

## PAPERS

# Forest taxation regime for tropical forests: lessons from Central Africa

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### SUMMARY

Intense debates have taken place on the role of forest taxation in forest management and its potential as a component of public policies. Some reforms, such as the introduction of auctions for allocating concessions in Cameroon, have been controversial and their effects are being assessed in different ways by analysts. Empirical analysis and data suggest that two different aspects have often been confused but should be considered separately: the level of taxes and the structure of the taxation system. The heterogeneity of companies has often been overlooked in economic models. The specific context in which the fiscal reform is planned is critical and a combination of instruments – fiscal and non fiscal, economic and regulatory – should be designed and implemented together to create systemic effects. This is rarely possible through a single reform. The potential of fiscal instruments in fostering SFM should not be over-emphasized, but certain possibilities do exist if taxation is not used alone but as an auxiliary in a coherent set of actions and public policies.

Keywords: forest taxation, forest concessions, sustainable forest management, central Africa

## Régime de taxation forestière pour les forêts tropicales: leçons de l'Afrique du Sud

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Des débats intenses ont pris place sur la question du rôle de la taxation des forêts dans la gestion forestière et sur son inclusion possible en tant que facteur dans la politique publique. Certaines réformes, comme l'introduction d'enchères pour l'allocation des concessions au Cameroun, ont été controversées, et leurs effets sont évalués de manières différentes dans les diverses analyses. L'analyse et les données empiriques suggèrent que deux aspects différents ont souvent été mélangés, alors qu'ils devraient être considérés séparément: le niveau des taxes, et le système de taxation. L'hétérogénéité des compagnies a souvent été ignoré dans les modèles économiques. Le contexte spécifique dans lequel la réforme fiscale est préparée est critique, et un ensemble d'instruments, fiscaux ou non fiscaux, économiques et réglementaires, devraient être conçus et mis en pratique ensemble, pour créer des effets systémiques. Cela est rarement possible par le truchement d'une réforme unique. Le potentiel des instruments fiscaux dans la prise en charge de la SFM ne devrait pas être suréstimé. Cependant, certaines possibilités existent réellement si la taxation n'est pas utilisée toute seule ; mais en tant qu'auxiliaire au sein d'un groupe d'actions et de politiques publiques.

## Régimen fiscal de los bosques tropicales: lecciones del contexto centroafricano

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Ha habido debates intensos sobre el papel que deben desempeñar las cargas fiscales en el sector de la gestión forestal y su potencial como componente de las políticas públicas. Algunas reformas, como la introducción de un sistema de pujas para el reparto de concesiones en Camerún, han sido polémicas, y los analistas están evaluando diferentes aspectos de sus efectos. El análisis empírico y los datos sugieren que hay dos aspectos diferentes que a menudo han sido confundidos pero que deberían considerarse de forma separada: el nivel de los impuestos y la estructura del régimen fiscal. En muchas ocasiones se ha pasado por alto además la heterogeneidad de las empresas en los modelos económicos. El contexto específico dentro del cual se planifica la reforma fiscal tiene una importancia fundamental, y una combinación de instrumentos – fiscales y no fiscales, económicos y reguladores – debe ser diseñada e implementada de forma conjunta para así poner en práctica efectos sistémicos. Pocas veces resulta posible lograr esto a través de una sola reforma. No se debe subestimar el potencial de los instrumentos fiscales para promover la gestión forestal sostenible, pero existen ciertas posibilidades con tal de que las cargas fiscales no se utilicen de forma aislada, sino como instrumento auxiliar dentro de un programa coherente de acciones y políticas públicas.

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## INTRODUCTION

One of the main objectives of a tax system is to collect revenue for the State and local governments. The tax system should also foster resource valuation by limiting wastes and adding value to the products. It is a tool that the government can use to adjust access costs to forest resources. The level of taxes should remain compatible with profitability of enterprises but should also be used to induce the operators to either improve their performance in sustaining the value of the resources, or withdraw from the forest sector if they cannot cope with new requirements.

