees would be used.

Although the domestic processing industry will benefit from the diverted logs and lower log prices, these lower log prices will also diminish the incentive to process the logs efficiently. Lower log prices will encourage the industry to concentrate on throughput of logs, rather than recovery of sawnwood, veneer, or plywood. As a result, utilization and recovery will inevitably be lower than in the industrialized countries importing logs.

Export Taxes on Processed Products

Exports taxes on semi-processed forest products such as sawnwood can be used to encourage further processing; into moldings, furniture parts, etc. Indonesia, for example, introduced a sawnwood export tax in late 1989 with rates of US$ 250 per cubic meter on most species of semi-processed sawnwood and US$ 500 per cubic meter on most species of rough sawnwood. These rates are so high that the tax is almost equivalent to an export ban.

However, to ensure further processing, an export tax on processed products needs to be combined with a higher export tax on logs (or a log export ban), otherwise logs will be diverted into the log export market, and the policy will backfire.

Incorrectly set rates of export tax on processed products can actually discourage domestic processing of logs if they are set too high relative to export tax rates on logs. To compare the export tax on logs and processed products such as lumber, veneer, or plywood it is necessary to calculate the actual tax paid on each from the ad valorem rates times the market prices, and then to adjust for the conversion from logs to products, to put the tax payable on a per cubic metre of log input basis. In some countries the differential in export tax rates and the domestic processing incentive has ended up the other way round after taking into account the conversion from logs to processed products, discouraging rather than encouraging processing.

If the export tax on processed products exceeds the export tax on logs, some logs will be diverted to (lower tax) log export market. Sawnwood will also be diverted to domestic sales. Little if any sawnwood will be further processed. Thus the use of export taxes as instruments of domestic processing policy gets more complex as you move further from the logs. There are many more linkages and many more non-taxable or lower-tax outlets for production. The domestic processing impacts of an export tax on logs are relatively clear and predictable, those of an export tax on processed products are not. Thus the introduction of export taxes on processed products should be approached with caution. Where used, such taxes should first be introduced at low rates and their impacts evaluated.
**Issue 15 — Log Export Restrictions**

Cameroon's forestry code requires domestic processing of 60% of the log volume from concessions, and a log export ban within four years has been proposed (Egli 1990). On concessions of 15,000 to 75,000 ha Gabon requires 75% domestic processing of logs; on concessions of more than 75,000 ha the proportion is negotiated (Egli 1990). In the Central African Republic, local processing is required for 50% of the log volume (Egli 1990). In the Congo, the 1974 forest regulations require that 40% of the logged volume from concessions in the north should be processed locally, 50% from concessions in the south, and 100% from Okoume concessions (Egli 1990). "These requirements have not been properly enforced throughout the years and at present some large companies even export 100% of their harvest as logs." (Egli 1990).

Log export restrictions that require the domestic processing of a given percentage of the log production from a concession, or log export quotas, can distort domestic production. Usually it is the more valuable high-quality species or grades of logs that are exported. The less valuable low-quality, smaller and defective species, grades, or logs are the ones that end up being processed domestically. It is partly as a result of this that processing is less efficient and more wasteful in the developing than in the industrialized countries. Such distortions are not the basis upon which to build a forest industry in developing counties. Value-based log export taxes, because they raise the log export cost of all logs proportionally, provide a more neutral, less distortionary domestic processing incentive. They generate government revenues rather than encouraging inefficient behavior in producing sawnwood or plywood wastefully, or "rent seeking" activity acquiring export quotas.

**Log Export Bans versus a Log Export Tax**

Many tropical countries have chosen an export ban on logs as their policy instrument to stimulate domestic processing. Ghana has had an export ban on certain species for a long time, and has gradually broadened it to cover more species. Gabon has required local processing in order to export an equivalent volume. Cameroon is considering an export ban. Although export ban is presumably simpler implement and easier to monitor, it is arbitrary and inflexible. An export tax can serve the same objective of encouraging domestic processing, generates revenue, is more flexible and has additional advantages. An export tax at very high tax rates, is equivalent to an export ban.

An export tax can generate revenue if some logs are still exported, as well as provide incentives for domestic processing of logs. Even at high export tax rates there will be at least some revenue from the few, extremely valuable logs or species able to withstand a high export tax rate.

An export tax is flexible. It can be set to achieve any desired level of processing incentive. The level of the incentive can be adjusted up or down over time, (a) in response to tariff changes on processed products in industrialized countries, and (b) as the domestic processing industry develops and matures, and incentives are less needed. However, the export tax should not be so flexible as to generate uncertainty, or investment in domestic processing will not take place.

An export ban, on the other hand can not easily be adjusted as conditions change, or lowered as the industry matures. It can only be removed, an abrupt change which many countries would hesitate to make. Export taxes do need to be adjusted from time to time, but that is an advantage.

An export tax has an advantage for policy formation. Exports of logs that pay the export tax provide data on world market prices, the level of protection accorded the industry, and the revenue cost of that protection. The benefits of the processing can then be compared with the
revenue cost (export tax and forest fees foregone), the domestic processing policies assessed, and the export tax raised or lowered as appropriate.

This advantage is somewhat diminished by imperfections in the world log export market. World markets for logs or processed products may not be competitive. Export prices can involve transfer prices between related companies, under-invoicing, or other imperfections. Ad valorem export taxes based on declared FOB values, rather than on posted prices, can encourage further under-invoicing.

An export tax, because it would allow some exports, may facilitate export abuses, such as illegal exports, under-measurement, under-invoicing, etc. An export ban is clear cut. Any log exports which occur and, if detected, are clearly illegal.

In summary, an export ban has some advantages. It provides very strong incentives for domestic processing. It is a sharp, clear and definite policy. An export ban avoids the problems of under measurement and under-invoicing that can plague an export tax system. However, an export tax has even more important advantages, those of efficiency, revenue, and data for policy adjustment. For most countries an export tax is the better domestic processing incentives policy.

Log Export Quotas

Log export quotas are used in a number of developing countries to encourage domestic processing. Usually log export quotas are tied either to processing capacity or to the output of processed products. If log export quotas are tied to the installation of processing capacity, there will be no incentive to build and operate efficient sawmills, veneer or plywood plants. A log export quota will result in a legacy of inefficient processing plants equipped with inexpensive, inefficient, used and outdated machinery. Such plants will be costly to operate, and will often sit idle.

Instead of tying log export quotas to processing capacity or output, log export quotas could be auctioned to the highest bidder, by sealed tender or oral auction. In this case, the distortionary linkages to domestic processing capacity or output are eliminated. Domestic processing is encouraged by a protected market, increased domestic log supplies and lower log prices for domestic processors.

In Cote d'Ivoire log export rights were previously based on sawmill and plywood mill capacities. Export rights were allocated to companies with processing facilities, based on their capacity, and companies began to trade these rights. The government recently began to auction log export rights. In the first auction of log export rights, on January 15, 1991, about 30 of 40 registered bidders submitted bids. About 20 bids were successful and the average sale price was close to CFAF 5,000/m3, above the old administratively set price of CFAF 4,000/m3, which was difficult to control (Chausse 1991). The new system of allocating log export rights by auction has proved very unpopular with the private sector.

2.4 CONCESSION MANAGEMENT AND TENURE ISSUES

Forestry in West and Central Africa, as in other developing countries, faces difficulties in the regulation, control and supervision of concessions distributed throughout the country, by nature in remote areas. In Cameroon, as in many other countries, regeneration following logging is required in the forest code, but the requirements are not specified and not enforced (Egli 1990). The majority of concessions have no precise forest management plan (working plan). Management plans are
required only for state forests (Egli 1990). Gabon's new forest code was written in 1982. However, the decree for its application had not been signed by 1990, and thus the forest code is not enforced (Egli 1990). In addition, in Gabon, "the presence of the forestry administration is very weak in the forest zone, and control is almost non-existent; there is little enforcement of forest regulations in the field." (Egli 1990).

Faced with these problems and the failure of forest services to supervise and control logging and forestry on concessions, a natural reaction is to either, (a) close down logging activities and cancel concessions, or (b) introduce deregulation, today's theme throughout the world. Neither is likely to be a best, or even a second best solution.

Closing down of logging activities and cancelling of concessions would preserve the forest from encroachment by logging and logging roads, but it could leave forest areas unprotected and open to claim for conversion to other uses, principally farming. Unused land does not stay unclaimed for long in most tropical countries, witness the invasion of forest reserves where government does not have the resources to protect them. In addition, with no revenue from forests, governments will have little inclination to protect them. That is why the logging bans in Ecuador and Thailand led to increased deforestation.

Deregulation is not likely to be successful either. There are too many public or collective benefits from tropical forests for deregulation to be an efficient solution. Regulation, after all, is an extension of legislation, and nobody suggests abrogating the laws of the land. However, there are opportunities to improve regulation and control, to support forest management with economic incentives as suggested above, to put forest management and concession management on a more businesslike footing, and to encourage or require concessionaires to undertake forest management activities.

There are opportunities to "privatize", or "contract out" certain forestry activities, regulatory functions, or services such as forest inventory, scaling and grading, inspection of concessions, forest nursery operations, tree planting, and other forest management operations. The activities "privatized" or "contracted out" will still need to be supervised for performance, but the day-to-day operational activities would be delegated.

Greater use might be made of refundable performance bonds, refundable at the end of each management plan upon demonstration of satisfactory performance. Performance could be evaluated by an independent organization or "inspection service".

**Issue 16 — Concession Fees**

An important issue is the role of concession fees in the forest revenue system. In most West and Central African countries, and indeed in most tropical countries, concession fees are minor, almost inconsequential, revenue sources. As a result there is little or no cost to the industry acquiring and holding large concession areas. Sawmills or loggers acquire concessions over vast forest areas, more for insurance purposes or speculation that for regular timber supplies. Not only does this mean that public resources are lying idle, but these unused forests are, paradoxically, also the ones that are especially prone to deforestation by shifting cultivators. The forest industry has little incentive to control encroachment if they have excess area.
A more significant share of forest revenues could be collected through concession fees. Concession fees could include:

1. an initial concession licence fee;

2. an annual concession fee based on the concession area, on the inventory volume, or on the annual allowable cut; and

3. bids on concessions, where concessions are allocated by competitive application, oral auction, or by sealed tender.

The Role of Concession Fees

Concession fees, properly designed, can serve a number of forest policy objectives.

First, the chief advantage of concession fees in West and Central Africa is that they are much easier to collect than the traditional stumpage fees. For the latter, as we have seen, forestry departments generally depend on the concessionaires for information on the volumes logged. As a result of this and other factors, forestry departments collect only a small fraction of the stumpage fees due. With a concession fee there are no such problems. A fee is set, generally an annual one, and that is the fee that has to be paid.

