

Policy Note on Natural Forest Value Chains

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Introduction

This policy note deals with the issues of value chains, business environment, timber processing and employment in the natural forest sector in Mozambique¹. For its production several companies, business organizations, and public institutions were contacted over the course of a two week joint mission of the World Bank and the FAO Investment Centre to Beira and Maputo in August 2015. The aim was to gather information on the main opportunities and constraints the industry is facing so as to assess the feasibility and adequacy of a set of different public policy options in support of the sector.

Main Findings

The companies that manage natural forest concessions in a legal and sustainable way – either certified against international industry standards or not - and who produce and market the products obtained from wood cut in these concessions, are facing severe financial problems. This is due to the unfair competition of the forest concessionaires, simple license holders, and informal loggers that manage to avoid the costs of complying with the laws governing forest activities, industry regulations, taxes and trade duties.

The sustainably managed concessions are in the process of cutting costs, downsizing and/or looking for new markets that could pay for the sustainable practices they implement. This is not an easy process and these companies need support. Some of these companies did not wish to discuss the value chains they are engaged in as they saw no strategic purpose in doing that until a new set of policies is implemented by the Ministry of Land, Environment, and Rural Development (MITADER) to curb the uncontrolled felling, transport, and export of logwood of precious and first class species to Asian markets. These have reached unprecedented levels in recent years and threaten the profitability of law abiding companies and the very existence of the natural forest in Mozambique. The Government of Mozambique is addressing these issues with a set of policy measures that aim to agree with the industry's requirements.

Taking into account the market size and also the potential for raising income and generate jobs at the local level, we found that the most promising opportunities lie in the value chains of **Furniture**, **Railway Sleepers**, **Honey**, and **Natural Oils**.

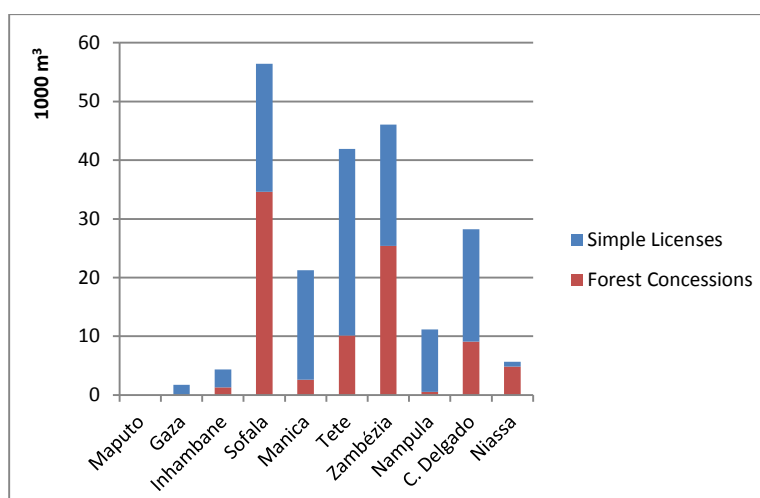
However the main finding of this report is that without a substantial effort by the authorities to enforce the rule of law, especially where the legal sourcing of the wood raw materials is concerned, the few companies that manage concessions in a sustainable way will fail. Other problems relate to access of forest products to higher paying but more demanding markets and the ecological sustainability of the forest resource base. The procurement of sustainably produced forest goods - possibly certified according to legal and recognized quality standards - by the Mozambican State and international institutions can be a positive factor for the creation or growth of markets for these products.

¹ This policy note is part of a set of four policy notes prepared by the TCI for the World Bank. The others focus on the themes of law enforcement; data management; and the Sustainable Development Fund (FUNDES).

Production of Wood Products

According to the Mozambican government, the Provincial Services for Forests and Wildlife (SPFFB) issued, until the third quarter of 2014, a total 788 licenses for the cutting of a total 216,820 m³ of logs, a 2 percent increase from the previous year. Simple licenses account for 59 percent of this volume, with the remainder being issued for forest concessions. The main cutting provinces are Sofala (26%), Zambezia (21%), Tete (19%), Cabo Delgado (13%), and Manica (10%), as shown in Figure 1.

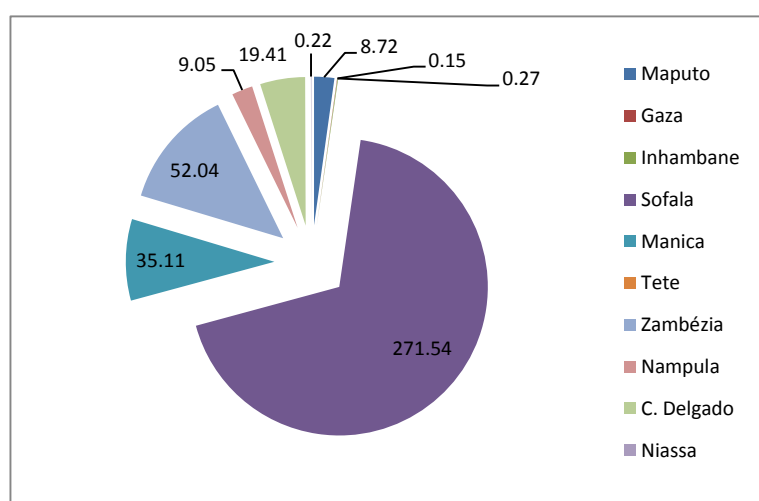
Figure 1. Volume of logs licensed for cutting in 2014



Source: Balance of the PES (2014)

The first transformation of logs into sawn wood (Figure 2) is concentrated in Sofala (68%), Zambezia (13%), and Manica (9%). A total 396,511 m³ of sawn wood was produced in 2014, 69 percent above the previous year. Translated to round wood equivalent [RWE]¹ this quantity can be more than five times the amount licensed for cutting in the same period, reflecting either illegal logging or stockpiling of wood in 2013, or both. As the Balance of the PES (2014) does not address this issue, more data should be gathered to clarify this situation.

Figure 2. Production of Sawn Wood in 2014 (1000 m³)

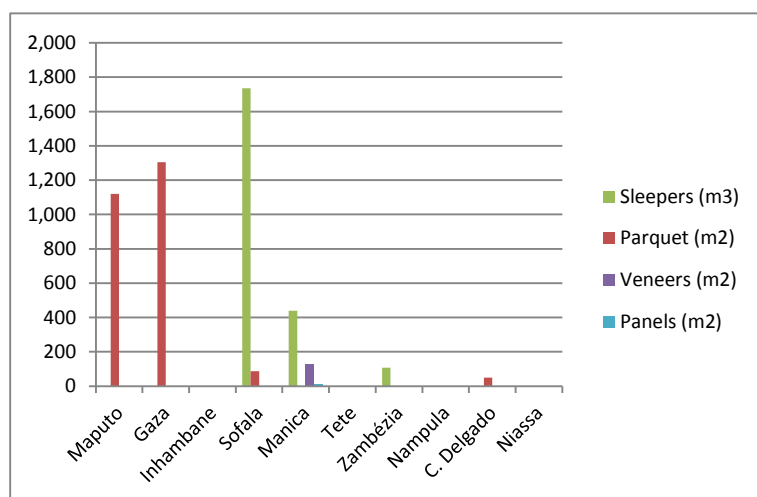


¹ By using a conservative factor of 3 such that round wood (m³) = 3 x sawn wood (m³). Source: FAO, internal discussions.

Source: Balance of the PES (2014)

The industrial processing of wood into railway sleepers is done in Sofala and Manica, while the production of parquet is concentrated in Maputo and Gaza. Other industrial products are still only made in very small quantities (Figure 3).

