

# Global Forest Product Chains

Identifying challenges and opportunities for China through a global commodity chain sustainability analysis

Changjin Sun, Liqiao Chen, Lijun Chen, Lu Han, Steve Bass

June 2008



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Federal Department of Economic Affairs FDEA  
State Secretariat for Economic Affairs SECO

This paper is a product of a joint initiative of the Chinese Ministry of Commerce (MOFCOM) and IISD with the support of the Swiss State Secretariat for Economic Affairs (SECO)

---

# Global Forest Product Chains

## Identifying challenges and opportunities for China through a global commodity chain sustainability analysis

---

Changjin Sun, Liqiao Chen, Lijun Chen,  
Lu Han, Steve Bass

June 2008

---

**This paper is a product of a joint initiative of the Chinese Ministry of Commerce (MOFCOM) and IISD with the support of the Swiss State Secretariat for Economic Affairs (SECO).**

© 2008 International Institute for Sustainable Development (IISD)

Published by the International Institute for Sustainable Development

The International Institute for Sustainable Development contributes to sustainable development by advancing policy recommendations on international trade and investment, economic policy, climate change, measurement and assessment, and natural resources management. Through the Internet, we report on international negotiations and share knowledge gained through collaborative projects with global partners, resulting in more rigorous research, capacity building in developing countries and better dialogue between North and South.

IISD's vision is better living for all—sustainably; its mission is to champion innovation, enabling societies to live sustainably. IISD is registered as a charitable organization in Canada and has 501(c)(3) status in the United States. IISD receives core operating support from the Government of Canada, provided through the Canadian International Development Agency (CIDA), the International Development Research Centre (IDRC) and Environment Canada; and from the Province of Manitoba. The institute receives project funding from numerous governments inside and outside Canada, United Nations agencies, foundations and the private sector.

International Institute for Sustainable  
Development  
161 Portage Avenue East, 6th Floor  
Winnipeg, Manitoba  
Canada R3B 0Y4  
Tel: +1 (204) 958-7700  
Fax: +1 (204) 958-7710  
E-mail: [info@iisd.ca](mailto:info@iisd.ca)  
Web site: <http://www.iisd.org/>

## Table of Contents

Acknowledgements.....	ii
Executive Summary.....	iii
1.0 Introduction.....	1
1.1 Why this report has been prepared .....	1
1.2 A brief global review of the policy framework for a sustainable forest industry.....	2
1.3 China's significance for the sustainability of the global forest Industry.....	16
2.0 Overview of the Chinese Forest Products Trade.....	18
2.1 Volume analysis .....	18
2.2 Cellulose product analysis.....	20
2.3 Wood product analysis .....	21
2.4 Trade route analysis .....	22
2.5 Chinese wood demands in relation to Chinese forest potential .....	24
2.6 China's global role.....	25
3.0 Profiling the Global Forest Products Commodity Chains .....	26
3.1 Theoretical origin.....	26
3.2 The composition of global forest product commodity chains.....	27
3.3 Framework for analysis .....	29
3.4 Primary wood product suppliers: The cases of Mozambique and Russia .....	29
3.4.1 Mozambique (see Annex 2 for full study).....	32
3.4.2 Russia (see Annex 3 for full study).....	40
3.5 China: The wood processing node in the commodity chain.....	47
3.5.1 Timber importing into China .....	47
3.5.2 Timber distribution within China .....	48
3.5.3 Timber processing within China .....	49
3.5.4 Exporting of finished products from China.....	51
3.6 Major consumers of Chinese wood products: The Case of the U.S.....	53
3.7 Sustainable global forest products commodity chains: The case of New Zealand .....	55
4.0 Analyzing the Global Forest Products Commodity Chain.....	57
4.1 Material and capital flows .....	57
4.2 Spatial distribution.....	59
4.3 Value distribution.....	60
4.4 Economic, environmental and social benefits and problems of the global forest products commodity chain: The case for China to act.....	61
5.0 Policy Recommendations.....	66
5.1 Building on progress to-date .....	66
5.2 Policy options for consideration by the Chinese government.....	68
Reference List.....	76
Annex 1: .....	80
Annex 2 .....	86
Annex 3: .....	106

## Acknowledgements

The authors are very grateful to Antoine Bossel and Simon Norfolk for their in-country investigations of supply chains connecting Mozambique and China; to Alexander Sheingauz for his work on Russian supply chains and Mr. Yang Jiping for his work on New Zealand Forestry. Kerstin Canby and Xiufang Sun of Forest Trends have been generous with both advice and data. Duncan Macqueen and Nicole Armitage have offered advice and support. Finally, we are grateful to the close reviewing and good advice provided by Ms. Luo Jian Xin (Chinese Academy of Forestry); Duncan Brack (Chatham House); Julie Thomas (WWF-UK); and John Warburton, John Hudson, Hugh Speechly and Leo Horn (DFID).

## Executive Summary

*A global commodity chain of forest products has now been formed.* At the centre of this chain is China, the manufacturing base that imports primary raw materials from developing countries and exports finished products to major consumers in developed Western countries.

*The responsible management of this chain is perceived to be highly significant for global sustainability.* It involves a very large flow of material from environmentally-sensitive forests worldwide, and the engagement of low-cost labour in both China and some very poor forested countries. With environmental and social governance of the chain, it could be a force for good, especially in poor countries through capitalizing forests, increasing employment and revenue generation and industrial upgrading. Chinese timber sourcing from New Zealand and the U. S. South is a good example of the positive effects this globalized forest product commodity chain can exert on global forestry sustainability.

*However, operation of the chain has been adversely affected by trade policies, poor governance in wood-supplying countries and irresponsible business practice.* Distorting trade policies in China has led to a huge increase in bulk imports within a time frame too short to implement adequate safeguards in wood-exporting countries. Weak forest governance and corruption in many of China's major wood-supplying countries has been exacerbated by a lack of responsible corporate behaviour among some Chinese businesses (including bribery, illegal logging and fraud).

*These problems interact to aggravate forest loss and poverty in the face of increasing competition for agricultural land, energy and urban expansion.* The Chinese-dominated wood supply chain thus joins these other causes to undermine many of the benefits that sustainably-managed forest provide—such as carbon storage, biodiversity, water regulation and cultural heritage, as well as wood.

*It is in China's interest to continue importing wood, but in ways that support secure and sustainable supplies from its trading partners while producing non-wood benefits.* China has been able to develop a highly-competitive domestic wood processing industry while effectively protecting its domestic forests for multiple purposes. However, China is now heavily reliant on imported wood. This has, inadvertently, “exported” problems of unsustainable wood production to other countries. It will also create several severe problems for China itself if “business as usual” continues, where fibre is sourced irrespective of legality or sustainability:

- *Insecurity of fibre supply* – Many of the countries on which China currently depends, such as in Southeast Asia, will effectively be logged out within 10 years, particularly for many hardwoods, as their “substitute” plantations are not yet producing well. Other countries on which China depends for medium-term supplies, such as Russia and Africa, have such poor

forest governance that supplies are uncertain.

- *High price of fibre* – Many countries currently exporting raw fibre to China are expected to encourage more domestic processing, for example, the rapidly-rising Russian raw log export tax. In addition, wood prices will be increasingly affected by energy prices as poorer quality wood is used for biofuel or land is put to use for biofuel cultivation. Chinese wood products companies have very low profit margins and will be vulnerable to such price increases.
- *Loss of market reputation* – The wood products markets of Europe and North America are increasingly discriminating in favour of products from proven legal and sustainable sources. Chinese producers are lagging behind others in sourcing proven legal and sustainable fibre supplies.
- *Mistrust of Chinese investors* – The above problems could be resolved with judicious Chinese investment in the productivity and sustainability of the fibre supply abroad, as well as through the support of good forest governance. But the current poor performance of Chinese companies does not make them the most favoured partners.

The challenge is a diverse one: Currently, China’s major suppliers of wood include some with “good” to “very good” forest practices, but also some with very “bad” practices.

*The key to global forest product commodity chain sustainability is to match production efficiencies with improved forest governance in the producer country.* The security of fibre supply depends upon adequate forest area and sound forest management. In turn, the sustainability of upstream timber production—and security of many other environmental goods and services—depends on good forest governance, which ensures a balance of all forest goods and services. This is especially urgent in poorer producer countries.

*Although there are some voluntary actions that could be taken by Chinese private industry, leadership from the Chinese government would be highly beneficial—as a regulator, as a source of aid to developing countries, as a nation committed to the production of global public goods and as a major buyer of forest products.* Although market instruments for ensuring sustainability are emerging, they are not yet fully in place and require supportive public policy. Some market-based instruments, such as forest certification and legal verification schemes, enable well-resourced producers to meet the needs of discriminating “green niche” markets. It will require complementary government action to close the doors to the bad practices of irresponsible producers and international cooperation to build the governance systems of poor forest countries.

*There is much progress on which China can build.* The Chinese government has recently released good-practice guidelines for forestry abroad. Almost all of the major countries to which China exports forest products are becoming increasingly discriminating about environmental and/or social

practices. This is encouraging Chinese companies to respond. For example, China is now supporting global recycling by importing and processing waste paper, while Chinese mills are improving their tracking of wood flows and their sources. Sixty per cent of pulp imports are already certified as environmentally sound.

*Further progress will entail significant leadership from the Chinese government.* Several policy options are explored to both meet China's self-interest and secure the environmental and livelihood needs that other countries also seek from the forest industry:

***Recommendation 1: Capacity-building for sustainable forest management:*** The Chinese government should provide targeted supply countries with financial and technical aid to build forest governance and management capacity by working with, and investing in, local public sector forest reform and stakeholder engagement processes, management infrastructure and production capacity. Chinese support should focus on building source country capacity for legal compliance as well as compliance with internationally recognized standards for “sustainable management practice” (for example: Forest Stewardship Council; PEFC; Sustainable Forest Initiative).

***Recommendation 1.1: Build sustainable forest management within the Sino-African Development Fund:*** The Chinese government should explicitly allocate a portion of its Sino-African Development Fund to improve forest governance, capacity and the implementation of sustainable forest management practices.

***Recommendation 1.2: Leverage regional partnerships for sustainable forest management:*** The Chinese government should enter into new national or regional partnerships aimed at improving sustainable forest management on the ground. In particular, China should prioritize investment in Russia and West and Central Africa. The Chinese government should increase investment and promotion of the Congo Basin Partnership and the Asian Forest Partnership.

***Recommendation 1.3: Join international efforts in implementing capacity-building:*** The Chinese government should collaborate with the International Tropical Timber Organization in the identification of needs and project implementation through the Bali Partnership Fund, FLEG program and/or bilateral funding mechanisms. The Chinese government should also become a proactive participant in, and contributor to, the United Nations Forum on Forests as a means to seeking joint-international implementation strategies.

***Recommendation 2: Build markets for sustainable forest products:*** The Chinese government should play a proactive role in ensuring the sustainable management of global forest product chains by improving market transparency and encouraging the growth of markets for sustainably-produced forest products.

**Recommendation 2.1: Improve the information base on forest sector sustainability:** The Chinese government should establish a mechanism for monitoring, reporting and disseminating information on the social and environmental impacts of China's forest industry, both domestically and abroad. The system should build upon, and be consistent with, the ITTO's internationally recognized "criteria and indicators for sustainable forest management," while seeking maximum compatibility with voluntary mechanisms such as Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC).

**Recommendation 2.2: Implement sustainable forest procurement:** The Chinese government should implement a robust and comprehensive sustainable wood product procurement program. A Chinese procurement program should focus on enforcing legal compliance as a baseline, moving towards the integration of compliance with sustainability standards at a later but specified time. In order to ensure cost-effectiveness, a Chinese government procurement program should be based on: 1. an analysis of the sustainability impacts of wood products and their non-wood alternatives; 2. internationally accepted standards for sustainable forestry; 3. mandatory minimum procurement requirements; and 4. a transparent and replicable process that can be adopted or adapted by other key buyers such as local authorities.

**Recommendation 2.3: Build the Chinese forest product brand:** The Chinese government should seek strategic improvement of the market value of the Chinese brand by proactively encouraging private sector investment in sustainable forestry and forest products. In order to address this, the Chinese government should adopt preferential tax policies for Chinese firms that either purchase sustainable products or themselves comply with internationally recognized sustainable forest management practices. In order to ensure the credibility and sustainability of its sustainability branding, China should also invest in a forest supply chain tracing system.

**Recommendation 2.4: Adjust VAT policy to promote sustainable forestry:** In order to reduce dependence on unsustainable forest production in supplier countries, the Chinese government should eliminate its VAT refund policy on processed wood products, including furniture, or restrict eligibility to certified sustainable forest products; at a minimum, the Chinese government should consider removing the VAT exemption policy on wood products so that such trade would not be encouraged unnecessarily. As a first step in identifying the most effective means for building sustainable VAT policy for forestry products, the Chinese government should set up an inter-departmental working group to define the parameters of such a system.

**Recommendation 3: International Initiatives:** China should become a proactive participant in key international sustainable forestry initiatives.



**Recommendation 3.1:** *Join international efforts to implement international carbon accounting for forest management:* China should work with the international community to establish and implement a system of carbon accounting and payments associated with sustainable forest management practices so that carbon is secured alongside—and not at the expense of—other environmental and social benefits from forests. As a first step, China should become an active participant in the Reduced Emissions from Deforestation and Forest Degradation (REDD) initiative while setting clear forest-based emissions reduction targets.

**Recommendation 3.2:** *Reduce illegal logging by implementing a Forest Law Enforcement and Governance and Trade (FLEGT) initiative:* The Chinese government should play a proactive role in monitoring and enforcing the legality of the international timber production it sources and trades. With this in mind, China should become a full member of the European Union’s FLEGT initiative while looking into a mechanism for applying a formal FLEGT licensing scheme for Chinese importers of wood products.

*Bold moves by China to support legal and sustainable forestry, implemented on a significant scale, could be highly valuable in improving the Chinese industry’s reputation for securing wood supplies, as well as sustaining environmental and social benefits from forests, for millions of people for many years to come.* China has not yet been involved in many of the international/consumer instruments to promote good forestry and halt bad forestry practices. Therefore, it is in a good position to ask questions of their suitability for all actors in the chain—and then to promote approaches that enable the majority of actors to move to sustainability, both individually and collectively.

## 1.0 Introduction

### 1.1 Why this report has been prepared

Forests worldwide are under increasing pressure from intensive agriculture and urban expansion. At the same time, demand for both wood and the environmental services that forests provide—biodiversity, water and climate regulation—is also increasing due to rising populations and consumption. Within this rapidly changing context, where forest governance may not be up to the task of meeting such demands, it is not surprising that problems such as deforestation, species loss and the marginalization of forest-dependent poor people appear in the headlines daily. Less reported are the many ways in which forests are being well-managed to sustain a balance of economic, environmental and social benefits.

The huge size and rapid growth of China’s economy is a highly-significant factor in shaping the future of almost all countries and commodity supply chains around the globe. Much is said about the “Chinese footprint”—the effects of unprecedented Chinese demands for imported raw materials such as wood—on global forests and workforces. Yet so little is understood about the ways in which many stakeholders along the new China-driven wood products supply chains—from forestry and product processing to sale, consumption and recycling—can both benefit themselves and promote sustainable practice along the chain.

This report traces the forces behind global wood product chains involving China, reviews the dynamics and assesses the impacts along those chains. It looks in detail at two specific chains arising from forests in Africa and Russia. It reviews best-practice instruments, notably for sustainable forestry where the most significant impacts are experienced, but also for other stages further down the chain. The information on “what works for a sustainable supply chain” is brought into a set of policy options for the Chinese government to consider. Whilst sustainable supply chains are a shared responsibility, there is much that China can and should do to provide leadership in building a sustainable forestry sector in a manner that is proportionate to China’s overall importance in the global forest market.

This section reviews global trends in forest production and trade, setting the context for this study. We highlight the importance of forests as a driver of economic growth as well as a source of increasingly scarce social and environmental benefits. We identify two linked challenges: halting bad forest management, which degrades the forest and denies benefits to local people; and making the transition to sustainable forest management, which sustains many benefits over time. We conclude with a review of the most effective instruments for meeting these challenges.

## 1.2 A brief global review of the policy framework for a sustainable forest industry

### *Why are the world's forests important?*

Forestry is inherently a sustainable industry—one that is “powered by the sun.” Forests are very well known for producing wood, but they also produce a much wider range of goods and services (Millennium Ecosystem Assessment, 2005), including:

- *provisioning services* – wood, other fibres such as bamboos and rattans, wild foods, medicines, freshwater, etc.;
- *regulating services* – air purification, CO<sub>2</sub> storage and sequestration, micro-climate regulation, disease control, etc.;
- *cultural services* – landscape beauty, traditional knowledge, education, social relations, etc.; and
- *supporting services* – nutrient cycling, soil formation, etc., including the biological processes that sustain the forest itself.

These services produce many economic, social and environmental benefits that are particularly important for poor people and countries. Whether the full range of forest goods and services is actually produced, as well as the quantity produced, will depend upon: (a) how much forest exists, which depends on the extent to which relative profitability drives land-use decision-making; (b) the type of forest, ranging from natural forests to artificial plantations; and (c) how forests are managed, from “asset-stripping” timber only, to more sustainable approaches that ensure continued regeneration of the forest.

### *What does sustainable forest management look like in practice?*

Sustainable forest management (SFM) is more information-intensive, more skill-intensive and more participatory with stakeholders than are mere timber logging operations. Sustainable practices include:

- compliance with the laws governing forests in a particular country;
- strengthening a culture of legality, taxation and reinvestment in the forest resource;
- negotiating forest access that abides by local tenure arrangements, distributes incomes from forest exploitation fairly and also respects and secures local peoples' diverse uses of forests;
- forest management planning that both calculates and abides by a sustainable timber off-take and includes provision for maintaining wildlife and non-crop plants and ensuring regular water supplies;
- reduced-impact logging techniques that protect soils, watercourses, biodiversity and young regenerating trees when larger trees are felled and removed;
- appropriate technology that reduces extraction and transport costs, increases conversion efficiencies and optimizes value added; and

- plantation siting, design and management that supports native and mixed-species and mixed-age plantings.

### *What policies and instruments support sustainable forest management?*

Most countries have had forest policies in place for many years to govern forest tenure, access, management, harvesting and use. These policies tend to focus on national or local issues. They also tend to ignore their implications further along supply chains, or knock-on forestry effects for other countries: for example, logging bans displace logging problems to other locations and countries (Brown et al., 2002).

A few trade policies directly concern forest issues, notably plant health regulations and the controlled trade of nine rare tree species under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES).

In general, however, forest product trade is most significantly shaped by the global trend towards liberalization (in exchanges of capital and enterprise, if not yet in land or labour). This brings benefits, notably bigger and more competitive markets that ultimately favour those with land or labour advantages, but also three complications: unanticipated levels of benefits and costs due to market imperfections; inequitable distribution of those benefits and costs; and disputed values ascribed to different types of benefits and costs, especially between market and non-market values. Special interest groups perceive the relative importance of these problems differently, and consequently promote different initiatives to solve them (IIED, 2003).

Domestic and export pressures on forests over the last 20 years have revealed that many of these territorial policies, and their delivery systems, are too weak to ensure the continued security of multiple forest goods and services to meet different stakeholders' needs. These pressures, plus international debate and commitments of sustainable development, particularly since the 1992 Earth Summit, has helped to put in place 12 categories of SFM instruments, or "levers," as a means to balance the economic, social and environmental roles of forests. Most notably, market-based approaches have emerged to allocate costs and benefits (Millennium Ecosystem Assessment, 2005). Annex 1 offers details of these instruments, which are summarized below:

The first six "levers" for SFM are largely *supply-side measures*, mostly connected to territorial regulation of forestry:

1. *Intergovernmental agreements on SFM principles and criteria* – These are ways to describe the elements of good practice at United Nations and regional levels (including the International Tropical Timber Organization).
2. *National forest programs* – About 130 countries are currently involved in national forest programs of various kinds, often to meet international SFM commitments.
3. *Forest decentralization and governance reform* – This worldwide trend has doubled the area of forests under community control between 1985 and 2000, reaching 22 per cent in developing countries.

4. *Voluntary, multi-stakeholder SFM processes* – These have become a planning and standard-setting norm in countries responding to market signals for sustainability.
5. *National SFM standards* – Often used to interpret and to give more “teeth” to—the international SFM agreements (see Point 1 above) or voluntary approaches (see Point 4 above).
6. *Monitoring the status of SFM* – The Food and Agriculture Organization (FAO) and International Tropical Timber Association (ITTO) offer criteria and synthesis services based on national reporting, but there is a lack of routine and real-time assessment.

The second six “levers for SFM” are *demand-side measures*, mostly connected to trade and supply chain governance. They have an increasingly strong influence on forest management:

1. *Campaigns for environmentally and socially-sound timber* – NGOs have conducted advocacy campaigns with consumers, boycotted stores and ports and have published the alleged poor forestry practices of particular companies and countries.
2. *Procurement standards* – Some retail companies and governments have committed to purchase wood products produced to one or other SFM standard (see 5 above). This is usually to secure good reputations, and to secure both supplies and market niches.
3. *Certification of forest management and chain of custody* – Many schemes have emerged to certify forest management against SFM, and the movement of resulting products to confirm their source, as well as wood tracking systems to ascertain sustainable and/or legal wood sources.
4. *SFM networks between forest companies and traders* – These networks are set up to create a level playing field for SFM throughout the supply chain by improving communications, commitments and policy coherence, e.g., the Global Forest and Trade Network.
5. *Payments for environmental services* – These are mechanisms to pay forest producers for providing watershed protection, carbon storage, recreation, biodiversity, etc.
6. *Forest Law Enforcement and Governance (FLEG) processes* – The main interventions to control illegal logging and trade are being led by importing countries, notably the EC and G8, with timber-exporting developing countries increasingly participating in shaping voluntary tracking and customs agreements.

These dozen SFM “levers” do not yet work as an integrated, coherent set, and many, particularly the supply chain levers, are not fully proven. Good governance—with strong institutions, good availability of data and skills and an emphasis on stakeholder participation—enables them to work best, with regulations supporting certification, clearer ownership of environmental services and associated markets. China’s involvement in most of them is weak; but more active Chinese participation to shape and implement them is increasingly being welcomed.

#### *Where are good SFM practices being taken up and why?*

In tropical forest countries, in 2006, ITTO found that “resources for enforcement and management are woefully and chronically inadequate—trained staff, vehicles and

equipment are all in short supply, while systems for monitoring and reporting forest management are often limited or lacking” (ITTO, 2006). Whilst every country’s policies promote SFM, plans exist for only 27 per cent of production forests, and only seven percent (25 million hectares) of those forests were being managed sustainably. Despite the low level of SFM, this is a great improvement on the mere 0.1 per cent of all tropical forests that ITTO had assessed as sustainable in 1988. Furthermore, ITTO noted that some “countries have made particularly notable improvements, including Malaysia, Bolivia, Peru, Brazil, the Republic of Congo, Gabon and Ghana” (ITTO, 2006).

In OECD countries, levels of sustainability are somewhat higher. In the European Union, 80 per cent of forest area has a management plan and 90 per cent of that area is managed sustainably. Although there are good examples of forest management in Russia, over-logging occurs in the Far East, only some 50 to 150 kilometres away from the Russian-Chinese border.

At the forest level, actual SFM practices will be hugely varied, given the diverse local conditions. As such, routine assessment of their compatibility with SFM is a highly technical, resource-intensive exercise, which at present is only reliably done through certification against a relevant SFM standard.<sup>1</sup> Currently 20 per cent of the world’s production forests are certified under one of the established schemes, for example, 84 million under the Forest Stewardship Council (FSC), which includes 10.5 million of the 25 million hectares identified as sustainable by ITTO (FAO, 2007; ITTO, 2006). However, a far lower proportion of natural forests are certified than are plantations; natural forests tend to be more complex to sustainably manage for wood than plantations, and the capital intensity of plantation businesses more readily warrant the costs of certification. Moreover, a far lower proportion of tropical forests are certified than “northern” temperate and boreal forests—only 1.3 per cent of certified forest area under all schemes is in Latin America, 1.2 per cent in Asia and just 0.6 per cent in Africa (Forest Industries, 2007). Only 15 per cent of FSC-certified area, and only one of the ten largest certified forests, are in the tropics—in Brazil (FSC, 2008). Several reasons explain this:

- tropical forests are biologically more complex to manage;
- the challenges of meeting social standards for tenure, indigenous peoples rights, etc., in contested tenurial contexts;
- the rights and assets of forest managers are not secure enough to support long-term investment, and access to capital, skills and markets is poor; and
- partly as a consequence, the forest sector in many tropical countries is largely

---

<sup>1</sup> Assessing levels of SFM through levels of certification will always provide an underestimate, as many forest managers will be doing a good job, but do not face the market need for certification.

informal, beyond government scrutiny and with no incentives for certification.

The impact of the different “levers” depends in large part upon the maturity of governance regimes. SFM plans and practices are often completely undermined where there is poor governance: weak skills, poor supervision, corruption and a lack of transparency and accountability offer no incentives and act against their effective implementation. The impacts of trade liberalization are positive where there are robust policies and institutions (a virtuous cycle) and negative where they are weak (a vicious cycle). If take-up of SFM is increasing in some places, but not others, this is because:

- SFM levers have the most effect on currently adequate practice—they encourage good, well-endowed producers in supportive countries to become excellent;
- the “stretch” to reach SFM standards is too great for poorer producers with less access to resources and government support—for whom the only strong signals are short-term price signals; and
- most SFM “levers” are less powerful than price signals. The availability of very cheap Chinese plywood has served to increase the relative costs of certified material, increasing the risks to importers of investing in certified stocks (Forest Industry, 2007). This has led to anti-dumping action against Chinese plywood exports in the U.S. and EU markets, and suggests looming import duties.<sup>2</sup>

#### **What bad forestry practices should be avoided?**

*Inefficient and unsustainable management that produces a high, negative environmental and social impact, as well as long-term economic impact.* This practise focuses on acquiring timber volumes at the expense of forest regeneration and other “provisioning, regulating, cultural and supporting services” (MA, 2005) of forests. It tends to result in “asset-stripping” forests of timber in the shortest time possible. Bad practice induces a range of environmental and social impacts: excessive early harvesting (blocking far larger in an area than can be restored and managed over future years); ad hoc tree finding without maps or plans (causing extraction teams to leave valuable felled trees in the forest); clear-felling or bulldozer extraction (often damaging regenerating young trees); high-grading with a failure to identify markets for less valuable or lesser known species; cutting below-diameter limits (reducing stock replenishment for future harvests); poorly-designed roadways (damaging soil and watercourses); poor safety provisions (resulting high worker accident rates); failure to pay legal minimum wages or sub-contracting to achieve the same (leading to high worker turnover and low capacity development); and denying forest access to local people (resulting in hardship for poorer groups).

*Illegal logging.* This takes place when timber is allocated, harvested, transported, bought or sold in violation of national laws. The harvesting procedure itself may be illegal, including corrupt means to gain access to forests, extraction without permission or from a protected area, cutting of protected species or extraction of timber in excess of agreed

---

<sup>2</sup> In November 2004, the EU imposed anti-dumping duties ranging from 8.5% to 48.5% on enterprises exporting okoume-faced plywood from China. Now there are moves to extend these duties to a wider range of hardwood plywood products from China. Such a measure could provide a significant incentive for Chinese firms to pursue certification.

limits. Illegalities may also occur during transport, including illegal processing and export, mis-declaration to customs, and avoidance of taxes and fees (Brack and Hayman, 2001, 5). It is a major problem for many timber-producing developing countries where governance is weak.

“*Conflict timber*” has also been identified by some influential NGOs such as Global Witness. It describes timber that is produced and sold to finance armed conflict. While it may not strictly be illegally sourced, Organisation for Economic Co-operation and Development (OECD) consumers are increasingly aware of such practices, influenced by successful campaigns against “conflict diamonds.”

The impacts of these poor forestry practices include:

- social and economic problems – notably for people, especially the poor, who depend most on non-wood services for livelihoods, and by funding armed conflicts;
- environmental problems – including degrading the forest’s potential to renew itself by disturbing soils, water regulation and biological populations,<sup>3</sup> damaging High Conservation Value Forests by reducing biodiversity and releasing CO<sub>2</sub> to intensify the green house effect;<sup>4</sup>
- revenue losses – where government is not able to capture rents, fees and taxes otherwise due;
- market problems – depressing the prices of legal and sustainable products and reducing the credibility of the country, industry, company or product; and
- above all, illegal logging and illegal trade penalize SFM and legal trade by eroding incentives for making critically-needed investments.

*Where have bad forestry practices been taken up and why?*

*Four powerful “drivers” result in bad forestry practices:*

- macro-economic policies, which give precedence to economic growth over people’s rights to tenure security, decent work, labour associations and other social networks, a sustainable environment and cultural integrity;
- forest fiscal policy, which supports underpriced forest products and short planning horizons, and does not encourage the long-term reinvestments for sustainability;
- weak national or local governance systems, where forest stakeholder rights, public scrutiny of forestry and trade, transparency and accountability are poor, and forest and trade officials may be corrupt; and
- commercial interests, which are unscrutinized and unconstrained in focusing on large quantities of wood to the detriment of other forest values.

In addition, there are many drivers that result in deforestation for other purposes, notably agricultural policies. For example, crop subsidies for soybean or oil palm that make long-term forestry unprofitable, resulting in forest being cleared and planted, as

---

<sup>3</sup> Mismanagement of woodlands in humid and subhumid tropical countries significantly contributes to soil losses, equivalent to an annual 10 per cent loss of agricultural GDP (FAO web)

<sup>4</sup> Deforestation of tropical rainforests may account for the loss of 100 species each day (FAO web)



well as energy policies that result in fuelwood collection being the major reason for deforestation worldwide (FAO, 2006).

Although these “drivers” are rooted primarily in poor national policies and governance, they are increasingly “fuelled” at the international level—particularly by unfettered trade and aid regimes and burgeoning consumer demand for large quantities of cheap wood or agricultural products, irrespective of their environmental and social impacts.

As a result of such pressures:

- US\$13 billion import value of wood was illegally traded in 2005, a huge volume of 70 million m<sup>3</sup> (RWE), or about ten per cent, of global timber trade. The figure is growing—it was up five to ten per cent on the previous year.
- World prices are depressed by between seven and 16 per cent (depending on the product) by the prevalence of illegal forest products in the market; for example, U.S. firms are losing at least US\$460 million each year in foregone exports (American Forest and Paper Association, 2004).
- Indonesia alone is losing US\$0.5–2.0 billion a year in government income from illegal logging and trade (compared to a 2003 total government budget of US\$40 billion).

Countries, such as China, which are rapidly growing their forest product trade with countries that are in the early stages of market development, are increasingly associated with the unsustainable harvesting that rapidly arises from the poorly governed (effectively open-access) natural forests. Producer countries’ policy and governance problems may not have been apparent before trade was significant, but are “magnified” when demand increases rapidly. It is only at the mature stage of forest market development that investment in good forestry becomes economically attractive when compared to agricultural land values and the cost of protecting property rights (Hyde, 2003).

#### *What initiatives are counteracting bad forestry practices?*

The twelve “levers” for SFM previously identified can make good forest management even better. But “bad practice” business models seem to require different instruments to block them—to effectively “close the door” on them. A new set of instruments is currently in development to counteract bad practice that is driven by illegal trade.

*Initiatives and processes related to improved forest governance and trade:* The main interventions to control illegal logging and trade in illegal wood products are being led by importing countries, notably the EC, Japan and New Zealand.<sup>5</sup> Timber-exporting developing countries are increasingly participating. The 1998 G8 meeting drew attention to the problem of illegal logging. Subsequent intergovernmental agreements, in particular the

---

<sup>5</sup>Recent U.S. actions include specifying clauses on illegal logging in free trade agreements, and extending the Lacey Act to timber—the latter in particular being a response to growing Chinese penetration of the U.S. market. The U.S. and China have agreed to collaborate on customs/trade solutions to eliminate illegal trade under their Strategic Economic Dialogue.

Forest Law Enforcement and Governance (FLEG) processes coordinated by the World Bank, have helped raise awareness of the issue and have resulted in agreements that “all countries that export and import forest products have a shared responsibility to undertake actions to eliminate the illegal harvesting of forest resources and associated trade.”<sup>6</sup>

*Exclusion options:* Governments of importer countries are increasingly excluding illegal products from their markets, by setting up border mechanisms to prohibit imports; by using public procurement policy to create protected markets for legal products; by using their own legal systems more aggressively to target companies involved in importing illegal goods; and by offering information and encouragement to importing, processing and retailing companies to control their supply chains. World Bank-led FLEG declarations have mentioned import controls, but only as one option among very many others. The EU-led Forest Law Enforcement, Governance and Trade initiative (FLEGT) and recent U. S. actions focus on a licensing system, with import controls and improved governance:

- *Licensing system for legal timber.* The European Union has established a system based on Voluntary Partnership Agreements (VPAs), which are negotiated with cooperating exporter countries.<sup>7</sup> These VPAs will put in place a licensing system in each country, to identify legal products and license them for import to the EU. Unlicensed, and therefore possibly illegal, products will be denied entry to the EU. The agreements include capacity-building assistance to set up the licensing scheme, improve enforcement and, if necessary, reform laws; and provisions for independent scrutiny of the validity of the issue of the licenses, as well as verifying legal behaviour through the chain of custody of the timber. The VPAs’ impact is as yet unknown: negotiations are currently under way in Ghana, Malaysia, Indonesia and Cameroon. Their success will depend upon how extensive the uptake is and how well they close off the opportunities for circumvention by, for example, trade through third countries. Chinese work to cut third-country trade could have a very significant impact.
- *Wood procurement policy:* Public procurement policy is key, as it also drives private policy. The U. K. central government’s wood procurement policy combines legal forestry requirements (compulsory for all government contracts) and sustainable forestry (optional, but mandatory from 2009, albeit with a six-year exemption for FLEGT countries), recognizing five certification schemes as equivalent, (four for SFM, one for legal only), and includes an independent Central Point of Expertise on Timber (CPET) to advise specifiers, contractors, etc. Sixty-seven per cent of timber imported into the U. K. is now certified—a huge increase.<sup>8</sup> Five other EU countries

---

<sup>6</sup> Europe and North Asia FLEG conference, 2005.

<sup>7</sup> See [http://ec.europa.eu/comm/development/body/theme/forest/initiative/index\\_en.htm](http://ec.europa.eu/comm/development/body/theme/forest/initiative/index_en.htm)

<sup>8</sup> In 2005 most U. K. imports of oriented strand board (98 per cent), medium-density fibreboard (88 per cent), particleboard (77 per cent), sawn softwood (58 per cent) and softwood plywood (47 per cent) were certified. But only a small proportion of hardwood plywood (24 per cent) and sawn lumber (11 per cent) were certified. (Forest Industries Intelligence Ltd. 2007)

have also established procurement policies.<sup>9</sup>

Many of these initiatives are yet to be implemented, but they appear to be promising, having gained good support of both producer governments (especially in Asia) and consumer governments (especially within the EU). The implementation of recent Sino-Indonesia and Sino-Burma agreements on combating illegal timber trade may benefit from many of the verification and control mechanisms currently being innovated through the wide range of FLEG and certification initiatives.

### *What is needed to improve all forestry—good, bad and in-between?*

If the current rough estimate is right that 10 per cent of forest trade may be *illegal*, and only a further 10 per cent of trade is certified as being of *high SFM standards* (Global Forest and trade Network, 2006), what about the remaining 80 per cent of trade? Forests producing that majority share of trade are *not* necessarily poorly managed for economic, environmental and social benefits—although evidence suggests that many are indeed poorly managed. This majority of forests have real potential. Will the powerful “fuel” offered by China’s huge wood demands be a force for good, or for bad practice?

Two approaches will be important to support all types of forestry improvement: a step-wise, shifting from bad to good practice in line with local capacities and incentives; and improving governance.

*First, a capacity-developing, step-wise approach to improving forest management is key.* Timber trade incentives can drive the process by requiring evidence of a progression from unknown/unwanted (and possibly illegal) wood sources to:

- known sources;
- sources verified as deriving from basic legal management; and finally,
- full certification of sustainable forest management according to the highest applicable standard.

The step-wise approach presents less of a challenge—and possibly more of an attractive business proposition—than the big “stretch” often required to move straight to full SFM certification. Furthermore, such a “continuous improvement” process builds capacity, driven and rewarded by preferential resource access and/or product procurement. The approach is being promoted by the Global Forest and trade Network (GFTN) as a good means of responsible purchasing by traders. The Tropical Forest Trust, Rainforest

---

<sup>9</sup> These public procurement systems are driven by the power of public spending in the EU (which accounts for 16–18 per cent of GDP). They differ, however, in whether they separate out legal and sustainable categories, whether they include social norms and how they verify non-certified imports. Public procurement policies for timber also exist for Japan and New Zealand, as well as some local authorities in the EC and U. S.

Alliance and Woodmark all offer programs supporting a step-wise approach to certification.<sup>10</sup>

*Second, attention to governance issues is important for all types of forestry.* Policies, institutions and processes shape the foundations of good forestry, but are also the underlying causes of bad forestry. It is especially important that the allocation of forest resources, the enforcement of social and environmental management rules and the collection and reinvestment of tax revenues are transparent and fair. It is not surprising, therefore, that forestry practice—once primarily concerned with trees and wood—is now understood as a major governance endeavour. In-country institutions and systems need to be strong to support both significant trade in forest products and SFM. But they are weak in too many countries.

The key governance question is how far traditional “territorial” governance over forests—national and local rules—needs to be replaced or complemented by governance through the supply chain. As supply chains become increasingly powerful, they can be expected to change the governance regime for forests. Certification has certainly been the biggest influence on forest policy over the last decade or so (Bass et al., 2001; Cashore et al., 2006). Since supply chains tend to be driven by retailers and buyers, these stakeholders’ values and their understanding about forestry are key. On the one hand, there are positive trends like buyers seeking to be assured of environmental and social conditions through certification. The key issue here is whether the standards they demand are right for the supplying country’s forests, people and development plans, because they will shape not only the product they buy, but also broader national and local forest governance. On the other hand, there are negative trends such as increased concentration of decision-making authority in larger companies and interest groups, rather than spreading it to include poorer and less powerful players, and buyers seeking wood products irrespective of any impacts, with no interest in accountability. The key issue is strengthening national and local governance. One place to begin is a national, well-articulated vision for the future of a country’s forests, and of forest-based economies. It is surprising how many forest-rich or forest-dependent countries often do not have such long-term visions, in spite of various national forest plans.

#### *What are the environmental and social impacts throughout the supply chain?*

Table 1 demonstrates the different environmental and social issues that apply throughout wood product chains from forest to end-use, as well as the regulatory and voluntary instruments that have been used to address them. Trends for forestry have been identified above; elsewhere in the chain, they are as follows:

- *Waste minimization and recycling:* A strong perception has developed in many OECD countries that paper and disposable wood product consumption is wasteful. This is driving considerable investment in recycling. By 2010, it is

---

<sup>10</sup> All of these may well result in better information than has been available to date about *improving* forest management over time.

predicted that the volume of wood being recycled in Europe will grow from the four million m<sup>3</sup> estimated in 2000 to some 30 million m<sup>3</sup>. Huge efforts are being directed into developing markets for recycled products, including animal bedding, compost, surfacing and charcoal. But the costs are significant and waste paper is often exported instead, including to China.

- *Pollution from processing:* In contrast, with technological improvements in processing between 1980 and 2000 in particular, campaign groups and buyers in richer countries are expressing less concern about issues such as pulp bleaching and mill effluents than in the past (IIED (1996)). However, such issues are still relevant in the older and/or smaller mills in developing countries.

Table 1: Forest products supply chain and “sustainability levers”

Stage in chain	Environmental and social problems <b>(Bold = typically most severe problems )</b>	Major sustainability “levers”  <i>(Italics = usually regulatory, connected to territorial legislation and/or intergovernmental agreement)</i> <b>Bold = usually voluntary, connected to supply chain actors)</b>
Planting forests	<b>Illegal conversion of natural forests</b> <b>Damage to soil and water bodies</b> <b>Removal of biodiverse habitats</b>  <b>Loss of access by local people to (farm) land and water</b> <b>Substandard forestry pay, health and safety conditions</b>	<i>Land titling arrangements</i> <i>Land use plans</i> <i>Sustainable development plans</i> <i>Forest laws/grants</i> <i>Labour standards</i> <b>Forest certification</b> <b>Company/community schemes</b>
Managing forests	<b>Reduced biodiversity (species)</b> <b>Loss of people’s access to forest</b> <b>Resulting loss of livelihood and insecurity</b> <b>Substandard forestry pay, health and safety conditions</b>	<i>Forest laws/grants</i> <b>Forest certification</b> <b>Voluntary forest management codes</b> <b>Payments for environmental services</b> <b>Social audit tools</b> <b>Company/community schemes</b>
Extracting wood from forests	<b>Illegal logging including theft</b> <b>Elites capturing public benefits</b> <b>Damage to soil and water</b> Degradation of biodiversity (species and gene) Localized landslips Substandard pay, health and safety conditions	<i>Forest concession laws</i> <i>Health and safety laws</i> <i>ILO core labour standards</i> <i>Anti-corruption initiatives</i> <b>Forest certification</b> <b>Voluntary harvesting codes</b> <b>Verification of legality [under FLEGT, this will extend throughout the chain of custody, not only extraction]</b>
Milling/pulping wood	Water pollution (suspended solids, chlorine) Air pollution (dioxins, furans) Energy use/climate change emissions High water consumption per m <sup>3</sup> <b>(Above severe only with old technology)</b> Substandard pay, health and safety conditions	<i>Pollution standards</i> <i>Energy costs and regulations</i> <b>Environmental management systems/certification</b> <b>Capital stock turnover and investment regulations on technology improvement in pulp/bleach/renewable energy</b>

Processing and manufacture	Air and water pollution Energy use/climate change emissions <b>(Above severe only with old technology)</b> Substandard pay, health and safety conditions	<i>Pollution standards</i> <b>Environmental management systems/certification</b> <b>New investments using new technology</b> <b>Reducing material intensity</b> <b>GHG calculation protocol</b>
Packaging products	Solid waste burdens Weight and associated transport costs	<i>'Take-back' legislation</i> <b>Producer responsibility schemes</b> <b>Quality/Env. Management System (Q/EMS)</b>
Retailing products		<b>Eco-labelling</b> <b>Company environment/CSR reports</b>
Consuming products	<b>Unsustainable excessive consumption of current cheap supplies</b> <b>Alternatively, health, education, housing problems from inadequate paper and wood supplies</b>	<b>Procurement codes e.g., on recycled, legality, sustainability</b> <b>Consumer associations—especially concern against waste</b>
Disposal or recycling products	Methane etc. from landfill Increasing scarcity of safe waste disposal sites	<i>Pollution standards</i> <i>Landfill regulations</i> <i>Recycling laws</i> <b>Integrated waste management – composting, incineration</b> <b>Market-based instruments for recycling, waste reduction</b>
Transport (throughout)	Illegal trade [export in defiance of controls (e.g., log export bans, CITES), non-payment of duties, etc.) Air and water pollution Energy use/climate change emissions Substandard pay, health and safety conditions	<i>Chain of custody certification</i> <i>Company environment/CSR reports</i>

We have outlined the potential impacts of producing wood products. They do not mean that wood products are inherently bad. We certainly wish to avoid undue bias against forest products in policy-makers' consideration of this report.

*The wood industry has high potential to be "powered by the sun."* Unique among materials (except for some agricultural fibres), wood products are renewable, recyclable and biodegradable. Their production can be highly energy-efficient and potentially carbon-positive (storing carbon and reducing climate change impacts). As a general rule, one cubed metre of timber fixes one tonne of CO<sub>2</sub> and releases 0.7 tonnes of oxygen. The world's forests

currently absorb 25 per cent of global fossil fuel emissions of CO<sub>2</sub> (FAO, 2001). However, deforestation currently releases between 1.1 and 1.7 billion tonnes of carbon per year into the atmosphere, approximately 20 per cent of human carbon emissions.

*Substitutes for wood products—such as metals, plastics, concrete, and non-wood fibres—result in a different set of sustainability issues.* Many substitutes may neither invest in renewable resources (the bulk of plastics manufacture is petroleum-dependent) nor exhibit the same degree of concern for ecosystem services that the various wood-producing sectors are increasingly doing. These alternatives are also often more energy- and water-intensive (Reid et al., 2004; MA, 2005).

### **What sustainability levers—and blocks to illegal practice—are common throughout the supply chain?**

As with forest management, there is an increasing tension between territorial regulation and “voluntary” governance at each stage of the supply chain. The growing dominance of globalized supply chains in the structure of forest industries, along with market concentration, offers new *opportunities* to develop and communicate coherent and consistent environmental and social signals along those supply chains. This contrasts with the situation just a few years ago, when standards and procedures were highly separate in different “nodes” of the chain or confined to sovereign states. Now there are new opportunities to make forest legality and sustainability key *product* “quality” issues:

- *Increasingly well-informed buyers (government or private) demand “total” sustainability of a forest product, recognizing issues across the product’s life cycle.*
- *Climate change, labour conditions, fair trade, fossil fuel intensity and water intensity are important issues for all nodes in the chain, offering coherent ways to govern its sustainability.* This is supported by globally agreed-upon standards that can inform all nodes (e.g., ILO labour standards, ISO EMS standards, Fair Trade standards, as well as emerging greenhouse gas emission assessment protocols).
- *Better “chain of custody” procedures assure that multiple requirements at each stage are met and communicated.* This can be supported by improved ICT and surveillance technology.
- *National legislation is requiring increased corporate accountability:* for example, the 2007 European Parliament’s resolution to extend mandatory corporate accountability to cover social and environmental reporting and foreign direct liabilities.
- *Direct corporate governance of large parts of the supply chain enables an efficient, coherent approach,* especially when combined with environmental and social reporting (common for listed large companies). Forest trade groups offer mechanisms, incentives and standards to communicate along the supply chain.
- *Key investors, such as the IFC and major development banks, operate coherent controls.* By and large, they have already stopped investing in unsustainable forestry and forest industry, and require certification associated with all forest investment. Export credit, investment insurance agencies, pension funds and other types of financial institutions are taking longer to shift towards sustainability, but the trend is strong (WBCSD, 2004).



*These potentials for promoting wide-scale uptake of sustainable approaches require good coordination and long-term planning.* However, the international forest industry does not yet cooperate well at an international level. Consequently, many companies harm the reputation of the industry as a whole. It is understood, if not condoned, that companies working in fragile governance situations often compete with one another to secure long-term resource access through corruption, in the absence of reliable and transparent systems. The key is to move away from systems based on personal contacts and patronage towards systems based on rules. Stronger legislation and incentives from major exporting and importing governments—including China—could encourage such a shift and build more effective forest industry organizations.

*Improvements can also be more difficult where there are long periods of time involved in capital stock turnover.* The typical estimated lifetime for a chemical pulp mill or paper production line is 25 years. Decisions concerning fuels, energy procurement options, production processes and their efficiencies, as well as main raw materials and product categories, are set years in advance. This lengthy period, together with large size of plants needed for economies of scale, has made it difficult to adapt to sustainable development demands. That said, mills in most OECD countries have made commitments to reduce the carbon intensity of their production processes, including by using wood as an energy feedstock (WBSCD, 2005).

*The trade-offs differ greatly along the supply chain.* Even if signals on the sustainability of different issues—carbon storage, good labour practices, etc.—are effectively passed right along the product chain, this will not necessarily result in the correct trade-offs being made at each stage. For example, political and commercial pressures to increase the use of biomass for carbon-neutral “biofuels,” which are gaining strength, can also threaten biodiversity, water conservation and other needs from forests. Logging bans may conserve some biodiversity, but they threaten rural jobs and income. Cleaner mills may improve health through stopping water pollution, but they tend to employ far fewer people (IIED, 1996).

### **1.3 China’s significance for the sustainability of the global forest industry**

Driven by its phenomenal economic growth (over nine per cent annual GDP growth over two decades), its large population and its massive new processing capacity, China’s fibre needs for both domestic consumption and re-export are growing rapidly. China is now buying wood from over 80 countries, wood product imports increasing from 40 million m<sup>3</sup> to 134 million m<sup>3</sup> RWE (roundwood equivalent) between 1990 and 2005. Import levels are now close to official annual industrial wood removals within China itself (Forest Trends, 2006). Arguably, no other country has ever, in human history, developed a re-export-oriented forest industry based primarily on imported wood, and

certainly not at this scale.

To sustain this level of imports will require very high levels of forest production outside China.<sup>11</sup> The question is how that production (equivalent to one million hectares of mature commercial forests being cleared each year) will take place—to what extent value generated is channelled back to the forests for regeneration, and in what ways social and environmental benefits from forests can be linked to economic benefits.

Many sustainable forest management traditions exist worldwide. Mechanisms to improve environmental and social aspects of the broader forest industry have been developed recently. The Chinese government has begun to collaborate actively with its major trading partners, to ensure the security of long term fibre supplies for China and to build China's image as a responsible wood consumer and a global citizen. Bilateral or multilateral coordination mechanisms have been established between China and Africa, China and Indonesia, as well as China and Russia. These Chinese initiatives offer the potential to integrate social and environmental concerns with the economic imperatives that have so far dominated the development of Chinese wood industry. Thus, with China dominating many commodity chains, it has unique opportunities to lead the world in shifting towards sustainable forestry and forest industry, and in “closing the door” to bad practice. A start has been made, but much more can be done.

Only recently has the international forestry community begun to realize that China is a major driving force behind this commercial process, which, once completed, would reshape both the global forest landscape and the global structure of forest industries. But China is not the only actor. The challenge and ultimate test to the international community is how, if a major reshaping of forests is tolerable or even desirable, to ensure that it is done in such a way that all countries' and all stakeholders' needs are met. This may sound like a daunting task because it requires international collaboration that is unprecedented in forestry, and because it may require an overhaul of the governance structure in certain producer countries. But it nonetheless enjoys an increasingly strong backing in the business interests of the major remanufacturing country (China) and the end consumer countries (mostly in the OECD).

With China experiencing such extreme dynamics and facing unique opportunities, it is essential that information and analysis keep pace if continued growth in forest production and trade is to result in sustainable development. This study aims to pave the way towards a more sustainable policy and associated information system. It applies a Global Commodity Chain (GCC) analysis to:

- explicitly identify players across the globe and their relationships in the chain;
- characterize problems affecting environmental and social performance of the chain as well as related costs;
- highlight market and policy means to improve environmental and social

---

<sup>11</sup> Assuming each ha produces 130 m<sup>3</sup> of logs

- performance; and
- identify effective interventions to make Chinese forest products commodity chains more sustainable, and aid the mobilization of market power to encourage good practice in China and trade partner countries.

## 2.0 Overview of the Chinese Forest Products Trade

Global forest products trade was valued at US\$327 billion in 2004, accounting for 3.7 per cent of total global trade. This can be further classified as 21 per cent in primary timber products, 34 per cent in primary paper products and the rest in secondary products such as furniture and books. Developing countries are among the major timber suppliers in this trading system, whereas developed countries dominate both production of high valued added forest products and their consumption.

As the world's fastest growing large developing country, China has emerged as an important player in timber trade and manufacturing since the 1990s. China is the second largest remanufactured timber products exporter. China annually imports 120 million m<sup>3</sup> RWE for domestic and re-export use, valued at US\$15 billion; and exports 40 million m<sup>3</sup> RWE of forest products, valued at US\$14.4 billion (FAO, 2007). Trade continues to grow at an extraordinary rate: trade in forest products in the first half of 2007 increased by 35.3 per cent over the same period in 2006—imports up by 28 per cent and exports up by a massive 41 per cent.<sup>12</sup>

### 2.1 Volume analysis

Chinese forest products imports have grown rapidly since the mid-1990s. Between 1997 and 2004, total imports increased nearly three times from 40.2 million m<sup>3</sup> to 120 million m<sup>3</sup> RWE; the value more than doubled from US\$5.4 billion to US\$13.9 billion, ranking number two in the world (Sun et al., 2005).

Several elements have contributed to the growth of imports of forest products:

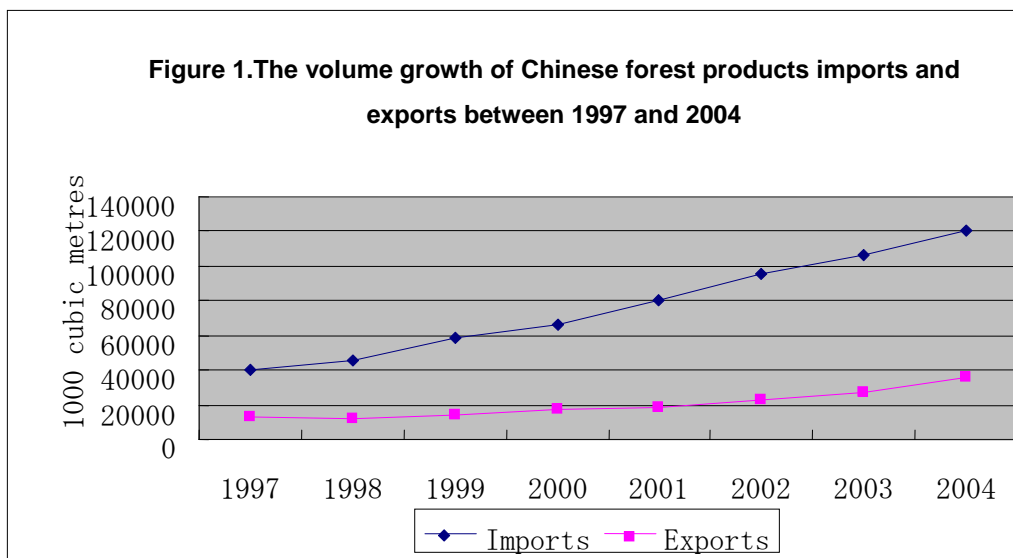
- rapid growth of the Chinese economy and associated rising living standards;
- lack of domestic forestry resources, exacerbated by reduced domestic supplies caused by domestic forest protection programs and policies;
- strong demand from international markets fuelling the development of a re-exporting industry in China;
- supportive government policies for wood re-manufacturing;
- inexpensive capital, enabling rapid development of the processing industry in China;
- a large, inexpensive labour force with capacity for timber re-manufacturing; and
- reduction of Chinese importing tariff rates.