Second, concession fees can reflect the security value of timber supply provided by the concession. This security value represents an important and real value to concession holders, the insurance value of a guaranteed timber supply at predictable logging costs. Thus concession fees can discourage the non-productive efforts (lobbying, persuasion, influence or even bribery) "invested" in obtaining a concession ("rent seeking," as it is termed), and so channel efforts into more productive activities.

Third, concession fees can encourage better management of concessions, improved wood supply, more efficient allocation and use of concession areas, more intensive forest management within concessions, and less speculative acquisition. Low or zero concession fees give the wrong signal or "message" to the industry. They signal that concession area is not scarce, not to be husbanded or managed. Low or zero concession fees therefore encourage extensive forestry, waste, "creaming" ("high grading"), and conversion to agriculture.

Finally, with low or zero concession fees, the full economic cost of logging forest areas is often not considered. In some cases no logging can be the best economic choice. Concession fees can serve to reflect the conservation and preservation values of forest areas, the value of alternative uses, the "opportunity cost" of logging an area.

Different Types of Concession Charges

Concession charges can be evaluated in two major groupings: (1) initial fees, paid only at the beginning of the concession and (2) annual fees, paid each year over the life of the concession.

Initial Concession Fees

Initial concession fees are levied in a number of West and Central African countries. In most countries they are modest, or even token. They are usually so low as not to have any effect on
concession acquisition or on the operation of concessions. However, set at more realistic levels they do influence behavior and reflect the environmental and administrative costs in granting concessions.

In Cote d’Ivoire an initial concession fee of CFAF 50/ha is levied on new concessions, and CFAF 25/ha for renewals (Egli 1990). In Cameroon initial concession fees include a "taxe d’exploitation" of CFAF 2/ha, a "taxe d’agrément" of CFAF 15/ha and a safety deposit ("cautionnement") of CFAF 40/ha (Egli 1990). These initial concession fees generate less than 1% of total forest revenues (Egli 1990). In the Central African Republic an initial concession allocation fee is levied on a per hectare basis; it is administratively set or negotiated individually for each concession (Egli 1990). If the concession is later sold, a transfer fee of CFAF 50/ha is levied (Egli 1990). In Gabon, under the forest law of 1982, a concession allocation fee of 2.5% to 10% of the expected gross sales from the concession is to be charged on new concessions, but as that forest law has not yet been passed, it is unclear how the new concession fee will be implemented (Egli 1990).

Initial concession fees can serve to capture a portion of the value of the concession itself and of the value of the timber on the concession, but because they are paid at the beginning of the concession period, initial concession fees are not effective as incentives for efficient concession operation. Annual concession charges provide better incentives for that.

If the initial concession fee is set administratively and not through bidding, a mechanism for its regular adjustment should be established to allow for annual or periodic adjustment for inflation and/or cost changes.

Annual Concession Fees

If concession fees are to be of a meaningful magnitude and not merely nominal, and if concessionaires are to pay them entirely "up front" as an initial fee, that fee will be so onerous as to impede access to and competition in the bidding, which is the recommended method of setting these fees. Annual fees will spread the burden and allow other than only the big companies to acquire concessions.

Annual concession fees in most of the countries of West and Central Africa are rather low. For most countries they generate 10% or less of total forest revenues. At such modest levels they have little incentive effect on concession management or utilization, but there is opportunity for them to play a more important role in forest management, in encouraging more intensive forestry and in maintaining non-timber forest values.

Where competition is adequate, annual concession fees should be set by inviting bids from the private sector. In that case these fees are set by the market, in the same way as the rent for an apartment is set by the market in most cases. Where competition is not adequate, and the traditional forestry command economy has to be relied upon, the annual concession fees can be administratively set according to the total area of the concession, on the productive forest area, on forest inventory volumes, or on the annual allowable cut of the concessions.

Administrative Setting of Concession Fees (When Bidding is not Possible)

**Area-Based Concession Fees:** Of the administratively set annual concession fees, the one based on the total area of the concession is the simplest and easiest to implement and administer. The total area can be easily calculated. It is agreed to in signing the Concession Licence document, and so will be accepted with minimal dispute.
In Cameroon annual area fees on concessions include four separate annual "taxes": County Tax ("taxe communale") CFAF 10/ha, Reforestation Tax ("taxe de reboisement") CFAF 20/ha, Social Contribution CFAF 40/ha, and Forestry Development Tax CFAF 28/ha (all figures in this paragraph are from Egli 1990). In Gabon annual area fees on smaller concessions ("permis temporaire d'exploitation") vary among four zones of the country, and range from CFAF 4/ha to 20/ha. In the Central African Republic the annual concession fee ("taxe de superficie") is a uniform CFAF 125/ha under the new forest code, reduced from a fee which varied from CFAF 125/ha/year on concessions of 20 years or more, up to CFAF 2,000/ha/year on concessions of 5 years or less. In Cote d'Ivoire the annual area tax ("travaux d'intérêt général") is CFAF 10/ha/year. In addition, in Cote d'Ivoire an area tax is also levied on the annual coupe ("travaux d'intérêt général") at CFAF 160/ha.

Using the total concession area as a basis for calculating the annual concession fee will encourage concession holders to release not just excess areas beyond their needs but also non-forest areas, and forest areas of low productivity such as mangrove swamps and highland areas. These are often areas of potential conservation value, or of value in non-forest uses.

**Fees Based on Productive Forest Area:** An annual concession fee based on the total productive forest area is second alternative. However, such a fee could only be implemented after the forest inventory of the concession area is completed. In addition, agreement on the total area of productive forest is likely to create disputes between the forestry department and the concessionaire. Finally, basing the annual concession fee on the productive forest area, gives no incentive for concessionaires to release either non-forest or low productively forest lands for other land uses. For these reasons, the total productive forest area is not recommended as a base for the annual concession fee.

**Fees Based on Inventory Volumes:** A third base is the total inventory volume of standing timber on the concession. Various merchantability classes, levels of utilization, and species grouping can be used.

In the Congo concession fees are based on the annual volume of timber available from the concession, the "volume maximum annuel" (Egli 1990). This annual cut is based on the volume of timber available in first cutting cycle. It is an interesting alternative but with problems. As the concession is based on the volume of timber rather than a specific area, the concession and the "volume maximum annuel" will encourage the concessionaire to cream or high-grade the forest, to take his annual cut from the most valuable trees and species.

Basing annual concession fees on inventory volumes is likely to involve other problems. Using inventory volumes may generate disputes between the forestry department and the concession holder. The accuracy of inventory volumes is dependent on the survey design and the reliability of field sampling. A concession fee based on inventory volumes cannot be implemented until the inventory of the concession is complete, checked and agreed upon. Also, annual concession fees based on inventory volumes provide little or no incentive for concessionaires to release non-forest land or non-productive forest lands. In conclusion, annual concession fees based on inventory volumes are not recommended.

**Fees Based on Annual Allowable Cut:** A fourth alternative base for the administrative setting of annual concession fees is the annual allowable cut. It has advantages, but also problems. The value of the concession to the concessionaire is closely related to the allowable cut, so it represents a fair and equitable base. On the other hand concessionaires may pressure the forestry
department to overstate the annual allowable cut on a concession area, so that they will be allowed
to increase their production.

Application of the concession fee would have to await completion of the forest inventory of
the concession, and following that the calculation of the annual allowable cut and its approval in the
concession management plan. Concession fees based on the annual allowable cut would encourage
concessionaires to release surplus allowable cut, but they give little or no incentive to release non-
forest areas or areas of marginal forestry productivity, for such areas contribute little or nothing to
the annual allowable cut. In spite of some advantages, the annual allowable cut is not recommended
as a base for annual concession fees.

Recommendations on an annual concessions fee

It is recommended that, wherever competition is adequate, annual concession fees be set by
bidding - see Issue 17 below. In areas where bidding is not possible, fees can usually be set, mutatis
mutandis, in accordance with bids obtained in other parts of the country. If the annual concession fee
must be administratively set, it is recommended that it be based on the total area of the concession.
Either way, the annual concession fee should be adjusted at regular intervals, indexed for inflation
or by forest products prices. An annual area charge can capture some of the value of the timber and
either replace other fees or allow fees and royalties based on log volumes to be kept at reasonable
levels.

Issue 17 — Bidding for Concessions

Concessions are too often allocated in an arbitrary fashion, which invites corruption. Persons
who have no knowledge of the forest industry, and no intention of entering it, are sometimes awarded
concessions which they then sell or contract out. Rent which should go the public owner of the
forest, is dissipated elsewhere.

In Cameroon, as in most countries, concessions are allocated through a long administrative
process without competitive bidding. The process can take up to five years (Egli 1990). Bidding on
concessions is not common in West and Central Africa, or elsewhere in the World. In the Congo
concessions are allocated by bidding in areas opened up to exploitation, or for concessions cancelled
or returned (Egli 1990). Bidding is for the annual volume of wood available, the "volume maximum
annuel" as a per cubic meter bid (Egli 1990). The government of Ghana agreed to introduce bidding
in the allocation of new logging concessions (World Bank 1988b), and the government of Cote
d'Ivoire has actually begun doing so.

When there is adequate competition, concessions should preferably be allocated through
bidding. The concessions which are sold in that way would provide some indications of what should
be charged for those which cannot be sold by bidding. Stumpage rates and area-based fees should
be reviewed and adjusted annually according to generally known "transparent" formulas. Allocation
of concessions by competitive bidding - auction or sealed tender - is a means of reallocating
concessions returned, expired and not renewed, or cancelled for non-performance, sometimes with
the existing holder being given the option of matching the winning bids (Gray 1983, Gray and Hadi,
1989).

Competitive allocation has advantages. It avoids the difficult administrative decisions in
choosing among competing applicants. It allocates concession areas to those processors to whom they
are most productive and valuable. Finally, it generates maximum revenue to the forest owners, be they governments or local communities. Bidding has another advantage. The prices bid for concessions are a market based indicator of whether forest fees on the timber harvested are at the right level. If forest fees are low, profits from harvesting timber will be large, concessions financially attractive, and the "bonus prices" bid for new concession will be high. On the other hand, if forest fees fully reflect the value of the standing timber on concessions, then bids will be low reflecting only the security of timber supply value of concessions.

Auction procedures would need to be under tight control, to ensure that bidding is competitive and that the concession is awarded to the highest bidder, or the highest ranking bidder if technical competence and other factors as well as price are included. It may be worthwhile to entrust the concession allocation procedures to an independent auctioneer, as is commonly done in the private non-forestry sector. To reduce the risk of collusion, the bidding should whenever possible be open to international as well as local firms, local communities, and NGOs.