Figure 3. Industrial Processing of Wood in 2014



Source: Balance of the PES (2014)

Trade in Wood Products

Mozambique is a net exporter of wood products in value terms. Some of the main products traded, such as wood in the rough (commonly known as “roundwood”) and wood sawn (commonly known as “sawnwood”), are both imported from neighbouring countries and exported to Asia and Europe. Although the country still imports some of the more processed products, there is evidence of new processing capacity being installed, which is in agreement with information collected during fieldwork.

Imports

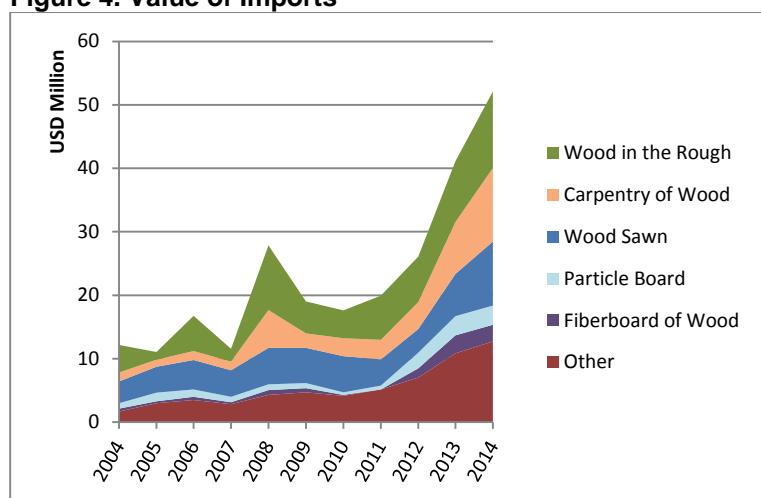
The declared value of Mozambican imports of wood products in 2014 was a record USD 52 Million (Figures 4 and 5). The main categories by value were wood in the rough, builders’ joinery and carpentry of wood, wood sawn, particle boards, and fibreboards of wood (commonly known as “medium density fibreboard” or MDF):

- Imports of Wood in the Rough (HS 4403) were valued at USD 12 Million and originated in the neighbouring countries of South Africa (67%), Zimbabwe (17%), and Swaziland (15%), in value terms.
- Imports of Carpentry of Wood (HS 4418) amounted to USD 11 Million with the main origins being South Africa (49%), Portugal (26%), China (17%), and Canada (2%), in value terms.
- Imports of Wood Sawn (HS 4407) reached USD 10 Million with more than 90 percent originating from South Africa, in value terms. Other origin countries were Malawi (3%), Zimbabwe (2%), and China (2%).

- Imports of Particle Boards (HS 4410) were valued at USD 3 Million, largely supplied by South Africa (71%). This product was imported from Sweden for the first time in 2014, making this country the second supplier to Mozambique with a 13 percent market share. Other origins were Portugal (8%) and China (4%).
- Finally, Fibreboard of Wood (HS 4411) was imported to the tune of USD 2.6 Million in 2014, again mostly from South Africa (61%), China (16%), Portugal (9%), and Zimbabwe (6%).

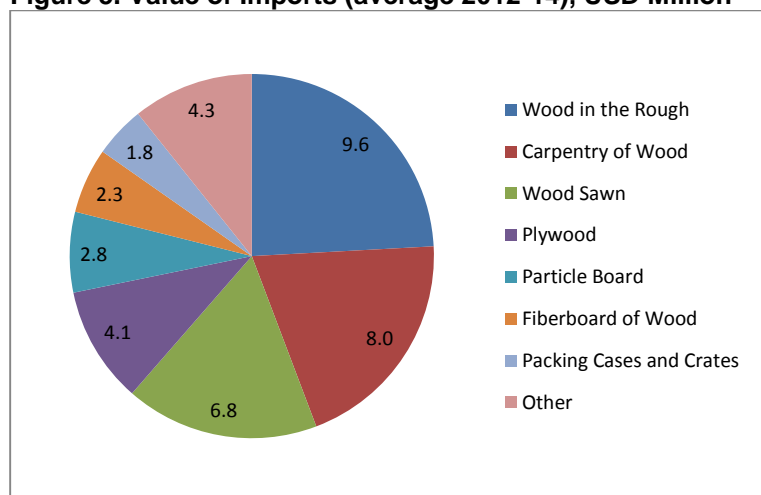
Figure 6 shows a massive increase in the quantity of wood in the rough imported over the last five years. The difference between these imports when registered in weight or volume may mean that lower density woods have been imported in recent years.

Figure 4. Value of Imports



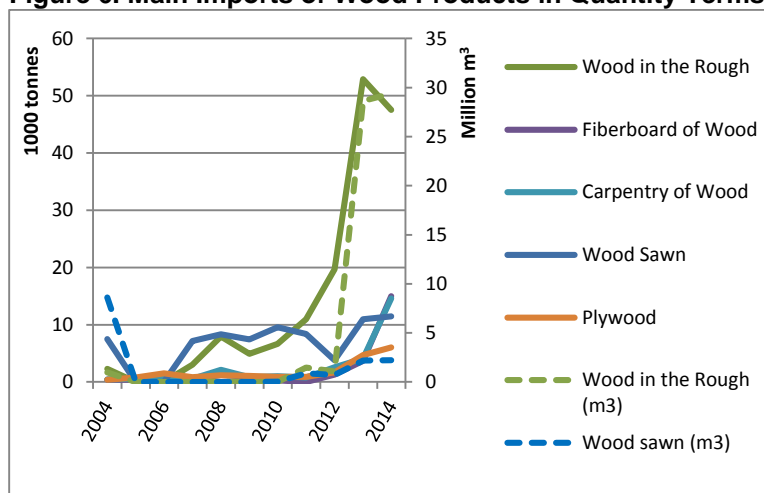
Source: UN Comtrade database in GTIS (2015).

Figure 5. Value of Imports (average 2012-14), USD Million



Source: UN Comtrade database in GTIS (2015).

Figure 6. Main Imports of Wood Products in Quantity Terms



Source: UN Comtrade database in GTIS (2015).

Exports

The value of exports of wood products declared by Mozambique was just above USD 123 Million (Figures 7 and 8), the highest since 2011. The main categories by value were wood sawn, wood in the rough, fuel wood, densified wood, and wood continuously shaped:

- Exports of Wood Sawn (HS 4407) reached USD 75 Million, more than 97 percent of which was destined to China with the remainder divided between Vietnam and India.
- Exports of Wood in the Rough (HS 4403) were valued at USD 22 Million and again were almost entirely destined to China (99%), with the rest being sent to India. However, the value that China declared as wood in the rough imported from Mozambique in 2014 was more than 15 times higher than this, at USD 335 Million. This difference in trade declarations has existed for more than 10 years but it has been widening as of late. Figure 9 shows these values as averages taken from the years between 2012 and 2014. Muianga and Macqueen (2015)¹ estimate that this caused the Mozambican state to lose tax revenue of close to USD 30 Million ascribed solely to the export timber trade with China in 2012, while Falcão *et al.* (2015)² estimate this value to be more than three times higher at USD 98 Million, and growing.
- Exports of Fuel Wood (HS 4401) occurred for the first time in 2014, amounting to USD 13 Million, all destined to Japan.
- A similar event happened with the exports of Densified Wood (HS 4413). These were valued at USD 7.6 Million, from USD 0.1 Million the year before, and again were almost 100 percent destined to Japan.

