



## **Forest Concessions - Past Present and Future?**

**Disclaimer**

The Forestry Policy and Institutions Working Papers report on issues in the work programme of Fao. These working papers do not reflect any official position of FAO. Please refer to the FAO Web site ([www.fao.org/forestry](http://www.fao.org/forestry)) for official information.

The purpose of these papers is to provide early information on ongoing activities and programmes, to facilitate dialogue and to stimulate discussion.

The Forest Economics, Policy and Products Division works in the broad areas of strengthening national institutional capacities, including research, education and extension; forest policies and governance; support to national forest programmes; forests, poverty alleviation and food security; participatory forestry and sustainable livelihoods.

For further information please contact:

For further information, please contact:

Cesar Sabogal  
Forestry Officer  
Forestry Department, FAO  
Viale Delle terme di Caracalla  
00153 Rome, Italy  
Email: [Cesar.Sabogal@fao.org](mailto:Cesar.Sabogal@fao.org)  
Website: [www.fao.org/forestry](http://www.fao.org/forestry)

Comments and feedback are welcome.

# **Forest Concessions - Past Present and Future?**

**Berty van Hensbergen**

Consultant

**Food and Agriculture Organization of the United Nations**

**Rome, 2016**



# Table of Contents

|       |  |    |
|-------|--|----|
| 1     | Executive Summary .....  | 1  |
| 2     | Introduction .....   | 7  |
| 2.1   | Background .....   | 7  |
| 2.2   | Objective .....  | 8  |
| 2.3   | The Concession System .....  | 8  |
| 2.3.1 | Forest tenures and forest rights. ....   | 11 |
| 2.3.2 | Concessions and responsibilities .....   | 11 |
| 2.4   | Concessions and their benefits. ....   | 12 |
| 2.4.1 | Concessions and sustainable forest management (SFM). ....                      | 12 |
| 3     | Concessions around the world: successes, failures and lessons learned .....    | 14 |
| 3.1   | Concessions in Latin America, West and Central Africa and Southeast Asia ..... | 15 |
| 3.1.1 | Where are the concessions? .....   | 16 |
| 3.1.2 | What are the benefits of concessions? .....                                    | 18 |
| 3.1.3 | Concessions as a means for protecting forests .....                            | 21 |
| 3.2   | Public forest concessions in other regions .....                               | 22 |
| 3.3   | Why are some concessions more successful than others? .....                    | 23 |
| 3.3.1 | Small concessions versus large concessions? .....                              | 24 |
| 3.3.2 | Are community held concessions more successful than others? .....              | 26 |
| 3.4   | How can forest certification help? .....                                       | 27 |
| 3.5   | What have tropical forest concessions achieved? .....                          | 31 |
| 4     | Why is tropical forestry so difficult?? .....                                  | 32 |
| 4.1   | The diversity dilemma? .....   | 32 |
| 4.2   | Economics of tropical forest management .....                                  | 36 |
| 4.3   | The role of markets .....  | 38 |
| 4.4   | Why have governments failed to keep the value in the country? .....            | 41 |
| 4.5   | Tropical forestry and self regulation? .....                                   | 43 |
| 4.6   | Illegality .....   | 44 |
| 5     | The future of concessions .....  | 47 |
| 5.1   | Scenarios for the future of tropical forest management .....                   | 47 |
| 5.2   | What is wrong with the concession model? .....                                 | 52 |
| 5.3   | Rights based approaches .....  | 53 |
| 5.3.1 | Workers rights, treatment of workers and health and safety .....               | 55 |
| 5.4   | The role of certification .....  | 56 |

|       |   |    |
|-------|---|----|
| 5.5   | Towards a new model for tropical forest business ( <i>Concessions 2.0</i> ) ..... | 57 |
| 5.5.1 | Recommendations for an improved concession system .....                           | 57 |
| 6     | Bibliography .....  | 60 |

## List of Figures

|   |    |
|---|----|
| Figure 1 Extent of IFL in 2013 .....  | 30 |
| Figure 2 Diversity of tree species by country.....  | 33 |
| Figure 2 Log abandoned in concession in Cameroon for being too short (<3m).....   | 35 |
| Figure 3 Major trade flows of tropical timber .....   | 39 |
| Figure 4 Volumes of tropical timber for export and for legal and illegal consumption on the local market. ....              | 41 |
| Figure 5 Informally/illegally harvested rosewood and other hardwood logs in Buseko Market, Lusaka Zambia (HJVH, 2015). .... | 44 |
| Figure 6 Workers field accommodation in a concession in Guyana consists of a tarpaulin .....                                | 55 |

## List of Tables

|   |    |
|---|----|
| Table 1 Summary of forest area (1000s ha) and concession areas included in the regional reports. Details in Table 3 .....   | 7  |
| Table 2 Dimensions over which forest resource rights can be allocated indicating broadly how commonly this occurs for each criterion value in the case of concessions ..... | 16 |
| Table 3 Forest revenues by region.....  | 17 |
| Table 4 Natural forest and concession areas in the studied regions (Areas 1000s Ha).....  | 18 |
| Table 5 Volumes of logs harvested and export sales values in selected countries (data from consultant reports) .....  | 19 |
| Table 6 Areas and beneficiaries of the Maya Biosphere Reserve Concessions .....   | 20 |
| Table 7 Some typical social benefits associated with forest concessions. ....   | 29 |
| Table 8 Corrective action requests requiring improved management in tropical forests certified by FSC. ....   | 29 |
| Table 9 Costs of logs in countries of origin and selling prices of boards in the UK of a range of hardwood species.....   | 39 |
| Table 10 Quantities of timber required for a range of products .....  | 39 |
| Table 11 Scenarios for tropical forest management .....   | 49 |

## List of Abbreviations

|       |  |
|-------|--|
| AAC   | annual allowable cut   |
| CIFOR | Center for International Forestry Research   |
| CIRAD | Centre de Coopération Internationale en Recherche Agronomique pour le Développement  |
| CSR   | corporate social responsibility  |
| DRC   | Democratic Republic of Congo   |
| FAO   | Food and Agricultural Organization of the United Nations   |
| FMU   | forest management unit   |
| FOB   | free on board  |
| FPIC  | Free Prior and Informed Consent  |
| FRA   | Forest Resources Assessment  |
| FSC   | Forest Stewardship Council   |
| GDP   | gross domestic product   |
| IFL   | Intact Forest Landscapes   |
| ILCF  | Investing in Locally Controlled Forestry   |
| ILO   | International Labour Organization  |
| ITTO  | International Tropical Timber Organization   |
| NGO   | non-governmental organization  |
| NTFP  | non timber forest product  |
| OHSAS | Occupational Health and Safety Advisory Services   |
| PES   | payment for environmental services   |
| PNG   | Papua New Guinea   |
| PPP   | public private partnership   |
| PUP   | Private Use Permit (Liberia)   |
| REDD  | reducing emissions from deforestation and forest degradation   |
| REDD+ | reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks |
| RIL   | reduced impact logging   |
| SFB   | Brazilian Forest Service   |
| SFM   | sustainable forest management  |
| SRA   | Social Responsibility Agreement  |



# 1 Executive Summary

Concessions as means for allocating rights in relation to natural resources have existed for hundreds of years. In forestry concessions are the dominant means of granting rights in boreal and tropical public forests. In tropical forests concessions have received a mixed press with some cases being heavily criticised and others highly praised by stakeholders.

This report forms part of a review process of the concession system aimed at providing advice on how the concession system in tropical forests can be improved. This review is being carried out by FAO in cooperation with ITTO, SFB (the Brazilian Forest Service), CIFOR and CIRAD. The report is based on three regional reports produced by consultants, discussions during an expert meeting held in Rome in November 2015 and an extensive literature review.

Concessions are one of the many ways in which the owner of forest rights may transfer those rights to a third party. Concessions generally involve a medium to long term transfer of the rights and usually deal with large areas of public forest land. The concession-holder will normally pay for timber rights on a volume extracted basis or on an area basis or some combination of these.

In addition to the rights to harvest timber, most modern forest concessions now include a variety of duties that the concession-holder must fulfil. These duties often include some measure of forest management and silviculture as well as the provision of social services and infrastructure for local communities. For this reason, some people distinguish between forest use concessions and forest management concessions. In practice there is a wide range of rights and responsibilities associated with forest concessions which may be shared between the government and the concession-holder.

In theory concessions offer a means for forest owners (usually governments but sometimes communities or private land owners) to realise the capital value of the forest resource in situations where they have neither the necessary forestry skills nor the capital to finance forestry activities. Governments can use this forest capital to meet a range of socioeconomic and environmental objectives such as, generating foreign exchange, creating employment, maintaining ecosystem services and earning government revenue.

Within the tropical areas encompassed by the consultant reports (Latin America, South East Asia and West & Central Africa) forest concessions cover about 123 million ha accounting for approximately 14% of the publicly owned forest. However there are current differences between the situation in Latin America and the rest of the tropics due largely to the very low concession area in Brazil - which accounts for a very high proportion of the total tropical forest area of the region, while in tropical Africa and Southeast Asia over 20% of public forest lands are under concessions. It should be noted that the situation in relation to concession areas is very dynamic with some countries terminating concession systems while others are starting new programmes.

Concessions have perhaps unfairly been targeted for failures that are more general failures of forest governance and wider societal problems in the countries in which they operate. In particular large concessions owned and operated by well known actors in developed countries are perhaps more likely to come under scrutiny than more secretive or smaller operations.

A generic problem in tropical forestry affecting concession forests, state forests and privately owned forests is the lack of forest management. This lack of forest management is based on the lack of long term objectives for the forest and its resources. Without these objectives no activities are carried

out that are designed to ensure a sustained supply of goods and services from the forest. Forest management plans in the tropics are in most cases harvesting plans and in the best cases these include measures aimed at reducing the negative impacts of harvesting activities. There is rarely any plan to effectively replace the desirable species that are selectively removed so that the effect of harvesting is the sequential economic extinction of commercially important species.

The practice of silviculture in tropical forests can counteract these negative impacts by ensuring the replacement of the commercially important trees. However, silviculture is rarely practiced since the costs of producing seedlings, site preparation, weeding, thinning etc. have often been considered to be a poor investment for a crop that will be harvested in 40 to 60 years. However, recent studies have shown that certain interventions are in fact profitable for the long term investor.

A further problem that besets not only forestry but all sectors of the economy in many developing countries is weak governance. This is exacerbated by the fact that forests, although a very significant land use type in most tropical countries, is rarely given the significance it deserves in government. Thus in Europe more than 90% of forest agencies have a head reporting directly to the minister while in Western Africa only 11% of heads of agencies report directly to the minister. This leads to a situation where forest agencies do not have staff of the calibre required to operate effectively in the marketplace and particularly in relation to evaluating and managing concessions.

As a result of this weakness, concessions may be specifically targeted by unethical companies seeking to exploit weak governance. This may be combined with corruption of poorly paid government employees and a failure of government agencies to collect the concession fees due to them.

In many countries the forest governance system fails to take proper account of the customary rights of forest-dependent people. This leads to situations where concession allocation impacts on the rights of local communities which often results in conflict. At the same time uncertainty surrounding tenure will dissuade concession-holders from investing in the kind of silvicultural activities required to make tropical forest management sustainable.

If an important objective of forest concessions is to raise forest revenues then this could be used as some measure of the success of the concession system. Worldwide, gross forest revenues are rather low averaging about US\$ 6/ha/yr while in Africa the figure is US\$ 1/ha/yr. It should be noted that in Africa an increasing part of the benefits from concessions are supposed to be in the form of social service provision. In practice almost any other land use could generate more revenue than forestry.

Forest revenues to central administrations, however, are not the only economic factor to be considered since other economic benefits such as foreign exchange and employment creation are also important. Export revenues are highly variable ranging from a meagre US\$ 0.20 to US\$ 233 per m<sup>3</sup> of logs produced in a sample of countries. At the local level these amounts may become important with one community concession in Guatemala generating US\$ 3760 for each family from timber and a further US\$ 2000 from NTFPs.

In many cases where concessions have been demonstrated to be successful in the tropics this has been achieved against a background of significant donor investment.

Social benefits of concessions include the generation of jobs (generally in the range of 1 job per 100 - 500 ha) and other aspects such as support for education, water supply, medical care and transport infrastructure. In West and Central Africa the provision of these services is often a requirement of the concession agreement while in other areas this is often enhanced where concession-holders

undertake forest certification. Forest certification also has a strong social impact when it requires concession-holders to maintain high health and safety standards.

Well managed concessions also have a potential to generate significant environmental benefits. Successful concession-holders acting in partnership with local rights holders can be an effective force in preventing the illegal settlement and degradation of forest reserves and some concessions have been established precisely for this purpose.

It is widely believed that small concessions held by communities will operate better than large industrial concessions. This has led to criticism of large concessions, some of which can exceed 1 million ha and many falling in the size range of 100,000 to 200,000 ha. Very large concessions can lead to an inefficient use of land particularly where there are no area-based fees so that concession bidders can apply for large areas without cost and concentrate on only the very best parts while ignoring the rest. This can also lead to wasteful use of the timber since only the best is worth extracting before moving on to the next site. As a result logs are often abandoned in forest or sawn with poor equipment that wastes large volumes due to sawing inaccuracy and kerf width.

On the other hand, concessions that are too small face their own problems. In many tropical forests the density of currently valuable trees is very low able to generate only 5-10 m<sup>3</sup>/ha. The minimum economic size for an efficient sawmill is likely to require the input from an area of 20,000 ha harvested over a forty-year period to produce marketable amounts of timber from a small group of species. However, with better knowledge and more intensive management of smaller areas it may be possible to increase the production rate of desirable timber by silvicultural interventions.

There is some evidence that where population pressure is not too high community managed forests are more effective than centrally managed forests at preventing forest degradation. Many communities, however, lack the capacity to manage forests and require significant technical and financial support to learn how to do this.

Forest certification standards are an important tool for improving many aspects of tropical forest management as carried out in concessions. The most frequent improvements have come in the form of improved health and safety, development of improved management plans and use of reduced impact logging techniques. In Africa certified concessions have had significant positive social and environmental impacts and the engagement with communities has led to an improved social contract with forest dwellers.

It has been argued that tropical timber businesses are not profitable enough to generate large forest rents from concession systems. This low profitability is due to the low density of desirable trees coupled with the high costs of extraction and transport. If this were really the case, then there would be greater incentives to make far more efficient use of the timber that is actually harvested in order to achieve a competitive advantage in the market.

When silvicultural activities can be shown to be profitable then it is likely that concession-holders would place much more emphasis on doing them correctly than when they are simply a regulatory or contractual requirement that is not enforced by a weak administration.

Only a small proportion of the timber species available from tropical forests are used since the remainder - even though they have desirable properties - are unknown on the market. Increasing the number of species accepted by the market should improve the situation of tropical forests by increasing value density. Unfortunately the costs associated with bringing a new species to market are so high that only the largest companies could attempt it on their own.

Increasingly countries have tried to keep as much as possible of the timber value in the country by instituting log export bans. This commenced in the 1990s and has been more or less successful. In some countries this has led to the development of an internal processing capacity to manufacture value added products and virtually eliminated log exports, but in many countries it has led to large-scale illegal export of logs. In other countries the sudden imposition of log export bans has led to the temporary collapse of the export market.

Perhaps the greatest reason for countries failing to retain the timber value has been their inability to collect the revenues due to them. It is rare for countries to collect more than 20% of their entitlement due to corruption and systematic evasion.

Part of the problem relates to failure to retain value within the country is due to the poor industrial performance of the processing facilities and the inefficiency of the timber market. Many sawmills in developing countries are equipped with old and worn out equipment which is incapable of sawing with precision. This leads to timber wastage during processing and customers demand an excessive degree of over-measure to account for the risks that some boards or parts of boards will be below market dimensions. Poor drying or complete lack of seasoning leads to further losses due to splitting or yet further over-measure requirements. In addition, old and poorly maintained machinery is far more energy demanding than modern, well maintained machinery so that energy costs are excessive.

The market for tropical timber is highly inefficient. It demands standard dimensions and unnecessarily long lengths of defect-free timber which leads to large volumes being rejected. The buyers are presented with these standard dimensions which in most cases bear no relation to the products they wish to manufacture. Improved communication between users and producers should lead to significant increases in timber recovery for producers and reductions in effective costs for buyers while allowing each to increase profits substantially. Manufacture of value added components is rare in tropical timber.

Privately owned forests in the temperate zone are effectively self regulating. It has been argued that it is the security of tenure offered by private ownership that is the major factor contributing to self regulating and that this would be replicated in the tropics if security of tenure could be guaranteed. With security of tenure investments in silviculture would be made to ensure the long term productivity of the forest. Unfortunately given the slow growth of forests it is likely that businesses seeking to optimise their return on capital may simply harvest the entire forest estate as quickly as possible in order to reinvest their capital elsewhere. It is clear that some form of enforceable regulation is necessary.

The situation is exacerbated by other risks faced by investors potentially leading to even higher demands on the rate of return on capital. Such risks, which are commonplace in developing countries, are political instability that could lead to arbitrary changes in tenure rules or even complete loss of tenure.

Illegality is a major issue in tropical timber markets. Most of this illegality is associated with the informal sector which is supplied by small-scale sawyers and accounts for the majority of the internal market and exports within the region. Most of the informal sector is small-scale with individual operators accounting for 10s of cubic meters of timber annually. However, since this sector is characterised by not paying for the timber and no payment of taxes, this has the effect of depressing processed timber prices making competition from larger formal operators almost impossible. The informal sector is often accompanied by petty corruption of junior officials.

Illegality of many forms also occurs in the larger scale formal sector and is used to inflate harvest far above the volumes legally allocated particularly for high value species. This illegality is often accompanied by small-scale corruption and grand corruption of senior officials and politicians. Illegality occurs for many reasons and is often accepted as part of the way of doing business.

The elimination of corruption is difficult and for this reason, when forest policy measures are proposed, analysis of their effect should assume and take into account the expected impact of illegality and corruption.

The report discusses a range of scenarios for the future of tropical forest management and concludes that success is only possible if there are significant improvements in:

- Forest governance
- Forest management
- Timber business performance

Forest governance must ensure that stakeholders receive their fair share of benefits. Forest management must be applied to increase the future yield of high value species. Timber businesses must become much more efficient and reduce wastage at all stages of the supply chain.

Concessions have failed for a wide variety of reasons including:

- concession-holders do not have adequate skills in tropical forest management and silviculture;
- scientific understanding of tropical silviculture and its economic benefits is poorly developed;
- weak governance means that concession-holders do not follow the terms of their contracts or the law.

Rights based approaches may be used to improve governance and to ensure that stakeholders customary rights are respected. Rights based approaches can ensure that those with customary rights are adequately rewarded when these rights are allocated to others. Where local rights holders receive adequate benefits from the forest they are much more likely to protect and improve the forest resource. Where local rights holders do not receive such benefits they are much more likely to see forest land as being of no value and to actively convert forests to other land uses.

The rights of workers are often better respected in the formal sector than in the informal sector so that workers employed by responsible and certified concessions are far better treated than elsewhere in the sector.

Forest certification is an important but often misunderstood tool for improving forest management, but it cannot on its own make a business successful. However, the performance standards used in forest certification can be used for guidance where forest managers are attempting to improve their business. Too often the relationship with forest certification systems and forest managers is of the form "let us do the absolute minimum required to obtain the certificate". If instead the objective becomes "let us do the maximum possible to improve our forest management business", then the forest certificate will become easily available if and when it is needed to support the business. With a better managed business and improved productivity profits will flow due to reduced costs and increased revenues.

The report concludes with a range of recommendations for improvements in tropical forest management and concessions grouped as follows:

- Revised and improved governance
- Facilitating forest business
- Improved forest management
- Involving local stakeholders

For concessions to become successful they must be based on a successful business model for tropical forest management. In such a business model, forests are well managed and able to provide an assured flow of all resources, the tenure rights to these resources are allocated within a framework of good governance that allows businesses to operate with the minimum possible interference and without corruption, and the products from the forest are processed efficiently into high value goods that return significant value to the forest.

## 2 Introduction

### Background

Forest concessions have in the recent past been the dominant governance tool for the harvesting and management of natural public/State-owned forests in many tropical countries as well as being dominant in boreal areas of Russia and Canada. They are less important in temperate zones but are in use in the forest areas of Eastern Europe as well. However, the concept of concessions is not a new one and they have been in use since the 1700s for a wide range of natural and other types of resources<sup>1</sup> where they have ranged from concessions of perpetual transferrable rights to much more limited rights.

Forest concessions have received a mixed press. In some cases, being hailed as notable successes in tropical forest management<sup>2,3</sup> while in other cases being vilified as focus of corruption, disenfranchisement of communities and deforestation<sup>4,5</sup>.

There is no international system for reporting on concessions. The regional reports<sup>6</sup> produced for this study indicate (**Table 1**) indicate that there are at least 122 million ha of tropical forests concessions accounting for 14% of State-owned forests. The success or failure of forest management under concessions is therefore a key factor influencing the safeguarding of forest resources at the global level.

*Table 1 Summary of forest area (1000s ha) and concession areas included in the regional reports. Details in Table 4*

|                       | Total forest area | Public forests area | Public production forests area | % of forest in public lands | % of public lands for production | Industrial concessions area | % of public lands under concessions |
|-----------------------|-------------------|---------------------|--------------------------------|-----------------------------|----------------------------------|-----------------------------|-------------------------------------|
| Latin America         | 718,820           | 425,368             | 43,582                         | 59%                         | 10%                              | 18,597                      | 4%                                  |
| West & Central Africa | 262,365           | 260,227             | 68,173                         | 99%                         | 26%                              | 56,114                      | 22%                                 |
| South East Asia       | 222,694           | 180,909             | 114,920                        | 81%                         | 52%                              | 48,122                      | 27%                                 |
| Study regions         | 1,203,879         | 866,503             | 226,675                        | 72%                         | 19%                              | 122,833                     | 14%                                 |

<sup>1</sup> Hardin R. 2011. Concessionary Politics Property, Patronage, and Political Rivalry in Central African Forest Management. *Current Anthropology*, Vol. 52, No. S3.

<sup>2</sup> Radachowsky, J., et al. 2011. Forest concessions in the Maya Biosphere Reserve, Guatemala: A decade later. *Forest Ecol. Manage.* doi:10.1016/j.foreco.2011.08.043.

<sup>3</sup> Anon. 2004. Conservation Concession Protecting forest ecosystems with payments for ecosystem services in Guyana. <https://www.cbd.int/financial/pes/guyana-pesconcession.pdf>.

<sup>4</sup> World Rainforest Movement. 2015. Why the forest concession model does not solve the structural problems of logging and wood extraction? Bulletin 217.

<sup>5</sup> Gray J.A. 2002. Forest Concession Policies and Revenue Systems: Country Experience and Policy Changes for Sustainable Tropical Forestry.

<sup>6</sup> (1) Karsenty A. 2015. *The Contemporary Forest Concessions in West and Central Africa: Chronicle of a Foretold Decline?*. (2) Chan B. 2015. *Status of Forest Concessions in Southeast Asia*. (3) Gretzinger S. 2015. *Latin American experiences in forest concessions*.

Against this background, FAO and ITTO have launched an initiative in collaboration with the Brazilian Forest Service (SFB in its Portuguese acronym), CIFOR and CIRAD, to review the current situation of concessions and to prepare recommendations aimed at guiding decision makers in the implementation of forest concession systems which should be able to answer the needs of local people, to be economically efficient while maintaining the integrity of forest resources<sup>7,8</sup>.

The immediate purpose of this report is to serve as background document to the International Workshop *What future for forest concessions and alternative allocation models for managing public forests?*, to be held in Brazil in the second half of 2016. It is also expected that the document will be of wider interest to policymakers and other stakeholders interested in regulation of rights to access and use, mainstreaming of sustainable forest management and tenure.

The report builds on three regional reports<sup>9,10,11</sup> completed in 2015 and presented at an expert meeting convened by FAO in Rome on 24<sup>th</sup> and 25<sup>th</sup> of November 2015.

## Objective

The overall objective of this report is to provide recommendations on how current forest concession systems can be improved so that concessions are better able to meet forest policy objectives, especially regulation of rights and management practices. It is expected that these recommendations will have the flexibility to be applicable in a wide variety of situations, contributing to maximise forest contribution to society.

The recommendations will cover a wide range of issues including:

- how the allocation of concessions can be improved;
- how the governance of concessions can be improved;
- how concessions can be fitted better into the social, political and environmental land use frameworks;
- how concessions can be made more profitable for entrepreneurs, landowners and local communities; and
- the future of community managed concessions.

Based on evidence raised from the three regional reports, the expert meeting and other relevant sources, it is envisaged that the report will contribute to make forest concessions a more effective and efficient forest and tenure policies' instrument and a fully sustainable business.

## The Concession System

Concessions are legal instruments between two parties usually the State and a private entity that confer rights from the State to the private entity in exchange for a payment or provision of services. In the context of forestry, concessions may refer to simple rights to harvest timber or other forest products or on the other hand rights to manage forest resources in the long term.

---

<sup>7</sup> Gray J.A. 2002. Forest Concession Policies and Revenue Systems: Country Experience and Policy Changes for Sustainable Tropical Forestry.

<sup>8</sup> FAO. 2001. Governance principles for concessions and contracts in public forests. FAO Forestry Paper 139.

<sup>9</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>10</sup> Chan B. 2015. *Status of Forest concessions in Southeast Asia*

<sup>11</sup> Gretzinger S. 2015. *Latin American experiences in forest concessions*.