### “Capturing the forest economic rent”

Specific taxation regimes generally apply to natural resources. It is commonly acknowledged that exploitation of natural resources such as ore, fish or timber is likely to generate an economic rent. The economic rent is the difference between the return derived from a factor of production and the remuneration needed to keep this factor in its same use.<sup>1</sup> In other words, economic rent is equivalent to excess profits, beyond the “normal” profit. Why are natural resources believed to generate rents? There are two basic assumptions, both derived from the Classical economic theory:

- Natural resources, priced as commodities on global markets, are a “gift of nature”, *i.e.*, no investment costs have been devoted to produce them, even if extracting them has a cost;
- Since the market price is given by the extraction cost of the marginal unit of resource, there is a range of differential rents enjoyed by the resource owner, depending on various factors (*e.g.*, location and quality).

Such a hypothesis can be debated and somehow alleviated, but it is the common background on which the existence of the natural resources economic rent is based. As the official owner of forests in most tropical countries, the government should try to capture the forest economic rent (FER) through various fiscal schemes. It must be pointed out that the FER is, potentially high, especially high when primary forest is logged, since this type of forest yields the benefit of centuries of biomass accumulation which will not be reconstituted under the common 25-40 years felling cycle enforced in managed forests in tropical countries.

In theory, the Government could capture the full FER using an appropriate corporate tax on revenues. However, there is asymmetrical information between the governments and the companies regarding the genuine costs borne and profits enjoyed. In addition, thanks to “fiscal optimization”, companies are able to lower their declared benefits and corporate taxes can be drastically reduced. For this reason, governments have put the emphasis on specific taxes and rely only marginally on corporate taxes.

Knowing the magnitude of the FER is particularly challenging. In theory, it is easy since timber is supposed to be a commodity, with prices based on the international market, logging costs that can be determined throughout the territory, and “mobilisation costs” that vary according to transport distance. In practice, however, it is not so simple. Timber is not a “perfect commodity”<sup>2</sup>: international databases are rare and incomplete<sup>2</sup> since there are dozens of species, different qualities, products (logs, sawnwood, veneer, plywood, moulding, etc.) and sizes. The different segments of timber markets are not large enough to harmonize prices and there are no forward markets for timber. Market niches are frequent, and for the same product, prices may vary from one contract to another, depending on the antecedent and quality of trade ties established between both parties (regular supply, quality maintained over time, etc.).

In addition, in many tropical countries (namely the Congo Basin and Southeast Asia), companies are vertically integrated and process logs into a range of products, some of them being no longer “commodities” but manufactured items. Thus, the magnitude of the FER can also be very sensitive to the efficiency of the timber process in the different industries, an efficiency not only reducible to the apparent wood volume recovery rate (for instance furniture-making might face a low wood volume recovery rate compared to plywood but its production often generates much greater added value, due to potential prices enjoyed by high quality furniture).

As a result, assessing precisely the FER magnitude is often a difficult exercise to set the “optimal tax level” which could capture the full economic rent for the government without hampering the forest industry. Tax levels are generally set by trial and error, and governments sometimes face “black boxes”. And since relative prices are subject to permanent change, the amount of FER captured by a given tax level is subject also to change: when timber prices rise, proportionately less economic rent is captured; but if energy prices rise more than timber ones, a rigid tax rate can lead to a situation of excess taxation, with remaining profits falling below “normal” levels. Cameroon was faced with such a situation in early 2006, before the escalation of timber prices beginning mid-year. Facts are dynamic in this respect; moreover, since industrial processes also need to be taken into account, the companies have their own capacities to respond to change in fiscal pressure and relative prices, through better management and technical or commercial innovation. In other words, companies have (differential) capacities to re-create economic rents, especially when they operate on the international market and they have a production diversification potential. Such empirical evidence suggests that, beyond the primary function of “collecting the rent”, the overall tax level may have a dynamic impact on companies’ strategy and behaviour. We shall come back later to this point.

A recurrent debate has opposed economists regarding the

<sup>1</sup> This reflects Alfred Marshall’s notion of rent as synonymous with “producer’s surplus”.