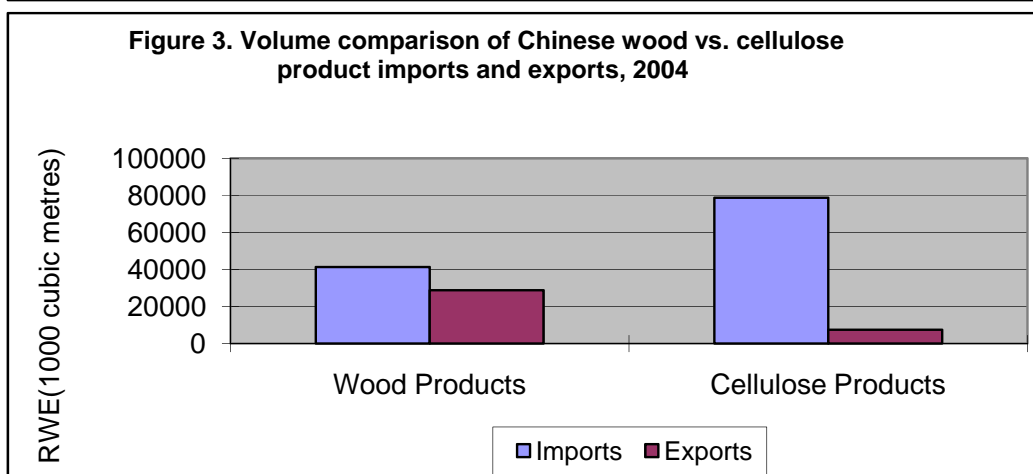
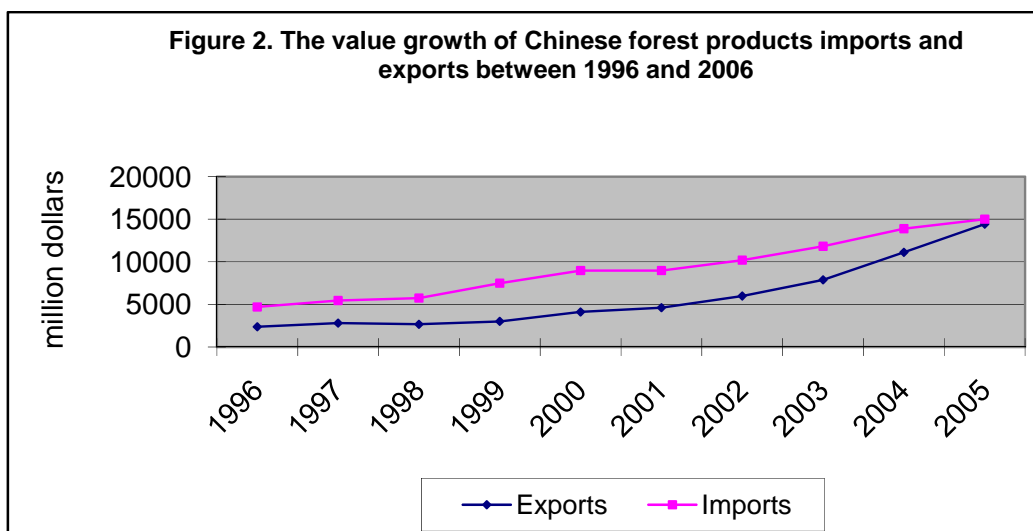
---

<sup>12</sup> State Forest Administration figures (quoted by Xinhua, 13 September 2007)

China's forest product exports tripled in volume between 1997 and 2004, increasing from US\$12.7 million to US\$36.2 million m<sup>3</sup> RWE, with the overall value of exports increasing fivefold, from US\$2.8 billion to US\$14.4 billion. China adds value to these massive volumes of wood through processing and re-exporting to the international market. Because of this characteristic, China is viewed as merely a middle node in global forest product chains (Forest Trends, 2006).

In aggregate volume terms, a large share of imports has been used for domestic consumption: in 2004 total imports were 3.3 times that of exports in RWE. Cellulose products (e.g., pulp and paper) dominate forest products trade in volume but are mostly consumed domestically (see Section 1.2). The volume of timber exports is much closer to the volume of timber imports. In 2005, China imported a total of US\$15 billion of forest products, whereas total exports were US\$14.4 billion. By 2006, in volume terms, wood products exports from China were roughly equivalent to the total timber imported (although these exports are not necessarily all re-exports) (Forest Trends, 2006).





Data Source: China Statistical Yearbook, 2005.

## 2.2 Cellulose product analysis

Cellulose products such as pulp and paper are the major import category by volume; each year their share is over 65 per cent of total Chinese forest products imports (RWE) (Figure 3).<sup>13</sup> In terms of exports, however, their share is much smaller, accounting for less than 25 per cent (RWE). The volume of cellulose products exported from China was much smaller than imports in 2004; by comparison, the volume of wood products imported was close to that exported. Evidently, cellulose products are imported mainly for domestic consumption. Rapid economic growth has resulted in an increase in the consumption of various paper and paperboard products, including writing and printing paper, copying paper, as well as cardboard boxes, paper bags and tissue paper (Forest Trends, 2006). A recent survey revealed that residents in Shanghai consume twice as much tissue paper as the world average (Nilsson and Bull, 2005).

<sup>13</sup> Many paper exports do not show up in trade statistics as they are exported in the form of packaging.

Waste paper imports have contributed a rising share in total Chinese paper imports. The domestic supply gap for waste paper in China was 9.4 million tonnes in 2003, increasing sharply to 12 million tonnes in 2004, and projected to reach 16.5 million tonnes by 2010 (Moore, 2005). Imported secondary fibre or waste paper has grown from 6.9 Mt in 2002 to 19.6 Mt in 2006 and now comprises 33.1 per cent of China's total fibre resources. Together with domestic waste paper, it forms an estimated 62.6 per cent of China's fibre supply. China imports waste paper from many countries of the world, with North America being China's largest source, followed by Europe. Recently Japan has begun to become another major source. From an environmental perspective, China's increasing demand for waste paper imports has prevented an extra 65 Mt of wastepaper from heading to the landfill in the U. S., Japan and Europe between 2002 and 2006, and has saved an estimated 54.3 million green tonnes of trees from being harvested in 2006 (Stafford, 2007).

### **2.3 Wood product analysis**

Our focus in this exercise will be on wood products, because commodity chains for wood products are known to have more profound environmental and socioeconomic implications for global sustainability, and China is a more active player in such chains. Products that we shall subject to structural analysis are round logs, sawnwood, veneer, millworks, particleboards, fibreboards, plywood, timber products, furniture and chips.

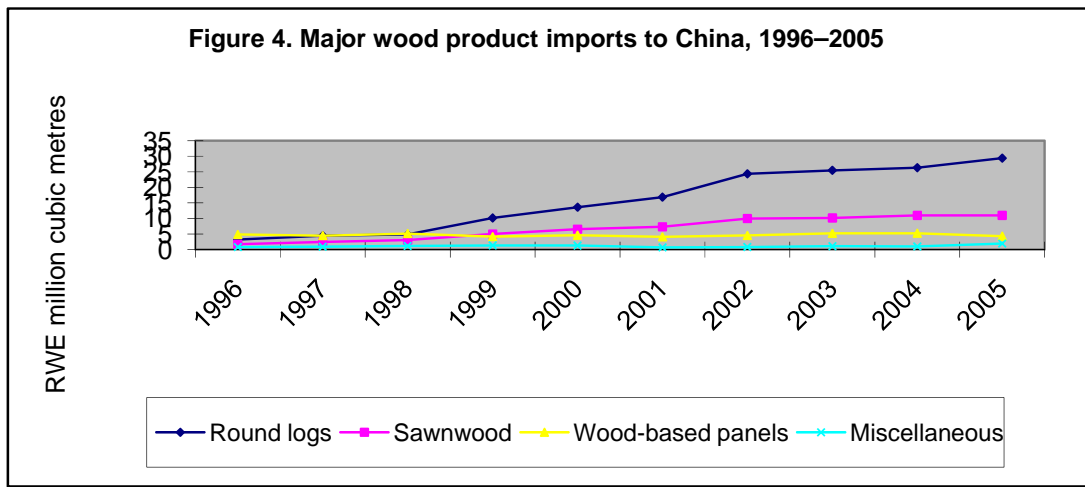
In the past decade or so, primary wood products have experienced a consistent increase in their share of China's forest product imports, with round logs and sawnwood seeing the largest share of growth. In 2005, log imports surpassed 29 million m<sup>3</sup>, and sawnwood imports reached six million m<sup>3</sup> (RWE), the two categories providing 80 per cent of total import value. In contrast, high value added products such as veneer, fibreboards and plywood have been steadily declining as a share of imports; in 1996, high value added products accounted for about 50 per cent of total import value, but by 2005 were less than 20 per cent. Instead, China is producing its own high value added products and exporting them. Resource-based primary products have never been major export commodities for China, and their share in total export has been shrinking in recent decades.<sup>14</sup>

The output of wood-based panels has increased from 0.914 million m<sup>3</sup> in 1980 to 63.93 million m<sup>3</sup> in 2005, surpassing the U. S. to become the world's largest wood-based panels producer in 2003. Similarly, the Chinese furniture industry increased the value of its production by over three times in just six years, from yuan87 billion in 1998 to yuan265 billion in 2004. Since 2005, the furniture industry in China also started to pursue overall industrial upgrading and huge furniture distributors have emerged. Overall, China has become a strong global player in furniture manufacturing. There is reason to believe that

---

<sup>14</sup> China Customs Office data, 2005

China will maintain its strengths for re-manufacturing-based re-exporting in wood products for many years to come.



Data source: Chinese Forestry Statistical Yearbook 2005

## 2.4 Trade route analysis

*Countries exporting to China:* An increasing number of countries are supplying China: 54 countries exported forest products of over US\$0.5M to China in 1997, increasing to 84 countries in 2005. The Asia-Pacific region maintains its dominance, still supplying two-thirds of total Chinese demands today. The rise of Russian timber supplies to China has been particularly dramatic, with log supply increasing 21-fold between 1997 and 2005 from less than one million m<sup>3</sup> to about 20 million m<sup>3</sup>; today, Russia is by far the most significant provider of many wood categories to China (Table 2). African timber

traditionally supplied the European market, but today China has become its major destination; China's share in total Congo Basin log exports increased from 25 per cent to 42 per cent between 1998 and 2003.<sup>15</sup> Finally, Western countries such as the U. S. have become major suppliers of hardwood timber, with New Zealand becoming a major source of pine logs. It is already clear that many countries—notably developing countries in Africa and Asia—are dependent on Chinese imports (Table 3).

Table 2. Major wood products supplier countries to China in year 2005

Ranking	Countries	Share in total Chinese imports
1	Russia	48.8%
2	Malaysia	8.3%
3	Indonesia	5.7%
4	Thailand	4.6%
5	Papua New Guinea	4.2%

Table 3. Export dependence on China in year 2005

Countries	Percentage dependence on China for log exports
Tanzania	96% <sup>i</sup>
Mozambique	>85% <sup>ii</sup>
Congo Brazzaville	>60%
Papua New Guinea	>>>50%
Myanmar	>50%
Indonesia	>50% <sup>iii</sup>
Gabon	>40%
Russia	>40%

Source: Forest Trends, 2006 (unless otherwise stated)

<sup>i</sup> (Milledge et al, 2006)

<sup>ii</sup> (Bossel and Norfolk, 2007)

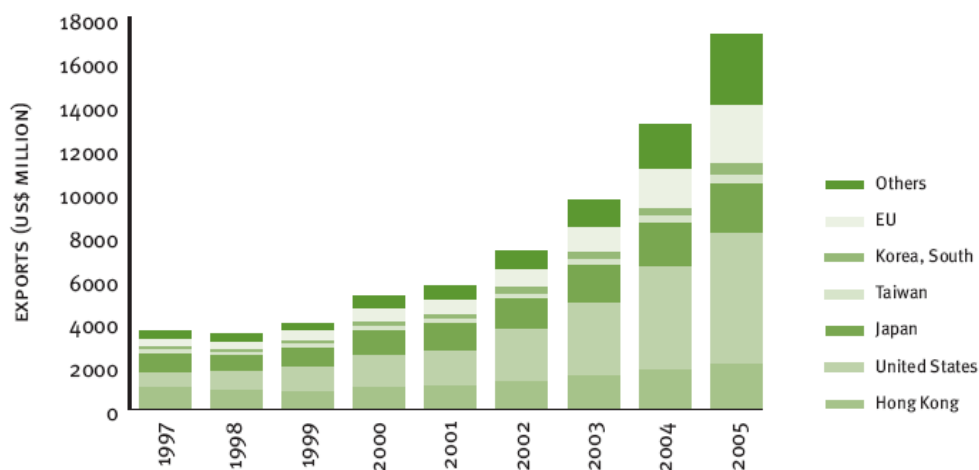
<sup>iii</sup> To note: Indonesia has a log export ban

*Countries importing from China:* The number of countries importing forest products from China has also increased significantly. Historically, Chinese exports went to the U. S. and Japan, as well as the Hong Kong region (for transiting). However, since 1997, imports by the U. S. and EU have mushroomed: U. S. imports have increased almost 10 times, taking 35 per cent of Chinese exports; EU imports have increased almost eight times, with the U. K. followed by Germany and the Netherlands being the largest EU importers. Imports by Japan and China's Hong Kong region have doubled in the same period.

<sup>15</sup> China Customs Office data, 2005



Figure 6. Major importers of Chinese wood products (US\$ million)



Source: Forest Trends, 2006

## 2.5 Chinese wood demands in relation to Chinese forest potential

The massive Chinese imports of industrial wood have been driven primarily by two sources, large domestic consumption demand and export-oriented processing, both of which are on the increase. The shortage of domestic wood supplies is unlikely to change fundamentally in the foreseeable future. According to the sixth national forest inventory data (SFA, 2005), China's forest assets are poor compared to most of the world:

- Forest cover in China is 18.21 per cent and only 60.09 per cent of the world average (in terms of land covered), ranking about 130th in the world. (According to FAO data for 2006, global forest coverage rate is 30.3 per cent for global terrestrial land only.)
- Forest area per person is 0.132 ha, less than 25 per cent of the global average, ranking 134th in the world.
- Forest stock per person is 9.421 m<sup>3</sup>, less than one-sixth of the global total, ranking 122nd in the world.
- Forest stocking rate is only 84.73 m<sup>3</sup> per ha, equivalent to 84.86 per cent of world average, ranking 84th in the world.
- Average tree size is only 13.8cm DBH<sup>16</sup> for stocked forests, indicating a predominantly young forest age structure.

Moreover, since the Natural Forest Protection Program started in 1998, domestic timber supply has generally declined each year. By 2003, domestic commercial timber supply had resumed slightly but it was still less than 80 million m<sup>3</sup> (Miao, 2004).

<sup>16</sup> Diameter at breast height

In the meantime, Chinese timber consumption has grown rapidly. Chinese consumption of industrial wood currently ranks third in the world at 140 million m<sup>3</sup>. Domestic production supplies some 80 million m<sup>3</sup>, leaving a gap of over 60 million m<sup>3</sup> (Wu, 2007). With rapid economic growth and industrialization, the domestic wood shortage will only get more severe in the foreseeable future, even when the re-exporting of wood products is not considered. According to Liu Can and Huang Yongchao's (2002) projections, based on per capita consumption, by 2010, effective total domestic timber demand may reach 320 million m<sup>3</sup>, leaving a gap of 70 million m<sup>3</sup>. Of this, about 30 per cent is large-diameter timber and timber of high-value ("precious") species.

Thus increasing wood imports can be expected, at least over the next two decades. Over time, timber demand could be reduced by wood substitution; however the cost and the environmental and social impacts of substitutes need to be considered—most are far more fossil-fuel intensive. Timber supply could also be increased by the continuing development of fast-growing plantations in China. China already has the largest area in forest plantation of any country—with a total of 54.1 million hectares of productive and 17.2 million hectares of protective forest (FAO, 2007). Moreover, the government has targeted a further 10 per cent increase in the total land area devoted to forests from 16.6 per cent in 2000 to 26 per cent by 2050 to close the production gap between domestic production and consumption/export (Up and Hyde, 2005). This has involved a dramatic increase in smallholder ownership, producing mainly short rotation species such as *Cunninghamia lanceolata*, *Populus* and *Eucalyptus* spp.—a testament to the need to involve local people in forest production systems (FAO, 2006).

## 2.6 China's global role

With a large population base and very high economic growth rates, China's domestic demand for timber has continued to rise. Coupled with the phenomenal growth of Chinese timber processing industries supplying export markets, wood demands have driven China to import wood from over 80 countries in ever-increasing volumes. Most imports are primary products, including logs and sawnwood from the Russian Far East, Southeast Asia, Africa, New Zealand, the U.S. and South America. Imported wood has been remanufactured into finished products and then exported mostly to Western developed country markets.

Clearly, several global timber products commodity chains have been formed with the common characteristic of a major processing base in China. They have broken the traditional pattern of forest products trading within a closely defined region only—they have made trade and consequent resource allocation truly global. The magnitude of these chains is also unprecedented. The physical distance that the commodities have to travel is enormous, made possible by advances in IT and ocean transportation. While this has brought opportunities for relevant developing country players, it has generated a series of environmental and social impacts such as resource degradation, environmental damage

and local livelihood problems. While many of these matters may have been experienced only regionally and at a small scale in the past; they are becoming international issues today. This study is designed to characterize such global commodity chains and the problems they present to global sustainability, and to propose policies for China to adopt to help address some of the problems and realize the potentials it contains for global sustainability.

### 3.0 Profiling the Global Forest Products Commodity Chains

#### 3.1 Theoretical origin

The Global Commodity Chain (GCC) paradigm originates from the value theory developed in the 1980s. Porter (1985) proposed that the value-generation process of firms comprises two types of activity: basic activities (including production, marketing, transportation and after-sales services); and supportive activities (including raw materials supply, technology, human capital and finance). These activities are interconnected in a “value chain,” which links economic interactions both within and across corporations.

Within a value chain, particular enterprises (often larger companies) can determine the business practices of others in the chain (e.g., Altenburg, 2000). By mapping actual commodity flows, activities and actors along value chains (the “*filière*” approach), it is possible to understand how value is added and what impacts occur along the value chain (Raikes et al., 2000). Gereffi et al. (2005) developed a new theory of the Global Commodity Chain with a nuanced understanding of the various ways in which different value chains are governed—from competitive markets to captive chains and vertically integrated hierarchies (Altenburg, 2000; Raikes et al., 2000).

Gereffi et al. (2005) distinguish a spectrum between two main types of commodity chains: producer-driven and buyer-driven. Most capital- and technology-intensive industries, such as automobile and aircraft manufacturing, can be classified as producer-driven chains, with large trans-national companies (TNCs) such as Boeing and GM playing the role of leaders. Labour-intensive traditional industries such as garments, shoemaking and agriculture have buyer-driven chains, with developing countries participating in such chains.

Generally speaking, a full global commodity chain comprises three nodes, namely resource inputs, processing, and shipping and sales. Gereffi et al. (2005) propose four dimensions to study these nodes and the full chain:

- Input-output structure: This is a series of nodes connected according to the order of value-adding, requiring inputs of all sorts at each node. While in the design node it may require the input of significant new knowledge and technologies, the processing node often requires only standardized or common technologies.

- Spatial deployment: Outsourcing has enabled TNCs to farm out the production of non-core nodes to producers in other countries across the globe and thus formulate truly global production systems.
- Governance structure: Commodity chains are production organizations with interconnected nodes that are led by some players; these players coordinate the operation of the commodity chain.
- Institutional framework: This mainly refers to the institutions that impact on the operation of commodity chains, including policies and laws, and formal and informal rules of business.

This paradigm is central to understanding industrial upgrading as an effective way for developing economies to develop in the global context (Humphrey and Schmitz, 2000; Caspari, 2003). Applying it to the study of forestry commodity chains can facilitate the understanding of various nodes and their power relationships and the identification of effective levers for intervention (particularly policy changes and institutional reforms) to ensure sustainability throughout the chain.

### 3.2 The composition of global forest product commodity chains

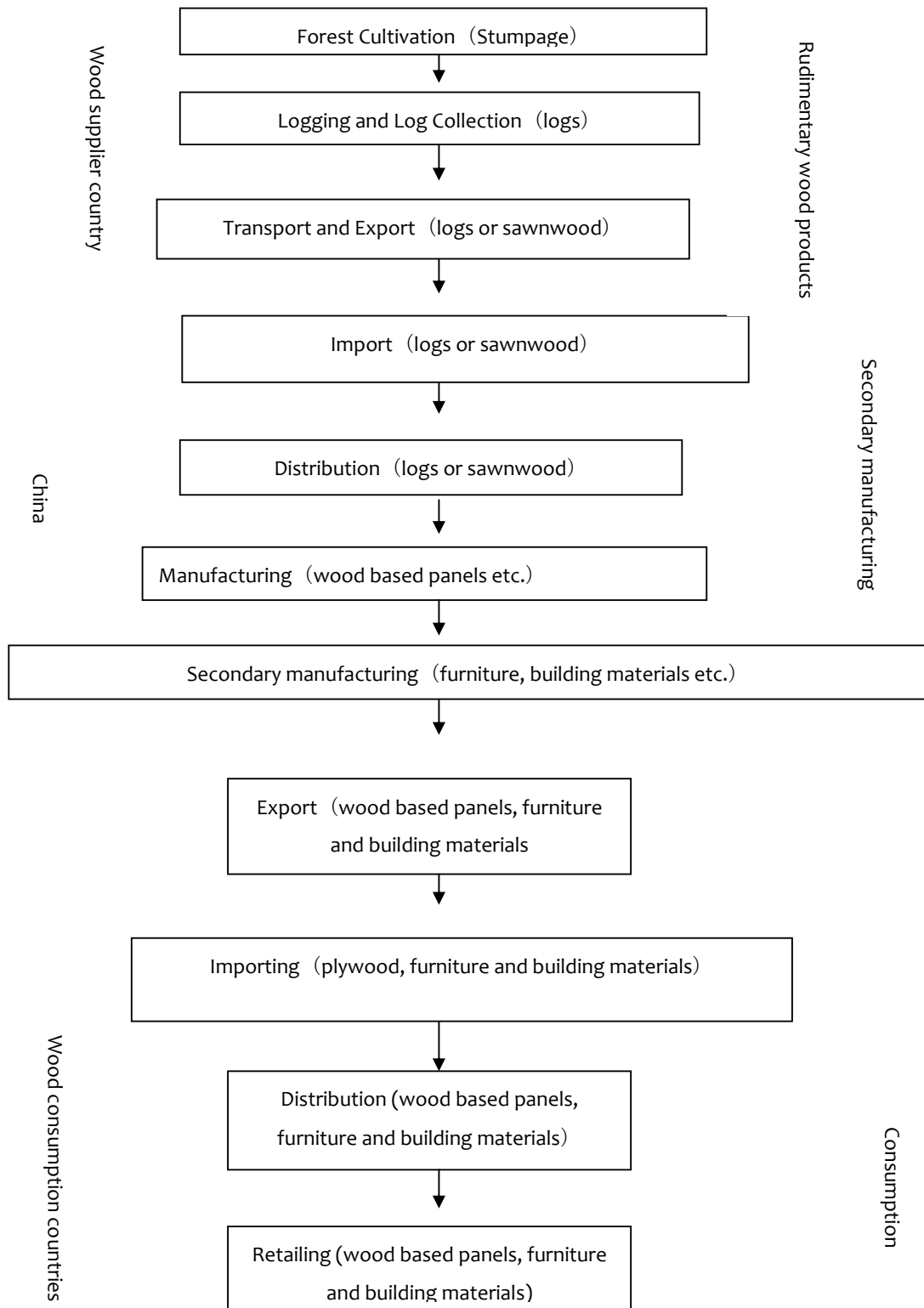
Forest products commodity chains with a manufacturing base in China can be classified into four types, according to wood origin and target consumption markets.

Table 4. Forest product commodity chains with a manufacturing base in China

Commodity Chain Type	Wood Origin	Product Manufacturing	Product Consumption
I	Overseas	China	Export market
II	Overseas	China	Domestic market
III	Domestic	China	Export market
VI	Domestic	China	Domestic market

We have chosen to focus on the first type of commodity chain for further analysis: importing timber for re-manufacturing and then re-exporting. This type of commodity chain best illustrates global linkages and offers clues for concerted international intervention. In this type of commodity chain (depicted in Figure 7), the timber-producing country plays the role of raw material provider; Western developed countries play the role of end consumer; while China plays the role of re-manufacturer in the middle, all roles being connected by trade.

Figure 7. Generic wood product commodity chains with processing base in China



### 3.3 Framework for analysis

This study approaches the issue of sustainability in the global wood products commodity chain from three angles, discussed briefly below:

*a) Commodity chain analysis*

Analysis covers wood production, processing and consumption. Typically, the chain starts with wood production in countries such as Russia, Southeast Asia or the African Congo Basin countries, processed into finished products in China, and shipped to Western countries for consumption. Detailed case studies have been made with local collaborating researchers in the Russia Far East (a highly significant supplier to China) and Mozambique (an African country for which Chinese trade is most important).

*b) Opportunities and challenges analysis*

Opportunities comprise the positive social and economic contributions and potentials that these commodity chains exert on stakeholders in participating countries. The challenges are mainly the negative environmental and social impacts that stakeholders are experiencing in timber producing countries, including forest asset stripping. A key question for other countries in these buyer-driven chains is the net effect of multiple downstream demands on timberland management and the sustainability of local forest industry. A key question for China is the impact of timber importing on Chinese domestic timber production and forest conservation.

*c) Policy analysis*

Our analysis has covered four key areas of policy that address the root causes of sustainability, including: i) producer country policies in forest tenure, logging, timberland management as well as tariff barriers and industry development; ii) Chinese industrial, tariff and trade policies; iii) consumer country policies in wood products consumption and out-sourcing; and iv) multi-stakeholder “soft” policy instruments such as forest certification. It has addressed power relationships and highlighted the importance of the behaviour of the leaders at all levels.

### 3.4 Primary wood product suppliers: The cases of Mozambique and Russia

These two countries have been chosen for case studies from China’s timber supplier countries because:

- both countries have rich forest resources, particularly natural forests (covering 45 per cent of Russia and 25 per cent of Mozambique);
- forest exports are important for both countries (the fourth biggest export for both Russian and Mozambican industrial products exporting) (Zhang and Li, 2007, 2);

- both countries produce most of their forest products in primary forms, mainly logs and sawnwood (softwood for Russia and valuable hardwoods for Mozambique);
- China has rapidly become the most important export market for forest products (25 per cent for Russia in 2002 and 85 per cent Mozambique) (Lu and Li, 2005), and
- both countries are believed to have deficiencies in their social infrastructure and forest policies, leading to unsustainable forestry practices including illegal logging.

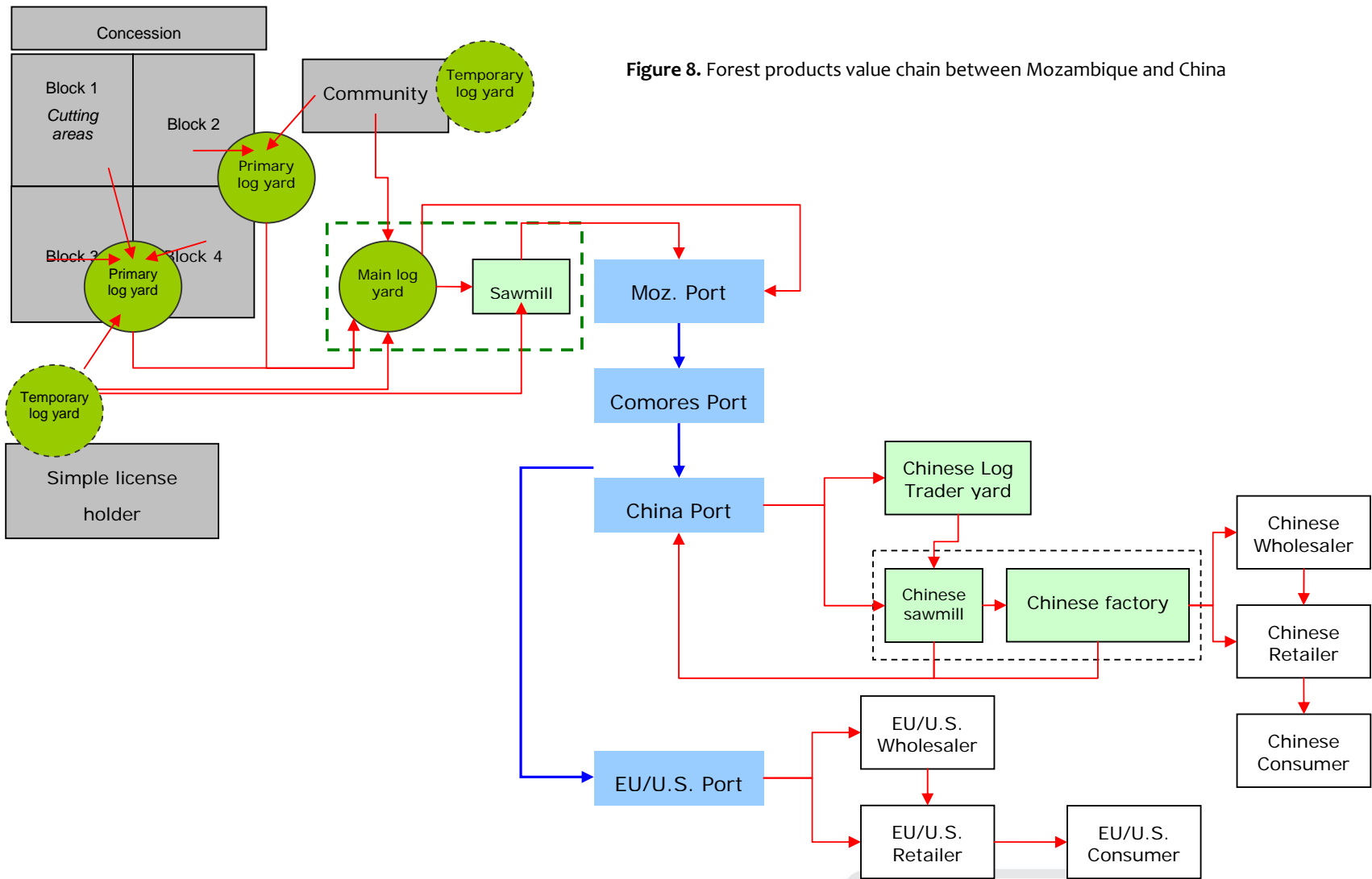


Figure 8. Forest products value chain between Mozambique and China



### 3.4.1 Mozambique (see Annex 2 for full study)

#### *Forest Management in Mozambique*

As the first node of the entire chain, forest management provides the material foundation for forest products chains, potentially establishing it on sustainable or unsustainable paths. Mozambique is endowed with rich forest resources, particularly high-value tropical commercial species. Almost 70 per cent of the national log cut over the last two years has come from only three Mozambican provinces—of which Cabo Delgado is one. Our field study has focused on Cabo Delgado Province, where three million hectares of commercial forests cover 36 per cent of the land. Yet, unsustainable practices such as over-logging and the lack of replanting are seriously threatening the sustainability of timber supply.<sup>17</sup> The economic contribution of the forestry sector has declined, from 3.9 per cent of GDP in 1996 to 3.1 per cent in 2001, despite increasing log exports.

Root causes of unsustainable forest management may lie in the lack of transparency with which forest use rights are allocated and the insecure tenure arrangements that result and related institutional failures to enforce forest management laws. After its independence in 1975, prolonged conflict reduced timber exploitation. After the peace agreement in 1992, a series of policy developments paved the way for timber production. In the early 1990s, timber production began with “simple licenses” given to Mozambican nationals to allow up to 500 m<sup>3</sup> timber production per year (governed still by colonial legislation of 1965 and operational over large, poorly defined areas of land). Following the Land Law and Forestry and Wildlife Policy of 1997, the Forestry and Wildlife Law of 1999 and the Regulations to the Forest and Wildlife Law of 2002, new rules for forest allocation and use came into being.

Implementation of these policies and laws have been hampered by lack of political will, lack of cooperation from the timber industry and poor institutional capacity.

In Mozambique, land and forest resources belong to the state—from whom it can be leased. Rights to exploit forest products can either be acquired on a long term concessionary basis, as a short annual simple license or acquired through customary habitation of the land.

*Concessions and Concessionaires:* According to the laws of 1999, qualified foreigners and national individuals or groups are all eligible for applying for concessions of up to 100,000 ha for management over 50 years—but without specific annual allowable cut quotas assigned to them. Concession applicants need to consult local communities in advance to ensure local interests are taken into consideration, subject to the provincial government or the Ministry of Agriculture approval. After approval, applicants are required to put forward management plans within a specified time. In the province of Cabo Delgado, nine companies have approved status for 13 concessions out of 23 applicants, covering a total area of between 852,500 ha and 1.18 million ha (government figures vary and are notoriously unreliable). The Regulations of 2002 stipulate that some species must be processed in-country, but this is not enforced. Concession holders have

---

<sup>17</sup> Although tree farms have been established, only one has remained in operation, cultivating only about ten thousand trees.

lands, capital, equipment and large numbers of workers to produce logs for them. Chinese-owned companies have obtained at least two large concessions, because of their advantages in technology and capital. For instance, in Cabo Delgado Province, Mofid has obtained two concessions covering 131,025 ha, which produced 8,900 m<sup>3</sup> of logs in 2004. largely to be seen to comply with legislation, its sawmill does conduct some rudimentary processing while the main business of log exports is carried out. In addition, other non-Chinese companies such as Miti Lda, with its three concessions, export more than 80 per cent of their logs to China.

*Simple License Holders (SLHs):* The new legislation still allows nationals to obtain, for a small fee, logging permits of 500 m<sup>3</sup> per year—but with a basic management plan, map and community consultation now nominally obligatory. SLHs are widely recognized to make sustainable logging nigh on impossible, but politically, have been difficult to phase out—at first because they were one of the few routes by which nationals could benefit from forestry, and more recently because they are useful to powerful industrial elites. According to differences in capital and technical strength, SLHs can be classified into three groups: those having vehicles, handsaws and wood processing equipment and engaging in timber harvesting; those without such equipment working just as the middlemen between local residents and sawmills and being responsible for organizing logging and transportation; and finally, those operating small sawmills with a few workers. The number of SLHs has seen a sharp increase in the past few years, because they are a simple and flexible way of organizing logging, can more easily evade government inspection and are increasingly financed by larger companies—many of which are owned by the Chinese. In Cabo Delgado Province, there were 40 SLHs in 2005, authorized to cut 16,535 m<sup>3</sup> of timber in 2006. Over half of these SLHs sell logs to Chinese owned sawmills (for example, the Chinese-owned Micco Resources Trading Lda sources logs from 8–10 SLHs).

*Local communities:* The hired workers that constitute a source of cheap labour, which they then offer to local concessionaires, SLHs and sawmills, come from local communities. Non-skilled workers do the hard work of tree felling and collection but are frequently paid between US\$1.50 and US\$1.90 per day. Skilled workers do sawmilling work at slightly higher salaries, but both categories lack social security or any form of written contract. More than 20 articles of the Labour Law are permanently violated in sawmills alone.

*Transport companies:* Felled logs are transported to nearby sites and then ultimately to sawmills or export ports. Concessionaires, processors and exporters own most transportation vehicles and dominate transportation, although their reliability is low. The combined trucking capacity of the three Chinese companies of Mogid, Mico and Heyne is 32,480 m<sup>3</sup>, far beyond their declared processed/export log trade. Yet informants still note that even this high capacity is insufficient to meet demand—and local transporters are also in high demand. There is evidence that both corporate (concessionaires and processors/exporters) and local trucking companies are engaged in shipping illegally-felled logs. The buyers of illegal logs are mainly processors and exporters. Timber merchants from India, Pakistan, China, Chinese Taiwan, Malaysia, South Africa and Portugal have all set up local buying operations. They typically employ local transporters to collect logs locally. This has made the monitoring of illegal logging activities

particularly difficult.

*Shipping.* Of the three shipping companies working in Cabo Delgado, one company alone (Span Freight) was shipping an estimated 32,320–35,200 m<sup>3</sup> per year from the two ports of Pemba and Mocimboa da Praia—which is 35 per cent above the legal declared figures for total exports.

In summary, within Mozambique forest management, a state of chaos and over-logging prevails. Much commercial logging has not been carried out in a scientific way, resulting in damage to local forest ecology. The decision to initiate logging is often made abruptly, with no plan for building log collection roads; logging roads are often poorly maintained; and the use of heavy equipment often damages soils and, with little directional felling, also damages as much as 60 per cent of the remaining trees. Furthermore, there are almost no measures to support tree planting and improved regeneration to promote forest re-growth. Workers in the logging camps often hunt wildlife for food, resulting in the loss of wildlife availability. Underlying causes of these problems are:

- Rights are not clearly defined, and local interests are not well protected. Although the interests of local community and residents are protected by law and there is a specified timberland development consultation system, such mechanisms exist only on paper. Local communities cannot participate in sharing the benefits of commercial harvesting, and their representatives often take bribes to forego community interests.
- Poor road networks, lack of investment and low efficiency have all contributed to unsustainable operations. Most commercial forests are located in remote and isolated sites with complex river networks and inconvenient transportation. Logging is done mostly via simple rudimentary tools and hard manual labour, and even loading is mostly manual.
- Companies lack trained staff to understand, let alone implement, sustainable forest management—with concession management plans written by external experts. They also lack awareness of corporate social responsibility. The numerous concessionaires and SLHs are not adequately monitored in their operations and they often engage in over-logging or illegal logging. Companies hire local workers or transporters to engage in illicit activities, making illegal logging and transportation more difficult to control.
- Rent-seeking and bribery involving government officers has smoothed the path to illegal logging, but blocked any incentives for sustainable forestry. The issuance of logging permits is plagued by bribery and poor administration, as is the payment of benefit shares from fines and licensing.
- The government has failed to take effective action to promote local sustainable forestry development. Provisions for forestry investment exist in theory, but are often not implemented, resulting in a lack of even the most basic investment in reforestation and forestry management. For example, major fiscal policies include the following provisions: US\$0.40 fee per cubic meter for collecting fuelwood; up to US\$120 fee per cubic meter stumpage for precious species; 50 per cent of the fines collected shall be provided to forestry agents; 20 per cent of the tax revenue from exploitation shall be provided to reinvest in local communities. These have potential for sustainable forestry, but poor governance means they are not

implemented.

However, there are isolated examples of good forest management, with three forests certified to FSC standards: these are providing wood for niche OECD markets.

### *Processing and export from Mozambique*

As noted above, the Mozambican government aims to restrict log exports and encourage domestic processing through:

- *timber classification*: 118 species are grouped into five classes. Class I timber, of the highest value, should be processed domestically on a priority basis, while logs in the other four classes can be exported with special export permit quota. Replanting of the same number of trees logged should be completed;
- *financial subsidy policy*: processing of flooring and plywood enjoys preferential tax rates; and first-time importing of processing equipment is tax-free; and
- *exporting processed products*: when a company's export of processed products reaches 85 per cent, all company imports are tax-free and the company enjoys lower tax.

Such policies have promoted the development of primary wood processing in Mozambique. In Cabo Delgado Province, 21 processing mills (six of which are Chinese-owned) process about 32,000 m<sup>3</sup> of sawnwood. However, the scale and quality of wood processing still needs to be upgraded. This faces a number of constraints. First, industrial infrastructure and governance institutions are too weak to support the development of processing industries. Government employees set up obstacles in administrative approval and auditing or even demand bribes. Second, backward technology results in poor product quality and waste, low product value-added and underdevelopment of processing industries. Exports of logs make 60 per cent more than exports of sawn timber from an equivalent volume of timber. Finally, the Chinese government's zero import tariff policy for primary products such as logs, sawnwood, chips and other primary products is believed to have affected the efforts of the Mozambican government to grow its domestic processing industry.

Most wood-processing mills have simply played the role of export agents; only a small portion of logs enters processing, producing mostly low-value sawnwood. Even this limited processing capacity rests mostly in the hands of mills owned by companies from Southeast Asia, Europe and China. The local Chinese companies lack corporate responsibility, have done little to promote local sustainable forestry management, and even participate in local corruption. The owners of these Chinese companies tend to hold passports of multiple Asian countries; their companies are small and/or anonymous; they receive no loans or official support from China and so the Chinese government has little access to them.

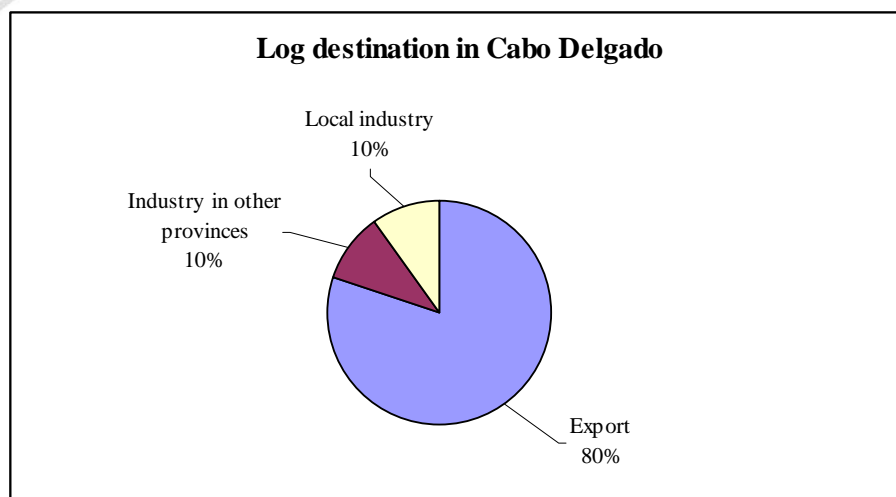


Figure 9. Log export destination in Cabo Delgado Province (Source: Savcor, 2005)

Most logs, sawnwood and wood products produced in Mozambique are exported. Between 1995 and 2005, Mozambique exported a total of US\$136 million of precious timber to the international market, with a market share of 0.3 per cent. A high proportion was unprocessed—60 per cent of forest production in 2005 was exported as round logs.

Cabo Delgado is Mozambique's most important timber export province, from which 80 per cent of logs are exported. Timber in Cabo Delgado is being exported mainly through two ports, Pemba and Mocimboa da Praia, by three shipping companies, Manica Freight Services, Maersk Mozambique and Span Freight Shipping Mozambique. The ports lack physical infrastructure, equipment and management, seriously limiting export capacity. At Pemba port, there is only one container-loading lift, while Mocimboa da Praia does not have a single lift.

China is Mozambique's most important export destination country. In the past six years, it is estimated that Mozambique exported a total of 429,710 m<sup>3</sup>, of which 85 per cent went to China (including 25 per cent to Chinese Hong Kong), with a value of US\$68.4 million. The remaining 15 per cent went mainly to South Africa and a number of European countries (Germizhuizen et al., 2007). It is difficult to monitor Mozambican shipments to China, because many pass through other ports (notably Comores Islands).

In addition, a considerable proportion of harvested timber may also have been exported illegally, because there are large discrepancies in publicized data. Timber volume figures for actual production and licensed production are inconsistent among different sources or even for the same sources.

Table 5. Value of timber exports from Mozambique by destination, 2001–2005 (US\$, CIF)

Country	2001	2002	2003	2004	2005
<b>China</b>	<b>1,509,193</b>	<b>3,691,077</b>	<b>4,929,029</b>	<b>19,133,545</b>	<b>19,020,907</b>
Hong Kong	3,321,696	6,016,999	5,630,025	3,499,461	1,642,280
South Africa	3,301,312	1,357,359	2,516,610	3,583,049	1,527,518
Portugal	1,328,973	627,536	728,927	809,249	444,009
Italy	310,546	908,023	575,682	296,062	497,484
Singapore	40,808	1,032,914	112,196	314,109	1,048,824
Germany	184,194	372,564	389,176	536,273	658,595
Other Countries	2,164,909	3,630,166	2,119,670	1,589,308	1,527,651
<b>Total</b>	<b>12,161,631</b>	<b>17,636,638</b>	<b>17,001,315</b>	<b>29,761,056</b>	<b>26,367,268</b>

Source: Germizhuizen et al., 2007 (draft)

Table 6. National log exports from Mozambique (in 1,000 m<sup>3</sup>)

	2001	2002	2003	2004	2005
Logs exported as round logs	33.6	65.0	59.0	72.6	60.0
Logs processed domestically	88.6	98.2	54.1	79.1	42.6
Total log cut	122.2	163.2	113.1	151.7	102.6
Annual cut exported as roundwood	27%	40%	52%	48%	58%

Source: National Directorate for Forestry and Wildlife (DNFFB)

### Summary of environmental and social impacts

Our study was not able to complete a 100 per cent inventory of the impacts of Chinese-led logging activities in Cabo Delgado. However, the main issues along the supply chain are environmental problems (deforestation, depleting wildlife, increased forest fires, unplanned access creation and high-grading); economic problems (wasting wood, lack of value added and return on investment to forest management); and social problems (workers' health and safety and poor labour relations).

- *Deforestation*: This is still considered to be quite marginal in Cabo Delgado, due to the use of selective cutting practices. According to the district director of Agriculture in Montepuez, deforestation on the edge of Mu Upua River has already led to increased floods. Such floods hamper the regeneration of the forest, and the lands deforested by forestry operators are often subsequently occupied by farmers.
- *Depleting wildlife*: Forestry workers camping in the forest frequently hunt to feed themselves, but also to sell meat in the urban centres. It is not uncommon to find bush meat on the trucks loaded with wood.
- *Forest fires*: Although fire is necessary for maintaining a healthy forest in Cabo Delgado, many fires are occurring throughout the year without any form of control. This has had serious ecological and economic impacts. These include the

destruction of grasslands, wildlife habitats, plants and non-timber forest products resources, the destruction of harvests, property and cattle and the loss of life.

- *Access opening:* Regulations currently prohibit logging and extraction during the rainy season, in part, to prevent heavily laden trucks destroying rain-softened roads. However, many companies ignore this. The opening of access roads has had an adverse effect on the forests' capacity to regenerate. From the cutting site to the secondary or temporary log yard, trunks are dragged on the ground by tractor. This is particularly true in Cabo Delgado, where ad hoc trails are opened for the purpose of cutting and extracting only a few quality trees in a certain area. This creates clear zones frequently occupied by farmers. However, where they facilitate connections with urban centres, the trails opened by foresters are appreciated by the local communities.
- *High-grading:* Since only top quality logs are marketable, the foresters abandon large parts of the tree, discarding timber with defects such as holes or knots. Logs with small diameters are also abandoned. The cutting of undersized trees is frequent and threatens the regeneration of the forest. It appears that diameter restrictions are not being adhered to and it is not only the large trees (in excess of 40 or 50 cm, depending on species) that are being taken. The lack of skilled concessionaire staff impedes a scientific approach to logging practices that could limit damage and favour forest regeneration.
- *Wasting wood resources:* Currently, nearly all branch wood remains in the forest after logging, representing a waste of resources and a potential fire hazard. Regulations currently prohibit the transport of such wood, in an attempt to prevent undersized logs from being extracted. This small branch wood could have been converted into useful charcoal. There are examples from other provinces, notably Sofala, where concessionaires have provided local communities with access to this timber for charcoal production and given them technical assistance in production methods.
- *Lack of economic value added:* Most of the benefits of the timber trade are not reinvested in Mozambique. The growth of logging activities and wood export has a very limited positive impact on the national economy. Low wages and non-compliance with the national social security scheme do not improve the living condition of the workers. Salaries are at subsistence levels and do not contribute to an increase in consumption or savings rates. Fiscal and customs tax evasion characterizes the forestry sector, weakening the state's capacity to improve its performance in terms of law enforcement or vocational training.
- *Health and safety problems:* Working conditions in the sawmills visited are very harsh. They do not fulfill any legally-required health and safety standards. The workers do not use any personal protective equipment (helmet, gloves, glasses, mask and reinforced shoes). They do not wear uniforms or shoes. The workers operate band or circular saws that are obsolete, damaged and unstable (they lie on clay or sandy soil). There is no lift mechanism and all loading is done by hand. There is no fire extinguisher, no tap water and not even water tanks or sand boxes. Electricity is not professionally installed; wires are frequently bare and cables connected without plugs. Oil and fuel barrels are not located in a safe place and at times lie near a saw that is continuously sparking. None of the visited sawmills have toilets, showers, cloak-room or refectory. There is no sentry box

for the guards. The only buildings are a warehouse and small offices used by the Chinese staff or foreign foremen. In case of accident, there is no on-site infirmary or even a rudimentary first-aid kit; injured workers do not receive any help from their employers. There is no drinking water available, a particular problem in situations where people work eight or nine hours per day in the sun or under a corrugated iron roof in a permanent cloud of sawdust. Such conditions are similar for Chinese or Asian workers.

- *Poor labour relations:* Employers dictate conditions to the workers. International social standards (OCDE, FSC, ILO) and the Mozambican labour law are totally ignored. The vast majority of the sawmill workers are not formally contracted. They are hired on a daily basis as a function of the volume of work, they can be fired without notice, they do not benefit from paid holidays and even public holidays are not paid. Extra hours are unpaid and employers do not contribute to the national social security program. As noted above, workers are not compensated when sick or injured. In Mozambique, private companies are obliged to openly display their working hours and a list of staff, with the specific mention of their function and salary. In the three Chinese-owned sawmills visited, there was no such information displayed.

### *Summary of Mozambique's role in the wood commodity chain*

The Mozambican part of the wood commodity chain is generally unsustainable, with the following features:

- Over-logging and lack of regeneration has resulted in a serious shortage of renewable resources, threatening the continuity of the commodity chain as well as employment and enterprise within Mozambique.
- Ambiguity in tenure rights and chaos in permit issuance have resulted in insecurity of community and corporate interests and lack of investment in forest cultivation.
- The government lacks strategic thinking and effective action in promoting sustainable forestry management; government corruption and inaction is widespread, poisoning the industry environment for development.
- The numerous concessionaires and SLHs are very effective at acquiring timber in difficult circumstances, but their entrepreneurial ability is not being channelled towards sustainable logging. Workers are inadequately trained, resulting in illegal logging, over-logging, illegal transportation and widespread waste; foreign companies operating locally have yet to establish minimum standards of corporate social responsibility.
- Local processing facilities are inadequate, infrastructure and management is poor, and capital and technology is lacking. There is every incentive to bypass processing altogether and focus on more lucrative log export activities.
- Foreign companies, particularly Chinese companies, are in a dominant position in the various nodes of the commodity chain, including production, transportation, processing and exporting.

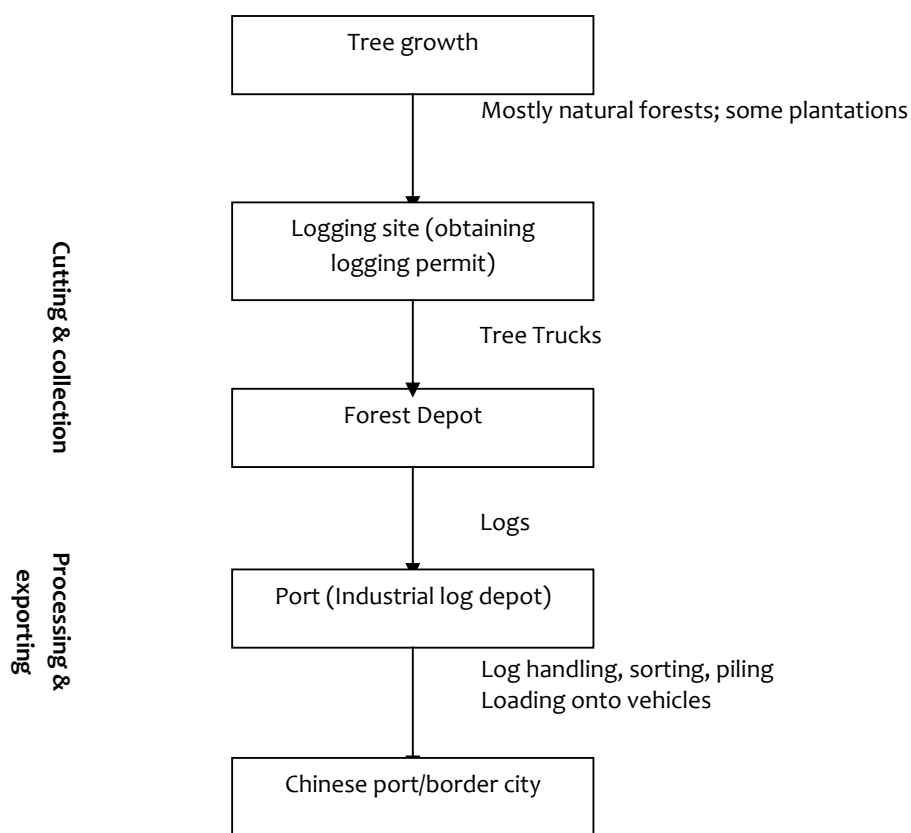
We conclude that in Mozambique, weak governance has allowed illegal logging and corruption to penetrate all stages of the chain, including production, transportation and exporting. Chinese involvement has been complicit in the breakdown of sustainability,



exacerbating the underlying weak forest governance in Mozambique. However, there are potentials associated with the engagement of Chinese companies in Mozambique—with their superior market access, technology and investment as well as with current improvements in Chinese-African government relationships. New partnerships could help to realize the comparative advantages of Mozambique in growing quality hardwood timber and sustain supplies for China over the long term.