Concessions are simply one form of allocating rights over forest resources. There is enormous variation in the specific rights and responsibilities associated with concessions. Concessions are well known from other spheres of business where they are similarly variable. As a result definitions of concessions are equally variable).

#### Some definitions of (forest) concession

##### Forest Concession

1. A temporary (or terminable) and defined facility involving the use of a forest or its produce, sanctioned by the owner of a forest to individuals or communities — *synonym* forest privilege.

2. A contract, license, or permit granted to a firm or a person to extract and market timber (timber concession) or other produce commercially from a defined area of the forest within a given period — *Note* a timber concession may specify the number, type, and size of trees that may be harvested.

[http://dictionaryofforestry.org/dict/term/forest\\_concession](http://dictionaryofforestry.org/dict/term/forest_concession)

##### Forest concession

System of awarding harvesting rights to individuals, private companies and/or communities who assume the risk and responsibility of forest resources exploitation and/or management.

[FSC (2015) *FSC Directive on FSC Forest Management Evaluations*. FSC-DIR-20-007 EN]

##### Concession

As it is defined nowadays, the “modern” concession is viewed as a way to deliver services of public and collective interest through an association of private investment and public regulation.

[Karsenty (2007). *Overview of Industrial Forest Concessions and Concession-based Industry in Central and West Africa and Considerations of Alternatives*. CIRAD].

##### Concession

Any grant of rights, land, or property by a government, local authority, corporation, or individual

<http://www.collinsdictionary.com/dictionary/english/concession>

##### Concession Agreement

A negotiated contract between a company and a government that gives the company the right to operate a specific business within the government's jurisdiction, subject to certain conditions. A concession agreement may also refer to an agreement between the owner of a facility and the concession owner or concessionaire that grants the latter exclusive rights to operate a specified business in the facility under specified conditions. Regardless of the type of concession, the concessionaire usually has to pay the party that grants it the concession ongoing fees that may either be a fixed amount or a percentage of revenues.

<http://www.investopedia.com/terms/c/concessionagreement.asp#ixzz3teXRDW61>

At its most general, the ‘concession’ is simply any granting of rights between two parties and it is usually governed by terms set out in a contract (concession agreement) between the parties.

However, when speaking of forest resource rights concessions, the usage has become somewhat more restricted so that it is more normal to talk of concessions between states as owners of resource rights and other actors including individuals, communities and corporations as users of these resources. Such rights may or may not be transferrable and may also involve multiple parties such as the case of PUP (Private Use Permit) concessions in Liberia<sup>12</sup>.

The terms of concession agreements are extremely variable both in terms of their scope, responsibilities and duration. Different countries have very different approaches to concessions both in terms of their duration and in the way that they levy charges (**Table 2**).

<sup>12</sup> de Wit, P. 2012. Land Rights, Private Use Permits and Forest Communities. Land Commission of Liberia.

Within this variability, however, it is possible to state that forest concessions are generally based on:

- longer term agreements (>20 years) usually covering at least one complete harvesting cycle for the forest.
- land that is directly owned by the State or allocated to communities
- the allocation of the right to harvest timber and/or other above ground resources.
- very large areas of land (>50,000 ha) for industrial concessions and somewhat smaller (3,000 – 50,000 ha) for small/medium-scale operations and community concessions.
- concession-holders acquiring responsibilities and rights for timber harvesting and forest management.

*Table 2 Dimensions over which forest resource rights can be allocated indicating broadly how commonly this occurs for each criterion value in the case of concessions. Cells highlighted in green are the common situation for concessions, those in orange are less common while those in yellow are rarely found for concessions. Note that timber may be further subdivided by species and purpose.*

| DIMENSION  | CRITERION   |   |                                      |  |                                  |
|--|---|---|--------------------------------------|--|----------------------------------|
| Duration   | 1 yr  | 2-5yr   | 6-20 yr                              | 21-40 yr                                     | 41-99 yr                         |
| Land Ownership before concession granted         | Private   | Lease   | State                                | Communal                                     | Private under communal law       |
| Resource classes granted by concession agreement | Timber only   | NTFP only   | Timber + NTFPs                       | All Above Ground                             | All Resources                    |
| Responsibilities of concession-holder            | Timber Harvesting only  | All aspects of Forest Management  | Development of Public Infrastructure | Provision of Public Social Services          |                                  |
| Fees & Taxes levied on concession-holder         | Fees paid with Application.   | Fees based on Volume harvested  | Fees based on Area of concession     | Fees based on combination of Volume and Area | Fee based on Standing Volume     |
| Type of concession-holder                        | Private Individual  | Any commercial entity.  | National commercial entity.          | Non-Resident Community                       | Resident Community               |
| Area of concession                               | 1-100 ha  | 100-3000 ha   | 3000-30.000 ha                       | 30.000-1.000.000 ha                          |                                  |
| Type of process for granting concession.         | Closed Process, private and secret negotiation between government and concession-holder | Qualified Process. Negotiation based on a pre-qualification of technical and financial competence | Transparent Process                  | Process Initiated by concession-holder       | Process Initiated by Authorities |

States have other ways of allocating timber rights which are not generally considered to be concessions. The most common alternatives to concessions used by governments to derive revenue from forest resources include:

- standing timber sales
- log sales (roadside, forest gate, delivered)

- short term harvest permits
- medium and long term land leases that include forest resource rights
- forest land sales
- joint venture forestry company
- State-owned 'independent' forestry company

In more recent times there are increasing demands that concession-holders, in addition to their rights to manage forests, have obligations to provide a range of social services which are more usually the direct responsibility of governments. These include such things as the provision of educational and health care infrastructure and services as well as the development of transport infrastructure.

### Forest tenures and forest rights

The concession confers the holder a certain parcel of rights. These rights are usually different from and independent of the rights associated with land tenure. There are significant differences between countries in the way in which these rights are divided so that in some cases forest tenure provides many of the rights associated with land tenure (i.e. privacy, rights to construct infrastructure) while in the other hand there are cases where land tenure does not include tree tenure.

Forest tenures exist under a variety of rights systems ranging from formal law to customary law including informally accepted traditions and practices. This results in many situations where there are tenure conflicts arising out of the different rights systems. This is likely to occur where there are overlapping tenures either under the same tenure system or tenures under different systems.

Since concessions are granted by governments under the formal legal system it is most likely that there will be tenure conflicts between legal rights of the concession-holder and customary or traditional rights of communities living on or using the same land. In Africa, for example, only 16% of the State-owned forest has no other forest tenure right associated with it<sup>13</sup>.

In most cases it is impossible to talk of Free Prior and Informed Consent (FPIC) for land allocated to concessions since communities and indigenous peoples are not consulted at the time of concession delineation.

### Concessions and responsibilities

All parties to concession contracts have responsibilities in relation to them as do some other parties (NGOs etc.).

For governments this means that the concessions offered should ensure that the forest resources are used for the benefit of the people. At the same time, governments have responsibilities to the global community of nations as described in any international convention and treaty to which they subscribe and which may limit how they can deal with their forests. It is also important to recognise that the rights assumed by governments to dispose of forest resources often predate independence. Such rights were usually put in place for the benefit of the colonial authorities and with little or no consideration for local populations.

Concession-holders have responsibilities as set out in their commercial contracts with the State as well as responsibilities to follow local, national and international laws. Responsible businesses would be expected to operate in line with the UN Global Compact which includes fair treatment of labour,

---

<sup>13</sup> FAO (2014) *Tenure security for better forestry. Understanding forest tenure in Africa*. Forest Policy Brief.

respect for human rights, avoidance of corrupt practices and minimising negative environmental impacts.

In some cases communities are directly implicated in tripartite contracts (State, company, community) in the management of concessions whilst in all cases communities will be affected parties. In practice community benefits are often contained in social responsibility agreements (SRA) which usually offer communities limited benefits. Communities need support from NGOs and others in order to negotiate fair SRAs.

## Concessions and their benefits

State governments should manage their natural resources principally for the benefit of their citizens. Forests form a significant part of the natural capital in many countries. In most developed countries (with the exception of Canada and Russia) governments manage their forests using their own resources and derive value from the multiple resources that forests provide (e.g. from tourism, hunting, water supply and timber sales). Timber sales are most often sold in the form of standing timber but in some countries State-owned forest organizations sell logs at roadside or delivered to processing facilities.

In tropical countries most governments do not have the human resources or capital required to manage their own forests and therefore employ agents by means of concessions to do so for them. Governments develop concession systems in order to meet multiple objectives and to achieve multiple benefits. These benefits include social, environmental and local economic development as well as revenue generation and for obtaining foreign exchange.

Concessions are allocated to commercial companies who are expected to pay for the timber harvested (forest rent) and to render a range of social, environmental and economic development services in exchange for their exclusive rights. In relation to the forest resource these services may be limited in scope or may include all aspects of the forest management cycle including, inventory, harvesting, regeneration and silviculture as well as management of biodiversity assets. Social development services often include aspects such as schools and medical facilities, facilities for forest regulatory agencies, and general infrastructure such as water, power supply and roads and bridges.

In order for this model to work, companies must be capable of making a profit from timber resources while at the same time meeting the costs of the socio-economic and environmental services they are expected to supply.

Recently governments have made some forest lands available for conservation concessions where the main objective is maintenance of biodiversity and environmental services. Such concessions are usually externally funded which may include payment for environmental services (PES).

## Concessions and sustainable forest management (SFM)

Concession-holders in partnership with government agencies are expected to achieve SFM. Responsibilities in such partnerships may be divided in many ways with government agencies taking more or less responsibility for many aspects (e.g. inventory, land use allocation, harvest allocation, biodiversity conservation etc.).

FAO commissioned a series of studies during the last 15 years aimed at identifying cases of exemplary tropical forest management and out of 227 cases that were nominated or selected, 27 were concessions. Although this is a small percentage of the total number of cases, they are generally of much larger size than the other examples and therefore represent a very significant area

of the tropical forest area under management considered in the studies. The exemplary cases largely overlapped with the countries and regions summarised in **Table 1** and would represent 3% of the total area of concessions.

If these 27 cases can be considered exemplary there must also be other concessions that can be considered as representing good or adequate forest management. This must include concessions that are certified under a variety of schemes and which were not included in the studies.

Criteria developed for evaluating SFM rarely deal with the benefits from the forest in a quantitative way. This can be considered to limit their usefulness since at the local level it is individual decisions based on land use benefits that determines the future wellbeing of the forest. Where benefits from alternative land uses to the individual are greater than forest benefits rational individuals will choose to replace forests with alternative crops.

The level of benefits from the forest will similarly influence government decision making, with few governments being prepared to make large investments in the management of forests that provide little revenue. This is quite clear from the emphasis of payments for forest protection in the REDD discussions.

#### Poor Forest Management

Forest management in the tropics including forest management in concessions remains poor for a range of reasons. Perhaps the most important of these reasons is the failure to set *a-priori* objectives for the forest. These objectives should be based on the range of goods and services that the forest is expected to supply now and into the future. Once these objectives have been determined it is necessary to develop a model for how this can be achieved in the long term. This will require a vision of the species and age/size distribution of the future forest and a silvicultural plan on how this can be achieved.

This lack of long term objectives for the forest means that in reality forest management plans have little to do with management of the forest. They can be better described as reduced impact harvesting plans with environmental and social safeguards.

The lack of proper forest management planning has led to a range of forest 'management' systems which have little or no basis in a scientific understanding of forest dynamics and which can be shown to lead to forest degradation and the economic extinction of the species targeted for current harvesting.

Silviculture, that is, *the active management of forest vegetation to achieve forest resource objectives*, is almost absent in tropical forests. Silviculture for the production of timber requires an understanding of the ecology of timber trees within the forest ecosystem. This understanding is increasing in the tropics although it still falls far behind the knowledge in temperate zones where research was started much earlier in response to the depletion of the temperate timber resource and the subsequent establishment of large-scale, industrially oriented forests.

There is however sufficient knowledge to show that certain interventions aimed at sustaining timber resources can be both successful and economically viable. For example, the active management and enrichment planting of canopy gaps created by harvesting has been shown to be both ecologically and economically viable.

The application of silviculture carries costs which should be supported by returns from the future benefits and where this is not clear then costly interventions will be avoided. Concession-holders are

unlikely to engage in silviculture on a voluntary basis when future forest tenure is uncertain. They are equally unlikely to carry out legally required silviculture when governance and enforcement of contracts is weak.

The failure to implement forest management and its associated silviculture is likely to prove disastrous for the future of the forests and their accompanying biodiversity.

Are the expectations from concessions realistic?

Concessions are expected to deliver SFM while simultaneously offering significant financial returns to states and to concession-holders. Until recently SFM in its broad sense was not considered in the concession model at all and concession-holders simply harvested timber and 'shared' incomes with the State. Concession-holders could be expected under this model to be good at the lowest cost extraction of timber from the forest with little consideration of other aspects.

In the modern concession the concession-holder is expected to fulfil an enormous range of additional tasks, many of which have nothing to do with forestry (e.g. provision of healthcare, provision of education) as well as the additional tasks that come as part of SFM (e.g. biodiversity management, silviculture). Most old concession managers will not have the trained staff to deal with these issues and in many cases since the tasks are relatively new this capacity is rarely found in the commercial environment. Experienced tropical forest biodiversity managers are not widely available since most of the expertise is concentrated in academic and research organizations.

#### Institutional settings and concessions

In almost all cases tropical countries with concession systems have instituted them at least partly because of a lack of human resource capacity. This lack of capacity is endemic to the entire system and means that governance is generally very weak. Forest agencies are not usually a priority of governments and this is reflected in the fact that although forest often account for more than 40% of the land the heads of forest agencies rarely report directly to the minister responsible for forests. This lack of capacity further impacts on the competence of the staff involved in the evaluation of concessions and the supervision of the concession contract. Furthermore, this lack of capacity encourages concessions to be taken up by companies that seek to make use of this weakness to avoid having to comply with the terms of concessions and with forestry laws in general.

When combined with poorly paid staff in the regulatory authority this leads to situations where corruption of government officials becomes commonplace in the forest sector. Poorly paid staff come to rely on facilitation payments in order to survive which has the further consequence that State revenues from forests are reduced due to non-collection of revenues.

### **3 Concessions around the world: successes, failures and lessons learned**

There is currently no consolidated data for forest concessions. The Global Forest Resources Assessment<sup>14</sup> reports on management rights of publicly-owned forests. It shows an increase in the share of public forests managed by private business from 3% in 1990 to 15% in 2010. Some countries, on a voluntary basis, report on area and/or timber production from forest concessions in their FRA country report (e.g. Cambodia, Mozambique) based on administrative records or *ad-hoc* studies.

---

<sup>14</sup> FAO (2010) *Global forest resources assessment 2010. Main Report*. FAO Technical Paper 163.

Although this document focuses on concessions in tropical countries, there are forest concessions also in other parts of the world. By far the largest concession areas occur not in the tropical forest but in the cool temperate and boreal forest zones of Canada and Russia. Canada alone has 265 million ha (76% of its total forest cover) under forest concessions<sup>15</sup>. Russia has over 600 million ha (68% of its total forest cover) defined as production forest<sup>16</sup>, with almost all of this area currently State-owned and available as concessions.

The forest sector outlook study<sup>17</sup> has identified illegal logging as a significant problem in Russia with up to 20% of all timber and 50% of timber in the Russian Far East being harvested without proper permits. Corruption in the sector appears to play an important part in facilitating the illegal business. It is clear that large volumes are either being directly taken (by harvesting outside of permitted areas) or are being laundered through concession-holders.

Canada appears to have a more successful concession system but it has received criticism for a number of reasons. Most concessions are allocated by negotiation<sup>18</sup> rather than by competitive tender, there are cases of overlapping tenures which have been problematical<sup>19</sup> and there has been a criticism that the low stumpage prices are a form of subsidy to Canadian forest companies<sup>20</sup>.

### Concessions in Latin America, West and Central Africa and Southeast Asia

The current situation of concessions in these tropical regions has been investigated by consultants as part of this initiative. In these areas most forest revenues<sup>21</sup> are expected to flow to government from concession-related fees so that it is instructive to determine to what extent these revenues actually flow. It is this revenue flow that in many cases is the principal justification for assigning concessions.

In **Table 3** we can see that worldwide, forest revenues average approximately US\$ 6/ha/yr on publicly-owned lands but that revenues in Africa are much lower at only US\$ 1/ha/yr. Furthermore, revenues per volume of timber are much lower in Africa than in Asia and South America. It should be noted that the figures for Papua New Guinea are included in Oceania and this leads to a large inflation of the revenue/ha for public areas since only 3% of the land is State land and PNG levies taxes on timber harvested from community land. One further observation is that the revenues in Europe are much more likely to be based on softwoods than the revenues from tropical forests which are based on higher value hardwoods.

---

<sup>15</sup> Global Forest Watch. 2014. Press Release, Industrial Concessions Cover Over One Quarter of Canada. 27 Feb 2014.

<sup>16</sup> FAO. 2012. *The Russian Federation: forest sector outlook study to 2030*. FAO.

<sup>17</sup> FAO. 2012. *The Russian Federation: forest sector outlook study to 2030*. FAO.

<sup>18</sup> Gray J.A. 2003a. Forest tenures and concession experience in Canada and selected other countries.

<sup>19</sup> Gray J.A. 2003a. Forest tenures and concession experience in Canada and selected other countries.

<sup>20</sup> Myers N. & Kent J. 2001. *Perverse Subsidies: How Tax Dollars can Undermine the Environment and the Economy*. Island Press. Washington.

<sup>21</sup> Some countries also collect revenues for NTFPs and firewood from local community members.

Table 3 Forest revenues by region<sup>22</sup>.

| Region                                 | Information availability |                        | Forest revenue in 2005 |            |                       |             |                                   |                       |
|--|--------------------------|------------------------|------------------------|------------|-----------------------|-------------|-----------------------------------|-----------------------|
|  | Number of countries      | % of total forest area | Total                  |            | Revenue per ha (US\$) |             | Revenue per m <sup>3</sup> (US\$) |                       |
|  |                          |                        | Million US\$           | %          | All areas             | Public area | All removals                      | Adjusted <sup>2</sup> |
| Africa                                 | 31                       | 63                     | 285                    | 2          | 1                     | 1           | 1.24                              | 6.85                  |
| Asia                                   | 22                       | 88                     | 2 846                  | 19         | 5                     | 7           | 4.31                              | 18.92                 |
| Europe                                 | 20                       | 89                     | 5 420                  | 37         | 6                     | 6           | 13.39                             | 17.72                 |
| North and Central America <sup>1</sup> | 14                       | 90                     | 2 620                  | 18         | 4                     | 6           | 3.40                              | 5.56                  |
| Oceania                                | 7                        | 20                     | 146                    | 1          | 4                     | 23          | 5.33                              | 33.24                 |
| South America                          | 7                        | 76                     | 3 290                  | 23         | 5                     | 6           | 10.80                             | 26.50                 |
| <b>World</b>                           | <b>101</b>               | <b>79</b>              | <b>14 607</b>          | <b>100</b> | <b>5</b>              | <b>6</b>    | <b>6.09</b>                       | <b>12.34</b>          |

Notes:

<sup>1</sup> These figures use revenue figures for 2000 for the United States of America (2005 not available).

<sup>2</sup> Excludes fuelwood production and production from private forests (based on share of total forest area).

## Where are the concessions?

The tropical regions covered by the consultant studies differ markedly in the area currently under concessions with Latin America having a much lower percentage of public lands allocated to concessions. From **Table 4** below we can see that this difference between the regions is largely due to the effect of Brazil which accounts for almost 75% of the forest area of the studied countries with 516 million ha, of which 313 million ha is in public ownership but only 840,000 ha is allocated to concessions. If Brazil is removed from consideration, then the rest of Latin America is similar to the rest of the tropical regions here covered.

The situation in relation to concessions in a region is quite dynamic with countries increasing or decreasing their concession areas rapidly in response to changes of government and pressures from stakeholders. Thus in Bolivia the 2000s saw a rapid decrease in forest concessions as land was allocated for indigenous community forestry instead, Cambodia saw a decrease as concessions were cancelled due to perceptions of mismanagement, while Brazil has seen an increase due to the start-up of a new concessions programme.

<sup>22</sup> FAO. 2010. *Global forest resources assessment. Main Report*. FAO Technical Paper 163.



Table 4 Natural forest and concession areas<sup>23,24,25,26</sup> in the studied regions (Areas 1000s ha)

|   | Total forest area | Public forests area | Public forests for production area | % of forest in public lands | % of public lands for production | Industrial concessions area | % of public lands under concessions |
|---|-------------------|---------------------|------------------------------------|-----------------------------|----------------------------------|-----------------------------|-------------------------------------|
| <b>Bolivia</b>  | 53,500            | 38,611              | 8,987                              | 72%                         | 23%                              | 2,107                       | 5%                                  |
| <b>Brazil</b>   | 516,000           | 313,000             | 4,300                              | 61%                         | 1.37%                            | 840                         | 0.27%                               |
| <b>Peru</b>   | 67,992            | 18,821              | 5,513                              | 28%                         | 29%                              | 7,110                       | 38%                                 |
| <b>Guatemala</b>  | 3,657             | 1,536               | 450                                | 42%                         | 29%                              | 450                         | 29%                                 |
| <b>Guyana</b>   | 15,200            | 12,200              | 6,850                              | 80%                         | 56%                              | 6,500                       | 53%                                 |
| <b>Suriname</b>   | 14,758            | 11,300              | 4,482                              | 77%                         | 40%                              | 1,090                       | 10%                                 |
| <b>Venezuela</b>  | 47,713            | 29,900              | 13,000                             | 63%                         | 43%                              | 500                         | 2%                                  |
| <b>Latin America</b>  | <b>718,820</b>    | <b>425,368</b>      | <b>43,582</b>                      | <b>59%</b>                  | <b>10%</b>                       | <b>18,597</b>               | <b>4%</b>                           |
| <b>Cameroon</b>   | 19,916            | 19,916              | 14,539                             | 100%                        | 73%                              | 7,059                       | 35%                                 |
| <b>Congo</b>  | 22,411            | 22,411              | 19,722                             | 100%                        | 88%                              | 12,600                      | 56%                                 |
| <b>Gabon</b>  | 22,000            | 22,000              | 9,900                              | 100%                        | 45%                              | 14,272                      | 65%                                 |
| <b>Equatorial Guinea</b>  | 1,626             | 1,626               | 81                                 | 100%                        | 5%                               | 740                         | 46%                                 |
| <b>CAR</b>  | 22,605            | 20,571              | 4,747                              | 91%                         | 21%                              | 3,059                       | 15%                                 |
| <b>DRC</b>  | 154,135           | 154,135             | 7,707                              | 100%                        | 5%                               | 12,184                      | 8%                                  |
| <b>Liberia</b>  | 4,329             | 4,329               | 1,082                              | 100%                        | 25%                              | 2,300                       | 53%                                 |
| <b>Ghana</b>  | 4,940             | 4,940               | 1,136                              | 100%                        | 23%                              | 3,200                       | 65%                                 |
| <b>Cote d'Ivoire</b>  | 10,403            | 10,299              | 9,259                              | 99%                         | 89%                              | 700                         | 7%                                  |
| <b>West &amp; Central Africa</b>  | <b>262,365</b>    | <b>260,227</b>      | <b>68,173</b>                      | <b>99%</b>                  | <b>26%</b>                       | <b>56,114</b>               | <b>22%</b>                          |
| <b>Cambodia</b>   | 10,094            | 10,094              | 3,331                              | 100%                        | 33%                              | 3,300                       | 33%                                 |
| <b>Indonesia</b>  | 94,432            | 85,933              | 56,093                             | 91%                         | 59%                              | 23,992                      | 28%                                 |
| <b>Lao PDR</b>  | 15,751            | 15,751              | 3,623                              | 100%                        | 23%                              | 600                         | 4%                                  |
| <b>Malaysia</b>   | 20,456            | 20,047              | 12,683                             | 98%                         | 62%                              | 9,230                       | 46%                                 |
| <b>PNG*</b>   | 28,726            | 862                 | 7,182                              | 3%                          | 25%                              | 11,000                      | 38%                                 |
| <b>Phillipines</b>  | 7,665             | 6,515               | 5,825                              | 85%                         | 76%                              | 0                           | 0%                                  |
| <b>Vietnam</b>  | 13,797            | 9,934               | 6,485                              | 72%                         | 47%                              | 0                           | 0%                                  |
| <b>Myanmar^</b>   | 31,773            | 31,773              | 19,699                             | 100%                        | 62%                              | Unknown^                    | Unknown^                            |
| <b>South East Asia</b>  | <b>222,694</b>    | <b>180,909</b>      | <b>114,920</b>                     | <b>81%</b>                  | <b>52%</b>                       | <b>48,122</b>               | <b>27%</b>                          |
| *In PNG Concessions are issued over land owned by communities (% is of Total Forest Area).          |                   |                     |                                    |                             |                                  |                             |                                     |
| ^In Myanmar concessions are known to exist but their scale is unknown but large in the border areas |                   |                     |                                    |                             |                                  |                             |                                     |
| <b>Study Regions</b>  | <b>1,203,879</b>  | <b>866,503</b>      | <b>226,675</b>                     | <b>72%</b>                  | <b>19%</b>                       | <b>122,833</b>              | <b>14%</b>                          |

<sup>23</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>24</sup> Chan B. 2015. *Status of Forest concessions in Southeast Asia concessions in Southeast Asia.*

<sup>25</sup> Gretzinger S. 2015. *Latin American experiences in forest concessions.*

<sup>26</sup> FAO. 2010. *Global forest resources assessment. Main Report.* FAO Technical Paper 163.

