

# Public Policy Failures in Timber Trade and Environment in Developing Economies:

By Aloysius Ajab Amin, Ph.D.  
(University of Yaounde II)

## ABSTRACT

Despite the importance of forest to the African Economies and the world's climatic condition, African forests have been disappearing very rapidly. There used to exist a strong ecological harmony between man (homo-sapiens) and its environment. With increasing globalisation of the African economy and Cameroon's economy in particular, the symbiotic relationship has increasingly been threatened, as the economy incurs both huge social and environmental cost.

Using Cameroon as an example, the paper examines markets, institutions and policy failures in timber exploitation, trade and environment between the partial equilibrium framework. From the analysis the paper shows that these failures result in unsustainable timber trade and among other things created heavy environmental costs. The paper discusses the appropriate policies and corrective measures including timber certification, which can better forest management in timber exploitation and brings out the role of the environmental conscious countries of the Developed countries as we enter the next millennium.

## **1) Introduction and the Importance of forests**

All tropical forests are located in the LDCs, and are very important for human and other forms of life in the whole world- a global asset. These forests don't only preserve but they also generate biodiversity which include species and genetic diversity. They also protect species such as the indigenous forest people as well as provide medicines and food and other substances for industrial purposes. Other importance of the tropical forests can be seen in their water conservation in living laboratories for education, scientific research and recreation. In all, the tropical forests sustain and maintain all webs of life. They are the most valuable. "The richest and most expression of life that have evolved on earth. Tropical forests are complex and fragile ecosystems with a complex of interlocking relationships among diverse plant species, animal species and nonliving environment" (Henning and Mangum 1989,p 281).

Thus Cameroon's forest located between latitude 2° and 5° north occupying more than 70 % of the national territory, possess enormous source of wealth for the country and the world. Their diverse fauna and flora are some of the richest in the world. The forests of Cameroon can be grouped into four main categories – tropical rain forest (174300 km<sup>2</sup>), tropical seasonal flood forest (1580 km<sup>2</sup>), swampy forest (5490 km<sup>2</sup>) and transitional forest (18,605 km<sup>2</sup>). All total above 26 million hectares. The forests are put also into ownership categories – Public forest, private forest, community forest and protected areas (ADB 1995,Cameroon 1992). The state appropriates all natural resources including the forest in the country. This type of appropriation should mean that the government takes full control and management of such natural resources.

National Surveys of less than of Cameroon forestry areas has shown that the forest potentials are enormous. In economic terms only, it has been estimated that the forest sector contributed more than 3 % of GDP, and accounting 7 % of total exports. And given the current exploitation of the forest these figures are much lower.

Furthermore, the tropical forests serve diverse functions. These diverse functions range from serving as the homeland or habitat of some indigenous peoples and biodiversity to climatic functions. Yet the threat to the existence of these (primary) forests, with unique evolutionary and ecological characteristics, is rapidly increasing.

The economic functions directly or indirectly contribute to human welfare. It is difficult to determine the total economic value of Cameroon's tropical forest. Knowing the total economic value of these forests is very important because decisions on the use of tropical forest resources are usually taken without proper understanding of the forests' total functions. Even when those functions are generally understood, only few functions determine the land use. In most cases the direct use values for timber or agriculture dominate decisions about land use, and the environmental factors are ignored.

This may partly explain the acceleration of deforestation. So analysing the resulting asymmetry of values and forestry exploitation may highlight these problems and bring out more appropriate and feasible policy instruments for promoting proper forests management. The paper demonstrates that because of not taking into consideration the total economic valuation of the forests (noting the forest functions and products), the timber exploited is much under valued with serious consequences. Our focus on market, institutional and policy failures clearly brings out the natural and magnitude of deforestation and environmental degradation.

## 2) **Forests Disappearance and waste.**

Despite this importance many tropical forests including Cameroon's tropical forest are disappearing. For the space of 4 years 1981 – 1985 Nigeria and Cote D'Ivoire had the highest rate of deforestation in the world (Henning and Mangum, 1989). At the beginning of this century, more than one-third of Ghana was covered with natural forest, but by the mid 1960s (just a little bit above 60 years) very little of this natural forest remains. In fact in 1980 only 7 % of the country was covered by forest (Panayotou, 1993). In Cameroon particularly in the South of Cameroon it is estimated that deforestation takes place at an average rate of 100,000 ha. Per year. Here the main type of deforestation experienced is that of lumbering, shifting slash-and-burn, and agricultural production expansion.

Anthropogenic activities such as logging, clearing, fire and poaching greatly affect the forest ecosystem. In 1991 it was estimated that deforestation activities in Cameroon cover about 150,000 ha. per year especially through shifting cultivation, small and large-scale logging and road construction (Cameroon 1992). In the same year (1991) a total of 64550 km<sup>2</sup> of closed forest was exploited by logging firms under licence (ADB1995). Forest exploitation is carried out for logging and other products, non-woody products including plants, beverages, food, medicine, species, parking material and wildlife mainly for protein and leather. In the distant past there existed a strong ecological harmony between man (homosapiens) and his environment. But since Africa (including Cameroon) was dragged into the global economy this symbiotic relationship has increasingly been under serious threat of complete destruction.

There are many underlying reasons for deforestation, which include logging for trade and development process pressure for land and public policy that may intentionally or unintentionally promote deforestation. Yet it is not easy to determine the relative importance of each immediate cause since they compound each other. For example, Cameroon's lumbering open up inaccessible lands for agricultural production. If left alone a secondary forest may replace the initial forest but the regeneration process may be stop if used for

agricultural production. In most Cameroon's forests, the logging companies are very selective in their timber exploitation. The timber companies select only the highest quality or valuable wood, such that their timber extraction is only 1 to 3 cubic meters per hectare while it is 15 to 20 times as much in South East Asia (Tchoungui, 1995). The timber companies selective logging is purely economic and not because of any legislative or environmental concerns. Because of this type of selective exploitation, much of the timber product is limited to less than six species in certain forests although nationally there are many species. In this type of selected lumbering, huge tracts of roads are opened up in the forests thus permitting the expansion of agricultural land. In some of these areas agricultural production is (extensive and) based on shifting slash-and-burn system. Although there is a gradual transition from this traditional extensive to intensive farming system. This type of deforestation poses great problem for regeneration; noting that natural regeneration is the principal mode if not "the only mode of regeneration" of the forest classified as national domain.