### 3.4.2 Russia (see Annex 3 for full study)

Figure 10. The Russian-Chinese forest products commodity chain



#### Forest cultivation in Russia

The Russian Federation has 1.178 billion ha of cold temperate and boreal forestlands, with 45 per cent of its land under forest cover. This amounts to the world's largest forest resources, with 25 per cent of the global total. Per capita forestland acreage is 5.2 ha, 5.8 times of the world average, ranking the Russian Federation third in per capita resources, just behind Canada and Finland. The RFE (Russian Far East) and Siberia play an important part in the Russian forest sector, and are most significant for trade with China. Coniferous species dominate the RFE forest landscape. Larch (*Larix daburica*) is by far the most widely distributed species; birch (*Betula spp.*) comes in a distant second, with spruce (*Picea spp.*) and fir (*Abies spp.*) following. It should be noted that Russian forests are heavily dependent on natural growth (a little over one per cent are plantations).

Moreover, their timber supply capacity has not been sustainable, in large part due to Russia's poor arrangements for forest tenure and management.

### *Tenure arrangements in Russia*

Generally speaking, RFE and Siberia forests are in the ownership of central authorities. According to the Constitution of the Russian Federation, two levels of state body—federal (the Russian Federation [RF]) and provincial (subjects of the RF)—are mutually responsible for the use and management of natural resources in Russia. No forests belong to local bodies of government or communities. According to the new RF Forest Code, the federal government assumes authority for governance of the forest sector, whereas provincial governments assume primary authority in forest utilization.

For timberland use, the RF Forest Code is the first forest law that defines both chargeable and non-chargeable uses. The maximum term of a chargeable lease agreement is 49 years. Clearly, such terms do not match the required time length for forests to reach maturity in the RFE, which is commonly 80 to 150 years. Lesnoy Fond is the most widespread form of leasing arrangement in the RFE and Southeastern Siberia, covering 98.6 percent of all RFE forests and most forests of Southeastern Siberia.

### *Forest management in Russia*

After former President Vladimir Putin's administrative reform, the independence of the Forest Service (as well as the independent Ecological Service) was abolished and it became a department of the federal Ministry of Natural Resources. Drastic downsizing occurred; only the lowest primary units, called *leskbozes*, or forest management units, remained from the former structure. Before the reform, *leskbozes* had a large staff for monitoring logging, fire control and implementing the forest law. After the reform, only six surveillance staff remained, leaving the supervision of activities in leased areas to leasing companies themselves. This has led to inadequate law enforcement and ineffective monitoring of illegal logging activities.

Furthermore, the already seriously under-funded institutions for forest management had their budgets cut further. The Russian Forest Code requires that finance for forest maintenance should come primarily from federal public finance and supplemented by provincial public finance, with any balance to be covered by stumpage fees and rents from *leskbozes*. In the era of USSR, some 90–95 per cent of forest management costs were assumed by the government. Today, however, the federal government assumes only about 25–30 per cent of this cost, and some provinces have virtually no budget for this. Some experts estimate that real financing for silviculture and forest science activities has decreased by 10 times from 1990 to the present, and financing for forest inventory and aerial surveys has decreased by four to five times. In the RFE, public financing is even inadequate for the most basic maintenance costs. In many areas, the highest finance available is US\$0.80 per thousand ha, and the lowest is only US\$0.10. This has forced *leskbozes* to earn approximately 60 per cent of their funds from alternative sources. For the most part, these funds are collected from intermediate cutting, which has in fact been turned into profit-making commercial cutting. Intermediate cutting—thinning of trees to help shape a final crop—has therefore become a major source of illegal logging, also threatening the quality of the final crop.

### *Felling and log collection in Russia*

Logging operators can be distinguished as large, medium or small enterprises, each with very different ways of operating. Generally speaking, large and medium-sized companies enjoy better reputations and are more law-abiding, whereas smaller operations may engage in illegal activities and employ equipment that is damaging to the environment. Few of them are efficient, with high levels of logging waste.

Table 6. Typical harvesting procedures for large Russian companies

Step	Phase description	Executors
1	Field allocation of cutting areas; stumpage fee payment; obtaining permit documents; preparation of cutting-areas; camp establishment; skidder/harvester route clearing, etc.	Forest service officials, loggers' representatives, auxiliary crew
2	Felling operations; cutting tree trunks into logs; moving timber to forest depot	Felling crew
3	Cutting tree trunks into logs in the case of removal of trunks from cutting areas as whole; loading on timber trucks	Forest depot crew or felling crew
4	Transportation from forest depot to industrial log depot	Logger's transport division or hired transport firm
5	Log handling; sorting and piling; loading onto vehicles/ships	Industrial log depot crew
6	Transportation to consumer/trader; custom formalities in case of export abroad	Logger's transport division or hired transport firm

This process is more or less the same for smaller operators. However, they often skip Step 3 and keep Step 5—so that illegally-logged timber can be mixed up with legal timber in the process of sorting, piling and handling. Small companies do not tend to have their own transport, relying on professional transport companies.

Large and medium operators are often transporters/traders as well as loggers, and they often have their own transportation subsidiaries. Large companies have started to own their own railroad cars and ships—by the end of 2004, there were as many as 11 enterprises that own their ships—enabling the integration of logging, transportation and exporting in one single company.

Companies commonly employ workers to do logging (power-saw operators, operators of harvesters and forwarders, auxiliary workers, tractor drivers, truck drivers, etc.). Competition at the worker level is becoming intense, as migrant workers from overseas (usually from Ukraine, China and North Korea) work alongside Russian workers. Even though migrant workers are not as familiar with the local environment, they are generally harder-working and better-disciplined.

Since the 1990s, illegal logging has become prevalent in Russia, reaching as much as 20 per cent of total timber harvested and 30 per cent of total Russian export (these are

conservative estimates) (AFPA, 2006). Illegal logging in Russia takes several forms: obtaining logging permits through corrupt collusion with government officials (below); logging without any permit; logging outside designated areas with fabricated documents; logging with permits but harvesting more than the designated volume or beyond designated boundaries; or buying timber granted only to local residents. Commonly, such illegal timber becomes indistinguishable from legal timber through transportation or sale, due to the lack of surveillance and monitoring mechanisms.

Illegal logging tends to start with obtaining logging authorization from forest stations in the pre-felling phase.<sup>18</sup> The Forest Code specifies that timberlands should be put to logging via bidding and auctioning, but it also allows for direct allocation without specifications on time and methods for such allocations. With an official monthly salary not exceeding US\$80, a mid-level specialist of the Forest Service has both the incentive and practically unlimited rights within their territory to distribute forestlands for logging in favour of those who may offer bribes. Alternatively, they can reject appeals for logging outright, forcing applicants to turn to outright theft.

While small-scale illegal logging can be carried out as direct theft without bribing officials, all large and mid-sized illegal logging operations are only possible through bribing the Forest Service officials who control the whole logging process. That is, illegal logging is first and foremost not a problem of theft; rather it is a problem of corruption. The financial structure of companies involved in illegal logging is very different from those in legal harvesting. Illegal operators are not burdened with the costs of infrastructure, taxes or social responsibilities, but they do need to pay extra transaction costs to “legalize” their timber in the marketplace. Making provisions for such transaction costs is becoming standard today (the cost composition of illegal operations being “felling cost + transport expenses + bribery”). The actual production cost is relatively small; in Khabarovsk in 2003, illegal loggers paid about US\$3 per cubic metre of log on taxes, and US\$15 on bribery, whereas legal operators paid US\$16 on taxes and US\$6 on social support. Thus, illegal operations are often located in places close to the customs office or where forestry departments are easily susceptible to corruption.

*Illegal logging has become a highly-organized criminal activity in some regions.* This can be more clearly seen in hardwood trading, because hardwood timber is worth at least 1.5 times more than softwood and profitability is 100 per cent or more. According to the Russian “Bureau for Regional Outreach Campaigns” BROCC’s estimates (Lebedev, forthcoming), for one cubic metre of hardwood logged by a Russian illegal logger and sold for US\$140 in China’s Suifenhe market, the distribution of sale proceeds is:

- US\$70 – goes to the Chinese wholesaler (middleman)
- US\$4 – to regional administration officials
- US\$5 – to municipal administration officials for access to “appropriate” depot
- US\$5 – to environmental inspector for removal from forest without seizure
- US\$3 – to Forest Service officials to avoid seizure
- US\$5 – to militia to avoid seizure
- US\$5 – to customs officer

<sup>18</sup> Each of the *leskbozes* has a number of forest stations

- US\$10 – to timber depot for documents
- US\$5 – to forest leaser to maintain rights to forest use next time
- US\$5 – to local criminal fund for “protection”
- US\$5 – for gasoline
- US\$18 – shared equally between the logger, security and truck driver

This distribution indicates the high proportion of transaction costs, notably for bribing relevant authorities or criminal forces. In practice, any official related to the timber trade can go to any logging site or depot to collect bribes or fines. Such corrupt officials are easily identifiable: like the big timber traders, they commonly reside in brand new, two-storey houses.

### *Processing and export from Russia*

Wood processing in the RFE has become mired in serious problems, with many villages and towns having already lost this livelihood-sustaining industry. The forest products industry has become mostly export-driven, 55 per cent of which is merely logs and other primary products. Exports of finished products have been minimal; in fact, Russia has to import finished wood products to meet its domestic demand. The decline of processing industry has been caused by a lack of investment, reduced domestic demand for processed products, outdated equipment, the loss of government subsidies, foreign tariffs, and—especially—increased taxes and competition from China. Where a mill in Lesozavodsk once paid US\$30 for processing a cubic metre of wood product, today this the cost has jumped to US\$58, mostly due to the increase in tax.

In order to limit log exporting and encourage the exporting of processed wood products, Russia has lowered its export tariff of processed products to zero and has decided to raise the export tariff on coniferous logs. The Russian government has projected with confidence that, by 2008, Russian forest product exports will increase by 70 per cent from its 2006 level, with the proportion of primary wood products decreasing.

Although its processing industry is underdeveloped, Russia plays a prominent global role because of its large volume of timber production and export. In 2000, Russia produced a total of 84.9 million m<sup>3</sup> of logs, of which 30.9 million m<sup>3</sup> were exported (including 7.8 million m<sup>3</sup> of sawnwood, one million m<sup>3</sup> of plywood, 1.7 million tonnes of pulp and 1.1 million tonnes of paper). The potential still remains for further export growth.

China is the most important destination for Russian timber exports. Russian timber arrives in China via three major routes:

- the Zabaikalian route from the Eastern Siberian border point of Zabaikalsk, directly entering China’s Inner Mongolia, either to remain in Heilongjiang Province or continue southward;
- the Siberian route from Central Russia and Western Siberia, exiting Russia through Naushki in Buryatia Republic, then crossing the country of Mongolia, ending up in China’s Inner Mongolia or further to central Chinese provinces; and
- the Russian Far East route from Primorsky Krai’s Grodekovo railway station to the Chinese city of Suifenhe, and more recently through Russian Pacific seaports.

The pathway also branches off to small customs gateways on the Russian-Chinese boundary and over the border rivers of Amur and Ussuri. The main destinations are China's northeastern provinces and southern seaports.

Official statistics indicate that all three routes move about 95 per cent of total timber traded between Russia and China, although the Russian Far East route carries about 55 per cent. The volume being shipped has increased in recent years after the implementation of Chinese Natural Forest Protection Program.

### *Summary of environmental and social impacts*

Some of the major impacts can be summarized as follows:

- **Forest loss:** Rational use of forests can be compatible with forest sustainability but forest use in the Russian Far East has resulted in forest loss, because: a) logging has been concentrated in easily-accessible areas to reduce cost; b) large areas have been subject to clear cutting; c) the more valuable species, such as the Korean Red Pine, have been graded higher; and d) destructive logging methods have tended to cause excess stress on local forests.
- **Timber waste:** Russian scientists have estimated that as much as 40–60 per cent of timber has been left in the logging site. This is about four times as much waste as in other countries. The lack of fibre board and MDF industrial use of by-products has further aggravated the problem of waste.
- **Forest fire:** In the first half of 2007 alone, there was a total of 560 forest fires in the Russian Far East, causing serious damage to local ecosystems.<sup>19</sup> Logging activity has increased the incidence of forest fires.
- **Employment opportunities:** The forest sector provides jobs for the populace of many forest settlements. Skilled workers who live in depressed settlements with depleted forest tracts (especially in the southern area of Khabarovskiy Krai and Amurskaya Oblast, and in the western and southern regions of Primorskiy Krai) become employed by logging firms in other parts of their provinces. In Khabarovskiy Krai, the forest sector is pivotal for no less than 100 settlements with a total of more than 300,000 people (20 per cent of the Krai's population).
- **Increase in forestry workers income:** According to official data, the average annual increase in wages in the forest sector after the ruble's devaluation in 1998 was good, even by U. S. dollars. In rubles, it was also higher than the inflation rate and fluctuations of timber price. At the same time, wage increases have coincided with "grey" wages being brought into daylight. According to experts' estimations, real monthly wages in logging average about US\$780 (excluding middle and top managers' salaries, which are higher) and vary across a very wide range (Table 10). The highest wage noted is in Arkaim (Khabarovskiy Krai). It amounts to an average of US\$1,100. The lowest wage is in Terneyles (Primorskiy Krai)—it is about US\$350, but is expected to increase in the near future.
- **Increase in local fiscal revenues:** All phases of the commodity chain entail tax payments and/or payments to the government. In addition, legal logging operations are subject to the following main taxes: income tax; value-added tax

<sup>19</sup> There have been 560 forest fires in the Russian Far East so far this year. See: [www.hkcna.hk/doc/2007/2007-06-11/14574.shtml](http://www.hkcna.hk/doc/2007/2007-06-11/14574.shtml)

(VAT); tax on funds; land tax; social charge of labour costs; pollution tax and other mostly local taxes. In 2003, tax payments of the Khabarovskiy Krai's forest sector into the Krai's consolidated budget (i.e., the sum of the Krai's own budget and the budgets of its municipalities) were US\$3.80 per cubic metre of commercially-harvested timber. Federal tax payments are estimated at about US\$6.50 per cubic metre.

- ***Social assistance:*** Besides obligatory fees, all corporate and individual logging firms bear the big burden of providing social assistance to small settlements. Such “social assistance” has different components: employment of local people, supplying the local population with firewood at low prices and supplying firewood free of charge to pensioners and disabled people. Forest firms also repair or cover repair costs for local schools, hospitals, roads and bridges. They buy computers for schools and musical instruments for local orphanages, support summer children's camps, etc. According to experts' estimates, average additional social expenses of the logging firms amount to up to five per cent of loggers' production costs (i.e., about US\$12 million per year in the Krai or annually US\$40 per capita of forest settlement residents).
- ***Uneven distribution of benefits:*** To summarize, timber going from the RFE to Chinese markets, harvested with economically- and environmentally-destructive methods, enriches a long chain of actors who put different amounts of labour into timber production and gain returns that are not proportional to their efforts. A significant part of the income falls to logger bosses, Chinese merchants and managers and local as well as to federal bureaucrats. The smaller part is more or less equally distributed among poor local communities at the expense of devastating their living environment and source of livelihood. As a result of that ignorance and the generally low level of incomes in the community, poorly-skilled workers in logging operations have no social programs, life insurance or security, and thus, often risk their health and lives without any hope of compensation for themselves and their families.
- ***Loss of revenues:*** The territory and its population do not receive the full return of legal logging: Migrant workers take with them 80–85 per cent of their wages when they go back to their homelands. One hundred percent of the customs taxes and 65 percent of other taxes are transferred to the federal budget. These make up 78 percent of the total amount of tax collected. Foreign companies and joint ventures operating in the forest sector repatriate a significant part of their profits.
- ***Institutional weakness:*** Weak federal laws, declining fiscal resources, as well as struggles between federal and local institutions have significantly reduced the control of government over forest management. Forestry administrative offices and officials tolerate, and even encourage illegal logging to seek grey incomes. Tax evasion is common. The business environment has been corrupted to the extent that law-abiding firms are finding it difficult to survive.

#### *Summary of Russia's role in the wood commodity chain*

- Rigid state ownership has made the tenure arrangements in Russian forests ambiguous and offers few incentives for sustainable stewardship.
- Waste in logging, inefficient administration and transportation, and corruption in

- the forest sector all seriously limit the sustainability of the Russian forest industry.
- Capital from logging has not been channelled back to forests for forest regeneration, seriously limiting the sustainability of forestry management.
  - The Russian government has promulgated various laws and policies to promote domestic processing but technology, capital, manpower and supporting infrastructure are all limiting factors.

However—as with Mozambique—given Russia’s particularly rich natural forest resources, the country needs to explore a more suitable path for both its forest industry and its forest processing industry. There are potentials existing in partnerships with China.

### 3.5 China: The wood processing node in the commodity chain

Imported timber goes through four basic stages before leaving China once again: importing, distribution, primary and secondary processing and exporting. Processing is the most important stage for concern in terms of value added and sustainability, because physical processes transform the wood and produce side effects.

#### 3.5.1 Timber importing into China

China has, for the most part, liberalized its forest products trade policies. This has encouraged its timber trade and the associated wood-processing industries in China. However, the escalating tariff structure of the Chinese government appears to have encouraged the over-importing of logs, in turn feeding the expansion of Chinese wood processing industries, at the expense of forests in supplier countries.

In the planned-economy era, only government-designated state trading companies imported the timber. Such restrictions were completely abolished in 1993. The government further adopted policies to encourage primary product importing to alleviate domestic timber shortages. In 1997, members of the APEC, China and other member states reached an agreement to liberalize trade in nine sectors including forestry. After its WTO accession, China further liberalized its timber trading policies, adopting a zero importing tariff rate on primary products (see Table 7), this tariff being associated with implementation of China’s Natural Forest Protection Program in 1998.

Table 7. Chinese import tariff rates for wood products in 2006

Type of Product	Tariff Rate (%)
Logs and sawnwood	0
Veneer	3–10
Plywood	4–12
Wood products including furniture	0–16

Source: Global Import and Exporting Data Net: [www.jkck.com](http://www.jkck.com)

The procedures of timber importing are relatively transparent and standardized, with fees to be paid clearly outlined. Quarantine actions can be taken prior to timber entry, or checked at the border or fumigated upon entry. Relevant paperwork is mostly done at the port, including customs clearance, plant fumigation and commodity checking. Border



control is mainly for security checks. Value-added tax for imported timber has been set at half of the normal rate. Overall, there are no unnecessary transaction costs to be paid to import timber. Such policies have facilitated the rapid development of timber importing businesses in China.

Imports mainly enter China through ports in three areas (Sun et al., 2004):

- the Guangzhou-Shenzhen Corridor (the Pearl River Delta) in Guangdong Province, including Guangzhou, Huangpu (and ports nearby) and Shenzhen ports;
- the Shanghai-Jiangsu zone, including the Shanghai port and Nanjing port; and
- the border regions of Northeastern China, including Harbin in Heilongjiang and Manchuria in Inner Mongolia.

Located on the coast, ports in the first two zones have played an important role in the Chinese timber trade. They are known for their robust economy, wealthy population and concentration of strong export-oriented processing industries. The third area is unique in that it has border cities rather than seaports—notably Harbin City and Manzhouli City. Their booming development has been driven in large part by rising Sino-Russian timber trade. Apart from these three zones, Kunming is notable as the main entry gate for Burmese timber to China.

Since the timber importing business opened up in 1997, various companies have entered this field, and there are now numerous active merchants in these importing ports. Customs data in 2004 indicated that at least 426 companies were involved in importing Russian timber, including small merchants, relatively large companies or even publicly-listed group corporations (Song, 2007). Smaller Chinese companies are generally unable to carry out logging and processing in Russia, so they tend to engage in trading by direct or indirect importing, typically at levels of 20–50 thousand m<sup>3</sup> of timber each year. Larger Chinese companies commonly bid for concessions in Russia, do the logging on their own and then ship timber to China. Some even set up and operate mills in Russia. A few large companies import up to 0.6–0.7 million m<sup>3</sup> a year (Song, 2007).

While all these new companies initially created a flourishing market, they also generated numerous problems. These include a lack of quality assurance for imported timber—many new players lack basic professional knowledge about timber (such as the identification of tree species, grading and measuring), as well as international trade. While in the early 2000s, timber importing was a rather profitable business, the large number of new entrants lacking in market intelligence, and the fierce competition amongst many smaller merchants resulted in frenzied importing of large quantities of “hot species” timber. This caused importing costs to rise and sales prices to fall, and created stresses on the resource base of many supplier countries (Maio, 2004). Today, timber importing is no longer a high-profit business. Smaller agents in Sino-Russian timber trade earn some 35.78 yuan/m<sup>3</sup>, but intense competition has forced some smaller players to exit the market (Song, 2007).

### **3.5.2. Timber distribution within China**

There is an interaction of formal and informal distribution mechanisms. Upon entry into

the Chinese ports of Suifenhe and Manzhouli, Russian timber is traded at the railway stations instead of at designated trading sites. For instance, at the customs office in Manzhouli, people rush to the railway station to make on-site transactions whenever a train with logs from the Lake Baikal region approaches. Some buyers are factories sourcing fibre directly on their own; some are distributors who, in turn, ship the timber to provincial capital city markets or markets set up at the juncture of major road networks. A large portion of the timber in these markets is used in municipal construction; lesser volume goes to interior renovation and furniture manufacturing; and only a minor portion goes to the smaller retail markets located in the vicinity of large timber markets or township markets. According to a recent survey, there are 995 timber markets in China, comprised of 344 wholesale and 651 retail markets. However, less than 10 per cent (82) of these are well-established; the balance are informal, developed out of sheer market forces and evidently very efficient (FAS, 2001).

A similar distribution pattern exists for imported tropical timber. Upon entry into the country via the ports of Zhangjiagang, Guangzhou, Shenzhen or Shanghai, some would be bought directly by processing mills, while some would go to the large timber trading markets located close to the ports. These large trading markets are the major distribution venues for imported timber in China, and their management is generally good. The top three large timber-trading markets in China all have annual transaction volumes of over one million m<sup>3</sup>, with Zhangjiagang Timber Trading Market being the largest at 2.8 million m<sup>3</sup> (in 2006).

### **3.5.3 Timber processing within China**

Processing includes primary manufacturing (where timber is converted into sawnwood, plywood, fibreboard, particleboard and other wood-based panels) and secondary manufacturing (where timber is converted into furniture, building materials and other wood products).

Mainland China successfully developed a wood-processing industry with the assistance of businesses from Taiwan and Hong Kong, giving it advantages in labour costs, industry infrastructure (both the processing industry and its supporting industries of equipment, spare parts and maintenance, glue, packaging, hardware, paint, etc.), a strong service industry (transportation, road networks, port facilities and related services) and a strong business environment (low-cost finance). Many of the producer countries cannot compare to China, with the occasional exception of large supplies of inexpensive labour. Chinese wood-processing mills tend to employ rural migrant workers with a minimal level of education and vocational skills. However, there has been little job welfare and security provided to these workers and their wages have been low because of oversupply of this labour force.

#### *The sawnwood industry in China*

Sawmills were once widespread in the forest-rich Southern Collective Forest Region and the Northeastern China State Forest Region. These mills were owned and operated as state businesses. After the implementation of the 1998 Natural Forest Protection Program, these mills went bankrupt, closed or ran below capacity because of the lack of domestic timber. At the same time, many family-owned sawmills started emerging to meet rising demands for processed wood, especially in the vicinity of large timber

distribution centres and particularly around markets of imported timber. Today, there are 10,350 sawmills in China, only 350 of which are considered large with an annual capacity of 30,000 m<sup>3</sup> or more (CAF, 2004a). Official data illustrates that sawnwood production increased from 8.52 million m<sup>3</sup> in 2002 to 11.27 million m<sup>3</sup> in 2003. Since most sawmills are privately owned and small in scale, it is believed that these figures underestimate actual production (Sun Xiufang et al., 2005). Indeed, the Chinese Academy of Forestry estimates that real production of sawnwood was as high as 53 million m<sup>3</sup> in 2002 (CAF, 2004a).

### *The wood-based panel industries in China*

In recent years, China's wood-based panel industries have achieved phenomenal growth, driven by the rapid development of construction, housing, interior renovation and furniture-making industries. In 2004, output in China reached 54.46 million m<sup>3</sup>, making China the world's largest panel producer. MDF production has grown fastest, with China now also the largest producer of MDF in both capacity and actual production (Shao, 2006). The flooring sector has developed late but caught up fast: in less than 20 years, China has grown an industry with multiple product types and sizes, covering production, distribution, instalment and after-sales services. There are currently over 4,000 mills in China, producing over 150 million m<sup>2</sup> of flooring (Gao, 2006). However, several constraints remain in the wood-based panels industry:

- Generally speaking, mill sizes are small, and equipment is poor. There are over 3,000 wood-based panel mills across China, of which over 2,000 are plywood mills with little technology. There are over 500 particleboard mills, only two or three of which have an annual capacity of over 100,000 m<sup>3</sup>. Most small mills have poor management, insufficient equipment, weak investment ability and lack technical personnel. Most small plywood mills employ technology of the 1970s, while most particleboard and MDF mills employ technology of the 1980s. As a consequence, panel products have a high rate of defects (Shao, 2006).
- The product mix is often irrational and the product quality poor. OSB and other new panels still comprise only a very small proportion (less than 20 per cent) of the total product mix.
- The product application field is narrow and has yet to be recognized by international mainstream markets. Some 70 per cent of Chinese wood-based panels are used in the furniture industry, and only 15 per cent in the building materials industry. Only about three per cent is used as house wall material (by comparison, the same statistic is 50 per cent in Europe and North America, and over 60 per cent in Japan). Chinese wood-based panels are being exported as medium-low grade products, and have not gained acceptance in Western housing industries because of inconsistent quality. Low price is the major competitive strategy employed by Chinese mills. On one hand, this has forced some mills to go to the brink of bankruptcy, while on the other, has caused frequent anti-dumping lawsuits against Chinese mills (Wu, 2006).

### *The furniture industry in China*

The Chinese furniture industry has seen remarkable growth since the reforming era began. According to the national economic census, there are some 25,000 furniture mills in China (above minimal scale), employing some 1.15 million people. The China Furniture Association (CFA) assesses that there are actually over 50,000 furniture mills employing over five million workers in China.<sup>20</sup> From 2001 to 2005, the compound growth rate of Chinese furniture export value was 30.16 per cent, with China's market share in the global furniture market growing to 17.21 per cent in 2005, surpassing Italy and Germany to become the top furniture exporter with exports of US\$17 billion in 2006.

Today, furniture manufacturing has become clustered in a few key zones in China. Furniture exporting mills are of different ownership types:

- foreign ownership (from the U. S., Italy and Singapore, with products mainly re-exported back to their home countries or to a third country market);<sup>21</sup>
- special foreign ownership (from Hong Kong, Macao and Taiwan, some relocating from those countries); and
- Mainland China ownership (mostly privately owned; they showed remarkable growth two years ago and their output has since reached US\$10 billion).

Some notable problems with the rapidly-growing Chinese furniture industry:

- Mill sizes are too small: Ninety per cent of the mills are small in scale, with only a dozen-plus mills having an annual turnover of yuan100 million. This lack of concentration has resulted in scattered production and lack of capital (Song and Cheng, 2005).
- Low technology and productivity: The Chinese furniture industry has installed advanced equipment, but utilization rates are low, with application software for machinery lacking. Productivity lags far behind Italy, U. S. and Japan.
- Brand name furniture is rare, with low- and medium-level furniture in surplus supply and high-end furniture in short supply. The furniture industry has weak design ability and copying is rampant.
- Furniture export has been large in volume but small in value, with irrational structure. In addition, exports have concentrated on only a few countries. Health-related pollution in the wood-processing stage is believed to be widespread. This is particularly serious in medium and small mills, which dominate the Chinese wood- and furniture-manufacturing mills.

#### **3.5.4 Exporting of finished products from China**

Chinese trade policies on wood products encourage the importing of primary wood products such as logs and sawnwood by zero tariff rates. They encourage the upgrading of the forest products industry (granting a rather high rate of VAT rebates for exporting processed products such as plywood, and finished products such as flooring and

<sup>20</sup> China Furniture Association 2006

<sup>21</sup> There are over 100 US owned companies in China, and about 60% of the furniture exported to the US has been made by these US owned mills.

furniture). But they encourage the export of finished products, and discourage export of primary products (log exporting is banned and sawnwood exporting, with the exception of sawnwood made from imported logs, is subject to a stringent quota, as low as under 120,000 m<sup>3</sup>). Export VAT rebating has provided a strong incentive for mills to target their production for the export market; often, many of these mills rely on tax rebates to run their business.

In November 2006, MOFCOM, the General Customs Office and SEPA together issued a new “Processing trade prohibiting commodity list.” Many low-value, poisonous or low-grade products were listed as prohibited items. In relation to forest products, processing trade factories could no longer export sawnwood and furniture made from domestic natural timber, notably from endangered species. This further reflects the government’s policy orientation of protecting domestic forest resources.

The Chinese government has a clear policy orientation regarding wood fibre trade. Its policy encourages the import of primary wood products such as logs and sawnwood by zero tariff rates, while restricting the export of these primary products. Log exporting is prohibited while sawnwood exporting is subject to quota management and punitive tariff. For processed wood products, the state policy encourages exporting and limits importing: exporting of plywood, flooring and furniture has been entitled to VAT refunding. In addition to VAT refund, tariff and quota management, processing trade has been a major policy instrument that helped to grow the Chinese wood processing and re-exporting business. Since the processing trade policy enables businesses in China to be exempt from paying the 17 per cent of VAT, it allowed many of the wood re-exporting businesses that would not otherwise be financially viable without the policy to sustain. This also partially explains why most Chinese wood-processing zones are located along the coast. According to Zhu Changlin, Executive Director of China National Furniture Association, furniture exports by processing trade account for 45 per cent (Home Focus, 2007) of total furniture exports in China. In Shenzhen Port, furniture export in processing trade was valued at US\$1.36 billion in 2005, accounting for 46.4 per cent of total furniture export.

The growing foreign exchange reserve and international concerns over the rapid growth of Chinese wood importing have pushed the Chinese government to take action to reduce the exports of products made from commodity-type resources. Major policy changes made by the Chinese government in the past few years include the following:

- 1) VAT rebate rates for wood products were reduced. In 2006, the stage government adjusted its wood products export policies three times: VAT rebate for wooden railway ties and corks were revoked, VAT rebate rates for plywood, laminated flooring, wooden windows, doors and furniture were reduced from 13 per cent to 11 per cent; and the export of chips, solid-wood flooring and one-off chopsticks were subjected to a ten per cent export tariff while their export VAT rebate was cancelled.
- 2) Some wood products are listed in the processing trade prohibited list. After policy changes in November 2006 and April 2007, a total of over 130 types of products were added to the prohibited list. Today, domestically-originated logs, some sawnwood and veneer are listed in the processing trade prohibited list. Also on the list are wooden one-

off chopsticks, most wood pulp, natural cork and cork wastes.

3) Most other wood products are listed in the processing trade restriction list. To import the products on this list, one is required to pay the VAT at the time of transactions, and the paid VAT can only be refunded after the finished product made from the imported fibre has been exported. This would significantly increase the working capital requirement for relevant processing trade mills.

These policy adjustments encourage the importing of resource commodities and restrict their export. They also serve to reduce the magnitude of Chinese wood importing. Chinese mills will be forced to compete on non-price terms, such as developing more value-added products, improving product design and quality. Hopefully, the Chinese wood-processing industry will begin to experience a gradual industrial upgrade.

As a newly-emerged manufacturing base of global forest products, China has been rather active in the export business. Statistics indicate that 80–90 per cent of overseas purchase orders come mostly from Europe and North America. China has hosted many export oriented exhibitions and trade fairs, and is recognized as a global centre of procurement for the furniture industry.

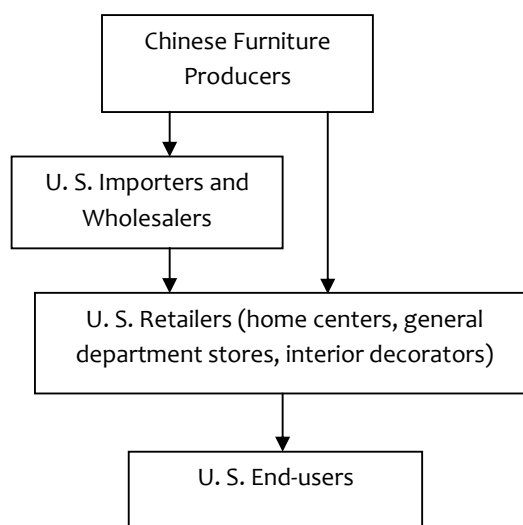
In the meantime, trading over the Internet has become rather active. In the furniture industry, close to 90 per cent of the mills have developed their own websites, 29 per cent have done Internet marketing, 14 per cent have joined business-to-business platforms, and six per cent have participated in an e-mail promotion. Alibaba, Chinawood, China Furniture and China Timber and China Wood Arts have become important platforms for marketing Chinese wood products internationally. In terms of export channels, professional international trading companies are still the main channels of exporting wood products from China, but direct sales from processing mills are on the rise. In 2005, five furniture companies had export sales of over US\$50 million.

Although China's wood products export market has been rather active, overall the industry is still relatively disorganized, with serious price wars and erosion of mill profits. For instance, in Shandong Province, export values have continued to increase, but sector profits are at a dangerously low level of three to six per cent, and 90 per cent of the mills export less than US\$1 million. This has also tended to induce anti-dumping lawsuits against China by China's major trading partner countries.

### **3.6 Major consumers of Chinese wood products: The case of the U.S.**

Chinese wood products have been mainly exported to the U. S., the EU and Japan. The U .S. has been the largest buyer for 10 years, especially in the furniture exports market. Therefore, we introduce the example of the U. S. for our discussion of the global wood products commodity chain.

Figure 11. U. S. consumer markets for Chinese wood products



The U. S. has rather well-developed furniture distribution networks comprised of wholesalers, traders and retailers. Importers/wholesalers buy from Chinese companies and then re-sell to U. S. distributors or retailers. Major retailers include department stores, large chain stores, home centres and specialty furniture stores, as well as interior renovation companies. Large retailers often have their own procurement departments, and they often buy directly from China. As Internet commerce progresses, even smaller U. S. retailers have started to change their past practice of buying exclusively from the U. S. market and now buy from China via the Internet. In addition, branded importers often buy from Chinese mills via OEM arrangements.

Several factors affect U. S. demand for Chinese wood products:

- *Product design* is the key market attribute, especially in furniture production. It is usually controlled by American middlemen or retailers, and has major implications for the type and quality of materials (wood and other products) and consequent purchase orders issued to Chinese mills. Pale hardwoods are currently in demand.
- *Price* is critical in most product markets. Large wholesalers are usually sensitive to market prices, aiming to buy in large volumes but at low prices. Large distributors usually have their own warehouses in the U. S., and demand both price and quality. Branded importers pay higher prices but only look for mills with established scale and consistent quality for OEM processing of their products.
- *Environmental and social issues* arising from the precise production process of particular wood products are rapidly becoming key issues for some major retailers. For example, U. S. companies that are members of the North American Forest and Trade Network make commitments to phase-out all trade in wood from unknown, illegal and controversial sources, and to phase-in trade in wood that originates from sources that can be designated as recycled, licensed and complying with policy, verified legal, in-progress towards certification or credibly certified. These commitments are carried out mostly through business-to-

business direct deals. Although only a few percent of the market, it is growing (a recent survey of North American Fortune 100 companies showed that 50 per cent will de-select suppliers for not meeting sustainability criteria).<sup>22</sup> However, this practise does not yet have the government policy encouragement that retailers in EU countries have, driven by government procurement policy. As noted above, 67 per cent of timber imported into the U. K. is now certified, in part driven by strong coherence in U. K. government policy (e.g., U. K. government wood procurement standards, supported by international work to control illegal logging, is supported by aid work to poor countries to improve their forestry).

This buyer-driven process has largely dictated how Chinese mills do their business. It has also generated shocks amongst smaller furniture makers in the U. S., as the manufacturing business is being shifted overseas to China.

### 3.7 Sustainable global forest products commodity chains: The case of New Zealand

While Chinese timber importing from countries such as Russia and Mozambique may have generated significant negative shocks, this same trade has nevertheless promoted good forestry in other countries such as the U. S., Australia and New Zealand. In the decade between 1997 and 2006, China imported a total of 7.66 million m<sup>3</sup> of round logs valued at about US\$587 million from New Zealand, and 1.23 million m<sup>3</sup> of timber valued at about US\$473 million from the US. The details are given in Table 8 below.

Table 8. Chinese log imports from New Zealand and the U. S.

From New Zealand		Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Logs total	Million US\$		10.75	11.92	16.94	28.19	52.19	100.49	128.24	79.07	64.17	94.88
	m <sup>3</sup>		116,353	143,580	234,820	405,569	819,795	1,641,322	1,920,690	837,592	638,001	899,903
Hardwood logs	Million US\$		8.14	5.93	1.47	3.27	7.82	2.22	0.66	0.28	0.12	0.50
	m <sup>3</sup>		86,668	68,237	18,997	43,704	110,982	32,813	9,214	2,724	1,314	5,095

<sup>22</sup> Kearney, 2007, at [www.globe-net.ca](http://www.globe-net.ca)

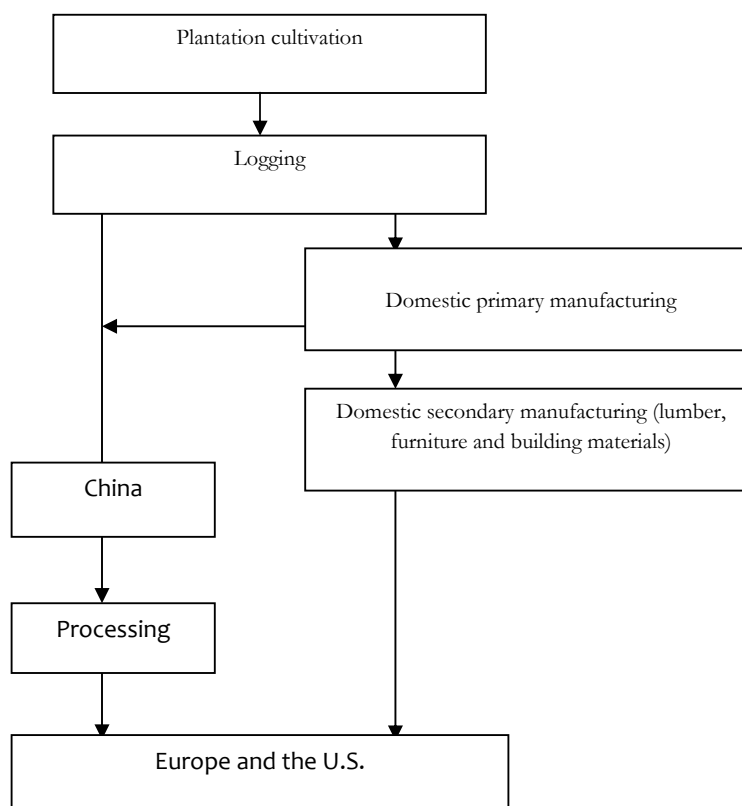


From the U. S.

Year		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Logs total	Million US\$	20.85	17.08	12.88	16.76	24.31	36.33	45.84	74.70	100.55	123.31
	m <sup>3</sup>	93,267	94,082	64,066	61,079	110,278	121,612	101,290	147,379	193,711	245,935
Hardwood logs	Million US\$	16.15	10.89	8.39	12.26	19.14	27.82	40.80	65.81	91.05	108.55
	m <sup>3</sup>	65,256	45,841	30,209	27,752	61,709	61,231	75,538	118,229	154,785	179,211

It is interesting to note that demand for timber from China has not resulted in forest loss as it has in Russia and the U. S.; instead, it has contributed to good forestry management. The underlying driver behind this difference is deeply rooted in the differences in local institutions and forestry governance in different producer countries. There are a total of 1.827 million ha of plantations in New Zealand, accounting for 22.21 per cent of total forests in the country. Of this, over 90 per cent is privately owned (Yang, 2005). Plantations provide over 90 per cent of timber, enabling the conservation of natural forests in the country (Dong, 2007).

Figure 12. New Zealand–China plantation forestry commodity chain



About one-third of New Zealand timber is being exported as round logs (Overseas Study, 2006). In 2004, New Zealand produced a total of 21.1 million m<sup>3</sup> of timber from plantations, accounting for 99.7 per cent of the total national production. Domestic consumption took 6.5 million m<sup>3</sup>, while the remaining 69.19 per cent, or 14.6 million m<sup>3</sup>, was exported. Logs and sawn timber exports accounted for 7.6 million m<sup>3</sup> (Yang, 2005).

The impact that the global forest products commodity chain has on New Zealand forestry is positive overall. Timber exports have earned about 12 per cent in foreign exchange, while contributing significantly to employment, public fiscal revenue and domestic forest industrial development (Yang, 2005).

Unlike the case of Russia and Mozambique, revenue from timber trade has been invested into forest regeneration and management, supporting various sustainable forestry initiatives in New Zealand including:

- the protection of state-owned natural forest;
- the protection of private natural forests and the development of sustainable forest management plans;
- the cultivation and regeneration of plantations and man-made ecological forests;
- other public forestry expenditures and subsidies;
- forestry research and extension;
- wood processing;
- forestry infrastructure development; and
- market research and development.

Good forest governance in New Zealand is believed to be instrumental to the positive impacts timber exporting in New Zealand has generated. These impacts include clear forest tenure arrangements, strict protection of state natural forests, well-functioning forest legislation, restricted logging of private natural forests, and sustainable management of plantation forests.

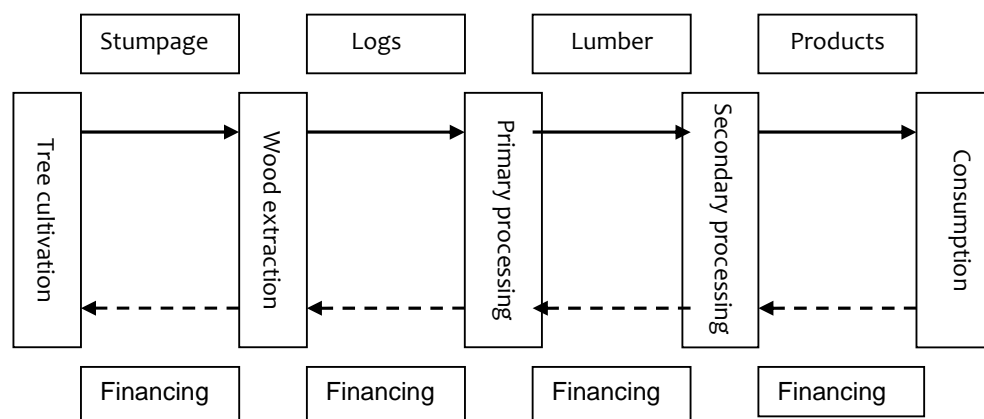
## 4.0 Analyzing the Global Forest Products Commodity Chain

We have identified four basic kinds of global forest product commodity chains with China-based manufacturing. The one having the most significant impact on the forest products sector has been the one that uses imported timber for processing in China and re-export to Western developed countries. While it has generated enormous consumer welfare for consumers across the globe, its questionable sustainability—financially, economically, socially and environmentally—is becoming the subject of major international concern. Some generalization of the major features of this chain, applying GCC analysis, is given below.

### 4.1 Material and capital flows

This chain can be characterized by a series of circular movements of materials and capital that shape the sustainability of the chain itself. A sustainable chain would be characterized by positive financial feedbacks as shown below:

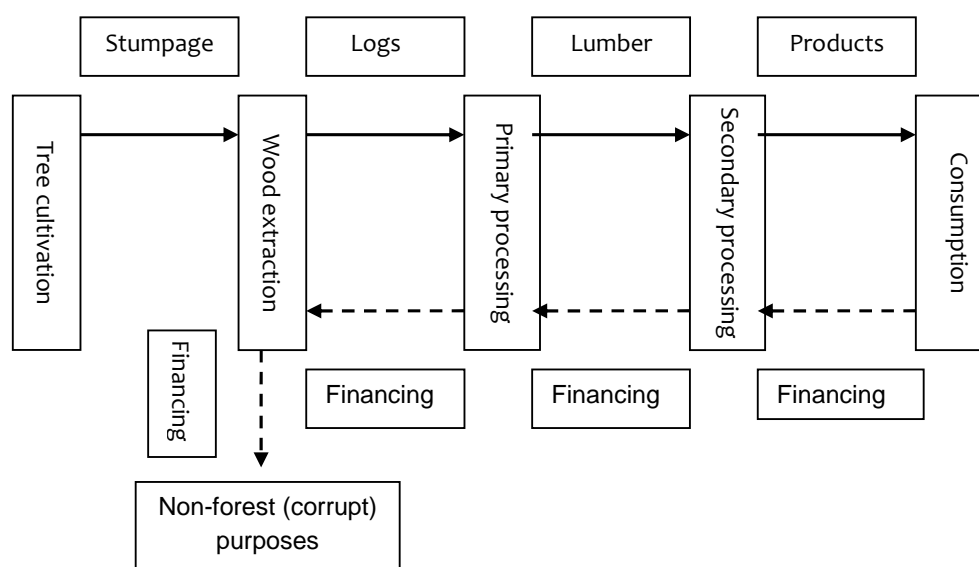
Figure 13. Idealized resources and capital flows in GCC



The GCC with China-based manufacturing, involving countries like the U. S., New Zealand and Australia, is close to this ideal situation. The benefits generated along the chain are seldom lost; instead, they flow back to forest cultivation, which is the foundation of the chain. As a consequence, good forest governance has been pursued and forest regeneration ensured, avoiding the tragedies experienced in some tropical timber-producing countries. The positive role that the demand for Chinese timber has played in sustainable forestry is a good indication that the GCC can be transformed to become a force for good, and holds clues about how such a transformation can be similarly pursued by some of the China's other trading partner countries whose forest management records need to be improved.

The GCC, with China-based manufacturing, has rapidly opened up material (fibre) flows along the chain, but the counter-directional movement of capital has not been smooth. In some cases—as we have seen in Mozambique and Russia—it has been particularly inadequate in relation to timber sales: revenue at the harvesting “node” often does not return to tree cultivation due to limitations in forest tenure, government control and other institutional arrangements. Indeed, such capital has often been diverted through non-productive or counter-productive means such as bribery and rent seeking. This can be depicted as follows.

Figure 14. Actual Resources and Capital Flows in GCC



The failure to return capital to forest cultivation results in a lack of forest regrowth. Consequently, continued harvesting to meet the needs of Chinese manufacturing may be a major drain on the forest assets of many countries. For instance, in Cabo Delgado Province of Mozambique, only one company planted some 10,000 trees on its over-logged site. In Russia, over-logged sites also depend almost exclusively on the vagaries of unmanaged natural regeneration. In both countries, deforestation is increasing. The technology and capital demands of effective, artificial regeneration on input are actually quite modest. The real challenge is in providing the right incentive for forest owners/managers to invest in an activity that bears fruit only after a significant amount of time. This lack of progress is threatening the very material basis for sustainable long-term timber supply, with consequences for all stakeholders in the chain. Although difficult to monitor (precisely because it tends to happen in countries with poor forest governance), Chinese manufacturing has enough of an association with forest asset-stripping for it to have become a major reputational problem for the Chinese wood products industry.

## 4.2 Spatial distribution

This chain has become truly global, but also shows clear spatial patterns. Wood comes mostly from forest-rich countries/regions such as Russia, Southeast Asia, Africa and South America, but some also from the U. S. and New Zealand; processed products commonly go to developed country markets. The physical distance spanned by the chain is often tens of thousands of kilometres. Transportation has become (apart from stumpage) the dominant cost factor in wood production. Transcontinental shipment of these traditionally localized products has been made possible by advances in communication, transportation and international trade institutional infrastructure. It has also impacted on industrial deployment in participating countries. Newly-formed forest industries are located in areas with good transportation, particularly ocean shipping. Chinese processing industries are mainly located along the coastal zones as well as along

the Russian–Chinese or Burmese–Chinese borders. In Mozambique, timber production has concentrated along the two northern provinces with access to ocean shipping. In Russia, timber exporting has been most active in the inner ports along its border with China and logging has focused along this border region. Even in the consumer country of the U. S., distribution of wood products is shifting to the Pacific West. Such spatial shifts have important implications for local economic development and forest conservation.

### 4.3 Value distribution

There are many players in each node of the chain, so the market surrounding each node is generally competitive. However, downstream buyers tend to be in more advantageous positions than upstream suppliers, having more freedom to manoeuvre. For instance, buyers of furniture and building materials from Europe and the U. S. set the price when they buy from Chinese manufacturers. In turn, wood prices are often set by Chinese buyers of timber from Mozambique and Russia. With the global demand for commodity products such as round timber heating up, Chinese firms are manoeuvring to control timber resources, too. As we have seen in both Mozambique and Russia, there is a trend for Chinese involvement directly in forest production—even if this is not yet well informed of long-term sustainable forestry requirements. The growth of the Chinese market could suggest that Chinese stakeholders are growing in power. However, the market’s highly-segmented nature means that much of the decision-making authority still rests with retailers in the U. S. and EU—where concentration is already high.

Field work conducted during this study further confirms this. In the Mongolian Scots Pine business (with wood imported from Russia), U. S. wholesalers and retailers enjoy a 50 per cent profit, whereas the Chinese processing mills receive seven per cent (just three per cent of the value of the retail product); in fact, the Chinese processing mills have to rely on the six per cent government VAT rebate to sustain their business.

Table 9. Value distribution of Mongolian Scots Pine wood panelling

U.S. retailer: of total chain value	30%	
U.S. wholesaler: of total chain value	20%	
Ocean shipping and customs	7%	
Chinese supplying mill, of which:	43%	<i>% of Chinese mill value</i>
▪ Fibre	31%	71
▪ Labour	4%	10
▪ Other	5%	12
▪ Profit	3%	7
Total	100%	
Tax rebate from Chinese Government		6
	106%	

#### **4.4 Economic, environmental and social benefits and problems of the global forest products commodity chain: The case for China to act**

##### *Benefits:*

For the most part, global forest products commodity chains have attracted attention in a negative way with the increase in illegal logging and illegal timber trade. The opportunities they bring to participating countries are less acknowledged in the mainstream media, but they are real and highly significant.

First, for timber producing countries, they attract capital and catalyze local employment and economic development. The U. S. hardwood industry and New Zealand's pine industry have grown rapidly, thanks both to Chinese imports and to good governance conditions that encourage sustainable forestry (although local processors cannot afford the high prices created by high Chinese demand). To many of China's developing country partners, Chinese timber importing has brought sought-after hard currency. In Mozambique, the value of the legal timber trade is now under 3.1 per cent of GDP. The government has collected significant taxes, local residents have gained employment and cash income and local timberland is potentially becoming more valuable in relation to competing uses. With improved governance and real partnerships with buyers such as China, such countries have the potential to build strong, natural resource-based economies that sustain security of wood supplies for the whole wood commodity chain.

Second, for China as a processor, the benefits this trade generates are real. A decade ago, China had to export logs to earn foreign hard currency. Today, the liberalization of timber trade and market-based reforms have promoted the rapid growth of Chinese wood processing industries and high levels of export. Chinese employment and tax revenues have increased. The influx of foreign capital to invest in Chinese processing industry has permitted Chinese processing industry to upgrade its technology and develop further value-added businesses in the chain. Such upgrading could bring wider benefits for Chinese development: building infrastructure and wider experience in, for example, sustainable energy, water supply and environmental management.

Although processing brings some localized pollution, many environmental benefits are also notable within China. The liberalization of the global timber trade has enabled China to significantly reduce its domestic commercial timber harvest, and therefore, take active measures to restore its degraded forest cover and vegetation. Through the implementation of the Natural Forest Protection Program of 1998, China cut its domestic commercial logging volume by a half (in the process, making the major contribution to a net increase in forest acreage in Asia between 2000 and 2005) (Liu, 2006).

Third, for consumer countries—in volume terms, mostly developed countries—this global commodity chain centered on China has brought large quantities of inexpensive quality products to their consumers. Their domestic firms have also gained

disproportionate profits through buyer control of these chains, exercised via such high-value activities as product design, importing, logistics, branding, marketing and distribution. As with China, the chain has also enabled these consumer countries to reduce timber production domestically, reducing stress on their domestic ecosystems and/or enabling such ecosystems to be used for other purposes (notably conservation, recreation and ensuring water supplies). Finally, the chain has also, in part, enabled consumer countries to exercise policy and consumer preference on matters such as biodiversity alongside wood in producer countries. With both local and global environmental benefits increasingly in demand in consumer countries, we can expect continued outsourcing of both wood production and processing, as well as increased public policy requirements for sustainability.

**Problems:**

The most fundamental challenge is the unsustainability of timber supply and forest management associated with these chains, and consequentially, local reductions in both livelihood and quality ecosystem services, especially for forest-dependent poor people. Overseas demand can help to drive illegal logging in particular, and further undermine governance. We have outlined the typical negative impacts in Part 1 and explored them in more detail for Mozambique and Russia.

In China, the environmental challenges this trade has brought about include environmental pollution in the process of remanufacturing, and species invasion. Many remanufacturing mills are small and have inadequate pollution-control facilities. Particulate and chemical pollution from milling, adhesives and paint are common. Log importing also aggravates species invasion: the African snail was, in fact, introduced to China from Mozambique.