Recommendations on Bidding for Concessions

It is recommended that competitive allocation of concessions by sealed tender be more used. This should first be applied to new concessions in areas of the country where competition can be expected. Bidding conditions can be tailored to the country's industrial strategy. For example, to prevent large companies from acquiring large areas, concessions could be auctioned in small but manageable units, and small companies without concessions given bidding preferences.

Issue 18 — Concession Size

Some concession areas are too small to support viable silviculture, logging and transport units. Others are too big to be efficiently managed. The size of concessions varies enormously within individual tropical countries. Partly this has been historical accident. Large concessions were granted initially to promote development of a forest industry. Later, as the area available for new concessions shrank, smaller concessions were awarded, often in areas between existing concessions. Planning of concessions in most countries has been very passive, responding to private sector requests and applications.

In the Congo, 17 large companies hold concessions covering 7.7 million hectares, with concession holdings ranging from 90,000 ha to 1,200,000 ha (Egli 1990). In Gabon small concessions ("permis temporaire d'exploitation") range in size from 1 ha up to 15,000 ha, larger concessions ("permis industriel") range from 15,000 ha to a maximum of 200,000 ha (Egli 1990). In Cameroon the maximum concession size has been fixed at 200,000 ha, irrespective of the forest type, its condition, or its allowable cut. In other countries concession size may be constrained by forest legislation or regulations to a size which is too small to manage efficiently on a sustainable basis.

Consolidation of concessions of less than the optimum range should be encouraged by making them transferable, particularly to adjacent concessions. At renewal, consolidation could be further encouraged or perhaps required. Division of concessions larger than the optimum range should be also be encouraged. At renewal, concessions which have been operated at less than say 75 or 80 percent of their annual allowable cut could be reduced in size. This would free area for reallocation, perhaps by competitive bidding as proposed under Issue 17.
In deciding on the size of new concessions to be allocated by bidding, the objective should be to achieve as much competition as possible, consistent with efficient management and operation of concessions.

**Issue 19 – Length of Concession Tenure (Lease Period)**

In many tropical countries the short tenure of concessions is blamed for the unwillingness of the concessionaires to manage the forest and to practice sustained yield forestry. It has been argued that a longer, more secure concession tenure would provide the incentive for sustained yield management. Foresters have traditionally argued that the length of tenure should at least match the length of the cutting cycle (generally 20 to 40 years in Africa), to provide an incentive for loggers to minimize logging damage.

However, long term leases can also have disadvantages. If the lease-holder or concessionaire mismanages the forest, it may be more difficult to get rid of him than if he has a short term contract of say five years. A compromise is called for, e.g. a long term contract for 20 to 50 years, but which needs to be confirmed every 5 years subject to inspection of the concession area and certification of the concessionaire’s performance. Such inspections could be carried out by independent agencies - see Chapter 3, Section 3.2.5. What is important in this context is the concessionaire’s expectation as regards his de facto length of tenure, which depends not only on the nominal contract period but also on the degree of macroeconomic and forest policy stability in the country. In other words, a 5-year renewable contract in a stable country may provide more security to the concessionaire than a 50-year contract in a country with a history of nationalizations without compensation, or where arbitrary and sharp increases of forest fees could make the concession valueless.

Where concessions can be sold by bidding, the concession period, like the concession area, should be set so as to elicit maximum competition. Too large concession areas will reduce the number of firms able to bid; too small areas will reduce the number willing to bid. The right balance for each situation will have to be found.

**Issue 20 – Concession Management Incentives**

Incentives, apart from the forest fees already explored, can be used to support the regulation and management of concessions. These can be positive incentives - payments or reduced fees based on performance - or negative - penalties or loss of deposits for non-performance. Two examples of incentives for concession management are introduced to illustrate the opportunities.

**Interim Concession Licence**

The granting of interim concession licenses which are converted to a second stage interim licence or operating licence upon demonstrated performance is a useful approach (see for example Annex 2). It provides the concessionaire with performance or compliance incentives. It puts the onus on the concessionaire to demonstrate his achievement, rather than requiring the forestry department to be continually checking upon performance.
Deposits, Refunds and Repayments

In most countries of West and Central Africa forest fees are collected long after the trees are cut, giving the forestry department little leverage over concessionaire behavior. In Cameroon, concessionaires have three months to pay forest fees. Only then will possible penalties be payable (Egli 1990). As a result, the government ends up financing the industry's working capital. In the Congo licences are, in theory, not renewed until all fees are paid for the previous year; in practice, concessions are renewed anyway. Most companies have arrears, some substantial, and timely collection would put most companies out of business (Egli 1990).

Concession management might include greater use of guarantee performance deposits and refunds upon performance. Prepayment of forest fees will ensure that concessionaires are up-to-date with payment of their fees. Performance deposits can be required at various stages in the concession application, approval and granting. However, concessionaires would need to be confident of the return of their deposits if the system is to provide incentives for forest management.

Prepayment of volume-based charges could be introduced perhaps based on the inventory volume of the annual cutting area. Volume-based fees on the timber cut would then be deducted from these prepayments as logging progresses. Deposits might be required as incentives to avoid damage in logging, for example on seed trees. These illustrate a few of the opportunities to introduce performance incentives into concession.

Issue 21 – Alternative Forest Tenures

Because of the diversity of outputs of tropical forests (private commercial outputs such as timber; common property outputs such as fruit and nuts, medicinal plants, game, etc., and public collective outputs such as water quality benefits, biodiversity, etc), tenure arrangement to maximize these combined outputs and provide incentives for efficient production of each require care in selection and design.

A wide range of forest tenure alternatives are possible. Not all are appropriate to tropical forests. Some are more appropriate to plantation forests, others to temperate forests. Here we survey a range of alternative tenures, and evaluate them in terms of their economic effects and suitability for management of tropical moist forests.

Privatization (Perpetuation) of Concessions

Privatization of concessions is like providing the concessionaire with a concession of infinite duration. The government or local community, as the owner of the forest and the seller of the wood, would continue to collect forest fees from the private concessionaire. Like most privatization, it would have to be linked to regulation (legislation) and supervision. Although sustained yield forestry in the TMFs can be very profitable, it is unfortunately in most cases even more profitable to the concessionaire to undertake a liquidation or salvage felling, with or without subsequent conversion to agriculture or grazing (Grut 1989b). This will be the case wherever growth rates are low. Private management of forests is only financially attractive if the growth rate in value of the forest biomass (the volume of the residual stand after logging) is greater than the concessionaire's opportunity cost rate of return. If, as is quite likely in the TMF, the growth rate in value is less than the concessionaire's opportunity cost rate of return, the concessionaire's financial choice will be to mine the forest, to take all merchantable trees and abandon the remnant stand to fate. This is not a
criticism of the private holder of the concession or of the forest itself: it is merely a statement of the fact that what is best for the private entrepreneur is not always best for society, and that the conflict needs to be resolved by means of regulation, incentives or disincentives.

The above-mentioned growth in value is (a) the physical annual rate of growth in volume of the biomass remaining after logging, times, (b) the real (inflation free) per cubic meter percentage increase in value of tropical timber. Growth rates of tropical moist forests are typically slow, in the order of 1-3 m3/ha/year for a residual stand remaining after logging of 100-200 m3/ha. Therefore the growth rates in the forest biomass are only 1-3 percent per year. Long term real growth rates in value of tropical timber have averaged at most 1-2 percent per year.

Growth rates of physical biomass of 1-3 percent per year, times growth rates in real value (relative to other prices and inflation) per cubic meter of 1-2 percent per year (due to increasing scarcity of timber), would yield growth in value estimates of 1-5 percent per year. This range is well below the opportunity cost rates of return on alternative investments for concession holders. Opportunity cost real rates of return often range from a minimum of 10 percent per year up to 20 percent per year or more. In developing countries, both nominal and real interest rates on borrowed funds are high. Nominal and real rates of return in alternative investments are also high - they need to be high to compensate for the risks. Logging is often very profitable, so opportunity rates of return are inevitably high.

Yet, even though the value of the growing stock may increase slowly or not at all, thus making clearfelling a temptation which needs to be legislated against, the rate of return on investments in forest management can be quite high, because these investments are typically very low. If in addition the non-market outputs of the forest are included, then the public economic rate of return from forest management of the tropical moist forest can easily be doubled or tripled.

Slow growth is one reason why privatization in forestry - whether of the concession, the forest alone, or the forest plus the land - must, if the forest is to remain as forest, be coupled with regulations, at least with regard to the minimum harvestable diameter, unless that is already the law of the land, as it is in most West and Central African countries with important TMFs. In some areas, where natural regeneration may not be adequate, regulations may also be required to ensure such regeneration. In the case of concessions in forest reserves (US term: national forest), they would automatically be abrogated if they were to threaten the forest, as such areas have been legally set aside to be under forest forever.

Also, privatization will not ensure production of the non-market, public, or collective benefits of the forest such as water management benefits, erosion control benefits, common property benefits of forest products collected by those living in or near the forest (fuelwood fruits, nuts, medicinal plants, game, etc.), environmental benefits, or biological diversity benefits. Privatization will not maximize overall social benefits from tropical forestry. In fact, privatization could lead to the conversion after logging of forest areas into non-forest estate crops such as palm oil, cocoa or rubber, even if forest management might yield higher social benefits. All this would require detailed regulation.

If privatization of concessions were chosen, the easiest policy to implement would be to hand over concessions to existing concessionaires. Concessionaires would welcome it. But it would be a transfer of public assets into private hands without compensation paid for the quite considerable values at stake. It would lock in the existing allocation of areas. Privatization of concessions could
be achieved by bidding for existing concessions upon entry. If the bidding is competitive the government would realize at least a proportion of the value of the forest as revenue.

Privatization of the Forest

Privatization of the forest goes one step further, to the outright sale of both the existing forest crop and future crops for a specified time period, or perhaps forever. This is the model adopted in New Zealand for the sale of that country’s exotic plantation forests (primarily radiata pine, Pinus radiata). The forests are being sold in lots, by sealed tenders and international bidding. The sale was for the existing crop of trees, plus the land use rights to grow a second forest crop on a 35 year rotation, or to use the land for other purposes. Bids were for an initial payment with no further fees on timber harvested. If it were not for the legal challenge of Maori land claims, the New Zealand Government might have sold the land as well. Bids expected would therefore reflect the bidders expectations of both the future value of the present crop and of the second crop, both discounted to present values based on buyer’s interest rates and their uncertainty of future prices and timber values. In the first round auction, held in July 1990, most of the sealed bids were rejected as too low. Only two bids, covering only 15% of the forest area offered, were accepted by the government. The government then planned to sell the remainder by negotiation.