## What are the benefits of concessions?

### 3.1.1.1 Economic benefits

The initial motivation for offering concessions is in most cases to provide economic activity in the country. Information about this is available in a number of ways but is often not directly comparable. From **Table 3** we have seen that at least in South America and Southeast Asia forests in many cases have a positive impact on government revenue with a value of about US\$ 5/ha/yr. The situation in Africa is significantly worse than this with a contribution of about US\$ 1/ha/yr. It may be that this difference is not as great as it seems if, as has been suggested, more of the contributions in Africa are contributions in kind such as social services. However, there are notable differences between countries: Myanmar appears to generate approximately US\$ 0.20 in export revenues per m<sup>3</sup> of timber harvested while Malaysia generates US\$ 215/m<sup>3</sup> (**Table 5**). Brazil appears to generate a meagre US\$ 32/m<sup>3</sup>, but the majority of its log production from natural forests goes into its enormous internal market. Cambodia is also anomalous since most of the timber produced is from forest conversion (at a rate of approximately 200,000 ha/yr recently)<sup>27</sup> and much larger volumes have been produced, most of which have been exported illegally so that the actual return per volume of timber harvested is much lower than given in this table.

*Table 5 Volumes of logs harvested and export sales values in selected countries (data from consultant reports)*

| Country     | Log production (m <sup>3</sup> ) | Total Exports (US\$) | US\$/m <sup>3</sup> |
|-------------|----------------------------------|----------------------|---------------------|
| Myanmar     | 5,290,000                        | 1,053,284            | 0.20                |
| Thailand    | 8,700,000                        | 658,663,000          | 75.71               |
| Cambodia    | 275,000                          | 61,416,000           | 223.33              |
| Philippines | 3,627,000                        | 124,928,000          | 34.44               |
| Malaysia    | 17,170,000                       | 3,695,633,000        | 215.24              |
| Indonesia   | 45,587,000                       | 2,571,763,000        | 56.41               |
| Brazil      | 13,500,000                       | 437,000,000          | 32.37               |
| Surinam     | 308,000                          | 1,900,000            | 6.17                |
| Guyana      | 299,000                          | 48,100,000           | 160.87              |

From this it is clear that in at least some cases logs harvested from concessions are making significant contributions to the balance of payments.

The figures in **Table 3** are for revenues of all types including all types of forest. The figures in form of US\$/m<sup>3</sup> are more comparable since they include only revenues from publicly-owned forests and exclude firewood. They range from about US\$ 6/m<sup>3</sup> in Africa to US\$ 26/m<sup>3</sup> for South America. In both cases the timber species used are predominantly tropical hardwoods.

In theory, tropical hardwoods in Liberia have much higher revenues/m<sup>3</sup>,<sup>28</sup> but there have been significant problems in collecting this revenue so that only 5% of the annual fee was actually collected.

Estimates of benefits of concessions at the local level are hard to find; however, for the concessions in northern Guatemala, considered to be an example of a successful concession system, there are

<sup>27</sup> Banks A, Sloth C, Hadley Garcia D. & Koy Ra (2014). *Forest-Land Conversion and Conversion Timber Estimates: Cambodia Case Study*. NEPCo & Forest Trends

<sup>28</sup> IBI Consultants. 2013. *Forest concessions—commercial forest revenue projection model final report: June 2013*. USAID.

some published figures<sup>29, 30</sup> These concessions occupy about half a million ha of the Maya Biosphere Reserve and are of several types including industrial concessions, non-resident community concessions and resident community concessions. Some of the resident community concessions have significant numbers of recent immigrants with no forest history. From **Table 6** below we can see that the ownership and beneficiary density is very low with about 11 km<sup>2</sup> of forest/member and 2 km<sup>2</sup> per beneficiary. Note that the numbers differ between authors who have looked at different times (e.g. Reyes et al. 2014)<sup>31</sup>; however, the order of magnitude of km<sup>2</sup>/beneficiary rather than ha/beneficiary is similar. Land parcels of 100 ha/beneficiary or more can be considered large for many parts of the world.

**Table 6 Areas and beneficiaries of the Maya Biosphere Reserve Concessions**

|                    | Industrial | Non resident | Resident community | Resident community with immigrants | Total   |
|--------------------|------------|--------------|--------------------|------------------------------------|---------|
| No of Concessions  | 2          | 6            | 2                  | 4                                  | 14      |
| Area ha            | 132,304    | 195,084      | 137,356            | 68,392                             | 533,136 |
| Beneficiaries      |            | 708          | 916                | 380                                | 2,004   |
| Members            |            | 129          | 167                | 69                                 | 365     |
| Area / Member      |            | 1,512        | 822                | 991                                | 1,098   |
| Area / Beneficiary |            | 276          | 150                | 180                                | 200     |

In 1994 in one of the concessions the harvest rate was of approximately 4m<sup>3</sup>/ha of roundwood and yielded a return of US\$ 218/ha<sup>32</sup>; this would equate to about US\$ 8/ha/yr on a 25 year cutting cycle. By 2011 the community of San Andres was selling timber products worth US\$ 830,000 from its concession of 51,939 ha providing an average net profit of US\$ 3761 for each of its member families at a rate of US\$ 16.30/ha/yr. This would be considered a very significant benefit for its members. This has been achieved by investing in harvesting and processing equipment and selling dimensioned lumber on the national and export market.

It is also important to recognise that in the case of the Maya Biosphere Reserve concessions the harvesting of NTFPs is also an important source of income generating about US\$ 2500 per person per year for 2000 full time equivalent workers. In practice families earn about US\$ 2000 from NTFPs on average<sup>33</sup>.

<sup>29</sup> Radachowsky J., et al. 2011. Forest concessions in the Maya Biosphere Reserve, Guatemala: A decade later. *Forest Ecol. Manage.*

<sup>30</sup> Gómez I. and V. E. Méndez. 2005. *Association of Forest Communities of Petén, Guatemala: Context, Accomplishments and Challenges*. CIFOR.

<sup>31</sup> Reyes Rodas, R., J. Kent, T. Ammour and J. Gálvez. 2014. Challenges and opportunities of sustainable forest management through community forestry concessions in the Maya Biosphere Reserve, Petén, Guatemala.

<sup>32</sup> Gretzinger S. P. 1998. Community Forest Concessions: An Economic Alternative for the Maya Biosphere Reserve in the Petén, Guatemala.

<sup>33</sup> Radachowsky, J., et al. 2011. Forest concessions in the Maya Biosphere Reserve, Guatemala: A decade later. *Forest Ecol. Manage.*

The economic benefits of the concession system in the Reserve have only been made possible against a background of significant foreign aid investment estimated at US\$ 92 million<sup>34</sup> between 1989 and 2003. This is the equivalent of US\$ 180/ha or US\$ 46,000 per beneficiary.

### 3.1.1.2 Social benefits

Social benefits from concessions can come in a variety of forms (**Table 7**). Some of these arise to a greater or lesser extent simply due to the presence of the activities associated with the concession<sup>35</sup> whilst others arise due to either corporate social responsibility (CSR) programmes or as a result of contractual obligations placed on the concession-holder<sup>36</sup>. Finally there is a group of benefits that is more strongly associated with forest certification.

In the case of the Maya Biosphere Reserve, in addition to the income sharing there is also a significant amount of work created by the harvesting and processing activities which will add significantly to the income of some individuals either within or from outside the concessions members<sup>37</sup>. The foreign aid expenditure highlighted above will also have created significant economic activity in the district although the majority is likely to have been spent on salaries for external consultants and for their support in the field.

In Brazil it is estimated that concessions create 1 job for every 500 ha put under management<sup>38</sup> and this compares well with the approximately 1 job for every 250 ha created in the Maya Reserve.

*Table 7 Some typical social benefits associated with forest concessions*

|   |
|---|
| Social benefits associated with the operation of a concession   |
| <ul style="list-style-type: none"> <li>• Employment</li> <li>• Skills training</li> <li>• Road and transport development and maintenance</li> </ul>   |
| Social benefits as a result of CSR programmes or contractual obligations  |
| <ul style="list-style-type: none"> <li>• Improved communication with stakeholders</li> <li>• Educational facilities</li> <li>• Medical facilities</li> <li>• Company shops</li> <li>• Local sourcing of goods and services</li> </ul>                         |
| Social benefits associated with forest management certification   |
| <ul style="list-style-type: none"> <li>• Improved health and safety conditions for workers</li> <li>• Improved job security</li> <li>• Provision of water</li> <li>• Provision of electricity</li> <li>• Recognition of indigenous peoples' rights</li> </ul> |

It is clear that in the absence of forest certification in West and Central Africa it is the contractual obligations associated with the concession that are the main driving force for social benefits. This seems to be largely due to an increasing emphasis on 'in kind' contributions *in lieu* of monetary

<sup>34</sup> Gómez I. and V. E. Méndez. 2005. *Association of Forest Communities of Petén, Guatemala: Context, Accomplishments and Challenges*. CIFOR.

<sup>35</sup> Lescuyer, G., S. Assembe Mvondo, J. N. Essoungou, V. Toison, J.-F. Trébuchon, and N. Fauvet. 2012. Logging concessions and local livelihoods in Cameroon: from indifference to alliance? *Ecology and Society* 17(1): 7.

<sup>36</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>37</sup> Gómez I. and V. E. Méndez. 2005. *Association of Forest Communities of Petén, Guatemala: Context, Accomplishments and Challenges*. CIFOR.

<sup>38</sup> Gretzinger S. 2015. *Latin American experiences in forest concessions*.

payments<sup>39</sup> by west and central African Governments. Where forest concessions have become certified there is a much higher degree of legal compliance and also a higher degree of voluntary social activities beyond the legal or contractual requirements.

Improved health and safety conditions for workers is strongly influenced by the requirements of forest certification schemes. This aspect is particularly important in Africa where the social safety net is almost non-existent and where the loss or incapacitation of a labourer has catastrophic consequences for the dependents.

In Southeast Asia and Latin America there is a tendency for the social benefits to be restricted much more closely to those associated with the normal operation of the concession, although in Southeast Asia there are often more significant problems associated with violation of customary rights. Even the exemplary forest concessions in Southeast Asia are not highlighted for their social development impact although better community relations is mentioned as a positive aspect<sup>40</sup>.

### 3.1.1.3 Environmental benefits

The potential environmental benefits of sustainably managed and profitable concessions are huge. Where successful forest managers are in a position to prevent illegal settlement, forest clearing, timber theft and overharvesting of NTFPs<sup>41</sup>, forests will remain functional. Such forests will contribute to maintaining biodiversity and will also provide important environmental services to the outside, such as adequate supplies of clean water and clean air.

In cases such as the Maya Biosphere Reserve, where the concessions were established as part of a policy to protect the forests, they appear to have been highly successful at this (albeit at a very high cost). Of the concessions originally issued by the government, only two have suffered from significant encroachment and conversion from forest to grazing pasture and have as a result been cancelled by the authorities.

In Southeast Asia and elsewhere the introduction of reduced impact logging (RIL) has in many cases significantly reduced the negative impacts.

Where payment for environmental services (PES) can be effectively implemented as an additional income stream this is likely to further enhance the environmental impacts of concessions as for example the Rukinga Wildlife Sanctuary in Savannah Woodland in Kenya<sup>42</sup>. It seems likely that this could apply directly to the Maya Biosphere Reserve where payments under the REDD+ framework have been suggested which would effectively double the income per hectare<sup>43</sup>.

### Concessions as a means for protecting forests

The history of concessions as a means for protecting forests has in the past not been a happy one in any of the three regions. In Ghana, for example, concessions have been implicated in large scale

---

<sup>39</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>40</sup> Durst P. B., C. Brown, H. D. Tacio and M. Ishikawa (eds). 2005. *In search of excellence: Exemplary Forest Management in Asia and the Pacific*. FAO.

<sup>41</sup> It is assumed that a successful forest manager has carried out the community engagement necessary to ensure that forest conservation and protection is seen as beneficial by the community.

<sup>42</sup> Rukinga Ranch Ltd. 2008. *The Kasigau Corridor REDD Project Phase I – Rukinga Sanctuary*. Wildlife Works.

<sup>43</sup> Hodgdon, B. D., Hayward, J. and Samayoa, O. 2013. Putting the plus first: community forest enterprise as the platform for REDD+ in the Maya Biosphere Reserve, Guatemala. *Tropical Conservation Science*. Special Issue Vol. 6(3):365-383.

forest destruction both by legally approved overharvesting<sup>44</sup>, illegal harvesting and by failure to protect forests from encroachment.

However, it is too easy to blame forest loss on concessions when there is a wide range of other activities that have contributed to forest loss on a large scale<sup>45</sup>. Logging is considered to be a secondary cause after large scale arable and pastoral agriculture.

The protection of forests is dependent on a social contract in which the parties involved agree about the land use. This agreement will only be reached if all of the parties are able to perceive benefits from the existence of the forest sufficient to offset the opportunity costs of other land uses. In most countries, governments and land owners are unable to resist the forces of deforestation due to the large variety of forces that are involved. Deforestation for agriculture takes place at the scale of the individual as well as the large landholder. Where corruption is rife deforestation is often done with the connivance of the most senior figures in government.

Concessions could be an important means to avoid deforestation if there is agreement between all stakeholders at the forest level about forest management and about the division of benefits from the forest that properly takes into account all legal and customary rights. This has proved successful for community managed lands in Zambia where a single chiefdom can now muster more forest guards than the entire national forest service<sup>46</sup>.

## Public forest concessions in other regions

Publicly-owned forests exist in almost all countries and in general those countries seek to use them for economic and social benefits. The benefits sought differ significantly in different types of society and for different interest groups within societies. The way people in different societies value their forest resources determines to a large extent how they are used. In some countries forests are valued more as recreational and landscape resources than for the timber and NTFPs they can supply.

These differences in public perception are likely to influence the amount of resources that governments are prepared to invest in forests, their protection and management. In the United Kingdom, for example, there was uproar when in 2011 the government proposed to privatise part of the public forest estate<sup>47</sup>. This public forest estate is fully managed by the Forestry Commission and its commercial arm *Forest Enterprise*. All management activities are controlled or carried out directly by the State and timber is sold either standing or at roadside (30%). The income generated by timber sales from an area of 250,000 ha is valued at 20 million pounds sterling or US\$ 114/ha/yr<sup>48</sup>.

Income to *Forest Enterprise* from all sources is about US\$ 350/ha/yr; however, this is offset by high costs of management for public benefit so that overall the nation subsidises the forest by about US\$ 50/ha/yr. The public benefit derived from this public investment has been estimated at about US\$ 400/ha/yr<sup>49</sup>. In any case, the figures justify the investment by the government in taking control of all management including part of the harvesting. It is notable that the timber revenues alone are an order of magnitude greater than the figure for the European average given in **Table 3** above.

---

<sup>44</sup> Oduro, K.A. E.G. Foli, G.M.J. Mohren & W.K. Dumenu (2011) Ghana.

<sup>45</sup> WWF. 2015. *WWF living forests report: chapter 5 saving forests at risk*. WWF.

<sup>46</sup> Dale Lewis, COMACO. 2015. Pers. Comm.

<sup>47</sup> Bennett, O. and D. Hirst. 2014. *The Forestry Commission and the sale of public forests in England* Standard Note: SN/SC/5734. House of Commons Library.

<sup>48</sup> Forest Enterprise England. 2015. *Annual Report and Accounts 2014-15 (For the year ended 31 March 2015)*. House of Commons.

<sup>49</sup> Our Forests. 2013. *Government Warned on Public Forest Estate: Get the Economics Right!* Press Release.

This appears to be the situation in most European countries and in the U.S. where State managed forests offer good net returns to the government. In Europe almost all countries sell standing timber from their forests as the major form of revenue generation. The timber parcels on sale tend to be relatively small ranging from tens of cubic metres to a few hundreds of hectares<sup>50</sup>. Buyers are required to perform according to strict performance standards in harvesting<sup>51</sup>. The harvesting licences are typically of short duration (one to three years).

In Europe more traditional concessions are found in Slovenia and Montenegro<sup>52</sup>. These concessions were established in Slovenia after the collapse of the Soviet system when State-owned forest companies were privatised. These companies were allocated 20 year concessions. In Montenegro, where forests were depleted after previous mismanagement, concessions started to be issued after changes in legislation in 2008. These concessions were for durations of 7 – 30 years and for both timber harvesting and the rendering of practical management services, but not management planning.

Both countries have experienced problems with the concession system. For various reasons neither country has achieved the forest revenues expected and as a result central forest administrations have been left short of finances. In the case of Slovenia, revenue calculations are based on prices set according to costs of production and timber prices. Companies are always able to argue that prices are lower than reality and that costs are higher, thus reducing government revenues. In Montenegro, where stumpages are higher, 70% of revenues are allocated to local municipalities and volumes harvested have been lower than expected so that the central forest administration does not receive enough income to carry out its functions of management planning and supervision.

In Slovenia the concession system may be terminated when the current concessions come to an end<sup>53</sup>.

### Why are some concessions more successful than others?

There are examples of entire concession systems that can be considered largely successful and there are also individual concessions that are included in the examples of exemplary forest management.

In spite of the problems with forest concessions in Canada<sup>54</sup> they have been overwhelmingly successful in economic terms even if not in direct revenue terms. The Canadian forest sector has an annual contribution to GDP of \$Can 20 billion<sup>55</sup>. This is primarily derived from concessions in the over 90% of forest land that is State-owned either federally or by the provinces. The sector employs approximately 300,000 people with a payroll in excess of \$Can 8 billion. It does this from a total forest base of 347 million ha generating a contribution of \$Can 57/ha. This is an average over all forest types including large areas that are not commercially used. In addition, almost 50% of the Canadian forest area has been third party certified according to at least one independent forest management standard while about 20 million ha is certified according to more than one standard.

---

<sup>50</sup> BUREAU OF LAND MANAGEMENT. 2015. *Prospectus ThunderKat Timber Sale*.

<sup>51</sup> BUREAU OF LAND MANAGEMENT. 2015. *Prospectus ThunderKat Timber Sale*.

<sup>52</sup> Ferlin F. and A. Golob. 2012. Forest concession and related public forestry administration models in Slovenia and Montenegro.

<sup>53</sup> Ferlin F. and A. Golob. 2012. Forest concession and related public forestry administration models in Slovenia and Montenegro.

<sup>54</sup> Gray J. (2003a) Forest tenures and concession experience in Canada and selected other countries.

<sup>55</sup> Canadian Forest Service (2014) *The State of Canada's Forests 2014*. Natural Resources Canada.



Although on a smaller scale and also not without their problems, the Maya Biosphere Reserve concessions discussed in 3.1.1.1 above can also be considered successful but are yet to achieve their full potential to benefit the communities.

In Malaysia, the Deramakot concession has also been considered successful<sup>56</sup> generating 20,000 m<sup>3</sup> of timber per year from an area of 51,000 ha while simultaneously fulfilling conservation goals for a range of large mammals including Orang Utang. This has been achieved by introducing RIL and intensive silviculture. However, as is the case with the Maya Biosphere Reserve, it has been achieved on the back of very substantial donor support.

On the other hand, many concessions have failed for a wide range of reasons including governance, economic, social and environmental failures.

### Small concessions versus large concessions?

It is widely held that where forest tenure is transferred to forest communities and where the areas involved are smaller then this will lead to improved forest management. It is necessary to determine if these propositions are reasonable and supported by evidence. In all cases it is necessary to relate what can be considered as successful to the forest management objectives of the stakeholders involved.

In Africa, some concession owners have tenure over forests in excess of 1 million ha in a single concession<sup>57</sup> (Danzer-IFO, Republic of Congo). An impression of the scale of this concession may be obtained by comparing it in size to some sovereign countries. It is a little smaller than Jamaica and Lebanon but larger than Cyprus (the entire Island) and The Gambia and twice as big as Brunei or Trinidad and Tobago. Although this concession is unusually large, the average concession size in the Republic of Congo is 240,000 ha<sup>58</sup> or almost as big as Luxemburg.

It is understood that in many cases these concessions are remote, their human population density is very low (0.5/km<sup>2</sup>)<sup>59</sup> and that there is very little infrastructure. However, the allocation of such large tenures by governments can lead to a wide range of problems. Wherever there are people, particularly indigenous and traditional communities, the allocation of tenure rights by central government is likely to be an infringement of the customary rights of those communities and even where forests appear to be unoccupied or unused they often provide critical resources for communities. For example, in villages around the town of Nzara in South Sudan the hunters would make an annual two-week excursion to remote forests about 70 km north of the town to hunt and obtain meat, a key issue in this area where animal protein is very expensive. Although there is unlikely to be immediate competition for resources such as building and service timber and NTFPs, there may be longer term impacts.

Large concessions may lead to an inefficient use of the forest area leading to losses in potential income. This is particularly likely when area-based fees are very low or non-existent<sup>60</sup>.

---

<sup>56</sup> Lagan P., S. Mannan and H. Matsubayashi. 2007. Sustainable use of tropical forests by reduced-impact logging in Deramakot Forest Reserve, Sabah, Malaysia. *Ecol Res.*

<sup>57</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>58</sup> Global Forest Watch Data. Accessed 26/01/2016.

[http://data.globalforestwatch.org/datasets/557bfc901c584b7a8884aa455cfa6de2\\_5?uiTab=table](http://data.globalforestwatch.org/datasets/557bfc901c584b7a8884aa455cfa6de2_5?uiTab=table)

<sup>59</sup> WWF. 2015b. *Largest forest concession in the Congo Basin receives FSC certification.*

<sup>60</sup> Gray J. 2002. *Forest Concession Policies and Revenue Systems: Country Experience and Policy Changes for Sustainable Tropical Forestry.*



Where the cost of holding a concession are low, concession-holders are likely to seek larger areas simply to hold their resources as a speculation towards future values<sup>61</sup>. When this is accompanied by low effective timber prices it not only affects the revenues received by governments but also the behaviour of the rights-holders. Low pricing falsely signals a resource in overabundance which results in wasteful use of the resources. This wasteful use of resources is reflected in all parts of the value-chain, logs forgotten in the forest, logs abandoned at log landings, logs left to rot in sawmill log-yards, logs sawn with equipment that wastes 20% of the volume due to excessive kerf and inaccuracy, boards lost due to bad drying processes etc.

Where the majority of the timber stock in a country is held in few hands then this leads to an effective monopoly situation where there is insufficient motivation for companies to introduce efficiencies which would lead to greater value being retained in the country or region of production.

Although overly large concessions may be seen as negative for these reasons, concessions that are too small are also likely to have problems for other reasons.

Small concessions will produce small volumes and have small incomes. As a result the managers of these concessions will have insufficient capacity to engage in the international market for tropical timber on fair terms although they may be better placed to service internal markets.

The international market in timber is largely traded in two ways: with round-logs loaded in bulk or with boards cut to standard dimensions and loaded into containers. Small concession owners are unlikely to have access to the heavy equipment that is required to extract long logs from the forest and will be restricted to the market in processed boards. If they do sell logs they will be forced to sell to local traders who will take a disproportionate share of the timber value.

If selling processed boards, they will be required to satisfy the market demand for standard dimensions and long board lengths and will not be in a position to dry timber before shipping so that they will be restricted to the lower end of the value spectrum. However, more importantly, the shipping unit is a standard container which has a loaded capacity of approximately 30 m<sup>3</sup> of sawn-timber. This is the minimum shipping volume that makes economic sense since the timber must be containerised to prevent salt water damage and excessive drying and for fumigation to meet phytosanitary regulations. In most cases the production of 30 m<sup>3</sup> of sawntimber will require the harvesting of 150 m<sup>3</sup> of logs. If all of the logs were of one species then this might require the full yield from 30 ha (5m<sup>3</sup>/ha<sup>62</sup>) to produce one container.

In reality there will be six or seven species of interest so that there would probably be a requirement for a minimum annual harvest area of 200 ha if all species were uniformly distributed. They are not uniformly distributed, so that in order to satisfy an established demand it would be necessary to have a larger area for an annual coupe, possibly 500 ha. If this is then managed on a 40 year return cycle then the minimum viable management unit would be a production area of 20,000 ha<sup>63</sup>. This could be managed to produce from 2,000 - 4,000 m<sup>3</sup> of logs per year producing perhaps 500 – 1500 m<sup>3</sup> of export boards. This assumes that standard practices are maintained and that there is little or no silviculture.

There may be other advantages of having smaller concessions that produce additional benefits. Smaller areas may be easier to protect from illegal activities, but perhaps more importantly it is likely

---

<sup>61</sup> Grut, M., J. A. Gray and N. Egli. 1991. *Forest pricing and concession policies: Managing the high forests of West and Central Africa*.

<sup>62</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>63</sup> It would not be unusual for 30% of the total concession area to be unsuitable for production for a variety of reasons.

that a smaller area will be much better known by the managers. This knowledge could be used to refine harvesting and silviculture plans to make much better use of the existing stock and to provide significantly increased regeneration rates.

A European forest manager with an estate of 1000 ha will have knowledge of every stand (and every important high value tree) on the estate and will use this knowledge to direct his activities to produce timber in response to the changing market demand: when demand is low and prices are down the manager will cut less, reserving his stock for the future when prices are high. Specific trees are retained for specific future customers such as to provide masts for tall ships. This is only possible when the manager retains flexibility within the framework of the management plan to vary his harvest pattern. This flexibility is denied to concession managers in the tropics. However, it may be that communities have the same knowledge of their own lands which could give them a competitive advantage and enable them to manage smaller concession areas successfully.