Timber-producing countries, however, face the most serious challenges, particularly those with inadequate institutional infrastructure to cope with the rising demand for timber from overseas. Although commercial logging is only one of the causes of tropical deforestation (agricultural clearance and fuelwood cutting being other major causes), it often opens up forested areas, inviting forest dwellers to claim over-logged sites. Furthermore, deforestation is on the increase due to demands from China, among others.

Table 8 synthesizes our review of various studies of the status of forest management in key supplier countries meeting Chinese demand. It is clear that China is associated with forest management of many types. This offers opportunities to encourage the spread of good practice, just as it has in the forest sectors of the U. S. and New Zealand.

Table 10. Forest management status of key countries that export to China

Countries that are major wood suppliers to China	% of China's wood imports <sup>23</sup>	% annual forest area change <sup>24</sup>	Illegal harvest as % total <sup>25</sup>	Sustainable forest management as % total production forest <sup>26</sup>	Certified good forest management (FSC area) <sup>27</sup>	National Forest and Trade Network to promote good forestry	Verification of legality	Payment schemes for forest env services
Russia	48.8	- <0.1	<66	Data unavailable	12.3M	Yes	Regional agreement;	Some
Malaysia	8.3	- 0.7	Data unavailable	43%	0.07M	Yes	Border campaign w Indonesia; VPA* soon	Some
Indonesia	5.7	- 2.0	80	6%	0.74M	Yes	Bilateral agreements; VPA* soon	Some
Thailand	4.6	- 0.4	small	Logging ban	0.003M	No		Some
PNG	4.2	- 0.5	significant	17%	0.2M	No		Some
Myanmar	Data unavailable	- 1.4	significant	3%	0	No	No	None
Gabon	Data unavailable	- <0.1	significant	15%	0	No	Regional agreement; VPA* likely	Few
Canada	Data unavailable	+0	0	Majority	18.9M 73M PEFC <sup>28</sup>	(linked to USA)		Many
USA	Data unavailable	+0.1	0	Majority	7.7M 54M PEFC <sup>29</sup>	Yes		many

\* Voluntary Partnership Agreement under the EU-FLEGT licensing scheme

#### *A focus on the root causes of unsustainability:*

*Underlying causes of deforestation and poor forest practice:* Today's highly-integrated global forest products commodity chain stretches far beyond the national borders of any individual sovereign state, and has generated important impacts on every participating country along the commodity chain. Its negative impacts within upstream supplier countries—including loss of forest resources, damages to the local ecology, disenfranchising local people and corruption—have received particular attention in the international community. The commonly-shared assessment seems to be that China has “exported deforestation” to timber-supplying countries such as Russia and Mozambique by protecting its own forests, building up the Chinese forest-processing industry and

<sup>23</sup> Forest Trends. 2006

<sup>24</sup> FAO. 2007. State of the World's Forests

<sup>25</sup> Forest Trends. 2006

<sup>26</sup> ITTO, 2006

<sup>27</sup> FSC. 2006. Website figures

<sup>28</sup> PEFC website 2006

<sup>29</sup> PEFC website 2006



purchasing imports. A supply chain view clarifies that consumer demand, while ill-informed about the negative impacts, is the underlying cause; Chinese industry is only the secondary driver where poor forest governance resides within its supply countries.

Our study reveals that deforestation is, in fact, a rather complex process. It may sometimes be triggered by—or exacerbated by—the timber trade, but its root causes are deeply embedded in the institutional and policy infrastructure of the producer countries (many of which may cause deforestation for agriculture or fuelwood). Market forces exerted by Chinese wood product manufacturers are indeed one (albeit often major) factor; end-consumers, mostly in Western-developed countries, in turn being responsible for shaping the market forces faced by those Chinese manufacturers, even though these consumers may not be directly involved in timber importing from the producer countries. The fact that the environmental and social impacts associated with Chinese timber imports from the U. S. and New Zealand are fundamentally different from those created in developing countries such as Mozambique, Russia and Myanmar is a clear indication that the root causes of forest loss in China's timber-supplying countries are beyond Chinese trade itself.

In both Mozambique and Russia, institutional arrangements and government policies have been directly instrumental in the impact of timber trade on forest sustainability. First and foremost, both countries pursue a kind of state ownership of forests and forestlands without clear rights and incentives for long-term good forestry practices; instead, the concession system is designed for short-term forest “mining.” Second, the process of concession granting, logging supervision, log shipping and exporting are all exposed to high risks of corruption and hence exclusion of forest-dependent poor people. While this is related to generally-corrupted governance in these countries (former Russian economist Professor Aleg stated that “grey salary in Russia accounted for 47 per cent of total income in 2001 and 45 per cent in 2003.”), the complex and ambiguous forestry regulations and the high profitability of forest “mining” have made corruption in export-oriented timber production particularly rampant and severe.

Third, the government sometimes tolerates or even encourages forest clearing: timber exporting has been a major source of foreign exchange earnings, and a major source of revenue for forest administration in Russia. The income generated has been diverted to sectors and industries perceived to have higher growth potential instead of being channelled back to forest regeneration. Fourth, the lack of capital, proper equipment, technology and qualified professionals in logging and forest management has also contributed to damaging logging operations. Addressing these and other issues in timber production is fundamental to addressing the challenge of forest loss through international timber trade.

Certain Chinese firms operating in overseas timber harvesting have been accused of unethical operations. Some are indeed taking a short-term mining strategy in harvesting forests overseas. Some lack basic understanding and appreciation of local culture and interest. In particular, many of these firms are small businesses trying to cash in the timber mining opportunities in an often highly risky developing country context: these firms are not set up for a longer business horizon and the governance structure in their operating country either does not encourage or does not allow such a long-term horizon.

*Underlying causes of decreasing competitiveness of timber processing outside China:* The international community has criticized China for pursuing distorted trade policies that take processing industry away from timber-producing countries and relocated it to China. Although an escalating tariff structure has been widely used by OECD countries to protect their domestic processing industries, it has received much criticism in the case of China because of the enormous magnitude of Chinese timber trading. China has also been widely accused of low-price-dumping wood products and has been sued for such practices. While this may simply be an effort on the part of the consumer country to protect its domestic wood processing industries (whilst enjoying low-price imports), it nevertheless reveals some serious issues associated with the rapidly growing Chinese wood-processing industry. Chinese labour security provisions enable the employment of labour at costs lower than in previous supplier countries. Weak intellectual property rights and their enforcement enable low-cost copying of design and technology. All these have contributed to the low cost of Chinese wood-processing mills and their low-price competition strategy in the export market. Naturally, the result is that, when prices are low (and profit margins consequently thin), the volume has to be large in order to sustain a business. This inflates Chinese demand for imported timber, and induces accusations of dumping forest products in the international market. It means that Chinese producers do not put a big premium on sustainably-produced wood.

#### *A focus on China's self-interest*

The principal reason for China to act—as opposed to other countries doing so—is its own self-interest as the force driving one of the world's largest forest industries. It is reliant on imported wood and, according to most international authorities on the global forest industry, will continue to be reliant (Roberts, 2007). This will create severe problems for China if “business as usual” continues, where fibre is sourced irrespective of legality or sustainability:

- *Insecurity of fibre supply* – Many of the countries on which China currently depends, such as in Southeast Asia, will effectively be logged out within 10 years, particularly for many hardwoods, and the “substitute” plantations are not yet producing well. Other countries on which China depends for medium-term supplies, such as Russia and Africa, have such poor forest governance that supplies are uncertain.
- *High price of fibre* – Many countries currently exporting raw fibre to China are likely to encourage more domestic processing, for example, the rapidly rising Russian log export tax. In addition, wood prices will increasingly interact with energy prices as poorer quality wood is used for biofuel or land is put to use for biofuel cultivation. The Chinese industry has very low profit margins and will be vulnerable to such price increases.
- *Loss of market reputation* – The markets in Europe and North America are increasingly discriminating in favour of products from proven legal and sustainable sources. Chinese producers are lagging behind others in sourcing and being able to prove legal and sustainable fibre supplies.
- *Mistrust of Chinese investors* – The above problems could be resolved with judicious investment abroad in the productivity and sustainability of fibre supply, and support for good forest governance. But the current poor performance of

Chinese companies abroad does not make Chinese investors the most favourable of partners.

## 5.0 Policy Recommendations

### 5.1 Building on progress to-date

*Our analysis of the forest products GCC may be summarized as follows:*

*A global commodity chain of forest products has now been formed. China serves as its manufacturing base, mostly developing countries as its raw material base, and mostly developed Western countries as its final consumers.*

*It is not surprising that this chain is perceived to be highly significant for global sustainability. It involves very high material flows from environmentally sensitive forests worldwide, and the application of low-cost labour in both China and some very poor forest countries. With good environmental and social governance of the chain, it could be a force for good, especially in poor countries—through capitalizing forests, increasing employment and revenue generation and industrial upgrading.*

*Operation of the chain has been adversely affected by trade policy and poor governance. This includes distorting trade policies in China, and weak forest governance and corruption in some of China's wood supplying countries, as well as a lack of responsible corporate behaviour among some Chinese businesses.*

*These problems interact to aggravate forest loss (although there are agricultural, energy and urban expansion causes of deforestation, too) and the many negative social and environmental impacts of commercial timber production.*

*It is in China's interest to continue wood imports, but in ways that support secure and sustainable supplies from its trading partners. The net socioeconomic and environmental impacts of timber trade inside China have largely been positive. China has been able to develop a strong domestic wood processing industry, while effectively protecting its domestic forests for multiple purposes. However, if China were to stop importing wood, it would have to clear all its remaining domestic forests within 70 years to continue current levels of wood consumption at current prices (Changjin and Liqiao, 2004). The challenge is a diverse one: China's major suppliers of wood include both those with very "good" forest practice and those currently with very "bad" practice.*

*The key global forest product commodity chain sustainability is improved forest governance. The security of fibre supply depends upon adequate forest area and forest management. In turn, the sustainability of upstream timber production—and security of many other environmental goods and services—depends on good forest governance, which ensures a balance of all forest goods and services. This is especially urgent in poorer producer countries.*

*Instruments for ensuring sustainability are emerging, but are not yet fully in place. Some market-based instruments such as forest certification enable well-resourced producers to meet*

the needs of discriminating “green niche” markets. But it will require government action to close the doors to the bad practices of irresponsible producers, and international cooperation to build the governance systems of poor forest countries.

*There is much progress on which China can build.* The Chinese government has recently released good-practice guidelines for forestry abroad (notably plantation investment). China is supporting recycling within consumer countries, as well as lowering its own forest fibre demands, by importing waste paper (currently making up one third of domestic fibre supply). Sixty percent of pulp imports are now certified as environmentally sound. Almost all the main countries to which China exports forest products are becoming increasingly discriminating about environmental and/or social practice. This is both encouraging Chinese companies to respond and raising questions about the effectiveness of the interventions that importers support.

*Further progress will arise from concerted “sustainability partnerships” within the global supply chain,* with improved international cooperation on both governmental (territorial) governance and voluntary (supply chain) governance, because consumption is driven by players downstream in the supply chain, who wield the most decision-making power; and because competitive forces require joint action—rather than unilateral action. Although much progress will be the result of collaboration, it will also require significant leadership from China, to:

- Improve information and monitoring of the social and environmental impacts of the forest industry, notably China’s own “forest footprint”;
- Help developing countries to improve forest governance and build capacity for sustainable forestry;
- Encourage Chinese corporate investment abroad in sustainable forestry and wood industry;
- Improve Chinese added value: a better “China brand” and better corporate responsibility aimed at “sustainable wood products”;
- Develop a Chinese government procurement program to encourage legal and sustainable wood products;
- Revise perverse Chinese trade and fiscal policies that promote unsustainability and inefficient wood use; and
- Engage in international initiatives to shape sustainable forestry and wood industry and to promote trade in legally-produced wood products.

We have not explored domestic forestry in detail within this study, but we also recommend that the competent bodies, notably the Chinese State Forestry Administration, consider the implications for Chinese forestry of the policy options recommended in this section.

China has not been involved to-date in many of the international/consumer instruments to promote good forestry and halt bad forestry. Therefore, China is in a good position to ask questions of their suitability for all actors in the chain—and then to promote approaches that enable a majority of actors to move to sustainability, individually and collectively. Subsequent bold moves by China to support legal and sustainable forestry, implemented on a significant scale, could be highly valuable in securing wood supplies, as

well as environmental and social benefits from forests, for many millions of people for many years to come. We address options for this below.

## 5.2 Policy options for consideration by the Chinese government<sup>30</sup>

The following policy recommendations are meant for China to play a more active role in promoting the sustainability of the global forest product commodity chains of which China is a part. It is important, however, to emphasize that China's own forestry should and will provide the real long-term solution to China's fibre needs. No matter what happens to China's timber trade policies and practices, China should take active efforts to increase the productivity of its own timberland and increase its self-sufficiency in fibre supply. Our recommendations are grouped along three broad lines:

1. Capacity-building for sustainable forest management
2. Building markets for sustainable forest products
3. International initiatives

### *Recommendations:*

***Recommendation 1: Capacity-building for sustainable forest management:*** The Chinese government should provide targeted supply countries with financial and technical aid to build forest governance and management capacity by working with, and investing in, local public sector forest reform and stakeholder engagement processes, management infrastructure and production capacity. Chinese support should focus on building source country capacity for both legal compliance as well as compliance with internationally recognized standards for “sustainable management practice” (for example: Forest Stewardship Council; Pan European Forestry Council [PEFC] and the Sustainable Forest Initiative).

*The need:* There is a special need to support the institutional arrangements of the many developing countries with which China has become—often in a big way—a key trading partner. These countries were not ready to join the international growth in forest trade, and many local problems arose as trade opened up to Chinese demand. Few producer countries have factored in the requirements of sustainable supply chain management. They urgently need to improve their control of forest resources and timber production, in ways that increase their own power in the chain, such as the ability to negotiate good contract terms, improve resource rents and protect key environmental and social benefits.<sup>31</sup> There is increasing economic consensus that, in order for sustainable forest management to be viable, forest enterprises need to move from selling a single asset (timber) to an income-stream approach based on a multiple assets (Roberts, 2007). Where developing countries have a comparative advantage to produce high quality fibre in the long run, it is in China's interest to help them set up their forest industry to do so.

<sup>30</sup> Section 1.2 and Annex 1 provide more information on those existing international policy mechanisms that are referred to in this section.

<sup>31</sup> For example, instead of raising tariff rates on log exports, the Russian government could raise its stumpage fees on concession logging, ensuring reinvestment in forest regeneration and improved forest management, and “branding” some of the premium timber from naturally grown forests, possibly through certification. In Mozambique, higher revenue and greater sustainability would be obtained from abolishing short-term “simple” forest licenses and promoting the commercial use of lesser known species

To date there has been little Chinese investment abroad, with Chinese business in wood-producing countries more concerned with short-term, one-off trade in wood, rather than longer-term investment to produce wood and value added products locally. However, with the continuing trend of wood-producing countries, notably Russia, tightening their control over log exports (via increased export tariff or outright bans), Chinese companies will be forced to seek new means for ensuring security of quality fibre supply, produced to acceptable social and environmental standards. This may mean investing “upstream” in a range of activities: acquiring concessions and harvest concessions overseas; establishing and managing plantations overseas; establishing processing plants overseas—especially primary product processing; and investing in ports and transport.

*Progress to date:* As a developing country itself, China has consistently offered sincere collaboration and provided valuable aid to other countries over five decades. For example, by 2005, China had provided over yuan40 billion in aid to Africa.<sup>32</sup> In 2007, China announced eight measures to promote the self-reliance of African aid-recipient countries. This offers much potential for improving forest management.

The Ministry of Commerce and others have recently introduced a guidebook on investment overseas, highlighting many countries for opportunities in paper-making and wood processing. The list includes countries with known good practices (e.g. Malaysia, Canada, New Zealand) as well as many with known poor practices (e.g. Papua New Guinea, Myanmar, Democratic Republic of Congo). The Chinese State Forestry Administration has also produced guidelines for investment abroad, but these are general and not informed by specific country conditions.

*Next steps:* China’s new aid policy could be a real catalyst for self-reliance in developing countries. A significant Chinese forestry aid program would enable developing countries to become ready for significant trade in SFM products—addressing the key needs of improving national forest governance and capacity. Initially, this might involve aid to explore and develop a minimum, immediately practicable standard of forest management (e.g. the legal minimum), as well as a long-term vision for a sustainable forest-based economy. Following the training of nationals and experience in this standard, it might progress to a system for rewarding continually rising standards towards sustainable forestry and the ability to offer certified wood. Such an approach is even more desirable if Chinese companies begin to invest in forestry abroad, because producer countries will need to guarantee an enabling environment to attract investment. However, that enabling environment should be shaped primarily by the values, objectives and capabilities of the developing countries themselves, including forest-dependent communities, and only secondarily by the needs of China.

A concrete entry of intervention in this light is the Congo Basin Partnership operated by the Aide for Trade Program. From a geographic point of view, the most important region for China to intervene is probably Russia, particularly Eastern Siberia and the Russian Far East. Given the importance of Russia to Chinese fibre needs and the geographic closeness of the two countries, a sustainable forest industry in Russia is vitally important to the sustainability of the Chinese wood processing industry.

The Chinese government should also promote overseas forestry and forest industry development by establishing government-sponsored processing bases in forest-rich countries, providing tax and credit incentives for those overseas investments that follow the recent guidelines and developing and *enforcing* a code of conduct on sustainability among Chinese firms operating overseas. But this needs to be better informed by the current levels of sustainability and strengths and weaknesses of governance in each country. China could also consider earmarking a portion of its Sino-Africa Development Fund to promote Chinese business long-term investment in sustainable forestry in Africa—involving partnerships with African governments, industry and civil society to ensure that Chinese investment is compatible with national and local conditions and objectives. This will require a rethink of current policies to reduce the proportion of processed products.

With the above in mind, we make the following recommendations:

***Recommendation 1.1: Build sustainable forest management within the Sino-African Development Fund:*** The Chinese government should explicitly allocate a portion of its Sino-African Development Fund to the improve forest governance, capacity and implementation of sustainable forest management practices.

***Recommendation 1.2: Leverage regional partnerships for sustainable forest management:*** The Chinese government should enter into new national or regional partnerships aimed at improving sustainable forest management on the ground. In particular, China should prioritize investment in Russia and West and Central Africa. In particular, the Chinese government should increase investment and promotion of the Congo Basin Partnership and the Asian Forest Partnership.

***Recommendation 1.3: Join international efforts in implementing capacity-building:*** The Chinese government should collaborate with the International Tropical Timber Organization in the identification of needs and project implementation through the Bali Partnership Fund, FLEG programme and/or bilateral funding mechanisms. The Chinese government should also become a proactive participant in, and contributor to, the United Nations Forum on Forests as a means to seeking joint-international implementation strategies.

***Recommendation 2: Building markets for sustainable forest products:*** The Chinese government should play a proactive role in ensuring the sustainable management of global forest product chains by improving market transparency and encouraging the growth of markets for sustainably produced forest products.

The impacts of China's international sourcing are most efficiently dealt with through market mechanisms that encourage the market to transition towards sustainable forest management. Given its size and importance in global forest commodity chains, the

Chinese government is in a unique position to exercise significant influence through targeted market-based policy instruments. Two of the most promising instruments are public procurement policy and Value Added Tariff (VAT) adjustments.

On the one hand, the Chinese government is the single largest consumer of forest products within China and, indeed, all of Asia. The adoption of a government-wide sustainable forest procurement program with obligatory targets could send a very strong signal to the market and stimulate growth in the sustainable forest practices among Chinese suppliers and beyond.

On the other hand, China's VAT refund and processing trade policies encourage huge volumes of minimally processed wood imports to feed Chinese wood processing, which in turn produces equally huge volumes of relatively low value exports, with limited sustainability. Some distortions need to be corrected to support both forest sustainability and higher Chinese value added.

Furthermore, China will need to switch from its current scale-oriented growth strategy to value-oriented development in its processing industry. This would require Chinese mills to develop higher value products and make the most economical use of timber. It would further imply a need for China to engage in more service-oriented activities such as product design, branding and targeted marketing. Chinese wood products need to be branded as quality products with embedded environmental and social values.

In order to effectively promote the growth of more sustainable markets with strategic policy, however, it will first be necessary to better understand the social and environmental issues that concern both consumers and stakeholders in the producer countries and how forest actually impacts producers on the ground. In particular, it is important to keep track of the changing impacts of the Chinese wood products industry on producer country forests by going beyond merely tracking wood volumes and values.

*Progress to date:* Studies such as this one, and work by Forest Trends, WWF and Chatham House, have engaged key Chinese researchers and other stakeholders in beginning to map the issues. However, one-off studies are not enough. Progress will be constrained by the lack of routine monitoring of social and environmental issues connected to the forest industry, especially in developing countries. The Netherlands government is currently developing its own approach to this.

On the issue of government procurement, the Chinese State Forestry Administration, with assistance from The Nature Conservancy and other external institutions, is currently developing criteria for a Chinese government procurement policy on wood products.

At the same time, the Chinese government has recently begun to address its VAT export refund policy in order to reduce distortions. From July 1, 2007, the export VAT refund for most furniture has been halved to 11 per cent, with reductions also for other wood products. All wood products and wooden furniture are now listed as processing trade-



restricted items, and some as processing trade-prohibited items.

Meanwhile, significant investment in trade fairs and other marketing has revealed both what other stakeholders think of Chinese forest industry (positive and negative), and potentials to add value. Several Chinese factories appear to be market-sensitive, and easier to reach than itinerant and often small forestry companies operating abroad.

*Next steps:* Supporting an independent technical institution to track the rapidly changing Chinese “forest footprint”—establishing a baseline and monitoring system using criteria used internationally in trade (e.g. UNSTATS), environment (e.g. Millennium Ecosystem Assessment) and social issues (e.g. ILO), as well as integrated approaches (e.g. FSC). Whilst this might focus on forestry, it could be expanded to include other parts of the forest products chain.

The Chinese government’s choice of definitions and standards will be highly significant, sending major signals throughout the chain. The program should focus on the forest management and harvesting nodes in the chain, since this is where the toughest issues lie. Assessment of further environmental/social impacts beyond the forest (e.g. transport and processing sustainability), adds complexity but there are good models available, especially for paper products. Standards should be chosen with care, building on a review of existing intergovernmental and voluntary standards. For consideration is who the standards are targeting. Is the intention to identify and reward currently good producers (e.g. the c 10% of production already certified, for which many standards currently exist)? Or, more challenging, and perhaps more in the longer-term interest of China, which is seeking much larger supplies than are currently provided by “boutique” sustainable forests, is to encourage the majority of “average” producers to improve (e.g. 80 per cent of which are neither certified nor illegal). For such ‘average’ producers, a good way forward is a procurement strategy to prescribe legal wood as a first-tier requirement, consistent with China’s recent moves to clamp down on illegality (see Option 7), and then to progress towards prescribing fully sustainable wood (such as FSC certified wood) as a higher requirement, along with general improvements in capacity and governance (Option 2 above). Once a procurement policy and program are in place, it is important to make information on them available to buyers, specifiers and tenderers for Chinese government contracts to help them to purchase the right type of wood; there are wood procurement models in Europe from which to learn (notably the UK’s CPET approach, which is currently being reviewed mid-term).<sup>33</sup> Finally, and to make the procurement policy more robust, it would be useful to conduct comparative studies of wood-based products with alternatives for given end uses (e.g. metals and plastics). This could also help in identifying both “sunset” and promising industries for sustainable development.

Existing VAT policies still generate significant distortions in trade incentives, with significant threats to sustainability. Theoretically speaking, the distortions would be completely corrected only if the VAT refund rate is reduced to zero per cent and all

---

<sup>33</sup> However, currently it is difficult to identify legal but not sustainable timber. FSC Controlled Wood is the only certification scheme aimed at this. This is why the impact of British and Danish procurement policy has to been to grow the market for certified (i.e., mostly sustainable) products, even though legal products are accepted—and why other EU countries’ policies have not bothered about specifying a legal step. The only easy mechanism to identify legal but not sustainable timber will be a FLEGT license (see Option 7).

processing trade in wood is listed under prohibited items. With such changes implemented, the Chinese timber trade patterns would accurately represent China's true comparative advantage in wood processing in international trade. That is, China's demand for wood imports will come down significantly. On the other hand, the Chinese wood processing industries will pay higher taxes to the government; it will be forced to switch to higher value products; and it will export less wood products, reducing the incidences of anti-dumping law suits against the Chinese processing sector. This will also reduce the transport of massive amounts of wood products across the globe, reducing the consumption of fossil fuels. The end result will be a more competitive, healthier, more sustainable, and upgraded timber remanufacturing industry in China.

A campaign to improve China's wood product "image"—away from cheap/low quality (with a few "islands" of good craftsmanship) towards quality wood products with embedded social and environmental values needs to be established. As well, some of China's first-mover, market-responsive factories need support so they can demand sustainably-produced woods; and the government should work with them in a campaign to improve the behaviour of Chinese forest companies and wood importers, so that they produce and/or import only legal, sustainable wood. Investing in reliable wood-tracking technology would also contribute to the credibility of that "brand." Chinese firms operating abroad would be a particular target for such a campaign, as they would be given incentives to improve training in corporate responsibility and supply chain tracking.

With the above in mind we make the following recommendations:

***Recommendation 2.1: Improve the information base on forest sector sustainability:*** The Chinese government should establish a mechanism for monitoring, reporting and disseminating information on the social and environmental impacts of China's forest industry, both domestically and abroad. The system should build upon, and be consistent with, the ITTO's internationally recognized "criteria and indicators for sustainable forest management," while seeking maximum compatibility with, voluntary mechanisms such as Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC).

***Recommendation 2.2: Implement sustainable forest procurement:*** The Chinese government should implement a robust and comprehensive sustainable wood-product procurement program. A Chinese procurement program should focus on enforcing legal compliance as a baseline, moving towards the integration of compliance with sustainability standards at a later but specified time. In order to ensure cost-effectiveness, a Chinese government procurement program should be based on: 1. an analysis of the sustainability impacts of wood products and their non-wood alternatives; 2. internationally accepted standards for sustainable forestry; 3. mandatory minimum procurement requirements; and 4. a transparent and replicable process that can be adopted or adapted by other key buyers such as local authorities.

**Recommendation 2.3:** *Build the Chinese forest product brand:* The Chinese government should seek strategic improvement of the market value of the Chinese brand by proactively encouraging private sector investment in sustainable forestry and forest products. In order to address this, the Chinese government should adopt preferential tax policies for Chinese firms that either purchase sustainable products or themselves comply with internationally recognized sustainable forest management practices. In order to ensure the credibility and sustainability of its sustainability branding, China should also invest in a forest supply chain tracing system.

**Recommendation 2.4:** *Adjust VAT policy to promote sustainable forestry:* In order to reduce dependence on unsustainable forest production in supplier countries, the Chinese government should eliminate its VAT refund policy on processed wood products including furniture, or restrict eligibility to certified sustainable forest products; at a minimum, the Chinese government should consider restricting the trade of processed wood products so that the export of wood products is not promoted unnecessarily. As a first step in identifying the most effective means for building sustainable VAT policy for forestry products, the Chinese government should set up an inter-departmental working group to define the parameters of such a system.

**Recommendation 3: International initiatives: China should become a proactive participant in key international sustainable forestry initiatives.**

*The need:* With China at the centre of a significant global wood products chain, it is increasingly necessary that the Chinese government be more proactive within major international processes that affect forestry. Many international processes are driven by richer consumer countries: on the one hand, this is welcome as they are jointly responsible; but on the other hand it is risky if international initiatives (e.g. forest certification, bilateral illegal logging agreements, and climate change funds) are not fully informed about what works for *all* the players in the chain—including for poverty alleviation and local economic development—as well as for global public goods such as biodiversity and carbon storage. It is not appropriate that, for example, U. K. consumers' values should be the dominant force in shaping Africa's forests.

*Progress to date:* Although China is a central player in the GCC, it has been remarkably silent in shaping international standards and interventions for *sustainability*. However, China is beginning to work with the EU and other supplier country governments on a number of initiatives to fight illegal logging and illegal timber trade.

*Next steps:* China's more active engagement in international policy initiatives would be very promising for both tackling illegality and improving sustainability, given China's expansive reach into many supply chains. The following are important and warrant timely Chinese engagement:

- Policy discussions on carbon payments that might support SFM business models by tipping the financial balance in favour of sustainable approaches (such as Kyoto Protocol debates on Reduced Emissions from Deforestation and Forest Degradation [REDD], which potentially pay producers to stop deforestation, but allow wood to be harvested at sustainable rates)
- Multi-stakeholder partnerships that aim at “mainstreaming” forestry in national development plans, linking buyers and potential sellers of multiple benefits from forests (e.g. biodiversity, carbon and water, as well as wood), and increase access to investment funds (such as the Global Forest Partnership that the World Bank is proposing)
- China engaging with the FLEGT licensing scheme to limit trade to legally-produced wood. A number of countries from which China imports will have the FLEGT licensing scheme up and running in the next few years, and it would be possible for China to adopt the same requirement for a license as the EU. In addition, Japan is interested in exploring options for a global licensing scheme, which, if it is going to be effective, will need Chinese participation or indeed leadership.
- China working with East Asia FLEG, particularly its work on regional customs collaboration, notably prior notification of timber exports, and establishing workable log tracking systems in environmentally sensitive regions. Recent Sino-Indonesia and Sino-Burma agreements on combating illegal timber trade may benefit from many of the verification and control mechanisms currently being innovated through the wide range of FLEG and certification initiatives.
- At the level of WTO, China working to ensure coherent trade policies between countries, so that sustainable forestry trade agreements can operate smoothly and without prejudice.

With the above in mind we make the following specific priority recommendations:

***Recommendation 3.1:*** *Join international efforts to implement international carbon accounting for forest management:* China should work with the international community to establish and implement a system of carbon accounting and payments associated with sustainable forest management practices so that carbon is secured alongside—and not at the expense of—other environmental and social benefits from forests. As a first step, China should become an active participant in the Reduced Emissions from Deforestation and Forest Degradation (REDD) initiative while setting clear forest-based emissions reduction targets.

***Recommendation 3.2:*** *Reduce illegal logging by implementing a forest law enforcement and governance and trade initiative:* The Chinese government should play a proactive role in monitoring and enforcing the legality of the international timber production it sources and trades. With this in mind, China should become a full member of the European Union’s FLEGT initiative while looking into a mechanism for applying a formal FLEGT licensing scheme for Chinese importers of wood products.

## Reference List

Altenburg, T. (2000). Linkages and spillovers between transnational corporations and small and medium-sized enterprises in developing countries: Opportunities and policies. In UNCTAD (Ed.) *TNC-SME linkages for development*. Geneva, Switzerland: UNCTAD.

Bass, S., Thornber, K., Markopoulos, M., Roberts, S. and Greig-Gran, M. (2001). *Certification's impacts on forests, stakeholders and supply chains*. London: International Institute for Environment and Development.

Brown, C., Durst, P.D. and Enters, T. (2002). *Forest out of bounds: Impacts and effectiveness of logging bans in natural forests in Asia-Pacific*. RAP Publication 2001/10. Bangkok: FAO.

Brack, D. and Hayman, G. (2001, March) *Intergovernmental actions on illegal logging: Options for intergovernmental action to help combat illegal logging and illegal trade in timber and forest products*. Retrieved November 4, 2008 from: <http://www.illegal-logging.info/papers/Illegalloggingfinalreport.pdf>

Cashore, B., Gail, F., Medinger, E. and Newsum, D. (Eds.) (2006). *Confronting sustainability: Forest certification in developing and transitioning countries*. Yale Forestry and Environmental Studies Series No. 8. New Haven, CT: Yale School of Forestry and Environmental Studies.

Caspari, C. (2003). *Participation in global value chains as a vehicle for SME upgrading: A literature review*. SEED Working paper No. 44. Geneva, Switzerland: International Labour Organization.

Changjin Sun and Liqiao Chen. (2004). The environmental impact of China's WTO entry in the forestry sector. In Ye Ruqiu (Ed.). *The study of the environmental impacts of China's WTO accession*. Beijing: China Environmental Sciences Press.

Chinese Academy of Forestry (CAF). (2004a). *Overview of China's sawnwood sector*. Forest Trends/CIFOR working paper. Washington, D.C.: Forest Trends.

Dong Dehong. (2007). The experience of and thinking into the success of specialized forest management in New Zealand. *South-Central China Forest Inventory and Planning*, 2.

FAO (2007). *World's Forests*. Retrieved November 4, 2008 from: [www.fao.org/docrep/009/a0773c/a0773c00.htm](http://www.fao.org/docrep/009/a0773c/a0773c00.htm).

FAO. (2006). *Global planted forests thematic study: Results and analysis*. Planted Forests and Trees Working Paper FP38E. Rome: FAO.

FAO. (2001). *State of the world's forests*. Rome: FAO.

Foreign Agricultural Service (FAS). (2001). *Timber markets in China*. GAIN Report #CH1071. Retrieved November 11, 2008 from: [www.fas.usda.gov/gainfiles/200111/135682796.pdf](http://www.fas.usda.gov/gainfiles/200111/135682796.pdf).

Forest Industries Intelligence Ltd. (2007).

Forest Trends. (2006). *China and the global market for forest products: Transforming trade to trade to benefit forests and livelihoods*. Forest Trends working paper. Washington, D.C.: Forest Trends.

FSC (2008). Retrieved November 4, 2008 from [www.fsc.org](http://www.fsc.org).

Gao Zhihua. (2006). *Overview and development trends of China's solid wood flooring market*. Beijing: China Housing Design.

Gereffi, G., Humphrey, J. and Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12(1): 78–104.

Germizhuizen et al. (2007).

Global Forest and Trade Network. (2006). *Responsible purchasing of forest products*. Switzerland: WWF-International.

Home Focus. (2007, August 31). *New policies are targeting high pollution and high energy as well as resource type of companies, making furniture mills stressed out in working capital requirements*. Retrieved November 4, 2008 from: <http://home.focus.cn/news/2007-08-31/84282.html>.

Humphrey, J. and Schmitz, H. (2000). *Governance and upgrading: linking industrial cluster and global value chain research*. IDS working paper No. 120. Brighton, U.K.: Institute of Development Studies.

Hyde W. (2003). *The global economics of forestry*.

IIED. (2003). *How can trade support sustainable forest management?* Rome: FAO.

IIED (1996). *Towards a Sustainable Paper Cycle*. London: IIED and Geneva: World Business Council for Sustainable Development.

ITTO (2006). *Status of tropical forest management 2005: Summary*. Yokohama, Japan: ITTO.

Lebedev, A. (forthcoming). *Siberian and RFE timber market for China: Criminal and official technologies, players and trends*. Vladivostok: Bureau for Regional Outreach Campaigns (BROC).

Lu Wenming and Li Jianquan. (2005). The status and outlook of Russian forest products trade. *World Forestry Status*, 16.

Liu Jianguo. (2006). Chinese environment under globalization: How China interacts with the rest of the world. Retrieved November 4, 2008 from: [www.natureasia.com/taiwan/focus/environment/feature](http://www.natureasia.com/taiwan/focus/environment/feature).

Millennium Ecosystem Assessment. (2005). *Ecosystems and human well-being: Synthesis*. Washington, D.C.: Island Press.

Miao Dongling. (2004). *Wood product trade and environment of China*. Beijing: China Forestry Press.

Moore, B. (2005). The influence of the development of China's paper industry on the world waste paper Market. *China Pulp and Paper Industry*, 11.

Nilsson, S. and Bull, G. (2005, May). World timber supply analysis. In "Paper and Wood Products Section" of the *Proceedings of the 46<sup>th</sup> Consultative Meeting of the UN FAO*. Vancouver, Canada.

Overseas Study. (2006). *New Zealand Today: Forestry Status Briefing*. Retrieved November 4, 2008 from: [www.overseasstudy.cn/newzealand/gb/article/2006-1/5769-1.htm](http://www.overseasstudy.cn/newzealand/gb/article/2006-1/5769-1.htm).

Raikes, P., Friis Jensen, M. and Ponte, S. (2000). *Global commodity chain analysis and the French filière approach: comparison and critique*. Working Paper No.00.3. Copenhagen, Denmark: Centre for Development Research.

Reid, H. Huq, S., MacGregor, J., Macqueen, D., Mayers, J., Murray, L., Tipper, R., and Inkinen, A. (2004). *Using wood products to mitigate climate change*. London, UK: IIED.

Richards M and Jenkins, M. (2007). *Policy options for innovative financing and incentives for sustainable forest management and conservation*. Draft paper for GLOBE International Legislators' Finance Working Group.

Roberts, D. (2007, October). Global vision for the forest products markets and industry in 2020. Paper prepared for to University of Toronto International Forest Conference.

SFA. (2005). *China's Forest Resources Report*. Beijing: China Forestry Press.

Shao Lan. (2006). *Wood based panels in China: The distance from big to strong*. Beijing: Green China.

Song Weiming. (2007). *Russian logs in China: The softwood commodity chain and economic development in China*. Forest Trends/CIFOR working paper. Washington, D.C.: Forest Trends.

Song Weiming and Cheng Baodong. (2005). Strategic Thinking into the Scaled Operation of Forest Products Industries in China. *Wood Industries*, 5.

Sun et al. (2005). *Meeting China's demand for forest products: An overview of imports trends, ports of entry, and supplying countries with emphasis on the Asia-Pacific region*. Forest Trends working paper. Washington, D.C.: Forest Trends.

Sun Xiufang et al. (2005). *China's timber market system: An overview*. Forest Trends/CIFOR working paper. Washington, D.C.: Forest Trends.

Sun Xiufang et. al. (2004). *An overview of Chinese forest products importing trends*. Washington D.C.: Forest Trends.

Stafford, B. (2007). Environmental aspects of China's papermaking fiber supply. *China and forest trade in the Asia-Pacific region: Implications for forests and livelihoods*. Forest Trends.

Up, J. and Hyde, W. (2005). From centrally planned economy to vigorous rural enterprise: China. In Graford, M. and Mayers, J. (Eds.) *Plantations, privatization, poverty and power: Changing ownership and management of state forests* (pp. 154-174). Earthscan, London, UK.

WBCSD. (2004). Sustainable Paper Cycle Review. WBCSD.

**Wu Shengfu (2006) What is the developing situation of the international trade for domestic wood based panel products? China Wood-based Panel Products, .3**

Wu Xu. (2007). *China's forestry industry: The value depends on the resource*. Retrieved November 4, 2008 from:  
<http://finance.sina.com.cn/stock/hyyj/20070403/17313468999.shtml>.

Yang Jiping (2005). An experience that is worth paying attention to: An investigative report of New Zealand Specialized Forestry Management. *Chinese Forestry*, 14.

Zhang Likun and Li Shuhua. (2007). The export structures and features of Russian forest products exports. Russia, Central Asia and Eastern Europe market.



## Annex 1

### Global Forest Product Chains

#### *A dozen forest and/or trade instruments that promote sustainable forest management and control illegal forest practice*

The following initiatives may be able to offer lessons, precedents and resources to help in developing the policy options identified in the Main Report. The first six are *supply-side measures* led largely by the forest sector:

1. *Intergovernmental agreements on SFM principles and criteria:* Broad enough agreement now exists on the national- and forest-level elements of SFM to enable every country to set appropriate policies and plans. Whilst there is no legally binding global forest convention (in large part because forests are sovereign territory and different countries value certain forest goods and services more highly than others, depending on national potentials and scarcities), there are United Nations Forest Principles<sup>34</sup>, and several regional sets of SFM criteria and indicators describing the elements of good practice. The International Tropical Timber Organisation has established SFM Criteria and Indicators for tropical forests; these apply to its member countries. All such sets cover the economic, social/cultural, environmental and institutional dimensions of SFM, based on scientific and technical knowledge of forest behaviour. They provide guidance only, and are intended to be interpreted to suit individual countries and their forests (see 5).
2. *National forest programmes:* FAO estimates that about 130 countries are currently involved in national forest programmes of various kinds, in part to implement the Forest Principles (1 above), and nearly always to improve attention to the non-wood aspects of forestry. FAO operates a Facility to support this. Although most NFPs have resulted in good multi-stakeholder networks, many have been only partially implemented. They have not yet transformed the machinery of government or business, especially those departments or companies beyond the forest sector that have so much impact on forests, such as in agriculture. However, a few PRSPs and NSDSs have clearly identified forests as significant for poverty reduction and sustainable development respectively.
3. *Forest decentralisation and governance reform:* Forestry has long been dominated by government, and today 84% of the world's forests are publicly owned (FAO 2007). For many years, forest administrations in many countries emphasised the leasing of state forests to companies to produce timber and thus to generate state revenue. Given multiple pressures on forests, institutional reform is emphasising better access to, and use of, public goods such as environmental services – as well as improved transparency and accountability for them. For both public and private goods, a decentralisation trend has also emerged – especially to give stronger control to indigenous peoples, local communities and interests other than timber companies. The idea is that local people both need forests more than outsiders and, with adequate rights and resources, will have incentives to manage them well: the area of

<sup>34</sup> The UNFF announced a *non*-legally binding UN forest agreement in 2007

forests under community control doubled from 1985 to 2000, reaching 22% in developing countries. This local control is often (but not always) accompanied by incentives for SFM, e.g. *campesino* forestry organizations in Central America, forest user groups in Nepal, the National Council of Rubber Tappers in Brazil, people's natural resource management organizations in the Philippines, and the Landcare movement in Australia all include SFM provisions. Very significant, and potentially commercial, forest resources have now been developed by communities in India through joint community/government management, but they lack access to markets and entrepreneurial services that could help to realise the potential.

4. *Voluntary, multi-stakeholder SFM standards and reporting:* Whereas 1-3 above are largely organised by government, recent initiatives by civil society groups and some forest companies and industry associations have developed voluntary SFM codes of practice and management guidelines. Perhaps the most significant is the Forest Stewardship Council (FSC) – a joint NGO-industry endeavour, providing an international framework for national or ecosystem-based forest management standards based around global Principles and Criteria. The aim has been to set a high social and environmental benchmark against which to certify 'good' producers and discriminate against 'bad' ones. Separate FSC standards are emerging to guide the management of forests for carbon offsets. Almost all major international forest companies report on environmental and social performance according to FSC's or similar voluntary standards. Associations of business leaders are encouraging this: for example, 54 international forest industry companies have signed a Commitment to Global Sustainability; and the WBCSD is establishing an obligatory code of practice on sustainable forest industry for its member companies, which requires the use of acceptable multi-stakeholder standards.<sup>35</sup> Finally, the UN has organised multi-stakeholder processes to produce voluntary guidelines e.g. on plantations (FAO 2007a).
5. *National SFM standards:* These have been established to interpret – and to give more 'teeth' to – the international SFM agreements (1 above) or voluntary approaches (4 above), and may distinguish between different types of forest and plantation. They include elements of national forest legislation and may be used for certification (8 below).
6. *Monitoring the status of SFM.* This is not easy to assess comprehensively. On the one hand, there is much interest in SFM: a Google search for 'sustainable forest management' offers 5.8 million results (14.03.2007). On the other hand, a major lack of consistent data on SFM makes assessment, learning and further progress at the national level very difficult (FAO 2007). FAO suggests seven elements which describe SFM. Two are relatively easy to assess at the national level: (1) the extent of forests and (2) the policy/legal framework. The other five require assessment in the field: (3) biodiversity, (4) forest health, and (5) forests' productive, (6) protective and (7) socio-economic functions.<sup>36</sup> Only recently has such information started to become available, driven by national-level reporting on intergovernmental

<sup>35</sup> WBCSD's code also aims to create a comprehensive performance baseline across 9 areas – Management & Governance, Fibre Sourcing, Eco-efficiency & Emissions Reduction, Mitigation of Climate Change, Health & Safety, Community Well-Being, Human Rights & Labour Standards, Stakeholder Engagement, and Reporting

<sup>36</sup> 5-7 are equivalent to 'ecosystem services'

agreements and forest-level certification. Some national forest administrations are reporting progress in this way, and leading forest companies are becoming more transparent, even if different companies report to different frameworks. Satellite information is potentially powerful but only now are groups such as WRI working on ways in which this can be used to routinely report progress in SFM. Recognising that good governance is a key prerequisite for SFM, ITTO has begun assessing improvements towards SFM at the national level, using member country reports against its SFM criteria and indicators. ITTO's 'task forces' have gone further, conducting in-country expert investigations: they address a wide variety of variables, notably national SFM systems, capacities and plans and how well these are carried out.

The second six 'levers for SFM' are *demand-side measures*, many consumer- or trade-driven, which are having a strong influence on forest management. Most are part of the fast-developing set of supply chain governance levers. No. 11 is not strictly an instrument for timber production, since it aims to encourage the production of forest environmental services – although this can often be compatible with some wood production:

7. *NGO campaigns and consumer action for environmentally-and socially-sound timber:* Environmental NGOs have conducted advocacy campaigns with consumers, lobbied politicians, boycotted stores and ports, and produced 'investigative' material highlighting the alleged poor forestry practices of particular companies and countries. Even if not well informed, the net effect has been to raise fears throughout the supply chain, and to encourage the further development of levers affecting the whole chain (8-11 below). Even with these new levers in place, the threat of further campaigns, particularly against illegal and 'conflict' timber, acts as an 'incentive' to apply them effectively. 'Independent forest monitoring', developed mainly by Global Witness, is seen as a way of bridging the gap between the state and civil society in regulation and law enforcement, and is proving valuable in Cameroon, Cambodia and Honduras; new programmes are starting in Tanzania, Ghana, Republic of Congo, DRC, Mozambique, Peru, Nicaragua and Liberia (Richards and Jenkins 2007).
8. *Public or private wood procurement standards:* Key buyers, notably large retail companies and governments, and particularly in the OECD, have committed to purchase wood products that come from SFM only. This is usually to secure good reputations among customers, shareholders or electorates, and to secure both supplies and market niches, as well as for ethical reasons. They demand adherence to one or other SFM standards (4 above), although sometimes the standard preferred may not be entirely appropriate to the locality supplying the wood. Most of them require forest managers and forest industries to adopt forest management and 'chain of custody' certification schemes (8 below) to prove the origin of their products.
9. *Certification of forest management and chain of custody:* Many certification schemes have been set up to certify forest management against one or more of the above SFM standards. Independent inspectors assess a mix of forest management documentation and actual field practice. There are two international approaches with widespread support due to their rigour and credibility: FSC – which also prescribes a global standard (4 above) – and the Programme for Evaluation of Forest Certification

(PEFC) which accredit national schemes. Both also offer ‘chain of custody’ certification, tracing products from sustainably managed forests and verifying they are not contaminated by other products (which are potentially unsustainable). The logistics can be challenging, especially for pulp where many wood sources are mixed. It usually operates through an electronic system of tagging logs with bar-codes and tracking subsequent products.

10. *SFM networks between forest companies and traders:* Several initiatives have been set up to create a ‘level playing field’ for SFM throughout the supply chain by improving communications, commitments and policy coherence. The Global Forest and Trade Network, facilitated by WWF, brings together 300 companies which together trade 10% of global forest products. There are associated national FTNs, including in China.<sup>37</sup> They aim to promote SFM (as well as to cut out illegal supplies – see below), often by promoting and supporting the other nine SFM ‘levers’. Such networks could be increasingly effective if more was done to attract investors, or to manage risk, e.g. as ForestRe is now doing to insure forests for SMEs.
11. *Payments for environmental services.* A range of mechanisms have emerged to pay forest producers for securing goods and services apart from wood. Watershed protection, carbon storage, recreation, biodiversity protection, etc would otherwise be undersupplied, where wood markets do not pay for the associated ‘production’ costs. These mechanisms range from local-level schemes e.g. Brazilian municipalities paying foresters to have their watersheds protected, to national schemes e.g. Costa Rican schemes paying farmers to protect biodiverse forests, to global schemes e.g. a range of voluntary carbon offset schemes for planting or conserving trees to fix CO<sub>2</sub> and store it.<sup>38</sup> Some environmental payments schemes also factor in social needs, e.g. paying communities to become engaged in providing the service, or in producing non-timber forest products that can safely be harvested alongside the desired environmental services.<sup>39</sup> Perhaps the biggest drivers are those connected to carbon storage, an imperative which is increasingly dominant in many industries as well as countries which are taking action under the Kyoto Protocol. Some of the large-scale payment schemes for carbon storage that are under development may have a large impact on the siting and use of forests, notably proposals under the UN FCCC for Reduced Emissions from Deforestation and Degradation (REDD). These have potential to support SFM on a large scale, rather than asset-stripping approaches. One strategy is to extend certification to include carbon, water or biodiversity values, or a combination of them, in order to capture emerging PES opportunities (Richards and Jenkins 2007).

<sup>37</sup> The Timber Trade Action Plan (TTAP) has encouraged UK importers to work with key Chinese shippers and the Tropical Forest Trust to improve the wood tracking and procurement systems of Chinese plywood mills. TFT has assessed 7 plywood mills, finding that most have poor systems to identify the origin of imported timber. TFT has worked with these companies to link the mills with certified and legally verified log suppliers in Malaysia and Central Africa. (Forest Industries Intelligence Ltd. 2007. Monitoring UK market conditions for “legal” and “legal and sustainable” wood products)

<sup>38</sup> However, the flexibility mechanisms of the Kyoto Protocol currently discriminate against natural forest management to produce forest-based carbon sinks

<sup>39</sup> Although over-exploitation of NTFPs, or inadequate revenue to make NTFPs an attractive incentive for forest management, are common problems

12. *Forest Law Enforcement and Governance (FLEG) processes*: The main interventions to control illegal logging and trade in illegally logged timber are being led by importing countries, notably the EC and G8, with the World Bank, and timber-exporting developing countries increasingly participating. The 1998 G8 meeting drew attention to the problem of illegal logging. Subsequent intergovernmental agreements have agreed that e.g. ‘all countries that export and import forest products have a shared responsibility to undertake actions to eliminate the illegal harvesting of forest resources and associated trade’ (Europe and North Asia FLEG conference, 2005).

Governments of importer countries are increasingly excluding illegal products from their markets: by setting up border mechanisms to prohibit imports; by using public procurement policy to create protected markets for legal products; by using their own legal systems more aggressively to target companies involved in importing illegal goods; and by offering information and encouragement to importing, processing and retailing companies to control their supply chains. The UK central government’s wood procurement policy combines legal forestry requirements (compulsory for all government contracts) and sustainable forestry (optional, recognising five certification schemes as equivalent), and includes an independent Central Point of Expertise on Timber (CPET) to advise specifiers, contractors, etc.

The European Union has recently established a licensing system for legal timber.<sup>40</sup> This depends on negotiating Voluntary Partnership Agreements (VPAs) with cooperating partner countries. These VPAs will put in place in each country a licensing system designed to identify legal products and license them for import to the EU. Unlicensed, and therefore possibly illegal, products will be denied entry at the EU border. The agreements include, where necessary: capacity-building assistance to partner countries to set up the licensing scheme, improve enforcement and, if necessary, reform their laws; and provisions for independent scrutiny of the validity of the issue of the licenses, as well as verifying legal behaviour through the chain of custody of the timber. The VPAs’ impact is as yet unknown: their success will depend upon how extensive the uptake is, and on closing off the opportunities for circumventing it by e.g. trade through third countries. Consequently, five EU countries have already also established comprehensive timber procurement policies to drive the system.<sup>41</sup>

The operational challenges of ensuring legality are large, especially in complex supply chains. Some forest certification bodies have introduced guides and procedures to ensure illegal timber does not enter a supply chain where a proportion of uncertified wood is allowed, e.g. PEFC’s ‘Mandatory Guide for the Avoidance of Controversial Timber’: this includes safety checks such as risk analyses, external assessments and on-site inspections, to ensure the legality of the uncertified wood. Ultimately, illegal practice is an area where global agreement is desirable. However, the definition of

<sup>40</sup> See [http://ec.europa.eu/comm/development/body/theme/forest/initiative/index\\_en.htm](http://ec.europa.eu/comm/development/body/theme/forest/initiative/index_en.htm)

<sup>41</sup> These public procurement systems are driven by the power of public spending in the EU, which accounts for 16–18 per cent of GDP). However, they differ, e.g. in: whether they separate out legal and sustainable categories; whether they include international social norms; and how they verify non-certified imports. Public procurement policies for legal and/or sustainable timber also exist for Japan and New Zealand, as well as some local authorities in the EC and USA. They use a variety of criteria for legality, sustainability, recycled content, etc. They do not cover all products in a uniform way, and are not all well-informed about the relevant social and environmental impacts

'illegality' will be contentious where existing forest laws may be considered to be prejudicial to the full range of forest goods and services and stakeholders' rights.

DRAFT

## Annex 2

### Forest Trends

#### *Technical Data and Explanations of the Status and Nature of the Forest Sector in the Russian Far East and Siberia*

#### Part 1

**Consultant – Prof. Alexander Sheingauz**  
*Economic Research Institute*  
*Khabarovsk, Russia*

#### Introduction

The text given below was compiled to produce technical data and explanations of the status and nature of the forest sector in the Russian Far East and Siberia, in support of a Chinese Ministry of Commerce Task force on Sustainable Trade (MofCOM) according to the Consultant Agreement of March 27, 2007 between Forest Trends and Alexander Sheingauz.

The list of questions in which the MofCOM researchers are interested was given in the Annex A of the Consultant Agreement. Not all questions can be answered at this time, since the forest sector in Russia is currently in a great state of flux. The Forest Code of Russia has only just been passed in January 2007 and more than 100 new laws and regulations will need to be drafted by July 2007 in order to clarify exactly how this new Forest Code will be established. However, the questions listed below give an indicative idea of the questions that need to be answered.

The current text is structured as questions and answers. The questions are marked with bold Italic letter **Q.** and written in blue fonts. The answers are marked with bold Italic letter **A.** and written in black fonts.