Furthermore, in log preparation much wood waste is incurred. There is a big margin on forest conversion thus leading to much wood loss and waste. Depending on the specie, it has been estimated that the loss in forest is between 20 % to 35 %, since only very high quality is exploited. This is partly a problem of under-valuation of forest resources and functions more so as value is assigned only after cut-down. This also has a significant impact on the environment.

### **2.1) Timber Export from Cameroon to Various Countries of the World.**

In 1995 much timber was exploited from Cameroon, to various parts of the world with the Far East taking the greatest share of 33.08 %, followed by Italy (20.35 %). France was third major importer of timber from Cameroon with 16.87 % (Sikod et al., 1996). Recently the timber export has sharply increased. The deep-sea port of Limbe was opened four years ago mainly for the export of timber. Recently the Tiko seaport was also uniquely for the export of timber.

### **2.2) Poor Forest Use.**

The very high rate of deforestation of more than 150,000 ha. per year does not only create unsustainable forest use but also poses great problems in sustaining the biological diversity which refers to different types of life with three important aspects species abundance, endemism and ecosystem diversity. The shrinking of the forest poses a very serious problem worldwide. This is because deforestation at this rate is very disastrous on the ecosystem, where biological diversity provides ecological services critical for human survival on this planet.

Due to deforestation the loss and fragmentation of forests and natural habitat means decrease in biological diversity, loss of plant and animal diversity representing a genetic resource of inestimable value.

### **3) National Forestry Policy.**

The Law No 94/01 of 20 January 1994 was deliberated, and adopted by the National Assembly and then enacted into Law by the President of the Republic. The Law put down implementing instruments and regulations on the forestry sector with a view of achieving the general objectives of forestry policy, which supposed to ensure an integrated management and sustainable conservation of the forest and various ecosystems, and the utilisation of forest resources. The World Bank requested the re-submitting of this law to the parliament. Instead the text for application of the law was signed by the Prime Minister in August 23 1995 completely putting the law into force.

On the whole the law is very elaborate and involved the use of many resources to make it enforceable and in the absence of such resources the law becomes difficult to enforce. For example, the law provides for a complete inventory to be carried out by the state. In addition

the law fixes the minimum diameter at which certain species of trees may be exploited noting that concessions are to be auctioned. Yet in practice the logging companies performed these functions which are supposed to be performed by the State. On the fiscal provisions, section 66 (1) provides a cumbersome system. According to this section "besides the business licence provided for by the general tax code, the financial charges comprise:

- (a) The annual forestry fees assessed on the basis of surface area; the rate shall be fixed by the finance law;
- (b) The felling tax, that is, the value by species, by volume weight or length, estimated following the procedure laid down by decree;
- (c) The contribution of the execution of social amenities;
- (d) The carrying out of a forest inventory,
- (e) Participation in the management projects".

Despite these provisions and despite the intensive exploitation of the forest particularly in the South, the average annual tax revenue is only 800 million francs CFA from the forest exploitation in the South (Tchoungui, 1995 p 103). In most cases the logging firms indirectly or directly do their own tax assessment and even state the amount to be paid. The management of the forest is full of problems. The lack of resources particularly the skilled man - power and necessary equipment has allowed serious rent seeking activities to take place in the forest sector. In the logging concessions the undersized trees are cut, the volume is under estimated, there is unreported felling and felling is usually off limit; much more licence holders go beyond their authorised quantities of trees. (Tchoungui, 1995). This reveals a chaotic situation to the advantage of timber exploiters but much to the disastrous effects on the environment, the nation and the planet – earth.

Furthermore, forest resources services are basically administrative and much less technical. The administrative services are mainly in the form of granting concession, taxing of forestry products and selling of licences. In general the forest services are very weak mainly due to lack of trained forest personnel, inadequate budget allocations, poor forestry maps and statistics, and little or no forest research. These are market, institutional and policy failures.

#### **4) Market Failures.**

When markets function well they tend to efficiently allocate resources among alternative uses and overtime. But inefficiency often arises because of market failure. The freely functioning markets may not reflect the full social cost of production in the price of tradables. In fact markets may not exist for many output "especially environmental services". The absence of prices reflecting the full social costs means that the economy can not attain the maximum or optimum potential of human welfare. There are certain basic conditions for the proper functioning of markets. These conditions include that the supply and demand forces should be the main determinants of the quantities and prices of scarce resources; such that competition prevails. All actions in the markets should have no significant side effects (no externalities). "Property rights over resources must be well defined and secure". Poor management, inefficient use, and exploitation of natural resources particularly those of timber resources and environment can be traced partly to malfunctioning, distorted or totally absent markets. Prices generated by such markets don't reflect the true social costs and benefits of resource use. Such prices convey inadequate incentives for management efficiently the use and conservation of natural resources. Sources of market failure permeate all sectors of the economy – be it a natural resource or human capital investment etc. however, market failure seem to be highly pervasive in the natural resource sector as exemplified in the Cameroon's forestry sector. The following are some of the principal market failure factors affecting the management and resource use.