A final consideration relating to the size of concessions relates to the impacts of corruption on concessions and the impacts of concessions. The presence of corruption can induce policy makers to allocate larger concessions<sup>64</sup> while, on the other hand, many smaller concessions may be more susceptible to being corrupted<sup>65</sup> leading to more rapid forest degradation.

### Are community held concessions more successful than others?

A recent FAO paper<sup>66</sup> has reviewed community forestry in general and found out that particularly in the south that community forestry is based on 'collaborative' models in which government and communities share rights and responsibilities which are gradually devolved to communities. In most cases this devolution of power has been slow or ineffective and the number of cases with well documented benefits is small.

In the Maya Biosphere Reserve it is clear that the successful community concessions have been those where the communities involved have a tradition of forestry and where they are working on lands known to them. The concessions that have failed are those where the concession-holders included a high proportion of recent arrivals from other parts of Guatemala. This failure is attributed both to uncertainty of tenure and land speculation accompanied by pressure from powerful external actors and organised-crime syndicates to carry out deforestation for the purpose of cattle ranching<sup>67</sup>.

There is some evidence that transferring forest rights to local stakeholders leads to improvements in forest management and decreased deforestation rates<sup>68, 69</sup>. In Mexico and in Guatemala, community managed forest areas have lower deforestation rates than protected areas close by<sup>70</sup>. However,

---

<sup>64</sup> Amacher G. S., M. Ollikainen and E. Koskela. 2012. Corruption and forest concessions. *Journal of Environmental Economics and Management* 63, 92–104.

<sup>65</sup> Delacote, P. 2010. *How concessions' size may influence systemic corruption in forest harvesting: a theoretical assessment*. Working Document INRA.

<sup>66</sup> Gilmour D. (2016) *Forty years of community-based forestry A review of its extent and effectiveness*. FAO Forestry Paper 176. FAO, Rome

<sup>67</sup> Radachowsky, J., V. H. Ramos, R. McNab, E. H. Baur and N. Kazakov. 2011. Forest concessions in the Maya Biosphere Reserve, Guatemala: A decade later. *Forest Ecol. Manage.*

<sup>68</sup> Porter-Bolland, L., E. A. Ellis, M. R. Guariguata, I. Ruiz-Mallén, S. Negrete-Yankelevich, V. Reyes-García. 2011. Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics. *Forest Ecol. Manag.*

<sup>69</sup> Bray, D. B., E. Duran, V. H. Ramos, J.-F. Mas, A. Velazquez, R. B. McNab, D. Barry, and J. Radachowsky. 2008. Tropical deforestation, community forests, and protected areas in the Maya Forest. *Ecology and Society* 13(2): 56.

<sup>70</sup> Bray, D. B., E. Duran, V. H. Ramos, J.-F. Mas, A. Velazquez, R. B. McNab, D. Barry, and J. Radachowsky. 2008. Tropical deforestation, community forests, and protected areas in the Maya Forest. *Ecology and Society* 13(2): 56.

there is considerable variation between communities, part of which can be attributed to deforestation pressures. Thus, in areas of high population density and high deforestation rates community managed forests are no better than formally protected areas in preventing deforestation.

In Tanzania, communities have been able to achieve tenure rights over their forests under revised legislation and where this has happened these communities have proved more effective than central authorities at encouraging forest regeneration<sup>71</sup> as well as protecting forest from fires resulting in an improved forest structure<sup>72</sup>. In addition, the transfer of forest ownership from central control to communities in Tanzania has in at least one case resulted in a tenfold increase in the income from timber derived by these communities<sup>73</sup>. However, such communities face significant challenges in securing the full potential value due to their lack of capital and the knowledge and skills to process timber and to access markets.

In Cameroon<sup>74</sup> on the other hand, community-owned forests appear to have higher rates of degradation than forests formally allocated to production. Where Cameroonian communities have achieved rights to manage their own forests, there have been significant problems for a variety of reasons. In many cases the forests are too small and the forest management plans are too rudimentary to allow for long term harvest planning. As a result, communities are unable to provide a reliable supply of timber to the market and are unable to respond properly to orders received from international buyers<sup>75</sup>. Regulatory authorities are very slow in the issuing of annual cutting permits leaving communities with just a few weeks at the end of the season in which to harvest their allowance. Management plans are produced by outsiders so that the communities have little knowledge of the true situation of their resources and little input into decision making about resource management. In the face of this situation it is said that many villages are simply selling their harvest allocation to launder timber harvested elsewhere.

In order to be successful anywhere, communities in tropical forests require significant assistance to develop the necessary skills. This includes skills to compete in the entire value chain including forest management, governance, harvesting, processing, marketing and business management. Community-based concessions certainly have a potential to deliver social, environmental and economic benefits and will often ensure that these benefits are better distributed amongst stakeholders but capital and human resource requirements mean that it is unlikely that a wholesale transfer of concessions from businesses to communities prove possible in the short term.

### How can forest certification help?

Forest certification systems have arisen since the 1990s and are based on two quite distinct but complimentary pillars. The first of these pillars has been the development by various means of standards for 'responsible/sustainable' forest management capable of being applied at the level of the forest management unit. The second pillar is a system of certification by means of third party inspection which offers certificates to organizations able to demonstrate compliance with the

---

<sup>71</sup> May Liana N. 2013. *Effects of forest management and land use on regeneration in REDD+ villages, southeastern Tanzania*. MSC Thesis. University of Michigan.

<sup>72</sup> Kalonga S.K., F. Midtgaard and T. Eid. 2015. Does Forest Certification Enhance Forest Structure? Empirical Evidence from Certified Community-Based Forest Management in Kilwa District, Tanzania. *International Forestry Review*, 17(2):182-194.

<sup>73</sup> Severin K. K., K. A. Kulindwa and B. I. Mshale. 2014. Equity in Distribution of Proceeds from Forest Products from Certified Community-Based Forest Management in Kilwa District, Tanzania. *Small-scale Forestry*.

<sup>74</sup> Bruggeman, D., Meyfroidt, P. and Lambin, E.F. 2015. Production forests as a conservation tool: Effectiveness of Cameroon's land use zoning policy. *Land Use Policy* 42 : 151-164.

<sup>75</sup> Pers obs.

standards. These certificates can then be used to demonstrate compliance with markets with the objective of increasing market share and/or market prices.

The question often asked about the impacts of forest certification would be better framed in terms of the impacts of compliance with internationally accepted forest management standards.

There have been numerous attempts to demonstrate the positive social, environmental and economic impacts of forest certification systems; however, very few of them have been able to demonstrate unequivocal proof of impacts. This is most commonly due to confounding explanations for observed changes<sup>76</sup> due to such things as certification being packaged with the transfer of forest tenure rights<sup>77</sup> or certification coming as part of a development aid support package, both of which would be expected to have a positive impact irrespective of certification.

Forest managers do not operate in isolation so that practices introduced in certified operations are likely to be adopted in uncertified ones if they are seen to have benefits. Similarly, government technical support programmes that are available to all forest managers are likely to adopt standards that are in line with certification standards so that improved practices will become much more widespread.

In any case, certification standards have changed the playing field significantly in terms of what is considered acceptable forestry practice. Thus a local adaptation of RIL is now a requirement of most new concession contracts.

Although difficult to demonstrate unequivocally it seems certain that practices associated with the standards for forest certification have become widespread in concessions and are more deeply embedded in organizations that have chosen to engage in actual certification regardless of the certification system used.

The most unequivocal evidence for impacts comes from the corrective action requests of auditors. An analysis of this type of request in natural tropical forests, including concessions and private ownership, is shown in **Table 8**. From this it is possible to see that there have been significant improvements as a result of certification in particular in relation to worker safety, management planning and the use of RIL as well as biodiversity protection. It is of interest to note that the long-term economic viability of forest companies was regularly raised by auditors<sup>78</sup> and this concurs with the view<sup>79</sup> that forest concessions in the tropics may not be as profitable as is often presumed.

---

<sup>76</sup> van Hensbergen H. J. Bengtsson K. Miranda M. & Dumas I. 2011. *Poverty and Forest Certification*.

<sup>77</sup> Severin K. Kalonga • Kassim A. Kulindwa Baruani I. Mshale (2014) Equity in Distribution of Proceeds from Forest Products from Certified Community-Based Forest Management in Kilwa District, Tanzania. *Small-scale Forestry*.

<sup>78</sup> Peña-Claros M, S. Blommerde and F. Bongers F. 2009. Assessing the progress made: an evaluation of forest management certification in the tropics. Tropical Resource Management Papers, Wageningen.

<sup>79</sup> Karsenty A. 2015 *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

**Table 8 Corrective action requests requiring improved management in tropical forests certified by FSC<sup>80</sup>.**

| Criterion | Description  | Ranking | Distribution |
|-----------|--|---------|--------------|
| 4.2       | Health and safety for employees and families   | 8,2     | 87           |
| 7.1       | Management plan  | 6,7     | 79           |
| 6.5       | Use of reduced impact logging techniques to reduce impact to the forest                    | 5,6     | 74           |
| 8.2       | Monitoring of indicators, such as productivity, forest diversity, socioeconomic impacts    | 4,8     | 76           |
| 5.6       | Harvesting regulations to assure long-term sustainability                                  | 4,5     | 61           |
| 6.2       | Rare, threatened & endangered species  | 4,0     | 73           |
| 8.3       | Chain of custody   | 4,0     | 58           |
| 5.1       | Economic viability   | 3,7     | 68           |
| 7.3       | Training and supervision of forest workers to ensure implementation of the management plan | 3,1     | 61           |
| 8.1       | Frequency and intensity of monitoring  | 2,8     | 63           |
| 6.1       | Assessment of environmental impact   | 2,7     | 54           |
| 4.1       | Communities are given employment, training, services                                       | 2,7     | 46           |
| 1.1       | National & local laws  | 2,6     | 46           |
| 1.5       | Protection from illegal activities   | 2,6     | 54           |
| 4.4       | Evaluation of social impact  | 2,5     | 60           |
| 6.3       | Ecological functions & values  | 2,4     | 55           |
| 2.3       | Mechanism to solve disputes  | 2,3     | 44           |
| 6.4       | Protected areas  | 2,1     | 44           |
| 6.7       | Waste (garbage)  | 2,0     | 54           |
| 9.1       | Define existence of high conservation forest values  | 1,9     | 52           |
| 2.2       | Local communities maintain control or they delegate it                                     | 1,9     | 30           |
| 7.4       | Public summary of management plan  | 1,8     | 57           |

In African concessions certification has had significant positive social and environmental impacts on the way in which certified companies carry out their business<sup>81</sup> and compared with uncertified companies the social environment is significantly better<sup>82</sup>. There is today a much greater degree of engagement with local people and indigenous communities in certified operations and this has led to attempts by certified companies to carry out FPIC processes with communities and to better compensate customary rights holders.

There is however evidence that certification can help to reduce deforestation and that this effect is stronger in tropical regions<sup>83</sup>, where FSC certification is much more prevalent than PEFC certification. It should be noted that this is based on a correlational study using information for whole countries and it may be that countries having a greater policy success in combating deforestation are also those where forestry businesses are more likely to seek certification.

One aspect of forest certification that has been little discussed is the fact that the process of certification requires a much higher degree of transparency than is common in the tropical forestry business. It is expected that this transparency will lead to a greater level of accountability<sup>84</sup> from both forest managers and associated parties. This greater accountability is expected to lead to

<sup>80</sup> Peña-Claros M, S. Blommerde and F. Bongers. 2009, Assessing the progress made: an evaluation of forest management certification in the tropics. Tropical Resource Management Papers, Wageningen.

<sup>81</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>82</sup> Cerutti P.O, Lescuyer G, Tsanga R, Kassa S.N, Mapangou P.R, Mendoula, E.E, Missamba-Lola, A.P, Nasi R, Eckebil P.P.T and Yembe R.Y. 2014. *Social impacts of the Forest Stewardship Council certification: An assessment in the Congo basin*. Occasional Paper 103. CIFOR, Bogor, Indonesia

<sup>83</sup> Damette, O. and P. Delacote. 2011. Unsustainable timber harvesting, deforestation and the role of certification. *Ecological Economics* 70(6): 1211-1219.

<sup>84</sup> Fox, J. 2007. The uncertain relationship between transparency and accountability. *Development in Practice*, 17:4, 663 – 671.

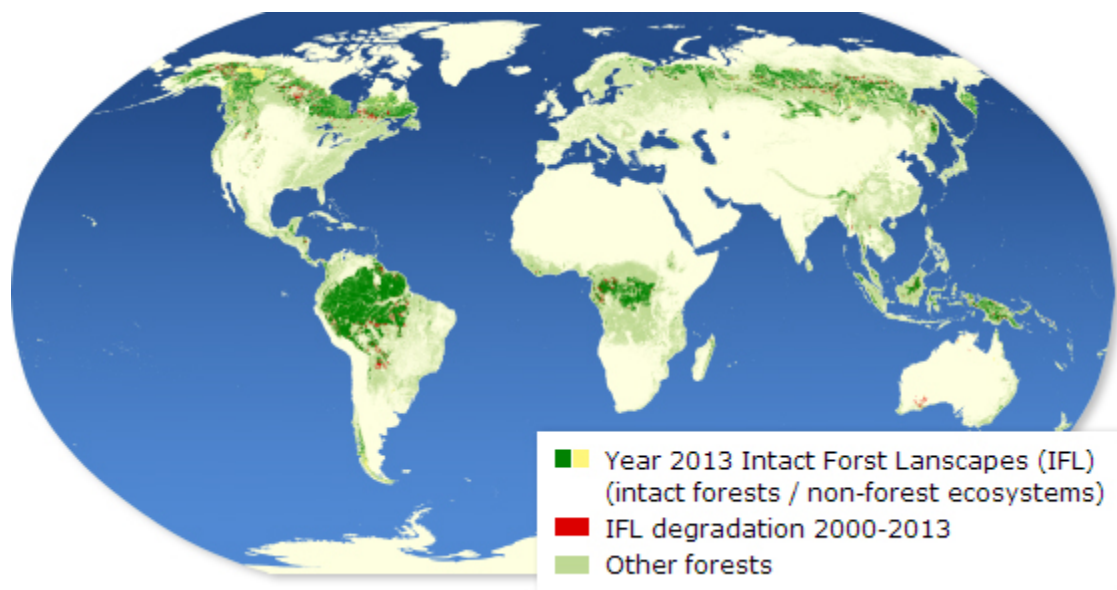
positive social and environmental impacts. One supposed strength of certification systems is the public availability of the certification audit reports which reveal the compliances and non-compliances with the defined standard norms. It is hoped that forest certification can be used as a tool to reduce forest associated corruption in tropical countries; however, there is little evidence that this has succeeded and it is unlikely that forest certification on its own can fulfil this role<sup>85</sup>.

#### Intact Forest Landscapes

Intact forest landscapes (IFL) are defined as forest areas largely free from human influence with an area of at least 50,000 ha and a minimum width of 10 km<sup>86</sup>. Such areas are the target of protection actions from environmental NGOs such as Greenpeace and WWF. At the FSC general assembly of 2014 the membership voted to accept motion 65<sup>87</sup> which seeks to protect significant areas of IFL from commercial harvesting. Under this motion, FSC certificate-holders will be required to set aside large areas (a default level of 80%) of the IFL contained within their FMUs and protect them from harvesting or other forms of degradation.

This development is likely to have significant impacts on concessions in several parts of the world where large extents of IFL (**Figure 1**) and concession systems coexist. This includes large areas of the Congo Basin and Amazonia as well as areas of the islands of Borneo and the New Guinea in the tropical zone and Russia and Canada in the boreal zone.

Figure 1 Extent of IFL in 2013<sup>88</sup>



This decision by the FSC membership will pose a range of challenges for certified concession-holders in these areas who are faced with losing a significant proportion of their harvest potential. The delineation of IFL at the local level may lead FSC-certified organizations to seek much larger forest concessions in order to remain viable while complying with certification demands. It also risks that existing certificate-holders will abandon their operations or sell them to uncertified operators. It is

<sup>85</sup> Søreide T. and A. Williams. 2013. *Certified integrity? Forest certification and anti-corruption*. U4 Issue January 2013 No 1.

<sup>86</sup> <http://www.intactforests.org/concept.html>

<sup>87</sup> <http://ga2014.fsc.org/motion-updates-205.motion-65-high-conservation-value-2-hcv2-intact-forest-landscapes-ifl-protection>.

<sup>88</sup> <http://www.intactforests.org/world.map.html>

also likely that certified organizations will be unable to compete effectively with uncertified companies when tendering for concessions.

It is therefore important that governments develop their own policies in relation to IFL and concessions in order to achieve a level playing field if they are to attract responsible concession-holders.

### What have tropical forest concessions achieved?

If, as suggested in 0, the objective of tropical forest concessions has been to employ the capital of the forest for societal benefit, then the history has at least during the period between 1945 and 2000, been a sad one. During this period, forest concessions have been operating in many of the world's poorest nations and there is little evidence that concessions have contributed much to development. In most cases, forest-dependent people remain amongst the poorest of the poor<sup>89</sup>.

This failure to significantly improve livelihoods has in many cases been accompanied by significant loss of or degradation of tropical forests. It is not suggested that concessions have been solely or directly responsible for these losses; however, it is clear that their failure to protect the forest resource has permitted the losses to occur. In addition, the repeated creaming of the forest under various pretexts has led to large areas of forest with very little timber that is today considered of commercial interest.

Towards the end of the last century there has been a significant change in the objectives of forest concessions in general, from concessions which were almost solely for the purpose of generating government revenue by harvesting existing trees to concessions where the responsibility for some or all aspects of forest management were transferred to the concession-holders. It is to be expected that if these responsibilities are taken seriously and the necessary forest management activities take place, there will in the future be some improvement in the forest resource including its social environmental and economic value.

It is suggested that the failure of concession-holders to generate significant local value is that tropical forestry (particularly in Africa) is not that profitable<sup>90</sup> so that there is little value to share with local stakeholders and governments. At the same time there is evidence that informal payments for regulatory permissions account for a large portion of the in-country value and that transfer pricing is used to hide true export values of timber products (section 0).

There is evidence that some concessions have benefitted local communities in a number of ways<sup>91</sup> including development of skills, development of local small entrepreneurs and suppliers, assisting communities in obtaining forest tenures and building higher level capacities required for negotiation with customers and regulatory authorities.

In addition, in at least some countries there have been significant improvements in the quality as well as the quantity of employment and in particular improvements in health and safety and the provision of adequate personal protective equipment. These improvements are likely to be associated with the requirements of all certification schemes for minimum standards of health and safety performance. In areas where significant value adding activities have been implemented this has increased the employment and value capture in country.

---

<sup>89</sup> Scherr S. J., A. White and D. Kaimowitz. 2003. *A new agenda for forest conservation and poverty reduction: Making markets work for low-income producers*: Forest Trends, Washington.

<sup>90</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>91</sup> Gretzinger S. 2015. *Latin American experiences in forest concessions*.

## 4 Why is tropical forestry so difficult??

Tropical timber reaching markets in developed countries is in general significantly more expensive than similar timbers from temperate forests. This occurs in spite of the fact that timber is generally seen as a free good and large volumes are taken that are never 'officially' paid for in the source countries. In order to justify these price premiums on tropical timber in a competitive market, there must be significant 'difficulties' involved in tropical forestry that lead to increased costs along the value chain.

### The diversity dilemma?

Tropical forests are significantly more diverse than temperate forests (**Figure 2**)<sup>92</sup>. A single hectare in a Malaysian forest contains more than 250 different tree species<sup>93</sup> whereas a hectare of a production forest in a temperate zone is unlikely to contain more than 20 tree species. The number of individuals per species in a hectare of tropical forest is also likely to be low (1-2)<sup>94</sup>, so that if there are relatively few species in market demand the number of trees of interest per hectare will be small.

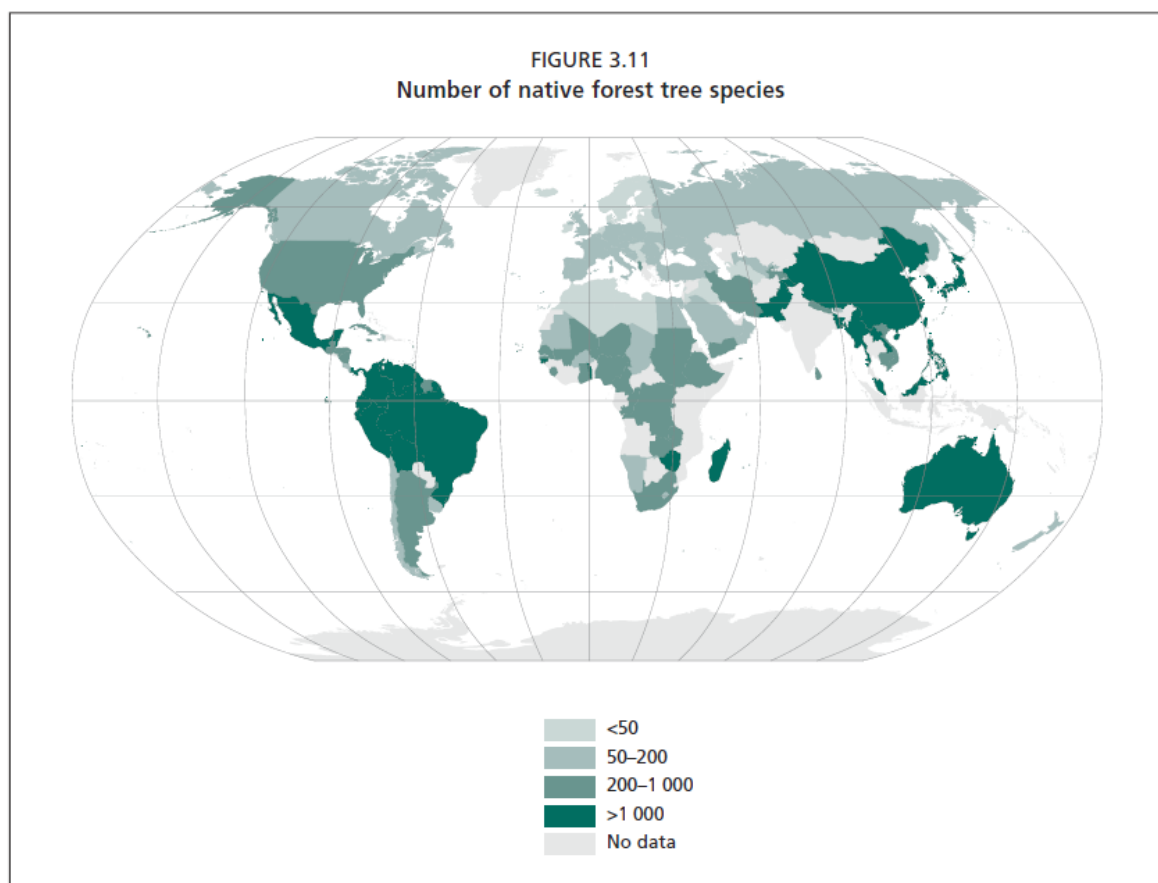
---

<sup>92</sup> Barthlott W., J. Mutke, D. Rafiqpoor, G. Kier and H. Kreft. 2005. Global Centers of Vascular Plant Diversity. *Nova Acta Leopoldina* NF 92, Nr. 342, 61–83.

<sup>93</sup> Suratman, M.N. 2012. Tree Species Diversity and Forest Stand Structure of Pahang National Park, Malaysia. In: Lameed, G.A., Ed., *Biodiversity Enrichment in a Diverse World*, 473-492.

<sup>94</sup> Suratman, M.N. 2012. Tree Species Diversity and Forest Stand Structure of Pahang National Park, Malaysia. In: Lameed, G.A., Ed., *Biodiversity Enrichment in a Diverse World*, 473-492.





*Figure 2 Diversity of tree species by country<sup>95</sup>.*

In practice there are differences in the volumes of timber of interest in different parts of the world. In Southeast Asia, dipterocarp forests have high standing volumes of commercial timber that are sufficient to encourage a lucrative business in clear-felling forest on the pretext of future agricultural development<sup>96</sup>. In Borneo, first entry harvest volumes in concessions may be as high as 80 m<sup>3</sup>/ha under traditional methods and 50 m<sup>3</sup>/ha is normal<sup>97</sup>. In Brazil, yields of commercial timber are about 13 m<sup>3</sup>/ha<sup>98</sup> during each harvest cycle while in Africa volumes of 4-5 m<sup>3</sup>/ha are usual<sup>99</sup>. In none of these cases can the current harvest rate be sustained under current management practices (see below).

#### Forest management planning

All forest management plans seen by the author for forests in tropical concessions in Africa and Latin America are missing a critical aspect of the management cycle which is the lack of long term objectives for the tree resource. The most comprehensive plans seen include detailed plans for proper access and harvesting, reduced impact logging, good biodiversity management planning based on comprehensive identification of High Conservation Values and set aside areas,

<sup>95</sup> FAO. 2005. *Global forest resources assessment 2005. Main Report*. FAO Technical Paper 147.

<sup>96</sup> Chan B. 2015. *Status of Forest concessions in Southeast Asia*.