#### **1. Timberland leasing/concession administration**

**Q. a) What are the essential qualifications for bidders/lease holders;**

**A.** Bidder/lease holder must be:

\* Registered in the Russian Federation as a legal person in accordance with Federal Law # 129-FZ of August 8, 2001, “On State Registration of Legal Persons and Individual Entrepreneurs” (Articles 25 and 71, Forest Code of the Russian Federation – here and further FCRF);

\* Not a person who is not eligible to be provided with forest parcels according to federal laws (Article 79 of FCRF), i.e. incapacitated by court sentence, incapable on account of poor mental health etc.;

\* Not a legal person that is in on-going bankruptcy processes at the time of application/auction (Article 79 of FCRF);

\* Not a legal person that is in on-going processes of closing-down (Article 79 of FCRF);

\* A legal person that made the deposit on the account indicated in the auction documentation at the time, before auction beginning (Article 79 of FCRF).

No any other restriction can be applied to lease bidder/holder (Article 79 of FCRF).

**Q. b) Are all forests that are being logged natural, semi-natural, or man-made?**

**A.** According the State Forest Accounting at January 1, 2006, area of man-made dense forests in the Russian Far East (RFE) is 595.0 thousand hectares that is 0.2 percent of the total regional dense forests. The biggest area and share fall to Sakhalinskaya Oblast that has 183.2 thousand hectares of man-made forests, i.e. 3.3 percent of Oblast's dense forests. The second is Khabarovskiy Krai – 170.5 thousand hectares and 0.3 percent. These two provinces concentrate 59.4 percent of total RFE's man-made forests.

The plantation area in Siberia is 2070.0 thousand hectares, 0.8 percent of dense forest area.

Mass forest planting in the RFE and Siberia had begun in 1950 after Stalin's reform of the USSR forest sector of 1947. So, the most part of man-made forests has age not more than 60 years. Only some part of Sakhalin's plantations made by Japanese foresters during Japanese occupation of Southern Sakalin in 1905–1945 is exclusion. More of that, the big part of the first plantations was lost because unskilled technologies at the first steps of planting and because forest fires.

The maturity age in the RFE is 80–100 years for coniferous that are dominant species of the plantations (see below). Therefore, man-made forests are not mature at present and are not under harvest till now.

Conifer timber in the RFE and Siberia is harvested in primary natural forests. Ash, elm, oak, bass (linden) wood is harvested in secondary forests that remained after selective high-grading harvest of conifer-broadleaved forests of the RFE. White birch and aspen are harvested mainly in secondary forests originated after general wild fires.

**Q. c) What are the typical age classes (number of years) of forests for logging? How are different age classes defined in terms of number of years when a forest is natural and has therefore trees of multiple ages?**



**A.** The age classes of conifer and long-lived deciduous (ash, elm, oak, bass/linden, maple, black and yellow birches) species are 20-year. The age classes of medium-lived deciduous species (white birch, aspen, poplar, willow) are 10-years. The age classes of mixed forests with dominating of species that are locally called “cedar” (Korean pine – *Pinus koraiensis* in the southeastern part of RFE and Siberian pine – *Pinus sibirica* in Siberia and the northwestern part of RFE) are 40 years. The class of maturity (harvest beginning) in the productive forests usually is 5th class, rarely 6th class. In those protective forests, where the harvest is permitted, the age of maturity is elder by one class. The classes are similar both for natural and man-made forests.

Age of stand that has many species is determined by the age of dominating species. Age of uneven-aged (multiple aged) forest stand is determined as average for dominating species.

**Q. d) What is the time length of typical leases;**

**A.** According both the old Forest Code (1997) and the new Forest Code (2006) the maximal term of lease is 49 year in compliance with the Land Code. Real typical time length of lease fluctuates in big range. For example, in Khabarovskiy Krai the most leases have 20 and 25 years length although there is the example of 49 year lease (Rimbunan Hijaw). In Primorskiy Krai, Sakhalinskaya and Amurskaya Oblasts the most part of leases has term 5 to 10 years although the big holder *Terneysles* (Primorskiy Krai) has 25 years' leases. The analogous situation is in Siberian provinces.

**Q. e) Can leases be renewed if long term leases are being administered? If there is no long term lease, why?**

**A.** The old FCRF did not mention both possibility and impossibility of long term lease renewing. The new FCRF has the notation that the lessee who due diligence under a lease agreement has the preferential right to conclude such an agreement for a new period (Article 72 of FCRF).

It coincides with the Article 621 of the Civil Code that is the principal law for all laws on nature resource use. The Article writes about the same preferential right and adds that terms of the new agreement can be changed.

The same notation there is in the Article 22 of the Land Code, which is the senior law for the Forest Code also.

**Q. f) Stumpage fee calculations formula: is it acreage based? Stumpage based? Timber based? Species specific? What is the theoretical foundation of such formula: land rents? Stumpage value derived from market timber? Regeneration costs?**

**A.** According the Article 73 of FCRF the lease charge shall be defined on the basis of the minimum lease charge. When a forest parcel is used with extraction of forest resources (timber, berries etc.), the minimum lease charge shall be defined through multiplying the rate of payment of forest resource volume unit (e.g. rubles per cubic meter, per kilogram etc.) by the volume of forest resources extracted from the leased forest parcel. When a forest parcel is used without extraction of forest resources (e.g.

recreation, sport), the minimum lease charge shall be defined through multiplying the rate of payment of forest parcel area unit (usually rubles per hectare) by the area of the leased forest parcel.

The minimum payment under less than year sale-purchase contracts for forest stands shall be defined through multiplying the timber volume unit rate of payment by the volume of timber to be harvested.

The forest resource volume unit rates of payment and forest parcel area unit rates of payment both in case of lease and sale-purchase contract for forest stands shall be established by the owner of forest: Government of the Russian Federation, the public authorities of the Constituent of the Russian Federation (province) or the local self governance bodies. The timber volume unit rates of payment in case of sale-purchase contract for forest stands for subsistence needs shall be established by the public authorities of the Constituent of the Russian Federation (province).

Since practically all commercially used forests are in the federal ownership, the minimal payment rates are established by the Federal Government. The rates are established not individually per each leased parcel/plot but as the all-Russian tables of rates. The rates are differentiated by:

- Regions (The RFE is the Far Eastern Federal Okrug – FEFO that consists of 10 provinces. It is divided into 7 so called “Tax Regions”. Those regions are allocated correspondingly to provincial boundaries, i.e. they do not part provinces. Siberia is united into the Siberian Federal Okrug – SFO which consists of 14 provinces. The SFO is divided into 15 tax regions which cut entire provinces into their parts);
- Distance of transportation from harvest site to point of loading/shipping to railroad car, ship etc. – 7 classes by kilometers: 1) less than 10 km; 2) 10.1–25; 3) 25.1–40; 4) 40.1–60; 5) 60.1–80; 6) 80.1–100; 7) more than 100.
- Species;
- Timber quality and size – fuel wood and industrial timber. The latter is divided by diameters measured by upper end of log without bark: large – 25 cm and more; medium – 13 to 24 cm; small – 3 to 12 cm.
- There are also corrective coefficients for:
  - Intermediate cuttings (reducing);
  - Average stock volume of liquid timber – more than 150 cubic meters per 1 ha (1.05) and less than 100 cubic meters per 1 ha (0.9);
  - Steepness of harvest site more than 20 degrees – 0.5 for helicopter’s transportation and 0.7 for cable transportation.

According the sense of the new FCRF, minimal rate is shaping starting price for auctions and it can be increased during auction bidding. However, new Manual on auction carrying out, Typical lease agreement and so on are not developed till now and it is impossible to describe the real process of payment establishment.

The theoretical foundation of rate formula is timber rent. But practically the real rates are lower than rent. For example, scientific calculations of the timber rent in Khabarovskiy Krai are 6 to 10 US\$/cu. m however real average payment in 2006 was 1.7

US\$/cu. m.

**Q. g) What is the size of typical leases? And how is the typical size determined?**

**A.** There is no typical size of leasing parcel/plot. The concrete size of real parcel is determined by many factors: availability of non-leased forest tracts; what size future lessee asks (in case of his/her direct request) and so on. Some provincial administrations try to regulate parcel sizes. For example, some years ago the Government of Khabarovskiy Krai proclaimed half-officially (without printed documents) its intention to give for leasing such forest parcels, which is not less than volume for work of 1 harvester. It was based on an aspiration to restrict access of small business to lease parcels. However, the Government could not keep its intention very strictly.

To picture real average size the example of Khabarovskiy Krai can be useful. In Khabarovskiy Krai in 2000 and 2005 (correspondingly) the leased parcel area was 61.8 and 76.9 thousand hectares, accessible wood stock – 4.1 and 4.9 million cubic meters, AAC – 60.0 and 68.2 thousand cubic meters. The range of sizes was very wide: from the smallest – 1.8 thousand hectares of area, 157 thousand cubic meters of stock volume and 2 thousand cubic meters of AAC to the biggest – 317.9 thousand hectares of area, 17,377 thousand cubic meters of stock volume and 226 thousand cubic meters of AAC.

In such Siberian heavy forested provinces as Irkutskaya Oblast and Krasnoyarskiy Krai the sizes are similar, in less forested Sakhalinskaya and Yevreiskaya Oblasts sizes are smaller.

**Q. h) Are there specific requirements on logging methods to be used? Are there restrictions on clear-cutting? Or on the size of clear cutting acreage?**

**A.** There is officially approved by the Russian Forest Service “Regulations for Timber Harvest in the Far Eastern Forests.” It is sufficiently complicate document because it concerns forests that are shaped by different species (formations) growing in different sites. Such “Regulations” exists in all big regions (RFE, East Siberia, West Siberia, Ural etc.).

The permitted logging methods are prescribed for different natural conditions, different forest structures (formations) and different goals of forests that were determined under the old Code as forest groups. Now Regulations must be adapted to the new FCRF but it does not done up to the moment.

In some formations (mostly uneven-aged and mixed) clear-cuttings are prohibited. Harvest of forests with domination of cedars (Korean pine or Siberian pine) is prohibited totally. There are also some species, mostly endemic and relic ones that are prohibited for cutting (e.g. velvet-tree – *Phellodendron amurense*, walnut – *Juglans manshurica*, etc.).

In such mono-species even-aged forests as pine, larch, white birch clear-cutting is possible. Both harvest sites of clear and of selective cuttings have restrictions on length and width. The site limits are different in different forests: in the productive forests lengths and widths are bigger than in protective forests (harvest is possible in some protective forests).

As indicated above, the “Regulations” in force should be changed according to the new FCRF but it is no doubt that their basic positions will remain the same.

**Q. i) Are there specific requirements on the type or amount or size of timber to be removed?**

**A.** First of all “Regulations for Timber Harvest in the Far Eastern Forests” permit and demand to cut all so called “liquid timber”, i.e. all industrial and fuel wood, that is contained in the trees with dbh of 14 centimeters and more. In some area it is possible to change the minimal dbh by  $\pm 4$  cm. For selective cuttings there is also minimal density of forest cover that must be remained. Usually it is 0.4 (accounting 1.0 as the full density). There is time period of repeated harvest for selective cuttings that is usually 20–30 years. For most part of clear-cutting there is time period of new harvest site allocation close to harvested site. Usually it is 3–4 years (average time of natural tree sawing).

**Q. j) Are there clauses of regeneration requirements in the leases?**

**A.** As noted above, the Typical Lease Agreement is not published till now. However, the Article 62 of the FCRF demands, “Within forest parcels leased out for wood harvesting, reforestation shall be undertaken by lessees of these forest parcels”. So, such clause will be in a lease agreement obviously.

**Q. k) Who is responsible for logging roads construction? If by logging companies, can roads be used as an advantage for securing more leases in the same watershed? What is the typical cost rate for constructing logging roads?**

**A.** There is no special fixation of responsibility to construct logging roads. Article 29 of FCRF reads, “Citizens and legal persons have the right to construct forest roads, forest terminals, other structures and facilities for purposes of wood harvesting”. Really, the construction of logging roads is now executed by big firms. A special rule that would create an advantage for securing more leases in the same watershed does not exist. Uncertainty of ownership of such roads is a problem complicated the situation. The most far-sighted provincial authorities (e.g. the Government of Khabarovskiy Krai) try to concentrate lease lots because it gives better possibility to manage and to control forest resource use. However, it will be difficult to carry out such intentions under the new FCRF because replacing of competition by auctions in which additional/side conditions will be prohibited. The FCRF does not have a notation about an advantage for lease concentrating. More of that, the new Code has the antimonopoly Article 50.

The cost rate for constructing logging roads varies very widely because very large range of natural and economic conditions and of road type. The trunk-road suitable for round-year movement with macadam and with width 9 to 12 meters costs in very plain conditions about US\$80,000/km. The same road in mountain conditions, that demand blasting operations, can cost US\$350,000/km. Earth road with width 6 to 9 meters can cost US\$15,000/km to US\$40,000/km.

**Q. l) Can leases be transferred and if yes, under what conditions?**

**A.** According the Article 9 and 71 of FCRF the lease right to forest parcels during established periods shall be acquired and terminated on the grounds and following procedures laid down in the Civil Code and Land Code unless otherwise provided for in the Forest Code. According the Article 615 of the Civil Code the lessee can make the following activities by approbation of the lessor:

- to transfer leased property (i.e. forest parcel) to sub-lease;
- to transfer his/her lease rights and obligations to other persons (re-renting);
- to pawn lease rights including mortgage;
- to deposit lease rights as a part of authorized capital of an economic association or as a member's due to a production co-operative.

In all these cases lessee keeps responsibility to lessor.

According the Article 617 of the Civil Code, in case of lessee's death his/her lease rights and charge passes to heirs-at-law.

**Q. m) Are there specific requirements on minimizing the environmental impacts of logging in felling, road building, hauling, timber transporting, log residues treatment, etc.?**

**A.** Specific requirements contain in many acts:

- In chapters and articles of the Forest, Land and Water Codes that are linked with key principles of forest use, management regimes in different forests, reforestation, forest protection, land erosion protection, water conservation etc.;
- In environmental laws – On Conservation of Environment; On Ecological Expertise etc.;
- In forestry regulations on harvesting, reforestation, fire control, etc.;
- In official construction standards.

## **2. Regeneration and Silvicultural Regimes on Logged over Sites**

**Q. a) Who is legally responsible for regeneration of logged over sites? Who is implementing regeneration?**

**A.**

According the old Code the regeneration of logged over sites was in full responsibility of the Forest Service.

Now the regeneration of currently logged sites within leased parcels is the responsibility of lessees and must be implemented by their accounts.

Regeneration of logged sites within unleased area is the responsibility of forest owner (state, province, municipality) and must be implemented by its account.

The situations with previously logged and burnt sites that are included into leased parcels are uncertain because they are not specified in the FCRF. From one hand they are not originated as results of lessee's activity, from other hand a lessee is responsible now

for all silvicultural activity within its parcel's limits.

Both lessees and forest owners can implement regeneration either themselves or with contractors.

**Q. b) Are replanting generally done? What are the species used in replanting? How long is the time of tending new plantings?**

**A.** Replanting covers small part of the logged area. In 2005, total area of all cuttings (harvest, intermediate cuttings and so called “others” – for road construction, power lines establishment etc.) in the RFE was 246.6 thousand hectares including 98.4 thousand hectares of clear cuttings (37.2%). If to take only harvest, figures are correspondingly 146.6 thousand hectares; 92.0 thousand hectares and 62.7%. Planting during the same year was 15.9 thousand hectares.

Main species used in replanting according the official accounting were:

pine – 30 % of planted area,

spruce – 10%,

Korean pine (cedar) – 9%.

Other 51 % that must be represented with larch and hardwood (ash, walnut) seems unreliable. Maybe they includes a big part of pine plantings.

The time of tending is 1–3 years but time of transformation plantations into dense forests (i.e. crowns closing) is about 7–10 years.

**Q. c) If there is replanting, are monoculture or mixed species plantations being established?**

**A.** Replanting is mostly monoculture. Mixed species are established rarely. However some of the monoculture plantations have natural settling of another species, mostly hardwood.

**Q. d) If there is no replanting, what is the typical regime to ensure forest regeneration?**

**A.** Almost all logging sites have natural undergrowth that is enough for natural reforestation. To ensure forest regeneration on the base of existing undergrowth the most part of logging permissions, given under the old Code, included a clause what share of undergrowth must be saved – usually about 60–70 percent. What will be under the new FCRF that abolished permission nobody knows yet. There are hopes that it will be clarified in the departmental sub legislative documents.

Additionally to the planting there is such activity that is called “help to natural renewal” that included different measures. The area covered with this activity is usually by 8–9 times more than planted area. It can be harrowing of soil cover to create open soil for natural tree sowing. It can be creating of soil hillocks in very wet sites for rooting of tree seeds, etc. But mostly it is only open space creating to save natural seedlings, giving them necessary amount of the sun light, and it is enough because natural regeneration in the southern part of the RFE, where 88 percent of harvested area is concentrated, is very good.

**FQ: how about regeneration in areas that are clear cut and NOT replanted (see numbers above in b). Would natural regeneration be adequate? Would clear cut areas not regenerated by planting be subject to any penalties on the lessees?**

**Q. e) Who is financing the replanting/regeneration?**

**A.** Under the old Forest Code the replanting was financed by the federal budget. According the new FCRF the replanting in leased parcels will be financed by lessees, in other area – by subventions from federal budget to provincial budget.

**Q. f) What is the cost of regeneration or replanting per unit land? What are the major regeneration cost items and how much are they?**

**A.** *Rosleskhoz* (Russian Forest Service) is working out standards of costs of state forestry works. According the draft of the standards the costs of 1 hectare of plantation in the Siberian and the RFE provinces are the following (from cheaper to more expensive):

	rubles/ha	US\$/ha
<b>Siberian Federal Okrug</b>		
Aginskiy Buryutskiy Autonomous Okrug	7429	286
Novosibirskaya Oblast	7951	306
Omskaya Oblast	9226	355
Irkutskaya Oblast	9245	356
Chitinskaya Oblast	10704	412
Kemerovskaya Oblast	11159	429
Ust-Ordynskiy Autonomous Okrug	11322	435
Tomskaya Oblast	11504	442
Republic of Khakasiya	13007	500
Republic of Buryatia	13651	525
Krasnoyarskiy Krai	13876	534
Republic of Tyva	14879	572
Altayskiy Krai and Republic of Altai	15067	579
<b>Far Eastern Federal Okrug</b>		
Yevreiskaya (Jewish) Autonomous Oblast	6034	232
Amurskaya Oblast	6625	255
Primorskiy Krai	11540	444
Khabarovskiy Krai	14865	572
Kamchatskaya Oblast	15266	587
Sakhalinskaya Oblast	19762	760

The budget of costs by items is not calculated because it is not demanded by existing system of planning and accounting (that is very old and will be changed soon). However, some estimation reveals that the main costs items are fuel-energy – 20–25 percent of costs, labor force – 25-35 percent, and samplings costs – 8–15 percent.

**Q. g)** What is the prevailing understanding over what constitutes a sustainable regime to regenerate these logged over sites? e.g., replanting with single species stands or mixed species stands? natural regeneration?

**A.** The regime of replanting is designed by forest consulting firm “*Lesproect*” that makes forest inventory and designs project of forestry management. During a project design, *Lesproect*’s experts select sites to be replanted and designate for each of them the replanting regime during forthcoming 10–15 years. However, final decision belongs to field foresters who take into account many different factors: current availability of machinery and labor force, availability of different species seedling (some of them they grow themselves, some – purchase), current weather and passability of roads etc.

### **3. Timber left unused at logging site: the volume size of this timber appears rather astonishing – what is exactly this timber and why left unused?**

**Q. a)** What is the smallest diameter of tree trunk that is considered or required to be cut as commercial timber?

**A.** See the answer to question 1i.

**Q. b)** What is being defined as off-grade logs (e.g., partially decayed logs, too deformed logs, damaged logs) and how are they being disposed of?

**A.** According the State Standards timber is divided into:

3 grades of industrial timber;  
Fuel wood;  
Waste.

The State Standards determine what species can be divided into which grades and what timber defects are possible or impossible in which grade of timber. Beside that there are many specifications that determine a log type according log dimensions and their grade: saw logs, pulp logs, veneer logs, etc. The defects considered by the State Standards are very different: log sizes, log shape, presence of decay and physical injuries (frost-cleft, notch etc.) – their types and sizes. It is a fair skill to cut tree trunk effectively according to the State Standards.

The very most part of off-grade logs are remained in logging sites. Some of them are revealed during trunk cutting in industrial log depot. The latter sometime are used as fuel.

The share of industrial timber in conifer stands is usually about 75–80 percent of growing wood stock, in hardwood – about 60–65 percent.

**Q. c)** What is being defined as off-size logs (e.g., logs shorter than 4 meters in length) and how are they being disposed of?

**A.** Off size are that logs, which are not economically effective. Their share varies not only according stand type but also according site location.

The industrial timber is divided by diameters measured by upper end of log without bark: large – 25 cm and more; medium – 13 to 24 cm; small – 3 to 12 cm.



The length of industrial logs varies in very wide range according the goals of logs use. For example, the minimal length of logs used as telegraph poles cannot be less than 3 meters. Logs that are designated to make parquet hoards can have length 0.5 meter. The State Standards have big tables described different logs sizes.

Off-size logs disposing of is the same as off-grade ones.

**Q. d) What is being defined as off-grade species (lower value species) and how are trees of such species being disposed of?**

**A.** The lower value species are those, which cannot be sold profitably. Their list varies not only according stand type but also according site allocation and logger's firm anchoring to specific market, i.e. structure of timber demand in the one or another market where the timber will be sold.

Under the planning economy, the main used species were Korean pine (up to 1991 when its cutting was prohibited), spruce, common pine, ash tree. This time the most valuable are ash tree, oak, lime/basswood, sometime white birch but they cannot give big volume of logs. The main amount of export is formed by spruce and larch in the FEFO, by pine and larch in the SFO.

Off-grade species disposing of is the same as off-grade ones.

**Q. e) Are there incentives from the government administration to encourage use of off-grade/size logs or off-grade species?**

**A.** There were no real incentives almost. One and very short (2-year) incentive was implemented in Khabarovskiy Krai as variation of lease rate according share of processed wood. The last and the most effective incentive can be the RF Government Decree of February 2007 to increase customs export tariffs for logs very high. It will stop export of unprocessed logs and will push development of wood processing production. However it is not obvious that new wood processing plants will use all logs – high-grade, low-grade and off-grade. Willing to increase profitability, maybe they will try to use only high-grade logs.

The best incentive will be a significant increase of stumpage/lease fee. If the growing timber will be expensive, then entrepreneurs will try to use the total wood stock.

**Q. f) Are there considerations to establish manufacturing capacity to make fiber use of the off-grade/size logs or off-grade species such as fiber boards, MDF/HDF, wafer boards, pulping chips etc.? If yes, how? If no, why?**

**A.** There are considerations but there are no competitiveness of such products with regard to export logs. Besides that, there is lack of economic environment including lack of available investments for such establishing. Wood processing development in the RFE and partly in East Siberia is a very big and very painful problem to be explained shortly. It depends very on total economic and politic environment.

The main reasons of such mismanagement are:

1) Long-time very low value of abundant forest resources that do not have specific owners;

2) An economic myopia, a type of current economic behavior that can be described as “catch profit and run out”.

**4. What are the policy effects of the differential stumpage fee scheme introduced in 2003 in Khabarovskiy Krai in encouraging processing? Why such effects? What does it say to the policy effects of encouraging processing in the RFE and Siberia overall?**

**A.** The scheme was implemented only 2 years and was canceled by the federal administrative reform because Krai's Government lost its power to establish forest payment rates. The effect was determined as positive by local authorities because during those 2 years the share of wood processing increased. However, there were impacts of other administrative measures and of economic situation change. So, it is impossible to mark out an effect of each factor exactly.

**5. How is the economic logging frontier advancing in the RFE and Siberia?**

**Q. a)** Has there been a process of expanding logging frontier toward the North in recent years?

**A.** Yes, such process takes place generally however it has difference in different cases because such process reflects striving to develop untaken tracts that are in diverse places. For example, in Primorskiy Krai untouched forests are in the northeastern corner of the Krai's territory, in the basin of Samarga River. In Khabarovskiy Krai the biggest undeveloped tracts are in the northeastern part of Krai's territory – Tuguro-Chumikanskiy and Ayanskiy Raions (districts). However the very north Okhotskiy Raion has no good forest tracts because its climatic conditions are very severe. In general, the northern parts of Siberia and the RFE have severe natural conditions for productive forests. So, loggers' striving northward has the evident limits.

**Q. b)** Given the same market price for timber, what is being squeezed in order to make the frontier marginal lands into economic reaches of logging? e.g., lower wages, lower other logging costs, lower taxes or fees?

**A.** Usually production and transportation costs in northern area are higher than in southern. The fuel is more expensive, if it is not excavated but transported. The same are energy tariffs. The labor costs in northern area are also higher than in southern. Only forest lease payments become lower but not in such level that can cover additional costs. Therefore, there are economic limits of expanding northward.

**6. Road control and patrolling to control illegal logging**

**Q. a)** Where are road check points set up and how frequent are they set up along roads?

**A.** There is no special regulations of road check points' allocation. Usually they

are allocated near crucial crossroads mostly in places where logging roads join to the common road net and where timber flow rushes to industrial log depots.

**Q. b)** How is volume of timber on trucks being checked against logging documents: by counting the number of logs and its diameters after unloading the entire truck? by rough guesses? What happens if there is a dispute on the volume of logs being trucked between the officer and the timber owner?

**A.** Dimensions and log number is not the subject of truck checking. The main subjects are legality of timber origin and presence of prohibited species. Such checking usually does not demand truck unloading.

A dispute between a controlling team and a timber owner can be solved officially in the court. However, there is no information about such court cases. Very often, conflicts are solved by «sweet-heart agreement». However, in case of blunt illegality the timber shipments can be sequestered by local administration and sold after that in auctions.

**Q. c)** Is LEGAL timber also subject to some level of “bribery” in order to gain ease pass at checking points or over road patrols?

**A.** Yes, of course, but not so often as illegal timber and with “chipper” bribes.

## 7. Sustainable forestry in the RFE and Siberia

**Q. a)** What is the major threat to sustainable forestry: legal logging or illegal logging or both? Or lack of regeneration? Or the infeasibility of regeneration on such logged over sites? Or the infeasibility of regenerating such logged over sites with its original vegetation and ecosystem (i.e. conversion of natural forests to plantations or low grade secondary growth forests)?

**A.** The main threat of sustainable forestry in the RFE and Eastern Siberia (the threat of the first rank) is wild fires. Once more I would like to highlight: the natural regeneration is so successful that traditional harvest does not originated reduction of forest area or transformation of forests species structure. However, forest fires, especially repeating fires, and fires in logged sites annihilate the regeneration. If there are cases of forest area reducing, it is usually the results of fires but not logging. (I do not consider here the intentional deforestation for agriculture or construction).

Once-only fires can destroy forests partly or fully. However that burnt areas are regenerated naturally with species transformation, usually from conifers to fast-growing deciduous: aspen and white birch. In case of lack of repeated fires, the conifer undergrowth settles under deciduous canopy and after 30–40 years conifers become dominated.

Naturally, that repeated fires destroy stands deeper and sometime annihilate upper soil. In that case full forest recovery can lasts 100–200 years.

The second threat is low value of growing timber that originates thriftless use of wood stock that is described in answers to part 3.

**FQ:** This is a bit puzzling to us. Apart from forest fires, how would you rank commercial logging particularly logging for export as a threat to SFM?

In terms of commercial logging, we are still not sure why there is so much emotional reactions against it. Is it because of too much illegal logging? Too fast forest depletion (even though logging has been legal)? Or lack of regeneration? Or improper logging so that the environmental damages are severe?

**Q. b)** How is the government/industry/academia defining sustainable forestry in the region?

**A.** The sustainable forestry is defined by the government according the official “Concept of the Development of Forestry of the Russian Federation during 2003–2010”. The “Concept” considers creation of opportunities for sustainable forest management as the main goal. Evidently, the “Concept” will be revised according the new FCRF. However, the new Code considers the sustainable forest management in its point 1 of the Article 1, which is devoted to the **key principles of the forest legislation:**

“The following principles shall underlie the forest legislation and other enactments governing forest relations:

1) sustainable forest management, biological diversity conservation in forests, and enhancement of their potential;”

The most part of business does not bother about sustainable forestry. The firms that received or want to receive third party’s certification adhere to certification criteria (usually FSC).

The academia defines the sustainable forestry as the inexhaustible use of all forest utilities both material and non-material. Khabarovskiy and Primorskiy Krai have the concepts of the forest sector development approved by the local governments. The scientific base of these concepts contains such definition of the sustainable forest use:

“It is forest management and forest use that preserve forest biodiversity, productivity, capacity for self-replication, possibilities to fulfill social, ecological and economic forest functions at present and in the future on the local, country and global levels, and that does not damaged other ecosystems”.

**Q. c)** What the Russian government/industry/academia/NGO sector would hope the Chinese government and industry do to help achieve sustainable forestry in the RFE and Siberia?

**A.** The RF Government is proclaiming and is implementing the policy of friendship and of economic cooperation including forest sector. Local governments of the RFE and Siberia see China as possible big economic partner and investor very interested in the forest cooperation. In such conditions, the participation of Chinese partners in sustainable forestry achievement will be framed by understanding of the problem by federal and local governments. The authorities think that one of the main ways to achieve sustainable forestry is wood processing development. Chinese industry can invest into their own or Russian-Chinese wood processing plants.

As mentioned above, the industry does not very bother with sustainable forestry. That is why it is not considers yet Chinese partners as responsible for sustainable forestry achievement.

Academia considers that cooperation with China due to the RFE and Siberia development including development of forests is inevitable according current global conditions and neighborhood. The cooperation must be mutually beneficial but not asymmetrical. In such case any mutual Russian-Chinese activity to develop forests according sustainable principles and according Russian laws is useful.

Local NGOs very often consider that Chinese activity in the local forest sectors is unfair and brings damages to local forests. At the same time, such international NGOs as WWF, IUCN and others keep cooperation of their branches in the RFE, Siberia and China.

## 8. New Forestry Code

**Q.** What are the major changes to follow from the new code in terms of tenure arrangements, logging policies, regeneration policies, taxes and investment policies?

**A.**

### 1. Tenure arrangements.

The old Code had divided all forest into 3 groups:

1st – strong using regime;

3rd – commercial using regime, mostly harvesting;

2nd – something average between the 1st and the 3rd, very vague.

According the new FCRF it will be “division of forests according to their designation, depending on beneficial functions they perform” (Article 1). So, now all forests are divided into

- 1) Protection forests,
- 2) Production forests,
- 3) Reserve forests (Article 10).

It is another approach in principle.

All forests are considered now as a property that is fully regulated by the civil legislation as well as by the Land Code of the Russian Federation (Article 3). It makes possible a tenure turnover that was prohibited by the old Code. (See also the answer to question 11 above).

For the first time the FCRF states property right on the timber felled by lessees or other loggers and the timber received during forest area clearance (Article 20). The old Code did not consider this issue generally.

Term of lease changed from 1 to 49 years in the old Code into 10 to 49 years in the new Code. The old term remained only when forests leased for geological survey, water reservoirs and watersides structures construction, construction of power, communication and other lines (Article 72).

The former order distinguished:

- Long term lease (1–49 years);
- Short term use (less than 1 year);
- Free of charge use of some users, usually socially supported (schools, hospitals, etc.);
- Gratis harvest of forest resources excluding timber for citizens' subsistence needs.
- Gratuitous use of some users.
  - The current order distinguishes:
- Long term lease, 10–49 years for the most part of users, 1–49 years for geological survey, water reservoirs and watersides structures construction, construction of power, communication and other lines;
- Use on the base of a sale-purchase contract for the forest stands valid for one occasion only;
- Free of charge use of peoples of the North, Siberia and the Far East of the Russian Federation adhering to their traditional life styles for their subsistence needs in the amounts based on some norms in places of residence and economic activities of persons identified as indigenous small-numbered nations (Article 30);
- Gratis harvest of forest resources excluding timber for citizens' subsistence needs (Article 11);
- Gratuitous use for a fixed period for religious activity of religious organizations (Article 47);
- Permanent use (use for indefinite periods) for research, education/training and recreation activities of the public sector institutions and municipal institutions (Article 40 and 41).

The order of user's rights acquisition changed also. The former order has two types of acquisition: contest for leasing and auctions for short-term use. Contests were based not only on the price but on other economic and social conditions that a user agreed to assume; auctions were based only on the price bidding.

The new Code provides auctions with price bidding for acquisition of all charged user's rights (Chapter 8). Leasing without an auction is possible only in cases:

- Geological survey, water reservoirs and watersides structures construction, construction of power, communication and other lines;
- Under priority investment projects in the area of forest development (Article 74).
  - Arrangement for auctions are described in the new Code much more minutely and exactly than in the old Code (Articles 79 and 80).
  - There is also in the new Code more exact than in the old Code distribution of powers of the public authorities of the Russian Federation, public authorities of the Russian Federation Constituents (provinces) and local self-governance bodies in the sphere of forest relations (Chapter 9). It covers all considered above issues. One of this Chapter's specific is division of provincial powers into their own powers (Article 82) and powers that the Russian Federation delegates to provinces (Article 83).
  - The latter contains such significant items as:
- Making forest parcels within the forest estate lands available for permanent use,

use for indefinite periods, lease-based use, gratuitous use during established periods, as well as conclude sale-purchase contract for forest stands, and organize and hold respective auctions;

- Issuing permits for works related to geological exploration of mineral resources on lands of the forest estate;
- Providing for use of forests, their protection (including forest fire fighting, and excluding forest pest monitoring), renewal (except for forest seed breeding) on the forest estate lands, and cause forests on the aforesaid lands to be protected and renewed;
- Undertaking the state forest inspection and oversight;
- Establishing a list of officials of the state forest inspection and oversight.

However, supervision of these rights is fulfilled by the federal forestry body. The Code does not specify the body's title but it is known now – the Federal Agency of Forestry – *Rosleskhoz*.

The Article 84 on powers of local self-governance bodies is practically new one because the old Code almost did not specify powers of such level.

### Logging policies

The main change in the new Code according logging policy is the replacement of permissive system by declaration system. Until the new Code any cuttings as any other forest use can be possible only under a special felling license (*lesorubochniy bilet*) or forest use license (*lesnoy bilet*). The new Code changed the system of logging sites allocation and cutting control as a whole (Article 26).

More concrete and limited are now possibilities to restrict or to suspend forest use (Articles 27 and 28).

The old Code did not identify the legislative status of stand felling. It gave possibilities to treat forest relation as specific ones. The new Code identifies now logging as entrepreneurial activity (Article 29). Due to this new position logging becomes completely as a subject of the Civil, Administrative and Tax Codes. The anti-monopolistic Article 50 about competition safeguards in the forest use appears in the new Code correspondingly.

The FCRF contains now articles that consider forest and forest-processing infrastructures. Such notions did not consider in the old Code at all.

The old Code divided cuttings into: Main cuttings, i.e. harvesting that in its turn were divided into clear, selective and gradual cuttings;

- Intermediate cuttings, i.e. stand treatment and sanitary felling;
- “Other cuttings”, mostly clearance for agriculture, construction, etc.

The new Code divides cutting into:

- Cuttings in mature and over-mature forest stands;

- Cuttings in middle-age, premature, mature and over-mature forest stands to remove dead and damaged forest stands and for purposes of forest tending;
- Cuttings in forest stands of any age within forest parcels designated for construction, reconstruction and operation of facilities (Article 16).

The current classification does not very differ from the old one but it abolished terms “main” and “intermediate” cuttings, i.e. equalizes all round wood removed from forests. According the old Code the timber received after intermediate cutting was considered as low value timber and did not burdened with stumpage fees.

Along with logging as traditional kind of forest use, the new Code introduces one another kind – forest use for processing of wood (Articles 25 and 46). It is not correct kind because wood processing is not direct forest use but it seems that Code authors strived to highlight significance to develop wood processing.

#### *Regeneration policies*

The Forest Service was responsible for forest regeneration according the old Code. Lessees’ responsibilities in this sphere were described by the old Code very contradictory. The regeneration now in leased parcels is complete responsibility of lessees according the new Code (Article 62).

The position that regeneration (as forest protection and guarding) in non-leased forest must be fulfilled on the base of an order/contract (Article 19) is very new one. The contract must/can include timber cutting.

Regeneration activity, as other forestry activity, is implemented on the base of planning documents. They replace old documents and are new:

- The Forest Plan of the Russian Federation Constituent (province) shall define forest planning goals and objectives as well as activities to achieve the forest development targets and zones of such development (Article 86);
- The Forest Management Regulation of the forest district or the forest park shall be devoted to use, protection and renewal of forests (Article 87). The Regulation shall be valid for periods up to ten years and shall determine the following parameters: permitted forest uses, ages of cutting, allowable cuts, use periods for the forests, and other parameters of their permitted use; forest use restrictions; forest protection and renewal requirements.
- The Forest Development Plan shall be produced for a forest parcel by persons who have made available to the parcel for permanent use, use for indefinite periods or on a lease basis (Article 88). Contents of and elaboration procedures for the forest development plans shall be established by the authorized federal executive body. A corresponding manual is developing now by *Rosleskhoz*.



Overstepping the Code text, it is essential to highlight that fire control in the Siberian and the RFE forests is more powerful factor to provide forest regeneration generally than special regenerative measures. Scientific calculations had manifested that from the point of view of regeneration the investments into fire control are more effective by 11 times than direct investments into regeneration.

### *Taxes and investment policies*

For the first time the FCRF considers investments specially (Article 22). The old Code did not consider investments as a whole. The new Code refers to common law on investments in the Russian Federation (1999). Big investment projects have some special privileges mentioned above. Beside that, there is now big activity of the RF Ministries to elaborate conditions of big forest investment projects. It is not discussed here because at the present some very controversial drafts of the RF Government decree exist, and it is impossible to predict what draft will be approved.

Almost all uses of forest resources are chargeable with rare exceptions (Article 94).

The old Code did not have clear notation of lease payment and stumpage fee calculations. The new Code has the exact indication that in case of use with forest resources extraction the lease charge shall be defined through multiplying the forest resource volume unit rate of payment by the volume of forest resources extracted from the leased forest parcel. For use without forest resource extraction, the lease charge shall be defined through multiplying the payment rate of forest parcel area by the area of the leased forest parcel. The entry that rates of payment shall be established by forest owner is also new (Article 73).

The new Code established the new system of forestry financing on the base of subventions from the federal budget into provincial budgets to exercise the powers devolved from federal to provincial level (Article 83). The subvention amounts are calculated depending on the areas of production forests and protection forests, intensity of their use, the provincial populations, and forest fire danger. *Rosleskhoz* issued special standards to calculate amount of subventions.

FQ:

1) Is it possible to grant lessees long term leases up to 150 years so that the lease term cover two rotations and give the lessees real incentive in maintaining long term land productivities?

2) Would it be possible to raise the minimal stumpage fees significantly instead of charging tariff on log exports? If not, who would be against this?

3) Would it be possible to get some time series data for timber prices (one or two major commercial species) for years since 1985 (so that we can see how the export business has affected the value of timber in the region and therefore the value of land in

the region)?

4) Would it be possible to get any info on the other buyers of wood from the RFE and Siberia such as Japan and South Korea? Are they having a better track record and reputation in terms of generating environmental and social impacts in the regions? In addition, is there any information on the track record and reputation of timber buyers in the European part of Russia from countries in Europe particularly Northern Europe?

DRAFT

**Annex 3:**

GLOBAL FOREST PRODUCT CHAINS:

*A Mozambique case study identifying challenges and opportunities for China through a wood commodity chain sustainability analysis*

Antoine Bossel & Simon Norfolk

Terra Firma Lda for IIED

Maputo, April 2007

DRAFT

## Acknowledgements

We acknowledge with thanks the assistance and co-operation received from the following persons:

- Directors of the District Directorates of Agriculture in Mueda, Mocimboa da Praia and Montepuez
- Forest Law enforcement officers from the District Directorate of Land and Forests in Mueda, Mocimboa da Praia and Montepuez
- Workers of sawmills owned by the companies Mofid Lda, Micco Lda and Heyne Lda
- Foremen and managers of the companies Mofid Lda, Micco Lda and Heyne Lda
- Duncan MacQueen and Steve Bass at the International Institute for Environment & Development for their support and advice and Changjin Sun for comments on a draft version of the report
- ...and all other key informants who obliged us with interviews.

DRAFT

## Disclaimer

This report was produced by Terra Firma Lda for review by the International Institute for Environment & Development. The views expressed in this report do not necessarily reflect the views of the International Institute for Environment & Development.

Exchange rate on 22<sup>nd</sup> January, 2007: 1 USD\$ = 26.6 Meticais MT

DRAFT

## Executive Summary

China is currently importing wood from over 80 countries around the globe to meet fibre needs for both domestic consumption and re-export. This is driven by China's phenomenal economic growth (over 9% annual GDP growth in the past two decades), its large population base and its massive processing capacity, as well as global demand for furniture, paper and other wood products. This is equivalent to some 1 million ha of mature commercial forests outside China being cleared each year.

Such rapid dynamics have given rise to concerns about sustainability of forestry activities in suppliers' countries such as Mozambique and therefore about the sustainability of the supply chain and the wood processing industry in China. At the same time, the scale and pace of change are such that China is presented with unique opportunities to lead a transformation of forestry and forest industry towards sustainability.

In that context, there is a need for in-depth supply study focusing on Mozambique and that will add insights into the incentives and disincentives for sustainability and the actual and potential levers for improvement.

The productive forests of Mozambique cover a total area of about 20 million hectares, or 25% of the terrestrial surface of Mozambique. Commercial forestry activities, i.e. industrial forest extraction and forest industries, contributed steadily around 0.6% to the GDP over the same period. In 2005, value of declared wood exports corresponded to less than 0.3% of the world market. Mozambique is globally ranked 43 out of 104 countries in the export of round logs". But the wood exports rank still the fourth biggest single item traded from Mozambique after aluminium, electricity and prawns and it is thus important for the Mozambican balance of payment.

However, the long term sustainability of the forestry sector is doubtful due to the actual forestry practices and deficient law enforcement. Environmental and economical issues among the supply chain shows worrying patterns as it is also the case in relation with workers' health and safety conditions or labour relations.

Chinese operators are central agents in the Mozambican side of the supply chain. They act mainly as sawmills operators and exporters but they play others key functions in the chain as they provide credit and lease equipment to their Mozambican counterparts.

Chinese operators face also numerous constraining factors that severely limit the environmental and economical efficiency of their activities. We can thus mention the language barrier, the lack of local skills among Mozambican forest workers and their low 'work ethic', the lack of proper infrastructure and a declining forest stock.

In that context, Chinese involvement appears to exacerbate all the Mozambican limitations but their presence could be potentially benefit for the sustainability of the chain:

- Best forestry practices are well documented and Chinese forestry operators could improve their long term profitability through the implementation of sound management practices that would diminish the waste of all resources and help sustain the forest resources.
- The high margins, wood market integration and control over the value chain could allow Chinese operators to engage in long term investment in processing and resources management as well as business partnerships between national and forestry operators.
- Chinese operators have the technology and skills to make a substantial contribution to improve the Mozambican workforce and transfer technology. Established market linkages would allow partnerships in order to increase value added at the processing stage in Mozambique.
- NGO and international organisations are very active in Mozambique and Chinese operators could call on them to provide expertise for the monitoring and integration of the supply chain. For example, forest certification already exists in Mozambique – but there is no involvement of Chinese industry.
- China has capacity to support its forestry operators in Mozambique through investment in port infrastructures, training, and long term financing.
- Mozambican government has made substantial progress in reforming trade policy. In 1998 the government of Mozambique's export procedures were simplified. Fiscal incentives to new investors through tax incentives promote export in the country.
- 

Numerous options for improving the efficiency and accountability of the chain can be considered such as introducing and implementing “Chain of custody” (CoC) concept, encouraging forest certification, promoting a bilateral agreement between China and Mozambique, providing training for Mozambican workers, incentive the use and exportation of more abundant species, overcoming corruption and reforming the legal and regulatory framework.

The uncontrolled and over-exploitation of forests in Cabo Delgado is eliminating assets that could provide long-term employment and contribute towards sustained economic growth in the province. Instead, the declining supply of timber means that local people will soon lose their forests (or, at least their high value trees); this represents an important lost potential source of revenue, firewood and non-timber forest products. It also means that Chinese importers will need to search elsewhere for forest products.

Forestry operators could not pursue their actual unsustainable practices if laws were properly enforced, if poverty were not so harsh or if wealth and power were more equitably distributed in Mozambican society. Political influence and power are used to override legislation. Interference from well positioned people undermines law enforcement in the provinces. In the context of Cabo Delgado as in other parts of

Mozambique, illegal logging is mainly a result of the high levels of corruption amongst civil servants and of the impunity enjoyed by prominent public figures. If the rule of law was respected, the forestry operators would have to adapt and to accept reductions to their high margins. It is highly probable that they would accept this state of affairs in order to stay in business, whatever their personal or corporate concern about environmental or social issues.

DRAFT



## Table of Contents

1.	Introduction	115
1.1.	Background	116
1.2.	Objectives	119
1.3.	Methodology	119
1.4.	Limitations, constraints and context	119
2.	Overview of the forestry sector	124
2.1.	Policies and priorities	124
2.2.	Practises and experience	134
2.3.	Economic significance	136
2.4.	Annual log cut and production of sawn timber	137
2.5.	Mozambique-China wood trade profile	138
2.6.	Domestic timber demand	141
3.	Description of the supply chain	141
3.1.	Functional analysis	142
3.2.	Technical aspects	146
3.3.	Key nodes in the chain	148
3.4.	Species and Products	149
3.5.	Stakeholders	150
4.	Positive and negative issues along the supply chain	158
4.1.	Environmental issues	159
4.2.	Economic issues	162
4.3.	Health and Safety	163
4.4.	Labour relations	164
4.5.	Rule of law	166
4.6.	Illegal practice	166
5.	Key factors in sustainability	167
5.1.	Key potential drivers of sustainability	167
5.2.	Key factors limiting sustainability	167
6.	Policy options for improving and/or scaling up the sustainability impacts of wood product supply chains in Mozambique	177
7.	Conclusion	183
	References	185
	List of Interviewees	188
	Annex 1: Mozambican Labour Law infringements	189
	Annex 2 - Specific terms of reference for Mozambique study	194

## List of Tables

Table 1 - Royalty values in 1998 and 2002 .....	132
Table 2 - Wood export process related fees.....	133
Table 3 – Value of Timber Exports from Mozambique by Group 1996-2000 (US\$000, CIF) .....	136
Table 4 - Value of Timber Export from Mozambique (all products) 2001-2005 (US\$000, CIF) .....	136
Table 5 - Timber production in Cabo Delgado .....	137
Table 6 - National licensed forest production (2005) .....	137
Table 7 - National Log Exports (000 cubic metres) .....	137
Table 8 - Value of Timber Exports from Mozambique by Destination 1996-2000 (US\$ 000, CIF) .....	138
Table 9 - Value of Timber Exports from Mozambique by Destination 2001-2005 (US\$, CIF) .....	140
Table 10 - Main Timber Species .....	149
Table 11 - Simplified Cost Comparison of Log and Sawn Timber Exporting .....	150
Table 12 - Concession in Cabo Delgado, 2006 .....	153
Table 13 - Chinese owned sawmills.....	154
Table 14 - Main Administrative Constraints .....	171

## List of Figures

Figure 1 - Mozambique's Natural Forest Product Exports .....	118
Figure 2 - Policy development timeline in Mozambique.....	124
Figure 3 - Functional Analysis of the Chain - Cabo Delgado .....	142
Figure 4 - Timber flow in Cabo Delgado .....	143
Figure 5 - Cabo Delgado - Chinese Timber Supply Chain .....	145

## Abbreviations and Acronyms

CFM	Caminhos de Ferro de Moçambique
CTA	Confederação das Associações Económicas (Mozambican Business Confederation)
CBNRM	Community Based Natural Resource Management
DINAGECA	Direcção Nacional de Geografia e Cadastro (National Directorate of Geography and Cadastre - now DINAT)
DINATEF	National Directorate of Land and Forests
DNFFB	Direcção Nacional de Florestas e Fauna Bravia (National Directorate of Forestry & Wildlife)
FAO	Food and Agriculture Organization of the United Nations
FGLG	Forest Governance Learning Group
GDP	Gross Domestic Product
GoM	Government of Mozambique
IIED	International Institute for Environment & Development
MINAG	Ministério da Agricultura (Ministry of Agriculture)
NGO	Non Governmental Organization
PARPA	Plano de Acção de Redução da Pobreza Absoluta (Poverty Reduction Strategy and Plan)
PROAGRI	National Program for Agricultural Development
RWE	Round Wood Equivalent
SLH	Simple License Holder
SPFFB	Serviços Provinciais de Florestas e Fauna Bravia (Provincial Services of Forestry & Wildlife)
SPGC	Serviços Provinciais de Geografia e Cadastro (Provincial Services of Geography & Cadastre)

## Introduction

This report is produced as part of a research process conducted in Mozambique in January and February of 2007 by Terra Firma Lda, with support from the International Institute of Environment & Development<sup>42</sup>. The research forms part of a Global Commodity Chain (GCC) analysis of forest chains involving China, designed to identify effective levers for intervention.

The intention of this country case study is to provide some insights into the behaviour of various actors involved in the trade of tropical hardwood from Mozambique to China. It will also help to identify some actions that the Chinese government could take to minimize the negative environmental and social impacts of production, consumption and trade in the forestry sector, and to promote positive impacts.

It is based on a brief study of only one province; Cabo Delgado, in the far north east of the country on the border with Tanzania. It is therefore an incomplete view of the nature of the trade in the country as a whole. Cabo Delgado was chosen because it is perceived as being one of the weaker provinces in terms of forest resource management. It also possesses some of the most valuable timber stocks in the country.

The province remains a valuable lens, however, through which to look at the national timber trade to as a whole and there are a number of other relevant reports, based on data collected in other provinces, which contain similar findings. These include the reports<sup>43</sup> of Kloeck-Jenson (1998), Brouwer (2001), Magane & Manjate (1999), Barnes (2001), Reyes, (2003), Bila & Salmi (2004), Johnstone *et al* (2004) and Mackenzie (2006) and also various reports produced by Mozambican NGOs, such as ORAM, and the Government of Mozambique's (GoM) Department of Land and Forests.

The research for this case study consisted of an initial review of available documentation, followed by a 12-day field trip in Cabo Delgado Province, including visits to three districts (Mocimboa da Praia, Mueda, Montepuez) and the provincial capital of Pemba, in order to meet important stakeholders (see list of interviewees at page 188)<sup>44</sup>. Further desk studies and writing took place in Maputo, after the field trip.

This first chapter explains some background to the overall GCC analysis, for the benefit of Mozambican readers, and gives some context to the study.

---

42 IIED (led by Steve Bass), a Chinese team (led by Chanjin Sun) and Forest Trends (led by Kerstin Canby) are collaborating in the Global Commodity Chain (GCC) analysis of forest chains involving China. Terra Firma Lda (led by Simon Norfolk) is responsible for this Mozambique case study.

43 See the References for full details.

44 Various meetings were held, but it was not possible to meet with several important potential informants (see section 1.6 below)

The second chapter presents an overview of the Mozambican forestry sector and its legal framework. The third chapter describes the supply chain, followed by a presentation of positive and negative issues along the chain in chapter four. Chapter five identifies some of the key potential drivers of sustainability and some of the factors that are limiting sustainability in the supply chain.

Chapter six presents some policy options for improving and/or scaling up the sustainability impacts of wood product supply chains in Mozambique and the final chapter presents some general conclusions.

## Background<sup>45</sup>

### *The Global Commodity Chain (GCC) research*

China is currently importing wood from over 80 countries around the globe to meet fibre needs for both domestic consumption and re-export.

While the Chinese experience is certainly part of a recent expansion in major global commodity markets, there are some prominent features that make the Chinese wood use pattern unique and challenging to sustainable forest and trade:

- *China's large capacity:* A proven ability to develop institutional, industrial and market infrastructure needed to support a large forest products remanufacturing industry, and to position strategically in the global wood products commodity chain.
- *China's re-export orientation:* In 2005, close to 50 million cubic meters of RWE was exported, mainly to the West (compared to 134 million cubic meters of RWE in imports) (White et al, 2006). China is the world's largest wood processor (furniture, plywood, etc) and the second-largest producer of paper and paperboard.
- *Huge demand on forests:* There is a massive volume and rapid growth of wood converted abroad, beyond that which may have been planned for by exporting countries' forestry administrations.
- *Imports emphasising unprocessed wood:* Logs dominate instead of sawn wood, both from tropical forests (Indonesia, PNG, Malaysia, Myanmar, the Congo Basin) and temperate forests (Russian Far East, Canada). China is now the world's biggest importer of industrial roundwood.
- *Position in the middle of the forest products supply chain:* This, combined with the other features above and increasing means to communicate along the supply chain, potentially puts China in an extremely powerful position to reshape the chain.

Such rapid dynamics have given rise to concerns about sustainability. There is a clear contrast between China's own conservation-oriented domestic forest policy and the unintended consequences of Chinese wood sourcing overseas; in Africa in particular, there tend to be fewer local controls to ensure sustainability and high levels of illegally sourced wood. National systems of control, in many African countries, are facing

---

<sup>45</sup> Much of this background section is taken directly from the original research proposal document (Bass & Sun, 2006) and is intended to provide contextual information for Mozambican readers of the report.

capacity problems; human capital and financial resources are limited and the systems are straining in the face of sustained demand for timber products.