Privatization of forests may be appropriate for plantation forests and under certain circumstances, but not likely tropical moist forest. Plantation forests involve large initial capital investments. Security of tenure is required to allow recovery of the investment. Plantations produce primarily marketable outputs of wood or other products. Non-marketed outputs and collective environmental values are usually much less than in natural tropical moist forests. For plantation forests these non-market values an often be protected by contract clauses, easements, or by separate land use legislation.

Privatization of Forest and Forest Land

Privatization might be taken one step further, to the sale of the forests and the lands. This is the mode used by the British Forestry Commission in selling a portion of the Commission’s holdings of plantations. It is also the model used in Chile in the sale of plantations and more recently in the sale of Chile’s natural forests.

In the case of tropical forests where non-market benefits are significant, privatization will not ensure continued production of these non-market benefit, as mentioned above ("Privatization of Concessions").

Forest Management Licence

In the forest management licence the tenure is for the annual allowable cut of the geographically defined forest area, and for a specified length of time. The licensee has rights to the volume of timber equal to the annual allowable cut at prevailing forest fees. The standing timber remains the property of the government, as owner, until approval of the annual cutting plan and logging. The forest fees could either be the normal forest fees applied on other tenures, or forest fees established in the licence argument and adjusted by a pre-established formula.

In exchange for the security of timber supply without competition, the licensee agrees to take on forest management and forest renewal activities, either with or without compensation. This model
is found in several Canadian provinces, with variants in tenure terms and forest management obligations.

The provinces of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick and Newfoundland all provide examples, each with variations. In Canada, under the Constitution, jurisdiction over forest resources is delegated to the Provinces, as it is in Nigeria to the United States. This provides a unique opportunity to evaluate the evaluate alternative arrangements.

Forest management licences in most provinces are for a 20-year period. A few have shorter or longer periods, 10 or 25 years. But in almost all provinces, the licence is subject to a performance review and is renewable periodically, at 5-year intervals in most provinces (10-year intervals in one or two provinces). This provides a regular, almost continuous incentive for performance of forest management activities. The licensee is concerned about and values the security of timber supply, so he is willing to undertake forest management and regeneration in order to preserve this security of supply. With adequate performance, tenure becomes continuing, almost perpetual. In almost all provinces there are provisions to allow withdrawal of up to 5 or 10 percent of the area at the review, if required for specific alternative land uses.

Forest management and reforestation expenditures are handled differently in each province. In the province of British Columbia, actual expenditures for designated forest management and reforestation activities are allowed as a deduction (i.e. credit) from forest fees (stumpage revenues) paid. Expenditures are audited but there is no cost-minimizing discipline to economize on costs.

In the province of Alberta, forest management and reforestation to achieve satisfactory restocking after logging at the licensee's expense is a condition of the licence agreement. Stumpage prices in Alberta are correspondingly lower, reflecting these additional costs. In Alberta the incentive is for the company to achieve regeneration efficiently and at minimum cost since it is financially responsible for reforestation. As a result Alberta has reforested a higher proportion of logged-over areas than other provinces, and at less cost per hectare.

In the province of Ontario forest management and reforestation expenditures are reimbursed, but at standard rates. For example, replanting is reimbursed at a standard rate per hectare, aerial seeding at another standard rate, etc. This provides an incentive to do each activity efficiently, at minimum cost. But it may not provide an incentive to choose the most efficient method.

Other features of the forest management licence arrangements vary among the eight provinces and provide a good opportunity for comparison and evaluation of actual experiences.

Selling Timber with a Guarantee of Future Supply

Under this model, companies have tenure rights either to a guaranteed share of the annual allowable cut or to a specified volume from a specific managed forest area. The tenure is to a guaranteed wood supply rather than to a specific area. Examples of this alternative are found in the timber quota systems of the Canadian provinces of British Columbia, Alberta, Manitoba and Quebec. Thus individual Canadian provinces provide examples of several forms of tenure, and provide a rich experience of successes and difficulties.

The forest area is managed by forestry departments rather than by the tenure holders. In British Columbia the provincial forest service is responsible for both forest management and reforestation. In Alberta, most quota holders are responsible for reforestation. The smaller operator
may either reforest or pay a reforestation fee. In some provinces such as Manitoba, additional, unallocated annual allowable cut has been auctioned by sealed tender. In most provinces timber quotas are for a fixed term. They have normally been renewed when fully utilized, subject to performance. Quotas not fully used are commonly renewed for a reduced volume. Therefore the incentive is "use it or lose it".

Selling Standing Timber Under Short Term Sales

In this model the forestry department is responsible for management of the forest, for designating, surveying and selling blocks of timber under one, two, three, or five-year timber sales (or perhaps longer terms). The forestry department is responsible for supervising logging, and for regeneration afterwards. This is the traditional timber sale model.

This model is illustrated by the United States Forest Service and Bureau of Land Management Timber Sales procedures. Examples are also found in Canadian Provinces (British Columbia, Alberta, Manitoba, Ontario). Timber sales can be by open auction or sealed tender bidding, or allocated at administratively set forest fees. In Gabon, per-tree timber sales are provided for in the legislation. The system has not been implemented because the forestry department is not able to mark the trees or control cutting.

Selling Felled Timber at Roadside or at Central Log Yards

In this model the forestry department is responsible not only for managing the forest, and allocating areas for logging, but also for the logging. Logging can be done by the department itself or by contractors hired by the Department. Timber can be sold at roadside, at fixed prices or in lots by auction. Alternatively logs can be transported to a central log yard and sold in regular sales by open auction, sealed tender, or at fixed prices.

This model is used in several European countries (e.g. Sweden, Finland, West Germany) and in several developing countries (e.g. Tanzania). In Thailand, before logging was banned, the government-owned Forest Industries Organization sold logs by public auction.

2.5 SUSTAINABLE DEVELOPMENT ISSUES

Issue 22 — Biological Sustainability

A theme of this study is that forestry pricing policies can contribute to the biological and economic sustainability of the tropical forest resource. Sustainable forest management will require improvements in the present management of the resource and institutional changes, but rational forest revenue systems can help. Non-market values will need to be incorporated into planning and management, but correct resource prices will support resource management and make it easier to achieve sustainability.

Pricing policies are intended to ensure that forest fees reflect the value of the forest resources and the opportunity costs involved, both market and non-market. This means that concession fees and fees on the timber cut should reflect the value of the concession in terms of the access to timber and the security of timber supply. Forest fees on the timber cut should reflect the value of that timber in processing and in markets. Forest fees should also reflect the opportunity costs in using
the concession area or cutting the timber, the alternative uses or preservation values. This can be achieved by means of minimum fees on concessions and the timber cut.

Higher concession fees put a scarcity price on concession area and make the acquisition of concessions less attractive. They will slow the acquisition of concession, or even result in a reduction in concessions. Similarly, higher concession fees will encourage better utilization on concessions.

Provided these policies are followed in other producing countries, higher forest fees on concessions and on the timber produced will slow the harvest, reduce the supply of tropical timber on the world market, and thus raise world prices of tropical timber. High prices for tropical timber will, in turn, dampen demand in industrial countries, reduce consumption and encourage the use of substitutes within industrial countries. Tropical timber will them be used primarily as a high-value commodity. Utility grade timbers will find uses satisfying the growing demand within developing countries. Timber producing countries will receive higher prices for their timber exports. If the demand for these high value woods is inelastic (not very sensitive to price increases) developing countries could receive greater revenue though they export less.

Higher prices for tropical timber will encourage better utilization and greater recovery from the now more valuable log input. Higher prices will encourage greater use of lesser quality logs and trees and of lesser known species. Much of this production can serve the producing countries basic wood use needs for construction, etc.

Finally, higher prices and values of tropical timber will make improved forest management more attractive economically. The tropical forest resource, made economically scarcer by forest pricing policies will thus became worth conserving and managing as a renewable resource rather than being treated as a minable resource.

**Issue 23 — Financial Sustainability**

Will forest revenues be sufficient to finance the management of the tropical forest resource, supervision of harvesting and encroachment, and possible environmental and social damages? Higher forest fees can make forest management financially sustainable, even very attractive, for both the owner and the user of the forest. Higher forest fees and a higher collection rate will provide the funds for management, protection and regeneration of the resource. Higher fees can also finance stronger forestry departments and better revenue collection system. Finally, financially sustainable forests will be both financially and politically worth preserving. If the tropical forests are valuable, are used and are managed, there are opportunities for their maintenance.
III. RECOMMENDED FOREST PRICING AND CONCESSION POLICIES FOR THE WEST AND CENTRAL AFRICAN HIGH FORESTS

3.1 PRIORITY RECOMMENDATIONS

3.1.1 Reasoning Behind the Priority Recommendations

The forest revenue and concession systems in West and Central Africa, and probably in many other developing countries too, are characterized by unmanageable complexity, timber fees which are considerably below what the concessionaires are willing to pay, very low collection rates, arbitrary allocation of concessions, failure to make use of market mechanisms, forest destruction due to lack of forest management, enormous waste of wood, and financial irregularities. These are thus the main issues which should be addressed by any change in forest revenue systems and in concession policy.

The priority recommendations set out below in section 3.1.2 amount to a radical simplification of present systems. After the forestry departments in West and Central Africa have been strengthened and their field effectiveness improved, other forest revenue options, discussed below in Sections 3.2.1 to 3.2.5, can be considered.

3.1.2 The Priority Recommendations

In order to deal with the above-mentioned main issues, the following combination of measures is recommended:

(a) Forest Management concessions to replace the present logging concessions.

(b) Each concession area to have a forest management plan.

(c) Concession contracts to be sold by bidding (tender or auction).

(d) Annual concession rent to replace the present multiplicity of forest fees.

(e) Inspection of concessions to be done by independent, private firms, selected by international competitive bidding, on behalf of governments.

These components of the recommendations will be discussed one by one below. Component (d) could lead to excessive felling if it is not combined with (b) and (e); and (a) would also require (c) and (e). All the components except (b) are radical, and should therefore be carefully introduced on a pilot basis, at first only for a few new concession contracts.
Management Concessions Instead of Logging Concessions

The government forestry departments in West and Central Africa are generally not strong in the field of supervision and implementation. They are often understaffed, and nearly always underpaid and under-equipped. If they do not have vehicles, it is very difficult for their staff to go out into the forest to measure logs felled by concessionaires, or in general to supervise the activities of the latter, or to prevent encroachment by shifting cultivators, or apply silviculture and forest management. It is therefore recommended that governments transfer some of the forest management tasks from the hard-pressed forestry departments to the private concessionaires who are better equipped and who are on the spot anyhow in order to do the harvesting.