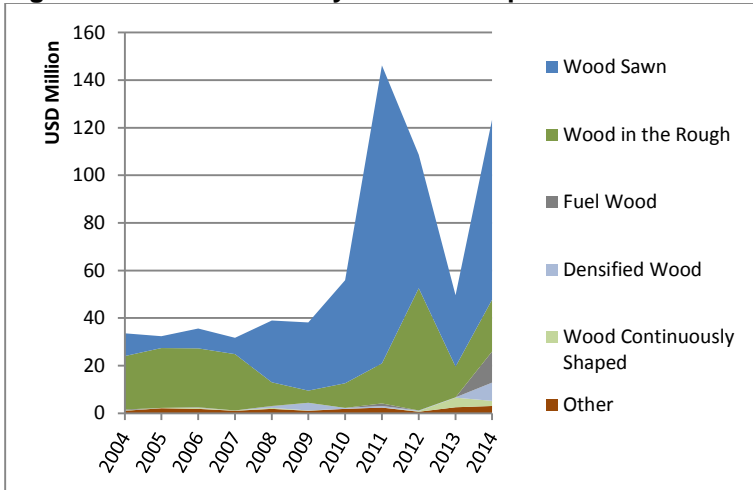
¹ Muianga, M. & Macqueen, D. (2015). *Exploring options to improve practice for Africa's largest exporter of timber to China*. (Country Briefing: China-Africa Forest Governance Project: June 2015). London: International Institute for Environment and Development.

² Falcão *et al.* (2015). *Avaliação das Perdas de Receitas Devido a Exploração e Comércio Ilegal de Madeira em Moçambique no Período 2003-2013*. Unpublished presentation.

- Wood Continuously Shaped (HS 4409) – including strips and friezes for parquet flooring, beadings and mouldings - was the fifth most valuable wood product category exported in 2014 at USD 2.1 Million, down from USD 4 Million the previous year and nearly zero before that. The main destinations were China (69%), France (9%), and South Africa (8%).

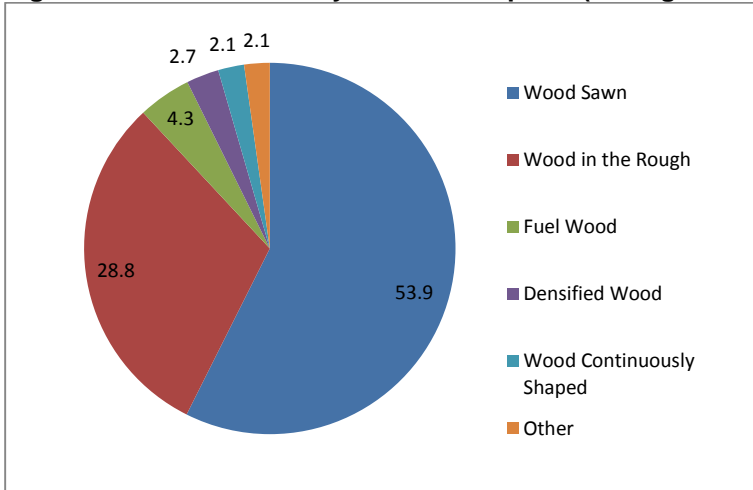
All these new exports of more processed products may be the reflection of new installed processing units in the country. This should be the focus of further research.

Figure 7. Value of Officially Declared Exports



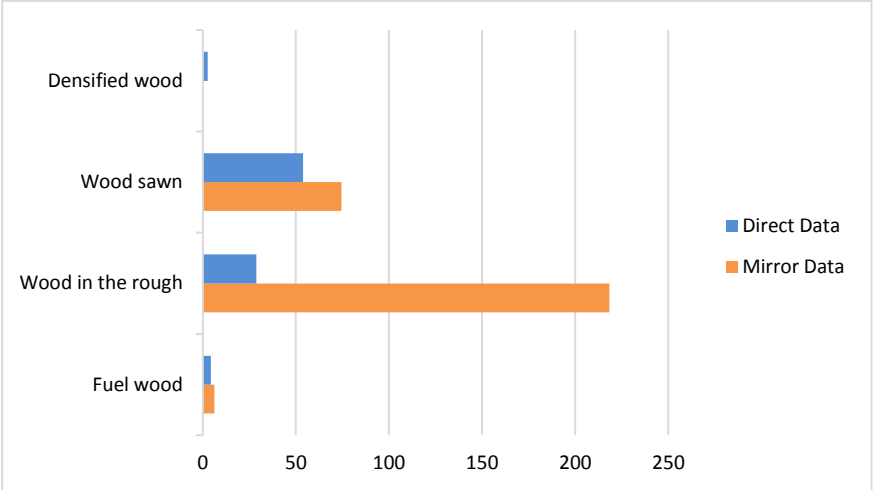
Source: UN Comtrade database in GTIS (2015).

Figure 8. Value of Officially Declared Exports (average 2012-14), USD Million



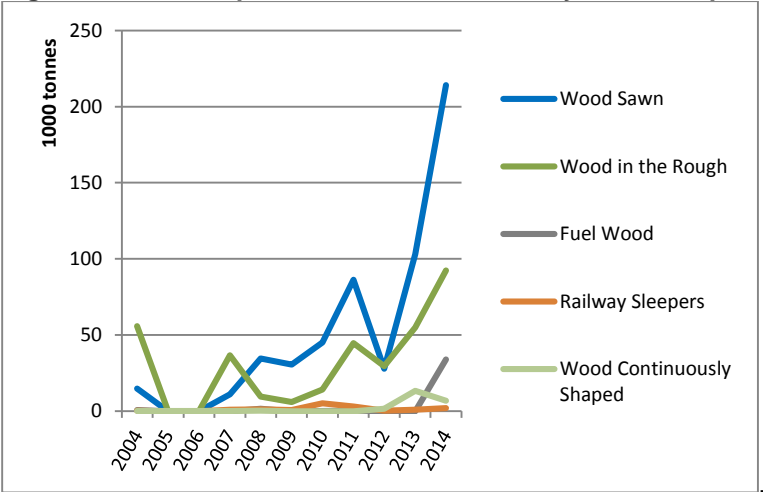
Source: UN Comtrade database in GTIS (2015).

Figure 9. Exports of Selected Wood Products (average 2012-14), USD Million



Source: UN Comtrade database in ITC (2015).

Figure 10. Main Exports of Wood Products by Mozambique



Source: UN Comtrade database in GTIS (2015).

Natural Forest Value Chains

Timber Products

Furniture

Mozambique has a huge opportunity in the production of quality furniture that is made from precious and first class woods. As long as this furniture is made with high crafts skills and quality design, it can be one of the best ways to add value to the Mozambican wood.

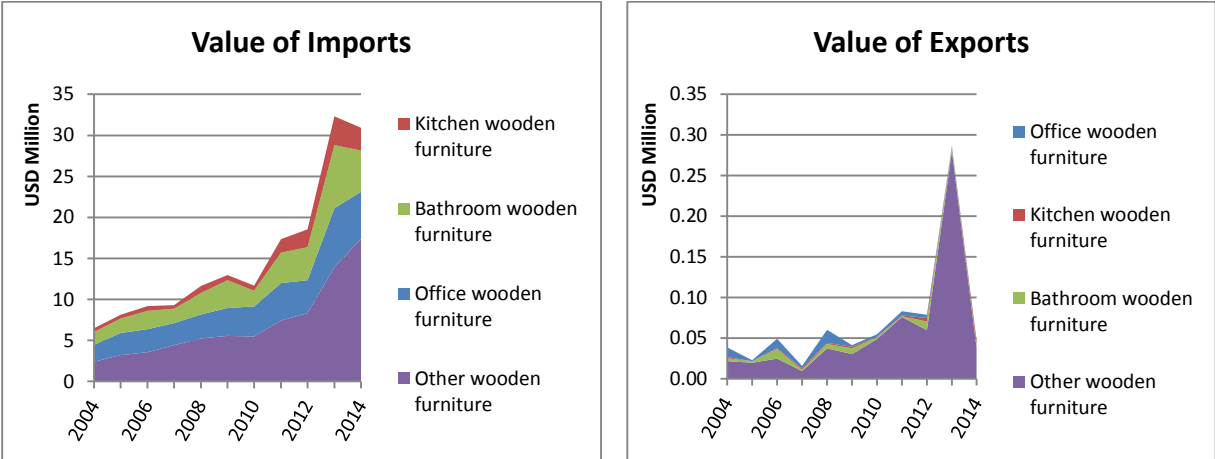
There is a domestic market for these products as Mozambicans traditionally recognize and appreciate good furniture. However, because the middle-class is practically non-existent, the market is segmented in two: the people who do not have enough money to pay for furniture upfront, and the Mozambican upper-middle class market. For the first, producing companies are increasingly using the *lay-by* system, a system of paying a deposit to secure an article for later purchase. Clients only take