<sup>97</sup> van Gardingen P.R, M.J. McLeish, P.D. Phillips, Dadang Fadilah, G. Tyrie and I. Yasman. 2003. Financial and ecological analysis of management options for logged-over Dipterocarp forests in Indonesian Borneo. *Forest Ecology and Management* 183 (2003) 1–29.

<sup>98</sup> Gretzinger S. 2015. *Latin American experiences in forest concessions*.

<sup>99</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

identification of social impacts and detailed mitigation for negative social and environmental impacts, amongst others.

However, none of these plans include plans for renewal of the resource based on some vision of the future timber and other resource requirements from the forest<sup>100</sup>. Following the commercial harvest, forests are simply left to 'recover' even though it is well understood that this recovery will result in a forest that is quite different in terms of the distribution of economically interesting species<sup>101</sup>. In effect, the history of tropical forest management based on minimum felling diameters is a history of sequential economic extinction of the desirable species<sup>102</sup>. Part of this is due to illegal overharvesting but the system itself would lead to the same result since harvested trees are less likely to be replaced in the canopy by conspecifics due to intraspecific competition<sup>103</sup>.

Although there has been significant improvement in understanding of the ecology of some tropical forest species, for example mahogany (*Swietenia macrophylla*)<sup>104</sup>, this has only rarely been translated into management recommendations. In any case it often fails to take into account regional ecological differences in tree life history processes<sup>105</sup>.

It is notable that for mahogany harvesting in the Brazilian Amazon to become sustainable over the next century, there would need to be both an increase in the number of trees of harvestable size retained in the stand combined with a significant increase in the investment in silviculture to promote mahogany regeneration.

This change in management will have a significant impact on the financial viability of mahogany harvesting by reducing the income and increasing the costs. The situation in the Amazon is similar for forests in Asia<sup>106</sup> and Africa<sup>107</sup>, where significant changes in management and silvicultural investments are required to become sustainable. However, it should be noted that harvest efficiency in most tropical timber operations is low (**Figure 3**), with poor log-bucking practices leading to abandonment in the field of significant volumes of felled timber<sup>108</sup>, so that there is potential for a significant increase in volumes recovered and hence increased incomes.

---

<sup>100</sup> von Gadow K, M. Kurttila, P. Leskinen, L. Leskinen, T. Nuutinen and T. Pukkala. 2007. Designing forested landscapes to provide multiple services. CAB Reviews: *Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources* 2, No. 038.

<sup>101</sup> Karsenty, A. and S. Gourlet-Fleury. 2006. Assessing sustainability of logging practices in the Congo Basin's managed forests: the issue of commercial species recovery. *Ecology and Society* 11(1): 26.

<sup>102</sup> Kometter, R. F., M. Martinez, A. G. Blundell, R. E. Gullison, M. K. Steininger and R. E. Rice. 2004. Impacts of unsustainable mahogany logging in Bolivia and Peru. *Ecology and Society* 9(1): 12.

<sup>103</sup> Fibich P., J. Lepš, V. Novotný, P. Klimeš, J. Těšitel, K. Molem Kipiro Damas and G. D. Weiblen. 2016. Spatial patterns of tree species distribution in New Guinea primary and secondary lowland rain forest. *Journal of Vegetation Science*.

<sup>104</sup> Grogan J., R.M. Landis, C.M. Free, M.D. Schulze, M. Lentini and M.S. Ashton. 2014. Big-leaf mahogany *Swietenia macrophylla* population dynamics and implications for sustainable management. *Journal of Applied Ecology*. 51(3) 664-674.

<sup>105</sup> Grogan J., R.M. Landis, C.M. Free, M.D. Schulze, M. Lentini and M.S. Ashton. 2014. Big-leaf mahogany *Swietenia macrophylla* population dynamics and implications for sustainable management. *Journal of Applied Ecology*. 51(3) 664-674.

<sup>106</sup> van Gardingen P.R, M.J. McLeish, P.D. Phillips, Dadang Fadilah, G. Tyrie and I. Yasman. 2003. Financial and ecological analysis of management options for logged-over Dipterocarp forests in Indonesian Borneo. *Forest Ecology and Management* 183 (2003) 1–29.

<sup>107</sup> Karsenty, A. and S. Gourlet-Fleury. 2006. Assessing sustainability of logging practices in the Congo Basin's managed forests: the issue of commercial species recovery. *Ecology and Society* 11(1): 26.

<sup>108</sup> Gerwing, J. J., J. S. Johns, and E. Vidal. 1996. Reducing Waste During Logging and Log Processing: Forest Conservation in Eastern Amazonia. *Unasylva* (FAO): 17-25.

Figure 3 Log abandoned in a concession in Cameroon for being too short (<3 m)



### Tropical Forest Silviculture

In section 0 attention was drawn to the fact that silvicultural techniques are rarely applied in tropical natural forest management. This is due both to the perceived high costs and poor returns that are thought to be achieved as well as a lack of knowledge of the impacts of specific activities.

Silvicultural interventions can be aimed at increasing both the quantity and the quality of the timber produced and there is increasing evidence that both of these factors can be of importance in ensuring that silviculture is both economically viable and environmentally acceptable<sup>109</sup>.

A range of silvicultural interventions have been carried out in tropical forests including enrichment planting under canopy or in gaps, soil scarification, early weeding, competitor removal, selective thinning and creeper cutting amongst others.

As would be expected, competitor removal and thinning can enhance growth rate increasing annual diameter increment by more than 30%<sup>110</sup> in Bolivian tropical forests. There have been a number of studies that demonstrate the effectiveness of enrichment planting with desirable species in the canopy gaps generated by harvesting<sup>111,112</sup> in both Latin American and African forests. These have also demonstrated the higher growth and survival rates achieved by planting nursery prepared material in canopy gaps.

The success in the use of a combination of methods is demonstrated from a financial analysis that shows that even with a 60 year return period to harvest investments in this type of silviculture are financially positive for a range of situations<sup>113</sup> outperforming under most circumstances situations in which RIL was used but not followed up with any silvicultural intervention. The additional benefits

<sup>109</sup> Günter S, Weber M, Stimm B, and Mosandl R. (2011) Five Recommendations to Improve Tropical Silviculture. In S. Günter et al. (eds.), *Silviculture in the Tropics*, Tropical Forestry 8, , Springer-Verlag Berlin Heidelberg, DOI 10.1007/978-3-642-19986-8\_34.

<sup>110</sup> Mostacedo, B., Z. Villegas, J. C. Licona, A. Alarcón, D. Villarroel, M. Peña-Claros y T. S. Fredericksen. 2009. *Ecología y Silvicultura de los Principales Bosques Tropicales de Bolivia*. Instituto Boliviano de Investigación Forestal. Santa Cruz, Bolivia.

<sup>111</sup> Doucet, J.-L., et al., Enrichment of logging gaps with moabi (*Baillonella toxisperma* Pierre) in a Central African rain forest. *Forest Ecol. Manage.* (2009), doi:10.1016/j.foreco.2009.08.018.

<sup>112</sup> Lopes J. do C.A, S.B. Jennings, N.M. Matni (2008) Planting mahogany in canopy gaps created by commercial harvesting. *Forest Ecology and Management* 255 300–307.

<sup>113</sup> Schwartz G, , ALS Bais, M Peña-Claros, MA Hoogstra-Klein, GMJ Mohren & BJM Arts (2016) Profitability of silvicultural treatments in logging gaps in the Brazilian Amazon. *Journal of Tropical Forest Science* 28(1): 68–78.

from this type of intervention include the positive biodiversity impact of replacing tree species whose numbers have been significantly reduced by harvesting.

Silvicultural activities such as enrichment planting, site clearing, weeding etc., when they are required by contract or law or by company CSR policies, are rarely given the attention they require. As a result they are often poorly done and are not subjected to the same type of efficiency checks as the other parts of the business. If instead these were seen as an integral part of the business investment, it is likely that they would be managed much more intensively and that this would lead to reduced costs of, for example, seedling production and that this would lead to higher profitability. On the other hand, long term investment requires long term security of tenure<sup>114</sup>.

## Economics of tropical forest management

In section 0 above it has been already highlighted the fact that tropical forests in general have a much lower density of desirable trees than temperate forests so that in many cases only one or two trees are harvested in each hectare<sup>115</sup>. This is associated with increased costs of access per unit of volume extracted. There are many other reasons why the costs of production might be higher in tropical forests than in temperate ones, for example<sup>116</sup>:

- difficulty of access due to terrain, soils and moisture
- poor transport infrastructure leading to high transport costs
- high costs of informal payments
- longer distances to processing facilities and ports
- low worker productivity
- large and heavy trees more expensive to extract

As a result, it may be considered that roundwood from tropical forests should be significantly more expensive than roundwood from temperate forests. In Liberia, for example, the costs of extraction of US\$ 60/m<sup>3</sup>, transport to port of US\$ 40/m<sup>3</sup> and a management overhead of US\$ 15 leads to a log cost in export harbour of US\$ 115 before any royalties are paid. The government is also seeking to extract a rent in excess of 50% of the log price. Log prices of US\$ 170/m<sup>3</sup> mean that the operation is not commercially viable<sup>117</sup>.

Transport is a key limiting factor in the timber industry in developing countries with high prices and low quality of transport being a major issue. Costs are much higher in Central Africa than in France with costs in 2007 of US\$ 0.12/tonne/km and US\$ 0.05/tonne/km, respectively. Thus a 100 km distance from forest to port would add US\$ 12 per tonne to the costs<sup>118</sup>.

It is notable that variable costs are a much higher proportion of transport costs in African developing countries than in Europe<sup>119</sup>. This is partly due to the lower cost of the second-hand trucks that form the bulk of the African fleet but also due to the higher operational costs due to the poor road condition leading to slower movement and higher repair costs. Thus, improvement of infrastructure may serve to reduce costs and increase the number of species that are economically viable.

---

<sup>114</sup> Schwartz G, , ALS Bais, M Peña-Claros, MA Hoogstra-Klein, GMJ Mohren & BJM Arts (2016) Profitability of silvicultural treatments in logging gaps in the Brazilian Amazon. *Journal of Tropical Forest Science* 28(1): 68–78.

<sup>115</sup> More in Asian dipterocarp forest than other tropical forests.

<sup>116</sup> Particularly when comparing timber concessions.

<sup>117</sup> IBI Consultants. 2013. *Forest concessions—commercial forest revenue projection model final report: June 2013*. USAID.

<sup>118</sup> Teravaninthorn, S. and G. Raballand. 2008. *Transport Prices and Costs in Africa: A Review of the Main International Corridors*. World Bank.

<sup>119</sup> Teravaninthorn, S. and G. Raballand. 2008. *Transport Prices and Costs in Africa: A Review of the Main International Corridors*. World Bank.

Local processing of timber should significantly reduce the transport costs as a proportion of the final product costs. For example, US\$ 12/tonne would be 6% of the value of a log priced at US\$ 200/tonne but only 2% of a load of sawn-boards at US\$ 600/tonne.

In many cases, forest operations are only economically viable when the highest valued species are extracted so that even permitted species with a commercial demand but a lower price are not collected<sup>120</sup>.

It is often considered that operators in tropical forests make excessive profits through a variety of mechanisms including transfer pricing. If this were generally true then this should be reflected in a price differential between temperate logs and tropical ones.

Information on the pricing of timber and of logs is difficult to obtain due to the secrecy surrounding suppliers and customers in timber value-chains generally<sup>121</sup>. In **Table 9** information has been collected on a range of both temperate and tropical species from a wide range of sources. In addition, within a species there is an enormous range of pricing difference according to the 'quality' of the timber product. An attempt to overcome this problem has been made by selecting prices for logs that are of sawlog grade A and not veneer grade and for selecting a board product as close to 25 mm x 150 mm x 2.4 m as possible and of FAS quality. The board prices are retail prices with large volume discounts and apply to volumes of approximately 1 m<sup>3</sup>. The figures shown are the average of a number of prices obtained and these could be very variable. For example, for teak boards of plantation the price range in Europe was from about US\$ 6000/m<sup>3</sup> to US\$ 18000/m<sup>3</sup>. It should be noted that the log price for ash is strongly biased upwards by a single price offer over US\$ 1800/m<sup>3</sup> for a parcel of logs in the UK. This was much higher than ash log prices in France or Sweden.

**Table 9** Costs of logs in countries of origin and selling prices of boards in the UK of a range of hardwood species<sup>122</sup>.

|                    | Board in Europe<br>US\$/m <sup>3</sup> | Logs in Source Region<br>US\$/m <sup>3</sup> | Roundwood/Board % |
|--------------------|--|--|-------------------|
| Ash                | 3689                                   | 682  | 18%               |
| Beech              | 3482                                   | 170  | 5%                |
| Oak European       | 4582                                   | 235  | 5%                |
| Oak American White | 3547                                   | 296  | 8%                |
| Iroko              | 4356                                   | 325  | 7%                |
| Padouk             | 4519                                   | 319  | 7%                |
| Sapele             | 5259                                   | 342  | 7%                |
| Wenge              | 9692                                   | 473  | 5%                |
| Mahogany           | 6988                                   | 253  | 4%                |
| Meranti            | 2933                                   | 188  | 6%                |
| Teak               | 12973                                  | 500  | 4%                |

In **Table 9** we can see that in spite of the large range of prices for different species and the different origin of the temperate and tropical species, there is a remarkable congruence in terms of the relationship between the log price and the board price as a percentage. In all cases this falls in the range of 4 – 8 % and there is no obvious difference in terms of the origin of the timber (it should be

<sup>120</sup> IBI Consultants. 2013. *Forest concessions—commercial forest revenue projection model final report: June 2013*. USAID.

<sup>121</sup> Poynton S. 2015. *Beyond Certification*. Do Sustainability. Oxford.

<sup>122</sup> This information is derived from an extensive search of prices and refers to published prices for dates from 2013 to 2016. As far as possible, the board information is based on boards of FAS quality of dimensions 25 mm x 150 mm x 2.4 m. Values are average of all values obtained.

noted that although the origin of the timber is known it is not known if the pricings in the table refer to timber processed in the country of origin or elsewhere).

This result suggests that there is no systematic market failure in the tropical timber market in terms of pricing when it is compared with the market of temperate timber, at least for these well-known species. However, it is also known that there is a large amount of illegal harvesting involving the non-payment of royalties which reduces the costs of at least some operators.

There are some interesting variations for some species. Although teak sells for a minimum of US\$ 6000/m<sup>3</sup> in Europe, plantation teak boards are available in India and China for US\$ 2397/m<sup>3</sup> and US\$ 4588/m<sup>3</sup>, respectively. It may well be that the market specification in these markets is different from the market in Europe, particularly in terms of allowing a certain amount of sapwood in the boards.

What is clear from a range of sources<sup>123,124</sup> is that harvesting natural forests is not as profitable as might be imagined, particularly if the operator works in full compliance with the law. This is confirmed by the very large number of concessions that lie unworked and abandoned.

However, it is likely that in a number of cases this lack of profitability is due to transfer pricing. A good evidence of this practice is found at least in Papua New Guinea, where average FOB log prices are significantly below the world averages and companies systematically make losses<sup>125</sup>.

What is quite clear is that unmanaged tropical forests with growth rates of commercially interesting species of 0.1 m<sup>3</sup>/ha/yr resulting in a log value increment of US\$ 20-40/ha/yr, cannot compete with temperate forests in which the commercial increment of a range of species in mixed species stands can exceed 5 m<sup>3</sup>/ha/yr - and in single species stands of beech for example, can exceed 10 m<sup>3</sup>/ha/yr - giving annual log value increments of US\$ 1000/ha/yr. They also cannot compete with other tropical land uses such as oil palm with annual returns of US\$ 1000 – 3000/ha.

Payment for environmental services could make a significant difference to the profitability of tropical forest operations; however, at least in Bolivia and Brazil the rights to carbon credits is not parcelled out with the concession but is retained by the government<sup>126</sup>. It is also possible that restrictions placed on forest management in order to achieve compliance with carbon schemes reduces the profitability.

Although there is no evidence of systematic market failure it is necessary to recognise that there is considerable opportunity to improve the efficiency of the market by improving market communication thereby ensuring that the small supply of timber is optimally used. Currently middlemen in the market make their profits by arbitrage on timber prices, adding little value. By matching customers' needs to suppliers' capacities they should be able to make much higher revenue on the basis of customer savings and suppliers revenue increases.

## The role of markets

The structure of the market for tropical timbers plays an enormous role in determining how tropical forests are harvested and managed. There is a huge variation in the demand for different species in different markets.

---

<sup>123</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>124</sup> Gretzinger S. 2015. *Latin American experiences in forest concessions.*

<sup>125</sup> Mousseau F. & Lau P. (2016) *The great timber heist: the logging industry in Papua New Guinea*. The Oakland Institute.

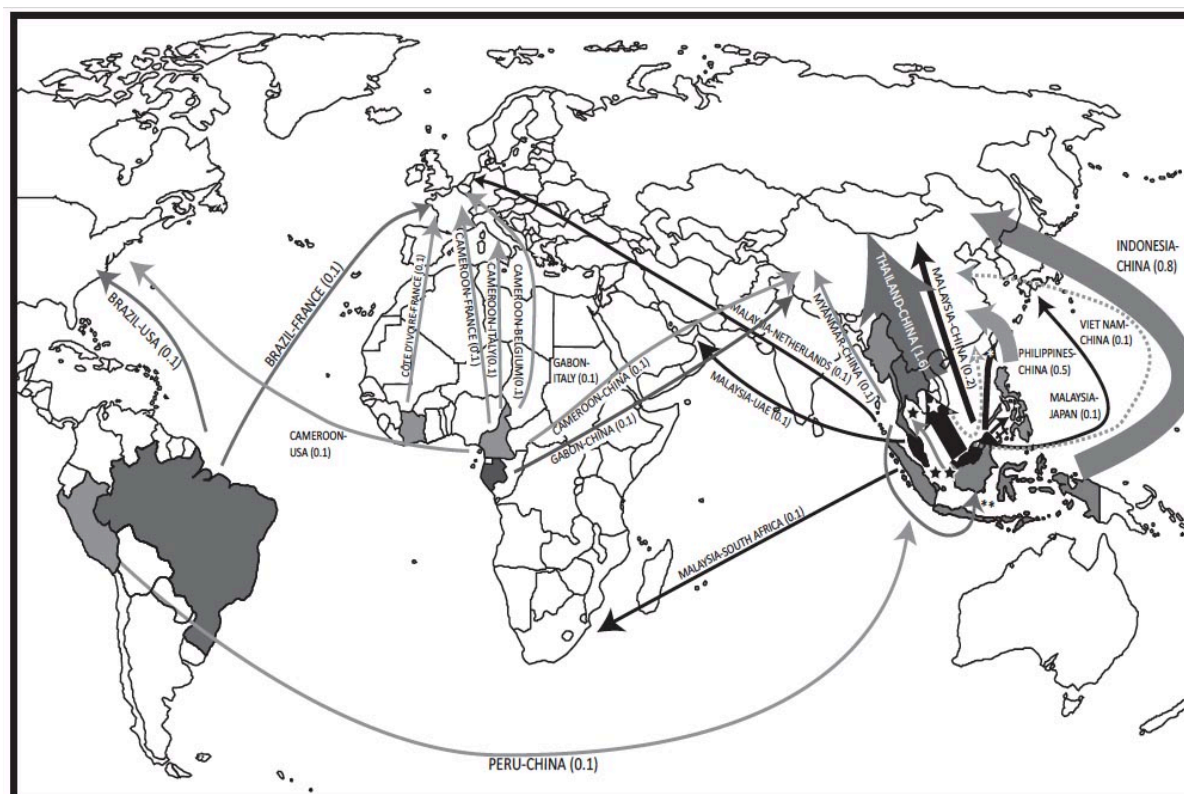
<sup>126</sup> Gretzinger S. 2015. *Latin American experiences in forest concessions.*



Some species are so valuable that their demand in even the smallest quantities ensures that they will be harvested, often illegally. For instance, the demand for rosewoods in China for manufacture of extremely high-priced furniture is in this category<sup>127</sup>.

The bulk of the species can be considered as commodity timbers which are supplied to the market to satisfy different types of demand. These vary from market to market according to fashion, availability and proximity so that the majority of tropical hardwoods from West Africa are exported to Europe<sup>128</sup> while Southeast Asian hardwoods are exported to China, Japan and USA<sup>129</sup>. (Figure 4).

Figure 4 Major trade flows of tropical timber<sup>130</sup>



The required volumes for commodity timbers depend on their end use and can range from as little as 1 m<sup>3</sup>/yr to as much as 3000 m<sup>3</sup>/yr for a large volume manufacturer of kitchen cabinet doors (Table 10).

Table 10 Quantities of timber required for a range of products

| Type of user                              | Unit volume conversion   | Typical annual demand (m <sup>3</sup> ) |
|---|--|---|
| Specialist furniture manufacturer         | 20 – 50 chairs/m <sup>3</sup> , 10 tables/m <sup>3</sup> , 3 dressers/m <sup>3</sup> | 1-10 m <sup>3</sup> /yr                 |
| Larger mass market furniture manufacturer | 20 – 50 chairs/m <sup>3</sup> , 10 tables/m <sup>3</sup> , 3 dressers/m <sup>3</sup> | 50-1,000 m <sup>3</sup> /yr             |
| High end windows and doors                | 10-20 doors/m <sup>3</sup> , 50 – 100 window   | 50-200 m <sup>3</sup> /yr               |

<sup>127</sup> Wenbin, H. and S. Xiufang. 2015. *Tropical Hardwood Flows in China: Case Studies of Rosewood and Okoumé*. Forest Trends.

<sup>128</sup> Blackett, H. and E. Gardette. 2008. *Cross-border flows of timber and wood products in west Africa: final report* European Commission Contract Reference: 2007/146818.

<sup>129</sup> Forest Trends. 2011. *Timber Trade Flow Maps of China and the Mekong Region*.

<sup>130</sup> ITTO. 2012. *Annual Review and Assessment of the World Timber Situation 2012*. Division of Economic Information and Market Intelligence, International Tropical Timber Organization, Yokohama, Japan. 196 pp.

| Type of user  | Unit volume conversion   | Typical annual demand (m <sup>3</sup> ) |
|---|--|---|
|   | frames/m <sup>3</sup>  |   |
| Yacht decking   | 0.5 – 1 m <sup>3</sup> /yacht  | 50-100 m <sup>3</sup> /yr               |
| Engineered wood flooring                                  | 150m <sup>2</sup> flooring/m <sup>3</sup> : typical house (0.5 – 1 m <sup>3</sup> ), hotel (10 – 20 m <sup>3</sup> ) | 300-700 m <sup>3</sup> /yr              |
| Low volume kitchen cabinet door range for large DIY chain | 50 - 70 doors/m <sup>3</sup>   | 300 m <sup>3</sup> /yr                  |
| Small scale guitar maker                                  | 200-300 guitars / m <sup>3</sup>   | Less than 1 m <sup>3</sup> /yr          |
| Large scale guitar maker                                  | 200-300 guitars / m <sup>3</sup>   | 1-100 m <sup>3</sup> /yr                |

Bearing in mind the discussion in section 0 about area productivity we can see that a single large customer will exhaust the supply of a particular species from an African concession of 50,000 ha or more. Any further volume would have to be of another species.

There is a problem with introducing new species onto the market which relates to the market development cost. There are often many species with appropriate technical properties for a particular use but only some of these will also be visually attractive. Even when a species meets all of the demands for a purpose it will be unknown on the market and it will be difficult to persuade manufacturers to use it in their processes as long as the alternative remains in good supply. The investment required to launch a new timber onto the market in competition with others is likely to be several million dollars and this would require an assured market and an assured supply for perhaps US\$ 20 million worth of logs. If logs are selling at a lower price for a new timber in order to attract customers we may be able to sell them at a price of US\$ 200/m<sup>3</sup>. Thus we need to sell 100,000 m<sup>3</sup> to make it worth the cost of bringing the new species to market. In order for a single commercial entity to achieve these volumes in a three-year period (remembering we would like to see a return on the marketing investment of 30%) we require a concession of almost 1 million ha harvested on a 30 year rotation.

Thus, although the forest may contain 30 to 40 species that would be of commercial value, at any one time only a maximum of six or seven of these will be in use. It is only when the supply of a particular species approaches economic extinction that customers will start to search for alternatives. The search for new species is demand-led and not producer-led.

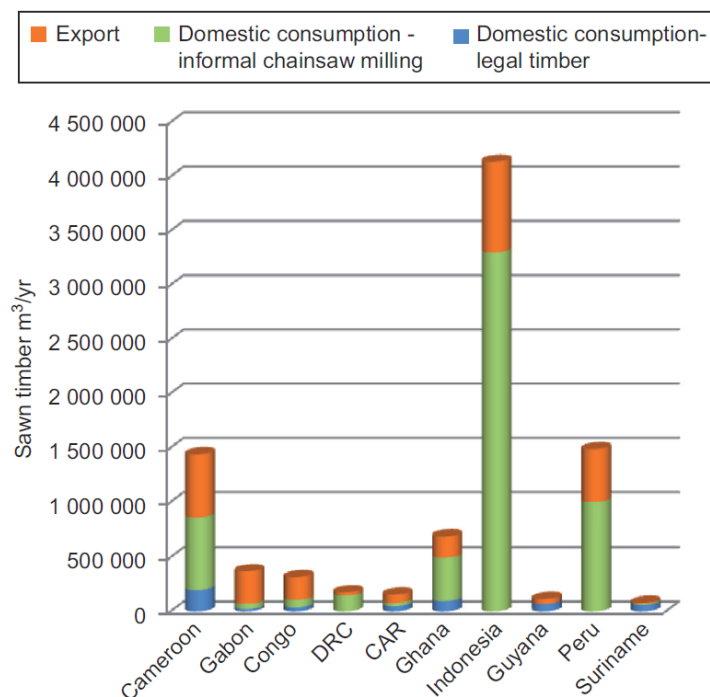
Domestic and regional markets for timber are also important consumers. In most cases these markets are satisfied by the informal/illegal supply of timber as discussed below in section 0. In many countries these volumes exceed the volumes traded (**Figure 3**) on the export markets<sup>131</sup>. The illegal nature of these markets has the effect of depressing local timber prices since the actors rarely pay any of the charges or taxes required. This makes it difficult for legal operators to compete successfully on the domestic market. Due to their size these informal markets are of critical importance for the future of forest management in Africa where they are a significant source of employment that has been largely ignored by policy makers<sup>132</sup>.