A basic condition for markets to operate efficiently "is the existence of well-defined exclusive secure, transferable, and enforceable property right over all resource, goods and services". (Panayotou, 1993 p 35). Well defined property right so as to avoid competing claims and conflicts that may lead to uncertainty of ownership which is disincentive to proper management, conservation and even investment. Multiple ownership of property rights may even have negative effects, since each owner could have incentive to free ride. In Cameroon's forests, the property rights are not well defined. The State appropriates all natural resources yet the indigenous or local people regard the forest as theirs. The result is no effective ownership

It is very important that property rights be more enforceable or else there are no rights if they are not enforceable. Certain forest areas have been declared as public or state forests but this declaration has instead hastened the exploitation and destruction of these forests; since the laws are not effectively enforced. When the enforcement of ownership is not effective the forestry lands become virtually open-access resources. And since the market in these forest resources is thin, there is no operative force of demand and supply. This is market failure with those who can exploit doing so excessively. The excessive exploitation, wasteful usage, poor conservation and management of our natural resources particularly forest lands emanate from market failure and the inability of the government to price the forest resources at the social scarcity value. But to arrive at this value or to be able to put in place an optimal system we should be able to identify and estimate the externalities or so resulting from the private actions.

Markets do not include environmental costs, since externalities are absent on the market, there is discrepancy between social (benefits) costs and private costs of natural resources exploitation. Many public goods are also involved in the environment. These public goods include ecological balance, biodiversity, and environmental quality. In fact externalities involved the provision and protection or preservation of public goods such as biodiversity. These goods can not be provided by the market. Instead they are best provided by the state which can finance the provision of such goods from the general (government) revenue, although in some cases such public goods could be provided by well-established institutions or organisations. These public goods are non-localised. Biodiversity is not only a local public good it is also a national as well as a global public good. Its conservation is therefore nationally and globally beneficial. This implies that its provision involves all its beneficiaries – local, national and global. Another type of market failure here is lack of information on the quality and nature of the resources on the part of the resource owner. In fact even the exploiters don't know how much it costs for what they take away; nor do they know the true value of the timber they are exploiting.

### **5) Policy Failure.**

Markets may fail to allocate efficiently the use of natural resources and environment. Because of this market failure this gives a rationale and opportunity for government intervention. So another kind of inefficiency is often created from the government's policy failure or intervention. But, for government to intervene, such intervention must be seen to be an improvement on the benefits derived from such intervention exceeding the costs including other indirectly related costs. Certain government's interventions, which are aimed at correcting or at least mitigating market failures, are through taxation, output targets, regulation, private incentives and macroeconomic management.

In reality certain policies "tend to introduce additional distortions in the market for natural resources rather than correcting the existing ones" as the case may be. And this may occur for various reasons since the government has many objectives besides the correction of market failure. These other objectives may include macroeconomic management, national

security as well as political reasons. Secondly, certain government policies generate vested interests and become politically difficult to be removed when they may have outlived their usefulness – such as subsidies or ownership control. Third, government policies tend to have unintended side effects, and may interact with others to create distortionary incentives "away from socially beneficial activities".

Hence we have different types of policy failures. First, government policies may even distort well functioning markets. Certain taxes or regulations, poor state enterprises may create great distortionary incentives, which may generate environmental degradation and as has been in the case of Cameroon forest sector.

Another type of policy failure may be such interventions, which produce poor outcome, although initially they were to mitigate or correct market failure. If intervention produces worse results, it may be preferable to do nothing than taking the wrong action or policy to contain deforestation. The government regulates the assessment and collection of taxes on forest exploitation. Yet rents are not collected, the companies themselves evaluate what they exploit and pay as they wish certain levies may be imposed but not effectively enforced. This is actually policy failure.

Also the government may fail to identify and internalise important side effects when designing certain desirable policies e.g. incentives to encourage local timber transformation, decision-makers may have failed to take into consideration the effects or choice of other inputs, and capacity utilisation. Yet the policy failure may arise where there is no intervention in failing markets when such intervention may prove highly beneficial or improve the functioning of the market. In some cases intervention could be justified but the government should be able to secure least cost interventions by using instruments of control that are not expensive or are not burdensome. In Cameroon as in most developing countries the governments are less informed about the relative effects of their actions. This means that government intervention would tend to generate much inefficiency.

A lumber company would rarely care about other objectives, except for bidding for the right to harvest timber and using the aim of promoting income growth and increasing export earnings to help its case. The firm would not care about environmental protection for long-term sustainable development, neither would it bother about distributional and equity concerns, and popular participation in resource management, since all this affects its profits negatively: Here is when policy measures are necessary to regulate or correct the situation.

In exploiting timber, the private calculations does not consider the destruction of biological diversity caused by extracting a cubic of timber, nor does the exploiter consider the effects of current resource use on the availability of future resources. Also costs are not internalised so as to provide appropriate pricing. But all this should be done in order to arrive at an optimal price system, which can reflect the social benefit-cost obligation. The society's welfare is reduced when there is absence of corrective measures.

However, depending on the state's commitment and management capacity to structure (or to have structured) the policy environment and policy making process, the obvious selfish interests of the private firm can be shaped to be constructive and beneficial to all concerned.

## 6) **Institutional issues.**

Most of these problems arise because there are no proper institutional systems and structures for effective forest management.

Forestry conservation and management was jointly implemented by the ministries of Agriculture, Tourism and Town Planning. However, in 1992 a Ministry of Environment and Forest was created to give more importance to environment and forestry. Its emphasis is on

biodiversity with forestry receiving particular attention. This ministry is responsible for the management and co-ordination of activities related to forestry and the environment and including government policy concerning the conservation and management of forests, through the Department of Forestry. This ministry has one autonomous agency under its care through which it executes its policy. This is the National Office for Forest Development (ONADEF).

The role of other ministries in this management policy can not be left out. These include;

- The Ministry of Agriculture (MINAGRI) which involves the local communities in ensuring soil conservation and plant protection in the use of phytosanitary products. MINAGRI promotes farming systems aimed at reducing shifting cultivation partly responsible for deforestation.
- The Ministry of Livestock Fisheries and Animal Industries (MINEPIA) is charged with helping stock breeders to move towards more sustainable livestock practices and so reduce the pressure on forests coming from nomadic grazing practices.
- The Ministry of Scientific and Technical Research (MIREST) through its autonomous institution, the Institute of Research on Agricultural Development (IRAD) takes care of national policy on forestry research and its implementation.

