



ISSUES



GLOBAL FOREST PRODUCT CHAINS:

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

Report for the International Institute for Environment & Development and the Forest Governance Learning Group

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Disclaimer

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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.

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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 Reducção 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)

1. 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 & Development¹. 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 reports² 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 65)³. 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.

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.

¹ 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.

² See the References for full details.

³ Various meetings were held, but it was not possible to meet with several important potential informants (see section 1.6 below)

1.1. Background⁴

1.1.1. 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 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-

⁴ 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.

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.

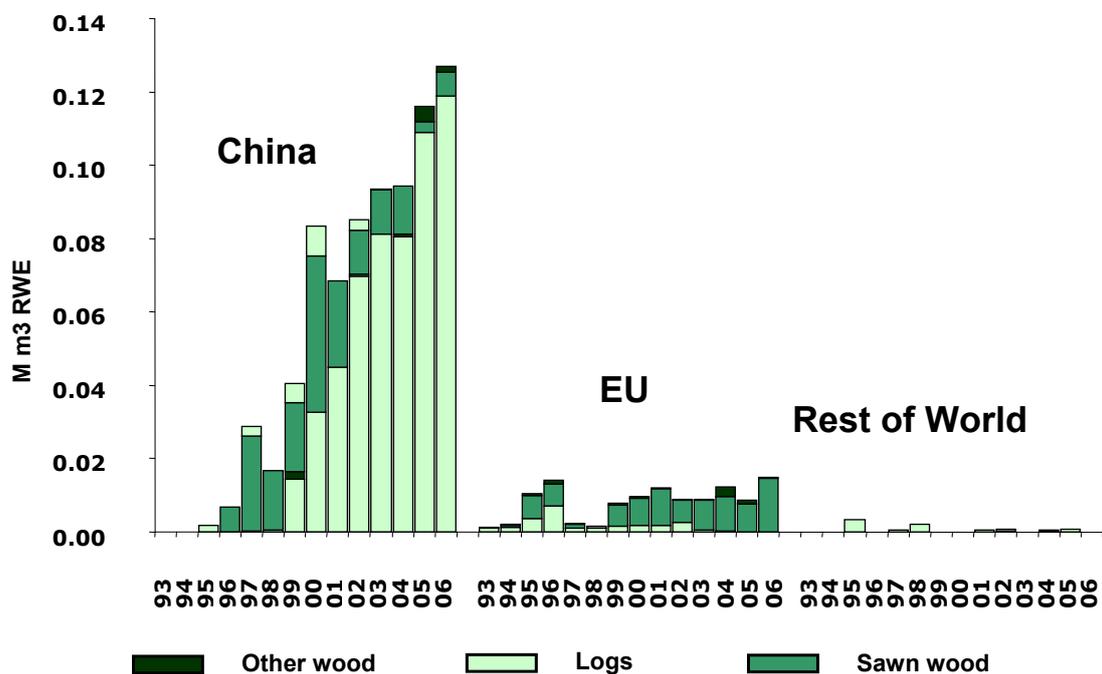
The challenge to the international community is to encourage forest operations that ensure a proportion of revenues generated are channelled back to the forests for regeneration, as well as to socio-economic benefits for forest-dependent groups. In producing countries this requires a set of effective 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.

1.1.2. Mozambique in context

Forest governance structures (see section 2.1.3) 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 m³ to 134 million m³ RWE (White *et al.*, 2006), whilst in 2005 Mozambique's exports of all wood to China amounted to a little over 0.12 million m³ 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.

1.2. 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.

1.3. Methodology

The requirements of the study were detailed in the Terms of Reference (see Annex 1 at page 66). 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 1.4 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.

1.4. 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-received⁵.

1.4.1. 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 managers⁶. 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 archives⁷. 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.

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

1.4.2. 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

⁵ 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).

⁶ 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.

⁷ 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.

studies, with greater country ownership and a longer time horizon, could probably surmount these obstacles more easily.

1.4.3. 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.

1.4.4. 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.