<sup>2</sup> The only free information source is the ITTO’s Market Information Service, which gives a twice-monthly list price of selected products, significant but far from being comprehensive.

impact of the level of taxation on loggers' behaviour *vis-à-vis* forest management quality. First, there is economic evidence: the more profitable logging becomes, the larger the national area of forest attractive for loggers is likely to be (less self-protected areas). Some arguments emphasize the perverse incentives generated by excess profits allowed by low tax levels: loggers will disregard any type of improvement such as reduced impact logging (RIL) or careful layout of skidding trails, which reduces ecological damage and is likely to save some money in the long term, but which implies significant management change at the company level. The same outcome is expected in the processing industry: why waste time and energy in investing in diversification and optimal use of by-products if the activity is profitable enough when "doing business as usual"? In short, "rentiers" are not innovative, and if sustainable forest management (SFM) has to do with innovation, then rents must be seized.

The other side argues that a non-profitable timber company will not have the capacity to invest in a high-standard management plan, training workers to achieve RIL, afford modern processing facilities and prospect new markets for lesser-used species (LUS). As an example of the ambivalence of insufficient profitability, it is clear in West and Central Africa that many European companies during the period of low timber prices in the 1980s abandoned improved forest management practices (such as planning road and skid trail networks) that they had used in the past.

Apparently similar causes (excess profits on one hand, falling profits on the other) do not always produce the anticipated effects.<sup>3</sup> We might provisionally close this debate on the influence of rent-sharing in forest management by citing this pragmatic opinion: "*It is an empirical question, however, whether the national economy and poorer local populations gain more from private harvests, private rent capture, and re-investments, than they would from the Forestry Ministry's resource management and rent capture. How much would private interest reinvest locally, how much would private operators transfer to secure accounts overseas? Alternatively, how much resource rent would the Forestry Ministry dissipate in hidden personal transfers, excess employment, poor financial management, and insufficient environmental awareness? (...)*" (Hyde & Sedjo 1992).

Redistribution in favor of the state and at the expense of the operator (high tax rates) will thus have no predictable influence on the practices of operators as a whole (everything will depend on the context and the many parameters that may be completely specific to the operator). This heterogeneity of the companies is a key issue, and is often not well perceived by reformers (who consider "the industry" without distinction). Providing it does not exceed a threshold above which the activity is unprofitable for all, a significant fiscal pressure acts as a **selection factor** amongst the companies, driving the less efficient out of business (provided laws are enforced

and control is effective). In a context of rising standard levels for achieving SFM, a tougher tax policy accelerates the concentration of the industry, leaving only those able to cope with demanding SFM standards (e.g., FSC certification) and who can afford to pay high taxes (since they have certain capacities to re-create economic rents). This sounds good for sustainability, but it can also be viewed as a threat by local entrepreneurs and national politicians wary of foreign capital domination in the forest sector.

### Why tax structure matters

It has been suggested that since forest taxes are not levied on damages but on production (or the surface bearing the production), it is not possible to use them as "eco taxes" (Leruth *et al.*, 2001). But, to varying degrees, any fee or tax has its own set of incentives, and can be used to collect economic rent and/or be an element of a field control system. The other, and often ignored, dimension of forest taxation is its structure along the commodity chain. This is where levers for amending company practices can be found.

For a given level of fiscal pressure, taxes can be collected at different stages, applying in particular to:

- the surface area conceded (area fee or royalties);
- the Annual Allowable Cut area, generally equal to 1/30<sup>th</sup> of the full concession area;
- the stumpage volume, as it is derived from inventories and valued according to the commercial value of the stand;
- the felled volume, with differences among species according to their contrasted commercial value;
- the (valued) volume of logs entering into the mill;
- the (valued) volume of processed products; and,
- the forest products exported (logs, sawnwood, veneers, plywood) valued at their FOB prices.

Some of these taxes can also be modulated according to the location of the concession in order to offset differences in transport costs. Forest taxation is never limited to a single tax, and its structure may be somewhat complicated. In the early 1990s, some economists advocated a dramatic simplification of the forest taxation structure in Africa, suggesting only an area fee (the easiest to monitor), preferably set through competitive bidding (Grut *et al.* 1991). But this idea proved to be unpractical: with a single area tax calculated upfront, forest taxation would be reduced to a fixed cost whereas the cash flows of companies vary with price changes, weather conditions, security, possible conflicts with local populations, etc. Too many fixed costs would be incompatible with the economically hazardous nature of tropical forestry. The private sector tends to prefer taxes proportional to their economic activities, namely felling taxes and export duties.