There are many inter-ministerial/multi - sectorial committees established within MINEF to co-ordinate activities that concern forests and environmental conservation and management such as:

- The commission on sustainable development and the environment created by decree No 94/259/PM of 31 May 1994
- The inter- ministerial committee on the follow up of the convention on biological diversity.
- The inter-ministerial committee on the ozone layer protection
- Inter-provincial committee on the environment (instituted by framework law on the environment No 96/12 of 5 August 1996).

These commissions and committees act as advisory organs on policy issues related to the protection of environment and biodiversity conservation and management.

Most important are the two official documents, which clearly define the administrative, and legal framework within which logging is carried out in Cameroon. These are;

- The Forestry Law No 94/01 of January 20, 1994.

- Its decree of implementation No 95/531/PM of August 23, 1995. As discussed above, the law defines different types of forests and their respective ownership and condition logging activities such as export quota, taxes, accreditation and the acquisition of exploitation rights.

Although many ministries and organs are involved in the functioning of the forestry sector, the Ministry of Environment and Forestry is the principal ministry responsible for designing and implementing forestry policy in Cameroon. Its central office is in Yaounde with its authority extending throughout the national territory. The ministry's provincial and divisional offices implement forestry policy and supervise "forestry activities (including logging activities) in their respective jurisdiction". ONADEF the technical agent of the ministry carries out more technical activities as required by the ministry.

In the past, ONAREF (National Office for Forest Regeneration) used to be the agency responsible for implementing national forestry policies and this was strictly limited to forest regeneration. With the new notion of forest management and development which includes regeneration, conservation, education etc there was need for a more structured institution and so it was changed from ONAREF to ONADEF (National Office for Forest Development)

Its role is to provide sustainable management of the forest ecosystem and the improvement of the timber sector. It benefits from both national and international funding as ONADEF has attracted the interest of international donors and many NGOs.

All these institutions have fully succeeded in establishing proper or sustainable forest management.

### 7) **A Partial Equilibrium Analysis.**

In this section we rigorously analyse the discussions within a partial equilibrium framework. Generally the demand reflects the marginal (social) valuation or marginal (social) benefit obtained from an additional unit of good concern. That is the demand represents the price or marginal resource cost consumers are willing to pay for that additional unit. So in a competitive market, price (P) equals marginal cost (MC). We therefore hope that marginal cost reflects the marginal resource cost, which the society can incur in order to obtain an extra unit produced. This means that social welfare is a maximum as marginal social benefit (MSB) equals marginal social cost (MSC). That is the  $P = MC$  criterion reflects the same opportunity cost from the private and social points of view.

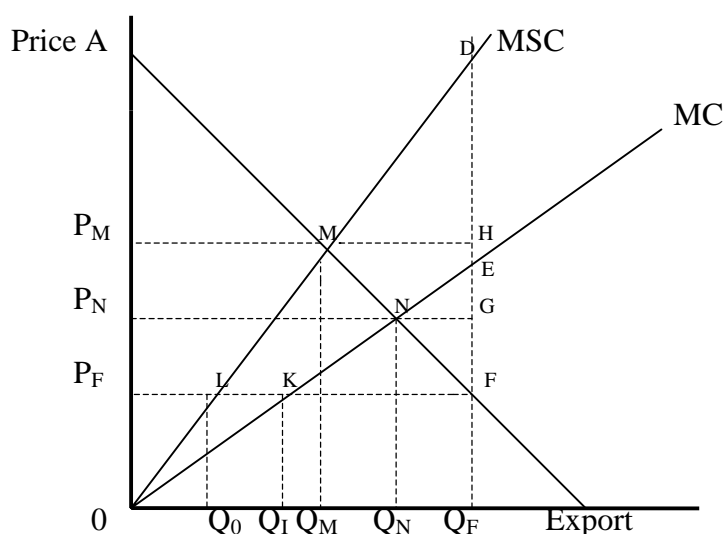
However, in certain cases the marginal private cost (MPC) is not equal to the marginal social cost. The behaviour of the profit-maximising firms governed by the marginal cost-price criterion is not always the same as the marginal cost to the society. In these cases the social welfare maximum is not attained. The situation may even be worse if the market price is below the private marginal cost. The effects of under valuation of Cameroon's natural resources are far reaching.

To carry out a more rigorous analysis we make the following assumptions to depict Cameroon's situation in the timber exploitation.

- Cameroon is a major producer of timber in the world timber market. This relaxes the small country assumption and gives us a downward sloping demand curve since Cameroon's timber products or forests are unique in the world.
- The commodity is produced and exported under distorted price regime. The price of timber is much below the private marginal cost-price configuration.
- Environmental degradation is an integral part of logging and an increasing function of the quantity of timber produced and exported. The more timber is produced the more environmental damage done.
- The domestic demand for this commodity is relatively small or even negligible.

From these assumptions we have the graphical representation of the model in figure 1

**Figure 1 Partial Equilibrium Model.**



At  $P_N Q_N$  (private optimum equilibrium at N) Net benefit =  $OANQ_N - ONQ_N = OAN$ .

But price is set mainly by the logging enterprises below marginal cost at  $P_F$ .

With quantity/price configuration of  $P_F Q_F$ , total benefit increased by  $Q_N NFQ_F$  and total cost increased by  $Q_N NEQ_F$ , hence net loss to society becomes NEF – Dead-weight loss.

Social desirable price ( $P_M$ ) and quantity ( $Q_M$ ) at  $P_M$  with quantity and price  $P_M Q_M$  and social optimum (equilibrium) at M. At this point total benefit =  $OAMQ_M$  while total cost equals  $ODQ_F$  hence a net benefit/loss =  $OAMQ_M - ODQ_F = OAM$ .

But since the pricing is at  $P_F$  with output  $Q_F$ , the dead-weight loss is MDEF (MDF) which is much above the dead-weight loss (NEF) when there is no market failure. OAM may be less than the dead-weight loss. So the price would be well above  $P_M$ .  $P_M$  is the social price of timber. But the price is above  $P_M$ , the price would be the price of the true social value of timber. If the property right for example was clearly defined at  $P_F$ , the suppliers would have been willing to supply only  $Q_I$  of timber but this is not the case.