1.4.5. 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 harbour⁸. 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.

⁸ 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

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 authorities⁹, 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”¹⁰) 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 Affairs¹¹.

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 president, calling for the establishment of an independent commission¹², 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 levels¹³. One notable exception was an article quoting a government technician, Sr. Joaquim Macuáua, 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 forests¹⁴.

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’¹⁵.

A subsequent debate on the issue of forest exploitation in parliament on the 8th 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.

⁹ For details on this event see http://oficinadesociologia.blogspot.com/2007_01_01_archive.html

¹⁰ See Mackenzie (2006) in References

¹¹ See “Chainsaws cut down more than just trees”, IRIN, accessed at <http://www.irinnews.org/Report.aspx?ReportId=67894> on 14/03/07

¹² See http://oficinadesociologia.blogspot.com/2007_01_01_archive.html for a copy of the letter in Portuguese.

¹³ See, for example, “Sector florestal arrecada 175 milhões de meticais”, Domingo, 02/11/07, p 6

¹⁴ “Resultados reais dizem que estamos a perder as florestas”, Savana, 09/02/07, p.3

¹⁵ See “Compulsando sobre exploração de madeira”, Sr. Adelino Buque in an opinion piece in the Noticias newspaper, 14/02/07

1.4.6. 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.

2. Overview of the forestry sector

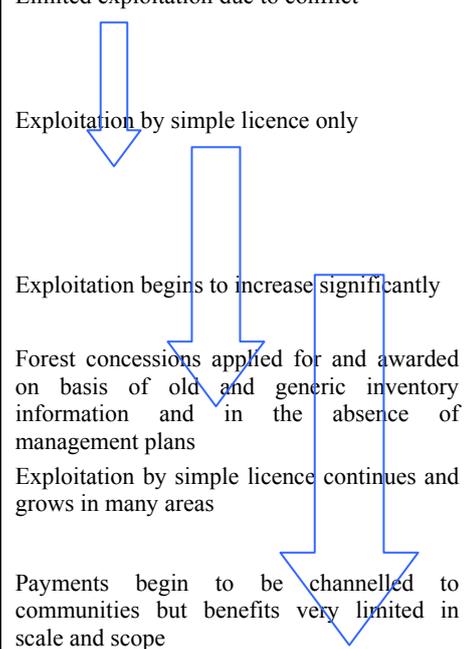
2.1. Policies and priorities

2.1.1. 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>1992</p> <ul style="list-style-type: none"> • Peace Agreement (1992) • Elections (1994) • Return process (1993-1994 onwards) • Forestry Pre-Programme' (1993) • 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) • Forestry and Wildlife Law (1999), Regulations to the Forestry and Wildlife Law (2002) <p>2007</p> <ul style="list-style-type: none"> • Diploma for channelling of community revenue entitlements 	<p>Limited exploitation due to conflict</p> <p>Exploitation by simple licence only</p> <p>Exploitation begins to increase significantly</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>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 2.1.6)

Substantive policy finally appeared when the Forestry and Wildlife Policy and Strategy was adopted by the Council of Ministers in 1997¹⁶. This was followed by the passing of the new Forestry and Wildlife Law in 1999¹⁷ (LFFB).

Regulations to the Forestry & Wildlife Law were published in 2002¹⁸. This legislation gave further details on some aspects of the permissible exploitation regimes, but left many areas for further regulation, including:

1. How powers for forestry management were to be delegated to co-management committees as envisaged in the law;
2. How revenue sharing components of the Law, that provide for 20% of forest taxes to be paid to local communities, were to be operationalised;
3. How revenue sharing components of the Law in respect to fines for illegal activities were to be operationalised;
4. What the contents of a suitable management plan were to consist of;
5. The level of annual taxes in respect to concession areas;
6. 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.

2.1.2. 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 Law¹⁹, promulgated in 1997 and the 1999 Forest and Wildlife Law.

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.