However, some empirical evidence shows that moving taxation upstream can have a positive impact regarding waste reduction and sustainability. It is, for instance, more advisable to set the taxes on (valued) volume entering the mill than to tax exported processed products: taxing the raw

<sup>3</sup> Since the mid-1990s, in the light of a more favourable economic situation, various logging companies in Central Africa have taken on forestry experts to improve their planning.

material rather than the output gives the timber processor an incentive to invest in increasing the rate of wood recovery. Such a change has been observed in Cameroon since 2001. But whilst this principle is relevant to this context, the control of timber entering the numerous mills spread across vast territories proved to be more difficult than expected (even though controlling the logs entering the mills ought to be part of the plans to fight illegal logging).

For other taxes, it is necessary to describe some features of the “logging sustainability issue” in high forests of the Congo Basin. Logging practised in remote forests (high transport taxes) is very selective, with, on average, one to two trees felled by hectare (but many more destroyed to get access to and extract them from the plots). Such ‘creaming’ of forest stands is not a direct factor of deforestation, but it can lead to biological erosion as it generally targets a handful of species. One side of the “sustainability issue” can be characterized as follows: overexploitation of some commercial high value species, and disregard for several abundant LUSs that could at least partially substitute the volume of principal species harvested (the logging of which is encouraged by high standard management plans).

In this respect, area fees and felling taxes can be utilized as levers to modify, to some extent, loggers’ choices. Increasing the tax rate on higher value species (in addition to setting silvicultural regulations in the forest management plans such as raising minimum felling diameters) and lowering tax rates on some abundant LUSs may result in a more balanced mix of harvested species.

Regarding the area fee, it is difficult to predict what impact a higher tax level would have (for an equal overall fiscal pressure). The first idea is that higher area fees provide incentives to logging intensification (*i.e.*, more trees harvested per surface unit on average), as in agriculture. Such intensification, provided it is done within the framework of well-designed forest management plans that include RIL can even increase forest regeneration in many semi-deciduous forests, with commercial light-demanding species (Fredericksen & Putz 2003). But it cannot be practiced in every forest, by any company, and disregarding market conditions. If intensification is neither desirable nor even possible, a higher area fee simply means fixed costs replacing variable ones (*e.g.* export taxes), and constitutes a higher risk for the industry.

At the same time, higher area fees send a signal of greater resource scarcity to the players. The announcement of an increase in area fees, from almost nil to US\$ 1.00 in 2002 in DRC, contributes to the return to the State domain of 25 million ha of low production concessions which until then had been retained by individuals for speculation purposes. Contrary to conventional wisdom, high area fees do not penalise large concessions but rather “under-exploited” ones, since what matters is the fiscal burden per cubic meter of yield, not the average tax per hectare.

This scarcity signal embodied in a higher area fee spreads its effects all along the commodity chain: with raw materials getting more costly (adaptations such as intensification take time, and their effect may be limited), the industrial

operator is more likely to increase wood recovery rate and/or the added value of its production (by valuing by-products, for instance). On the other hand, such a multiplier effect associated with upstream taxation can also have undesirable and indirect impacts on local wood consumption patterns. In a country like Cameroon, since the tax burden has moved (and increased) from downstream (there is no more export tax on processed products but logs are taxed at the mill gate) to upstream (with higher area fees when set through loyal competitive bidding), the sawnwood sold on domestic markets bears the same production cost (including taxes) as the exported one. Consequently, impoverished African consumers cannot afford to pay the price for this industrial production and is more likely to turn to the informal sector.

Last, but not least: in practice, the restructuring of forest tax patterns is rarely “neutral” in terms of fiscal burden: and since governments keep looking for increased fiscal revenue, restructuring and raising fiscal pressure are often associated – and often confused by observers. As we have seen, companies do not have the same capacity to re-create rents, and for many of them higher area taxes mean a narrower “profitability perimeter”. This profitability perimeter (or the area inside the economic rent frontier) has often been assimilated to a surface of profitable forest. But in highly diversified natural tropical forests, the profitability perimeter also needs to be considered according to the range of harvestable species: higher fixed costs (*i.e.*, area tax) mean fewer harvested species (only the most valuable can absorb the higher costs). This means more “creaming” – except if corrective measures are adopted in the meantime, such as reducing felling taxes on abundant LUSs, as was suggested in 2006 by an economic study (Karsenty *et al.* 2006) and is currently considered by the Cameroonian government.