The socially desirable price-quantity configuration is  $P_M Q_M$ . the price (P) equal marginal social cost MSC at M. The private maximum supposed to be given by  $P_N Q_N$ . Instead the logging private companies pay  $P_F$  for quantity  $Q_F$ . The quantity is much higher than socially desirable and the price is much lower than it is socially or even "privately" desirable. Obtaining the commodity at below the free market price generate dead-weight loss at two levels. The dead-weight loss from below marginal-cost pricing, and dead - weight loss from below social marginal cost price. Hence prices below market prices ( $P_F$ ), generate great inefficiency and results in excessive exploitation of the natural resources and rapid environmental degradation as output (Q) moves from  $Q_M$  to  $Q_N$  and from  $Q_N$  to  $Q_F$ . given that increase in output production in this case is positively related to environmental degradation.

$Q_M Q_N$  shows the extent of market failure and  $Q_N Q_F$  indicates the extent of policy and institution failures. These failures could be collapsed in to policy failure. They show that output is produced as high as  $Q_F$  with price as low as  $P_F$ . Taking all the forest functions, products and the scarcity value of the resource into consideration would have required production to be carried out at  $Q_M$  for the price  $P_M$ . So the ideal most efficient equilibrium point is M. But because of policy, institutional and market failures, production is carried out at  $Q_F$ ,  $P_F$  – quantity – Price configuration with far reaching consequences.

### 7.1) The Effects of Under Pricing

At  $P_N Q_N$  private equilibrium is at N.

Net benefit is  $OANQ_N - ONQ_N = OAN$ .

But price is set mainly by the logging enterprises below marginal cost at  $P_F$  with quantity / price configuration of  $P_F Q_F$ .

The total benefit increased by  $Q_N NFQ_F$ .

And total cost is increased only by  $Q_N NEQ_F$ .

The net loss to society is NEF.

This dead weight loss is the result of price being set at PF.

The social desirable price ( $P_M$ ) and quantity ( $Q_M$ ) equilibrium is at M.

Total benefit =  $OBMQ_M$

Total cost =  $OMQ_M$

Net benefit =  $OAMQ_M - OMQ_M = OAM$ .

But the price is at  $P_F$  with output  $Q_F$ . The dead weight loss is MDEF (MDF), which is much above the loss to the society when there is no market failure.

**Table 1: Estimated Revenues and Dead-weight Loss (in Francs CFA)**

<b>YEAR</b>	<b>FEES PER M<sup>3</sup></b>	<b>TOTAL INCOME FROM TIMBER SALES (FCFA)</b>	<b>TOTAL FOREST/TI MBER FEES (FEES)</b>	<b>TIMBER EXPLOITER'S NET GAIN</b>	<b>DEAD WEIGHT LOSS DUE (DL)</b>
1972	2111	15541430	2199662	13341768	
1973	2101	32119120	2374130	29744990	13898544
1974	2011	37534900	2614300	34920600	24686178
1975	1950	36618400	2535000	34083400	22363954
1976	1895	42112800	2274000	39838800	23903280
1977	2000	64200724	2758000	61442724	41258856
1978	1511	80943250	2458397	78484853	57259693
1979	1415	86256788	2282395	83974393	55705270
1980	1711	111110000	3422000	107688000	70697172
1981	3500	92685555	5827500	86858055	56027358
1982	3716	113529768	6993512	106536256	73477184
1983	3615	120708900	6868500	113840400	84122064
1984	3785	133327359	7278555	126048804	97011040
1985	3950	146020803	8259450	137761353	105017502
1986	3795	149829904	7920165	141909739	115798891
1987	3800	148613643	7945800	140667843	105618610
1988	4000	160625920	7880000	152745920	102192448
1989	3905	201077163	8282505	192794658	143800636
1990	4095	248459172	10139220	238319952	189231432
1991	4102	227765048	9368968	218396080	156434320
1992	4201	209706740	8868311	200838429	146704338
1993	4502	201804000	9049020	192754980	136079262
1994	5922	379350000	15989400	363360600	187870888
1995	10283	405099695	28699853	376399842	227916780
1996	10320	421156725	28947600	392209125	243155675

Source: Authors estimates from Note Annuelle de Statistique, Eba'a-Atyi

**Table 2: Estimated Ratios of Gain, Fees and Loss**

<b>YEAR</b>	<b>RATIO: FEES TO NET GAIN</b>	<b>RATIO: DEAD WEIGHT LOSS TO NET GAIN</b>
1972	0,16487035	
1973	0,07981613	0,46725664
1974	0,07486412	0,70692308
1975	0,07437638	0,65615385
1976	0,05708003	0,6
1977	0,04488733	0,67150109
1978	0,0313232	0,72956361
1979	0,02717965	0,6633602
1980	0,03177699	0,6565
1981	0,06709222	0,64504505
1982	0,06564443	0,68969182
1983	0,06033447	0,73894737
1984	0,05774394	0,76963079
1985	0,05995477	0,76231468
1986	0,05581129	0,81600383
1987	0,05648626	0,75083692
1988	0,05158894	0,66903553
1989	0,04296024	0,74587459
1990	0,04254457	0,79402262
1991	0,04289898	0,71628722
1992	0,04415644	0,7304595
1993	0,04694571	0,70597015
1994	0,04400422	0,51703704
1995	0,07624831	0,60551774
1996	0,07380654	0,61996435

Source: Author's estimates

We limited our empirical estimates to dead-weight loss due to institutional and policy failures without extending estimates to bringing the social marginal cost. This restriction is partly due to inadequate data and the poor quality of the existing data. Because of these limitations, the estimated figures are just estimated and remain estimates.