the furniture home after finishing paying up for it. For the latter, domestically produced furniture is already substituting imports, although to a limited extent.

Mozambique has imported wooden furniture worth more than USD 30 Million for the last two years (Figure 11 a). The main origins are China, South Africa, and Portugal, with countries like Lebanon and Brazil accounting for a smaller share of the imports. This market could, with the right policies and incentives in place, be taken over by Mozambican companies.

An issue that should be addressed is the CPI granting of import duty exemptions to approved investment projects. When these include furniture, they act as a disincentive for local production as it gives a large price advantage to imports. This is not the case when imports are made to pay the 20 percent *ad valorem* import duty rate in force¹. The production of furniture for tourism lodges and hotels is a market opportunity that should be encouraged by the government, as it adds authenticity to the tourism offer in the country. Procuring Mozambican sustainably produced wooden furniture to supply schools and other state institutions with is also a sound policy option.

Figure 11. Value of imports (a) and exports (b) of wooden furniture



Source: UN Comtrade database in GTIS (2015).

Exports show an erratic behaviour in 2013 and 2014 (Figure 11 b), possibly reflecting the influence of international prices, currency devaluation, policy measures, and general business environment. Exactly what is the influence of each of these factors on the slump in exports occurred in 2014, after what seems to have been a brilliant 2013, should be the focus of further research. The value of exports is still but a fraction of that of imports but this situation can change, especially if there is support for the production and export of the more valuable, higher-end furniture.

The regional market’s most important destination for Mozambican produced furniture is South Africa, followed by Zimbabwe and Mauritius. South African buyers are well aware of the quality of Mozambican wood and are good clients. The main obstacle to exporting to this market is that the formal export process is very expensive for small volumes and thus acts as an export deterrent. Mozambique export regulations oblige companies to receive payment before being allowed to take the goods out of the country. This creates distrust from the buyer’s side, which is aggravated by Mozambique’s poor business rank². Because it is hard for national companies to find financing, the

¹ Website of the Revenue & Customs Authority of Mozambique accessed the 11/09/2015 in <http://www.at.gov.mz/por>

² Mozambique was ranked 127th out of 189 countries in 2015 by the World Bank Group’s Doing Business Rank (webpage accessed the 06/10/2015 at <http://www.doingbusiness.org/data/exploreeconomies/mozambique/>)

solution is often saving enough to constitute a revolving fund with which the company can finance its exports. Port and road infrastructure are not good and there is no shared/consolidated cargo on any products.

Some producers of quality furniture are already exporting to markets in the EU (mostly Paris and London) and the U.S. (New York). Furniture is exported by air-freight via Johannesburg, generally with the national carrier LAM. Furniture can be marketed in the U.S. and European markets at a price advantage because it benefits from import duty exemption in both these trading blocks, so long as no foreign materials are incorporated in their making. Mozambican quality furniture is in the same market as the traditional quality Danish or Italian made products. The main barrier to accessing these markets is the sustainability issue because of the generalized association of Mozambique with poor resource management. In this case the brand “Made in Mozambique” can act as a deterrent to new prospecting buyers in international markets.

Figure 12. Summary SWOT analysis for the Furniture value chain



Source: Author

Railway Sleepers

Mozambique is traditionally a net exporter of railway sleepers, although it both imports and exports this product, taking advantage of momentary price differences between its neighbouring countries. In 2014, Mozambique exported over USD 1.1 Million of these products, mostly to South Africa (87%), but also to Malawi (9%) and Zimbabwe (4%). Imports were valued at USD 42,000 in the same year, coming from South Africa.

The domestic market is also strong at present, with the production of sleepers from messassa wood currently being the main activity of some of the concessionaries contacted. This activity is especially profitable for the companies located close to where the Mozambican Railway Company (CFM) infrastructure is being built or rehabilitated, such as the Beira – Tete railway line.

The price paid by CFM ex-Inhaminga is USD 700/m³ (before VAT) and the company pays once a month. CFM has stated that the current large demand for railway sleepers – it is estimated that CFM is buying around 500 m³ per month, but basically all that can be produced is purchased immediately - will last for the foreseeable future. However, there are no formal guarantees of this and no supply contracts are being signed, which makes this market unpredictable. Pre-stressed concrete sleepers are a substitute product widely used in Europe and Asia.

South Africa imports railway sleepers although at the lower price of USD 550/m³ (after VAT) in Durban. Because this market is considered to be steadier and more predictable, some producers are sending railway sleepers to South Africa with the purpose of keeping this market open in case the Mozambican demand withers. The prospection of new foreign markets that pay for sustainably produced railway sleepers should be encouraged.

Potential Use of Waste from Concessions

Pallets can be produced with the waste of railway sleeper production. Treated pallets are sold at the ex-mill price of 350 MT (USD 8.1¹) per pallet in Sofala, paid on delivery, with the main buyers in the Beira region being cement, fertilizer and tobacco companies.

The amount of wood residue that could be used for the production of charcoal is estimated at 40% of the tree mass. The production of certified sustainable charcoal can be a good business opportunity provided there is enough demand for this product. Sustainable producers are contemplating investing in new kilns for charcoal production. For this they are searching for buyers interested in signing a supply contract for sustainably produced charcoal. The price for a 50kg bag of common charcoal currently varies between 120 MT close to the places where it is produced, to 220 MT in Beira, to 1,100 MT in Maputo.

Use of wood waste for kiln drying of timber (needed before some species can be processed into furniture) is also an option, as is co-generation, for which concessionaires may be able to obtain carbon credits.

¹ 1 USD = 43 MZN

Figure 13. Summary SWOT analysis for the Railway Sleepers value chain

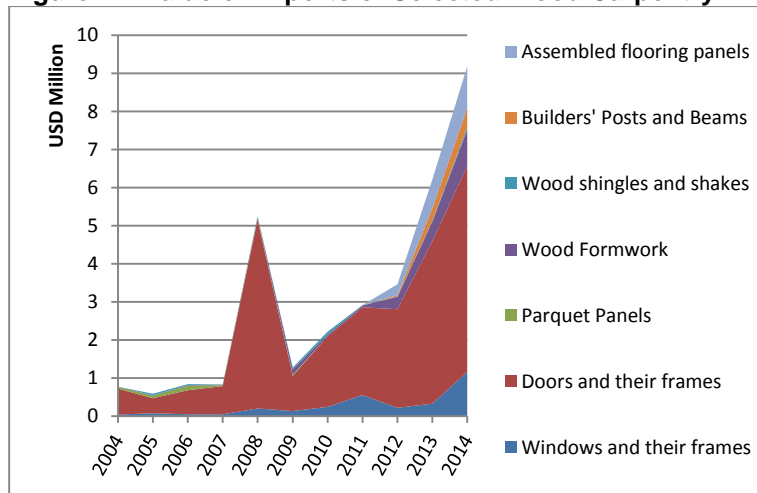


Source: Author

Builders' Joinery and Carpentry work

The increase in the building activity has meant a concurrent rise in the imports of builders' joinery and carpentry works over the last few years (Figure 14). Mozambique could gradually substitute these imports with domestic production. Again, the problem for sustainably managed concessions is that the main domestic producers are road-side carpenters that source wood from unchecked providers and sell their products at lower prices. As a consequence, demand for sustainably produced carpentry works like doors and window frames is low.