### **Bidding and risk: is there a “winning curse”?**

As we mentioned above, there is asymmetrical information between the regulatory authority (the government and its experts) and companies regarding the magnitude of FER which the latter benefit from. The difficulty is compounded by the heterogeneity of the companies,<sup>4</sup> the differences in richness and remoteness of forest stands. Setting a “right level” for an area fee is the more difficult as such a tax both has the potential to send important signals of resource scarcity and is a potential risk to the industry as a fixed cost. In recent years, the majority of conflicts with the private forest industry were related to the level of area tax (in Gabon, Congo, DRC, Cameroon...).

These reasons explain the present shift away from the setting by the Administration of the area tax level setting towards a competitive bidding system. Among the advantages of this latter approach, one expects a simplification of tax recovery (less control), greater transparency (fewer arbitrary allocations), a reduction of differential economic

<sup>4</sup>Since each company has its own “industrial equation” which makes different the effective commercial value of the same forest depending on who manages it

rents linked with location (bids would be higher in low-cost transportation areas compared to remote or land-locked areas, all things being equal), an incentive to reduce wastes (in logging and processing) and a disincentive to speculation (adjustment between logging capacities and size of the requested area).

Concession allocation through bidding has been encouraged by the World Bank in reform packages, and such a procedure is in force in Cameroon since 1997.<sup>5</sup> The current allocation system is based on an examination of a technical offer (with an eliminatory threshold) with a weight of 30% in the final computation, and a proposal for setting the per hectare annual area fee, with a weight of 70%. There has been a floor price equivalent to € 1.5 per hectare since 2000. Normally, bidders commit themselves to pay the area fee they proposed for the entire contract duration (15 years, renewable), which made this case almost unique worldwide (contracts are generally shorter). Normally, area fees should be updated on a regular basis to reflect domestic inflation, but this has not yet been the case.

The bidding system has been fought against by prominent operators including the best known ones. “Insiders” were very reluctant to give up their long-time established network of patronage and face competition. Not surprisingly, “outsiders” have another view. A new generation of companies, generally more efficient, have seized this opportunity to enter the Cameroonian forest sector. Obviously, once they become insiders, they will be prompt to coalesce with the other players to claim for tax cuts.

Some lessons can be drawn from the Cameroonian experience:

1. The area fees proposed by private operators in a market-based environment – € 4-6 per hectare a year in average, and up to € 13 for “good” forests – are far higher than area fees initially calculated by the government under the administrative system. This result was unexpected for most observers and reveals not only the value of Cameroon’s forests on international markets, but also, to some extent, the windfall earnings that neighbouring countries were and are still experiencing;
2. One objection to the reform was that, without a comprehensive inventory of the whole forest, commercial concession values would remain largely unknown and the auction would be impracticable. In fact, though the lack of a comprehensive inventory is a handicap, companies are relatively well informed of the composition of the forest auctioned, often previously exploited at low intensity. Nevertheless, the setting of the floor price was a tricky matter during the reform process. After being set at approximately € 2.5 per hectare, it has been lowered

at approximately € 1.5 to take into account “the less favoured concessions” with lower potential commercial value.

3. In fact, the floor price matters only in few situations, perhaps in less than 10% of the cases. When competition is real, the proposed price is significantly above the floor price (from € 4 to 6, in average, and sometimes higher). However, it sometimes happens that there is only one bidder in the allocation process for a particular concession and that his bid is only slightly above the floor price. This is often due to the fact that he has been informed – against existing regulations – that he is alone in the race. Sometimes, there is no proposition at all, which may indicate the floor price is too high.
4. The auction system has been effective in capturing most of the economic forest rent and both government and local council revenues (entitled to 50 % of the annual royalty) have increased. The structure of forest taxes has changed with most of them concentrated upstream; this is consistent with the decline of roundwood exports due to the progressive implementation of a partial log export ban since 1999.
5. A 2006 economic study (Karsenty *et al.* 2006) found many indications that some recently allocated concessions (particularly in 2005) were marred by new irregularities, as demonstrated by the strong correlation between the abnormally low level of financial bids and the many cases where only one bidder was selected at the stage of bid evaluations (all other candidates were eliminated for “insufficient” technical scores). Such a situation simply confirms the fact that any mechanism for the award of an economic asset can end up being diverted. Another lesson is the fact that the “technical” component of the bidding system gives way to manipulations fuelled by corruption, and public opinion (including the civil society and some analysts) is still reluctant to accept the idea that the financial offer is the only component that cannot easily be manipulated.
6. The increase in the costs of access to the forests sparked a range of responses. Some companies attempted to enlarge the range of species harvested, provided they could find new markets for them. The most efficient wood processors have been able to diversify their finished or half-finished products. Recovery rates have globally increased, as several operators have moved toward valorisation and marketing of by-products (including moulding, flooring, etc.). Other wood processors have decided to increase the share of out-sourced raw material, and with the weakness of control by the Forest Service (including widespread corruption), contractors are often national entrepreneurs who access the forest through different ways, often illegally, and with no forest management activities at all.
7. The traditional contrast between regulation and