Governments would award forest management concessions, not merely logging concessions. In other words, concessionaires would be required to care for the forests in their concession area, not just to harvest them. Existing concession contracts would remain until renewal, as long as the concessionaires fulfill their contractual obligations, but would be renewed under the new forest management contract. Future concession contracts would all be forest management contracts. Concessionaires might not be willing to pay as much for a management concession as for a logging concession, because the management concession would entail costs of protection, management and silviculture. Government forest revenue might therefore decrease (although the collection rate should greatly increase if concession rent becomes the main forest fee), but so would government costs. In the case of forests owned by the local communities, concessionaires would pay their annual concession rent directly to these communities. Even in the case of forests owned by governments, nominally or actually, concessionaires would pay a portion of the concession rent to the local communities. This would give the latter a stake in the management and conservation of the forest: an incentive for its protection, a disincentive for its conversion to agriculture.

The proposed introduction of management concessions amounts to a responsibilization of the concessionaires. Most concessionaires operating in West and Central Africa today may not be willing or able to assume the additional responsibilities which would be entailed by management concessions, but in that case Africa needs another type of concessionaire in the future. In the beginning of this century, for example, forestry in the Nordic countries was highly exploitative of the forest, but that is no longer the case. The same evolution of forestry should be possible in Africa.

The introduction of management concessions do not necessarily imply the application of intensive silviculture. Indeed, for tropical forests, careful logging, a light cut, minimum intervention, and extensive rather than intensive forestry is often the best silviculture from the viewpoint of both ecology and economics.

Many different mechanisms can be envisaged for getting the private concessionaires to undertake forest management (in the widest sense of the word, including protection and silviculture). The obligation to assure adequate regeneration within a specified number of years could, for example, be contractual, or legal, or both. If the obligation is legal, no compensation need be envisaged. If it is contractual, the compensation for the concessionaires can take many forms:

(a) The obligation to do forest management is taken into consideration by the concessionaires when they calculate how much they can afford to pay in annual concession rent. In this case the concessionaires are likely to carry out their forest management duties in a cost-effective way. On the other hand, their incentive will be less direct than with the options described below.
(b) After an annual inspection of each concession area, the concessionaires receive payment for the forest management which they have carried out during the past year. The payments are determined according to tariffs reviewed each year. Such direct payments may encourage unnecessary works, but on the other hand they do constitute a very direct incentive.

(c) As payments from governments are not always forthcoming, concessionaires may have more confidence in each year’s payment instead being subtracted from next year’s concession rent.

Forest Management Plans

Every new concession would require a forest inventory and a management plan for the concession area. These need not necessarily be done by the forestry department. Indeed they could be done by an independent forestry consulting firm under terms of reference prepared by the forestry department, or by a separately funded independent government organization, as in Zaire, or by the concessionaire. However, the forest inventory and the forest management plan should both be subject to forestry department approval. To ensure professional competence and reliability the inventory and management plans could also be subject to independent audit, perhaps by an international organization prior to forestry department approval. Forest management plans would take into consideration the multiple-use character of forests, and would be prepared in consultation with the local communities.

Besides the general forest law of the land, the department may wish to include in the concession contract various conditions specific to a particular area, if such conditions are not already taken care of under the forest management plan. These conditions might relate to logging methods to be applied or not applied, logging track specifications, maximum allowable felling per hectare in terms of numbers of trees or cubic meters, minimum cutting cycle (20-40 years), species limitations, and so on.

Each area which is to remain under forest forever - whether totally protected or set aside for continuous timber production - should be surveyed, legally designated (gazetted), marked on the ground, and provided with proper protection, preferably involving the local communities. As biodiversity preservation is of benefit for the international community, international grant funds should be found for financing the above operations in the case of forests to be set aside for total protection, and also to compensate developing countries for the opportunity cost of not using the forest for timber production.

Sale of Concessions by Bidding

In areas or regions where there is sufficient competition, concessions would be sold by bidding, basically to the bidder offering the highest annual concession rent, although factors like technical competence, possible ownership of local processing capacity, financial standing, nationality (local or foreign) etc. would also be taken into consideration. Pre-qualification of bidders could ensure technical competence. To encourage a wide ownership of concessions, small companies could also be given preference in the weighing system for the evaluation of bids. When ownership of local processing capacity should count in the favour of bidders, it is partly in order to encourage local processing, and partly because concessionaires who own such capacity tend to be much more interested in sustainable forest management than those who do not.
Prospective concessionaires may not have confidence in a forest inventory carried out by someone else. Either the concessionaires should be given ample time and opportunity to visit the concession area and carry out their own inventories before the bidding, or they should be guaranteed against possible losses caused by the concession forest being less rich than indicated by the official inventory. The first alternative would be better. The second would be complicated and could lead to complex litigation.

Minimum acceptable prices (floor prices, or reservation prices) should be indicated in each case. They should be high enough to cover all the relevant costs of the forestry department, supervision and inspection, as well as environmental opportunity costs and of the benefits foregone, e.g. if the logging would reduce the production of game meat, environmental protection, etc. In some cases a government might be inclined to accept a low bid in order to obtain revenue, and so be drawn into "below-cost" sales of concession areas. However, there is no reason to subsidize logging. To support forest management and prevent such "cash flow shortsightedness", donor agencies might offer to provide the corresponding revenue as a soft loan or even as a grant. Such an arrangement could help maintain bidding levels and discourage price-fixing among bidders.

The formula by which the bids are evaluated and the concessions allocated should be "transparent", not only in the interest of fairness, but also because uncertainty would reduce the prices offered. In the concession allocation formula the concession rent offer would have a weight of at least 50%. The procedures according to which bids for government contracts are evaluated should be followed, except that in this case it would be the highest rather than the lowest offer that would be most likely to be chosen. In areas or regions where there is not enough competition for bidding to be efficient, the government would set the concession rent according to the free-market rents obtained by bidding in areas of comparable accessibility and quality.

The present arbitrary allocation of concessions is a great source of wealth and power to local politicians. Sale of concession contracts to the highest bidders will therefore be vigorously resisted, and all sorts of spurious arguments will be put forward to show why it would not work. As free-standing advice it would certainly be ignored, but if its acceptance is linked with a credit it may be accepted. In the Bank's Forest Resource Management Project in Ghana the government did accept to give the concession rent bid a weight of 50% in the bid evaluation formula (World Bank 1988 B, para 4.03.b).

Bidding for concessions should first be tried out on a pilot scale. It should initially be done in good and accessible forest areas characterized by timber shortage, to ensure competitive bidding. Bidding could then be extended to concessions that have been cancelled or returned. The concession size and period would be set by the government in such a way as to elicit maximum competition among bidders. Too big an area would limit the number of local bids, besides being unmanageable, and too small an area may not attract foreign bidders.

Where stumpage rates are retained, even though the concession fees may become the main forest fee, the rent paid for the concessions would be in the nature of a bonus, reflecting economic rent not captured by the stumpage rates. Stumpage rates have the advantage that they act as a brake on excessive harvesting and they provide an additional tool for regulating the species composition of the harvest. However, as mentioned, the problem is that forestry departments cannot cope with the necessary measurements.

If an independent inspection service is used to supervise the concessions, as suggested below in the section on "Inspection", that service could also be used for evaluating the concession bids.
**Annual Concession Rent**

The annual fee payable for a concession, here called the "concession rent", would replace all existing forest-related fees, except perhaps the log export tax which is relatively easy to collect, and which may sometimes be justifiable under the infant industry argument in order to encourage local processing. Where a log export tax is used, log values would be determined by the forest inspection firm recommended in next section, in order to minimize undervaluation.

The concession rent would be reviewed and adjusted annually, according to a "transparent" formula which should be known to the concessionaires when they bid for the concession and sign the concession contract. Such a formula should be based on the weighted average FOB value of the relevant forest products at the nearest port; less costs of logging, transport and perhaps processing; and less adequate profit to the concessionaire so that he stays in the business.

Such a system would obviate the present onerous measuring of log volumes in the forests, with which the forestry departments cannot cope. The collection rate, which in the case of stumpage fees tends to be less than 20%, could now be 100%. It is still desirable to measure log volumes, for purposes of statistics and in order to compare the overall log output in a country with its overall sustainable yield, but if such measurement no longer forms the basis of forest fee assessment, log measurement can be done much more conveniently and therefore cheaply at points of concentration such as export ports and processing plants, and it can become the obligation of exporters and processors to furnish such information to the Bureau of Statistics. Also, when log measurement is not the basis for fee assessment, the reason for the prevalent under-scaling disappears.

If this proposal is too much of a change for a government to accept, the old volume-based fees can be left in place, widely evaded though they are, but the important thing is that the concession rent should be given much more weight than at present, when it is generally so low as to encourage speculation by concessionaires who acquire far larger forest leases than they need or can use.

**Inspection**

Each concession area would be inspected at least once a year to ensure that the provisions of the law and the management plan are being adhered to. In the case of minor unauthorized deviations it should be enough to draw the concessionaire's attention to them. In the case of more serious lapses (defined as such in the concession contract or law), a fine may be called for. In order not to have to go to court for that, concessionaires should be required to pay a deposit at the beginning of each financial year, repayable after the annual inspection. In the case of really serious infringements, the government should have the right to cancel the contract.

The inspections would be done by an independent private firm. There are precedents for this. For example: governments usually make use of private firms of architects to check that construction firms are correctly carrying out government building contracts; they sometimes use private auditing firms to check the financial accounts of state organizations, or one civil engineering firm to check road construction work done by another firm; and the Government of Zaire has recruited a private consulting firm to check that the plantation firm which is establishing a 8,000-ha fuelwood plantation near Kinshasa is following all the specifications. Besides the inspection of the concessions, the duties of the forest inspection firm would also, as already mentioned, include the determination of log values in cases where a log export tax is applied, and the evaluation of bids for concessions.
The firm which would carry out the annual inspections would be selected by means of international competitive bidding. It must obviously possess the required forestry expertise, and pre-qualification of bidders could help ensure that. There are precedents also for the possible use of a foreign firm for this type of work. For example, the Government of Indonesia has contracted the Swiss firm Société Générale de Surveillance (SGS) to manage its customs service.

3.1.3 Advantages of Priority Recommendations

Forest Conservation

At present, forestry departments are not doing well in the field of forest conservation. The concessionaires, being on the spot and generally having greater resources than the government forestry departments, will be better able to protect and improve the forests in their area, and carry out regeneration where necessary, provided a good system of incentives and inspections is in place. Also, the introduction of bidding for concessions would allow governments to capture more of the economic value of timber, and the resulting higher timber price would reduce the demand pressure on the forest.