<sup>131</sup> Kishor N & Lescuyer G. (2012) Controlling illegal logging in domestic and international markets by harnessing multi-level governance opportunities. *International Journal of the Commons* Vol. 6, no 2 August 2012, pp. 255–270.

<sup>132</sup> Cerutti P. Nasi R. Baxter J (2015) *Once 'invisible,' Africa's domestic loggers come into the light The European Union is driving greater emphasis on Africa's artisanal sector.* <http://blog.cifor.org/26637/africa-artisanal-domestic-logging-timber-vpa-flegt?fnl=en>



Figure 3 Volumes of tropical timber for export and for legal and illegal consumption on the local market<sup>133</sup>



### Why have governments failed to keep the value in the country?

Forestry and associated processing activities are highly capital intensive, requiring equipment that is not manufactured in developing countries. There is therefore a large capital outflow associated with forestry investments which are only recovered after several years. Where these costs are met by expatriate investors they are balanced by capital inflows.

In the past, the industry was characterised by the large-scale export of low value roundwood to other markets where these could be processed. In an attempt to retain more of the potential value in country, a number of governments have instituted log export bans requiring at least a minimum amount of processing. In many cases, businesses have attempted to circumvent these restrictions by minimal processing in a 'red queen' game in which governments impose ever more stringent restrictions to offset the attempts to avoid restrictions.

Ghana has had a log export ban since 1994 and at least some processors have been able to engage in high added value activities such as the production of veneers and high value moldings. Mozambique established selective log export bans in the 1990s and as a result had some success in developing markets for species not covered by the ban. However, its early experience was of value subtracted processing<sup>134</sup> of the kind that has occurred in Gabon recently<sup>135</sup> under which the exported sawn-timber is sold at a lower price than sawlogs<sup>136</sup>.

Countries where the log export ban has been in force have also been subject to leaky borders with large-scale exports of roundwood such as is occurring in Laos<sup>137</sup>, Cambodia<sup>138</sup> and Zambia<sup>139</sup>. Illegal

<sup>133</sup> Kishor N & Lescuyer G. (2012) Controlling illegal logging in domestic and international markets by harnessing multi-level governance opportunities. *International Journal of the Commons* Vol. 6, no 2 August 2012, pp. 255–270.

<sup>134</sup> Alimah Issufo, Pers. Comm.

<sup>135</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>136</sup> Mackenzie C. (2006) *Forest governance in Zambézia, Mozambique: Chinese takeaway!* Final report for FONGZA.

<sup>137</sup> Chan B. 2015. *Status of Forest concessions in Southeast Asia concessions in Southeast Asia.*

loggers in Cambodia developed their own road network to cross the border without passing customs controls and the same occurs on the border between Zambia and Tanzania.

In Gabon, the impact of this log export ban has been to reduce the volume and value of timber exports and to reduce government direct revenue since this was levied on logs for export. A process of restructuring has been ongoing since the ban and installed processing capacity is only now reaching levels equivalent to previous log export volumes<sup>140</sup>. There have therefore been significant short term losses both of revenue and foreign exchange.

Government revenues are based on the range of different charges levied and these differ from country to country. Regardless of the types of charges imposed, the major factor in limiting government revenue has been the inability to collect the revenues. In Cambodia, with its very complex system of charges, only 10% of expected revenues was collected<sup>141</sup>. In Liberia, where a significant portion of the charge was area-based, companies sought to renegotiate these charges after concession contracts had been signed and withheld payments amounting to more than 95% of the amounts due, while continuing to operate<sup>142</sup>.

The inability to enforce contract-based charges is closely allied to the inability to enforce contract-based requirements for forest management and the inability to apply fines and penalties associated with illegal logging. Poor governance and lack of transparency, coupled with lack of capacity are major issues<sup>143</sup>. Issues related to legality and corruption are dealt with in greater detail in 0.

In some cases transfer pricing<sup>144</sup> has been used to transfer the value out of the country, while companies may also transfer profits to other jurisdictions by overcharging for imported equipment supplied by related companies.

#### Poor industrial performance

Many sawmills in tropical countries are equipped with old fashioned and often worn out equipment which is incapable of sawing accurately. As a result, there is a very poor conversion efficiency from roundwood to sawntimber. In addition, due to sawing inaccuracy the demand for over measure from customers in order to secure minimum dimensions are much higher than for timber that is accurately sawn. Saw blades are often much thicker than they need to be so that significant volumes are lost as sawdust during sawing. Similarly drying is often improperly controlled, both in open air seasoning and in kiln drying so that further losses occur due to deformation and cracking.

It is rare for the conversion efficiency from roundwood to sawn products to exceed 30%. This situation is exacerbated by a market that demands standard dimensions of defect free timber. These standard dimensions are in many cases much larger and longer than required by end users but as a result large volumes of useful timber are rejected.

---

<sup>138</sup> Zhang Y., J. Bampton and B. van Hensbergen. 2015. *Global Witness v Vietnam Rubber Group. Public Summary of Complaints Panel Report. FSC.*

<sup>139</sup> van Hensbergen H.J. and F. Njovu. 2015. *The role and future of guidelines, codes of practice and certification systems in the forest sector to support the greening of the building and construction sector in Zambia.*

<sup>140</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>141</sup> Sophanarith K.T., N. Kim Phat, M. Koike and H. Hayashi. 2006. Estimating actual and potential government revenues from timber harvesting in Cambodia. *Forest Policy and Economics* 8 (2006) 625– 635.

<sup>142</sup> Dorbor Jallah J., et al. 2012. *Report on the Issuance of Public Use Permits (PUPs).* Report of the Special Independent Investigating Body (SIIB) presented to the President of The Republic of Liberia, H.E. Ellen Johnson Sirleaf. 19 December 2012.

<sup>143</sup> REM. 2009. *IM-FLEG: Progress in tackling illegal logging in Cameroon.*

<sup>144</sup> Contreras-Hermosilla, Arnoldo. 2002. *Law Compliance in the Forestry Sector.*

Old, poorly maintained and inefficient equipment is also a significant consumer of electricity often consuming five times more than modern, well maintained equipment performing the same job. In countries with high energy costs (e.g. Ghana) this poor energy efficiency can mean the difference between profitable and loss making business<sup>145</sup>.

A few businesses have succeeded in developing markets for small dimensioned timber and for value added products such as moldings or veneered boards and this can increase the conversion efficiency from roundwood to final products to in excess of 60%. These businesses are large and secure employers, contributing significantly to local economic development.

Given the potential competitive advantages that are possible as a result of improved efficiency both in the forest and in the sawmill, this raises the question of why there are not more cutting edge investors prepared to take out concessions.

### Tropical forestry and self regulation?

In temperate areas, privately owned-, and in many cases State-owned forestry is regulated by the vision of a long term return (intergenerational forestry). Why is this difficult to achieve in the tropics?

It is commonly argued that the majority of concession-holders in tropical forests fail to carry out their activities in such a way as to be sustainable. This relates both to overharvesting in such a way as to destroy the future value of the forest and in failing to apply silviculture that would ensure forest regeneration of harvested species. It has also been argued that excessive area fees induce concession-holders to reduce the length of the rotation<sup>146</sup> by systematically overharvesting.

It is believed by many that the major problem relates to the security of tenure and that, if concession-holders were given greater security, they would be prepared to make the necessary investment. There are two aspects of this security which are of importance. In the first instance, governments may issue tenures which are for fixed periods without any guarantee of renewal and in such cases it is argued that there is little incentive to invest or incur costs on behalf of some other future beneficiary. In the second instance, many countries have lacked political stability so that the risk of war or arbitrary removal of tenure is seen as significant.

The first risk leads decision makers to reduce their rate of investment and/or compliance with contract requirements towards the end of a contract if there is a significant perceived risk while the second type of risk causes investors to seek very high rates of return on capital. Rates of 30% per annum are common in developing countries.

While it may be that greater contractual security of tenure will increase the propensity of investors to manage the forest for future benefits, the existence of the second class of risk means that investors will continue to seek for very high rates of return.

In any case, the return on the investment is related to the rate of increase in value of the resource and when this rate falls below the opportunity cost of the investment the rational investor will

---

<sup>145</sup> A single sawline consumed more than 70kw to do a job that could be done with a saw consuming 9kw. Costs of US\$35/hr as opposed to US\$4.5/hr.

<sup>146</sup> Boscolo M. and J.R. Vincent. 2007. Area fees and logging in tropical timber concessions. *Environment and Development Economics* 12 (4): 505–20.

liquidate the resource and seek other investments<sup>147</sup>. This would occur even if the resource was privately owned by the investor with perfect tenure security.

The only way in which this type of behaviour can be countered is by external regulation. However, there is little reason to believe that governments would be more successful at enforcing such regulations for which they get no reward than they are at collecting forest revenues for which there is significant reward. Investment in collection of forest revenues is one of the highest return investments that a government can make<sup>148</sup>.

## Illegality

In many tropical forest countries the majority of timber is handled through the informal (illegal) sector<sup>149,150</sup>. Most of this timber is destined for the internal market<sup>151</sup> or for export to neighbouring countries. For example, most tropical hardwood timber in the market in Kigali, Rwanda is sourced illegally in DRC whilst almost all timber on sale in the Buseko Market in Lusaka, Zambia (**Figure 4** below) is informally/illegally sourced inside the country<sup>152</sup>.

*Figure 4 Informally/illegally harvested rosewood and other hardwood logs in Buseko Market, Lusaka Zambia (HJVH, 2015).*



It is important to understand the difference between illegality and corruption. An illegal act in forestry is any act that contravenes the laws and regulations governing forestry or the processing of forest products or the trade in forest products. Corruption, on the other hand, involves the use of

---

<sup>147</sup> Grut, M., J. A. Gray and N. Egli. 1991. *Forest pricing and concession policies: Managing the high forests of West and Central Africa*.

<sup>148</sup> Grut, M., J. A. Gray and N. Egli. 1991. *Forest pricing and concession policies: Managing the high forests of West and Central Africa*.

<sup>149</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>150</sup> Amacher G.S. 2006. *Corruption: A challenge for economists interested in forest policy design* *Journal of Forest Economics* 12 85–89.

<sup>151</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

<sup>152</sup> van Hensbergen H.J. & Njovu F. (2015) *The role and future of guidelines, codes of practice and certification systems in the forest sector to support the greening of the building and construction sector in Zambia*. Zambia Green Jobs Programme.

public office for private gain<sup>153</sup>. Corruption itself is in most jurisdictions an illegal act and is also in the forestry sector associated with other illegal activities. However, much corruption also occurs in cases where all other aspects of forest operations are legal but where regulatory authorities have the legally authorised capacity to delay temporarily or indefinitely such legal activities. In these cases, corrupt payments are used to expedite permissions.

Illegality associated with forestry takes many forms<sup>154,155</sup> which may be loosely grouped into:

- Illegally harvesting timber
  - Harvesting outside an area for which a valid permit is held
  - Harvesting without a permit
  - Harvesting species to which there is no entitlement
  - Harvesting trees not included in the allocated yield
  - Harvesting dimensions for which there is no entitlement
  - Harvesting for a purpose for which there is no entitlement i.e. communities harvesting under a legal exemption for 'own use' and then selling commercially
- Misrepresentation
  - Underdeclaration of harvested volume
  - Misdeclaration of species harvested
  - Misdeclaration of timber values or undergrading
  - Use or reuse of permits and permissions for an alternative purpose
- Illegal transport and trade
  - Transport without permits or payment of fees
  - Illegal export of timber or of logs
  - Transfer pricing
- Illegal acquisition of forest or forest land tenure
  - Land invasion
  - Misrepresentation in acquisition of forest tenure
  - Failure to comply with legal obligations associated with forest tenure
- Corruption
  - Petty corruption associated with regulatory and bureaucratic requirements
  - Petty corruption associated with any other illegalities
  - Grand corruption associated with allocation of forest tenures
  - Grand corruption associated with trade in timber products

### Causes of illegality

Some illegality associated with forestry can be ascribed to the prohibition of traditional activities on various pretexts<sup>156</sup>, often based on the appropriation by central governments of customary tenures

<sup>153</sup> Smith J., K. Obidzinski, A. Subarudi, I. Suramenggala. 2003. Illegal logging, collusive corruption and fragmented Governments in Kalimantan, *Indonesia. International Forestry Review* 5 (3), 293–302.

<sup>154</sup> Amacher G.S. 2006. Corruption: A challenge for economists interested in forest policy design *Journal of Forest Economics* 12 85–89.

<sup>155</sup> Contreras-Hermosilla, A. 2002. *Law Compliance in the Forestry Sector*. 47 pages. Stock No. 37205 World Bank Institute.

<sup>156</sup> Fairhead J. and M. Leach. 1996. *Misreading the African Landscape: Society and Ecology in a Forest-savanna Mosaic.*, Cambridge University Press, Cambridge. ISBN 0-521-56499-9.

and often with a historical origin in the colonial period. Thus, in Guinea for some time the setting of fires in the savannahs, a traditional agricultural activity, carried the death penalty<sup>157</sup>.

In other cases, illegality is associated with extreme poverty so that illegal activities are carried out simply in order to survive. This is the case in many countries where timber is illegally harvested for artisanal production of charcoal for sale in urban centres.

In many tropical countries, production forests are remote and difficult to access, and as a result there is an almost complete lack of law enforcement capacity.

In many cases, illegal activities are so ingrained in forestry practices that the only cause today can be ascribed to tradition. In Ghana, for example, it is standard practice to under-measure logs by 20% in order to decrease stumpage payments. This illegal behaviour is not considered to be in any way questionable by those involved.

In cases where the salary of forest officers is far below the minimum required for subsistence it is not surprising that petty corruption, involving payment for ignoring illegal activities, is widespread. A culture of this type of corruption is difficult to break since the entire system becomes involved and even officers who are not directly involved become guilty of failing to report it and are then made vulnerable to becoming corrupt. It must be added that simply increasing forest officer salaries is unlikely to be a quick cure for this type of corruption<sup>158</sup>.

At the other end of the scale lie the cases of large scale illegality involved in allocation of forest tenures, transfer pricing, false accounting etc. These cases are almost always tied in to some form of illegality and may also involve collusion<sup>159</sup> between senior officials and businesses. In many cases, it is simply not possible to obtain a forest tenure without resorting to corruption. Often this type of corruption is associated with perceptions of entitlement<sup>160</sup> amongst high government officials.

### Impacts of illegality

Illegal actions deny the rightful beneficiaries - be they central governments or local communities - the benefits from the forest to which they are entitled. There have been a number of estimates of the impact of illegality in terms of losses to government revenue both nationally and globally and the amounts are substantial, ascending to billions of dollars in some countries<sup>161</sup>.

Illegality also criminalises those that participate in illegal activities and although this might be seen as a desired outcome it must be considered if this is always the case. A large portion of the rural population of Zambia, Kenya, Tanzania etc. is dependent on illegal charcoal production as a means of survival. To criminalise entire populations should not be a desired outcome of a law. Laws are based on the 'social contract' between the governors and the governed, where laws are so widely disobeyed as to be meaningless there is clearly no such social contract.

Where illegality is combined with corruption the impacts become catastrophic for development and for forests, as discussed below.

---

<sup>157</sup> Fairhead J. and M. Leach. 1996. *Misreading the African Landscape: Society and Ecology in a Forest-savanna Mosaic.*, Cambridge University Press, Cambridge. ISBN 0-521-56499-9.

<sup>158</sup> Amacher G.S., M. Ollikainen and E. Koskela. 2012. Corruption and forest concessions. *Journal of Environmental Economics and Management* 63, 92–104.

<sup>159</sup> Amacher G.S. 2006. Corruption: A challenge for economists interested in forest policy design *Journal of Forest Economics* 12 85–89.

<sup>160</sup> Messner E. 1981. Reactive entitlement in elective public office: a possible precursor to political corruption. *Am J Psychother*: 35 (3): 426-35.

<sup>161</sup> Contreras-Hermosilla, A. 2002. *Law Compliance in the Forestry Sector*. 47 pages. Stock No. 37205 World Bank Institute.



There is, however, another important aspect of informal/illegal production that must be highlighted. Informal producers do not usually pay for their wood in any way, simply extracting it from the forest according to their needs and capacities. They also avoid all of the regulatory and personal taxes by operating in a cash economy only. For this reason, they are often able to produce timber at a far lower price than formal producers and concession-holders. This has the effect of bringing down the market price of timber inside the country and makes it difficult or impossible for formal producers to compete.

### Impacts of corruption

Corruption has a range of negative impacts associated with it. In relation to concessions, first and foremost it means that governments do not achieve an optimal rent from the concession-holders since large portions of the 'rent' are collected elsewhere in the value chain. Such rent-collecting behaviour is unlikely to be economically efficient since much time is spent in its collection and in covering it up, time which otherwise could have been spent on productive activities.

More importantly, however, the existence of corruption means that almost all other policy instruments become ineffective since there is no mechanism for enforcing them. Once a corrupt action has taken place both parties become guilty of involvement in it, both in situations of collusion and non-collusion. This means that threats aimed at ensuring enforcement of some aspects of the policy requirements become largely ineffective. Thus, when operating in a corrupt environment it becomes much more difficult to design and enforce policies that ensure economic development and forest conservation<sup>162</sup>.

The counterargument that, in the face of impossible regulatory demands corruption is the 'grease that lubricates the wheels of development', has been discredited<sup>163</sup>.

Eliminating corruption and its associated illegality will not be easy. Policy development must take into account the existence of illegality and in the long term develop strategies where illegality and corruption ceases to be the optimal strategy for government officials.

## 5 The future of concessions

It is not possible to discuss a future in which forest concessions play a significant role in economic development without discussing the future of tropical forest management. Concessions are simply one common way by which governments seek to achieve their goals for the forest estate. Many of the problems with concessions highlighted by diverse actors are problems of forest management and not problems with the concession system itself. Any system that seeks to correct the situation with concessions must first address the problems with tropical forest management. It should be recognised that external conditions, including the governance of the local concession system, also affect the viability of good forest management.

### Scenarios for the future of tropical forest management

The current situation for tropical forests is not a happy one as tropical forests continue to decline in area and integrity in large parts of the world for a variety of reasons<sup>164</sup>. Of the 11 major deforestation fronts identified by WWF in 2015 only one lies partially outside the tropical zone<sup>165</sup>.

---

<sup>162</sup> Amacher G.S., M. Ollikainen and E. Koskela. 2012. Corruption and forest concessions. *Journal of Environmental Economics and Management* 63, 92–104.

<sup>163</sup> Contreras-Hermosilla, A. 2002. *Law Compliance in the Forestry Sector*. 47 pages. Stock No. 37205 World Bank Institute.

In many cases, the ultimate reason why forests are not protected is that they are not perceived as offering sufficient value in the face of land use alternatives; in a few cases they are perceived as having such high timber value that it is better to cut them (legally or illegally) before someone else does.

The largest cause of deforestation is for conversion of land to agricultural use, both small-scale informal and large-scale industrial. For forests to survive they must be able to compete with alternative land uses by demonstrating value streams that make them competitive in the eyes of local stakeholders who maintain a *de facto* control over the resources.

For concessions to become successful they must be based on a successful business model for tropical forest management. In such a business model, forests are well managed and able to provide an assured flow of all resources, the tenure rights to these resources are allocated within a framework of good governance that allows businesses to operate with the minimum possible interference and without corruption, and the products from the forest are processed efficiently into high value goods that return significant value to the forest.

At present, this business model is not fully implemented anywhere. Tropical forests are not managed, they usually exist in an environment of deficient governance and the business model is generally suboptimal and often unsustainable.

For this to happen it is suggested that there need to be significant improvements in three fields of forestry: governance, forest management and the timber business model. Only if these are all implemented will concessions be able to have the positive impacts expected of them. The outcomes of different scenarios depending on which types of improvements are implemented are given in **Table 2** while the details of the required improvements are described below. It should be noted that these are requirements for all tropical forest management situations and not only for concessions.

---

<sup>164</sup> WWF. 2015. *WWF living forests report: chapter 5 saving forests at risk*. WWF.

<sup>165</sup> WWF. 2015. *WWF living forests report: chapter 5 saving forests at risk*. WWF.



*Table 2 Scenarios for tropical forest management*

|                     |                   | Timber business status quo          |  |
|---------------------|-------------------|-------------------------------------|--|
| Governance          | Forest management | Status quo                          | Improved forest management   |
|                     | Status quo        | Forest loss for a corrupt elite     | Forest management without development<br>'The Forest Poverty Trap' |
| Improved governance |                   | Forest loss with negligible benefit | Low value forestry<br>'The Eternal Forest Poor'                    |

|                     |                   | Improved timber business                                      |   |
|---------------------|-------------------|---|---|
| Governance          | Forest Management | Status quo  | Improved forest management  |
|                     | Status quo        | Commercial extinction of forests for the benefit of the few   | Sustainable forestry for the benefit of the few   |
| Improved governance |                   | Short term benefits for all leading to loss of forest capital | Sustainable forestry with local development and valued forests<br>'The New Forest Rich' |

### Improved forest management

In order to maintain and increase forest productivity and forest values it is necessary to institute proper forest management. In some parts of the forest this will require significant silvicultural activity whilst in other areas critical habitats should be set aside for natural resource conservation purposes. The components of improved forest management will be:

- Management planning
- Appropriate harvesting considering the regeneration of desired species
- Assisted regeneration of desired species
- Silvicultural thinning
- Other silvicultural activities ??
- Reduced impact logging

Such activities as silvicultural thinning may be required in the entire forest estate in advance of future harvests and not only in areas where past harvest have taken place. For example, it may be beneficial to carry out release thinning of target trees some years prior to entering a compartment for harvest. It is understood that in many tropical forests these types of activity are currently prohibited and also that in many cases forest access roads must be destroyed after a harvest has taken place in order to 'protect' the forest from incursion. Under a proper and equitable governance system, these incursions would be prevented by the local stakeholders who derive value from the forest.

Silvicultural thinnings are likely to generate large volumes of small diameter timber of a wide range of species, so it should be feasible to develop both the processing capacity and a market for this type of material. Waste timber can also be used for biomass.

#### Improved governance

It is recognised that there have been significant moves in recent years towards the decentralisation of the forest administration and revenue allocation. However, these moves have been fully implemented in only a few cases. It must also be recognised that the historical fall in value of a forest officer compensation has been a key driver in permitting forest corruption. In Uganda, for example, the Forest Officer Salary in 1988 had fallen to a mere 0.4% of its 1962 value in real terms<sup>166</sup>. The components of an improved forest governance system will include:

- Forest Administration officers adequately paid
- Transparency in allocation of forest tenures
- Recognition of customary tenures
- Allocation of appropriate revenues to customary rights-holders
- Simplification of regulatory requirements
- Elimination of inefficient charges
- Revision of forest laws/regulations to make forest management possible
- Elimination of inappropriate rent-seeking behaviour by government agencies and government officials

In most cases the portion of the timber value that reaches local rights holders is minimal, in the range of 1-2% of the timber value, and in some cases the amount reaching these rights holders is actually zero<sup>167</sup>. It is likely that the single largest incentive to support responsible forest management and forest conservation is to ensure that local rights holders receive a fair share of the forest derived value.

In many countries, the highest single costs of forestry businesses relate to informal payments which are often in the range of US\$ 60 – 100/m<sup>3</sup><sup>168</sup>. In many cases, it can be argued that the complexity of forest regulations is intentional since it facilitates corrupt rent-seeking practices by officials<sup>169</sup>.

Lack of transparency in the allocation of forest tenures is a key issue in preventing the proper functioning of an efficient market for forest rights. In extreme cases, even the responsible authorities lack knowledge about the forest tenures<sup>170</sup>.

#### Improved forest business

Forest businesses in the tropics suffer from a wide range of problems that lead to inefficiencies both in terms of their performance as businesses and in terms of their economic performance in relation to the country. The causes of these problems are manifold, ranging from inadequate human resources to risk minimisation, extreme capital return rate demands, to wasteful field and processing practices. It should be noted that much of the behaviour of business investors appears

---

<sup>166</sup> Webster G. and H.A. Osmaston. 2003. *A History of the Uganda Forest Department 1951–1965* The Commonwealth Secretariat. DOI :10.14217/9781848598171-en

<sup>167</sup> Arumadri, J. 2002. *The forest revenue system and government expenditure on forestry in Uganda*, FAO.

<sup>168</sup> Contreras-Hermosilla, A. 2002. Law Compliance in the Forestry Sector. Stock No. 37205 World Bank Institute.