¹⁶ Resolution 10/97 of 7th April

¹⁷ Forestry and Wildlife Law [*Lei de Florestas e Fauna Bravia*] Law 10/99 of 7th July

¹⁸ Decree Law: Regulations to the Forestry & Wildlife Law [*Regulamento da Lei de Florestas e Fauna Bravia*, Decreto Lei 12/2002], of 6th of June

¹⁹ Land Law [*Lei da Terra*] Law 19/97 of 1st October

Article 35 states:

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 enjoyment²⁰. 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 alienated²¹. However, the same provision also stipulates that the use and enjoyment of land shall be the right of all the Mozambican people²². 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 sector²³. 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,*

²⁰ "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."

²¹ Article 46 (i) and (ii) [Constitution]

²² Article 46 (iii) [Constitution]

²³ 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.

*forests, sites of socio-cultural importance, grazing lands, water sources and areas of expansion*²⁴.

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 community²⁵. 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 user²⁶

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:

- "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;"

²⁴ 1997 Land Law, Chapter 1, Article 1(1)

²⁵ Article 1(5) [Forestry & Wildlife Law]

²⁶ Article 18(3) [Regulations to the Forestry & Wildlife Law]

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.

2.1.3. 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 (DNLF). 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.

2.1.4. Forest taxation and fines

2.1.4.1. 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.

Table 1 - Royalty values in 1998 and 2002

Class of Timber	Previous Royalty Value¹	Actual Royalty Value²
Precious Wood	105,000	2,000,000
1 st Class	65,000	500,000
2 nd Class	45,000	300,000
3 rd Class	30,000	200,000
4 th Class	20,000	100,000

1 Decree 38/98 of 18th August 1998 (MT/m³) - exchange rate at time of legislation – MT10,000/\$

2 Decree 12/2002 of 6th June 2002 (MT/m³) - 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 harvesting²⁷.

2.1.4.2. 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.

2.1.4.3. 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.

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)

2.1.4.4. 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 concessionaires obtained investment incentives, they can import their equipment (but not vehicles) free of duties providing that no similar items are produced in the country.

²⁷ 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.

2.1.4.5. 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 or 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.

2.1.5. 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%.

2.1.6. 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).

2.2. 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 DNTF, 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 practise²⁸. 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 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.

2.3. 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 km²) of the total area of the province (82,635 km²)²⁹. 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 respectively³⁰.

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

²⁸ 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.

²⁹ Calculated with SAVCOR (2005) data.

³⁰ DNFFB (2003). A contribuição do sector florestal e faunístico para a economia do país.

declared wood exports corresponded to 27,1 million USD³¹, less than 0,3% of the world market³². 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 prawns³³.

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
Total	6,547	12,347	8,145	13,539	29,390

Source: ITC/UN 2002

Table 4 - Value of Timber Export from Mozambique (all products) 2001-2005 (US\$000, CIF)

	2001	2002	2003	2004	2005
Total	12,161	17,691	17,476	30,675	27,150

Source: Germizhuizen *et al.* (2007, p.15)

2.4. 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 m³ of wood were processed in squared log and 79% of this production was exported³⁴. 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.

³¹ Germizhuizen *et al.* (2007)

³² ITC website

³³ Mozambican Industrial Performance and Investment Climate 2003.

³⁴ Calculated with SAVCOR (2005) data.

Table 5 - Timber production in Cabo Delgado

Annual Production (cubic metres)	2001	2002	2003	2004	2005
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)

Product	N.º Licences issued	Units	Licensed Volume
Round logs	824	m ³	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)

	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)

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)

2.5. 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 China³⁵.

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 m³ 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 m³ 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
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
Total	6,547	12,347	8,145	13,539	29,390

Source: ITC/UN 2002

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

³⁵ In 2005, the total value of China wood product import was USD 16.4 billion (White, A., 2006, p.4)

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.

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
Total	12,161,631	17,636,638	17,001,315	29,761,056	26,367,268

Source: Germizhuizen *et al.*, 2007 (draft)

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.

2.6. 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.

3. 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.