Forest Revenue Collection Rate

The present stumpage fees are difficult to collect, as they require extensive measuring of logs in very dispersed and inaccessible forest areas. Concession rent, on the other hand, should be 100% collectable.

Simplification

Instead of the multiplicity of fees now facing the concessionaires, there would normally be only one or two: the concession rent and perhaps the log export tax. This should save much time for both concessionaires and government officials. Administrative costs of revenue collection for the government and compliance costs for the forest industry would both be reduced. An important simplification would be that measuring (scaling) of timber in the forest would no longer be necessary.

Regional Differentiation between Fee Levels

If bidding is introduced, the differences in logging and transportation cost in different areas will automatically be reflected in the concession rent offers.

Less Corruption

Concession allocation by bidding will reduce corruption in two ways. First, removing arbitrariness from the allocation process will in itself work in that direction. Secondly, bidding should mop up the economic surplus which makes "unofficial payments" possible.

Less Speculation

When area-based fees are very low, as they are now, concessionaires often acquire forest areas far in excess of their requirement and their ability or intention to use them. The concession fee will basically be an area-based fee, because, other things being equal, bids will be higher for big
areas than for small areas. When this fee is increased through bidding, acquisition of large unused forest areas will be discouraged.

Less Wood Waste

The introduction of bidding will mop up the surplus economic rent, and by thus making wood more expensive it will encourage better utilization both in logging and in processing.

Increased Government Revenues

By increasing collection rate and capturing more of the economic value of timber, government forest revenue can be expected to increase, even though the higher timber price will presumably and hopefully reduce timber demand somewhat.

Savings in Personnel

Not having to measure logs, and in general the simplification of the forest revenue system, will make savings in personnel possible.

3.1.4 Possible Variations of Proposed System

Many variations or extensions of the system proposed are possible. A few examples of possible variation are:

(a) Holders of ongoing concession contracts can be offered the option to convert them to the new-style management concessions.

(b) The concession period may vary from a few years to a century. In Quebec and other Canadian provinces where logging concessions have recently been replaced by management concessions, the contracts are for a duration of 10-25 years depending on the predominant species, and the contracts are renewable every five years.

(c) Nature conservation organizations should also be eligible to bid for the management concessions. When the forest fees and thus forest revenues are no longer volume-based, governments will no longer encourage heavy felling. Bids by nature conservation organizations could help prevent price fixing by regular concessionaires. "Debt for nature swaps" might be used to purchase forest concession areas.

(d) The "new-style" concessionaires, responsible also for reforestation, and presumably employing trained foresters, could as a side-activity outside their concession areas act as plantation establishment contractors.

(e) Concessionaires who prefer not to acquire their own forestry expertise, could contract out their forestry work.

(f) To encourage local communities to participate in the bidding for concessions, they could be given a certain price advantage in the bid evaluation.

(g) Governments able to administer the traditional stumpage fee system, can leave it in
place and introduce concession bidding to mop up the surplus economic rent, i.e. to more completely capture the full economic value of the timber.

3.2 ALTERNATIVE RECOMMENDATIONS

Concession fees should be a key component of any proposed forest revenue system. The application of other fees, particularly volume-based fees, is, in many tropical countries, constrained by the problems of low collection rates, and by weaknesses in scaling and field supervision.

However, in countries where the forestry department is functional in the field, in scaling and forest administration, volume-based fees or other fees could be retained with modifications to improve collection and enforcement. In other countries, once forestry supervision and inspection is strengthened and becomes functional in the field, volume-based or alternative fees could become more significant revenue sources.

3.2.1 Improvements to Volume-Based Fees

Volume-based fees (stumpage fees, royalties, etc.) provide an additional management tool with which the species distribution of the cut can be manipulated, and which also discourages over-cutting. If a forestry department is capable of handling this tool, there are thus good reasons for retaining it. If retained, volume-based fees can be improved if based on log volumes scaled at central points in the wood transport system, at log dumps, rail transfer points, or at processing plants (upon arrival or as logs enter the mill) and at log export points. At such key points, scaling can be more easily supervised and inspected. Illegal logs are more easily intercepted.

Scaling could be contracted out to an independent organization or private company. Alternatively, auditing and inspection of government scaling could be contracted out to an independent inspection service which might be an international organization.

If scalers are paid per volume scaled, they will have an incentive to fully scale logs, and to scale all logs. This incentive pay system, along with the resulting higher pay can make scalers less subject to influence from the logging companies.

Often fellers, tractor crews, logging contractors and subcontractors, truck drivers, and log transportation contractors are paid by log volumes. They all have an interest in seeing that logs are fully and properly scaled. If the same volumes are used for forest revenue purposes, the government can harness their self-interest to ensure reliable scaling.

Volume-based fees can be differentiated by species to reflect differences in value. To properly reflect differences in value the fees per cubic meter would need to vary more widely than is usually the case. But, as differences in fees between species are widened, the incentives for abuse are strengthened. Differentials by species groups are therefore only recommended where such groups can be clearly distinguished, where scaling is reliable and where supervision and control is tight. Otherwise, misclassification and abuse will only be encouraged. Unless differentials in price between species groups fully reflect values, it is better that they not be introduced. Instead uniform volume-based fees should be applied.
Volume-based fees could be varied within the country, by region, state or province, provided the scaling system can properly distinguish logs by source. Fees that vary by region can more accurately reflect differences in values, reflect competitive market pricing, and collect a larger proportion of the value of the timber without discouraging utilization in remote areas.

Volume-based fees should be adjusted annually for inflation, or for changes in product prices, as recommended for concession fees.

3.2.2 Minimum Volume-Based Fees

Minimum volume-based fees should be introduced. Minimum fees would reflect the opportunity cost value of the timber in other uses, environmental and other non-market values, plus the administrative costs in supervision, forest management, logging, scaling and wood administration. Minimum volume-based fees can improve resource allocation and prevent "below opportunity cost" harvesting of tropical forests.

3.2.3 Per-Tree Fees

For some countries, in which stand mapping is done and is reliable, and logging inspection is complete, per-tree fees levied on the felled tree can be used. However, they require conscientious on-the-ground supervision of logging to avoid abuse or evasion. Per-tree fees avoid the need for log scaling. They also have advantages for tropical silviculture and for utilization. They discourage harvesting of small trees and so support diameter limits. Finally, they encourage the utilization of the full tree.

3.2.4 Fees Based on the Standing Volume

An alternative based on a detailed operational level inventory of the standing volume might be applied in a few countries.

The merchantable volume is estimated from a pre-logging inventory of the annual cutting area. The total fees are calculated from the volume of harvestable trees times the fee per cubic meter. This standing volume fee is paid no matter how much is cut.

The standing volume fee has advantages, but also some significant practical and forest management problems. Fees based on the standing volume require an accurate and detailed inventory of the cutting area prior to logging, the marking of those trees to be felled, and tight supervision of logging to ensure that only marked trees are taken.

Fees based on the standing volume avoid the problems and costs of scaling. They take away any incentive for under-scaling or misclassification of species. Since there are no additional fees paid for additional trees cut, fees based on standing volume encourage full utilization of all merchantable trees. However, without close, on-the-ground supervision of logging, they can encourage overcutting of the forest, taking too many trees. This can be a very significant danger for the sustainable management of tropical forests.
An Area Fee on the Annual Cutting Plan

A fee based on the area of the annual cutting plan can serve: (1) to supplement the concession fees proposed; (2) as an alternative to volume-based fees on timber cut; or (3) to supplement volume-based fees on the timber cut.

If it serves as a supplement to volume-based fees, it can collect part of the value of the standing timber, and so avoid having to raise volume-based fees to a level where they might discourage utilization, or encourage scaling abuses.

A fee based on the area of the annual cutting plan has advantages of simplicity and ease of collection. However, a fee on the annual cutting area will still require on-the-ground inspection to ensure that logging is confined to the approved area, and that only marked trees, or those within diameter limits are taken.
ANNEX 1

SUMMARIES OF COUNTRY CASE STUDIES OF SELECTED WEST AND CENTRAL AFRICAN COUNTRIES

by
Nicolas Egli

INTRODUCTION

This annex presents a summary of the country case study reports and data collected during field studies of the forest revenue systems, forest legislation and taxation in Congo, Cameroon, Gabon, and Central African Republic. The annex presents a condensation of working papers for each country which are published separately and available in the World Bank, Africa Information Centre. In order to establish a document that will be useful for quick reference, along with the main text, three main areas of interest were retained from the working papers.

Firstly, the fees as such are presented, showing their level compared to the value of the timber and the area fees. Such a list is very useful to show the intricacy of the system and the possibilities for miss-allocation of revenues from the forest resource. As a rule of thumb the collection rate of these taxes goes from one fourth to one eighth of the expected revenue (calculated from the actual production and considering the scaling standards as satisfactory). The problem of scaling may decrease the value of the timber production by up to 25 percent.

Secondly, the flows of revenue derived from forest fees shows the intricacies of the procedures of redistribution in certain countries. It is often clear that a very small proportion of the forest fees, if any, will come back directly to the forestry administration. This has shown be a widespread disincentive for the forestry administration to improve its collection procedures, as well as controlling scaling procedures.

It is important to stress that this information, especially in parts I and II shows the official fee levels and allocation channels of the fees that should be charged and collected. In practice many concessionaires are subject to a case by case treatment through which they may be exempted from certain fees or even pay a yearly lump sum to the right beneficiary and be left “unbothered” to exploit their concession. It is interesting to mention that the most successful and competent concessionaires generally are the ones who pay the forest fees with the higher degree of accuracy. The most blatant cases of bribery and indirect payments are with concessionaires that show a low degree of technical and managerial competence.

For more detailed information the reader is referred to the working papers for individual countries.
Summaries of Forest Fees and Taxes per Country

Name of Country: CAMEROON
Currency: CFA F
Total Forest Area: 22 million ha

I. Land Tenure System of the Forest Area

The productive forest of Cameroon is classified as follows:

- Forêt Domaniale ............ 4 million ha (9% of forest national area) subdivided as follows:
  
  ............ National Park & Reserves 65%
  ............ Forestry Production 35%

- Community Forests ............ less than 2% of National area

- Forêt du Domaine National .. remaining part of the forest. Not very clearly defined for fallow areas within the forest zone. Also, the definition of which administration is responsible for the wooded savannas is not clearly defined.

The classification of the forest land into different categories is the sole responsibility of the Minister of forestry.

II. Means of Forest Allocation

The administration publishes the new areas that will be opened up for logging. The interested parties then submit a candidacy document that includes an investment calendar, the CV of the management team, and a provisional budget.