Figure 14. Value of Imports of Selected Wood Carpentry Products



Source: UN Comtrade database in GTIS (2015).

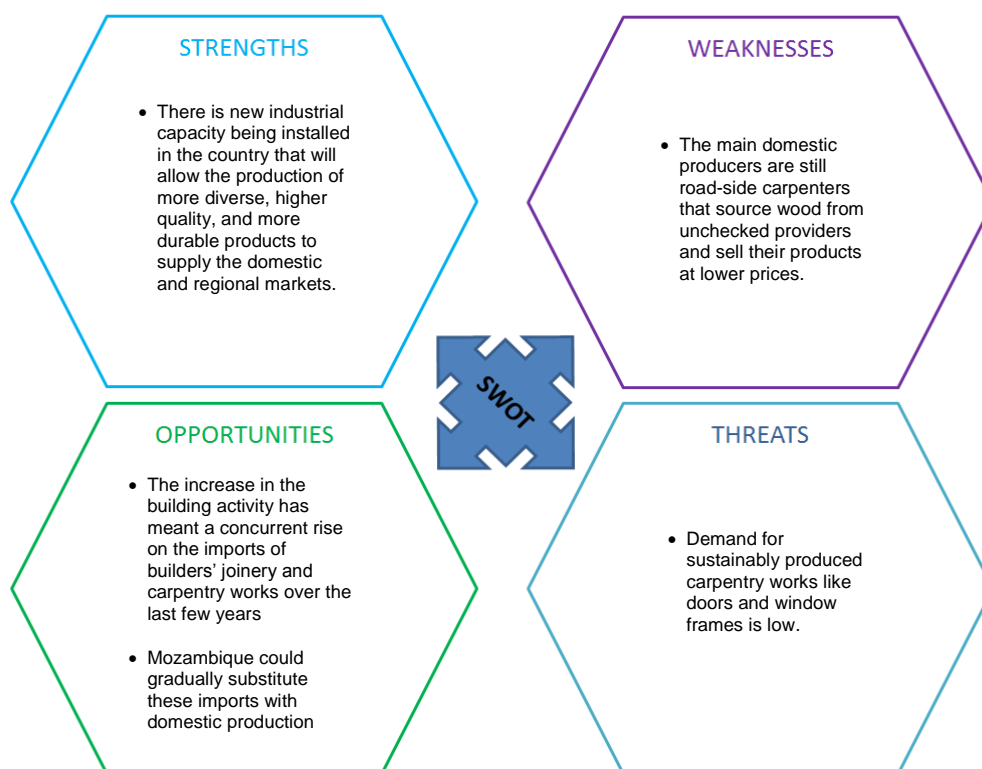
In some African countries, industrial furniture producers have been able to establish themselves despite competition from roadside carpenters using illegal wood because they can provide a higher quality product that is also more durable, e.g. using kiln-dried wood that does not warp as air-dried wood of some species does. This can be quite important, especially for products like doors and office furniture with drawers where the tolerance for faults in the wood is limited.

Some Mozambican investors have also been increasing their processing capacity. An example of this is the new MOFLOR carpentry unit in Dondo, Sofala, which is focused on the production of timber products for the building industry. This unit is based in district of Dondo in Sofala province. This investment was inaugurated in 2013 and the production and marketing of the following products has started recently: pavement and outdoor solid timber covers (such as material for decks, parquet and strips of timber for floors, among others) and building components (rings, frames, beams, planks and boards, among others). The main types of timber processed in the industrial carpentry are:

- First quality timber (or semi-precious timber): rose-wood (*Berchemia zeyheri*), Chanfuta (*Azelia quanzensis* Welw.), "Panga Panga" or "Jambirre" (*Millettia stuhlmannii*), "Mutondo" (*Cordyla africana*), "Mecrusse" (*Androstachys johnsonii*), and "Mbila" (*Pterocarpus angolensis*).
- Second quality timber: "messassa" waist (*Brachystegia spiciformis*).

The company contemplates expanding its production capabilities to the processing of more valuable products.

Figure 15. Summary SWOT analysis for the Wood Carpentry value chain



Source: Author

Non-Timber Products

Natural Oils

Several natural oils are being exploited in Mozambique. Of these, the most important ones are the Mafurra, Marula, and Baobab oils. PhytoTrade Africa - a trade association of the natural products industry in Southern Africa – is promoting these products among smallholder harvesters in the country¹:

1. Mafurra is an integral part of the traditions and incomes of Mozambicans living in Gaza and Inhambane for at least the past 200 years. There continues to be great interest in the production of Mafurra oil and a revival in the seed trade for processing into Mafurra oil would be welcomed. This offers substantial potential additional and new income generating opportunities to communities in these areas. As a proposal for re-launching the marketing of mafurra fruits, it is recommended that fruit collection centres/posts be set up, strategically located in the areas of greatest potential. They would be established, by order of importance: in Inhambane province - Zavala, Inharrime, Jangamo and Morrumbene; in Gaza - Manjacaze district (Madender, Chidenguele), and in Maputo - Chibututuine, Guava and Djonasse.
2. Marula gives origin to one of the most highly valued natural cosmetic oils in the international market, commanding bulk prices of 20-30 USD per kilo. Baseline work has been realized to

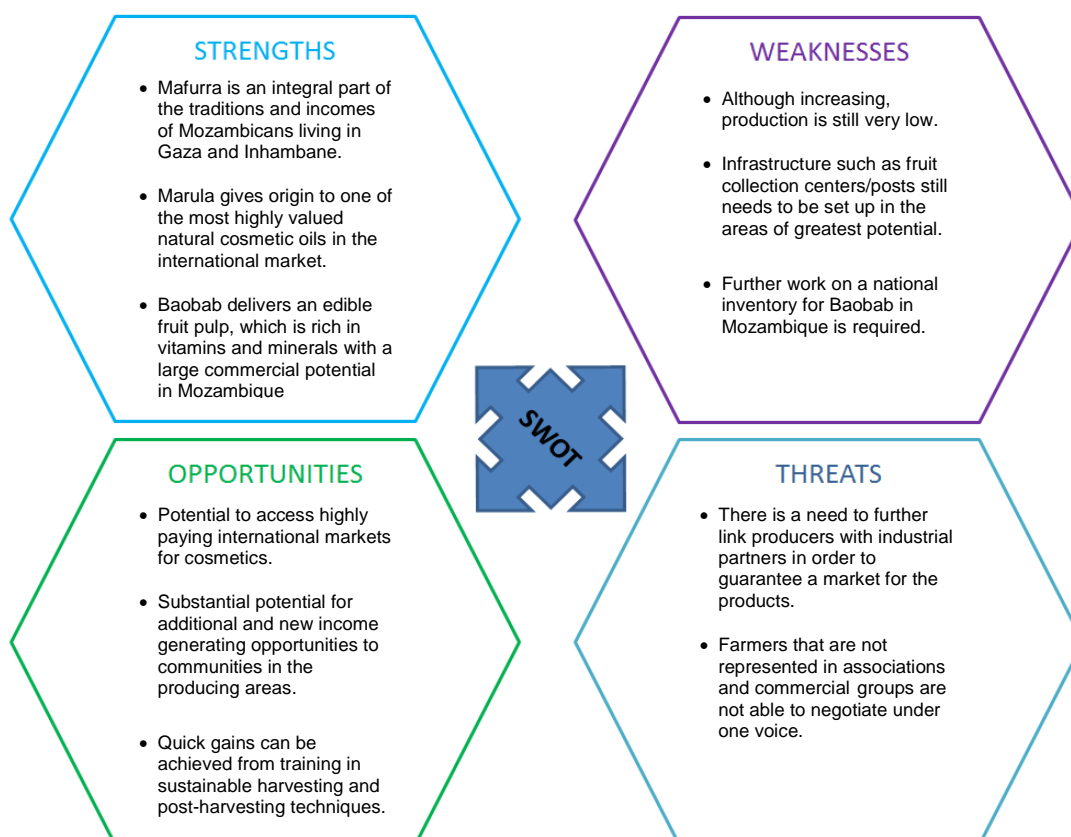
¹ This section is taken from material provided by PhytoTrade Africa.