3.1. 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			Log
	Trunk bark cut					
	Log transport to					
Production	Sawing		Sawmill	Concession /sawmill staff	Sawn wood	
Export	Charging into container		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		
	Transport to		Log trader yard			
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/UE	Port	Port operator		
	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

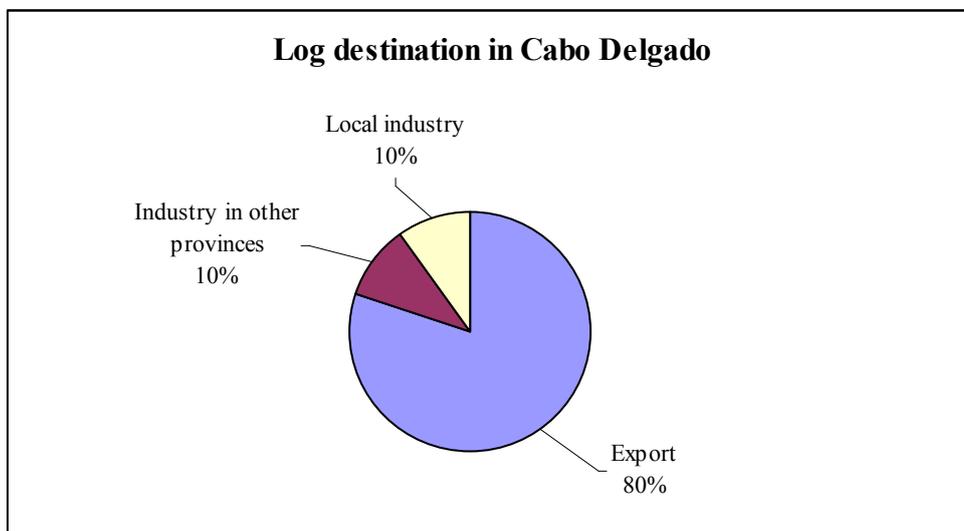
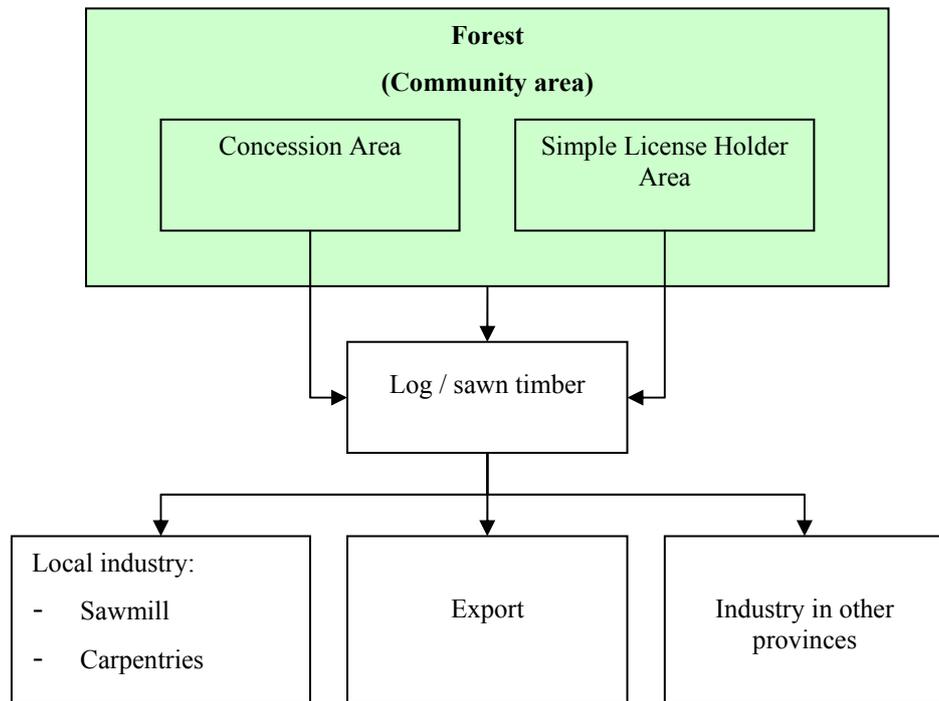
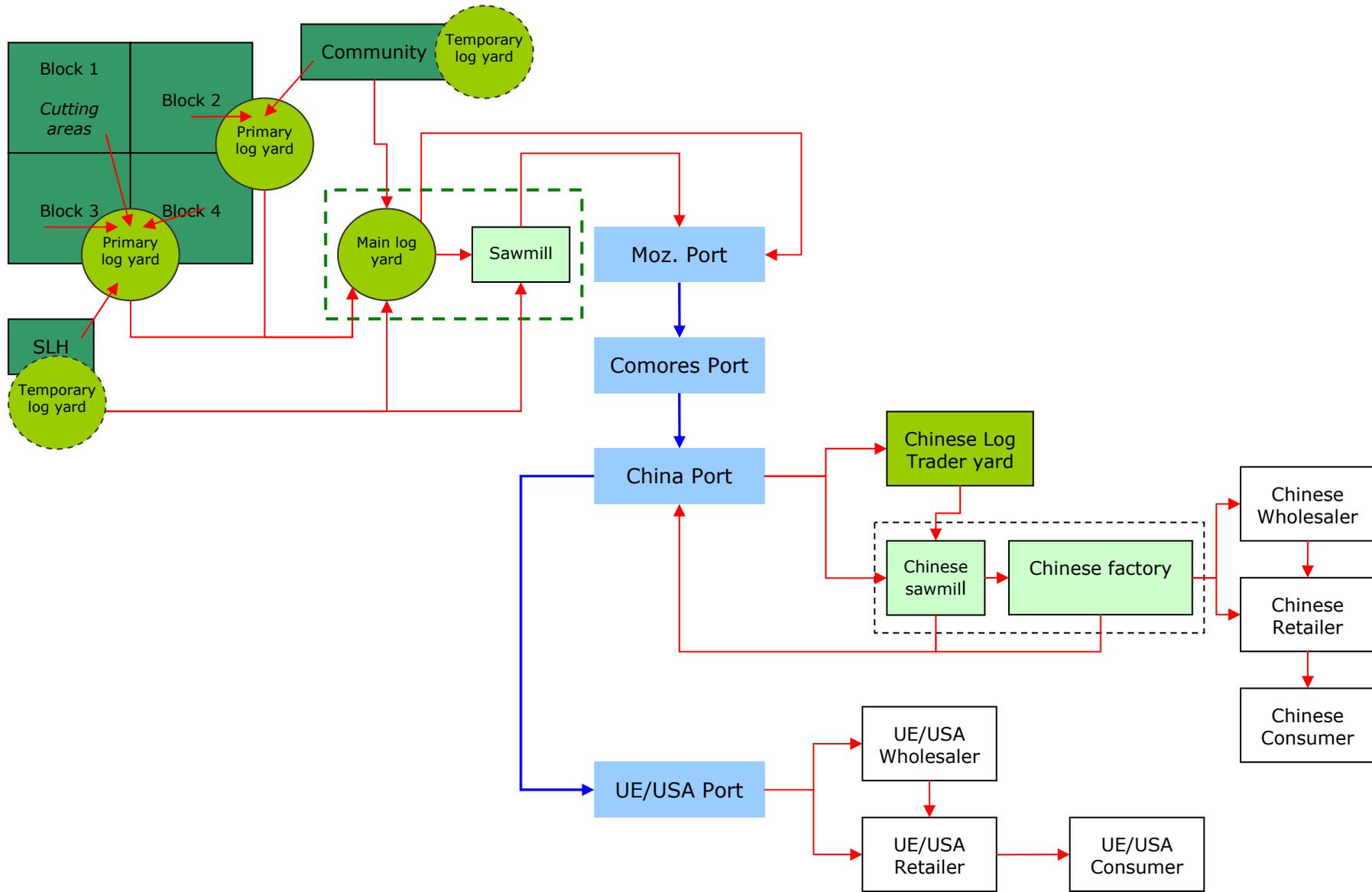


Figure 5 - Cabo Delgado - Chinese Timber Supply Chain



3.2. Technical aspects

The technical aspects considered here are the harvesting methods, the means of transportation, the transformation process and exports.