It would be observed from the tables above that the estimated fees per cubic meter are very low. This also means that the total forest/timber fees are low. While the total estimated incomes obtained by timber exploiters are relatively very high. That is the net benefits are quite large and have been increasing over the years. Of particular concern is the magnitude of the dead-weight loss. It is so large that fees form only a small fraction of the dead-weight loss. And the dead-weight loss form a very large proportion of the net benefit.

Developing countries often have poor institutional basis for implementing the right policies, having difficulties and poor legal system to support the collection of revenues. The pricing does not reflect the actual financial cost of production nor the true market value of the product. The problem is that the marginal cost (MC) is greater than the price (P) or the prices are kept below the market price, instead of equating price to marginal social cost (MSC), that is where marginal social cost equals to marginal cost plus marginal external cost (MEC).

When  $P < MC$ , many effects are created. First financial subsidy is generated which reduces government revenues. Second, in term of natural resources such as timber, there is excessive production of timber. This also produces financial waste and degradation of the

environment. Third, this creates a great difference between economic benefit and cost of production that generates rent seeking activities. The degree of rent seeking activities depends on the level of the net economic benefit (NEB). The greater the NEB the greater the degree of rent seeking activities.

The literature on poor allocation of resources in developing countries stresses on market failure partly because of the absence of institutional framework for social cost pricing. To achieve correct social prices means knowing the size of the distortion. This necessary means having some form of environmental monitoring agency that can evaluate the nature and extent of damage caused by timber exploitation.

### 7.2) **Principal Actors.**

The main actors in the forestry exploitation (or lumbering) are the government and its officials (or agents), the private logging companies and the local communities. The actions of these actors may be influenced externally or directly by each other. Their actions or in-actions determines the benefits or costs accruing to each other and to the society locally, nationally and even globally.

### 7.3) **Logging Enterprises**

Since 1986, the beginning of the decline of the Cameroonian economy many firms have been accredited as professional logging enterprises. Between 1986-1987 about 296 logging enterprises were accredited.

**Table 3: Log production by province 1995/96.**

Province	No. of logging enterprises	Log production (m <sup>3</sup> )	Percentage of National production
Centre	96	447,404,187	15.95
East	5	1600,163,385	57.03
Littoral	86	225,388,296	8.03
South	15	451,841,671	16.10
South-west	12	81,134,072	2.89
Total	214	2,805,931,611	100

Source. Forestry Department and Eba'a-Atyi 1997.

The table indicates that firms tend to have their head office where the best communication infrastructure is found, and also where the laws and policies are made. Hence Yaounde and Douala have the highest number of logging enterprises. This is more so where the firms export their products. The East province produces more than 50 % of logs but has the least registered logging enterprises mainly because of very poor communication infrastructure.

However, Cameroon's logging industry is controlled by small numbers of foreign firms/companies which can influence both timber price and policy (Eba'a –Atyi 1997). In 1995/96 only 29.3 % (821,320 m<sup>2</sup>) of log production was absorbed by the domestic market which is mainly lumber, plywood and matches of low quality which could not be exported. Although part of local consumption went to the neighbouring countries like Nigeria, Chad etc.

The private logging companies are more interested in obtaining the maximum profits and as such it would be good for them if they can obtain the commodity as at low a price as possible. In extracting the marketable timber they therefore reduce other factors that may reduce their profit margin and increase profitable strategies; while government's objective is to maximise the social welfare. But this objective has to be achieved by the government's officials or agents. The question becomes as to whether the agents are pursuing their own interest or the government's objectives. In the current situation, it would seem the selfish interests of the public agents are dominant partly because of the government's failure. For the

services to function well the services must have the necessary resources in terms of equipment, trained personnel, necessary infrastructure and services. The main provider of these resources has to be the state, or institutions large enough to have the means because of the peculiar characteristics of the natural resource. Consequently the lack of forestry officers in the field has most often resulted in serious fraud and the fraud is in connivance with the few available forestry officers in the field. "The absence of forestry officers in the field allows serious fraud to take place undisturbed in the logging concessions (cutting undersized trees, under estimation of volume, unreported felling, felling off limits...). The main consequences are the degradation of the forests and the loss of earnings for the state" (Tchoungui, 1995 p 101 – 102) but much gain to the forest exploiters and the few forest officers. On the whole the logging firms are better organised and economically powerful. They therefore exploit the weak situation of the others to the fullest.

### **8) Environmental Impact of Economic Policies.**

Economic policies are usually taken in order to promote the overriding objectives of the government such as economic growth. However, environmental implications are often not considered when these measures are implemented. Environmental considerations may mean scaling or altering the macroeconomic policy-mix so as to cushion the negative environmental effects. Yet macroeconomic imbalances reflected in the budgetary deficits, imbalances in the current account, high unemployment and macroeconomic distortions as seen in the price distortions, market rigidities coupled with weak political institutions are hindrances to economic growth and development. Also the huge domestic and foreign debts, low savings and negative investment growth, large fiscal deficits, etc. have resulted in accelerated natural resources depletion and environmental damage.

The Bretton Woods institutions and other donors have tended to support Cameroon's and other African countries' efforts in dealing with the economic problems which were triggered principally by increasing foreign debt and worsening terms of trade and compounded by weak institutional framework. Their support has been structural adjustment, sectoral adjustment, stabilisation loans most often with some conditionalities tied to macroeconomic and sectoral policies.

#### **8.1) Devaluation and logging industry in Cameroon**

As from 1986 there was a sharp decline of the Cameroonian economy with the GDP falling by 4 % in 1993. The poor performance of the economy was partly blamed on the over valuation of the domestic currency the CFA Franc which made the member countries of the CFA Franc zone to be less competitive in international markets.

In 1994 the CFA Franc was devalued by 50 % relative to the French Franc

**Table 4: Growth of accredited logging enterprises.**

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total	90	94	100	106	121	135	166	170	194	351	386

Source: Eba'a Atyi

The table shows a sharp increase in the number of logging enterprise especially after 1994.