The scale and pace of change are such that China is also presented with unique opportunities to lead a transformation of forestry and forest industry towards sustainability:

- *Forestry is inherently a sustainable industry.* Wood is a renewable product, the production of which can also offer numerous environmental benefits (e.g. sequestering carbon from the atmosphere, biodiversity and soil and water conservation, and restoration of degraded land) as well as social benefits (e.g. access by poorer groups to forests for livelihoods and employment in labour-intensive wood processing). In sustainability terms, forest products compete well with alternatives such as plastics, metals and concrete, being of low external input intensity. Chinese trade and investment is critical to developing these potentials to scale.
- *Recent international sustainability innovations.* The past two decades have developed mechanisms to improve environmental and social aspects of the forest industry. Implementation has been promising but at too small a scale: verification of legality (controlled wood), certification of forest management sustainability, corporate-community forestry partnerships, markets for environmental services, codes of forestry practice, sustainable timber trading groups, etc. The Millennium Ecosystem Assessment identified a dozen such 'Response Options'. Chinese trade and investment could offer means to scale up these mechanisms, innovate further, and shift some from voluntary to regulatory.
- *Supply chain communication possibilities.* The growing dominance of globalized supply chains in the structure of forest industries, and market concentration, offer new opportunities to develop and communicate coherent and consistent environmental and social signals along those supply chains. This contrasts with a few years ago, when standards and procedures were highly separate at different stages or confined to sovereign states.
- *Progressive forestry initiatives in China.* Several mechanisms in China also offer potential to drive forward an approach that integrates social and environmental concerns with the economic imperatives that have so far dominated the development of Chinese wood industry. These include the regional development planning processes in, notably, the Great Western Development Program, the Sloping Farming Lands Conversion Program and the Fast-growing Plantation Development Program.
- *Progressive trade initiatives in China.* Active efforts by the Chinese government, particularly in the last few years, have sought communication and collaboration trading partners in order to secure long term economical and stable fibre supply and build China's image as a responsible wood consumer and a global citizen. Bilateral or multilateral coordination mechanisms have been established between China and Africa, China and Indonesia, as well as China and Russia.

Only recently has the international forestry community begun to realize that China is a major driving force behind this commercial process which, when completed, would reshape both the global forest landscape and the global structure of forest industries.

This reshaping has the power to support long-term sustainability and stability, or alternatively short-term forest asset stripping and clearance.

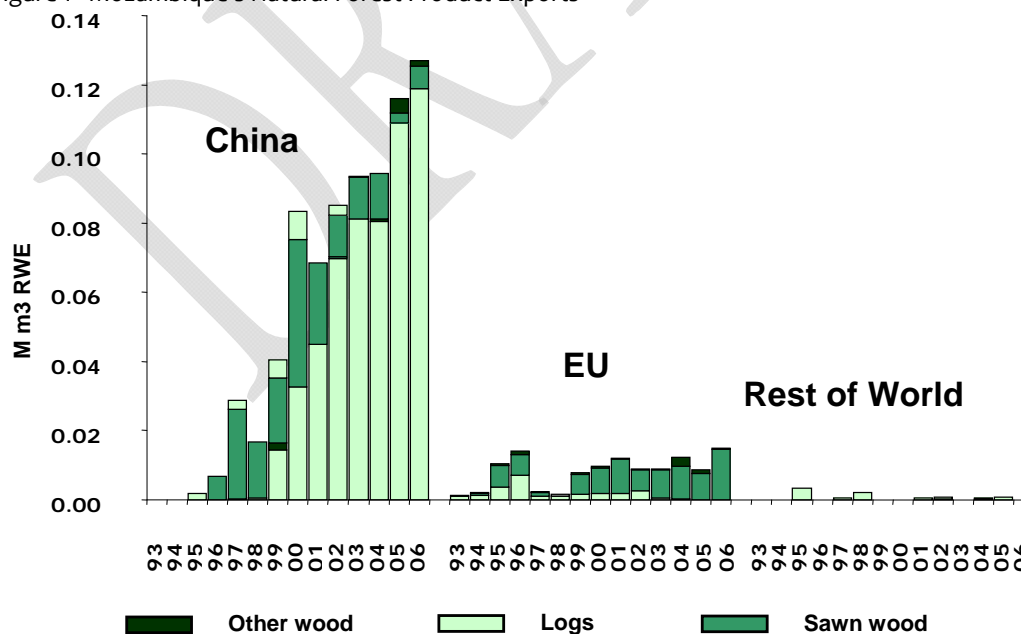
The challenge to the international community is to encourage forest operations that ensure a proportion of revenues generated are channelled back to the forests for regeneration, as well as to socio-economic benefits for forest-dependent groups. In producing countries this requires a set of effective local institutions and public policies; whilst Mozambique has been moving towards a better policy framework, the generally weak governance environment has meant that implementation has not yet had the intended impacts.

### *Mozambique in context*

Forest governance structures (see section 0) in Mozambique are still only recovering from the debilitating effects of a prolonged period of conflict. The rate of forest exploitation activities has increased steeply over the past few years, almost exclusively feeding a rising demand for timber exports to China.

The extent of Mozambique's forest trade with China makes it a country which is particularly sensitive to the economic, social and environmental impacts of the relationship. Figure 1 below shows the extent to which forest trade has grown with China over the last 10 years, and the dominance of China as an export destination in relation to other markets.

Figure 1 - Mozambique's Natural Forest Product Exports



Source: Forest Trends (draft), 2007

Exports from Mozambique only contribute in a very small way, however, to the total imports into China; between 1990 and 2005, Chinese imports of all wood have increased from 40 million m<sup>3</sup> to 134 million m<sup>3</sup> RWE (White *et al.*, 2006), whilst in 2005 Mozambique's exports of all wood to China amounted to a little over 0.12 million m<sup>3</sup> RWE, or just 0.08% of total imports into China. For China, Mozambique is not a particularly important timber producer. For Mozambique, however, the Chinese export market is extremely significant and represents over 80% of the market share.

### Objectives

The objectives of this analysis are:

- To increase knowledge and awareness of the sustainability impacts of production, consumption and trade in key forest products involving China and Mozambique.
- To make the case for strategic options that the Chinese government could take to minimize the negative environmental and social impacts of production, consumption and trade in the forestry sector, and to promote positive impacts.
- To identify promising mechanisms for undertaking such strategic action based where possible on current good practice in forest product chain management and shared responsibility for further improvement.

### Methodology

The requirements of the study were detailed in the Terms of Reference (see Annex 1 at p 189). Based on these requirements, the work was divided into two distinct phases: field visits and desk studies. The methodology used was based on direct observation, site visits, data analysis, individual interviews and review of documentation.

Information was collected from a variety of sources as specified below:

- Review of forestry sector documents and available secondary data
- Interviews with forestry operating staff in sawmills and head offices
- Informant interviews with GoM officials
- Interviews with the representative of Span Freight shipping company in Pemba

The commodity chain analysis began with the mapping of steps in the chain to obtain an overview and identification of the product flows, the actors in the chain and the type of interaction between these actors. Once the activities and agents in the chain were identified, we organised these in a functional analysis table which includes:

- The principal functions in the chain, i.e. the stages of processing and transport.
- The agents, (or aspects of agents) carrying out these functions;
- The products concerned in the chain: i.e. the principal products, in the various forms into which it is transformed throughout the chain

Restricted access to information (see 0 below) and a lack of precise data mean that our analysis is limited to a functional perspective that identified only the physical processes involved in the circulation of wood.

### Limitations, constraints and context



Unfortunately, in conducting this case study, we were confronted with a range of significant obstacles and limitations, which in themselves reveal the clandestine and illegal environment that characterise forestry activities in Mozambique generally, but particularly in the province of Cabo Delgado.

Some of these limitations are reflections of perennial problems, such as the generalised lack of and inconsistency in the data from official sources. Others arose as a result of time-bound events, which coincided with the study; the subject is a controversial one in contemporary Mozambique and discussions between civil society and government have become more heated in recent times. This created a less conducive atmosphere in which to conduct investigations than is normally the case. It does serve, however, as a useful indicator that increased cooperation between the Mozambican and Chinese Authorities, with a view to promoting more sustainable practises, would be timely and well-received<sup>46</sup>.

#### *Which are the Chinese owned companies?*

The study has a focus on Chinese owned or Chinese managed companies acting in the forestry sector in Cabo Delgado. Identifying these companies is a very difficult task, since neither the Chinese Embassy in Maputo nor the relevant Mozambican Ministries maintain listings with this level of information.

We were, however, able to interview the representatives of 1 concessionaire and 6 sawmill operators that fit into the category of ‘Chinese’ as understood colloquially by people in Cabo Delgado; they designate a company as “Chinese” as a function of the fact that there is a visible presence of Asian foremen or managers<sup>47</sup>. We were also able to conduct an in-depth interview with the major shipping agent transporting timber to China.

This in itself is an indication of the paucity of information regarding the commercial exploitation of the forests. Although applications to the GoM for the allocation of concession contracts are accompanied by a copy of the company statutes, the applications themselves are not a matter of public record and in many cases do not remain in the provincial archives<sup>48</sup>. The statutes of all Mozambican registered companies, including ownership details, are published in the official government gazette but there is no search facility for the gazette archives and we were unable to obtain publication dates or other cross references in order to review the contents of the relevant company statutes.

<sup>46</sup> The study also limits its scope to the Mozambican side of the supply chain. Details regarding the Chinese side of the chain is scarce as informants in Mozambique either do not have access to the information (Chinese Embassy) or are reluctant to provide it (Chinese exporters or company representatives in Cabo Delgado).

<sup>47</sup> It should be noted that many of these employees come from various countries such as Indonesia, Thailand, Singapore or Malaysia. Others are of Chinese origin but hold Australian or Malaysian passports.

<sup>48</sup> Data from the GoM, particularly at provincial or district level can even contain colloquial references to a company, rather than the legally registered name of the entity.

Notwithstanding the lack of verification, we are confident that the majority of our informants from the industry were in fact representatives of Chinese companies.

### *Information accessibility*

While many reports exist regarding forestry activity in Mozambique, accessing primary sources is difficult. We were not allowed access to government information, other than that which has been published. The provincial Directorates of the Department of Lands & Forestry, of Finance, of the Labour Ministry and the customs and port authorities all refused to give any information related to the forestry sector in Cabo Delgado. The representatives of these bodies were unwilling to provide us with information unless we had been accredited by the Ministry of Agriculture in the capital. In the absence of the Director of the National Directorate of Land and Forests, it was not possible to obtain this authorisation during the period of the study.

Thus all information used in this study comes from informal interviews and from previous reports related to the subject. Other recent researchers have faced similar reluctance or inability to provide data (Germizhuizen *et al.*, 2007, draft, p. 12). Future studies, with greater country ownership and a longer time horizon, could probably surmount these obstacles more easily.

### *Limited access to key informants*

We made good progress in talking to many different stakeholder groups, but access to the key private sector agents involved in wood cutting, processing and trading, whether Mozambican or Chinese, was complicated by the general uncertainty that these actors have regarding the motives of anyone wanting to know more about their business. Most of them simply didn't want to talk with us and when they did, they were reluctant to show any written records. As the study demonstrates, these agents operate in a climate of fear, harsh competition and frequently in an illegal manner. If the legal framework related to forestry, industry, labour, environment, land or finance was properly enforced then the majority of operators would have to stop their existing activities, would be required to pay heavy fines and would need to invest substantially more capital in order to conduct their business in a lawful manner.

We did conduct some useful interviews, but because the only way that we were able to gain access to the sawmill yards was through local Forest Law enforcement officers we were therefore often perceived as 'controllers' rather than as impartial researchers. The limited knowledge of Portuguese and English languages of our Chinese informants also constrained the interviews.

### *Wood cut ban period*

The fact that the study occurred during the wood cutting closed period constituted another limitation, since no activity was occurring in the concession areas. It was thus impossible to visit the concessions. During this period, managers of the concession or

sawmill are frequently away from the area and most of them were absent during our visit. Instead of talking with the general management, we often met with assistants or foremen. These people were reluctant to divulge much information without the express authorisation of their managers.

#### *Events in January 2007 in respect to illegal timber felling and exports*

A number of events that took place during the research period are particularly indicative of the scale of the China-Mozambique problem in the forest sector. These events tended to increase the general climate of distrust and unwillingness to share information. However, they are worth explaining in some detail because of the insight that they offer into the Mozambican perception of the relationship.

On the 22nd of January, forty-seven containers belonging to the Chinese-owned company MOFID were detained by the custom authorities in Pemba harbour<sup>49</sup>. The containers were loaded with *Jambire* and *Umbila* logs which, under Mozambican law, can only be exported once processed. This case created turmoil amongst the Chinese wood exporters in Cabo Delgado, who were targeted indiscriminately in the media as generally fraudulent operators, and caused the provincial authorities to close ranks completely in the face of the widespread perception that various GoM personnel had been involved.

The apprehension of this illegal timber further coincided with other events in January that brought the spotlight to bear sharply upon the involvement of Chinese operators in the forestry sector, the general non-compliance with the regulatory frameworks by forest operators and the lack of action and political will from the authorities to address these issues.

The first was the apprehension of an Asian operator engaged in transporting illegally harvested timber out of the Quirimbas National Park, allegedly under armed guard illicitly provided by the park authorities<sup>50</sup>, the second was the publication (by a group of Mozambican NGOs) of the results of research into forest activities in Zambézia province (under the unambiguous title of “Chinese Takeaway”<sup>51</sup>) and the third was an article published by the United Nations on the basis of a fact-finding mission in November 2005 by the Office for the Coordination of Humanitarian Affairs<sup>52</sup>.

In the weeks that followed, press coverage of these three events was intense, particularly by the independent media. The respected sociologist, Dr. Carlos Serra of the Centre for African Studies at Eduardo Mondlane University, wrote an open letter to the national

49 See “Porto de Pemba : Madeira apreendida ultrapassa mil toros”, Noticias 02/02/07 and “50 contentores de toros igual número de “erros”, Noticias, 10/02/07

50 For details on this event see [http://oficinadesociologia.blogspot.com/2007\\_01\\_01\\_archive.html](http://oficinadesociologia.blogspot.com/2007_01_01_archive.html)

51 See Mackenzie (2006) in References

52 See “Chainsaws cut down more than just trees”, IRIN, accessed at <http://www.irinnews.org/Report.aspx?ReportId=67894> on 14/03/07

president, calling for the establishment of an independent commission<sup>53</sup>, and a loose grouping of NGOs and activists came together to form a pressure group under the name of Amigos de Floresta (Friends of the Forest).

The response from the GoM and official media was initially muted and tended towards the discrediting of the information and a reliance on government statistics that purported to show that exploitation rates were well within sustainable levels<sup>54</sup>. One notable exception was an article quoting a government technician, Sr. Joaquim Macuácuá, of the Forest Areas Inventory Department, who stated that there were in fact real indications, from contemporary inventory processes, that Mozambique was rapidly losing its forests<sup>55</sup>.

However, in the lead up to the state visit by the Chinese President, there was a more strident response. Press articles appeared in the government-aligned media that cast suspicions on the motives of those calling for reform and labelling their reactions as part of an ‘anti-Chinese conspiracy’, timed to coincide with the Chinese President’s visit and orchestrated by ‘foreign hands’<sup>56</sup>.

A subsequent debate on the issue of forest exploitation in parliament on the 8<sup>th</sup> March witnessed the government defending its management of the sector, with claims that there has been significant progress in introducing more sustainable management regimes. The opposition party joined in the call from civil society for the establishment of an independent enquiry into the state of the nation’s forests and a protest march in Maputo is now planned to coincide with the International Day of the Forests.

### *Methodological limitation*

The limitations and constraints described above had a negative impact from a methodological point of view. Due to the restricted access to information, it was not possible to evaluate the income and profit at each level of (or among groups of actors within) the commodity chain, through an analysis of prices and quantities of goods handled by the different actors. We were thus unable to precisely assess how and why different actors are or are not able to benefit from markets.

53 See [http://oficinadesociologia.blogspot.com/2007\\_01\\_01\\_archive.html](http://oficinadesociologia.blogspot.com/2007_01_01_archive.html) for a copy of the letter in Portuguese.

54 See, for example, “Sector florestal arrecada 175 milhões de meticais”, Domingo, 02/11/07, p 6

55 “Resultados reais dizem que estamos a perder as florestas”, Savana, 09/02/07, p.3

56 See “Compulsando sobre exploração de madeira”, Sr. Adelino Buque in an opinion piece in the Noticias newspaper, 14/02/07

## Overview of the forestry sector - Policies and priorities

### *The development of Forest Policy*

Timber resources were, for the most part, hardly exploited during the prolonged period of conflict that affected Mozambique until the early 1990s. However, after the peace accord was signed in 1992, timber represented a means of generating significant foreign currency with minimal capital investment; the safer operating conditions in the forests at this time lead to dramatic increases in the levels of exploitation.

At this point in time, no new forestry laws had been promulgated since 1965 and forest exploitation was therefore being carried out under colonial era legislation. From the early 1990s, therefore, the GoM initiated a process of developing more appropriate policies for the forestry sector. A timeline for this process is shown in Figure 2.

Figure 2 - Policy development timeline in Mozambique

Important Events	Nature and extent of forest resource exploitation and related aspects
<p><b>1992</b></p> <ul style="list-style-type: none"> <li>• Peace Agreement (1992)</li> <li>• Elections (1994)</li> <li>• Return process (1993-1994 onwards)</li> <li>• Forestry Pre-Programme' (1993)</li> <li>• 1995 – 1997 National Programme of Forestry and Wildlife (1995-2000), 'Investment Programme for the Forest and Wildlife Sector', (1996), 'Forestry and Wildlife Policy and Strategy' (1996), Adoption of Forestry and Wildlife Policy and Strategy (1997)</li> <li>• Forestry and Wildlife Law (1999), Regulations to the Forestry and Wildlife Law (2002)</li> </ul> <p><b>2007</b></p> <ul style="list-style-type: none"> <li>• Diploma for channelling of community revenue entitlements</li> </ul>	<p>Limited exploitation due to conflict</p> <p>↓</p> <p>Exploitation by simple licence only</p> <p>↓</p> <p>Exploitation begins to increase significantly</p> <p>↓</p> <p>Forest concessions applied for and awarded on basis of old and generic inventory information and in the absence of management plans</p> <p>Exploitation by simple licence continues and grows in many areas</p> <p>↓</p> <p>Payments begin to be channelled to communities but benefits very limited in scale and scope</p>

Initial attempts were directed at bringing together various disparate initiatives and

developing a coherent national forestry programme within the agriculture sector (Cuco, 2001). This began in 1991 with the drawing up of a provisional programme under a UNDP/FAO team. A 'Forestry Pre-Programme', based on the 1991 design phase, began in 1993 for a period of 18 months with finance provided from the UNDP.

In 1995, a 'National Programme of Forestry and Wildlife (1995-2000)' was prepared by the DNFFB, followed in 1996 by the development of an 'Investment Programme for the Forest and Wildlife Sector', drawn up with technical assistance from FAO/UNDP. The investment programme was subsequently revised in 1997, following a Joint Donor Pre Appraisal Mission and it was then integrated into the broader PROAGRI programme (see below – section 0)

Substantive policy finally appeared when the Forestry and Wildlife Policy and Strategy was adopted by the Council of Ministers in 1997<sup>57</sup>. This was followed by the passing of the new Forestry and Wildlife Law in 1999<sup>58</sup> (LFFB).

Regulations to the Forestry & Wildlife Law were published in 2002<sup>59</sup>. This legislation gave further details on some aspects of the permissible exploitation regimes, but left many areas for further regulation, including:

- How powers for forestry management were to be delegated to co-management committees as envisaged in the law;
- How revenue sharing components of the Law, that provide for 20% of forest taxes to be paid to local communities, were to be operationalised;
- How revenue sharing components of the Law in respect to fines for illegal activities were to be operationalised;
- What the contents of a suitable management plan were to consist of;
- The level of annual taxes in respect to concession areas;
- How the taxes levied for re-forestation activities were to be utilised.

As Bila (2005) points out, the lack of these further legislative instruments left significant gaps; combined with a generally low level of knowledge concerning the content and spirit of the new legislation, these important gaps lead to a lack of motivation amongst many involved in the sector. Although some of these issues have now been addressed through ministerial diplomas, the policy and legislation is still relatively new and unfamiliar to many and will take time and work before it becomes widely known and accepted as the defining framework for forest resources management.

### *Land and Forestry Sector Policy and Regulations*

There are two key laws that govern and protect forest resources and the rights of various stakeholders: the Land Law<sup>60</sup>, promulgated in 1997 and the 1999 Forest and Wildlife Law.

<sup>57</sup> Resolution 10/97 of 7th April

<sup>58</sup> Forestry and Wildlife Law [Lei de Florestas e Fauna Bravia] Law 10/99 of 7th July

<sup>59</sup> Decree Law: Regulations to the Forestry & Wildlife Law [Regulamento da Lei de Florestas e Fauna Bravia, Decreto Lei 12/2002], of 6th of June

According to the Constitution of 1994, land and forest resources in Mozambique belong to the State. Article 35 deals with the public domain of the State and, in common with many other constitutions from around the world, entrenches the concept that the State is the paramount owner of the natural resources occurring within its territorial limits.

The article states:

1. The ownership of natural resources located in the soil and the subsoil, in interior and territorial waters, on the continental shelf, and in the exclusive economic zone is vested in the State.

Article 36 recognises the obligation of the State, in the national interest, to develop the natural resources of which it is the paramount owner and to determine the conditions under which citizens (and others) may access these resources for their use and enjoyment<sup>61</sup>. Thus the constitution makes provision for the owner of the resources (the State) to develop mechanisms that enable it to grant other forms of rights over these resources to its citizens.

Regarding land, the constitution is unequivocal in its stipulation that the right of ownership is vested in the State and that no land may be sold, mortgaged, or otherwise encumbered or alienated<sup>62</sup>. However, the same provision also stipulates that the use and enjoyment of land shall be the right of all the Mozambican people<sup>63</sup>. The exact conditions under which citizens may exercise this constitutional right of use and enjoyment of land are the prerogative of the State, which is constitutionally obliged to develop specific laws governing these conditions.

Land therefore cannot be owned and can only be leased for the purpose of "use and fruition", or "use and usufruct" (*direito de uso e aproveitamento*, most commonly translated as a "right of use and benefit" and known by the Portuguese acronym as a DUAT). On application to the relevant authorities, a legal entity or an individual can obtain a DUAT over land on a concessionary basis, limited to a maximum period of 50 years (renewable once) and, in most cases, dependent upon the fulfilment of a development plan and payment of an annual land 'tax'. The award of these concessionary rights is also subject to a mandatory consultation process with the 'local community', as defined in the Law.

In addition to this tenure regime, consisting of long leaseholds awarded by the State, the Constitution also recognised 'acquired' land rights. Mozambique has numerous customary land tenure regimes, which taken together constitute its customary land tenure

---

60 Land Law [Lei da Terra] Law 19/97 of 1st October

61 "The State shall, with regard to the national interest, promote the inventory, the knowledge and the development of natural resources and shall determine the conditions for their use and enjoyment."

62 Article 46 (i) and (ii) [Constitution]

63 Article 46 (iii) [Constitution]

sector<sup>64</sup>. These regimes differ markedly from location to location depending on a variety of factors, including population density, kinship organization, inheritance patterns (matrilineal or patrilineal), land quality, markets and historical experience.

It was recognition of this diversity of regimes that led policy-makers to adopt particular approaches in the development of the 1997 Land Law. One of these was to introduce the concept of the 'local community' - *'a grouping of families and individuals, living in a circumscribed territorial area at the level of a locality or below, which has as its objective the safeguarding of common interests through the protection of areas of habitation, agricultural areas, whether cultivated or in fallow, forests, sites of socio-cultural importance, grazing lands, water sources and areas of expansion'*<sup>65</sup>.

Communities under this flexible formulation are therefore self-defined; they can be traditional units based on clans or chieftainships, extended families, or simply a group of neighbours (Tanner, 2002). The Land law provides for the *legal recognition of customary rights* held by such community groups and also those of individuals who openly occupy land in good faith for a period of at least 10 years. These rights are all now recognised as formal, legal occupancy rights. They are exactly the same form of right as the leasehold rights that can be awarded by the State.

The Forest and Wildlife Act of 1999 repeats this protective measure in respect to the subsistence use of forest resources by local communities; the Forestry Law uses the Land Law's definition of a 'local community' but adds 'hunting' to the definition as one of the areas considered as 'safeguarded' by the local community<sup>66</sup>. This is a positive change, since it recognises a further purpose for which customary user rights have existed. However, the Forestry Law only recognises these customary rights to forestry and wildlife resources for **subsistence** purposes. Instead of going beyond this, to recognise more fully an inherent right to the resources (which could then not only be safeguarded by the community, but used by them as a natural capital asset with which they could negotiate), the law establishes a licensing framework for development and exploitation of such resources on a commercial basis. While it is true that members of local communities can apply for and hold the licences for hunting and exploitation of timber resources, they are required to do so (mostly) in terms applicable to any other user<sup>67</sup>.

The Forestry Law also aimed to make the commercial exploitation of the forestry resources more sustainable, while providing a more effective structure for the generation and distribution of related tax revenue.

Article 3 of the Forest and Wildlife Act contains a list of principles upon which the law and its regulation are based. Amongst these are the following:

---

64 Customary tenure to this day accounts for 90 percent of land tenure rights and is the framework for the vast majority of every day transactions.

65 1997 Land Law, Chapter 1, Article 1(1)

66 Article 1(5) [Forestry & Wildlife Law]

67 Article 18(3) [Regulations to the Forestry & Wildlife Law]



- “of equilibrium: the policies of social and economic development and the preservation and conservation of biodiversity must involve local communities, the private sector and civil society in general, with the object of advancing a sustainable development in the present and for future generations;”
- “of harmony between local communities and local organs of the State: the promotion of conservation, management and utilization of forestry and wildlife resources without prejudice to customary practises and in conformity with the principles of conservation and of the sustainable utilization of forest and wildlife resources, within the framework of decentralization;”
- “of private sector participation: involvement of the private sector in the management, conservation and exploitation of forest and wildlife resources, with a view to adding value and imprinting greater development for local communities;”

Until the 1999 Forest and Wildlife Act, up to 500 cubic meters of timber could legally be cut per year by anyone who paid a small fee to obtain a ‘simple license’. Officially, these licenses could only be held by nationals, were operational for one calendar year and allowed for timber be taken from large, ill-defined land areas. No management plans were required and abuses in the allocation system, including illegally obtained licenses, false licenses, over harvesting, and harvesting outside the permitted boundaries were common.

The Forest and Wildlife Act retains the simple license system (including most of its shortcomings), adding to its requirements, however, that a basic management plan be approved and observed.

The Forest and Wildlife Act also creates a new exploitation regime allowing for logging by way of a forest concession contract. According to the law, forest concession agreements can cover up to 100,000 hectares, with no explicit annual harvest limit, and can last for up to 50 years. Concessions should be available to any individual or group of individuals, including Mozambican communities and foreign nationals.

Concessions also require the implementation of an approved management plan, based on a detailed forest inventory, which must be presented within 180 days from the granting of the concession. Basic guidelines for developing these plans were produced by the DNTF in 2003.

Furthermore, the law requires concessionaires to establish a capacity to process the wood they harvest prior to export and provides that they may process, under contract, the produce of simple license holders.

Explicit protections for local communities under the Forest and Wildlife Act are quite strong. The rights of third parties are explained in Article 18:

“Forest exploitation (...) should always safeguard all rights to third parties

existent in the area being exploited as well as safeguarding unimpeded access by the local communities into the area being exploited and including use rights of the natural resources which these communities need for their subsistence.”

The concession regime also mandates consultation with potentially affected communities prior to awarding a contract. The same is not true of the simple license system. This consultation must be done through local government administrative organs and is commonly understood that communities in theory have a veto power over the allocation of a concession. The actual text, however, is more ambiguous on this: article 17(2) states that:

“The granting of a forest concession shall always be preceded by consultation with affected communities in the respective area...” and Article 34 stipulates that “It is obligatory to obtain an authorisation for the exploitation, commercialisation, and utilisation as well as transporting... [sic] forest and wildlife products, according to the terms of the present law and the relevant regulation...”

Nowhere is it stated that such a “granting” or “authorisation” shall be contingent on the communities’ approval.

#### *Forestry governance structure*

Under Mozambican Land Law the state retains ownership of all land; the Forest and Wildlife Act states that logging takes place under one of two permitting regimes. Administering the exploitation of forest resources falls within the purview of the Ministry of Agriculture (MINAG) and its National Directorate of Forestry and Land (DNTF). Each province (the country is comprised of 10) has a Provincial Directorate of Agriculture, within which fall the Provincial Services of Forestry and Wildlife (SPFFB).

Provincial level governance is executed by a Provincial Governor, who appoints District Administrators and Heads of Administrative Posts throughout each province. This is the lowest administrative level where the state apparatus is present in any significant way. Then there are the ‘localities’, which overarch small communities and villages and are governed largely by structures without formal governmental support and often consisting of the remnants of former FRELIMO Party structures.

Concession contracts of up to 20,000 hectares and all simple licenses can be authorized by the Provincial Governors, without the involvement of the national government. Concessions ranging in size from 20,000 to 100,000 hectares must be approved by the Ministry of Agriculture.

The basis for granting a concession begins with a direct request presented to the Provincial Head of the Forestry and Wildlife Services. This should be followed by a number of steps, including an initial timber inventory and the community consultation

process explained above. After the consultation, a more detailed topographic representation of the area, its population and its timber resources should be established, along with establishment plans for the operation of sawmill. Analysis of these materials is done at the provincial level. Meanwhile, the proposal is made public in national newspapers through the publication of an official notice.

Depending on the size of the concession, authorization is granted or denied at the level of Provincial Governor or the Minister of Agriculture, as explained above.

## **Forest taxation and fines**

### *Royalty taxes*

The regulations subsequent create a structure for licensing (or royalty) fees to be paid annually; they divide Mozambique's 118 commercially valuable species of trees into five categories for the purposes of taxation.

The first category classifies certain species as "precious" and, as the name implies, covers the most rare and valuable types. All others fall within classes numbered one through four, based on their relative scarcity and commercial value. Levels of taxation depend on the species classification; these were increased in the 2002 regulations to values of about US\$0.4 per cubic metre for fuel wood and up to US\$120 per cubic metre for precious species.

Both forest concessionaries and simple license holders are liable for the harvesting taxes, which are based on the volume of wood cut during the year. Furthermore, forest concessionaries should be liable for payment of a land-use rental, but this has yet to be determined and applied.

The government of Mozambique has issued a number of diplomas and other ministerial statements relaxing some provisions of the forestry regulations and, in particular, reducing the value of taxes. For example, immediately after the entry into force of the 2002 Regulations (which initially banned the export of first-class species in log form) the government passed legislation to reclassify some species. The change of class should have increased royalties to the government, but in fact the level of royalties for first-class species was allowed to continue unchanged for a year (2003). Then, for the following two harvesting seasons, the royalties for all categories were cut by 50 percent (ref: Ministerial Diploma 57/2003). These types of decisions undermine the higher legal regulatory provisions, and have created confusion in the forestry sector.

The regulations provide that 20% of the harvesting tax revenue will be reinvested in affected local communities. However, there is no national implementation structure and only limited application occurs until now. The government has decided to retain temporarily the 20 percent in most cases because of difficulties in meeting the

disbursement requirements.

The most valuable species (Class 1) are reserved for local processing at royalty rates that are at most only 25 percent of those prevailing for export logs. In addition, a rebate of a further 40 percent of royalties for veneer and parquet flooring is meant to encourage value-added processing.

The taxes are levied based on the harvester's total volume of timber cut and are theoretically controlled by roadside checkpoints. Agents of the Forestry Department are tasked with tracking timber volumes by category, with checking license compliance and with the levying of fines. In an attempt to rectify past problems with corruption, the new regulations provide that these agents should receive 50% of the fines they impose.

DRAFT

Table 1 - Royalty values in 1998 and 2002

Class of Timber	Previous Royalty Value <sup>1</sup>	Actual Royalty Value <sup>2</sup>
Precious Wood	105,000	2,000,000
1 <sup>st</sup> Class	65,000	500,000
2 <sup>nd</sup> Class	45,000	300,000
3 <sup>rd</sup> Class	30,000	200,000
4 <sup>th</sup> Class	20,000	100,000

<sup>1</sup> Decree 38/98 of 18th August 1998 (MT/m<sup>3</sup>) - exchange rate at time of legislation – MT10,000/\$

<sup>2</sup> Decree 12/2002 of 6<sup>th</sup> June 2002 (MT/m<sup>3</sup>) - exchange rate at time of legislation – MT24,000/\$

Source: (a) Decree 38/98 of 18th August 1998, Boletim da Republica, 3rd Supplement, Series 1, No. 33, of 25th August 1998 and (b) Regulamento Florestal, Decree 12/2002 of 6th June 2002

The other specific tax related to forestry is directed to reforestation. All harvesting licensees (both simple license holders and concessionaires) must pay a 15 percent levy in addition to the royalty payments and in addition to any direct funding from their own funds to reforestation. There is no specific regulation established to implement and monitor reforestation. The national-level policy and guidelines are unclear on how these resources should be allocated to provincial agencies or to the private sector. Nor do they make clear who is responsible for reforestation using the funds collected. Provincial authorities are supposed to have a plan to use the funds available for reforestation. The provincial plans are then to be consolidated into a national reforestation plan or projects. The funds, however, are sitting unused. The justification for the levy appear thus to be weak. Currently it is merely an additional tax on log harvesting<sup>68</sup>.

### *Personal Tax*

Residents are subject to tax on employment income earned in Mozambique and on work performed abroad (if paid by a Mozambique company). Rates are calculated on a band system and vary between 10 to 20 percent. Freelancers, self-employed individuals, shareholders and members of statutory boards are liable to progressive rates from 15 to 20 percent. Non-resident employees pay 20 percent.

### *The Export Regime*

Only species classified as precious and second, third, and fourth classes can be exported in the form of logs.

First-class species can be exported if processed as planks, railway sleepers, veneer sheets or parquet. The export strategy (MIC/IPEX, 2003) prioritizes handicrafts, furniture, and construction material to supply the international market.

<sup>68</sup> Some concessionaires (such as Miti Lda in Cabo Delgado) consider that they should be exempted from this tax because the government does not use the levied funds and because they are currently producing trees in their own nurseries for replanting in their concessions (in Miti's case, these are in Nhangade and Chiure). Miti Lda claims that they have already planted more than 18,000 trees by employing local community members. These persons receive 20 Mt (\$0.75) per living tree at the end of the year.

Table 2 - Wood export process related fees

Export procedure	Value
Certificate of Origin from the Department of Commerce	\$30 (single payment, not depending on quantity)
Inspection from the Forestry Division of the Department of Agriculture for the issuing of a Certificate of Quality (CoQ)	\$25 (single payment, not depending on quantity)
Inspection by the Plant Protection Service of the Department of Agriculture for the issuing of a Phytosanitary Certificate (PC)	Depends on the quantity, usually \$20 per 20-foot container (plus single payment of USD 25 for official per diem)
Submitting export documentation to custom (through custom clearing agent)	\$100 (payment made to custom clearing agent not customs)

### *Importing*

Import duties are assessed on CIF value of most imports at varying rates between 2.5 and 35 percent. The rates vary according to the classification of goods (raw materials, fuel, equipment, intermediate material and consumer goods). If concessionaries obtained investment incentives, they can import their equipment (but not vehicles) free of duties providing that no similar items are produced in the country.

### *Investment incentives*

Net Operating Losses May be carried forward for 3 years

Tax reduction Investments in new projects (greenfield investments) or in existing but inactive projects benefit from 50 % reduction in the corporate tax rate during the period necessary for recovering the investment, up to a maximum of ten years. For investments in the provinces of Niassa, Cabo Delgado and Tete, the reduction is 80% of the normal rates.

Special tax benefits Granted to investments for the rehabilitation of expansion of existing firms or projects. For a five-year period, an immediate 100% write-off is allowed for investments in new equipment and in the construction of civil installations and agricultural.

Fiscal incentives in the form of duty-free imports are also available for the initial investment in wood processing equipment.

### *The Poverty Reduction Strategy and Action Plan 2006 - 2009*

The Poverty Reduction Strategy and Action Plan (PRSP II 2006-2009) makes relatively little mention of forestry. It makes some vague statements about ensuring the sustainable management of forest resources (para 530), and about promoting an information system on existing resources (para 533).

Nhantumbo & Ogle (2006) point out that the PRSP focuses on the development of small and medium enterprises, better collection of revenue, and budget allocation, stating that these areas are particularly relevant for the forestry sector because the sector's competitiveness and contribution to the economy depend on improvements in management efficiency and on the operations of small and medium-sized enterprises, which can grow, accumulate wealth and savings, and reinvest in the sector.

In the GoM's Annual Social & Economic Plan (PES 2007) there is also very little detail on actions to be taken in the forestry sector. It is stated that there will be growth in the sector globally of 2.9% and that commercial production of round wood timber will grow by 5%.

### *The National Program for Agricultural Development (PROAGRI)*

The second version of the PROAGRI, to run from this year, was developed on the basis of a strategic environmental assessment (SEA) of the programme to assess positive and negative impacts. Strategic interventions were planned to ensure its social, economic, and environmental sustainability.

The priority objectives for the forestry and wildlife component of the PROAGRI II programme were identified as:

1. An effective and efficient normative and institutional framework established for the forest and wildlife sector.
2. Improved access of communities to forest and wildlife resources and sustainable forest and wildlife management.
3. A competitive and diversified commercial sector established based on the sustainable management of forest and wildlife resources.
4. Forest and wildlife resources effectively protected and conserved for the production of environmental and other public services.

The SEA process also identified, however, an urgent need for a concerted and integrated zoning and land-use planning process. Zoning and land-use planning are needed to ensure that national, provincial, and district level decisions on land and resources allocation for different uses and users are properly informed.

Resource assessment in this way should inform the allocation of resources to short and long-term forest operators, and is seen as critical to facilitating the monitoring process. Furthermore, research on the impact of various interventions is identified as being a key element to developing an evidence-based response to problems (Nhantumbo & Ogle, 2006).

### *Practises and experience*

The implementation of this new policy and legislative framework has been beset with various problems. Some of the most important divergences noted have been:

- Despite a policy which called for a phasing out of the SLs and the establishment of scientifically managed concession areas, in 2005 there were still 462 SLHs operating

and to date only 63 of the 126 approved concessions have management plans.

- Consultations with local communities are not conducted thoroughly and are not broadly participative. What seems to occur in practice is some form of meeting between district or provincial level government officials, company representatives and some community ‘representatives’ (who may or may not actually speak for their communities)
- Both government and private operators have largely failed to deliver benefits to local communities. This is partly because of the superficial nature of the consultations but relates also to the absence of an enforceable contract between the communities and the operators and to real logistical problems.
- The required preparations for concession applications are generally weak. For example, the detailed timber inventories imply a substantial expense for the would-be concessionaire, prior to them having any guarantee of a return. They are therefore unwilling to invest the requisite finances to have these completed properly and these inventories, by and large, are therefore realized without any real scientific basis. A relatively small number of consultants, accredited by the DNTP, are permitted to conduct these inventories and they often use data provided to them from the Department; largely this is obtained from the national forest inventory data dating from 1994.
- The management plans themselves are often inadequate. In particular, the establishment of a sustainable quota and measures to deal with local social issues related to the concession management are both weak areas (Heikkinen 2006). There are few accredited consultants for the production of management plans, leading to generally poor quality plans; as an example, all of the management plans for concessions in Cabo Delgado have been produced by a single accredited consultant.
- The poor quality of management plan is compounded by the low professional capacity of forest concession personnel. There is no vocational training in the forestry sector in Mozambique. Most of the workers are trained on-the-job and real expertise in forestry or timber processing is often absent (Savcor Indufor Oy, 2007).
- The inclusion of sawmills in concession management plans may or may not happen; there is a general shortage of functioning mills, which at least indicates a lack of enforcement of this regulation. The legislation does not stipulate any minimum capacity for processing and there is no link to the size of the concession or the volumes of timber licensed under the annual quota system. Sawmills, often of small capacity, are therefore installed and then not utilised.
- Payments to local communities of the 20% share in revenues are not happening. There is no standard implementation of this scheme at a national level and only limited local initiatives have put this provision into practise<sup>69</sup>. In Cabo Delgado, only one community has so far received payment.
- Measures to provide incentives to enforcement agents have not been effectively implemented. While government would describe the efforts so far as a qualified success, with room remaining for improvement, most other observers express doubts about the efficacy of not only this, but all attempts to limit corruption. Many of the agents responsible for enforcement, including local enforcement agents from the state, complain that their entitlements to 50% of the fines are very rarely honoured.
- There has been no implementation of the provision that a 40% reduction in royalty payments should accrue to operators producing value-added products locally, largely

<sup>69</sup> This could be explained as resulting from political wrangling in Mozambique’s legislature between those who feel the need to put the law to more practical use and those with contrary objectives.



because the concessionaires have no method of proving how much wood goes into processing. That is, there is no chain of custody or log tracking system (Savcor Indufor Oy, 2007, p4).

- There remain legislative gaps and a lack of guidance in relation to a number of important management issues; the most important of these relates to the delegation of powers to co-management groups.

### *Economic significance*

The productive forests of Mozambique cover a total area of about 20 million hectares, or 25% of the terrestrial surface of Mozambique. In Cabo Delgado, the productive forest represents 36% (29,589 km<sup>2</sup>) of the total area of the province (82,635 km<sup>2</sup>)<sup>70</sup>. The total value of the trees in Cabo Delgado is estimated to represent roughly 97 million USD (Cuco et al, 1996).

The forest sector has contributed less and less to the economy of Mozambique during the last decade, while log exports have increased over those five years. The GDP contribution decreased from 3.9% to 3.1% in 1996 and 2001 respectively<sup>71</sup>.

Commercial forestry activities, i.e. industrial forest extraction and forest industries, contributed steadily around 0.6% to the GDP over the same period. In 2005, value of declared wood exports corresponded to 27,1 million USD<sup>72</sup>, less than 0,3% of the world market<sup>73</sup>. Following Germizhuizen and al. (2007, p. 14), “Mozambique is globally ranked 43 out of 104 countries in the export of round logs”. The wood exports rank still as the fourth biggest single item traded from Mozambique after aluminium, electricity and prawns<sup>74</sup>.

In the past two years, the provinces of Sofala, Zambézia and Cabo Delgado have accounted for over 70% of the national log cut.

Table 3 – Value of Timber Exports from Mozambique by Group 1996-2000 (US\$000, CIF)

Product	1996	1997	1998	1999	2000
Round wood (logs)	5,232	10,213	6,790	10,421	24,881
Sawn wood	1,227	2,051	1,244	2,946	4,053
Parquet + Panel	88	83	111	172	456
<b>Total</b>	<b>6,547</b>	<b>12,347</b>	<b>8,145</b>	<b>13,539</b>	<b>29,390</b>

Source: ITC/UN 2002

Table 4 - Value of Timber Export from Mozambique (all products) 2001-2005 (US\$000, CIF)

	2001	2002	2003	2004	2005

<sup>70</sup> Calculated with SAVCOR (2005) data.

<sup>71</sup> DNFFB (2003). A contribuição do sector florestal e faunístico para a economia do país.

<sup>72</sup> Germizhuizen et al. (2007)

<sup>73</sup> ITC website

<sup>74</sup> Mozambican Industrial Performance and Investment Climate 2003.

<b>Total</b>	<b>12,161</b>	<b>17,691</b>	<b>17,476</b>	<b>30,675</b>	<b>27,150</b>
--------------	---------------	---------------	---------------	---------------	---------------

Source: Germizhuizen *et al.* (2007, p.15)

### Annual log cut and production of sawn timber

In 2004, Cabo Delgado province had an annual reported production of 30,337 logs and 45% (13,729 logs) of the total log production was exported, mainly to Asia. 4,280 m<sup>3</sup> of wood were processed in squared log and 79% of this production was exported<sup>75</sup>. These figures present a similar pattern to the situation at a national level. Mozambique's greatest proportion (71.86%) of forest products exported has been in the form of round logs. Sawn timber makes up 17.49% of the total exported value. The rest of Mozambique's processed forest product exports amount to less than \$12 million or an average of less than \$2 million per annum (Germizhuizen *et al.*, 2007, p.18 draft).

The figures have to be considered cautiously, as it is widely recognised that a large part of the production is not properly reported by the operators and because of the discrepancy showed between the different available sources. As is shown by the following (Table 5, Table 6 and Table 7), timber volume figures for actual production, licensed production and total logs cut are inconsistent between different sources and from the same sources.

Table 5 - Timber production in Cabo Delgado

<b>Annual Production (cubic metres)</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Annual Log Cut	27,683	51,456	34,376	63,062	21,167
Sawn Timber Production	1,418	5,161	11,403	6,514	7,362

SOURCE: National Directorate for Forestry and Wildlife (DNFFB)

Following this source, the annual log cut in Cabo Delgado represents 21% of the national yearly production (23% for the sawn timber production). These figures are consistent with the one mentioned in the PES report (MINAG 2005).

Table 6 - National licensed forest production (2005)

<b>Product</b>	<b>N.º Licences issued</b>	<b>Units</b>	<b>Licensed Volume</b>
Round logs	824	m <sup>3</sup>	134,886
Firewood	440	bundles	54,475
Charcoal	1,552	sacks	781,166
Poles	132	bundles	8,164
Bamboo	175	bundles	9,686

SOURCE: National Directorate for Forestry and Wildlife (DNFFB)

Table 7 - National Log Exports (000 cubic metres)

	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Logs exported as round logs	33.6	65.0	59.0	72.6	60.0
Logs processed domestically	88.6	98.2	54.1	79.1	42.6

<sup>75</sup> Calculated with SAVCOR (2005) data.

Total log cut	122.2	163.2	113.1	151.7	102.6
Annual cut exported as roundwood	27%	40%	52%	48%	58%

SOURCE: National Directorate for Forestry and Wildlife (DNFFB)

The proportion of log exports in relation to annual cut has remained high for the past three years. This is also the case in Cabo Delgado, where 35% of the annual log cut has been processed in 2005. 100 sawmills in 2005 produced approximately 32,000 cubic meters of sawn timber (Nhantumbo & Ogle, 2006)

### *Mozambique-China wood trade profile*

From 1996 to 2005, over USD 136 million worth of timber was exported from Mozambique. In 2001, China supplanted South-Africa as Mozambique's largest trading partner in forest products. China is the leading importer of wood products from Mozambique with 45.39 percent of the total exports valued in US dollars. Hong Kong is second with 18.68 percent of total export, followed by South Africa (12.95%) In 2005, Mozambican wood export to China represented a value of USD 19 million, with an additional USD 1.6 million registered separately to Hong Kong (Germizhuizen *et al.*, 2007 draft). Mozambique is thus by no means the largest source of China's timber import as it provides less than 0.12% of the total value of timber imports to China<sup>76</sup>.

Over the past 6 years, China has been the by far the greatest importer of logs from Mozambique. Over 60 percent of the total logs exported from Mozambique went to China. Hong Kong accounts for more than 25 percent of Mozambican log exports meaning that China and Hong Kong absorb more than 85 percent of the estimated 429,710 m<sup>3</sup> logs exported from Mozambique during 2000-2005. Exports to the rest of the world are relatively insignificant. South Africa has imported only and estimated 7,500 m<sup>3</sup> of logs over 6 years. China was the third importer of sawn timber from Mozambique between 2000 and 2005 (Germizhuizen *et al.*, 2007 draft).

China is actually the world leader in the timber trade and processing market, which explains the strong Chinese presence in Cabo Delgado and in the rest of Mozambique. A China that wants to maintain and consolidate this position needs to expand and diversify its supply source and, after 16 years of war, the underexploited Mozambican market has logically appeared on the radar.

Table 8 - Value of Timber Exports from Mozambique by Destination 1996-2000 (US\$ 000, CIF)

Country	1996	1997	1998	1999	2000
Hong Kong	3,114	9,899	5,733	6,951	16,172
China	0	29	158	3,069	8,424
Germany	1,035	101	493	1,262	1,509
South Africa	541	787	952	868	665

<sup>76</sup> In 2005, the total value of China wood product import was USD 16.4 billion (White, A., 2006, p.4)

Portugal	248	202	146	607	876
Italy	250	349	310	447	667
France	353	547	13	5	90
Spain	0	208	142	26	339
India	673	24	0	5	0
Japan	44	0	127	39	295
Belgium	86	14	0	67	201
Czech Rep.	0	0	0	118	118
Korea Rep.	46	96	43	16	0
Thailand	84	91	0	0	0
Netherlands	0	0	28	59	34
USA	73	0	0	0	0
<b>Total</b>	<b>6,547</b>	<b>12,347</b>	<b>8,145</b>	<b>13,539</b>	<b>29,390</b>

Source: ITC/UN 2002

Table 9 - Value of Timber Exports from Mozambique by Destination 2001-2005 (US\$, CIF)

Country	2001	2002	2003	2004	2005
China	1,509,193	3,691,077	4,929,029	19,133,545	19,020,907
Hong Kong	3,321,696	6,016,999	5,630,025	3,499,461	1,642,280
South Africa	3,301,312	1,357,359	2,516,610	3,583,049	1,527,518
Portugal	1,328,973	627,536	728,927	809,249	444,009
Italy	310,546	908,023	575,682	296,062	497,484
Singapore	40,808	1,032,914	112,196	314,109	1,048,824
Germany	184,194	372,564	389,176	536,273	658,595
Zimbabwe	85,419	2,124,007	7,756	7,303	
Iran	509,633	8,127	43,706		23,324
Malaysia	965,391	185,782	83,744	119,828	
Switzerland	33,820	106,987	222,517	253,624	263,630
Netherlands	167,595	246,367	91,699	145,045	74,422
Greece			584,653	6,093	7,658
India			381,686	19,724	103,608
Belgium	29,800	6,262	64,115	91,924	356,239
Spain	38,611	95,323	59,611	107,374	57,999
Lithuania			48,679	71,446	219,464
Indonesia	20,827	159,738		56,086	8,433
Taiwan	57,373	62,596		53,977	63,353
U.K.	49,322	99,654	38,839	44,038	562
Mauritius	39,425	17,438	56,810	55,741	49,164
Cambodia		79,440	32,017	105,064	
Vietnam	22,038	33,705	54,788		105,341
Russian Fed.				198,784	9,244
Croatia		206,083			
Other Countries	145,655	198,657	349,050	253,257	185,210
<b>Total</b>	<b>12,161,631</b>	<b>17,636,638</b>	<b>17,001,315</b>	<b>29,761,056</b>	<b>26,367,268</b>

Source: Germizhuizen et al., 2007 (draft)

A major contributing factor for the prevalent Chinese presence is probably related to the fact that even small Chinese operators are well connected to the guaranteed export market that is China. These operators can also rely on advance payments by their clients and thus compensate for the lack of local affordable credit. In the case of Cabo Delgado, it is also noticeable that some Chinese operators have in fact relocated from neighboring Tanzania, from where they have brought machinery and, in many cases, their Swahili-speaking foremen. A further hypothesis is that Chinese operators are used to the adverse technical and environmental conditions, and tend to cope better than other foreigner

forestry operators. During our field visit, we noted the harsh living conditions that many of the Chinese employees face in the sawmill premises. This ability to adapt helps to reduce start-up costs and to lower their running costs, in particular regarding transport or expatriate salaries and benefits. Chinese operators also tend to rely less on heavy machinery and more on a human workforce. These reduced costs make the Chinese less vulnerable to political turmoil, drastic changes in policies or natural disasters. In adverse cases, they have less to lose than their European counterparts and can relocate more easily. One further factor is that the Chinese operators face less public or consumer concerns regarding the methods of wood extraction or the processing conditions. In China, Greenpeace activists are not known to have blocked the unloading of tropical timber, as they have been able to do, for example, in France.

#### *Domestic timber demand*

Exports in log form have been 48 percent to 58 percent of the total log cut in the past three years. In 2005, 38 percent of sawn timber production was exported (Nhantumbo & Ogle, 2006). These figures show that domestic timber demand is important and contributes to a significant portion of the forestry activity. But the domestic market for primary and added-value wood products is growing rapidly and local production does not satisfy the demand. Market development by saw millers has been poor. Little cutting or market testing of lesser-known species is carried out to fill the construction timber market. This segment of the market is being partially satisfied by imported pine.

The country has very limited kiln-drying to support tertiary added value joinery and furniture-making. Other added value processing such as cut stock or componentry for furniture, glue lamination, joinery (doors, door frames, moldings, window frames, stairs, solid-wood kitchens) and furniture are still in their infancy.

#### *Description of the supply chain*

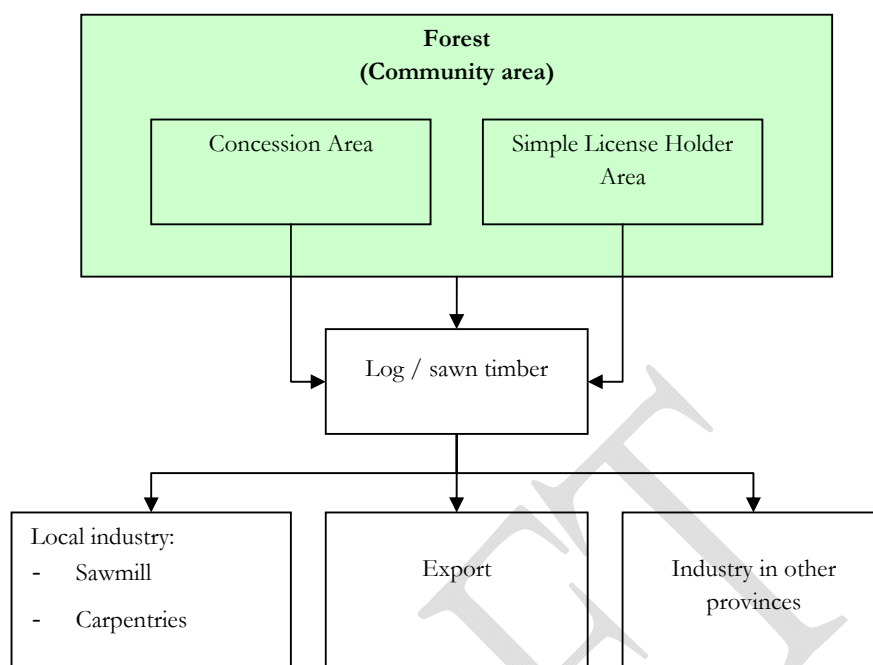
The description of the supply chain presents a functional analysis and details the various elements: the timber flow and the key nodes, the technical aspects of the flow, the wood species and products, the locations of the forestry operations, and the stakeholders.