3.2.1. 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.

3.2.2. 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.

3.2.3. 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 timber³⁶, contributing to China's successful and dramatic increase in raw log imports³⁷. 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).

3.3. 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).

³⁶ China Daily, Import Tariffs on Wood Products to Be Cut, February 19, 2002 (quoted in Thornton, 2005).

³⁷ Chunquan, Taylor and Guoqiang, China's Wood Market, Trade and the Environment, WWF International, Science Press USA, Inc. 2004 (quoted in Thornton, 2005)

3.3.1. 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.

3.3.2. Log yards

Log 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.

3.3.3. 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 3.5.8 below.

3.4. 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>Azelia 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	Sawn Timber for Export	USD per m ³
		Log Export
Felling and extraction cost to loading point ^a	25	25
Royalty	31	123
Reforestation Levy (15%)	5	18
Transportation (350 km one way to port or mill) ^a	60	60
Logging overheads ^{b, c}	10	10
Sawing costs to green sawn ^{a, b}	52	
Sawing overhead ^d	5	
Transport to port	10	
Total Costs	198	236
Profit margin	22	114
Selling Price ^e	220	350

^a Assumed to include depreciation

^b Based on TECHNOSERVE analysis “Overview of the Mozambique Timber Industry” May 2003

^c Includes concession cost amortization, management, marketing

^d Includes management and marketing

^e Based on 0.4 m³ (40 percent conversion rate) of Umbilla sold at US\$550 per m³

Note: The figures were obtained from fieldwork and are considered to be indicative averages for comparative purposes

Source: Nhantumbo & Ogle, 2006

3.5. 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)

3.5.1. 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 4.2). 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.

3.5.2. 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 m³ 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.

3.5.3. 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 m³ 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 m³. 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, lda	Muidumbe	20,257	Plan	2003	Approved
MITI, lda	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)

3.5.4. 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.

3.5.5. 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 5.2.5 below).

3.5.6. 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.

3.5.7. 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 vehicles³⁸.

This is unexpected, in view of the transport capacity of the operators. The registered transport capacity shows a total of 94,000 m³ and a utilized capacity of 66,000 m³, a pattern that is similar for all Chinese companies. Mofid Lda, Mico Lda and Heyne Lda have a combined capacity of approximately 32,480 m³ far beyond their declared volumes of processed/exported logs.

According to our informants, a large proportion of their fleet is permanently immobilized, the result of high rates of breakdown³⁹, 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

³⁸ 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.

³⁹ Due to bad road conditions, obsolete equipment and low driving abilities.

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.

3.5.8. 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 m³ of wood per month).

From Mocimboa da Praia in the same year, Span Freight sent approximately 18,000 tonnes (or 16,000 m³) 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 m³ per year, approximately 35% higher than the figures for log exports (see Table 5).

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 Shangai, 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 shipments⁴⁰ 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.

3.5.9. 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

⁴⁰ 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.

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.

4. 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.

4.1. 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.

4.1.1. 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.

4.1.2. 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.

4.1.3. 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 CO² 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.

4.1.4. 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.

4.1.5. 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).

4.1.6. 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.

4.2. 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.

4.3. 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.

4.3.1. 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.

4.3.2. 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 month⁴¹ 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.

4.3.3. 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 23rd 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

⁴¹ 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.

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.

4.4. 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/\$US30), 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 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.

4.5. 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.

4.6. 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.

5. Key factors in sustainability

5.1. 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.

5.2. 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

5.2.1. 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.

5.2.2. 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.

5.2.3. 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.

5.2.4. 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.

5.2.5. 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.

5.2.6. 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.