While timber-processing capacity was little affected, indicating that most of the timber was exported without processing. For instance on average timber production was 2,804,932 m<sup>3</sup> per year and raw log export of 1,854,407 m<sup>3</sup> per year, with much timber processed in Cameroon than the required capacity. The regulation stipulates a processing target of at least 70 % of the total production.

**Table 5: Timber harvest.**

Year	Log volume (m <sup>3</sup> )	Percentage change
1986/87	2090596	
1987/88	1970490	
1988/89	2120603	
1989/90	2476275	
1990/91	2283968	
1991/92	2111029	
1992/93	2010000	
1993/94	2700000	34.32
1994/95	2790903	
1995/96	2804932	

Source: Eba'a Atyi p 35

After 1994, the year of devaluation, the timber volume harvested increased sharply. After 1993, there was a 34 % increase of timber harvest. The timber exports from the Douala seaport increased from an average of 600,000 m<sup>3</sup> of log per year to over 1,000,000 m<sup>3</sup> per year as from 1994 (1,055,045), 1995 (1,040,000). The area given out by the forestry Administration department for logging also increased. For the 3 years after devaluation, the area estimated was 3,222,300 ha. but the net area exploitable is less than that as not all that is given out for exploitation is exploited. The net effect is that devaluation has resulted to sharp increases of raw timber export from Cameroon to the rest of the world.

The macroeconomic policies supported by the structural adjustment loans have been much more export-oriented as well as having serious distributional effects resulting from sharp expenditure and salary cuts; and relative price changes with focus on more market oriented. All these have resulted to serious environmental damage (Opschoor and Jongma 1996) because of policy failure. For example, in the forestry sector prices do not represent the socio-economic functions of forests, so the under-valuation of these functions has lead to excessive exploitation of the resource base. More so, the very low prices of the tradables, such as timber, gives a great competitive advantage. During the period of over-valued exchange rate the natural resources particularly timber were sold at much below market prices. This situation has been reinforced with the implementation of the 50 % exchange rate devaluation, general trade liberalisation policy and budgetary cuts. Devaluation, strengthened by other trade oriented policies have caused a shift from nontradables to more profitable tradables. Cameroon's exports have therefore become much more competitive; thus resulting to over-exploitation of the natural resources – particularly timber. Another very important negative effects of making Cameroon's primary commodity "more competitive" is that the country may be condemned to remain primary producers and unable to transform its products from primary tradables to industrial tradables. Historically no country has developed without being industrialised. The short-term gains in selling of "the forests" at prices not reflecting social costs or even market prices may compromise the future development potentials and the environmental assets. The environmental consequences of export growth oriented policies are both direct and indirect. The ramifications are therefore far reaching.

### 9) Reducing the Failures

Many international organisations and institutions have been making a lot of efforts in promoting sustainable forest management and certification. In Central Africa, the World Bank is having a decisive role in the forest sector through the Congo Basin Initiative. Through their technical agencies the European Community and its member states effects are been made to

carry out projects on sustainable forest management. The African Timber Organisation has been working on producing regional criteria and indicators for sustainable forest management, partly with the idea of producing an 'African Green Label'. There are many other associations and non-governmental organisations such as WWF-International and CIFOR Centre for International Forestry research which has also carried field tests to see the practicability for various criteria and indicators for establishing sustainable forest management.

Local people have generally been excluded from participating in the decision making process concerning the forest. The non-involvement of the local people in the forest management has contributed to the poor forest management. The local people must therefore be involved in the management of the forest resources.

Timber certification is becoming another way of inducing logging companies and other stakeholders to insure better forest management in timber exploitation and also to induce the level of deforestation. Environmental conscious countries, such as Northern European Countries are asking for certified timber but the Asian countries are not very much concerned with certified timber. Timber exports to Asia countries are increasing. The diversion of timber trade to Asian countries may not change the management practices in Africa unless countries are also able to obey the sustainable management norms. In 1995, the Far East took the largest share (33.08 %) of timber exports from Cameroon. Italy took 22.35 %, and France was third with 16.87 % of Cameroon's timber exports. As Asian market form part of global timber trade and can absorb much more species and even lower quality timber, it means that the impact of logging will sharply increase in the near future.

So far timber certification process is just beginning in African countries. It has potential to catalyse changes in timber exploitation, as it puts in place a process of standard setting involving all stakeholders. Yet the governments must in the first instance assume their responsibility of designing sound forest policy and implementing good forest management. Logging companies should be able to operate in a stable and good economic and financial environment, as much as they must equally be 'legally forced to implement good long term forest management'. Proper forest management is a function of the government implementing appropriate policies effectively.

Cameroon's wood is demanded both domestically and externally. The law tends to limit domestic access to wood products from individuals and communities. Yet timber export trade is very important. Studies show that the impact that of certification on forest management may not have the desired effect if domestic wood market is excluded. This means that certification must include all timber trade for both domestic producers and consumers, and foreign consumers of timber products. However, the process of timber certification is just being initiated in central African countries.

### 9.1) Revenue and Pricing

Forest revenue or forest pricing system is a set of fees imposed or levied for forest use such as stampage charges (royalties), concession fees, stamp fees, environmental fees, licence fees etc. These refer to user fees for forest products, although we may use the term tax to refer to export and import duties.

Concession policies relate to supervision management, tenure of forest concession.

- Low forest fees  
Concessions are usually sold at very low prices, far less than what the buyers are willing to pay. And the low forest fees become incentives for wasteful forest use.
- Low concession rates  
Less than 1/5 of what should be collected (World Bank 1980 a and b) partly due to lack of equipment to calculate the stampage fees

A weak forest pricing has tended to discourage sustainable forest management. Over cutting may be stopped by designing proper fees, which reflect alternative and environmental values of timber and forest-land, and opportunity cost of logging.

Proper forest pricing can strongly contribute to financial sustainability of tropical forest partly by producing revenue necessary/required for the forest management and protection, and minimise damage to the forest and the residual stand, increased forest and forest products utilisation. Equity in the distribution of benefits and costs among government, local communities, forest users etc.