Concession attribution procedure

Each application is then reviewed by a technical committee within the Government. Once an application has been accepted, a meeting in the field is organized with the local population and authorities. A report on the conditions and desires of the local population is then sent to the "Direction des Forêts" in which it is stated that they should receive part of the timber taxes. After all the above points have been defined and agreed upon, the "cahier des charges" is written, stating precisely the responsibilities of each concessionaire. Then the President has to sign a decree of attribution for concessions larger than 15,000 ha. The whole process is very lengthy and can take up to five years.
Before 1983 the concessionaires were required to undertake "public interest work" such as roads, dispensaries, and schools, in the area of their concession. This regulation was then replaced by the present system of defining a percentage of the taxes that will come back to the local population.

In the present legislation one concessionaire may have a maximum of 200,000 ha of forest under concession.

Each concession is subdivided into 2,500 ha "assiettes de coupe" logging units. Each year a concessionaire may open a number determined by the forestry administration of these units within his concession. An "assiette de coupe" is open for three years renewable; once it is closed the concessionaire is strictly forbidden to come back to it, even if some standing timber species have gained acceptable commercial value in the meantime. A certificate of closing for each unit has to be supplied by the forester to the administration before new units can be open for exploitation.

III. **Fees Paid by Concessionaire for the Right to Cut Timber**

Specify felled or commercial volume: *felled*. Since filed control by the forestry administration is weak, a considerable amount of abandoned timber is unaccounted.

Initial Taxes for the attribution of the concession:

- Taxe d'exploitation: 2 CFAF/ha
- Taxe d'agrement: 15 CFAF/ha

Logging tax: 5 % of Valeur Mercuriale

IV. **Tax on Concession Area**

Area based taxes can be subdivided into two main subgroups, the one-time fees that are paid at the time of the attribution of the concession and the yearly fees.

**Safety Deposit** (cautionnement): 40 CFAF/ha one time

**Taxes paid at the time of attribution:**

Exploration tax (taxe d'exploration): 2 CFAF/ha one time.
Yearly taxes

- County tax (taxe communale): 10 CFAF/ha/yr
- Reforestation tax (Taxe de reboisement): 20 CFAF/ha/yr
- Social contribution: 40 CFAF/ha/yr
- Forestry Development tax*: 28 CFAF/ha/yr

Total: 98 CFAF/ha/yr

*: includes: regeneration tax, timber promotion, forest inventory

Export Taxes (as a Percentage of Valeur Mercuriale)

- Droit de Douane: 30.0%
- Tax on export logs: 2.0%
- CENAFOR contribution: 2.5%
- ONAREF contribution: 5.5%

Total: 40.0%
Name of Country: CENTRAL AFRICAN REPUBLIC
Currency: CFA F
Total Area: 622,984 km²
Total Forest Area: 30,000 km²
Population: 2.5 Millions Density: 4 /km²

I. Means of Forest Allocation

A. Are bids invited for the price/m³ or for concession area?

No, the actual potential of the forest is not yet known to an acceptable degree of detail to invite bids for each concession.

B. Concession attribution procedure

Timber companies apply for a concession. At the time a concession is granted, an attribution fee is paid, it is set individually for each concession. Thereafter a yearly concession tax is paid based on a fee per hectare that decreases with the length of the concession, this is an incentive to encourage longer concession times that should influence the loggers to practice a better management of his forest.

If a concession is transferred, it is subject to a transfer tax payable by the new beneficiary. The level is fixed at 50 CFA F/ha.

The type of processing or the size of each timber company is not taken into account at the time of attribution.

II. Fees Paid by Concessionaire for the Right to Cut Timber

LOGGING TAX (taxe d'abattage): 1% of the "valeur mercuriale" (defined as 1/4 of the FOB value in Douala or Pointe Noire for LM logs, reviewed at least once a year) for each type of timber. A statement of the monthly volumes logged has to be presented to MEFCPT by the 28th of the following month. The volumes per timber species have to be listed precisely, after that an invoice is prepared and has to be paid within 30 days. If the declaration is not submitted in due time, the amount from the previous month will be invoiced, subject to future adjustments.
Reforestation Tax (taxe de reboisement): Paid on the volume of logs exported with a valeur mercuriale of more than 15,000 CFA F/m³. The tax level is 10% of valeur mercuriale. Before 1/1/88 the tax level was 2,000 CFA F/m³. It is paid in full to ONF. Each company has to submit a copy of the customs form declaring the volumes exported to MECCPT by the 28th of the following month. The tax will then be calculated, invoiced, and payable within 60 days.

Tax on Concession Area (taxe de superficie): paid per hectare per year for the whole area, regardless of timber density. Price incentives to encourage longer concession attributions.

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In the new code the tax level has been set to 125 CFA F/ha/yr.

Deforestation Tax: In the case an exception is granted to clear a forested area, a tax of 50,000 CFA F/ha will be charged for public forest land and 150,000 CFA F/ha will be charged for protected forest.

Firewood Tax: The felling of trees for firewood purposes will be subject to a 50 CFA F/m³ of roundwood tax. How this tax will be recovered still has to be defined.

Export Taxes For: LM logs: red woods 3,356 CFA F/m³
white woods 3,245 CFA F/m³

Sawn wood: red woods 732 CFA F/m³
white woods 721 CFA F/m³

Veneer: red woods 872 CFA F/m³
white woods 788 CFA F/m³

with an average yield of 35 to 40% for sawing, the round wood equivalent for the export tax is of:

red wood 257 CFA F/m³ log
white woods 252 CFA F/m³ log

with an average yield of 45% for peeling, the round wood equivalent for the export tax is of:

red woods 392 CFA F/m³ log
white woods 354 CFA F/m³ log
Name of Country: PEOPLES REPUBLIC OF THE CONGO
Currency: CFA F
Total Area: 342 000 km²
Total Forest Area: 13 to 14 mill. ha
Total Timber Plantations: 75 000 ha
Population: 1.9 Millions Density: 5.5/km²

I. Means of Forest Concession Allocation

A. Are bids invited for the price/m³ or for concession area?

Bids are made when a new area is opened for logging or when a company closes and the forest is still open for exploitation. Bids are made for a guaranteed yearly volume of timber rather than for a concession area.

B. Concession attribution procedure

The asking party must submit a written plan that will justify the economic benefits derived from the exploitation of a given forested area. The concession will then be granted upon acceptance of this document after a review of all the bids. If the only activity is the extraction of logs, the logging license will be for a maximum of 7 years. If there is transformation, the time span of the license will be calculated in relation to the global amount of the investments; the appropriate volume of wood will then be defined and granted.

C. Contracts

Each time a new logging license is granted, a specific contract is written (cahier des charges). The following companies are all subject to the same legal and fiscal conditions:

- State companies,
- Companies part owned by the state,
- Private companies with local funding,
- Private companies with foreign funding,
- Private companies with Congolese/foreign funding, and
- Private individuals, whether Congolese or foreign.
Each contract contains detailed guidelines on the share of each participant in a company. Precise guidelines are also stated for:

- the yearly volume of wood that may be logged,
- the machinery that should be installed to carry out the activity properly,
- the production calendar, and
- the personnel training obligations.

Each contract is strictly granted to an individual and can never be sold or sublet. A contract can never be used as an asset in the case of bankruptcy.

There are two main types of contracts:

- "Contrat d'exploitation" (logging contract): when the only activity will be log extraction.
- "Contrat de transformation": when a mill will be set up to transform logs.

II. Fees Paid by Concessionaire for the Right to Cut Timber

Fees are paid on VMA (volume maximum annuel) that is specified for a number of years and based on a localized inventory. This system is very advanced and unique in Africa, since it attributes a volume of wood rather than an area to the logger, namely the volume that is considered sustainable for a forest area. Through this system, the size of the logging area is determined and adapted to the activity of each timber company. The only problem presently encountered with the VMA system is that the party responsible for the inventory is not clearly defined. In the past, the inventories have been done by the Ministry, by CTFT or by FAO; at other times it is the responsibility of the future logger, prior to bidding. In certain cases no thorough inventory is made and the VMA is estimated from results from nearby concessions, which leaves considerable room for over- or under-estimation of the standing timber potential.

III. Tax on Concession Area

There is no such thing precisely. A definite concession is not attributed but rather the guarantee of a certain annual supply of timber.

IV. Export Taxes

They are based on the "Valeur Mercuriale" which is defined for every grade and species. The export taxes are then defined for each of the eight geographical regions (in order to take transport costs into account).
V. **Reforestation and Forest Management Tax**

It is calculated on the whole commercial wood production and varies between 2.5 and 3.5% of the valeur mercuriale. The actual rate is negotiated for each logging contract, depending on the management needs of the area.

VI. **How Are the Forest Fees Set**

In theory the fees are reviewed every five years (within a "Plan quinquennal"). A major change in the forest fee system took place in 1974 when the French colonial system was abandoned. In 1982 the system was reviewed, strengthened and rationalized but did not undergo any major conceptual changes.

The current fees were set during the forestry law review of 1974 when all previous texts were replaced and rewritten. That regulation system was partially reviewed in 1982.

VII. **Incentives for Local Processing of Timber**

There is no export tax on finished and transformed products. The "taxe entrée usine" for locally transformed logs is much lower than the export tax. Better forests and VMA are usually granted to companies that will undertake local transformation, even though this is not explicit.

VIII. **How is the Free Market Mechanism Introduced in the Taxation System?**

For the woods that are directly marketed by the foresters, the valeur mercuriale is adjusted when price variations justify it, but not more than every 15 days. The Valeur Mercuriale is then used as the basis for calculating the "taxe entrée usine" and the export tax.

OCB compiles the prices of wood and publishes the trend every six month on which the Valeur Mercuriale is calculated. It is calculated only for LM and BC grade logs for all woods except Okoume where QST "sciage" grades are used.
Name of Country: COTE D'IVOIRE

Currency: CFA FRANCS (CFAF)

Total Forest Area: 3 Million ha*

* This is the figure declared by the Government. A more realistic estimate would come to 2.2 million ha, of which 600,000 ha as National Parks.

I. Means of Forest Concession Allocation

Applicants file a concession request that is then reviewed by the ministry. If the exploitation of the forest will be mostly logs, the concession period will be five years, renewable. If the exploitation of the forest is geared toward primary or secondary processing, the period is from 10 to 15 years.

II. Fees Paid by Concessionaire for the Right to Cut Timber

Logging tax (taxe d'abattage): varies according to species

- paid by the forwarding agent for export logs;
- paid by the user (mill) for logs that are processed in Ivory Coast.

The tax is calculated on the volume of wood that has been felled and marketed, based on the declarations of the loggers.

Tax for the right to cut timber:

First-time allocation: 50 CFA F/ha.
Re-allocation: 25 CFA F/ha.