<sup>169</sup> Contreras-Hermosilla, A. 2002. Law Compliance in the Forestry Sector. Stock No. 37205 World Bank Institute.

<sup>170</sup> In Cambodia, the Forest Department had no official maps of the rubber concessions issued for the Seima Protection Forest. (Pers. Comm). Their existence only became public after 8 years when maps were obtained and published by Licadho.

perfectly rational such as the requirement for very high capital return rates in situations where governments are unstable.

One additional aspect of importance is related to the history of the tropical forestry business, for the vast majority of its life the business has been focussed on harvesting of old growth trees. As a result, the expertise that has been built up in the organizations carrying out the business is focussed on the difficult task of optimising the harvest. It is only recently that managing the forest has become a requirement and as a result there is little in-house capacity to do so. In fact, in comparison with temperate forestry, where there are hundreds of years of experience and an accompanying and rapidly growing scientific literature, the silviculture literature for tropical natural forests is tiny.

The market for tropical timber is also highly inefficient when compared with the market for temperate timber. The timber market remains opaque in terms of pricing information and the lack of direct communication between end-users and suppliers means that there is enormous waste of material at all parts of the value chain due to the demand for standard dimensions by traders.

The structure of the commodity market for sawntimber with its dependency on standard dimensions and grades is a hangover from a past where communication between the end-user and seller was impossible due to the long shipping period and poor telecommunications. This resulted in a situation where the end-users knew what they would get in terms of size and properties but which did not necessarily meet their needs.

This situation is long gone and end-users can now communicate directly and in real time with sellers. The market has not yet adapted to this new reality in which a sawmill can provide dimensions that exactly meet the needs of end-users and in so doing reduce wastage at both ends of the supply chain resulting in very significant value recovery for both parties. A new type of agent is required in order for this market to function efficiently.

Many of these issues have already been discussed in Chapter 4. Correcting these problems requires a range of improvements in businesses such as:-

- Human capacity development for processing
- Human capacity development for forest management
- Incentives to ensure a full utilisation of the available yield (e.g. payment for allocated yield)
- Incentives to ensure a full use of the felled material (e.g. payment for volume felled as opposed to volume extracted)
- Investment in more efficient processing equipment to reduce volume losses and maintenance and running costs
- Human capacity development for timber manufacture
- Improved maintenance regimes for machinery to prevent failures
- Better market knowledge
- Better communication with end users

Most tropical countries have little or no resource of skilled woodworkers outside of the sector that manufacture smaller items for the tourist business. Thus, a rosewood furniture manufacturer in Zambia needs to import 10 master cabinet-makers from China in order to manufacture products that will satisfy the high quality demands of its Chinese market<sup>171</sup>. These cabinet-makers will over a number of years train their Zambian counterparts.

---

<sup>171</sup> Pers. obs. 2015.

In order to reduce capital risks processors in tropical forests often invest in old saws and other machinery which is wasteful both due to sawing inaccuracies and large saw kerfs, but also due to high energy inefficiency. In one case seen in Ghana, a large saw was consuming 54 kW of electricity for a job that could have been done by a smaller saw using 9 kW which would have resulted in a saving of US\$ 15 per operating hour. This saving alone would have paid for the smaller saw in less than one year.

### Forest Investment

The last decades have seen significant changes in the pattern of concession ownership in many parts of the world. This change is best expressed as a move away from old ex-colonial capital mainly from Western Europe to new eastern capital with sources in the rapidly growing economies of the Far East. For example, Chinese companies had acquired concession rights to approximately 10% of the dense forest area of Gabon by 2010<sup>172</sup>. Malaysian-owned companies controlled the majority of forest concessions in Liberia in 2013 and Indian companies owned the largest forest concessions in Guyana. This trend is associated with the increasing demand for tropical timbers in the Far Eastern market. It is also possible that part of this trend is related to the much lower legality requirements of the Far Eastern markets when compared with the European or U.S. markets<sup>173</sup>.

In either case the capital employed in tropical concessions is mainly family-based capital taken from other businesses, since it is hard to obtain commercial capital for tropical forestry activity other than plantations<sup>174</sup>, particularly in countries with a perceived high political risk. In addition, few companies meet the investment requirements of international investors including the recent trend of requiring forest certification<sup>175</sup>.

### What is wrong with the concession model?

Although concessions have been moderately successful in some cases, the failures appear to outnumber the successes, if we base the evaluation on revenue collection<sup>176</sup> where it is rare for governments to collect in excess of 20% of the revenues due from the timber taken.

The modern concession is based on the government as Principal allocating certain rights and duties to the concessionaire acting as its Agent<sup>177</sup>. In this case, the government does not have the capital or the skills to manage the forest and to provide all of the other services required such as education and health. The concession is based on finding an agent who has all of these and then to provide a contractual interest to the agent to do the management.

However, the agents in this case are forestry companies who have come from a background in timber harvesting and/or timber processing and usually have adequate skills in these activities. These forestry companies have not needed to develop skills in tropical silviculture or the other new

---

<sup>172</sup> Putzel, L., Assembe-Mvondo, S., Bi Ndong, L.B., Banioguila, R.P., Cerutti, P., Tieguhong, J.C., Djeukam, R., Kabuyaya, N., Lescuyer, G. and Mala, W. 2011 Chinese trade and investment and the forests of the Congo Basin: synthesis of scoping studies in Cameroon, Democratic Republic of Congo and Gabon. Working Paper 67. CIFOR, Bogor, Indonesia.

<sup>173</sup> Masiero M. Pettenella D. Cerutti P. (2015) Legality Constraints: The Emergence of a Dual Market for Tropical Timber Products? *Forests*, 6, 3452-3482; doi:10.3390/f6103452.

<sup>174</sup> Clenaghan S, Jacopo Levi Morenos and Alberto Thomas (2009) Ch3 Stimulating private capital investment to achieve REDD+ In *Forest Investment Review. Forum for the Future*. London.

<sup>175</sup> Best C. & , Michael Jenkins (1999) *Capital Markets and Sustainable Forestry Opportunities for Investment* - The Pacific Forest Trust, Forest Trends.

<sup>176</sup> Grut, M., J.A. Gray and N. Egli. 1991. *Forest pricing and concession policies: Managing the high forests of West and Central Africa*.

<sup>177</sup> Gray J. 2002. *Forest Concession Policies and Revenue Systems: Country Experience and Policy Changes for Sustainable Tropical Forestry*.

requirements since they have never had to perform them in the past. As a result, they have little or no in-house capacity in these aspects.

This situation is compounded by the fact that the scientific understanding of tropical silviculture is generally at a much lower level<sup>178</sup> than is the case for temperate silviculture. This is largely due to the fact that the revenues generated by forests in temperate systems are enormous compared with their tropical counterparts so that both businesses and governments have been prepared to invest heavily in research.

In addition, the concession system assumes that concession-holders will follow the laws of the country and the terms of the contract, a rare situation. In most cases, concession-holders seek to minimise their adherence to demands for forest management to minimise costs and maximise volumes by harvesting outside the scope of their permits. In Ghana, for example, detailed follow up of stumps revealed that four out of the first five stumps examined were not included in the allocated yield even for a company considered to be law abiding<sup>179</sup>.

Any solution to these problems must be based on a realistic view of forest management capacities and support needs coupled with incentive systems that reward good behaviour sufficiently to render illegality and non-compliance with contracts unattractive.

When developing solutions policy analysts should consider corruption and illegality as one of the rules of the game since failure to do so is likely to result in policies and practices that do not have the desired effect<sup>180</sup>.

## Rights-based approaches

The current system of forest tenure rights in many developing countries is a hangover from previous colonial administrations. Under these systems the rights to forest products and in particular to timber often became separated from other types of land and resource rights. These systems supplanted previous customary rights which were held under a wide variety of social organizations in which rights were allocated to individuals in a systematic but undocumented way.

These previous administrations set up those rights under a legal framework which is largely in place today. In practice, away from cities and large towns the traditional systems have continued to function with relatively little interference from the centre. People have continued to use timber and non-timber forest products in much the same way as before the advent of the colonial powers.

Many countries run parallel administrative systems in which the centralised legal system runs alongside the customary system more or less comfortably. In these traditional systems and partly as a result of the lack of transport, infrastructure timber was mostly used and traded locally for building and manufacture of a wide variety of items. It is only recently that these timbers have acquired a significant value through demand from an urbanised population and the ability to get these to them and to export harbours.

Thus it could be argued that, since remote communities never made large-scale use of those timbers, they have not established a customary right to using them commercially. Such argument may well be valid, but what cannot be contested is that these communities have made use of the

---

<sup>178</sup> Siteo A., E. Chidumayo and M. Alberto. 2010. Timber and wood products. In Chidumayo EG, and Gumbo D. (ed.), *The Dry Forests and Woodlands of Africa: Managing for Products and Services*.

<sup>179</sup> Pers. obs.

<sup>180</sup> Amacher G.S., M. Ollikainen and E. Koskela. 2012. Corruption and forest concessions. *Journal of Environmental Economics and Management* 63, 92–104.

land on which these timbers stand with varying degrees of intensity. Forests have been used for collection of timber, NTFPs, for hunting or as places to hide in times of war<sup>181</sup>. There is effectively no place in any developing country that is accessible on foot that has not been visited and impacted by human activity so that it is impossible to find areas where there is no previous land tenure of some sort.

As a result, although sovereign states have appropriated centralised formal land tenure over much of their territory, both customary and *de facto* tenure resides with the land occupants<sup>182</sup>. These occupants may be long-term residents or more recent arrivals tolerated within the customary framework. When governments attempt to allocate concessions over such land then this often leads to conflict.

This situation has been increasingly recognised since the 1980s and there have been a variety of attempts to address the situation, including:

- requirements that local communities be able to continue traditional activities in the forest
- requirements that a portion of the concession fees is allocated to communities
- requirements that concession-holders negotiate social responsibility agreements with communities
- requirements for 'benefit sharing' over affected lands
- requirement for FPIC prior to allocation of concessions
- allocation of concessions to communities
- transfer of land title or forest tenure to communities

On the other hand, it is also clear that where communities have *de facto* tenure over forest land but this land does not return benefits to them then the forest is degraded and appropriated for other land uses that give greater returns<sup>183</sup>.

It is likely that the future of the forest in all cases is dependent on the value that the local communities derive from them, regardless of the type of forest tenure arrangements, since it is the local communities who have the boots on the ground and are able to determine if and how concession-holders are keeping to their contractual agreements and are thus able to inform the competent authorities or independent observers.

The inclusion of local customary tenure-holders as well as government and concessionaire in a tripartite agreement negotiated under FPIC seems to be a prerequisite.

It must be added that simply transferring all forest rights to local communities is unlikely to be successful in all circumstances. When governments don't have the capacity to manage forests for business purposes then it is even less likely that communities in remote areas will have these capacities. This is particularly the case for communities who wish to access the higher value export markets with good quality products since this requires very large areas, significant investment and human capacity development to be successful.

Such communities will require enormous support in terms of capacity building, planning, inventory as well as support for needed capital and technical advice for processing etc. The difficulty should

---

<sup>181</sup> During the recent civil war in Sudan families from villages around Nzara in West Equatorial Province fled into the forest and lived there for decades before returning to their original villages when hostilities ceased in 2007.

<sup>182</sup> It is recognised that with political instability and large scale population movement such tenure may have been in place for only a relatively short period.

<sup>183</sup> Karsenty A. 2015. *The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline?*

not be underestimated and where it has been successful this has usually been on the basis of significant very long term support over several decades.

An alternative approach would be to partner such communities with entrepreneurs<sup>184,185</sup> in an approach that has become known as ILCF (Investing in Locally Controlled Forestry). In this model it is the community that obtains the forest tenure rights and seeks an entrepreneur with capital and know-how to help them with forest management and processing.

This type of approach may work best when communities are able to become organised in the manner espoused by the Forest and Farm Facility of the FAO<sup>186</sup>.

### Workers rights, treatment of workers and health and safety

The treatment of forestry workers in developing countries has in many cases been poor both in terms of employment<sup>187</sup> and in health and safety issues. It has to be recognised that not all employers are failing in this respect and that in many cases the more formal employment offered by the formal businesses that are able to take up concessions is of a much better quality than that offered in the informal sector<sup>188</sup> (Figure 6).

*Figure 5 Workers field accommodation in a concession in Guyana consists of a tarpaulin*



Health and safety issues are commonly overlooked both in the forest and in processing facilities. Partly this is due to unsafe working practices and partly due to the use of outdated equipment which does not have modern safety features. It is often also due to safety equipment being purposely disabled in order to facilitate machine access.

<sup>184</sup> Elson, D. (2011). *Investing in locally controlled forestry: reviewing the issues from a financial investment perspective*. The Forest Dialogue, New Haven, USA.

<sup>185</sup> Nhantumbo, I., Macqueen, D.J., Cruz, R., Serra, A. (2013) *Investing in locally controlled forestry in Mozambique: Potential for promoting sustainable rural development in the province of Niassa*. IIED, UK

<sup>186</sup> FAO () Forest and Farm Facility. <http://www.fao.org/3/a-i4848e.pdf>

<sup>187</sup> Asanzi, P. L. Putzel, D. Gumbo and M. Mupeta. 2014. "Rural livelihoods and the Chinese timber trade in Zambia's Western Province." *International Forestry Review* Vol.16(4), 16 (4): 447-459.

<sup>188</sup> Gretzinger S. (2015) *Latin American experiences in forest concessions*.



The role of outside inspection is an important factor that can limit the hazards in forestry activities but this is another aspect where corruption often results in government inspectors issuing safety certificates in situations where no care is taken at all.

Where government led safety monitoring systems are not effective, third party systems such as offered by Occupational Health & Safety Advisory Services (OHSAS) or forest certification inspections can serve to identify issues. In such cases it is always up to the forest business to be open for making the necessary changes to ensure success.

In many countries, particularly in Southeast Asia, there is extensive use of migrant labour in the forest sector and particularly in this case the risk of abuse is very high. There are certain risks of forced labour and denial of the fundamental rights of workers as laid down in the ILO Core Conventions<sup>189</sup>.

## The role of certification

The potential role of forest certification is largely misunderstood by stakeholders. Governments and businesses expect forest certification to cure the woes of businesses and to immediately cause ailing businesses to become successful. This is wishful thinking and far removed from reality. There are significant benefits to get from certification but they lie more in relation to achieving good forest management than in the issue of the certificate itself. Where businesses seek to achieve forest certification for certifications sake or to meet some regulatory requirement they will invariably be disappointed.

### Forest management

Certification standards require forest managers to take a more systematic approach to the preparation and execution of the forest management plan. This ensures that all important aspects are taken care of. As part of this planning it is vital that all significant impacts are taken care of, and just as important, that wherever impacts related to an aspect are not important no resources are allocated to such issues. This should have the result of reducing wastage and concentrating resources where they are most effective. If the planning is well done, then forest management becomes more efficient with a significant reduction in costs.

The key benefit of forest certification is that it improves the way the business is run and improves the relationship between the forest manager and other stakeholders. This also acts to reduce the risks posed by illegal activities or natural catastrophes.

### Forest markets

Forest owners on achieving certification often complain that as a result they do not achieve higher prices for their products. There are two aspects to solving this problem: product quality and marketing. No amount of certification can turn a poor quality product into an attractive one, in the long term a well-managed production forest will start to produce timber with better properties so that the quality of the products manufactured from the timber will be better and thus achieve higher prices. In the short term, improved harvesting and transport will produce timber with less damage and with a greater volume recovery due to reduced wastage and this will lead to an increased volume and quality of products. In addition, if the improved management style of the forest is also implemented at the sawmill, there will be immediate improvements in the quality of products and reductions in wastage and costs.

---

<sup>189</sup> ILO (1998) *ILO Declaration on Fundamental Principles and Rights at Work*.



This improvement will mean nothing to established customers used to getting low quality products at a low price. They will simply rub their hands with glee and refuse to offer a single cent extra. However, the improvement in quality combined with the certificate will enable managers to seek alternative customers who are prepared to pay more for the quality and for the certificate. The initial customer, now being left short of timber, is likely then to increase price offers.

This does however require that forest managers engage in marketing their products in new markets and this is an expensive activity which is likely to require support from governments, NGOs or forest sector organizations.

### Auditing and transparency

A key benefit of certification usually overlooked is the presence of external auditing and requirement for a much increased level of transparency. The benefits of having an independent expert without any internal conflicts of interest reviewing the practices of an organization has long been recognised by businesses and has led to the success of the many ISO performance standards and their associated certification systems. Forest managers seeking to limit the costs of certification usually select the certification provider with the lowest cost. This is exactly the wrong approach. Forest managers should seek out the certification provider who is able to provide them with the most experienced and respected auditors who will be able to add significant value to their business by the observations they make.

Transparency is a key factor in reducing undesirable outcomes in forest management. Transparency enables an organization to communicate its practices to stakeholders and engage with them openly for the benefit of the business. Transparency allows a business to demonstrate to regulatory authorities and businesses that it is complying with its regulatory requirements and this can be a powerful tool in combating corruption.

Transparency can only go some of the way in convincing outsiders that an organization is meeting its commitments. External verification is often required and this is where external auditors can supply an important service.

Where companies are able to use independent auditing and transparency to demonstrate their compliance with all aspects of their contracts with government it should not be necessary for the government to verify this independently. It should therefore be possible for the authorities to reduce the regulatory burden on companies which could be an important incentive for companies to do the right thing.

### Towards a new model for tropical forest business (*Concessions 2.0*)

In moving towards a revised model for tropical forest concessions it is necessary to state that there is no 'one size fits all' solution since every country has its own social, legal and forest situation. Forests in Southeast Asia have a much higher volume of commercial timber than forests in Africa, community based forest management is far better developed in Latin America than in Southeast Asia etc.

The recommendations below are aimed at all stakeholders and are in the form of interventions that may be required from governments, aid agencies, concession-holders, rights holders and other stakeholders. Not all of the recommendations are relevant for all situations.

### Recommendations for an improved concession system

#### Revised governance

- 1) Much more time and effort needs to be invested in the proper planning of concessions by governments. Governments should avoid rushing to allocate large areas in the hope of short term returns.
- 2) Concession planning must involve FPIC agreements with stakeholders prior to the allocation of a concession. Recognition of overlapping tenure rights is a pre-requisite for effective concessions.
- 3) Systems for the allocation of concessions should be wholly transparent with full public disclosure of all information relating to competitive bids. Mechanisms should be put in place that allow public input into the allocation decision.
- 4) Models for governance of concessions should presuppose the existence of corruption and take this into account as part of the policy analysis in system development.
- 5) The system for allocation of concessions should be simplified so that all communication between a bidder and the government should be through a single point of access. Allocation must avoid undue delays that are costly for businesses.
- 6) Governments should focus much more strongly on the control of illegal and informal activities that have an impact on the market and depress the price of timber. Formalisation of the commercial parts of the informal market could be an important source of government revenue through general taxation.
- 7) Local stakeholders including local governments require extensive support and capacity building in order to be able to fulfil their role in concession management.
- 8) Governments should aim at a mixed concession system with both private concessions and community concessions being available in a mixed economy.
- 9) Governments should allocate significantly more resources on the management of the forest sector. This must include greater investment in the regulatory system through reform and capacity building.
- 10) Third party observers of all types should be welcomed as contributors to good governance due to their independence and access to information.
- 11) Governors should govern. It is not adequate to have complex systems of regulation that are never enforced, far better to have fewer laws properly enforced.

#### Facilitating forest business

- 1) Concession fees should be made as simple as possible to collect and should be based on a realistic appraisal of the expected value of the concession to the business. However, fees should be set in such a way as to avoid inefficient use of the forest resources. Bidders should have access to the forest before they submit their bids in order to make realistic bids based on a proper knowledge of the likely costs of access and of the quality and quantity of the forest resources available. Fees should take into account the market prices of timbers.
- 2) There should be complete transparency related to the collection of forest fees.
- 3) Concession tenure systems must be made more secure based on good performance. Rolling tenures of rotation length (25-40 years) refreshed at the end of every short term planning cycle (5-10 years) may give concession-holders the necessary security to invest in better forest management practices.
- 4) Up front charges and performance bonds requiring cash security present a significant cost to businesses and alternatives should be considered. For example, an equity bond in a parent

company with dividends withheld may be an effective way for a government to obtain security without capital costs to companies.

- 5) Incentives should be available to encourage companies to fulfil the terms of their contracts and for subjecting themselves to alternative systems of third party inspection such as by certification.
- 6) Small-scale forestry requires significant long-term support in order to be viable and they should have simple regulatory requirements in order to reduce the regulatory burden. The regulatory burden is an important factor in limiting their attempts to formalise their business. There should be significant advantages and government support for informal operators prepared to formalise their business.
- 7) Small-scale and community forest owners could be supported by entrepreneurs in forest management and processing in a real partnership.
- 8) There are likely to be advantages in situations where governments as owners of the allocated timber rights become partners with the concession-holders as opposed to opponents.

#### Improved forest management

- 1) Forest management plans should focus on the essentials (e.g. realising the objectives for the forest resource, mitigating the most significant environmental and social impacts. Forest management plans should therefore be based on realistic objectives and an assessment of key impacts.
- 2) Forest management plans should be supported by detailed technical guidelines that ensure they will be executed properly (e.g. instructions on how to carry out assisted regeneration of forest in a harvesting gap.)
- 3) Landscape level planning should precede forest management planning in order to identify suitable concessions. An integrated land use planning system involving all parties able to influence land use decisions is vital. The One Map initiative of Indonesia is an example of this approach.
- 4) Independent technical experts can be a significant advantage in providing impartial advice free from the constrictions of government policy or internal politics of government organizations.
- 5) Forest yield plans should be based on realistic expectations of growth under the type of silviculture implemented. For example, where enrichment planting and tending are carried out in canopy gaps the improved growth and the selection of species should result in higher yields which need to be recognised by increased harvest rates in the future.
- 6) Monitoring of performance is required for key indicators. It is recognised that monitoring is costly and should be limited to the minimum necessary.

#### Involving local stakeholders

- 1) Social impact assessments must be completed before the allocation of concessions.
- 2) Social issues and engagement must be included in forest policy.
- 3) All customary tenures should be identified and mapped prior to the allocation of tenure so that customary rights holders can be engaged in FPIC.

- 4) Specific solutions are required to address the problems faced by the informal sector. These should include measures aimed at decriminalising the sector by simplification of forest codes and allocation of timber rights.