## Functional analysis

Figure 3 - Functional Analysis of the Chain - Cabo Delgado

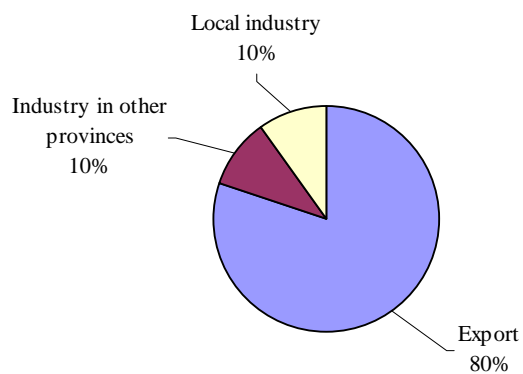
Stage of the chain	Function	Location		Agent	Output	
Extraction	Tree marking	Mozambique	Concession area Simple license logging area Community forest area	Community members (CM)	Mark	
	Access opening		Primary log yard	SLH/Concession staff/CM/Truck owner	Trail	
	Felling, lopping and crosscutting				Trunk	
	Trunk transport to		Main log yard	Concession /sawmill staff	Sawn wood	
	Trunk bark cut					Log
	Log transport to					
Production	Sawing		Sawmill	Concession /sawmill staff	Sawn wood	
Export	Charging into container	Mozambique	Port	Truck owner	Sawn wood, log	
	Container transport to			Caminhos de Ferro de Moçambique		
	Loading into vessel					
	Shipping					
	Transport to		China via Comoros			
	Unloading		Port	Port operator		
Production	Processing	China	Sawmill		Sawn wood	
	Manufacturing		Factory		Manufactured product	
Marketing, export	Marketing, sales, export	Factory products wholesaler				
Retail	Marketing, sales	Factory product retailer				
	Consumption	Retailers	End user			
	Loading	Port	Port operator			
Export	Unloading	USA/EU	Port	Port operator		Manufactured product
	Transport to		Importer warehouse			
Marketing	Marketing, sales	Factory products wholesaler				
Retail	Marketing, sales	Factory product retailer				
	Consumption	Retailers	End user			

Figure 4 - Timber flow in Cabo Delgado



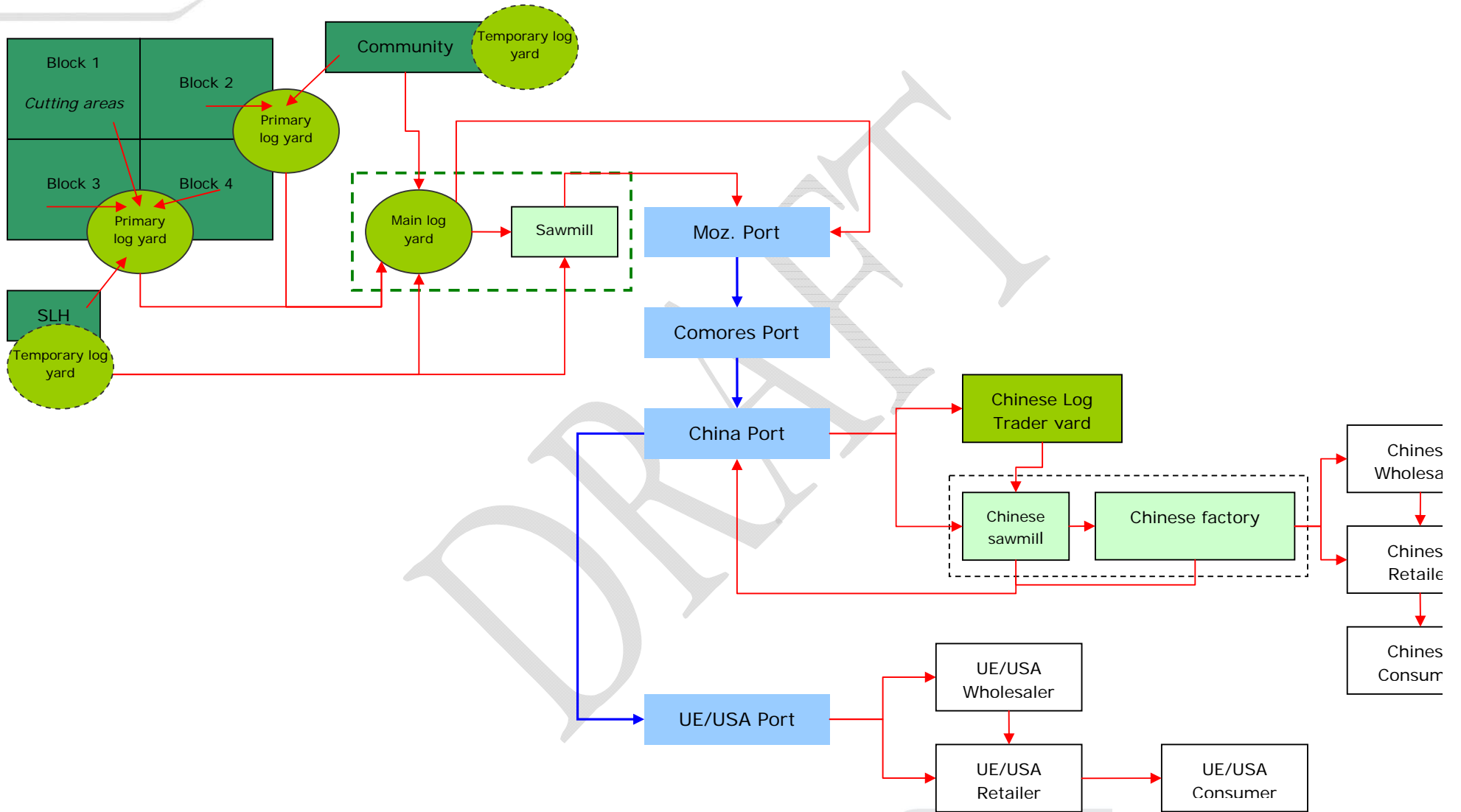


### Log destination in Cabo Delgado



DRAFT

Figure 5 - Cabo Delgado - Chinese Timber Supply Chain



### *Technical aspects*

The technical aspects considered here are the harvesting methods, the means of transportation, the transformation process and exports.

#### *Harvesting*

The methods of harvesting timber in Cabo Delgado vary greatly according to the scale and capitalization of operations. Operations tend to be labour intensive and generate quite a lot of waste of time and resources. Tree selection is done randomly by tree spotters rather than by reference to inventory. Separate teams extract the log and they often fail to find all the logs previously spotted.

The large scale exploitation of a concession area is likely to involve some modern equipment (chain saws and tractors), although there still seems to be nothing on a par with harvesting in the more productive forests of West Africa, for example. At the other end of the spectrum, operations can be as rudimentary as the felling of trees with handsaws and the removal of trunks literally by rolling them through the forest to the nearest road.

There is no requirement for the replanting of forests, nor do the majority of the operators or the government seem to be engaged in any sort of significant forest regeneration efforts. However, Mr. Farouk, the general Manager of Miti Lda declared that the company has planted more than 18,000 trees within their concession areas. There is no independent verification of this information.

#### *Transportation*

Larger operations will use tractors to remove logs from the forests and to assist with loading them onto trucks, which then rely on a network of narrow dirt pathways to get the logs to roads and eventually to mills or shipping ports.

Most logging occurs in areas with numerous streams and rivers; these waterways are unsuitable for transportation due to the fluctuating water levels.

Smaller operations still rely on trucks for transport out of the forests, but are more dependent on manpower to move and load logs after felling.

#### *Transformation and export*

The 1999 law stipulates that concession holders must process their harvest in accordance with subsequent regulations. The regulations were issued in 2002 and stipulate the in-country transformation of all but two of the “precious” species; enforcement here is lagging. Explanations of this situation vary from it being too soon to expect genuine enforcement, to resistance from the operators opposed to this requirement and having effectively lobbied to have it ignored indefinitely.

Otherwise, two concessionaires (Miti Lda and Mofid Lda) say they sell whole logs or squared wood for export, almost exclusively to Chinese buyers who then ship to Chinese cities for milling and wholesale, usually for the fabrication of furniture, also in China.

Miti Lda export 80% of its production to China through the company Mico Lda and Madeiras Alman Lda, based in Cabo Delgado, or through four importers based in China. The rest of its production is sold to Portugal and Germany.

Madeiras Alman Lda, which owns concessions in Sofala and Zambézia also export most of its production to China (Changai, Lian Hua Shan and Zhang Jia Gang) and the remainder is sent to Singapore or to the United States. SLHs are under no processing obligation and apparently sell the majority of their harvest whole to the same Chinese buyers.

Nevertheless, Cabo Delgado is said to have something in the vicinity of 20 sawmills, of which 6 are Chinese-owned. Many sawmills, however, were imported as second hand equipment from Portugal prior to 1975, or more recently from China. Processing has focused on low added-value sawmilling to produce rough-sawn green timber of a limited number of high-value species. Investment in modern tertiary wood processing (e.g., kiln drying, plywood, veneer, moldings, and furniture) is non-existent.

Sawmills are in disrepair and generally produce lumber that is substandard for international markets. Some of these mills may, in fact, result in lost value resulting from poor quality control and wastage. Operators have been actively lobbying the government to rethink its transformation policy based on their contention that the investment required for modern milling would not yield sufficient returns to justify the costs.

A log exported in round form is worth approximately 60% more than the exported sawn timber that can be obtained from that log (Nhantumbo & Ogle, 2006). In 2002, China eliminated import tariffs on logs and sawn timber<sup>77</sup>, contributing to China's successful and dramatic increase in raw log imports<sup>78</sup>. This increase was despite many African nations' attempts to promote domestic value-added production in their timber sectors.

Miti Lda is one of the few Mozambican owned companies active in the forestry sector in Cabo Delgado. This company has three concession areas, totalling 163,500 ha, but its two sawmills are inoperative due to the obsolescence of the machinery. Nevertheless, the general manager of Miti Lda, Mr. Farouk, intends to install a new wood processing unit in partnership with Chinese investors (Mr. Farouk pers com).

<sup>77</sup> China Daily, Import Tariffs on Wood Products to Be Cut, February 19, 2002 (quoted in Thornton, 2005).

<sup>78</sup> Chunquan, Taylor and Guoqiang, China's Wood Market, Trade and the Environment, WWF International, Science Press USA, Inc. 2004 (quoted in Thornton, 2005)

### *Key nodes in the chain*

Main key nodes in the Mozambican side of the chain are cutting sites, log yards, sawmill and ports. Cutting sites range from the concession area, the SLH area and the community forest area. Log yards can be designated as primary, main or temporary. Primary yards are located in the concession or in the SLH area, main yards are found within the sawmill premises, whether they are owned by the concessionaries or not, and temporary yards are situated near to the main access routes of the SLH cutting areas.

Ports in Cabo Delgado province are situated in Pemba and Mocimboa da Praia, although there are also anecdotal reports of informal unregulated ports and loading areas along other northern parts of the provincial coastline (Thornton, 2005).

### *Cutting sites*

Current cutting sites vary widely in terms of location and size. Concessionaries do not operate in delimited blocks, despite this forming part of the requirements of the management plan. They cut within their concession, but without any rigorous geographical planning.

Some researchers have claimed that most concession holders target the richest, closest, and most profitable areas of their concessions first and that a number of concessions are likely to be abandoned after the first five years of exploitation (Nhantumbo & Ogle, 2006).

In the search of only the better trees, SLHs frequently cut outside their attributed area, which are in any event only vaguely delimited. Local community members cut in the surrounding forest of their villages, but, despite their general lack of transport, these can still be quite extensive areas. In a village nearby the district capital of Montepuez, community members declared that they will walk three days before installing their camp and starting to cut.

### *Log yards*

Logs yards can be divided in function of their location and purpose; this last criteria being related to the type of operator who makes use of the yard. The primary log yards, situated in concession areas or in SLH areas, can be differentiated from the main log yard, located in the concession or sawmill premises and the temporary yards, to be found where communities or SLHs temporarily operate.

All these yard types serve as log concentration and collection sites, but other specific functions can also be noted. The main log yard of the concession or sawmill is frequently used to permanently accommodate the workers, to dry wood, to cut bark and to park vehicles. The temporary yard often serves as the camp from where community members and SLHs operate their cutting activities and trade wood to exporters.

## Ports

There are two ports in Cabo Delgado Province: Pemba and Mocimboa da Praia. Both ports have been rehabilitated in previous year but their equipment remains limited. In Pemba port there is no crane and only one container lift which is frequently broken down. There is also no crane in Mocimboa da Praia and no lift. Cranes mounted on the vessels need to be used for loading in both ports.

More details about the situation of these ports can be found in the section 0 below.

## Species and Products

Most of the exploited wood species fall into the precious or first class and first class categories as defined by Mozambican legislation. By law, the first class species must be processed in Mozambique prior to export, but logs of precious species can be exported without any processing. Seven species are currently exploited, as listed below.

Table 10 - Main Timber Species

Commercial name	Latin name	Classification	Main uses
Pau Rosa	<i>Berchemia zeyheri</i>	Precious*	Logs (Export)
Pau-preto	<i>Dalbergia melanoxylon</i>	Precious	Logs (Export)
Umbila	<i>Pterocarpus angolensis</i>	Precious*	Logs (Export), Lumber
Mecrusse	<i>Androstachys johnsonii</i>	First Class	Parquet (Export), Sleepers
Chanfuta	<i>Afzelia quanzensis</i>	Precious*	Logs (Export), Lumber
Panga-Panga	<i>Millettia stuhlmannii</i>	Precious*	Logs (Export), Lumber
Pau Ferro	<i>Swartzia madagascariensis</i>	Precious	Logs (Export)

\* Classification as of 2003 (in 2002 these were 1st Class)

Source: Rytkönen (2003), Germizhuizen et al. (2007 draft)

The main products of the forestry sector in Cabo Delgado are logs, sawn wood and parquet. Logging for export is clearly the least sustainable aspect of sector activity because companies do not themselves do inventories, and the inventories by contracted consultants are based on old or biased data. Until more reliable inventory data is available the annual quotas granted for export have a very flimsy scientific justification. This makes true sustainability completely impossible.

The Chinese owned sawmills mainly produce squared log to fulfil the legal obligation to 'process' first class wood. Only one Chinese-owned sawmill claimed to be processing parquet, but their representative estimated that this production line represented no more than 10% of the total sawmill output. According to sawmill informants, most of their exports to China are destined for furniture factories with a small proportion for the manufacturing of musical instruments (Pau-preto).

Table 11 - Simplified Cost Comparison of Log and Sawn Timber Exporting

Cost Component	USD per m <sup>3</sup>	
	Sawn Timber for Export	Log Export
Felling and extraction cost to loading point <sup>a</sup>	25	25
Royalty	31	123
Reforestation Levy (15%)	5	18
Transportation (350 km one way to port or mill) <sup>a</sup>	60	60
Logging overheads <sup>b, c</sup>	10	10
Sawing costs to green sawn <sup>a, b</sup>	52	
Sawing overhead <sup>d</sup>	5	
Transport to port	10	
Total Costs	198	236
Profit margin	22	114
Selling Price <sup>e</sup>	220	350

<sup>a</sup> Assumed to include depreciation

<sup>b</sup> Based on TECHNOSERVE analysis "Overview of the Mozambique Timber Industry" May 2003

<sup>c</sup> Includes concession cost amortization, management, marketing

<sup>d</sup> Includes management and marketing

<sup>e</sup> Based on 0.4 m<sup>3</sup> (40 percent conversion rate) of Umbilla sold at US\$550 per m<sup>3</sup>

Note: The figures were obtained from fieldwork and are considered to be indicative averages for comparative purposes

Source: Nhantumbo & Ogle, 2006

### Stakeholders

The main stakeholders of the chain in Cabo Delgado are the following:

- Local community members
- Simple license holders
- Concessionaries
- Sawmill operators and exporters
- Brokers
- Sawmill and concession workers
- Transporters
- Shipping company
- Civil servants

Their main characteristics and function are detailed below. Chinese act mainly as sawmills operators and exporters. In each category of stakeholder, we explore relevant Chinese connections and roles that can be summarised as follow:

- Pre-financing of forestry activities (licensing, logging, transport and bribes)
- Lease of equipment (chainsaws, vehicles)
- Logging (when concessionary)
- Transporters
- Sawmill operators
- Trader and Exporter

- Side-selling controller (by sharing information between Chinese operators)

### *Local community*

Local community members in forest areas of Cabo Delgado play an important role in the commodity chain. They provide the workforce for forest concessionaires, for SLHs and for sawmills situated in the towns. In addition to the unskilled functions that many workers perform, there are more specialised positions; some are employed as “tree markers”, responsible for identifying the better trees and for opening access routes.

We met with local community members living around the small city of Montepuez who cut, transport and trade timber trunks in Montepuez. This activity remains very marginal, since the use of tractors for towing trunks is expensive and is not often available locally.

When working for a concession or sawmill, local community members earn between 40 and 50 MT (US\$1.5 and US\$1.9) per day on a seasonal base, without any written contracts or any kind of social protection (see also section □). These values are slightly superior to the actual monthly minimum wage in the agriculture sector of 1,050 MT (US\$39.5), but it must be noted that community members only work on a casual basis and minimum wage stipulations are largely irrelevant.

### *Simple Licence Holders*

According to data from SPPFB in Pemba, there are 40 SLHs in the province, representing 19% of all the simple licenses issued nationally in 2005 (MINAG, 2005). In 2006, they were allowed to cut a total of 16,535 m<sup>3</sup> of various species. The number of SLHs has actually grown over the last few years, despite the policy of encouraging more concession management. The reason for this growth was explained by one local SL operator to a UN mission in 2006:

"As a concession holder you become a 'legal entity', which means you are just a target for the labour department, finance department, and every other department is after you. If you are a SL holder you have only one chainsaw, one truck, you move into an area and work it and you're gone. It's much easier to fly under the legal radar - inspections are rare and bribes are common." (IRIN, 2007)

Their technical and financial capacities vary greatly, as do their markets. Some own a truck or a tractor, chain saws and a small carpentry (in the case of Mr. Sergio da Costa Ferreira in Montepuez); others have no significant technical means for log harvesting and serve merely as ‘middlemen’ between community members and sawmill operators (in the case of Mr. Jamal in Mueda), organizing and facilitating the cutting, transport and marketing of trunks. Between these two extreme examples, lie a small minority of SLHs who operate small, rudimentary sawmills (in the case of the company Naomy Lda. in Montepuez and Pemba).



By law, simple licenses are reserved for Mozambican citizens, but we estimate that roughly half of the SLHs sell logs to Chinese-owned sawmills. Mofid Lda, with sawmills and 2 concessions (see below) buy logs on a regular basis from a total of 12 SLHs. Tienhe Lda, a recently constituted Chinese-owned sawmill in Pemba have 4 SLHs as suppliers.

Micco Resources Trading Lda, another Chinese owned sawmill, source logs from 8 to 10 SLHs. A larger proportion of SLHs may in fact supply Chinese operators, but it appears that these operators tend to work with between 5 to 8 SLHs on a regular basis, with others only supplying occasionally. This practice seems to be more a response to the general unreliability of the SLHs in terms of side-selling, quantities and quality than a deliberate strategy to drive timber prices down. The harsh competition between Chinese operators rather tends to increase timber prices.

Chinese operators provide technical (trucks, chainsaws) and financial means (advance payment) to their regular SLHs. None of these relationships were established through written contract. All the details of the deal (volume, species, delivery dates, buying prices, etc) are established verbally and only handwritten records are kept by the Chinese operators. However, they complained about the lack of rigour and, in some cases, the dishonesty of their Mozambican suppliers. They declared facing recurrent problems, such as lack of log quality, reduced log quantities, 'side sales', and long delays in delivery.

Recent reports affirm find that most SLHs are now heavily in debt to Chinese intermediaries, who use this debt as a means of under pricing and leveraging over-cutting (Nhantumbo & Ogle, 2006; Mackenzie, 2006). In the context of extremely high interest rates and commercial banks that are reluctant to finance small and medium companies, however, the financing facilities provided by the Chinese make sense. According to an operator, TCT Industrias Florestais, (2003, p.8) the licensing fees have increased by 600% from 2002 to 2003 and all licence fees for the whole years production have be paid upfront at the start of the campaign. Credit provided by Chinese operators compensates this adverse context and contributes to the significant augmentation of SLHs.

### *Concessionaries*

In Cabo Delgado province, the data on concessions varies; we were informed that a total of 14 forest concessions have been allocated to 12 different concessionaries, of whom 1 is Chinese (Mofid Lda). However, the provincial authorities produced a list of concessions in the province in 2006 which records 23 concessions (of which 13 had been finally approved after producing a management plan), with 4 of these appearing to have some form of Chinese participation. The area of these concessions varies between 15,213 ha to 99,810 ha; a total of either 852,500 ha (information in January 2007) or 1,189,860 ha of forest (published data in 2006). According to the export statistics, it is most likely

that most of the concessionaires export to China, as is the case for the Mozambican concessionaire Miti Lda which, for example, exports 80% of its production there.

The total annual authorized volume of cut in the province is 27,594 m<sup>3</sup> of all species. The concessions between them employ a total of approximately 1,200 workers, most of them unskilled and earning less than US\$2 per day. This figure does not take into account the casual workers coming from the local communities.

Mofid Lda concessions are located in Mueda and Chiure. The total area of these concessions is 131,025 ha. In 2004, they produced a total of 8,900 m<sup>3</sup>. Mofid Lda concessions employ approximately 330 workers. They export to China, South Africa and Vietnam.

Table 12 - Concession in Cabo Delgado, 2006

Company	District	Área (ha)	MP	Year	Status
PANGA (Empresa Madeiras, Lda)	Montepuez	91,250	No Plan	2004	Approved
PANGA (Empresa Madeiras, Lda)	Nangade	15,213	Plan	2004	Approved
ROMACA (Rovuma Mad.de cabo)	Mueda	48,282	No Plan		
WOOD EXPORT, LDA	Mueda	99,810	Plan	2001	Approved
Moçambique Madeiras, Lda	Mueda	50,939	Plan	2002	Approved
Moçambique Madeiras, Lda	Nangade	27,344	Plan	2002	Approved
MADEIRAM, LDA	Macomia	64,416	Cancelled		
SIMAF (Sociedade Industrial de Madeiras, Lda)	Balama	66,496	Plan	2005	Approved
Mahomed Faruk Ibraimo Jamal	Moc. da Praia	24,063	Plan	2003	Not approved
MITI, Ida	Muidumbe	20,257	Plan	2003	Approved
MITI, Ida	Muidumbe	39,589	Plan	2003	Approved
Mofid MF-Inter Develop, Lda	Mueda	60,312	Plan	2003	Approved
Grupo Samas/ Salomão	Ngapa/Mueda	54,296	No Plan		
Mozwood /Albertus	Chiúre	61,371	No Plan		
Estaleiro Naval	Montepuez	45,387	Plan	2003	Approved
Mofid MF-Inter Develop, Lda	Chiúre	70,713	Plan	2003	Approved
K & T Trade (Pty) Lda/Tina Tsou	Nairoto/Montepuez	25,125	No Plan		
Jambirre Company, Lda	Montepuez	31,875	No Plan		
Macaloa, Lda/Narciso Gabriel	Pemba	48,125	No Plan		
Comadel	Nangade	37,652	Plan	2003	Approved
Pemba Sun	Meluco	43,656	Plan	2003	Not approved

Green Timber, Lda	Kwekwé, Namuro/Balane	98,089	No Plan		
Mahate Florestal	Mueda	65,600	Plan	2004	Approved

Source: SPFFB (2006)

### *Sawmill operators and exporters*

According to the Savcor report (2005), there were at least 21 wood processing units in 2005 and 6 are presently owned by Chinese. Beside their processing activity, Chinese sawmill operators are, above all, exporters of logs.

Table 13 - Chinese owned sawmills

Company	District	Export from
Pacific International Lda	Montepuez	Pemba
Tienhe Lda	Pemba	Pemba
MRT Lda	Montepuez	Pemba
Madeiras Alman Lda	Pemba	Pemba
Micco Trading Resources Lda	Mocimboa da Praia	Mocimboa da Praia
Mofid Lda	Mueda	Pemba

Source: Savcor (2005)

Chinese-owned sawmill operators are central agents in the Mozambican side of the supply chain. Apart from Mofid Lda, which has 2 concessions of its own, the sawmill operators buy logs from SLHs or concessionaries. To do so, they frequently need to finance SLHs' operational costs, a situation that is as risky for them as it is for the borrowers. Rather than being a planned strategy to entrap SLHs, this practice is probably more likely to be a logical response to the Mozambican economic and financial context. Without a supportive environment for Mozambican entrepreneurship, Chinese operators do not have a choice other than to pre-finance their suppliers.

The Chinese owned companies export almost all their processed timber production (squared logs or sawn wood, some parquet) and the logs bought from SLHs from Pemba or Mocimboa. Current exports are mainly to China, but also to Thailand and Vietnam.

Production is very rudimentary and adds little value; most of the Chinese investment in processing units appears to be merely a way to fulfil a legal prerequisite for permission to export. The Chinese owned sawmills serve more as trading posts, than as processing units.

These sawmill sites provide spaces to stock logs (primary yard), to parks and maintain vehicles and to load containers. Logs transactions and leasing of equipment mainly occur there.

Apart from Mofid Lda, Chinese operators in Cabo Delgado seem to be quite small companies without significant investment capacities or without interest in investing. This can be seen when we consider the fact that all machinery and vehicles that we saw were old and probably imported as second hand equipment. Most sawmills' infrastructure, such as buildings, are made with local materials or are prefabricated modules that have a short duration in the Mozambican climate.

### **Brokers**

One informant declared that there were no Mozambican or Chinese companies in Cabo Delgado that engaged solely in timber export. But there are many individuals, of all origins, who act as brokers between all of the various agents in the chain, their place in the hierarchy, a function of their sophistication and cash flow. Agents of this category are difficult to assess, since they do not publicise their activities. The brokers are frequently designed as the main cause of 'side selling' (see section 0 below).

### **Sawmill and concession workers**

Wage earners with technical skills are those who operate the logging equipment and those involved in oversight of the operations. The total estimated number of concession and sawmill workers is 1,400 (without counting casual workers from the local communities). These people are almost exclusively from outside the communities where logging occurs.

Unskilled wage earners come from the local communities. They generally cut underbrush and do most of the physical labour, including the manual loading of logs onto trucks. They are generally paid about 40 MT per day (US\$1.50), an amount which they feel is too little, but which corresponds with the fact that there is a large labour pool and very few job opportunities. In other words, people complain about the pay, but no one turns down the work.

### **Transporters**

Local haulers are crucial agents in the chain, even though the concessionaries and the processors/exporters own their own trucks and tractors. But, according to informants, this fleet is not sufficient to cover their needs and they frequently use the services of local transporters, or even share their vehicles<sup>79</sup>.

This is unexpected, in view of the transport capacity of the operators. The registered transport capacity shows a total of 94,000 m<sup>3</sup> and a utilized capacity of 66,000 m<sup>3</sup>, a pattern that is similar for all Chinese companies. Mofid Lda, Mico Lda and Heyne Lda have a combined capacity of approximately 32,480 m<sup>3</sup> far beyond their declared volumes of processed/exported logs.

<sup>79</sup> During our visit in Mocimboa da Praia, all the vehicles that operated in Micco Sawmill were hired from Miti Lda, a Mozambican owned company. Mr. Farouk, the manager of Miti Lda, confirmed that it is current practice between companies partnering in the wood supply chain.

According to our informants, a large proportion of their fleet is permanently immobilized, the result of high rates of breakdown<sup>80</sup>, the costs and lack of spare parts for repair. The logistics involved in forestry operation seem also to be particularly challenging for the operators. For them, it is frequently easier to rely on local ad hoc solutions for their transport needs, than to plan the use of their own vehicles over long distances and for extended periods.

This is linked to the way logs are supplied to the processors and exporters. Offers of log from SLHs, community members and even concessionaries constitute their main log suppliers. Their cuts are not coordinated or planned and offers of small quantities appear randomly and very frequently at the temporary log yards. These offers surpass the transport capacity of the SLHs or the community members. They cut far more than they can transport to the secondary log yards owned by their buyers.

As competition for supply is tight between processors and exporters, they hire local transporters to travel to the temporary log yards as soon as the offer is made. The local transporters thus play a vital role in sustaining the efficiency of the chain. This creates a challenging situation for law enforcement; a large part of the wood transport done in this way is not under license or is falsified.

There is another factor relevant to understanding the intense use of local transporters. The declared volume of logs is certainly far below the real volume being transported and all the operators appear to be working quite frenetically to supply wood to the processors and exporters. Even with the logistic constraints mentioned above, it seems that the use of local transport is principally a result of a growing and sustained demand for wood.

### *Shipping company*

Three shipping companies work in Cabo Delgado: Manica Freight Services, Maersk Mozambique and Span Freight Shipping Mozambique. This last company operates in Pemba and Mocimboa da Praia ports and ships nearly all the wood exported from the Province.

In 2006, Span Freight shipped between 170 and 220 containers (20ft) per month out of Pemba (between 2,040 and 2,400 m<sup>3</sup> of wood per month).

From Mocimboa da Praia in the same year, Span Freight sent approximately 18,000 tonnes (or 16,000 m<sup>3</sup>) of bulk loads (pers comm., Span Freight representative). The shipping season runs from July to February, so the total estimate is between 32,320 and 35,200 m<sup>3</sup> per year, approximately 35% higher than the figures for log exports (see Table 5).

---

80 Due to bad road conditions, obsolete equipment and low driving abilities.

80% of the Span Freight operation is directed to China, via the Comoros Island (Mutsanudo port), 5% to Vietnam, 5% to Thailand, the rest being sent to the UE and the USA. Wood from Cabo Delgado is unloaded in the Comoros, to be grouped and sent in larger vessels to its final destination. In China, the main entry ports for the wood are Shanghai, Huangpu, Guang Zhu, Lian Hua Shan, Zhang Jia Gang and Hong Kong.

The Span Freight representative in Pemba stated that the volume of shipping grew continually since they operations began in 2004 and he believes that only the reduced capacity of the port operator (CFM) limited this growth. In fact, Pemba and Mocimboa da Praia ports are considered the worst in Mozambique in terms of service quality.

Equipment in these ports is described as insufficient and management as incompetent. There is no crane in Pemba and the vessel-based cranes need to be used. The only container lift in Pemba breaks down frequently. Staff lacks the proper training and do not speak English. Whilst Nacala Port in Nampula Province makes an average of 140 loads in 24 hours, Pemba Port manages only 80 (Comoros - 200). Beside the reduced number of loads, Cabo Delgado ports are also characterized by a very high rate of accident and damages. Span Freight spends approximately US\$1,200 per month to repair the containers damaged during their stay on the quays or when loaded. This situation leads to an increase in the shipping prices of up to US\$400 per container. Another cause of container damage is frequent overloading by the exporters. This extra cost is assumed by the wood exporters and reflected in the consumer price.

The representatives of Chinese-owned companies confirmed the statements from Span Freight. Effectively, they would export more wood if the timeframe for loading containers into vessels was shorter. They are willing to pay for better services at the ports. The Mico Lda representative said that its yard in Mocimboa da Praia and Mueda would need four extra shipments<sup>81</sup> to empty the actual stock.

To avoid the problems encountered at the ports, it is reported that some exporters loads vessels in the open ocean, using barges (operating informally off the northern coast) for supply (Thornton, 2005, p. 6). This appears not to be frequent, as it is a very lengthy process. Mackenzie (2006, p.17) reports such practices also in Zambézia province.

Span Freight is occupying a profitable but delicate position in the chain. This company enjoys a de facto monopoly on wood shipping from Cabo Delgado. Growing demand, frustrated by the limited handling capacities of the ports, allows for profit margins to be maintained. In that context, Span Freight interests could be seen as colluding with illegal forestry sector practices used to supply the market. In fact, this company, through its accounting and administrative system, is probably the most reliable source of data on which to assess the true extent of logging activity in the province.

<sup>81</sup> Our informant didn't specify what the term "shipment" meant (or give numbers of containers or logs) and we presume that he was referring to a vessel.

### *Civil servants*

Numerous administrative bodies are involved in the supply chain. In Mozambique, civil servants from the DNTF, the police, the Ministry of Finance and the Industry and Commerce Ministry play a key role.

The Ministry of Labour, however, seems totally absent from the chain, notwithstanding the permanent and obvious infringements of the Mozambican Labour Law. More than 20 articles of the Labour Law are permanently violated in the sawmills (see annex).

All workers interviewed during the field visits declared that they had complained about their working conditions to the local delegation of this Ministry, but to no effect. The Labour Law, in chapter VII, states that the Labour Inspectorate should take immediate measure when infractions are certified. Interestingly, all the company representatives presented many complaints about the intrusion of the state into their business operations, but never mentioned any problems relating to interventions of the Ministry of Labour.

The representatives of the Chinese owned companies declared that they feel under permanent pressure from government officials. They explain that officials from the SPFFB, from Finance or from Industry and Commerce frequently come to their premises, requesting to examine files and check installations or products. According to informants, these officials are not interested in implementing effective controls and threaten them with fines for reasons that they do not really understand. The officials provide verbal and confusing answers in response to explanations regarding the nature and the legal basis of their infractions.

Our informants recognize that the lack of Portuguese language skills prevent them from challenging the 'findings' made by officials and that they pay bribes in fuel or money to prevent further harassment. Other types of pressure denounced by our informants relate to deliberate delays being suffered when requesting administrative decision (such as work permit renewals, car registrations and the issuing of land or property titles). Again, the strategy is to pay the officials for facilitating the process.

Our informants obviously ignore most of the Mozambican legal framework and administrative procedures. They describe it as unclear or complicated and consider that most official decisions are either arbitrary or targeted at leveraging bribes. They do not believe that a lawyer or a specialized consultant would help them to establish less fraught relations with the state administration. Our informant said that such services, in any event are not available in Cabo Delgado and that it would be too costly to use someone from Maputo.

### *Positive and negative issues along the supply chain*

Main issues along the supply chain are related to environmental and economical issues, to workers' health and safety to labour relation, rule of law and illegal practices of the forestry operators.

### *Environmental issues*

Negative environmental issues linked to logging activities in Cabo Delgado relate to deforestation, depleting wildlife, forest fires and unplanned access creation. Specific characteristics and practices of the forest operators also aggravate the environmental situation. However, some typical patterns of the forestry sector in Cabo Delgado mitigate the negative impacts.

### *Deforestation*

Deforestation is one of the most obvious environmental issues caused by logging activities; since trees hold soil together and help the ground absorb water, deforestation leads to soil erosion and flooding during the rainy season because water can not be absorbed into the ground. Deforestation is considered as still quite marginal in Cabo Delgado, due to the use of selective cutting practices. According to the District director of Agriculture in Montepuez, deforestation on the edge of Mu Upua River has already led to increased floods, although these could also just be the result of heavier than normal rains. The same has apparently occurred near the Megaruma River in Chiure district, where Mofid Lda has a concession. These floods hamper the regeneration of the forest, and the lands deforested by forestry operators are often subsequently occupied by farmers.

### *Wildlife*

Workers of forestry operators camping in the forest frequently hunt to feed themselves, but also to sell meat in the urban centres. A Forest Law Enforcement Officer declared that it is not uncommon to find bush meat on the trucks loaded with wood. The head of the Community Natural Resources Management Unit of the SPFFB in Pemba told us that they have received recurrent complaints from community members concerning the depletion of wildlife in the concession and SLH areas of Montepuez. He considers this the result of illegal hunting combined with the mere presence, and correlated noise levels, of the woodcutters and their vehicles.

### *Forest fires*

Forest fire as a damaging factor for the forest is a controversial issue that needs to be cautiously examined within the local context. Fire, depending on where, when and why it occurs, can be either an essential factor in the ecological cycle of the landscape or a destructive threat.

The effects and degree of harmfulness of fires depend on the ecological and socio-economic conditions of the region and also partly on the management objectives of a specified land area. Seasonality of fires is also an important factor: fires occurring in the



early dry season are less intense than late dry season fires, when the water content in the vegetation is low. The fires can be the result of human interventions serving different purposes and positive and negative effects both occur in Cabo Delgado.

When used in a controlled manner, fire can be an effective and inexpensive tool in community land management. It can be used for the promotion of grass re-growth and to produce better quality grass for grazing and the production of thatching material. It serves in the clearing and preparation of fields, facilitates hunting, enhances the germination of some plants and kills harmful insects. In addition, regular fire helps in controlling bush encroachment and prescribed burning can be used to reduce fuel build up, thus helping preventing more intense late dry season fires. Community members and forest operators also use fire in order to facilitate the opening of access roads. Concessionaries also use fire to create fire breaks around defined areas. Forest law enforcement officers in Cabo Delgado explained that all these uses of fire are common practice.

When burning out of control, fire can have serious ecological and economical impacts. These include the destruction of grasslands, wildlife habitats, plants and non-timber forest product resources (e.g. medicinal plants, wildlife, nuts, wild fruits and honey), the destruction of harvests, property and cattle and sometimes even loss of life. Excessive fire also exposes soils to wind and water erosion, eventually contributing to desertification. In addition, biomass burning releases CO<sup>2</sup> to the atmosphere, which is one of the main greenhouse gases contributing to climate change, and reduces vegetation available as carbon sink.

Agriculture Ministry officials in Cabo Delgado state that the current levels of uncontrolled fire occurrences and severity are putting excessive pressure on natural systems. The potential positive effect of the use of fire is suppressed by factors such as wind and human negligence. Too frequently, the opening of a field or trail gets out of hand and large portions of the forest are unnecessarily burned.

Mr. Farouk, the manager of the company Miti Lda presented an interesting opinion regarding forest fires. He declared that fire is necessary for maintaining a healthy forest in Cabo Delgado, but deplored the fact that fires are occurring throughout the year without any form of control. He mentioned that on several occasions his workers and vehicles were endangered by the burning practices of farmers or hunters.

#### **Access opening**

When unplanned, the opening of accesses to the trees can have an adverse effect on the forest capacity to regenerate. From the cutting site to the secondary or temporary log yard, trunks are dragged on the ground by tractor. This is particularly true in Cabo Delgado, where ad hoc trails are opened for the purpose of cutting and extracting only a

few quality trees in a certain area. This is a typical practice of the SLHs but is also practised by concessionaries who do not manage their areas by block. The manager of Mofid Lda was not able to show us an access map and he recognized that he relies on field staff to plan for trails.

The opening of access for obtaining selected species also creates clear zones that are frequently occupied by farmers. Where they facilitate connections with urban centres, the trails opened by foresters are appreciated by the local communities.

Timber extraction can be very damaging to rural earth-built roads and forestry operators are not responsible for their maintenance. The regulation currently prohibits logging and extraction during the rainy season, in part, in order to prevent heavily laden trucks destroying rain-softened roads. However, many companies ignore this regulation and district representatives of DNTF appear to be ineffective in enforcing it.

#### *Specific characteristic and logging practices of the forest operators*

Since only top quality logs are marketable, the foresters abandon large parts of the tree in the forest discarding timber with defects such as holes or knots. The low loading and hauling capacity of the SLHs also leads to the abandoning of trees even when they are of good quality. Forest law enforcement officials state that it is quite common to observe SLHs cutting more trees than they can transport.

Logs are also abandoned because they have small diameters. The cutting of undersized trees is frequent and threatens the regeneration of the forest. It appears that diameter restrictions are not being adhered to and it is not only the large trees (in excess of 40 or 50 cm, depending on species) that are being taken. The fact that unskilled woodcutters are employed exacerbates this situation and they will often cut some species (notably *Umbila*) that are unusable at lower diameters (because of the poor durability of immature wood).

SLHs are rarely trained in forestry and it is reported that few if any concessionaries employ forestry engineers. This lack of skilled staff impedes a scientific approach to logging practices that could limit damage and favour forest regeneration. For example, an engineer hired by Swedish Cooperation in Cabo Delgado told us that the very limited canopy opening under selective felling may have a negative impact on regeneration, since insufficient light gets into the forest to release saplings for further growth. According to this view, an intermediate level of disturbance and canopy opening may actually be better. Clearly, the nature of the regeneration present in a forest (seedlings, saplings, coppices) and the local site conditions (soil depth, fertility, moisture) should be assessed before harvesting methods and post-harvest treatments are decided upon. It is very doubtful that such considerations are considered by the forestry operators in Cabo Delgado.

Finally, the logging practices also lead to a waste of wood resources. Currently, nearly all branch wood remains in the forest after logging, representing a waste of resources and a potential fire hazard. Regulations currently prohibit the transport of such wood, in an attempt to prevent under-sized logs from being extracted. This needs to be rethought, as the small branch wood could very usefully be converted into charcoal, either for the very active domestic market or for the higher value export market. Mackenzie (2006, p.48) observed in Zambézia that “much timber is also left abandoned at the end of the year, usually because the operator is unable to extract it, or because the quota has been exceeded”. There are examples from other provinces, notably Sofala, where concessionaires have provided local communities with access to this timber for charcoal production and given them technical assistance in production methods (e.g. Marfer Lda).

#### *Mitigation of the negative impacts*

Cabo Delgado forests are denser than in the rest of Mozambique. But their density is still lower than Africa’s tropical rainforests found, for example, in the Congo Basin. The nature of Cabo Delgado forests makes it easier to find, access and remove valuable trees than in the more jungle-like conditions found closer to the tropics. Thus the relative openness of the forest allows log extraction without the use of bulldozers or heavy forestry equipment. This reduces forest floor damage and the need to construct large forest roads. The ability to harvest and extract specific trees limits the damage to surrounding ones.

#### *Economic issues*

Corruption and illegal practices of the forestry operators regarding logging, processing, exports and labour relations generate important financial losses for the Mozambican economy and for the state. As it is likely that most of the benefits of the timber trade are not reinvested in Mozambique, the growth of logging activities and wood export has a very limited positive impact on the national economy.

Low wages and non-compliance with the national social security scheme do not improve the living condition of the workers. Salaries are at subsistence levels and do not contribute to an increase in consumption or savings rates.

Fiscal and customs taxes evasion that characterise the forestry sector weaken the State capacity to improve its performance in term of law enforcement or vocational training. More broadly, the loss of tax income limits public investment in all sectors of society and particularly in infrastructure development, much needed to facilitate forestry operation in remote areas.

As most of the equipment used in forestry operation is obsolete and rudimentary, there is no space to develop a local forestry inputs market.

### *Health and Safety*

Working conditions in the sawmills that we visited are very harsh. They obviously do not fulfill any legal requirements or have even the most basic safety standards. Occupational health and safety standards are not implemented in any of the sawmills that we visited.

At first look the sites appeared messy, disorganized and dirty. There are no warning signs. The workers do not use any personal protective equipment (helmet, gloves, glasses, mask, and reinforced shoes). They do not wear uniforms or shoes. The workers operate band or circular saws that are obsolete, damaged and unstable (they lie on clay or sandy soil). There is no lift and all loading is done by hand. There is no fire extinguisher, no tap water and not even water tanks or sand boxes. Electricity wiring is not professionally installed; cables are frequently nude and connected without plugs. Oil and fuel barrels are not located in a safe place and at times lie nearby a saw that is continuously sparking. None of the visited sawmills have toilets, showers, cloak-room or refectory. There is no sentry box for the guards. The only buildings are a warehouse and small offices used by the Chinese staff or other foreign foremen. In case of accident, there is no on site infirmary or even a rudimentary first aid kit; injured workers do not receive any help from their employers. There is no drinking water available for the workers, a particular problem in situations where people work 8/9 hours per day under the sun or a corrugated iron roof and in a permanent cloud of sawdust.

Working conditions are similar for the Chinese or Asian workers. Apart of the ones who assume managerial position, Chinese workers can undertake similar activities to their skilled or semi-skilled Mozambican colleague (drivers, machine operators). We saw some of them living in the sawmill premises. They stay in rudimentary huts and do not have better sanitation facilities than their Mozambican colleagues. They also do not wear any protective equipment.

Sawmill activity is dangerous and specific procedures and technical means are necessary to mitigate the risks. Beside this, the proper ordering of machinery, of the wood stocks and of the fuel stocks are important factors that influence safety at work. The lack of order on site also means that the control by law enforcement officers (i.e. forestry authority staff, Industry & Commerce officials) is difficult. Our visits revealed not only the lack of preventative measures but working methods that in fact worsened the risks, endangering the health and lives of workers.

#### *Case of Mofid Lda sawmill in Mocimboa da Praia.*

In this sawmill, the machines are in the open air and barely shadowed by trees. Workers informed us that the saw blade frequently breaks while operating. The blade is then projected into the air at high speed. Walking in this area is dangerous and the workers systematically indicated to us the safer places to stand in order to limit the risks whilst observing the machine. The blades are sharpened with a rudimentary machine and the person in charge does not wear protective glasses or gloves.

### *Interview with Mofid Lda worker in Mueda*

Mr. Mauluna Maulete has worked at Mofid Lda sawmill in Mueda as a guard since 2005. He does not have a signed contract. He earns 800 MT (US\$30) per month<sup>82</sup> and has never taken a paid holiday. The payment of his and colleagues salaries is never on time. He does not receive a salary when he is sick or any kind of financial help to buy medicines. He works 6 nights a week from 5.00 pm to 7.00 am.

### *Case of Micco Ressources Tradings Lda in Montepuez*

Mr Jose Alfeu Muchanga has worked at Micco Lda sawmill in Montepuez since November 2006. He earns 50 MT per day, but is without a written contract. On the 23<sup>rd</sup> of January 2007, he was injured whilst loading a pau-preto trunk into a container. The Chinese foreman refused to take him to the hospital and continued to oversee the load. A forest law enforcement officer was present during the accident and took him to the hospital on his motorbike. The doctor determined that his leg was broken in two places and that he would be immobilized during at least 30 days. He will not receive any salary during this period or any kind of help from his employers.

Occupational health and safety standards appeared not to be considered as a relevant issue by our informants. Their workers declared that they have never seen their manager performing safety inspections or establishing any kind of health and safety policy. When asked about health and safety standard (such as OHSAS 18001), the manager showed a total lack of knowledge. They were also not aware of the industry and labour regulations that oblige the provision of minimal sanitation infrastructure for the workers.

This situation is worsened by the lack of law enforcement regarding health and safety and labour relations. The workers from Micco Lda and Mofid Lda stated that they have presented complaints to the local administration about their working conditions but to no effect. If forest law enforcement deficiencies can be partly explained by the lack of resources and the inability to exercise continuous control, this cannot be the case for health and safety or labour standards. Most of the sawmills are located in towns where state officials from the Industry and Commerce Ministry are present. Checking working conditions is not a permanent task and can be made at any time during the year.

### *Labour relations*

Labour relations in the forestry sector in Cabo Delgado appear to be totally in favour of the employers, who dictate conditions to the workers. In that context, international social standards (OCDE, FSC, ILO) and the Mozambican labour law are totally ignored.

The vast majority of the sawmill workers that we met are not formally contracted. They are hired on a daily basis as a function of the volume of work. Unskilled workers earn the equivalent of the minimal monthly salary (1,200 MT/US\$45) or less (800 MT/US\$30), they can be fired without notice, they do not benefit from paid holidays and even public holidays are not paid. Extra hours are not paid and the employers do not contribute to

<sup>82</sup> Minimal salary in 2006 is 1,443 MT (US\$54.25) for Industry and Commerce sector and 1,050 MT (US\$39.50) in agriculture sector.

the national social security scheme. As noted above, workers are not compensated when sick or injured.

Skilled workers receive slightly better treatment in terms of a salary, but also work without formal contracts. Foremen or machine operators earn between 2,000 MT (US\$75) and 3,000 MT (US\$112) per month. Delayed payment of salaries is frequent as are insults from foremen and supervisors. None of the Chinese or Asian employees agreed to divulge their salary levels.

In Mozambique, private companies are obliged to openly display their working hours and a list of staff, with the specific mention of their function and salary. In the three Chinese-owned sawmills which we visited, there was no such information displayed. When we asked for it, the managers or foremen refused to show it or did not understand what we were referring to. This type of document should exist given that all the sawmill managers claimed that the use of temporary staff was exceptional and that they permanently employ most people. Interestingly, none of these foremen or managers gave us the precise number of people working permanently and casually. The numbers that they mentioned never corresponded with what we observed on site.

The characteristics of this set of labour relations is more easily understood when we consider the local context. Employment opportunities in Cabo Delgado are scarce. There is no other industry other than wood processing and the service sector is embryonic, with a very few exclusive tourism resorts operating in the coastal areas. Agriculture and fishing serve only subsistence purposes, as there is no market for surplus. Cashew nuts are not processed on a large scale. Raw cotton prices are low. Only the forestry sector generates large volumes of trade; not, however, to the profit of the workers. The literacy rate is very low and the small numbers of educated people tend to migrate to the urban centers in other provinces. Thus people have no other choice than to accept any kind of paid job, even if the remuneration is barely at survival level. The use of strikes as a means of pressuring employers is unforeseen as there is a perennial army of unemployed people waiting for jobs at the sawmill gate.

Once again, the Mozambican state seems to be absent from the scene. All the workers interviewed stated that they have presented complaints to the local authorities without any reaction. The lodging of formal complaints would hardly seem to be necessary; nothing is hidden and a glance under the sawmill fence is enough to give a clear picture: men sitting on the floor are waiting to be called for work, this one who broke a screwdriver is dismissed on the spot, the Asian foreman shouts at the woman who is taking too long to bring a bag of bread and a bottle of water to her husband.

Throughout Mozambique, labour relations are quite tense, a result of the unbalanced power of the private sector and the desperate need for paid jobs. In Zambézia, Mackenzie (2006, p. 49) reports that the salary of the low skilled forestry worker can be

even lower than in Cabo Delgado (US\$20 per month) and payment of this is not guaranteed.

### *Rule of law*

There is a widespread perception of rampant corruption amongst government officials and it seems that the government lacks both the capacity and the political will to effectively monitor the forestry sector. Corruption is present at all the stages of the Mozambican side of the supply chain: in licensing, transport and log clearance in the yards and ports.

Among the civil servants, there is a large sense of impunity and cases of corruption are rarely denounced and sentenced. The fact that prominent political figures or ex-army officers are involved in the forestry business is frequently mentioned as a factor which severely inhibits law enforcement. The high levels of corruption and the minimal enforcement of forestry regulations present an enormous challenge to the sustainability of the wood supply chain and leads to significant over exploitation of the resource.

The payment of bribes is not limited to civil servants (Ministry of Agriculture staff, police and custom officers) but also involves community leaders, who are consulted by operators in order to access the forest areas. Often, these community leaders will be offered bribes in order to head off more onerous community requests for infrastructure such as wells, schools or health posts.

Without improved provincial forestry staff surveillance, the benefits of the concession system could be largely lost.

### *Illegal practice*

The corruption amongst government officials is linked to forestry operators' illegal practices denounced in various reports. (Mackenzie 2006, Reyes, 2003, Johnstone *et al.*, 2004). It is estimated that 50% of Mozambique's forest harvesting is illegal according to its own national laws (Taconi *et al.*, 2003). The annual progress report (PES, 2005) of the MINAG mentions a 6% increase in the number of fines applied in 2004 for infractions to the forestry law. The total value of these fines was said to show a 28% increase during the same period.

The following evidences of illegal practice have been identified by Mackenzie (2006):

- Systematic under reporting of the volume of logs. Standard log weights and volumes are being used on export data which are far below the actual weights.
- There is a significant difference between timber export statistics returned by the different government agencies.
- There is inconsistency in the type of data presented by the different government agencies, making cross checking difficult.
- Actual case studies were conducted on the bulk carrier MV Chang Ping in Quelimane and it was found that much more timber is actually being loaded

than being reported to the authorities.

According to Johnstone *et al.* (2004), customs documents revealed that some exporters invoice their overseas clients, often their parent company, for logs at prices lower than the current market prices in Mozambique. This indicates the existence of a transfer pricing system, a widespread and usually illegal practice used by multinational companies to avoid paying taxes in countries where they operate. Transfer pricing would also affect the average values and hence the estimation of timber volumes exported.

## Key factors in sustainability

### *Key potential drivers of sustainability*

- Best forestry practices are well documented and Chinese forestry operators could improve their long term profitability through the implementation of sound management practices that would diminish the waste of all resources and help sustain the forest resources.
- The high margins, wood market integration and control over the value chain could allow Chinese operators to engage in long term investment in processing and resources management as well as business partnerships between national and forestry operators.
- Chinese operators have the technology and skills to make a substantial contribution to improve the Mozambican workforce and transfer technology. Established market linkages would allow partnerships in order to increase value added at the processing stage in Mozambique.
- NGO and international organisations are very active in Mozambique and Chinese operators could call on them to provide expertise for the monitoring and integration of the supply chain. For example, forest certification already exists in Mozambique – but there is no involvement of the Chinese industry.
- China has the capacity to support its forestry operators in Mozambique through investment in port infrastructures, training, and long term financing.
- Mozambican government has made substantial progress in reforming trade policy. In 1998 the government of Mozambique's export procedures were simplified. Fiscal incentives to new investors through tax incentives promote export in the country.