support the establishment of a marula oil processing facility in the rural district of Chigubo, in central Gaza province. A feasibility study completed in 2014 envisioned sourcing kernels from twenty Chigubo communities to produce an oil volume of over 30 tons (from over 130 tons of kernels), before active expansion can be carried out into neighbouring districts. Projected production quantities would use only a small proportion of available stock, enhancing livelihoods while leaving plenty of resource for traditional community use and the natural replication of tree populations.

3. The Baobab is an African tree with a large commercial potential that in Mozambique is mostly found in the Tete, Cabo Delgado, Nampula, Niassa, and Maputo provinces. It delivers an edible fruit pulp, which is rich in vitamins and minerals. Secondary commercialisation uses include the pressing of the Baobab seed for oil, used in cosmetic applications. The high anti-oxidant levels contained in the fibres which attach the seed to the inside of the pod itself have interesting applications within the tea sector. In Mozambique, the commercialization of Baobab has commenced in 2013 and operations have moved swiftly to the point whereby the first export sales are expected to start from 2015 utilizing the 2015 harvest. Baobab powder will be marketed through supermarkets and similar outlets such as filling stations in 1 kg packs.

Indicative ex-concession sale prices for bulk oil in the Beira region include USD 1.5/l for mafurra oil; USD 30/l for Marula oil; and USD 18/l for baobab oil. Some producers of natural oils are managing to sell after bottling in small packages, thereby adding another layer of value to the end products. These oils can also be sold blended with plantation oils like sesame, coconut, sunflower, and moringa oils.

Figure 16. Summary SWOT analysis for the Natural Oils value chain

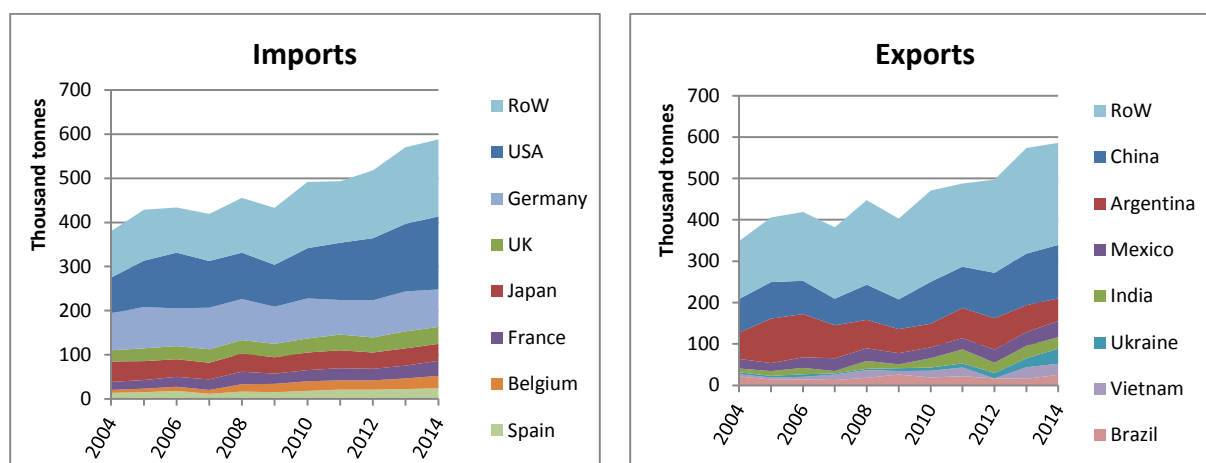


Source: Author

Honey

Import demand for honey at world level has been growing (Figure 17) and now reaches close to 600,000 tons, valued at over USD 2,140 Million annually. Mozambique has very good natural conditions to produce honey but production is in its infancy and the domestic market is largely undeveloped. The country is estimated to have produced 545 tons of honey in 2013 (FAO, 2015) and imported 61 tons, worth USD 140,000 from Portugal (61%), South Africa (28%) and Pakistan (8%), in value terms.

Figure 17. Volume of imports (a) and exports (b) of natural honey



Source: UN Comtrade database in GTIS (2015).

A study prepared by VSO in 2010 for Sofala Local Economic Development Agency (ADEL)¹ concluded that the biggest barrier to the expansion of the industry was the lack of a quality product and proper packaging and labelling. Although targeting the Sofala Province, the analysis was also conducted at national level. The report's main findings were that:

- Until beekeepers are able to produce a consistently high quality product, gaining access to better markets will not be possible.
- Informal groups clustered at the district level can jointly own and share beekeeping equipment and supplies, process honey collectively and sell under a common brand.
- The official national certification standard for honey in Mozambique is not being enforced, which is an advantage for small scale producers who do not have the technology and equipment to produce an internationally certified grade of honey.
- Consumer awareness about the use of honey needs to be promoted. Honey is not a part of the culture in Mozambique and the population is largely unaware of the benefits of incorporating honey into the diet.

¹ Bush, B. (2010). *A market assessment of the honey industry in Sofala Province*. (accessed the 12/10/2015 at <http://www.adelsofala.org.mz/data/documents/VSO-ADEL-Honey-Market-Assessment-FINAL-no-pics.pdf>)

Figure 18. Summary SWOT analysis for the Honey value chain



Source: Author, based on Bush (2010), cited above.

Some of the producers contacted see the export market for **beeswax** as having more potential than that for honey, as the high end of the honey market requires “organic unprocessed honey”, but the EU requires all honey from Africa to be heated to reduce the risk of transmission of diseases. Beeswax, which is used in cosmetics and candles, also needs to be heated, but this does not influence its price in high-end markets. This potential market should be the focus of further research.

Common Opportunities and Constraints to Upgrading the VCs Analysed

In this section we follow the value chain framework to look at the opportunities and constraints presented to upgrading that are common to the value chains analysed.

Impact potential

Good forest management¹ and a diversification of production into Non Timber Forest Products can be a way forward to the creation of local employment². Currently there are very few alternative paid jobs in the vicinity of the concessions. The concessions themselves do not generally employ a large number of people or graduate technicians such as forest engineers.

¹ T-REDD+ project run by IIED, UEM and Mozambican NGO partners in the Beira Corridor is promoting a new model of forest management, where simple license holders pool their small forest holdings to create larger forest concessions, develop management plans and involve local communities in non-timber forest product value chains.