<sup>5</sup> The first round was most disappointing for the World Bank since robust rules were not implemented at this time. New allocation rounds resumed in 2000, with better designed allocation rules and the appointment of an Independent Observer.

economic instruments does not make sense here. As we pointed out, two types of response exist: one (type 1) is potentially favourable to SFM and is based on forest productivity increase (compared to the high-grading initial situation), waste reduction, increase of efficiency in wood processing, and attempt at market innovations. The other response (type 2) threatens SFM. It includes outsourcing, fiscal evasion and illegal logging. In fact, depending on the pressure they feel from the regulating authority, most companies tend to mix “type 1” and “type 2” strategies in varying proportions.<sup>6</sup> An appropriate policy, backed by a strong political will, has to enforce strict regulations in the field to block the “type 2 response”, and apply economic instruments such as a bidding procedure and an incentive-oriented taxation regime.

However, the competitive auction system has some inherent risks, which are exacerbated by the excess of installed capacity and the lack of information during the launching phase. The heterogeneity of forests, in terms of occurrence and distribution of commercial species, of timber quality and of proportion of unproductive areas, is not always taken into consideration in forest inventories (both reconnaissance and large scale) and an information asymmetry is always present in a context of limited public information. The companies’ adaptation capacity to diverse characteristics of the resource depends on a number of factors, including capital availability, access to markets and the efficiency of the processing capacity. These features are not always under the control of firms that often have limited access to information, limited capacity of anticipation and can make wrong assessments, all limiting factors that can cause risks of overbidding.<sup>7</sup> Some operators argue that given the fluctuations of the international wood market and the unstable institutional and legislative conditions of the country, it is impossible for them to correctly reveal their willingness to pay based on expectations on future economic rent. Furthermore, having to pay a fixed annual area fee – as it is the case in Cameroon – when a large part of the cash flow is determined by international volatile prices exposes the concession holder to high risks when the market is down.

Based on the above considerations, competitive auctions should not be implemented alone. Targeted fiscal measures aimed at reducing the risks incurred on versatile international markets should be introduced. The following set of measures is to be considered:

- Financial means should be given to the Forest Service (or to private firms acting on its behalf) to undertake **survey inventories** aiming at providing accurate **public information** of the commercial potential of the resource to be auctioned. In addition, sufficient

time has to be given to allow potential bidders to make their own surveys.

- **The area fee should be linked to the international price of tropical wood** through the creation of a basket of forest products (logs, sawn wood, ply and sliced veneer, plywood) from different species on which a wood price index updated yearly would be based.<sup>8</sup>
- **Export, felling and sawmill entry tax** on secondary species could be significantly reduced in order to promote diversification of these species to counterbalance potential high-grading due to higher fixed costs deriving from SFM implementation. And if the forest management plan reduces the potential yield (through increase of the minimum exploitability diameter on main species) after the auction (unexpected reduction), a corresponding reduction in the area fee can easily be calculated.
- **A reduced area tax** could be granted to firms that go beyond legal requirements and get independent certification of their forest concession. The government will have to decide what certification system it will endorse and what the duration of the tax rebates for certified firms will be. It is clear that this measure would strongly increase certification which in turn will result in an acceleration of forest management plan implementation, a pre-condition for certification.
- Management plans under preparation will define productive and non-productive areas within the concession. If the allocation is not made through bidding, it would be advisable to have the **area fee paid only on the productive areas** once the management plan is ready and approved (it would also provide an incentive to achieve readily the forest management plan).
- **Transferability of concessions** (already in force in Cameroon) at auctioned prices should be facilitated with minimum interference of the administration. In case of evident overbidding (payment default), the operator must return the concession without delay and the possible non compliance with forestry rules must be sanctioned adequately.