### *Key factors limiting sustainability*

The main limitations factors for the Chinese operators are the following:

- Language barrier
- Lack of local skills among Mozambican forest workers
- Low 'work ethic' (absentee rate, thefts, side-selling) in Mozambique
- State of relation with the Mozambican and Chinese government
- Lack of infrastructure
- Declining forest stock
- Lack of knowledge



### *Language Barrier*

Almost none of the Chinese interviewees were able to speak Portuguese and knowledge of Mandarin amongst Mozambicans in Cabo Delgado seems to be totally non-existent. Some Chinese speak English, but it appears that very few of their Mozambican workers/counterparts know more than a few words of this language. In fact, the Chinese frequently rely on Tanzanian citizens to liaise with their workers or with the local administrations. These Tanzanians speak Swahili, a language mastered by numerous Mozambicans from Cabo Delgado, and most are fluent in English.

The language barrier between Chinese and Mozambican constitutes an obstacle to on-site communication and hence productivity. This was obvious in the sawmill yard where the Mozambican labour force faces Chinese overseers that cannot speak Portuguese and who communicate largely through gestures. This language problem becomes particularly acute when conjoined to the lack of technical skills.

### *Lack of local skills*

Most of the forestry workers have only basic education and lack any specialised technical skills. It was unanimously agreed by respondents from the Chinese companies that local labour was sub-standard. In addition, Chinese engineers and operators, familiar with the imported technology, are required for the operation of much of the equipment (imported from China) that is used by Chinese companies.

The companies recognized that they do not provide employees with on-the-job training, focusing particularly on machine operation. They justified this situation by the problem of the language barrier. However, there is neither an institutional framework nor any government capacity for the monitoring and resourcing of direct investment in terms of local skills development and technology transfer.

### *Absentee rates*

Absentee rates among local workers are notoriously high in Mozambique and Chinese informants complained often about this. This is possibly due in part to prevalence of HIV/AIDS. Even if the worker is not personally afflicted by the disease, many are facing increased family obligations, including caring for the sick and participating in funeral ceremonies.

### *Thefts*

Thefts of wood are frequently denounced by forestry operators. Theft of logs occurs at various stages of the chain: in the yards, during the transport, and at the sawmills. The manager or foremen essentially consider their workers as being inveterate thieves. However, thefts are also committed by SLHs or by community members in remote cutting areas.

### *Side-selling*

The practice called “side-selling” occurs when a SLH sells part or all of its logs to a buyer

that did not financially sponsor its forestry operations. Side-selling is a common occurrence in the wood market in Cabo Delgado. Sawmill operators and exporters frequently complain about it.

Side selling occurs at the level of SLHs and the pre-financing of their operation by sawmill operators and exporters does not guarantee their loyalty. Harsh competition between the buyers is the principal factor for side-selling. In Cabo Delgado, our informants stated that there is no established record of sales operations and pre-financing agreements, shared by sawmill operators and exporters in order to overcome this practice.

#### *Relation between Chinese owned companies and the PRC government*

Chinese investment in the forestry sector in Cabo Delgado province does not seem to benefit from any particular support from the government of the People's Republic of China (PRC). Unlike Chinese construction companies operating in Africa, this type of venture does not receive the support from the Chinese government that is otherwise channeled through the Chinese embassy in Maputo and its respective Economic and Commercial department.

None of our informants had obtained capital through Chinese state-owned banks. In fact, all stated that they have entered into business in Mozambique through personal linkages and private investors. These investors can be of Chinese origin, but are not necessarily holders of a PRC passport.

From information provided by the PRC embassy in Maputo, there are no Chinese state-owned enterprises (SOEs) active in the Mozambican forestry sector and the representative of the Economic and Commercial Department did not have a list of private companies owned or operated by Chinese acting in that sector (as is the case for example, for Chinese construction companies operating in Mozambique). This representative stated that he has never received any request for information or advice from Chinese investors interested in the forestry sector. However, he is well informed about the Mozambican investment law in general and about the Mozambican forestry legal framework in particular. It appears that the embassy of the PRC provides only one-off support to these investors, in order to solve immigration issues or in regard to the translation of documents.

Our Chinese informants in Cabo Delgado confirmed having benefited from this type of assistance, but declared that the distance from Maputo was problematic because it does not allow for more frequent personal contacts with the Embassy staff. All our informants would like to see the opening of a consulate in the central or northern region of Mozambique. They feel that such consulate would help them to solve immigration problems and would protect them from administrative or law enforcement abuses.

### *Relations between Chinese owned companies and the Mozambican government*

The managers of Chinese owned companies acting in the forestry sector in Cabo Delgado all confirmed that they have received no support from the Mozambican government. None of them was aware neither of the Investment Law nor of the incentives that it provides for the starting of new ventures through the Investment Promotion Center (CPI). They were also totally unaware that they could import personal items free of import taxes after receiving their resident permit.

Our informants declared that relations with provincial and district representatives of the various ministries were quite fraught both before and after initiating their activity.

In fact, nearly all Mozambican administrative procedures appear to be rather unintelligible to our Chinese informants. They recognize that their very limited knowledge of the Portuguese language constitutes a major obstacle to efficiently dealing with the Mozambican administration. But they also feel that the officials take advantage of it in order to put them at fault, make them liable to heavy fines and then ask for bribes to solve the problem. All consider that they are victims of racism and discrimination from the Mozambican administration.

The following administrative issues are indicated by Chinese operators as being particularly complicated:

Table 14 - Main Administrative Constraints

Entity	Issue and/or Delivery	Main Problems
Public Notary	Company registration	- Delay
Finances	NUIT (tax payer registration)	- Delay
	Tax payment	- Tax payment calendar - VAT reimbursement
Immigration	DIRE (residence permit)	- Delay - Interpretation of supporting document such as criminal or academics records - Renewal
Land	DUAT (land title)	- Understanding of the whole procedure for requesting land - Swindle from official offering their help as facilitator to obtain or transmit DUAT - Request for bribe - Delay
Industry and Commerce	Commercial and Industrial Licenses	- Understanding of the related legislation and procedure - Control - Delay
Custom	Clearance	- Administrative tax structure and procedures - Delay
Forestry	Concession	- Procedures - Lack of transparency - Lack of information

To deal with this situation, our informants declared that they tend to use the services of informal intermediaries on a regular basis, but they were quite reluctant to give details about them (such as their nationality, their specific functions or their cost). The employment of registered consultants was never mentioned and only lawyers seem to have been contracted for company registration purpose or land titling. Even these lawyers were labeled as being expensive and unreliable!

#### *Lack of infrastructure*

The infrastructure has severe problems in the most important forestry areas in Cabo Delgado. Improvements are needed to road development and energy distribution. The concession areas in remote places face two principal problems:

1. It is expensive and insecure to transport logs or other materials and equipment between concession areas and towns (processing and market place); and,
2. the establishing of a processing unit at the concession site requires a source of energy; normally this means own diesel generators, which causes significant additional costs.

The initial poor condition of the road infrastructure is worsened by the increasing traffic that forestry operations have caused. Lack of accountability amongst the forestry operators does not allow the sharing of the burden of road and bridge maintenance. Local authorities in Cabo Delgado report frequent complaints from community members related to the use of tertiary road by heavily loaded trucks. This situation is common in Mozambique as Mackenzie (2006) reports (p. 59) for Zambézia province.

#### *Limiting factor related to the forest stock*

Due to the growth of demand and capacities and the lack of proper regeneration schemes, the timber stock in Cabo Delgado is reducing and forest functions and products are declining. Rudimentary forestry practices and accelerated illegal logging weaken the rule of law and deprive the government of tax revenues. Forestry activity has modified local livelihoods and communities have adapted themselves to the system, without, however, obtaining any real financial benefits or empowerment. In this context, the sustainability of the chain is doubtful.

#### *Declining forests*

Data to precisely assess the rate of deforestation and other negative consequences of logging in Cabo Delgado is absent. Nevertheless, indicators such as the registered volume of cut, the movements of vessels or the number of licenses requested and delivered clearly indicate that the pressure on the timber stock is growing. Reforestation or regeneration schemes are marginal and are threatened by the actual logging techniques and the lack of law enforcement. The forest is declining in term of density, diversity, economic and cultural value.

The selective cut of high value species reduces the diversity of the forest, as the regeneration of good quality trees is threatened by other uses of the cleared forest areas, such as agriculture, grazing or the occurrence of fires.

The uncontrolled and over-exploitation of forests in Cabo Delgado is eliminating assets that could provide long-term employment and contribute towards sustained economic growth in the province. Instead, the declining supply of timber means that local people will soon lose their forests (or, at least their high value trees); this represents an important lost potential source of revenue, firewood and non-timber forest products. It also means that Chinese importers will need to search elsewhere for forest products.

For local communities, the declining of the forest is not as clearly evident; they are struggling for survival and adapting themselves to socio-economic trends that they do not control or significantly influence. Cleared forests areas are used for agriculture or cattle and the foresters offer casual but salaried jobs. The communities remain in poverty and have few effective means to increase their bargaining power. Local authorities do not have the necessary means to force SLHs or concessionaries to keep local promises and

are subject to corruption. The legitimacy of the local authorities is severely challenged.

### *Accelerating illegal logging*

The demand for forest products has worsened the problem of illegal logging<sup>83</sup> in Cabo Delgado. Illegal logging deprives governments of tax revenues, leads to unsustainable harvesting and undermines the rule of law. It is a prominent pattern of the wood supply chain in Cabo Delgado.

Chinese log buyers exploit weaknesses in local law enforcement. By financing and monopolizing the export log market they have manipulated many harvesting operators (particularly the simple annual license holders) to operate outside of the law.

Chinese operators are widely accused of being the principal agent of the illegal logging, because they generate a growing and permanent demand for wood. Their financial and technical capacities allow them to overcome many of the problems typically encountered by Mozambican operators (lack of cash flow and market information, red tape). With few constraints and scant concern for scientific forest management, Chinese operators are dominating a very profitable market.

However, they could not do business on similar terms if laws were properly enforced, if poverty were not so harsh or if wealth and power were more equitably distributed in Mozambican society. Political influence and power are used to override legislation. Interference from well positioned people undermines law enforcement in the provinces (Nhantumbo & Ogle, 2006).

In the context of Cabo Delgado as in other parts of Mozambique, illegal logging is mainly a result of the high levels of corruption amongst civil servants and of the impunity enjoyed by prominent public figures. If the rule of law was respected, the Chinese operators would have to adapt and to accept reductions to their high margins. It is highly probable that they would accept this state of affairs in order to stay in business, whatever their personal or corporate concern about environmental or social issues.

The significant presence of Chinese forestry operators is perceived as one of the main factors for the prevalence of illegal logging, not because of any specific behavioral patterns, but with regard to the fact that the Chinese constitute by far the main buyers and exporters of wood from Cabo Delgado and because of their permanent growing demand. To respond to this demand, Mozambican simple license holders use all the means at their disposal, including corruption and illegal logging. The commercial practices of Chinese operators are not peculiar to them as a specific foreign group. Their current commercial practices are logical responses to the needs and opportunities of the Mozambican market. It is doubtful that other foreign operators would act very

---

<sup>83</sup> The definition of “illegal logging” is usually accepted as the violation of relevant national legislation (including ratified international treaties and conventions).

differently from the Chinese and refuse to buy wood resulting from illegal extraction. In any case, none of the wood traders have the authority or the technical possibility of checking the logging methods or compliance with cutting quotas. If this market is characterized by the deficiency of the rule of law, it is certainly not due to the Chinese presence; this has merely amplified preexisting tendencies and market patterns.

A more Chinese-specific way of doing business is more evident with regard to labour management and community relationships, however. In all of the sawmills owned by Chinese that we visited, we noted that the majority of the workers were employed on a daily basis, without any formal contracts. The lack of protective clothing and of even basic amenities (such as toilets), the authoritarian attitudes of the foremen and the insulting manner in which they are treated are all characteristics of a Mozambican forest workers experience if they are involved with a Chinese company. Contrast this to the conditions in a sawmill in Mueda, owned by an Israeli citizen (Wood Export Lda.): here, the workers are formally contracted and wear uniforms and protective items, such as hamlets, gloves and reinforced shoes; as required by the Labour law, official and other holidays are paid; the workers have the use of rudimentary but decent utilities. A similar situation was observed at a hardwood processing unit in Montepuez owned by a British operator.

#### *Negative impacts on local livelihoods*

The increased trade in forest products in Cabo Delgado has benefited some of the poor in the forests; evidence suggests, however, that most often it is poor communities which are most closely tied to the forests, most dependent on them for their survival and most likely to lose out as the local elites, the logging companies and the migrant workers from Tanzania and China capture most of the benefits. While a relatively small number of operators have become rich quickly, the vast majority are facing the loss of the forests and their livelihood resources. Forest law enforcement officers also mentioned the fact that the Chinese sawmill operators do not offer their wood waste to local inhabitants but sell it, a practice that is at variance with that of other foreign and national operators.

### **Lack of scientific, technical and financial background for the implementation of the law and the forestry operations**

#### *Lack of information and related tools*

No useful data is readily available to delve scientifically into the forestry business in Mozambique. Information is scarce, sometimes contradictory and never translated in Chinese. The actual characteristics and potential of the forest in Cabo Delgado are not precisely known, as current forestry operations are not monitored. Debate on reforestation, regeneration, fires and community empowerment with regards to the specific context of Cabo Delgado is still marginal. Land use planning and management tools are nearly inexistent and local technical or scientific skills are scarce.

### *Sawmill profitability*

The issue of investment in milling capacity can be tricky, as developing an overcapacity to mill the country's sustainable yield could provide an incentive for further illegal, excessive logging. It could also fail to produce a reasonable return on the investment if initial calculations to determine the scale are wrong. Factors such as location, energy supply and suitability of the product are critical elements of sawmill profitability. In Cabo Delgado, these factors are particularly restricting.

### *Management Plan conception and implementation*

Management plans are widely considered as non effective and as unrealistic. There is no real technical capacity to assess their validity. Every one of the management plans in Cabo Delgado was elaborated by a single accredited consultant. Mackenzie (2006, p.54) state that in Zambézia province “concessions have been approved on the basis of management plans that do not demonstrate even a basic understanding of or commitment to sustainable forest management”. She gives some concrete examples of obvious miscalculations of the timber stock.

Logging operators seem to view the management plan requirement as a pointless burden, rather than as an essential part of a logging company's business plan. How, for example, can a company expect to project future earnings and develop competitive strategy without first knowing its inventory, identifying its workforce, planning its investments, estimating its costs, and so on? The answer is simple. It cannot.

In an industry like logging, where the resource is finite, failure to plan is the equivalent of planning for failure. The implementation of an effective management plan would provide the operator with the basis for a future business strategy, whilst also helping communities to participate in strategizing their own development. This more symbiotic relationship would prolong the profitability of forest exploitation in Mozambique, benefiting all involved.

### *Reforestation*

The requirement to replant after harvesting seems to ignore the fact that miombo species regenerate from their stumps, and that post-harvest management of coppices is probably a more realistic management technique for ensuring sustainability.

Only a few concession holders have started tree planting programs or practice coppice management. According to NDF (2005), out of the 67 companies interviewed in Zámbezia, Sofala and Cabo Delgado, only 10 were, to some extent, engaged with reforestation initiatives (Savcor Indufor Oy, 2007).

### *Transparency at a local level*

Interactions between forestry operators, government officials and community members



are characterized by a complete lack of transparency. Distrust is already problematic where the average person has little faith in the government's commitment to defend her rights or interests. Corporations inherit the negative side effects of this and thus appears as being equally unconcerned with these rights and interests. But beyond trust, there is also the issue of cost. Corruption appears at first glance to be an efficient way of sidestepping costly regulations and time consuming bureaucratic hurdles. Over time however, the costs of fuelling corruption invariably outweigh those of operating legitimately.

Concession holders are currently struggling to ensure that villagers do not cut trees from within their allotted areas and sell them illegally to exporters. According to Mr. Farouk, the general manager of Miti Lda, the villagers have two motives for doing this: the primary motivation is the money, followed by a desire to spite the concession holders that are failing to bring benefits to the local people. Ultimately, this benefits no-one but the exporter. If concession holders were to communicate openly with villagers about the costs involved, as well as the market prices, it should be possible to reach a deal where no one feels exploited, and the parasitic exporters can be undermined.

While the granting of a concession requires prior consultation with potentially affected communities about their concerns and expectations, it is the government that bears responsibility for these interactions. The operator should be represented, but community members complain about how representation tends to come in the form of an individual who lacks deal-making authority. As a result, concession agreements proceed without the operators taking on any meaningful obligations vis-à-vis the affected communities.

Other villagers lament the fact that community leaders have negotiated away their forests in exchange for gifts such as bicycles or food. Concessionaires admit that they often arrive in areas to begin harvesting and find villagers who have heard nothing of the concession. When problems arise after operations begin, such as the inadvertent destruction of crops as a result of tree felling, the communities apparently find it impossible to speak with people at a level within the company who can make reparations. In short, there is essentially no channel by which affected communities can communicate directly with operational decision makers.

#### *Transparency at a national level*

It remains to be seen whether the growing crisis in Mozambique's forest sector will be addressed by the GoM as more evidence becomes available of the unsustainable nature of the present system. Nonetheless, reform and the encouragement of sustainable forest operations are beginning to enjoy stronger backing from the business interests of the remanufacturing country (China) and from the end consumer countries (mostly in the West).

### *Policy options for improving and/or scaling up the sustainability impacts of wood product supply chains in Mozambique*

Numerous options for improving the efficiency and accountability of the chain can be considered. Some steps have been taken by other industry stakeholders in other parts of the country already and offer examples that could be built upon. They include:

- Introducing and implementing “Chain of custody” (CoC) concept
- Establishing systems to track wood all along the supply chain
- Promote a bilateral agreement
- Put together concession, processing and export manual
- Document forest agency staffing and structure
- Encourage forest certification
- Provide training for Mozambican workers
- Providing finance and advising for concessionaries
- Demand-side measures
- Provide incentives for the use and exportation of more abundant species
- Keeping the promise made to communities
- Partnership with NGO and bilateral cooperation organism
- Overcome corruption
- Reform the legal and regulatory framework

#### *Introducing and implementing the “Chain of Custody” (CoC) concept*

In a forestry context, the wood supply chain can be regarded as a series of handling and processing stages that begins with standing trees in the forest and ends with final wood products. The ownership and control aspect of the wood supply chain is referred to as the “chain of custody” - the custodial sequence that occurs as ownership or control of the wood supply is transferred from one custodian to another along the supply chain. A “chain of custody” system comprises a set of technologies, procedures and documents that are used to provide information useful for managing the wood supply chain.

Using a well-designed chain of custody system, the manager of a wood supply chain (or of any link in that chain) should be able to determine where the wood supply is coming from, where it is at any point in time, where it is intended to go, and when it is scheduled to arrive there. Also available should be information on species, volumes, and quality grades and the system should be able to trace the wood back to its origin so that this information can be tied directly to forest management. Properly applied, CoC systems can be used to expose log theft and to prevent unscrupulous operators from commingling illegally sourced logs with others of legal origin, a practice known as “log laundering.”

Chain of custody systems are thus essential components of any effort to reduce illegal logging. But they also are of direct financial benefit to the forest industry because of the information they provide to managers, both in the forest and in manufacturing facilities.

Such systems are widely used in many other industries for purposes such as quality management, safety and financial control, and they provide the same benefits to the forest industry.

### *Establishing systems to track wood all along the supply chain*

To be effective, chain of custody systems for logs and processed wood products must be based on the principles of identification, segregation, and documentation. Logs or other products must be identified using some type of labelling technology:

- At each point along the supply chain at which material from a known source potentially could become mixed with material from unknown sources, it should be segregated and handled or processed separately.
- Finally, the labels affixed to the logs or other products must be keyed to documentation so that information on wood volume, species, quality, and other attributes is available to managers of the supply chain.

Industry, possibly supported by governmental programs, should be aware of where its supplies of forest products come from and develop appropriate wood-tracking systems. Importers and processing enterprises in China could gain a better understanding about where the wood in their products comes from, and take steps to ensure that it is certified through credible programs, or can be legally verified at every step along the supply chain. Various possibilities are explored in depth in the recent Savcor report to the DNTF (Savcor Indufor Oy, 2007).

Several international initiatives such as Tropical Forest Trust (TFT) and the Global Forest Trade Network (GFTN) are already providing advice and technical assistance to producers, suppliers and retailers, thus helping them and their customers gain confidence in the supply chain.

### *Promote a bilateral agreement that honours Mozambican laws and seeks to discourage illegal trading*

Promote a bilateral agreement with China to coordinate measures to eliminate the flow of illegally logged products between the two countries and encourage cooperative enforcement arrangements within such an agreement. The implementation of such agreement could be partly financed by custom taxes.

### *Put together a concession, processing and export manual*

Forest concession bidder's manual should be produced in English and Mandarin accompanied by the organisation of educational workshops. These would guide large and small enterprises seeking to compete for concessions and would clarify the private parties' rights and obligations. The materials would describe the laws that apply to the process, the agencies that implement the laws, the fees involved and the deadlines or typical time necessary for the agency to process requests. A specific section should address community involvement and set related standards commonly applicable for all

communities. The concessions workshops should include agency officials from both countries.

Processing standards and an export manual should complete the concession guidelines and allow for partnership with specialized agencies such as UNIDO, FAO or FSC.

#### *Document forest agency staffing and structure*

Create and publish a complete organogram or roster of forest agency personnel, with contact information for senior officials. The organogram would illustrate the organization of the agency, explaining the roles of the various branches. It would also reveal exactly how many people work in each branch, and at what rank. Revision of the roster regularly to keep it accurate would be important. Other actions include:

- Offer training for law enforcement officials on technical issues related to forest corruption. For example, customs agents could be trained in recognizing species of wood to help detect mislabelled shipments. Finding a pattern of such shipments could suggest illegality and perhaps corruption in the harvest of the wood.
- Police could be trained in investigating accounts to detect signs of fraud or abuse of power. Prosecutors could be trained in gathering and presenting evidence of corruption. Judges could be trained to understand the scientific issues that may arise in these cases (for example, the importance of protection of natural areas) to help them both decide the case and arrive at appropriate punishments for the guilty.
- Maintain and publish career biographies of past and present senior forest officials. Include information about training, past positions and family members who have connections to government or the forest sector.

#### *Encourage forest certification*

Forest certification programs set standards for production of forest products and then certify whether products or producers meet those standards. The most prominent programs today focus on following environmental standards, but programs may also include social standards, such as worker safety or compliance with laws. Some programs are self policed, while others rely on independent audits. Some programs certify the forest management program, while others include chain-of-custody tracking and certify the products produced. Some programs include transparency provisions, which allow interested citizens and groups access to information on past or planned forest management activities.

There is though, a good level of interest in FSC and other certification schemes amongst key stakeholders and operators aiming at the European and U.S. market. The legal framework for forestry is considered conducive for certification, but several constraints still exist (WB & WWF 2003). The most important constraints are found in the forest management regulations and in the participation of all stakeholders including communities and civil society.

In February 2005, a proposal for Mozambican National Standards for FSC Certification

of Natural Forests was submitted to the FSC but the standards have not yet been accepted (Savcor Indufor, 2005). The first FSC certificate for a concession of 25,000 ha in Sofala province was given to Industrias Florestais, Lda – Dalmann Furniture (TCT) in spring 2006. Levasflor Lda, which possesses a concession of 46,240 ha (also in Sofala) and is under management contract to Industrias Florestais, Lda has also recently been certified (Germizhuizen *et al.* 2007, p. 30).

As certification is becoming increasingly important for EU and US exports, international organisation such as UNIDO, ILO, FAO and UNEP should provide technical expertise and financing for the certification process.

#### *Provide training for Mozambican workers and law enforcement officers*

On-the-job training focusing particularly on machine operation and cut planning is needed to improve the sustainability of the chain and to increase the worth and wages of local workers.

The Mozambican government should also develop its capacity to train skilled forestry workers and DINATEF and custom law enforcement officers. Vocational schools focusing on practical and theoretical forestry skills need to be established. Internship opportunity for young professionals should be promoted among concessionaires and subsidized through taxes reduction. Chinese companies should insist that their forestry operations are managed by at least one person with a technical knowledge of forest management. Training could be financed through a levy on wood exports.

#### *Providing finance and advise to concessionaries*

Mozambican or foreign owned concessions should be actively supported through subsidised long term financing and technical assistance provided by qualified international organisations. These organisations should promote stable business linkages between all the stakeholders of the chain, including the forestry equipment supplier and the certification bodies. It would guarantee and oversee credit provided by buyers and would prevent side-selling. Such schemes could support the creation of SLHs consortia with the objective of establishing concession regimes.

#### *Demand-side measures*

Introduce demand-side measures locally and/or in importing countries to reduce the demand for illegal timber. Adjust domestic public procurement policies to reward legal timber. Collaborate with governments in importing countries to adjust their public procurement policies to provide incentives for legal timber. Collaborate with governments in importing countries so that they ban all timber imports without proof of legality.

#### *Provide incentives for the use and export of more abundant species*

The Mozambican export promotion agency reported that there are up to 100 species that

could be exploited commercially (IPEX, 2001). Currently only 18 species have been thoroughly explored for commercial use and by far the greatest proportion of exported trade is restricted to a few species (see Table 10).

The use and export of more abundant species which, at present, are in secondary plans (such as *Messinge* and *Muanga*) should be promoted through technical research and fiscal incentives. International and national specialized forestry research institutes should be associated for the promotion of the use of new species.

According to Germizhuizen *et al.* (2007, p. 31 draft) “recent export markets have opened up for *Messassa* (*Brachystegia speciformis*) to Sweden. This species is one of the dominant Miombo trees and would be an enormous boost to the effective forest resource”. A recent USAID study (Nhantumbo & Ogle, 2006) noted that although there has been little cutting or market testing of lesser-known species to supply lower-value market segments, there have been several exceptions, stating that *muanga* has recently become a sought-after species for export to Asia and South Africa”.

Increasing use of lesser-known species will require research support from the government of Mozambique on species properties, likely end uses, processing characteristics, technologies, and markets. Most countries that market tropical hardwoods have research programs that support high-value use of as wide a range of species as possible. Ghana is one of the best examples; it has researched and published excellent promotional material about the properties and end uses of its species<sup>84</sup> (ibid, 2006).

The waste products from sawmilling (slab-wood and saw dust) can be used or sold, offsetting sawing costs in most importing countries. Slab-wood, in particular, can often be resawn into smaller components or used in less-exposed components (e.g., drawer components, table leg fixings), so a higher proportion of off-cuts is used. In Mozambique, these waste products generally have little or no value.

### ***Keeping the promise made to communities***

Concessionaries need to make fewer promises and keep them all. In interviews with villagers affected by logging, people demonstrate an impressive level of pragmatism. They are not, for instance, idealistic about safeguarding the forests of their ancestors. They are concerned though, that the forests are disappearing to be replaced by nothing. What they want in exchange for the exploitation of the forests is primarily a good faith effort on the part of loggers to understand their interests and incorporate them into the management plan and the methods of operations. Agreements between communities and forestry operators should be recorded, publicised and monitored.

<sup>84</sup> See [www.forig.org/forig/history](http://www.forig.org/forig/history)

### *Partnership with NGO and bilateral cooperation organisations*

International NGOs and bilateral cooperation organisations have shown a willingness to invest in bridge building and tertiary road development. They understandably do not want to see their investments destroyed nor do they want to pay the higher price of building for the increased loads inherent to logging traffic. Rather than building their own infrastructure, concessionaries should explore way to arrange for shared planning and costing with these NGOs. For the cost differential between a lighter (temporary) and heavier duty bridge, it would seem that over a reasonable period of time the investment could pay for itself.

### *Overcome corruption*

The current government came to power with a strong stance against corruption but is generally perceived to have been ineffective against graft. The Mozambican government must bolster efforts to overcome corruption.

Multi-sector law enforcement and control teams could operate at all stages of the chain. There are well known process of Independent Forest Monitoring (IFM) in many countries and China could push for teams of independent experts to cut out corruption in Mozambique. The team would collect, compile, analyze and publicize all relevant data related to the forestry sector. It would review the concession requests and implementation of the management plan. Such team should be overseen by a panel of forestry sector stakeholders that would include private sector associations, NGOs, community representatives and academics. This panel would appoint yearly independent evaluations of the forestry sector and would have financial autonomy. Forestry sector supervision teams and panels could be financed through taxes on logging.

Regarding forestry law enforcement, Barne (2001) suggests that specific measures should be implemented in order to reduce the occurrence of corruption and improve efficiency in the control mechanisms:

- More training for forest law enforcement officers in the short term
- In the long term have fewer forest law enforcement officers, but better equipped and more highly qualified
- Increase random checks on forest product transport
- Better checkpoint control to stop night-time movements
- Better co-operation with the police
- Tighten up paperwork and: e.g. numbers of forms to be printed on, not written
- Introduce a pilot project for log tracking to obtain reliable information on sector activity
- More emphasis on community involvement
- High priority to the development of concessions and a long-term stewardship approach to forest management
- Better information sharing with port authorities to check and control exports

### *Reform the legal and regulatory framework*

Simple licenses need to be abolished and only concessionaries should be permitted to cut, transport and trade wood for export. SLHs should be technically and financially supported to partner with concessionaires as a consortium; access to high value market niches should be facilitated for consortiums that result from formal mergers.

The minimum investment required for operating a concession and the technical specifications must be raised in order to allow only highly profiled companies to operate. Squared log need to be forbidden for export and more stringent criteria for wood processing needs to be adopted. Export taxes need to be raised and oriented to the financing of improved law enforcement, chain monitoring and vocational training.

Mackenzie (2006, p.79) also suggests to “remove customs incentives for the export of logs, by applying volume based levies” and to pronounce a “moratorium on concessions and independent review of existing management plans” (p.81)

## **Conclusion**

In the context of Cabo Delgado, Chinese involvement in the supply chain has clearly led to a dramatic increase of wood exports to China. This “gold-rush” type growth is of doubtful sustainable, as forest diversity and stock are declining rapidly. The social cost of Chinese involvement also appears to be very high. Labour relations in the forestry sector could hardly be worse. However, Chinese involvement has merely amplified already established factors and practices. Before their involvement, forests were not better managed and corruption was common. Tax evasion, non compliance to legal norms related to logging, labour relations and health and safety standards are a common pattern in the entire forestry sector.

The massive wood imports from Cabo Delgado into China are not secure. The sustainability of the chain is doubtful due to the rate of deforestation and the compromised regeneration of the forest. It means that, in the medium term, Chinese importers will need to search elsewhere for forest products. This is not particular to Cabo Delgado, but common to all Mozambique. A recent study on Chinese involvement in the forestry sector in Zambézia province considers that the unsustainable and inequitable use of forest resources “is caused primarily by governance failure”, in turn caused by corruption<sup>85</sup>.

Only a comprehensive and coordinated initiative can reverse the situation. Such an initiative would need a very high level of political support and major investments at various levels.

---

<sup>85</sup> Mackenzie (2006), p. 80



The actual legal framework, its enforcement and the supply chain management are insufficient to implement and coordinate a sustainable use of the forests in Cabo Delgado. This is mainly due to the high monetary value of the wood that provides incentives for the profusion of agents and the lack of transparency regarding their activities. Wood should be considered as a strategic national resource and managed as such. This would imply a strict control of the financial flux within the chain, such as the ones applied for money laundering or anti-corruption policies.

To gain effectiveness and efficiency, the institutional and legal framework need to be reformed. Administrative procedures and law enforcement related to the forestry sector need transparency and accountability. This should be linked with the promotion of corporate responsibility, a concept that is totally absent from the preoccupation of the operators and of their clients in Asia.

In Cabo Delgado, the overall picture of Chinese involvement in the forestry sector is simply put, alarming. But due to its central and dominant position in the market, China has strong leverage to modify the actual scenario. The PRC government and private sector have the technical and financial means to invest in sustainable forestry practices.

## References

- Alima A. K. Issufo (2003): “Current Legislative and Policy Changes and their Effect on Forestry and Land Use in Mozambique”.
- Bila, A. and J. Salmi (2003): “Fiscalização de Florestas e Fauna Bravia em Moçambique. Passado, Presente y Acções para Melhoramento”. DNFFB, Maputo, Moçambique.
- CTA/CPI/RPED/World Bank (2003): “Mozambique Industrial Performance and Investment Climate”.
- Del Gatto, F. (2003): “Forest Law Enforcement in Mozambique: An Overview”. DNFFB & FAO
- DNFFB (2003): “A contribuição do sector florestal e faunístico para a economia do país”. Ministério da Agricultura, Maputo, Moçambique.
- DNFFB (1999): “Política e Estratégia de Desenvolvimento de Florestas e Fauna Bravia”. DNFFB, Maputo, Moçambique.
- EFI (1999): “Country Reports – Mozambique: Current forest resource and market profile”. EFI, Joensuu, Finland.
- FAO (1999): “Commercial timber harvesting in the natural forests of Mozambique”. Rome, FAO.
- FAO (2003): “Mozambique country information. Rome, FAO”.
- Germizhuizen and al. (2007): “Market study on South African trade in forest products from natural forests in Africa”. Forest Trends & Intercooperation, SECO, Switzerland.
- Gulbrandsen L.H. and Humphreys, D. (2006): “International Initiatives to Address Tropical Timber Logging and Trade”. Norwegian Ministry of the Environment
- Johnstone, R., Cau, B., Norfolk, S. (2004): “Forestry legislation in Mozambique: compliance and the impact on forest communities”. Terra Firma Lda, Paper for the Forest Governance Learning Group.
- Mackenzie, C. (2006): “Chinese Takeaway! Forest Governance in Zambézia”. FONGZA, Mozambique.

- NDF (2005): “Actual Situation of the Forest Industry in Sofala, Zambezia and Cabo Delgado”. Ministério de Agricultura, Direcção Nacional de Florestas e Fauna Bravia. Forestry Entrepreneurship and Joint Forest Management Project. Financed by Nordic Development Fund (NDF).
- Nhantumbo & Ogle (2006): “Improving the Competitiveness of the Timber and Wood Sector in Mozambique”. Report for the Confederation of Mozambican Business Associations under the Mozambique Trade and Investment Project. Nathan Associates, Maputo, Mozambique.
- Nhantumbo, I. and D. Macqueen (2003): “Direitos das Comunidades. Realidade ou Retórica”. DNFFB, Maputo, Moçambique.
- Reyes, D. (2003): “An evaluation of commercial logging in Mozambique. A CDA report”. Cambridge MA, USA.
- Rytkönen, A. (2003): “Revenues from Forests of Mozambique: Improving the system of collection”. National Directorate of Forestry and Wildlife, Maputo, Mozambique.
- SAVCOR (2005): “Analysis of the Forest Industry in Sofala, Zambezia and Cabo Delgado: Actual Situation”. National Directorate of Forestry and Wildlife, Maputo, Mozambique.
- SAVCOR (2005): “Forest Sector Profitability in Mozambique”. National Directorate of Forestry and Wildlife, Maputo.
- SAVCOR (2006): “Guidelines for Formulating and Implementing National Action Plans to Combat Illegal Logging and Other Forest Crime”. Maputo, Mozambique.
- SAVCOR (2007): “Practical Tool for Forest Monitoring and Timber Tracking in the Mozambican Forestry Sector”, Report produced for FGLG, Mozambique.
- Taconi, L., Boscolo, M. and Brack, D. (2003): “National and international policies to control illegal forest activities”. CIFOR, Jakarta, Indonesia.
- TCT Industrias Florestais (2003): “Mozambique Timber Industry. An industry in crisis”. TCT Indústrias Florestas, Beira, Mozambique. Unpublished report.
- Thornton (2005): “Chinese Involvement in African Illegal Logging and Timber Trade”. Testimony of Allan Thornton, President, Environmental Investigation Agency to US House of Representatives (Committee on International Relations

Subcommittee on Africa), Global Human Rights and International Operations.

White, A. (2006): “China and the Global Market for Forest Products; Transforming Trade to Benefit Forests and Livelihoods”. Forest Trends.

DRAFT

## List of Interviewees

Name	Company/institution	Position	Location
Abdala Amisse	Mofid Lda.	Sawmill worker	Montepuez
Abdul Madiva	Mico Lda.	Sawmill worker	Mocimboa da Praia
Ahamada Sumaila	DDA	Law enforcement officer	Mueda
Albert Issa	Wood export Lda.	Worker	Montepuez
Alfredo Mumbule	DDA	Law enforcement officer	Mocimboa da Praia
Anonymous	Thienhe Lda.	Manager	Pemba
Anonymous	Thienhe Lda.	Foreman	Pemba
Anonymous	Mofid Lda.	Foreman	Mueda
Anonymous		Simple License Holder	Pemba
Anonymous	Mico Lda.	Export agent	Pemba
Anonymous		Community members	Montepuez
Antonio Campo	Miti Lda.	Manager	Mocimboa da Praia
Bettina Thomsen	MS-Mozambique	Project coordinator	Pemba
Castro Rassul	DDA	Director	Montepuez
Chen Changhe	Chinese Embassy	Commercial advisor	Maputo
Farouk Jamal	Miti Lda.	General manager	Pemba
Fernando Ndomby	DDA	Law enforcement officer	Montepuez
Ismael Antumane	Heyne	Sawmill worker	Pemba
Jaime Lucas		Simple License Holder	Mocimboa da Praia
Jamal		Broker	Mueda
Joaquim Daude	CFM	Director	Pemba
Jose Alfeu Muchanga	Mofid Lda.	Sawmill worker	Montepuez
Juao Mandiro	Madeiras Alman Lda	Foreman	Pemba
Luis Benjamin	Wood export Lda.	Sawmill worker	Montepuez
Mauluma Maulete	Mofid Lda.	Guards	Mueda
Modad		Sawmill owner	Mueda
Moises Nicoleu	UMC	Chief of department	Pemba
Peter Zweemer	Span Freight Shipping	Manager	Pemba
Piva Srilina	GAK Lda.	Manager	Mocimboa da Praia
Rachid Madiva	Mico Lda.	Manager	Mocimboa da Praia

Sergio Ferreira		Carpentry owner	Montepuez
Willson Hasmonio	Madeiras Alman Lda.	Director	Pemba

## Annex 1: Mozambican Labour Law infringements

Mozambican Labour Law (Law no. 8/98 of 20th July)

Art.	Title	No	Text
7	Form of Employment Agreement	7.1	Individual employment agreement shall be in writing, dated and signed by both parties.
		7.4	The absence of a written agreement shall be presumed to be the fault of the employer.
15	Rights of Workers	15.1	The State shall guarantee the efficacy of preventative and coercive measures to make non-viable, and to penalise, both civilly and criminally, all violations of the rights of workers.
		15.4	Workers have the following particular rights (extract): To be assured of the stability of their post, To be treated correctly, and with respect; all acts performed against their honour, good name, public image, private life and dignity being punishable by Law To be able to compete for access to higher positions, in accordance with their qualification, experience, results obtained at work, and the needs of the workplace; To be assured of weekly rest periods, and paid annual holidays; To benefit from appropriate measures for protection, security and hygiene in the workplace, and to be assured of physical and mental integrity; To benefit from medical assistance, and medication, and from compensation in case of accident at work, or occupational illness; To benefit from adequate assistance in the case of incapacity or old age, in accordance with the Law.
18	Duties of the Employer		The employer is, in particular, obliged: To respect, in their entirety, the rights and guarantees of workers and, in general, to comply with all of the obligations flowing from the employment agreement, and the norms which regulate it; To guarantee the observance of standards of hygiene and safety at work, as well as to investigate the causes of work accidents and occupational illnesses, and to adopt adequate methods for their prevention; To respect the workers, and to treat them correctly and politely; To provide good physical and moral work conditions at the

Art.	Title	No	Text
			workplace;
20	Regulatory Power	1	The employer may draft internal work regulations, containing the rules for work organisation and discipline, for the regimes of social support available to workers, and for the utilisation of work equipment and facilities intended for cultural, sport and recreational ends. These regulations shall be obligatory for those enterprises which normally have an effective staff complement of twenty - five or more workers in their service.
		2	The coming into force of internal regulations which have as their object work organisation and discipline, shall necessarily be preceded by consultation with the enterprise's trade union committee, or, in the absence of this, with the competent trade union body, and shall be subject to prior review by the State department responsible for the administration of labour.
		3	The internal work regulations referred to in the previous sub-clauses shall be displayed at the workplace, in a form which enables workers to have adequate knowledge of their contents.
27	Normal work period	2	The effective duration of work shall be deemed the time during which the worker performs effective service for the employer, or makes himself available to do so.
28	Limits to the Normal Work Period	1	The normal work period may not exceed forty -eight hours per week, and eight hours per day.
31	Intervals	3	In the case of continuous and uninterrupted work hours, it shall be obligatory to institute a rest interval of not less than half an hour, which shall be counted as effective working time.
32	Exceptional Work	1	Exceptional work is that which is conducted on a day of rest, whether normal or complementary, or a public holiday.
		3	Employers are obliged to have a register of exceptional work, wherein relevant notes shall be made prior to the commencement of the performance of work, and after its termination, and an express indication shall be made of the reason for the performance of exceptional work, which shall be confirmed by the worker who performed it.
		4	The performance of work on a day of rest, or public holiday, shall give a worker the right to a complete compensatory day of rest on one of the following three days, except when the performance of work does not exceed a period of five hours, in which case the worker shall be compensated by a half day of rest.
38	Right to Annual	1	A worker's right to paid holidays may not be renounced,

Art.	Title	No	Text
	Holidays		and may not be refused in any circumstance.
40	Schedule of Annual Holidays	1	The employer, in co-operation with the trade union committee, shall draw up a schedule of annual holidays.
47	Definitions and Principles related to remuneration	4	The government shall determine the minimum applicable salaries for various groups of workers, to provide for those whose conditions of work are of such a nature that their protection is warranted.
146	Hygiene, safety and health of workers		<p>All workers have the right to work in conditions of hygiene and safety, and it shall be incumbent upon employers to create and develop adequate methods for the protection of their physical and mental integrity, and to improve work conditions constantly.</p> <p>Employers shall provide their workers with good physical, environmental and moral conditions of work, inform them of the risks associated with their position of work, and instruct them regarding appropriate compliance with rules of hygiene and work safety.</p> <p>Workers should look after their own safety and health, and that of other persons who may be affected by their work actions or omissions, and as such should collaborate with employers on matters of hygiene and safety at work, whether individually or by way of work safety commissions or other appropriate structures.</p> <p>Employers should adopt all appropriate precautions, in order to guarantee that all work locations, as well as their entrances and exits, are safe and free of risks to the safety and health of workers.</p> <p>Whenever necessary, employers shall provide protective equipment and work clothing, with a view to preventing the risks of accidents or effects prejudicial to health.</p> <p>Employers and workers are obliged to comply with legal norms and regulations punctually and rigorously, as well as with directives and instructions issued by competent entities on matters of hygiene and work safety.</p>
147	Work Safety Commissions		<p>All industrial enterprises with more than fifty workers, or those that have fewer workers but pose exceptional risks of accident or occupational illness, shall be obliged to create work safety commissions.</p> <p>Work safety commissions shall include representatives of workers and of the employer, and their purpose shall be to supervise compliance with norms of hygiene and safety at work, to investigate the causes of accidents and, in collaboration with the technical services of the enterprise, to organise methods of prevention and ensure hygiene at the place of work.</p>



Art.	Title	No	Text
148	Regulation of Hygiene and Safety		The Labour Inspectorate shall enforce compliance with norms of hygiene and safety at work, and may require the collaboration of other competent government departments, whenever it is deemed necessary.
149	Medical Assistance at Places of Work		Enterprises having more than one hundred workers in their service shall be obliged to establish and operate a private health unit at the work place, for the provision of first aid in cases of accident, of sudden illness, of poisoning or of indisposition. The provisions of the previous sub-clause are equally applicable to those enterprises who have fewer workers in their service but whose activities are cumbersome, unhealthy or involve a high degree of danger to which workers are permanently exposed
152	Prevention of Work Accidents and Occupational Illness	1	Employers shall be obliged to adopt effective measures for the prevention of work accidents and occupational illnesses, and to investigate the causes thereof and ways to suppress them, in strict collaboration with the commissions for work safety constituted at the workplace.
		2	Employers, in collaboration with trade unions, shall inform the competent local department for the administration of labour of the nature of work accidents or occupational illnesses, and their causes and consequences, after appropriate inquiries and records have been made.
155	Reporting of Work Accidents or Occupational Illnesses	2	Health institutions shall be obliged to report the death of any injured worker to the Labour Courts, and, likewise, to the person in whose care he was.
156	Duty of Assistance		In the case of a work accident or occupational illness, employers shall provide the injured or ill worker with first aid and adequate transport to a medical centre or hospital at which he may be treated. The injured worker has the right to medical and medicinal assistance and other necessary care, as well as to the provision and the normal renewal of prosthetic and orthopaedic equipment, in accordance with the nature of the injury suffered, at the expense of the employer or of insurers against accidents or occupational illness. If the injured worker has to be transported within the country to an establishment distant from his place of residence, he shall have the right, at the expense of the employer, to be accompanied by one member of his family, or by someone else who may provide direct assistance. In order to meet unforeseen needs associated with his condition, the injured worker may, at his request, benefit from an advance of an amount corresponding to one

Art.	Title	No	Text
			month's compensation or pension. The employer shall pay the charges resulting from the funeral of an injured worker.
171	Conditions for the Employment of Foreign Workers		A foreign worker shall possess such occupational qualifications and specialisations as the country requires, and he may only be employed if there are no nationals who have such qualifications, or if their number is insufficient.
207	Control of Labour Legalities)	1	Labour legality shall be monitored by the Labour Inspectorate, which shall be competent to supervise compliance with the duties of employers and workers.
208	Competencies of the Labour Inspectorate)	2	In the case of imminent danger to the life or physical integrity of workers, the agents of the Labour Inspectorate may take immediate measures to prevent this danger, provided that they shall submit the decision taken to a superior officer, for confirmation, within a period of 24 hours.
213	Notices of Violations	1	The agents of the Labour Inspectorate shall draft notices of violations when, in the exercise of their functions, they personally and directly detect and prove any violations of the norms which they are responsible for supervising, and shall set a deadline within which the establishment must comply with, and rectify, violated norms.

## Annex 2 - Specific terms of reference for Mozambique study

The major focus of this specific study will be on one specific supply chain which will be researched through special consultation, literature review and field visits where necessary. The six outputs / chapter headings listed below will also be informed by existing information on forest policy and practice in Mozambique outside the specific chain being studied, e.g. in other provinces.

**Output 1** - The description of one forest products supply chain – defining it in terms of product, geography, and key nodes in the chain.

A supply chain framework or flowchart will be established for the elements of a significant chain within Mozambique that supplies China. They would cover the entire commodity chain, beginning with wood production in the forests or plantations, key processing stages and export. Geographic distinctions would be made to clearly identify the different roles of China both within country and with transport and other international links also mapped out as far as possible. Although there may be dozens of stages, key nodes would be identified for their qualitative or quantitative significance for sustainability.

Although existing data will be used as far as possible, market, business or industry surveys may be conducted to collect key data for the specific chain in question.

**Output 2:** The identification of positive and negative environmental issues along the supply chain; and, where possible, to assess these impacts at major nodes.

The environmental impacts will be analyzed in detail for the key stages identified in Output 1, in the manner of a Life Cycle Analysis, with particular attention to impacts of forest management and harvesting. Findings will be compared and contrasted with existing information from elsewhere in Mozambique.

Both negative and positive environmental impacts will be categorized, as well as direct and indirect effects. As far as possible, impacts will be categorised according to the four types of 'ecosystem service' identified by the Millennium Ecosystem Assessment – supporting, regulating, provisioning, cultural. This framework has the advantage of

linking environmental impacts with social impacts

To facilitate the identification of feasible policy interventions, major environmental impacts so identified will also be correlated as far as possible with:

- conversion/logging of natural forests;
- improper harvest practices
- sustainable practice (likely to be positive).
- illegal logging or illegal trade;

For this case study, particular effort will be made to establish explicit linkages between activities of a particular player in the case study supply chain and their specific environmental impacts, so that leverages for intervention can be identified. Again, this may be compared with information from other areas in Mozambique.

**Output 3:** The identification of positive and negative social, cultural and distributional issues along the supply chain. Where possible, also to measure specific social impacts, and to identify changes before and after Chinese influence on the chain.

As with environmental impacts, social impacts are highly context-specific and will thus be identified in detail only for one single case study supply chain.

Both negative and positive social impacts will be categorized. Where possible, they will be categorised in a manner that is consistent with the five constituents of *'human well-being'* identified by the Millennium Ecosystem Assessment – health, basic material for a good life, security, social relations, and freedom of choice and action. and *international social standards* such as ILO core labour standards, ILO's international standard for social responsibility, and FSC (or other forest certification) social standards

Particular attention will be placed on the impacts of newly established wood commodity chains on the level and type of worker employment and local livelihoods. As with Output 2, efforts will be made to establish explicit linkages between activities of a particular player in the case study supply chains and their specific social impacts, so that leverages for intervention can be identified. Again, comparisons may be drawn with information from other supply chains in Mozambique.

**Output 4:** An overview of the distribution of market power and decision making authority across the different actors along forest product supply chains in Mozambique, including the influence of associated policy.

The players participating in and/or influencing decision-making along the supply chain, as well as market action (production, trade and consumption, and key intermediate activities) will be described. These include not only the immediate value-added ‘producers’ at each stage, but also a ‘stakeholder network’ of investors, politicians, associations and other groups that influence the immediate ‘producer’, including voluntary initiatives. Stakeholder influence mapping will enable us to identify e.g. whether a chain is driven by final buyers, wood product suppliers, etc – and who are the protagonists/antagonists of sustainability.

The case study will assess five major types of policies and institutions that set a framework for supply chain governance and send signals to the stakeholders involved. As a land-based industry, forestry worldwide is governed by a unique regulatory framework that seeks to balance resource access, commerce, conservation and local livelihoods. This is mostly a matter of formal national and local regulations, but increasingly also of international environmental and trade policy, and ‘soft’ trade and market policies. The case study will therefore map:

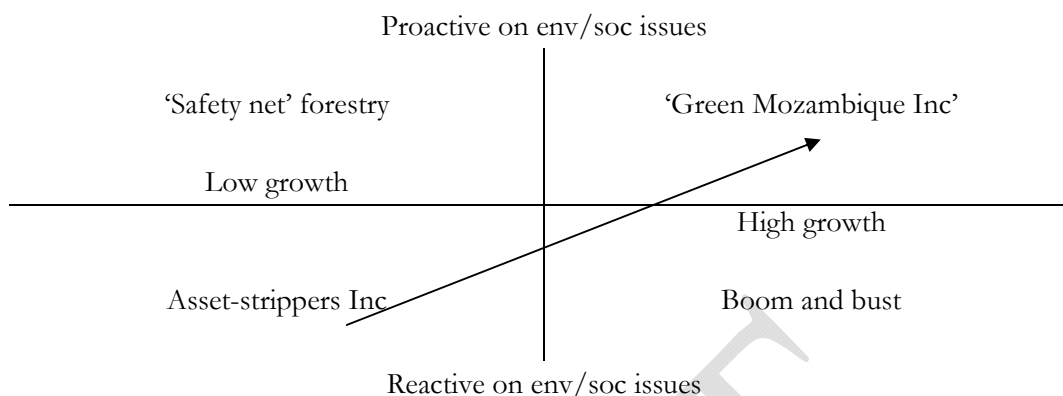
- Resource access and control policies, particularly land title arrangements and timber harvest policies
- Trade policies that affect the flow of wood and wood products along the chain
- Market relationships that define the role of individual players at each node and the likelihood of industrial upgrading in the chain
- Policies and institutions affecting treatment of environmental assets and hazards
- Market forces (including ‘soft policy’ such as voluntary certification instruments)

**Output 5:** The identification of ‘*what works*’ currently for sustainable development in given forest product supply chains, in terms of supply chain dynamics and associated actors and instruments

This case study study will analyse the dynamics and interactions revealed above using a *'drivers of change'* approach, e.g.:

- The key drivers (stakeholders, policies and instruments) for sustainable practice at key supply chain nodes, and how they exercise leverage
- Conversely, who or what acts against sustainable development, and how this influence is exercised
- Where possible, conclusions on the relative effectiveness of specific instruments (verification of legality, certification of sustainability, anti-corruption initiatives, industry codes, procurement policies, environmental payments, etc)
- How far China's growth in forest products is affecting the above for better or worse
- A forward-looking *scenarios* approach may also be employed, in order to explore what changes would be needed and feasible to moving towards sustainable futures. [to be discussed in the group e.g.:]

DRAFT



**Output 6:** Provision of sound and practical policy options for improving and/or scaling up the sustainability impacts of wood product supply chains in Mozambique; and to ensure options are suited to Chinese and international stakeholders, identifying which options appear to be 'must-have' prerequisites.

Priority will be given to interventions that are politically and operationally feasible and manageable in the near or medium term, as well as making business sense. In particular, the existing collaboration arrangements between China and Mozambique will be assessed and new programs and initiatives suggested for such arrangements.

Recommended options could be direct (e.g. better enforcement of environmental policies on logging), or indirect (e.g. tariff policies to encourage local processing or policies to boost Chinese domestic timber supply capacity); be punitive in nature (e.g. fines on illegal logging) or rewarding in nature (such as voluntary third party certification or verification of wood legality); they could be based on existing power relationships of the supply chain (when most of the power is rested with the lead firm in the buyer group), or be based on a changed power structure (realized by industry upgrading in the supplier countries).