² A saw-mill cutting wood and doing minor transformation can employ around 100 permanent people plus 50 part-time in a 40,000 ha area. This number can rise fast, once replanting and anti-poaching measures are implemented. This work generates around 4,800 MT (112 USD) per month per worker.

The training of a skilled labor force pool is a priority. Existing arts and crafts schools are currently not working to the industry's requirements of carpenters and other mid-level professional staff. The labor law in force does not encourage on-job training or apprenticeships. Some concessions employ nurses and distribute medicines, which is particularly important where HIV infection rates are very high and malaria is endemic. Some have also built schools and hired teachers to run evening classes of the primary and secondary cycles for employees.

Business enabling environment

The business environment was described by concessionaires as a situation of endemic corruption at all levels of administration: from the police at the road side, to the department of finance, to the agricultural department, etc. This leads to a climate in which concessionaires fear the government. The strategy to mitigate this situation may involve a closer dialogue with higher echelons of the administration, mediated by international donor organizations and foreign country representatives. Basic infrastructure like roads, communications, energy and water supply, is still poor but it is slowly improving.

There is no updated knowledge base within the country as to the wood resources that currently still exist. Inventories have been done over the past decade but the high levels of illegal logging mean that remaining commercial timber supplies cannot be assessed with any certainty. The Government is planning to conduct new forest inventories in 2016. Concessionaires are also required to conduct periodic inventories of the resources available in their areas.

Vertical linkages

Any development project implemented should play the role of facilitator and catalyst to strengthen vertical linkages in order to increase competitiveness and ensure a greater distribution of benefits to smaller firms. One of the main problems facing producers in Mozambique is the unreliability and high cost of transport from the concessions to the markets. As the electricity grid is expanding to the Districts, some concessionaires are relocating their transformation plants from the cities to the inside of their concessions to save on transport costs – they will transport only the finished products and not the raw materials. This will also help create jobs and advance the economy at a more local level.

Horizontal relationships

Longer-term cooperative arrangements among firms in a given industry involve interdependence, trust and resource pooling in order to jointly accomplish common goals. In Mozambique there is an open relationship between competing forest concessionaires. The Association of Forest Concessionaires (ACFLOR) lobbies the government on matters of interest to the industry, such as the issuing new cutting licenses. This role can be expanded to include market studies and the potential to explore non-traditional timber species to widen the range of species to be utilised. The Association of Forest Loggers (AMOMA) congregates both simple license holders and concessionaires.

Supporting markets

The availability of basic inputs such as machinery and tools is not satisfactory, especially outside the main cities. Local markets are not developed, unemployment is high, purchasing power is low, and there is no consumer finance available. The granting of import duty exemptions for the concessions wishing to access inputs of better quality at lower cost should be considered as a policy option.

Value Chain Selection

We use Porter's Five Forces framework¹ (Figure 19) to assess the competitive intensity and therefore attractiveness of the value chains considered. Attractiveness in this context refers to the overall industry profitability: an unattractive industry is one in which the combination of these five forces acts to drive down overall profitability; a very unattractive industry would be one approaching pure competition, in which available profits for all firms are driven to normal profit:

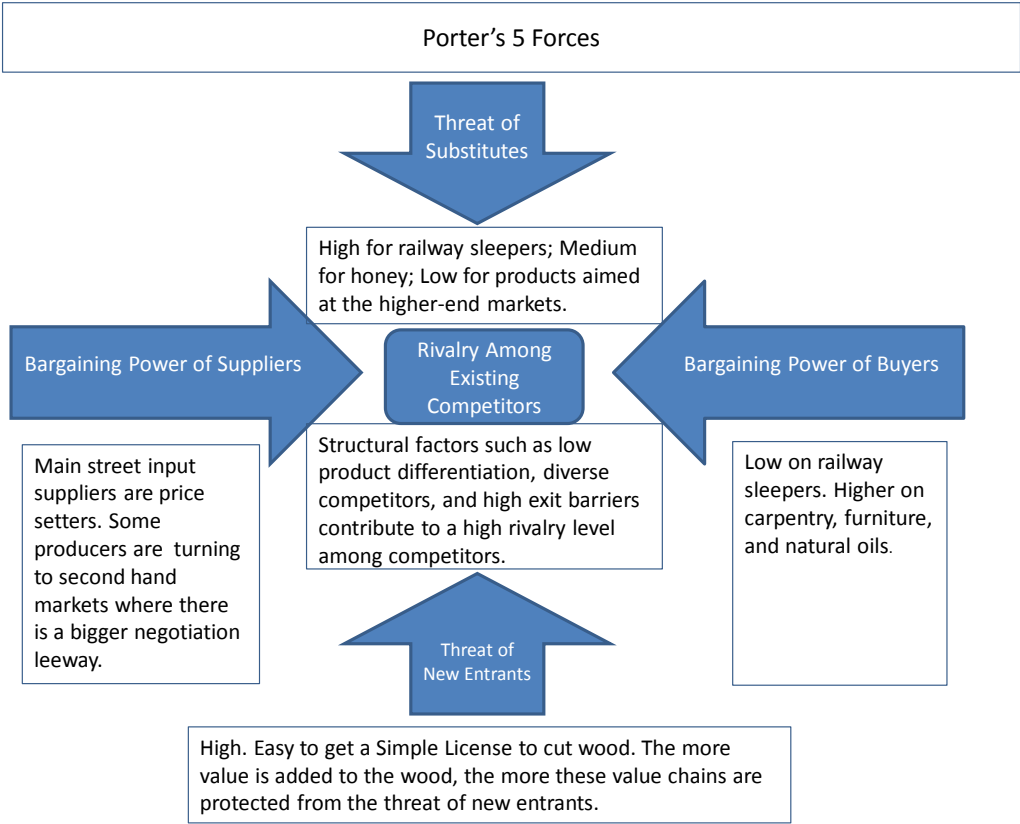
- The intensity of industry competition is high for carpentry products sold at the road side. It is also high on high-end furniture. There are many companies producing railway sleepers but there is high demand for this product. In Maputo there is intense competition between national wood products and imports. Competition is less intense in the non-timber forest product value chains where there is room for more players to enter the value chain in a competitive way.
- The bargaining power of buyers is high, with the exception of those products where demand exceeds supply such as the domestic market for railway sleepers; and products where Mozambique has a unique competitive advantage such as those made from the country's precious woods.
- The bargaining power of suppliers is also high. Inputs are considered by the industry to be much more expensive and of lower quality than what can be found in neighbouring countries. This is due to low internal demand and inefficiencies along the supply chain, such as the time and cost for importing these products. Some producers are turning to second hand markets of machinery, tools, and tyres, where there is a bigger negotiation leeway.
- The threat of new entrants is high. It is easy to get a simple license to cut wood. All the Chinese operators manage to get it, by entering into partnerships with Mozambican companies. The capital requirements to cut wood are only those of machinery: no major infrastructure is required and no knowledge barriers exist to just cut wood. Producers of higher added value products are safer from the threat of new entrants.
- The threat of substitute products is low for carpentry products. High-end furniture for international markets is not very threatened by substitute products but furniture sold internally faces strong competition from imports from Asia. Railway sleepers can be replaced by pre-stressed concrete sleepers. Honey can be replaced by sugar until domestic consumers are made aware of the advantages of consuming this product. Natural oils are a niche product that is in high demand as an ingredient for cosmetics and health foods, both rapidly growing market segments worldwide. Mozambican oils can benefit from quality certification to overcome competition from substitute products.

¹ Porter's Five Forces framework was developed by Harvard's Michael Porter using concepts from industrial organization economics to analyze five interacting factors critical for an industry to become and remain competitive: industry competition, threat of new entrants, threat of substitutes, bargaining power of buyers and bargaining power of suppliers.