III. Tax on Concession Area

Area tax (Taxe de superficie): 10 CFA F/ha/yr.

Travaux d'interet generaux (TIG): 400,000 CFA F/2,500 ha-permit.
If the forest has a particularly low density of commercial timber, this amount can be reduced.

The TIG was originally intended for reinvestment and civil works that would benefit the local community.
IV. Typical Felling Cycle

Almost the entire forest area has been logged at least once, and the value of yields has been drastically reduced due to over-felling. A very large percentage of the forest has been degraded to the point of having almost no commercial value for timber exploitation.

Most of the degraded forest is now being exploited for smaller-diameter logs and secondary species.

V. Enforcement of Regulations

The enforcement of regulations is the responsibility of MINEFOR. Until now the control has been inconsistent and erratic in the field. For processed products, the control takes place at the port and is much more systematic; discrepancies are often noticed by MINEFOR agents and settled.

Sawnwood specifications are checked by random sampling.

VI Incentives for Local Processing of Timber

Up to 1972, certain timber species were subject to a quota that allowed the export of these logs only to the extent that a percentage of them be processed locally. In 1982 the quota system was extended to all species and required all producers to have processing facilities.

The logging tax on export logs is higher than the tax on locally processed logs.
I. Means of Forest Allocation

Are bids invited for the price/m³ or for concession area?

No bids, conditions defined by the forest administration depending on the type of permit.

Steps for concession attribution procedure

- The candidate has to give proof of his competence as a forester to the ministry of forests (agreement a la profession).
- The candidate has to identify a zone where he wants to start exploitation.
- Request of a permit of exploration that may be up to double the size of the final concession. The fee is 2 CFAF/ha.
- Hand in the results of the inventory to the ministry of forestry.
- The candidate then has to submit the borders of the concession he chooses within the explored area.
- The whole file on the new concession has to go up the administrative hierarchy up to the minister for approval.
- Once the file has been accepted the decision to grant a certain area as a logging concession has to be posted publicly in order to see if there is no opposition.
- If there is no opposition a certificate is issued to the concessionaire.
- The concessionaire then has to pay the area tax for the first year.
- The cahier des charges is then issued, in which the level of all taxes is defined.

Types of Permits

Permis Spéciaux (special permit): maximum logging of 10 stems, for local use only, and valid 6 months. Attributed by permission of the minister in charge of forestry.

Permis Temporaire d’exploitation (PTE): Attributed by permission of the minister in charge of forestry. The length of attribution varies between 5 and 15 years. Size ranges from 0 to 15,000 ha with the following subdivision:

a/ 0-500 ha
This subdivision was established in an attempt to abolish the "Coupe Familiale" system that was very wasteful and brought little fiscal revenue.

b/ 500-15,000 ha.

These permits are subject to the following taxes:

Area tax:
- Zone A: 20 CFAF/ha
- Zone B: 12 CFAF/ha
- Zone C: 8 CFAF/ha
- Zone D: 4 CFAF/ha

Attribution tax: 2.5% to 10% of expected gross sales, the percentage is defined according to the hardship of exploitation and the zone. Since this tax has not yet been officially passed, the precise guidelines along which the taxation level is fixed were not available. The attribution tax is paid bit by bit, calculated on timber exports.

**Permis Industriel:** Implies the processing of 75% of timber for concessions under 75,000 ha. For permits over 75,000 ha transformation quotas are decided individually. Concession size ranges from 15,000 to 200,000 ha. Attribution time of up to 25 years for concession of at least 75,000 ha.

This type of permit is subject to very stringent obligations (cahier des charges) that derive from a decision of the investments commission including representatives from the following ministries: finance, private enterprises, employment, commerce, and industry.

**Permis de zone d’attraction du chemin de fer:** These permis are granted in the zone serviced by OCTRA and are negotiated case by case between the ministry of forests and the concessionaires. Such permis are also subject to area and attribution taxes but the levels are determined after negotiation.

II. **Tax on Concession Area**

See Permis Temporaire D’exploitation, above.
III. Flowcharts of the Distribution of Forest Fees

A. CAMEROON - Main Flows of Taxes Between State Bodies and the Industry

[Diagram showing the flow of taxes and funds involving Area Tax, FEICOM, LOCAL COMMUNITIES, DIRECTION DES FORETS, County Tax, FORESTRY COMPANY, Export Tax, Logging Tax, Customs, ONAREF, SENADEFOR, and TREASURY.]
S. CADON - Main flows of fees and taxes between State Bodies

CUSTOMS

TAXES ON DIVERS

YEARLY

BUDGET

MINISTRY OF FORESTS

TREASURY

TAXES ON OKOUME

SMBG

TAXES ON OKOUME

DOMAINES

TAXES ON BOIS DIVERS

FORESTER

AREA TAX
C. CENTRAL AFRICAN REPUBLIC: Forest Fee Allocation and Redistribution

- Diagram showing the flow of information from timber companies to the public treasury, customs, and MECPT for export tax purposes.
- Key points include:
  - Declaration and invoice
  - Copy of invoice
  - Timber companies
  - Public treasury
  - Customs
  - Pay export taxes
  - Onf
ANNEX 2

INTERIM CONCESSION LICENCES - THE EXAMPLE OF ZAIRE

1. The experience of Zaire with interim concession licences can provide ideas of potential application to other countries. Zaire introduced new concession procedures in 1984. These regulations and procedures were developed and implemented with assistance from the Canadian International Development Agency (CIDA), based on a decade of CIDA assistance to Zaire. These new regulations and procedures are well documented in the "Guide de l’Exploitant Forestier". The "Guide" lays out the steps, data requirements, inventory requirements and provides forms and instructions. They represent a well designed and comprehensive set of regulations and procedures.

2. Before 1984, concession procedures were less demanding, required less planning and inventory and less commitment. Large concession areas were granted to individuals and companies with little capital resources. Concession owners then used the concession to attract foreign partners. As a result there was considerable speculation in concession. The investment realized was minimal, and, often without an adequate forest inventory and planning. The investments in processing plants were often not suited to the timber sizes, quality and species available. Processing plants were often poorly located with reference to the concession area. Potential timber values were dissipated by the inefficiencies of the processing plant and by high log transport costs.

3. The new concession regulations and procedures, introduced in 1984, involve an interim licence (Lettre d’Intention) granted after completion of an application (Requesting file - Dossier de la demand) requiring completion of 20 elements. The interim licence (Lettre d’intention) is converted into a concession licence (Guarantie d’approvisionnement). If investment does not take place within three years the Lettre d’intention is cancelled automatically.

4. The 1984 procedures (Decision No. 002/CCE/DECN/84) were designed to tighten procedures, and reduce speculation, encourage more investment and lead to better located, better planned and more efficient logging, transport and processing operations.

**Dossier de la Demande**

5. The application or "requesting letter" (Dossier de la demande) requires completion of twenty elements. A number of them are similar to Indonesian applications requirements, but others are different and of potential interest for improvement of Indonesia’s concession application and renewal procedures.

6. The twenty elements of Zaire’s Dossier de la demand are:

   (a) The location of the area requested mapped at 1:200.000 with proof of agreement of the regional authorities of the Department of the Environment, Conservation of Nature and Tourism and the Governor of the region.

   (b) The permit from the Forest Inventory and Management Plans Unit (SPAAF - Service Permanent des Aventiere Augment Forestier) an independent unit within the Department of Environment, Conservation of Nature and Tourism. It operates like
a private company. The SPIAF is paid for the inventory by the concession applicant before the inventory is done. The SPIAF is financed entirely from fees and charges for inventory and forest management. The inventory procedures are laid out in the Guide de l'Exploitant forestier.

(c) The results of the forest inventory, following the inventory procedures laid down for the exploitable and non-exploitable areas.

(d) The annual volumes to be harvested and the destination, processing and exploitation planned.

(e) The location and site plan of the wood processing plant.

(f) The utilization plan with details of each production line and products to be produced, energy utilization and waste disposal.

(g) The list of products to be produced, the degree of processing, annual production of each, sources and uses of raw materials, and the quantities and utilization of residues.

(h) The list of imported equipment of various types to be installed.

(i) The list of investments in local funds for social infrastructure.

(j) A logging and forest management work plan for the first five years.

(k) The plan and material requirements for: road construction, road maintenance, felling and bucking plans, landings, log transport routes and unloading facilities, river transportation plans.

(l) The investment in permanent infrastructure in the first 5-year period (roads, bridges, etc.) and semi-permanent infrastructure in the f-year period (camps, housing, garages, etc.).

(m) Manpower plans and labor requirements in the forest in processing plants and other operations; expatriate requirements.

(n) A production schedule.

(o) A product cost analysis.

(p) A market analysis and forecast of selling prices.

(q) The forecast of fixed charges, overhead and selling charges.

(r) Projection of profit and loss and of working capital in each of the first 5-year of the project.

(s) The statement of the capital structure of the company, a list of share holders and their holdings, a list of the Board of Directors.
A time schedule for the construction of processing facilities or expansion of existing facilities.

7. Zaire's procedures provide ideas of potential application in other West African countries.

8. The idea of an inventory unit financed from the fees for forest inventory services provided to the concession applicants is good. If concession applicants have to pay for the inventory, they will be more serious about applying for a concession and later take their responsibilities more seriously. They should be required to pre-pay the estimated inventory costs or make a deposit at the start and payments as the work progresses. If the inventory unit is self financed, it can operate in a more business-like and expeditious way. It will have the resources to do the job quickly.

9. The "Guide de l'Exploitant Forestier" provides a detailed guide to the application procedures. Other countries should consider developing, printing and distributing such a guide for concession applications and renewals.

10. Zaire's requirements for the work plans, production plans, investment plans, utilization plans, production schedule, through market analysis are quite complete (terms 4 to 14 and 16).

11. Zaire's financial planning and reporting requirements (items 15 and 18) allow the financial strength of the company to be evaluated reasonably well. The requirements of ownership, management and capital structure (item 19) is helpful in judging the company.

**Lettre d’Intention**

12. Once the "Dossier de la demande" is complete, the application file is reviewed and if all is satisfactory and adequate the interim licence (Lettre d’intention) issued. If the investment commitment is not fulfilled within the time (three years) the "Lettre d’intention" is cancelled. This provides a strong incentive to complete the investment, and to carry through on the concession holders commitment.
REFERENCES


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<td>Argentina</td>
<td>Carlos Hirsch, SRL, Calle 25 No. 350, Buenos Aires</td>
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<tr>
<td>Australia</td>
<td>Huawei, S.A., P.O. Box 6, Canberra, ACT 2601</td>
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<td>Bangladesh</td>
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