This set of measures can be considered as a useful way of “fine-tuning” the fiscal regulatory framework following the consolidation of the competitive allocation process. They are inspired by the need for risk reduction, performance recognition (certification), diversification, levelling of the playing field conditions and fair treatment of law-abiding

<sup>6</sup> Even though a handful of companies are clearly committed toward SFM and globally comply with the new regulation system.

<sup>7</sup> Vincent *et al.* (2003) speak of a “winning curse”.

<sup>8</sup> Such a mechanism has been mentioned as a possible means of reducing risk associated with the volatility of international timber prices in Karsenty (2002), and was also put forward by Vincent *et al.* (2005). Given that operators might be reluctant to disclose their prices to competitors, it is important to work with a price index. This type of information provided by ITTO twice a month for a dozen of African species (logs and sawnwood) could be used as a starting point.

operators. If implemented, they would reduce fiscal revenue in the short-term. At the same time, they should spur a sounder and more vigorous growth of the sector which in turn would benefit the whole economy and counterbalance the initial reduction in revenues.

**BOX 1** *Providing fiscal incentives for certified concessions: a realistic “performance bond” scheme*

The increase in cases of tax evasion, or attempts to do so, is also an expected – and obvious – outcome of a higher fiscal burden unless controls become more rigorous. The area tax is less favourable for tax evasion, but “non complying” loggers look for other ways of escaping payments on logs harvested in or outside the concession (felling taxes) or without declaring (and paying taxes on) logs entering the mills. To counter such a tendency, financial rewards could be given to concessionaires who comply with the law and commit themselves to independent auditing based on performance, *e.g.* forest management certification. One could consider that a concessionaire who invests in independent auditing certification places himself under scrutiny and invests in its “reputation”. Certification is both a difficult and long process and easy to lose quickly. Compliance with law is the first requirement for internationally recognized certification schemes and works as an ally for the forest service with respect to law enforcement. Thus, **tax cuts for certified concessions would be a wise policy**, and would return fractions of the captured economic rents to operators complying with the law, allowing them to offset the cost of their organizational investments and diversify their harvests, in line with management plan prescriptions.

To convince governments to give up such tangible fiscal revenues, the international community could propose to compensate governments for the foregone revenues derived from the amount of area certified. This seems a realistic way to take up the idea embodied in the so-called “performance bond” scheme suggested by several authors (Blakeney 1993, Leruth *et al.* 2001) but whose implementation seems most difficult as long as it does not take into account the dynamics of independent certification schemes.

**Export duties, log export bans and the case for auctioning log export rights**

Export levies are the easiest to collect (“no payment, no sale”) and here, in principle, opportunities for fraud are the fewest. For these reasons, it would seem advisable to have them play a significant role in any taxation system. The main problem is to determine the appropriate level of tax: if it is too high, it will discourage exporters, while if it is too low, the government will lose revenues.

Bans on log exports (or excessive taxation of exports) are economically unsound (because of the opportunity cost of processing locally under lower technical conditions, or because of limited intelligence of the needs and market conditions) and dangerous from the perspective of resource management (because they rapidly induce processing

overcapacity). A free regime of log exports (or with moderate taxation) hinders the development of local companies required for the countries’ economic take off, and does not guarantee improved management of forest resources. A “limited protection” through a pre-determined flow of exported logs appears to be the best compromise. Controlling the flow according to the efficiency of local enterprises may prove effective in monitoring the forest sector.

Governments can regulate the flow of logs exported through export taxes and/or quotas aiming at supplying minimum raw material to national industries at a price adapted to local processing capacities. A national quota of log exports can be set yearly and distributed between different exporters according to objective and transparent criteria. If and when the national administration capacity allows, these quotas have to be auctioned for the sake of both economic efficiency and transparency of allocation procedures. This would result in the implementation of a national market of log export rights, which can be regulated by the Government who decides the quantity of rights which can be auctioned annually.