- No market mechanism is used to give out concessions, which are even set too low.
- Weak forest management can even control the logging operation.
- Wasteful logging.

Much of the felled volume is left in the forest. While if loggers could be made to pay per tree (cubic meter) volume of tree felled and those removed, wastage could be reduced.

- Forest theft: Felling more trees than paid  
Felled trees not reported

### 9.2) **Low Forest Revenue**

In 1987, total forest revenue collected for forest fees (all area and volume based fees) averaged 1,603 Francs CFA per cubic meter, representing only 2 % of FOB price of exported logs (Grut et al 1991).

Low forest fees, the posted export log and product prices which volume fees are based on has not changed since 1984.

These low forest fees result to wasteful use of forest wood by concession

### 9.3) **Poor Contribution of logging industry**

In 1995/96, about 811.02 billion CFA Franc worth of export was from Cameroon with 160.53 billion CFA Franc contribution of timber products being about 19.8 % of total export from Cameroon, employing 1370 persons (Eba'a-Atyi).

Sharp increases in contribution to National product from 3.5% in 1989/90, 3.5% in 1991/92, 3.8% in 1991/92, 4.3% in 1992/93, 6% in 1993/94, 6.2% in 1994/95 to 6.7 % in 1995/96 which are for raw timber export contribution.

Total log exported 2.8million m<sup>3</sup>, revenue estimated 28.95 billion CFA Franc, which gives an average of 10.339 CFA Franc of tax revenue per m<sup>3</sup>. This is much below the average market price of 110.350 francs CFA.

### 10) **Conclusion**

The excessive exploitation of Cameroon's forest leads to rapid disappearance of Cameroon's natural resources (forest) and environmental degradation. This is due to too much reliance on the free market that is not functioning well (market failure); but it is also due to government's actions or in-actions which intentionally or unintentionally distort incentives towards excessive exploitation away from conserving or managing Cameroon's scarce natural resources (institutional and policy failures). Analysing each distortion in isolation and separately gives much clarity but in reality such distortions or inefficiencies are often presented simultaneously and may influence each other.

To some extent the differences between these failures are not so distinctive or they are ambiguous as the government is capable of altering the prices to reflect social valuation in production or even in consumption. That is if the market fails because of incomplete information, externalities or the presence of public goods the government can correct these market failures. But as the government fails to make these corrections, or establish institutions that function properly, the situation becomes that of policy failure. Even situations of free markets may require proper management.

The literature on inefficient resource allocation in developing economies seems to concentrate much more on policy failure than on market failure (Pearce et al 1994). For one

thing, before correcting for social costs, market prices have to be first established. In most cases there are poor institutional framework for social cost pricing. In some cases political and other institutional considerations may hinder the elimination of some of those distortions. So in assessing a given real-life distortion it must be seen first if it is too costly to eliminate. In which case it can be regarded as institutional facts of life, and then work within the second best option. Hence as in other cases the analysis here demonstrates a serious case of policy failure which has prevented the forest sector from performing its actual role. Thus generating huge costs to the society.

It is therefore equally important to design environmental education programmes in the school system – from primary through to the tertiary level. The specific environmental subject areas such as tropical forests and desertification are now involving many research areas and projects needing strengthening. Furthermore, it is important to promote and maintain training and research activities particularly at the university and institutional levels. The necessity of an increasing critical mass of forest personnel highly trained with required working equipment cannot be over-stressed. In fact, the pay off from such training and research activities on a long-term basis is very high and cannot be over-emphasised since this could help in building up a strong institutional framework. The forest sector has not contributed significantly as it should to the socio-economic development of the country despite its enormous resources and potentials. Internationally some groups are pressing for timber certification. Timber certification involves certifying wood/logs from well-managed system of production that their production meets certain environmental criteria. A sort of "eco-labelling" which would force logging companies to produce wood products efficiently as well as enabling environmental conscious persons to identify wood from environmental well managed systems. Certified timber if feasible would increase the price of timber and reduce the quantity produced. Part of the social costs would be shifted into the private costs. This would reduce deforestation. With more efforts and commitment on the part of the State and the international community the gross inefficiency in the forest sector could be eliminated for the benefit of all.

## 11) Selected References

ADB African Development Bank (1995) "Country Environmental Profile – Cameroon"  
Working Paper No. 16. Abidjan.

Ascher William and Robert Healy (1990) National Resource Policy Making in Developing Countries. Duke University Press, Durham and London.

Cameroon, Republic of (1992 "Environment and Sustainable Development for Cameroon")  
Yaounde Report of Multi-Disciplinary Mission – Yaounde.

Eba'a-Atyi (1997) Cameroon's Logging Industry: Structure, Economic importance and Effects of Devaluation. Center for International Forestry Research – Yaounde.

Henning Daniel H. and William Mangum (1989) Managing the Environmental Crisis: Incorporating Competing Values in Natural Resource Administration. Duke University Press, Durham and London.

Grut Mikael, John Gray and Nicolas Egli (1991) Forest Pricing and Concession Policies  
Managing the High Forests of West and Central Africa. World Bank technical paper  
no. 14

Opschoor J. B. and S. M. Jongma (1996) "Bretton-Woods International Programmes and Sustainable Development" Environment and Development Economics. Vol. 1 part 2  
pp 183-202.

Panayotou Theodore (1993) Green markets: The Economics of Sustainable Development  
ICEG/HIID, ICS Press, San Francisco – California.

Pearce David W. and Jeremy J. Warford (1994) "World Without End: Economics  
environment and Sustainable Development". Oxford University Press, Oxford.

Pindyck Robert S. and Daniel L. Rubinfeld (1989) Microeconomics. Macmillan Publishing  
Company, New York.

Sikod Fondo, A. Ajab Amin and F. Nyamnjoh "Interlinkages between Trade and the  
Environment: a case study of Cameroon" UNTAD/UNDP Project Report.

Tchoungui Roger et al (1995) "Structural Adjustment and Sustainable Development in  
Cameroon" ODI Working Paper 83 London.