## 6 Bibliography

- Anon. 2004. Conservation Concession Protecting forest ecosystems with payments for ecosystem services in Guyana. <https://www.cbd.int/financial/pes/guyana-pesconcession.pdf>
- Amacher G.S. 2006. Corruption: A challenge for economists interested in forest policy design. *Journal of Forest Economics* 12 85–89.
- Amacher G.S., M. Ollikainen & E. Koskela. 2012. Corruption and forest concessions. *Journal of Environmental Economics and Management* 63, 92–104.
- Amsallem I., M. Løyche Wilkie, P. Koné and M. Ngandji. 2003. Sustainable management of tropical forests in Central Africa: In search of excellence. FAO Forestry Paper 143.
- Arumadri J. 2002. The forest revenue system and government expenditure on forestry in Uganda. FAO.
- Asanzi P., L. Putzel, D. Gumbo and M. Mupeta. 2014. Rural livelihoods and the Chinese timber trade in Zambia's Western Province. *International Forestry Review* Vol.16(4), 16 (4): 447-459.
- Ashton, Mark S. and Jefferson S. Hall (2011) The Ecology, Silviculture, and Use of Tropical Wet Forests with Special Emphasis on Timber Rich Types. In S. Gunter et al. (eds.), *Silviculture in the Tropics* Tropical Forestry 8, DOI 10.1007/978-3-642-19986-8\_4, Springer-Verlag Berlin.
- Barnes, A. 2014. Economic State of the B.C. Forest Sector 2013. B.C. Ministry of Forests, Lands, and Natural Resource Operations. <https://www.for.gov.bc.ca/ftp/het/external/!publish/web/economic-state/Economic-State-of-BC-Forest-Sector-2013.pdf>
- Banks A, C. Sloth, D. Hadley Garcia & Koy Ra. 2014. Forest-Land Conversion and Conversion Timber Estimates: Cambodia Case Study. NEPCon & Forest Trends.
- Barthlott W., J. Mutke, D. Rafiqpoor, G. Kier and H. Kreft. 2005. Global Centers of Vascular Plant Diversity. *Nova Acta Leopoldina* NF 92, Nr. 342, 61–83.
- Bennett O. and D. Hirst. 2014. The Forestry Commission and the sale of public forests in England Standard Note: SN/SC/5734. House of Commons Library.
- Best C. & , Michael Jenkins (1999) *Capital Markets and Sustainable Forestry Opportunities for Investment* - The Pacific Forest Trust, Forest Trends
- Blackett H. and E. Gardette. 2008. Cross-border flows of timber and wood products in West Africa: final report. European Commission Contract Reference: 2007/146818
- Boscolo M. and J.R. Vincent. 2007. Area fees and logging in tropical timber concessions. *Environment and Development Economics* 12 (4): 505–20.
- BUREAU OF LAND MANAGEMENT (2015) Prospectus ThunderKat Timber Sale. ORS04-TS-2016.0503 November 18, 2015 Salem District Office 1717 Fabry Road, S.E. Salem, Oregon 97306.
- Bray D.B., E. Duran, V.H. Ramos, J.-F. Mas, A. Velazquez, R. B. McNab, D. Barry and J. Radachowsky. 2008. Tropical deforestation, community forests, and protected areas in the Maya Forest. *Ecology and Society* 13(2): 56. [online] URL: <http://www.ecologyandsociety.org/vol13/iss2/art56/>
- Canadian Forest Service. 2014. The State of Canada's Forests 2014. Natural Resources Canada. <http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/35713.pdf>

- Cerutti P.O, Lescuyer G, Tsanga R, Kassa S.N, Mapangou P.R, Mendoula, E.E, Missamba-Lola, A.P, Nasi R, Ekebil P.P.T and Yembe R.Y. 2014. Social impacts of the Forest Stewardship Council certification: An assessment in the Congo basin. Occasional Paper 103. CIFOR, Bogor, Indonesia
- Cerutti P. Nasi R. Baxter J (2015) *Once 'invisible,' Africa's domestic loggers come into the light. The European Union is driving greater emphasis on Africa's artisanal sector.* <http://blog.cifor.org/26637/africa-artisanal-domestic-logging-timber-vpa-flegt?fnl=en>
- Chan B. 2015. Status of Forest concessions in Southeast Asia concessions in Southeast Asia.
- Contreras-Hermosilla A. 2002. Law Compliance in the Forestry Sector. 47 pages. Stock No. 37205 World Bank Institute.
- Damette O. and P. Delacote. 2011. Unsustainable timber harvesting, deforestation and the role of certification. *Ecological Economics* 70(6):1211-1219.
- Day B. 1998. Who's Collecting the Rent? Taxation and Superprofits in the Forest Sector. Darft Report. [http://www.ucl.ac.uk/cserge/Forest\\_Rents.pdf](http://www.ucl.ac.uk/cserge/Forest_Rents.pdf)
- Delacote, P. 2010. How concessions' size may influence systemic corruption in forest harvesting: a theoretical assessment. Working Document INRA [https://www.researchgate.net/publication/254428218\\_How\\_concessions%27\\_size\\_may\\_influence\\_systemic\\_corruption\\_in\\_forest\\_harvesting\\_A\\_theoretical\\_assessment](https://www.researchgate.net/publication/254428218_How_concessions%27_size_may_influence_systemic_corruption_in_forest_harvesting_A_theoretical_assessment)
- de Wit P. 2012. Land Rights, Private Use Permits and Forest Communities. Land Commission of Liberia. April 2012. [http://eeas.europa.eu/delegations/liberia/documents/press\\_corner/20130916\\_01.pdf](http://eeas.europa.eu/delegations/liberia/documents/press_corner/20130916_01.pdf)
- Dietrich C., et al. 2012. Final report of the Panel of Experts on Liberia submitted pursuant to paragraph 5 (f) of Security Council resolution 2025 (2011). S/2012/901. United Nations Security Council. 4 December 2012. <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N12/588/46/PDF/N1258846.pdf?OpenElement>
- Dorbor Jallah J., et al. 2012. Report on the Issuance of Public Use Permits (PUPs). Report of the Special Independent Investigating Body (SIIB) presented to the President of The Republic of Liberia, H.E. Ellen Johnson Sirleaf. 19 December 2012. <http://www.illegal-logging.info/sites/default/files/uploads/SIIBReportonPUPs.pdf>
- Durst P.B., C. Brown, H.D. Tacio and M. Ishikawa (eds.). 2005. In search of excellence: Exemplary Forest Management in Asia and the Pacific. FAO.
- Ellison K. 2003. Renting Biodiversity: The Conservation Concessions Approach. *Conservation in Practice* 4: 20–29.
- Elson D. 2011. Investing in locally controlled forestry: reviewing the issues from a financial investment perspective. The Forest Dialogue, New Haven, USA. [http://environment.yale.edu/tfd/uploads/TFD\\_ILCF\\_London\\_Backgrounder\\_Elson.pdf](http://environment.yale.edu/tfd/uploads/TFD_ILCF_London_Backgrounder_Elson.pdf)
- Fairhead J. and M. Leach. 1996. Misreading the African Landscape: Society and Ecology in a Forest-savanna Mosaic. Cambridge University Press, Cambridge. ISBN 0-521-56499-9
- FAO. Forest and Farm Facility. <http://www.fao.org/3/a-i4848e.pdf>
- FAO. 2001. Governance principles for concessions and contracts in public forests. FAO Forestry Paper 139.
- FAO (2005) Global forest resources assessment 2005. Main Report. FAO Technical Paper 147.
- FAO. 2008. Understanding forest tenure in Africa: opportunities and challenges for forest tenure diversification. Comprendre les Régimes forestiers en Afrique: opportunités et enjeux de diversification. Forestry Policy and Institutions Working Paper/Document du travail sur les politiques et les institutions forestières No. 19. Rome.
- FAO. 2010. Global forest resources assessment 2010. Main Report. FAO Technical Paper 163.
- FAO. 2012. The Russian Federation: forest sector outlook study to 2030.

- FAO. 2014. Tenure Security for Better Forestry. Understanding forest tenure in Africa. Policy Brief.
- Ferlin F. and A. Golob. 2012. Forest concession and related public forestry administration models in Slovenia and Montenegro. in *Legal Aspects of European Forest Sustainable Development*: Peter Herbst, Alexander Puhachevski, Uladzimir Baginski, Elena Laevskaya, Rastislav Sulek, Vitalie Gulca Eds .Proceedings of the 14th International Symposium Minsk, Republic of Belarus. IUFRO.
- Fern (2006) Forest Governance in Ghana An NGO perspective. FERN
- Fibich P., J. Lepš, V. Novotný, P. Klimeš, J. Těšitel, K. Molem Kipiro Damas and G.D. Weiblen. 2016. Spatial patterns of tree species distribution in New Guinea primary and secondary lowland rain forest. *Journal of Vegetation Science*. DOI: 10.1111/jvs.12363
- Forest Enterprise England. 2015. Annual Report and Accounts 2014-15 (For the year ended 31 March 2015). House of Commons.
- Forest Legality Alliance. 2012. National export bans and restrictions. [http://declaration.forestlegality.org/files/fla/Export\\_bans\\_restrictions\\_2012\\_06.pdf](http://declaration.forestlegality.org/files/fla/Export_bans_restrictions_2012_06.pdf)
- Forest Trends. 2011. Timber Trade Flow Maps of China and the Mekong Region.
- Fox J. 2007. The uncertain relationship between transparency and accountability. *Development in Practice*, 17:4, 663 – 671 DOI: 10.1080/09614520701469955
- Gerwing J.J., J.S. Johns and E. Vidal. 1996. Reducing Waste During Logging and Log Processing: Forest Conservation in Eastern Amazonia. *Unasylva* (FAO): 17-25.
- Gilmour D. (2016) Forty years of community-based forestry A review of its extent and effectiveness FAO Forestry Paper 176. FAO, Rome
- Global Forest Watch. 2014. Press Release, Industrial Concessions Cover Over One Quarter of Canada. 27 Feb 2014.
- Global Witness. 2013. *Rubber Barons: How Vietnamese Companies and International Financiers are Driving a Land Grabbing Crisis in Cambodia and Laos*. Global Witness, London.
- Gómez I. and V.E. Méndez. 2005. Association of Forest Communities of Petén, Guatemala: Context, Accomplishments and Challenges. CIFOR.
- Gray J.A. 2002. *Forest Concession Policies and Revenue Systems: Country Experience and Policy Changes for Sustainable Tropical Forestry*. ISBN: 978-0-8213-5170-3 <http://dx.doi.org/10.1596/0-8213-5170-2>
- Gray J.a. 2003a. Forest tenures and concession experience in Canada and selected other countries. In: PROFOR (eds.), Institutional Changes in Forest Management in Countries with Transition Economies: Problems and Solutions. Workshop Proceedings.
- Gray J.A. 2003b. Implementing forest concessions policies and revenue systems: Experience and lessons from countries around the world. In: PROFOR (eds.), Institutional Changes in Forest Management in Countries with Transition Economies: Problems and Solutions. Workshop Proceedings.
- Gretzinger S.P. 1998. Community Forest Concessions: An Economic Alternative for the Maya Biosphere Reserve in the Petén, Guatemala. In Richard B. Primack ed. Timber, tourists, and temples: conservation and development in the Maya Forest of Belize, Guatemala, and Mexico. Island Press.
- Gretzinger S. 2015. Latin American experiences in forest concessions. Draft report for FAO.
- Grogan J., R.M. Landis, C.M. Free, M.D. Schulze, M. Lentini & M.S. Ashton. 2014. Big-leaf mahogany *Swietenia macrophylla* population dynamics and implications for sustainable management. *Journal of Applied Ecology* 51(3) 664-674. doi: 10.1111/1365-2664.12210
- Grut M., J.A. Gray and N. Egli. 1991. Forest pricing and concession policies: Managing the high forests of West and Central Africa. Technical Paper No. 143, Africa Technical Department Series. World Bank, Washington, D.C.

- Guha R. & Gadgil M (1993) State Forestry and Social Conflict in British India. In Indian Forestry: A perspective. Ed. A.S. Rawat
- Günter S., M. Weber, B. Stimm & R. Mosandl. 2011. Five Recommendations to Improve Tropical Silviculture. In: S. Günter et al. (eds.), *Silviculture in the Tropics*. Tropical Forestry 8, Springer-Verlag Berlin Heidelberg, DOI 10.1007/978-3-642-19986-8\_34
- Hardin R. 2011. Concessionary Politics Property, Patronage, and Political Rivalry in Central African Forest Management. *Current Anthropology* 52 (S3), Corporate Lives: New Perspectives on the Social Life of the Corporate Form: Edited by Damani J. Partridge, Marina Welker, and Rebecca Hardin (Supplement to April 2011), pp. S113-S125
- Hodgdon, B.D., J. Hayward & O. Samayoa. 2013. Putting the plus first: community forest enterprise as the platform for REDD+ in the Maya Biosphere Reserve, Guatemala. *Tropical Conservation Science*. Special Issue Vol. 6(3):365-383.
- Honig, L. and B.P. Mulenga. 2015. The Status of Customary Land and the Future of Smallholder Farmers Under the Current Land Administration System in Zambia. Working Paper 101. Indaba Agricultural Policy Research Institute (IAPRI) Lusaka, Zambia Downloadable at: <http://www.iapri.org.zm>
- IBI Consultants. 2013. Forest concessions—commercial forest revenue projection model final report: June 2013. USAID.
- ILO. 1998. ILO Declaration on Fundamental Principles and Rights at Work. <http://www.ilo.org/declaration/thedeclaration/textdeclaration/lang--en/index.htm>
- ITTO. 2012. Annual Review and Assessment of the World Timber Situation 2012. International Tropical Timber Organization, Yokohama, Japan. 196 pp.
- Kalunga S.K., F. Midtgaard and T. Eid. 2015. Does Forest Certification Enhance Forest Structure? Empirical Evidence from Certified Community-Based Forest Management in Kilwa District, Tanzania. *International Forestry Review*, 17(2):182-194. Commonwealth Forestry Association URL: <http://www.bioone.org/doi/full/10.1505/146554815815500570>
- Kalunga S.K., K.A. Kulindwa & B.I. Mshale. 2014. Equity in Distribution of Proceeds from Forest Products from Certified Community-Based Forest Management in Kilwa District, Tanzania. *Small-scale Forestry*. DOI 10.1007/s11842-014-9274-6
- Karsenty A. 2000. Economic instruments for tropical forests: The Congo Basin Case. Instruments for sustainable private sector forestry series. International Institute for Environment and Development, London. Centre for International Forestry Research. Centre de coopération internationale pour le développement.
- Karsenty A. 2007. Overview of Industrial Forest Concessions and Concession-based Industry in Central and West Africa and Considerations of Alternatives. CIRAD.
- Karsenty A. 2015. The contemporary forest concessions in West and Central Africa: chronicle of a foretold decline? Draft report for FAO.
- Karsenty A. and S.Gourlet-Fleury. 2006. Assessing sustainability of logging practices in the Congo Basin's managed forests: the issue of commercial species recovery. *Ecology and Society* 11(1): 26. URL: <http://www.ecologyandsociety.org/vol11/iss1/art26/>
- Kishor N & Lescuyer G. (2012) Controlling illegal logging in domestic and international markets by harnessing multi-level governance opportunities. *International Journal of the Commons* Vol. 6, no 2 August 2012, pp. 255–270
- Kometter R.F., M. Martinez, A.G. Blundell, R.E. Gullison, M.K. Steininger & R.E. Rice. 2004. Impacts of unsustainable mahogany logging in Bolivia and Peru. *Ecology and Society* 9 (1): 12. [online] URL: <http://www.ecologyandsociety.org/vol9/iss1/art12/>

- Lagan P., S. Mannan & H. Matsubayashi. 2007. Sustainable use of tropical forests by reduced-impact logging in Deramakot Forest Reserve, Sabah, Malaysia. *Ecol Res.* DOI 10.1007/s11284-007-0362-3
- Leal D. J. Shaw. 2005. Turning a profit on public forests. The Property and Environment Research Centre. <http://www.perc.org/articles/turning-profit-public-forests-full>
- Leffler K.B. and R.R. Rucker. 1991. Transaction Costs and the Efficient Organization of Production: A Study of Timber-Harvesting Contracts. *Journal of Political Economy*, 99(5), 1060-1087.
- Lescuyer G., S. Assembe Mvondo, J.N. Essoungou, V. Toison, J.-F. Trébuchon and N. Fauvet. 2012. Logging concessions and local livelihoods in Cameroon: from indifference to alliance? *Ecology and Society* 17(1): 7. <http://dx.doi.org/10.5751/ES-04507-170107>
- Masiero M. Pettenella D. Cerutti P. (2015) Legality Constraints: The Emergence of a Dual Market for Tropical Timber Products? *Forests*, 6, 3452-3482; doi:10.3390/f6103452
- Mackenzie C. 2006. Forest governance in Zambézia, Mozambique: Chinese takeaway! Final report for FONGZA <http://www.open.ac.uk/technology/mozambique/sites/www.open.ac.uk.technology.mozambique/files/pics/d72272.pdf>
- Matthews J.D. 1989. *Silvicultural Systems*. Oxford.
- May Liana N. 2013. Effects of forest management and land use on regeneration in REDD+ villages, southeastern Tanzania. MSC Thesis. University of Michigan.
- Messner E. 1981. Reactive entitlement in elective public office: a possible precursor to political corruption. *Am J Psychother.* Jul;35(3):426-35.
- Mostacedo B., Z. Villegas, J.C. Licona, A. Alarcón, D. Villarroel, M. Peña-Claros y T.S. Fredericksen. 2009. *Ecología y Silvicultura de los Principales Bosques Tropicales de Bolivia*. Instituto Boliviano de Investigación Forestal. Santa Cruz, Bolivia.
- Mousseau F. & Lau P. (2016) *The great timber heist: the logging industry in Papua New Guinea*. The Oakland Institute.
- Muys B., H.J. van Hensbergen, L. Oldenkamp. 2010. *Principes van Duursaam Bosbeheer*. Acco Uitgeverij, Leuven. In: *Bosecologie en Bosbeheer*, by Muys B & Mohrens F. Den Ouden J. Leuven: Acco Uitgeverij.
- Myers N. and J. Kent. 2001. *Perverse Subsidies: How Tax Dollars can Undermine the Environment and the Economy*. Island Press. Washington.
- Neumann R. P. 1996. Forest Products Research in Relation to Conservation Policies in Africa. In Perez M.R. & Arnold J.E.M. (eds.), *Current Issues in Non Timber Forest Products Research*. Cifor.
- Nhantumbo I., D.J. Macqueen, R. Cruz & A. Serra. 2013. Investing in locally controlled forestry in Mozambique: Potential for promoting sustainable rural development in the province of Niassa. IIED, UK.
- Oduro K.A., E.G. Foli, G.M.J. Mohren & W.K. Dumenu. 2011. Ghana. In: Werger, Marinus J.A. (ed.), *Sustainable Management of Tropical Rainforests: the CELOS Management System*. Tropenbos International, Paramaribo, Suriname. x + 282 pp.
- Office of the Deputy Prime Minister. 2005. Valuing the external benefits of undeveloped land: main document. [Http://www.odpm.gov.uk/staging/index.asp?id=1145268#P547\\_96498](Http://www.odpm.gov.uk/staging/index.asp?id=1145268#P547_96498) Accessed (9/03/06)
- Our Forests. 2013. Government Warned on Public Forest Estate: Get the Economics Right! Press Release. [http://www.handsoffourforest.org/documents/OF\\_warning\\_economics.pdf](http://www.handsoffourforest.org/documents/OF_warning_economics.pdf)
- Peña-Claros M, S. Blommerde & F. Bongers. 2009. Assessing the progress made: an evaluation of forest management certification in the tropics. *Tropical Resource Management Papers*, Wageningen.
- Perez M.R. and J.E.M. Arnold (eds.). 1996. *Current Issues in Non Timber Forest Products Research*. Cifor.



- Petrokofsky G., P. Sist, L. Blanc, J. Doucet, B. Finegan S. Gourlet-Fleury, J.R. Healey B. Livoreil R. Nasi., M. Peña-Claros, F.E. Putz & Wen Zhou. 2015. Comparative effectiveness of silvicultural interventions for increasing timber production and sustaining conservation values in natural tropical production forests. A systematic review protocol. *Environmental Evidence* (2015) 4:8 DOI 10.1186/s13750-015-0034-7
- Porter-Bolland L., E.A. Ellis, M.R. Guariguata, I. Ruiz-Mallén, S. Negrete-Yankelevich & V. Reyes-García. 2011. Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics. *Forest Ecol. Manage.* (2011), doi:10.1016/j.foreco.2011.05.034
- Poynton S. 2015. Beyond Certification. Do Sustainability. Oxford.
- Putzel, L., Assembe-Mvondo, S., Bi Ndong, L.B., Banioguila, R.P., Cerutti, P., Tieguhong, J.C., Djeukam, R., Kabuyaya, N., Lescuyer, G. and Mala, W. 2011 *Chinese trade and investment and the forests of the Congo Basin: synthesis of scoping studies in Cameroon, Democratic Republic of Congo and Gabon*. Working Paper 67. CIFOR, Bogor, Indonesia
- Radachowsky J., V.H. Ramos, R. McNab, E.H. Baur and N. Kazakov. 2011. Forest concessions in the Maya Biosphere Reserve, Guatemala: A decade later. *Forest Ecol. Manage.* doi:10.1016/j.foreco.2011.08.043
- Ramblers Association. 2007. *The "Right to Roam" in England and Wales*.
- REM. 2009. IM-FLEG: Progress in tackling illegal logging in Cameroon. [http://www.observation-cameroun.info/documents/REM\\_IMFLEG\\_Cameroon\\_Report\\_endproject.pdf](http://www.observation-cameroun.info/documents/REM_IMFLEG_Cameroon_Report_endproject.pdf)
- Rice R. 2001. *Conservation Concessions - Concept Description*. Center for Applied Biodiversity Science, Conservation International.
- Reyes Rodas R., J. Kent, T. Ammour & J. Gálvez. 2014. Challenges and opportunities of sustainable forest management through community forestry concessions in the Maya Biosphere Reserve, Petén, Guatemala. In: Pia Katila, Glenn Galloway, Wil de Jong, Pablo Pacheco, Gerardo Mery (eds.), *Forests under pressure: Local responses to global issues*. IUFRO World Series Volume 32. Vienna. 561 p.
- Rukinga Ranch Ltd. 2008. *The Kasigau Corridor REDD Project Phase I – Rukinga Sanctuary*. Wildlife Works.
- Sabogal C. & J. Casaza (eds.). 2010. Standing tall: exemplary cases of sustainable forest management in Latin America and the Caribbean. FAO.
- Scherr S.J., A. White & D. Kaimowitz. 2003. *A new agenda for forest conservation and poverty reduction: Making markets work for low-income producers*: Forest Trends, Washington DC.
- Schwartz G., A.L.S. Bais, M. Peña-Claros, M.A. Hoogstra-Klein, G.M.J. Mohren & B.J.M. Arts. 2016.) Profitability of silvicultural treatments in logging gaps in the Brazilian Amazon. *Journal of Tropical Forest Science* 28(1): 68–78.
- Sitoe A., Chidumayo E and Alberto M. 2010. *Timber and wood products*. In Chidumayo EG, and Gumbo D. (ed). *The Dry Forests and Woodlands of Africa: Managing for Products and Services*. Earthscan.
- Sheil, D., van Heist, M. 2000. Ecology for tropical forest management . *International Forestry Review* 2 (4) :261-270. ISSN: 1465-5489.
- Smith, J., Obidzinski, K., Subarudi, A., Suramenggala, I., (2003). *Illegal logging, collusive corruption and fragmented Governments in Kalimantan, Indonesia*. *International Forestry Review* 5 (3), 293–302.
- Snook LK (2005) Sustaining mahogany: research and silviculture in Mexico's community forests. *Bois et Forêts des Tropiques* 285: 55-65.
- Sophanarith Kim,T, N. Kiim Phat, M. Koike, H. Hayashi. 2006. Estimating actual and potential government revenues from timber harvesting in Cambodia. *Forest Policy and Economics* 8 (2006) 625– 635
- Søreide T. 2007. Forest concessions and corruption. CMIU4 ISSUE 3:2007

- Søreide Tina & A. Williams. 2013. *Certified integrity? Forest certification and anti-corruption*. U4 Issue January 2013 No 1.
- Stidsen S. (ed.). 2007. The Indigenous World 2007. The International Work Group for Indigenous Affairs.
- Subedi S.P. 2012. *Report of the Special Rapporteur on the situation of human rights in Cambodia. Addendum: A human rights analysis of economic and other land concessions in Cambodia*. A/HRC/21/63/Add.1 UN Human Rights Council.
- Suratman, M.N. 2012. Tree Species Diversity and Forest Stand Structure of Pahang National Park, Malaysia. In: Lameed, G.A., Ed., *Biodiversity Enrichment in a Diverse World*, 473-492.
- Tewari V.P. and K. von Gadow. 2015. Domesticated Forest Ecosystem and Multiple Path Theory in Forest Design: A Paradigm Shift from Traditional Silviculture. In: *Advances in Tree Seed Science and Silviculture*, Chapter: 21, Publisher: Institute of Forest Genetics and Tree Breeding, Coimbatore, Editors: C. Buvaneswaran, R. Anandalakshmi, Rekha R. Warriar, S. Senthilkumar, N. Krishna Kumar, R.S. Prashanth, pp.230-239 DOI: 10.13140/RG.2.1.5060.8080
- Teravaninthorn S. and G. Raballand. 2008. Transport Prices and Costs in Africa: A Review of the Main International Corridors. World Bank.
- Tuckness Alex. "Locke's Political Philosophy", The Stanford Encyclopedia of Philosophy (Winter 2012 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/win2012/entries/locke-political/>>.
- UK. 1967. The Forestry Act 1967.
- van Gardingen P.R, M.J. McLeish, P.D. Phillips, Dadang Fadilah, G. Tyrie & I. Yasman. 2003. Financial and ecological analysis of management options for logged-over Dipterocarp forests in Indonesian Borneo. *Forest Ecology and Management* 183 (2003) 1–29.
- van Hensbergen H.J., K. Bengtsson, M. Miranda y I. Dumas. 2011. Poverty and Forest Certification. WWF & The Forest Initiative DOI: 10.13140/2.1.2357.1522
- van Hensbergen H.J. and F. Njovu. 2015. The role and future of guidelines, codes of practice and certification systems in the forest sector to support the greening of the building and construction sector in Zambia. Zambia Green Jobs Programme. ILO. DOI: 10.13140/RG.2.1.3280.6486
- von Gadow K. 2015. *Managing Natural Forests*. Presentation · November 2015 DOI: 10.13140/RG.2.1.1194.8888
- von Gadow K, M. Kurttila, P. Leskinen, L. Leskinen, T. Nuutinen and T. Pukkala. 2007. Designing forested landscapes to provide multiple services. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources* 2, No. 038
- Webster G. and H.A. Osmaston. 2003. A History of the Uganda Forest Department 1951–1965. The Commonwealth Secretariat. DOI :10.14217/9781848598171-en
- Wenbin H. and Sun Xiufang. 2015. Tropical Hardwood Flows in China: Case Studies of Rosewood and Okoumé. *Forest Trends*.
- Whiteman A. 1999. Economic rent from forest operations in Surinam and a proposal for revising Surinam's forest revenue system. FAO, Rome.
- World Rainforest Movement. 2015. Why the forest concession model does not solve the structural problems of logging and wood extraction? Bulletin 217 <http://wrm.org.uy/wp-content/uploads/2015/09/Bulletin217.pdf>
- WWF. 2015. WWF living forests report: chapter 5 saving forests at risk. WWF.
- WWF. 2015b. Largest forest concession in the Congo Basin receives FSC certification [http://wwf.panda.org/about\\_our\\_earth/deforestation/deforestation\\_front/deforestation\\_in\\_the\\_congo\\_basin/?237170/Largest-forest-concession-in-the-Congo-Basin-receives-FSC-certification](http://wwf.panda.org/about_our_earth/deforestation/deforestation_front/deforestation_in_the_congo_basin/?237170/Largest-forest-concession-in-the-Congo-Basin-receives-FSC-certification)

Zhang Y, J. Bampton and H.J. van Hensbergen. 2015. Global Witness v Vietnam Rubber Group. Public Summary of Complaints Panel Report. FSC. <https://ic.fsc.org/en/stakeholders/dispute-resolution/archived-cases/vietnam-rubber-group-vrg>