**BOX 2** *The opportunity cost of the log export ban*

Log export bans for the most valuable species have an economic cost, as specific qualities of logs – most often the highest quality – are processed rather than exported. The economic cost is generated by low processing efficiency which causes a given log to lose economic value in the processing compared to selling it as logs on the international market (to be processed in more efficient sawmills abroad). Not all timber processing entails a loss of added value, as there are efficient plants with good wood processing rates able to fetch high prices for their products. However, there is still a portion of the industrial sector which is not very efficient.

According to customs statistics, the average declared FOB price of sapelli sawnwood exported from Cameroon was CFAF 274,250 per m<sup>3</sup> in 2003 (equivalent to € 418 per m<sup>3</sup>, but listed at € 487 per m<sup>3</sup> by ITTO-Market News Service in 2003). The FOB price for Congo Basin sapelli logs was listed as € 206 per m<sup>3</sup> for “B” quality by ITTO-MNS in 2003. The recovery rate in simple sawmills (*i.e.* without drying facilities or industrial carpentry for by-products re-utilization) is 32% on average (Fochivé 2005). Sapelli logs which have been processed in these mills could have been exported for a minimum of € 200 (above the € 175 FOB price given by ITTO for “B/C” quality). The average round wood equivalent value of sapelli exported as sawn wood is € 134 per m<sup>3</sup> using customs value and € 156 per m<sup>3</sup> using ITTO value. Thus, the likely opportunity cost is € 66 per m<sup>3</sup> in the first case and € 44 per m<sup>3</sup> in the second case.<sup>9</sup> If these same logs were sold in the international market as B/C quality, they would still be earning higher profit than they would as sawn wood. The reasoning does

<sup>9</sup> Net benefits (sales minus costs) rather than gross value of sales would be a more appropriate indicator of opportunity cost of the log ban. However, if the net benefits were used, results would likely provide a similar indication.

not change if applied to a more efficient segment of the industry with higher processing efficiency.<sup>10</sup> What varies is income distribution.

With a higher volume of exported logs, a greater part of the forest rent goes to the public treasury, as taxation is heavier on logs as compared to processed products. Under a log export ban and given a low processing efficiency, the share of the economic rent going to the industry could probably be greater as compared to a free trade situation. A more comprehensive analysis on added-value generated by the processing industry would need to be carried out in order to make a reliable assessment.<sup>11</sup>

**Conclusion: the value of forest taxation as an auxiliary tool for sustainable forest management should not overestimated nor overlooked**

The structure of the tax system should be simple enough to reduce the numbers of opportunities of tax evasion, disputes or abuse of power, and at the same time to limit administrative costs. Tax systems should, at the very least, include area fees, stumpage fees (or felling taxes) and export taxes. The administrative costs/tax revenues ratio cannot be used as the only criterion to evaluate the taxation system of a country. Taxes collected in the field, referred to as stumpage fees or felling taxes, contribute to the forest administration outreach in logging areas and thus help control illegal logging by either entitled companies or illegal loggers in production areas. Collecting this kind of taxes helps structure the administration and therefore contributes to delivering public goods (logging control), justifying the use of several criteria to evaluate the taxation system.

Taxes can also be used as incentives, i.e. by encouraging economic agents to implement practices contributing to the sustainability of forest ecosystems, thus performing beyond the minimal requirements of regulation.

Because of this double function played by the tax system, only a part of the forest tax can be considered exclusively as an incentive. The other component (rent collection) may also entail incitation aspects (particularly when its structure is appropriate) but is not conceived to fill this objective. For these reasons, the potential of the fiscal instrument for fostering SFM should not be over-emphasized. But, as we have tried to suggest here, there is a real potential for the fiscal instrument in this respect, provided it is not used

<sup>10</sup> It should be kept in mind that a recovery rate of 45 – 50 % in sawn wood can be reached by adding by-product output to the standard product (which has a higher price as compared to by-products). Also, some companies obtain high recovery rates on the main products by selecting only the highest quality logs for processing. In this case, processing efficiency would be higher, but so would be the opportunity cost associated with logs which are not exported.

<sup>11</sup> This analysis should assess the positive impacts on added value of establishing a log export ban which includes wage distribution and industrial capital remuneration against a reduction in transportation activity due to lower volumes.

alone but as a component of a consistent set of actions and public policies.

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