5.2.7. 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!

5.2.8. 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.

5.2.9. 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 logging⁴² 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

⁴² The definition of “illegal logging” is usually accepted as the violation of relevant national legislation (including ratified international treaties and conventions).

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 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 Ltda.): here, the workers are formally contracted and wear uniforms and protective items, such as helmets, 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.

5.2.10. 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).

6. 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

6.1.1. 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.

6.1.2. 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.

6.1.3. 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.

6.1.4. 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.

6.1.5. 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.

6.1.6. 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.

6.1.7. 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.

6.1.8. 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.

6.1.9. 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.

6.1.10. 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 species⁴³ (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.

6.1.11. 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

⁴³ See www.forig.org/forig/history

them into the management plan and the methods of operations. Agreements between communities and forestry operators should be recorded, publicised and monitored.

6.1.12. 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.

6.1.13. 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

6.1.14. 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” (ibid, p.81)

7. 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 corruption⁴⁴.

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.

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

⁴⁴ Mackenzie (2006), p. 80

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.

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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 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.

Art.	Title	No	Text
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 Holidays	1	A worker's right to paid holidays may not be renounced, 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 exists, 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</p>

Art.	Title	No	Text
			on matters of hygiene and work safety.
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>
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		<p>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.</p> <p>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</p>
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		<p>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.</p> <p>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.</p> <p>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.</p> <p>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 month's compensation or pension.</p>

Art.	Title	No	Text
			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:

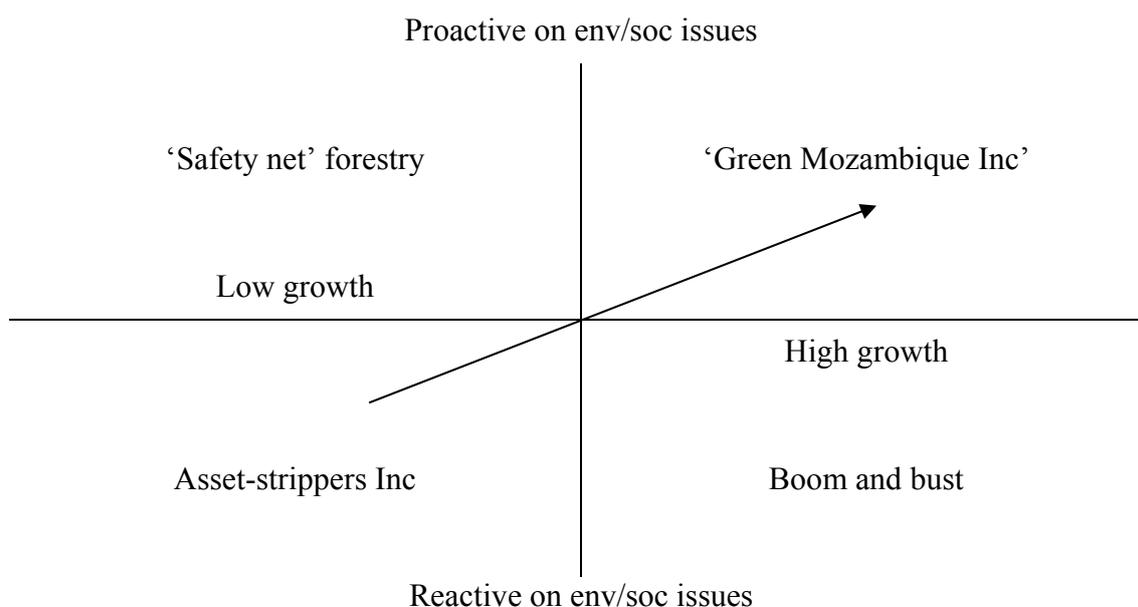
- Resource access and control policies, particularly land title arrangements and timber harvest policies
- Trade policies that affect the flow of wood and wood products along the chain
- Market relationships that define the role of individual players at each node and the likelihood of industrial upgrading 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.:]



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.

finer 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).