As such, we conclude that:

- There continue to be immediate opportunities in the production of **railway sleepers** for the domestic and regional markets.
- The same is true for **honey** provided a concerted effort is made into improving quality and raising awareness of domestic consumers to the benefits of consuming this product.
- The **natural oils** industry is also attractive, provided international markets are found that pay for the production and certification costs involved. Many of these oils are used in health food and cosmetics, industries that have been growing fast over the last decades. In addition, the cosmetics industry is highly concentrated and willing to pay for sustainably produced oils. The health food industry, though maybe less concentrated, needs sustainable supplies of these products. An increasing number of these companies is willing to invest directly in sustainable supply chains.
- The **furniture** industry that works according to sustainable management practices needs to be protected from duty exempted imports. High quality furniture producers need financial trade aid to reach higher paying foreign markets.
- Fewer opportunities lie in the supply of sustainably produced **carpentry products** for the building industry, until there is an effective political will to enforce the already existing legislation regulating the forest industry.
- Government procurement of sustainably produced wood and non-wood forest products can help develop the internal market.

Figure 19. Competitive intensity of the Value Chains considered



Source: Author

Policy Options

As stated earlier in this report, the forest concessionaires generally known to be working according to good management practices are calling for a new set of policies to be implemented by the MITADER to curb the uncontrolled felling, transport, and export of logwood to Asian markets. The Government of Mozambique is addressing these issues with a set of policy measures aim to be in agreement with the industry's requirements. These include the temporary suspension of certain forest operations to allow reorganization of the sector, with a focus on sustainability. The components of this moratorium on the industry's activities are:

- “Closed season” for threatened or non-classified species, already in place and coordinated by MITADER.
- Suspension of new licenses and concessions from 1 Jan 2016, for 5 years, including pending requests (ordered and coordinated by MITADER).
- Suspension of log exports from 1 Jan 2016, which would require reviewing parts of the Forest and Wildlife Law that allow export of logs under species class 2-4.

A number of other policy actions have been proposed in the past for improving the efficiency and accountability of the wood value chains. They include:¹

- Introducing and implementing the “Chain of Custody” (CoC) concept: the custodial sequence that occurs as ownership or control of the wood supply is transferred from one custodian to another along the supply chain;
- Establishing systems to track wood all along the supply chain;
- Promoting a bilateral agreement between China and Mozambique that honors Mozambican laws and seeks to discourage illegal trading;
- Putting together a concession, processing and export manual;
- Documenting forest agency staffing and structure;
- Encouraging forest certification;
- Providing training for Mozambican workers and law enforcement officers;
- Providing finance and advice to concessionaires;
- Adjusting domestic public procurement policies to reward legal timber;
- Providing incentives for the use and export of more abundant species;
- Controlling and enforcing the commitments made by concessionaires to the communities;
- Partnering with NGO and bilateral cooperation organizations interested in investing in road and bridge infrastructure;
- Overcoming corruption with multi-sector law enforcement control teams operating at all stages of the value chains.

The China-Africa Forest Governance Project of the International Institute for Environment and Development (IIED) aims at improving evidence, capacity and joint action for sustainable Chinese investment in Africa's forests. More information on the state of policy negotiations for this sector in Mozambique can be found at this project's website².

¹ Terra firma (eds.), 2007. *Global Forest Product Chains : A Mozambique Case Study Identifying Challenges and Opportunities for China through a Wood Commodity Chain Sustainability Analysis*. The International Institute for Environment and Development : London, UK.

² Website accessed the 07/10/2015 at <http://www.iied.org/china-africa-forest-governance-project>

Figure 20. Location¹ of the Concessionaires interviewed



- Catapu/ TCT Dalmann (contacted in Beira and Maputo)
- LevasFlor
- Mezimbite Forest Centre
- Sociedade de Móveis do Licungo (contacted in Maputo)
- Moflor (phone and email)

¹ Map Source: http://www.lib.utexas.edu/maps/africa/mozambique_re195.jpg

Annex A – Value Chain Maps

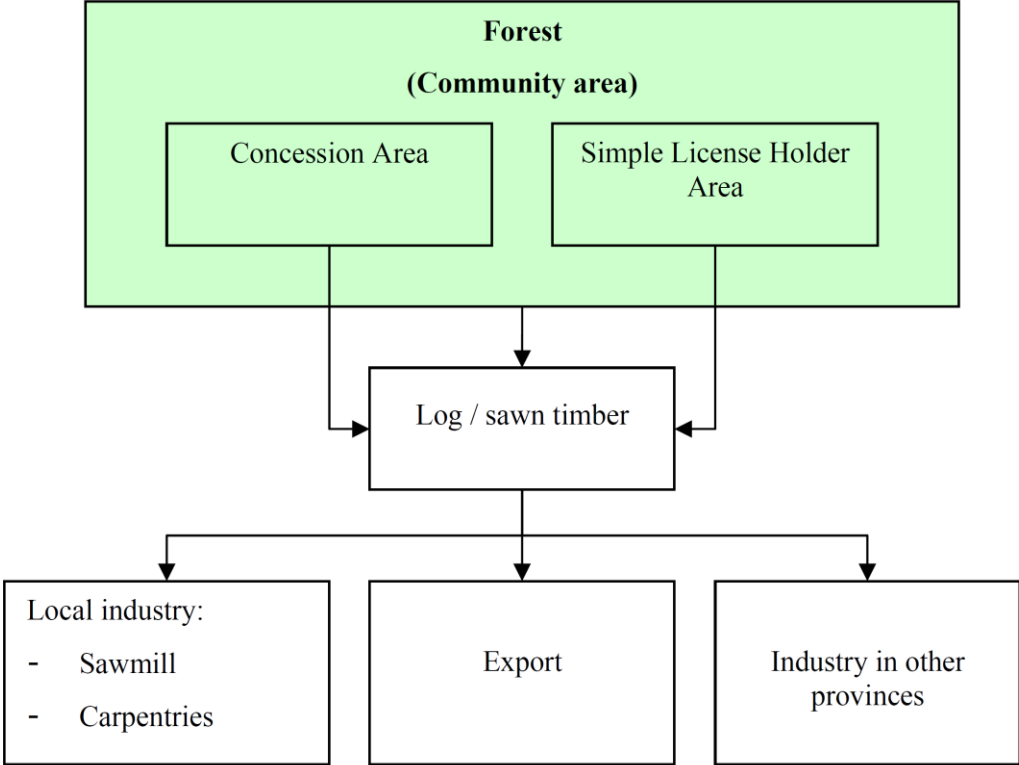
This section contains value chain maps, as presented in different detail studies of the sector.

Table A1. Functional Analysis of the Logwood 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				Log	
	Trunk bark cut					
	Log transport to		Main log yard			
Production	Sawing		Sawmill	Concession /sawmill staff	Sawn wood	
Export	Charging into container	China	Port	Truck owner	Sawn wood, log	
	Container transport to			Caminhos de Ferro de Moçambique		
	Loading into vessel					
	Shipping					
	Transport to			China via Comoros		
	Unloading			Port		Port operator
Production	Processing	China	Log trader yard		Sawn wood	
	Manufacturing		Sawmill			
Marketing, export	Marketing, sales, export	China	Factory products		Manufactured product	
			Factory product retailer			
Retail	Marketing, sales	China	Retailers	End user		
	Consumption		Port	Port operator		
Export	Unloading	USA/UE	Port	Port operator		
	Transport to		Importer warehouse			
Marketing	Marketing, sales	USA/UE	Factory products			
Retail	Marketing, sales		Factory product retailer			
	Consumption	Retailers	End user			

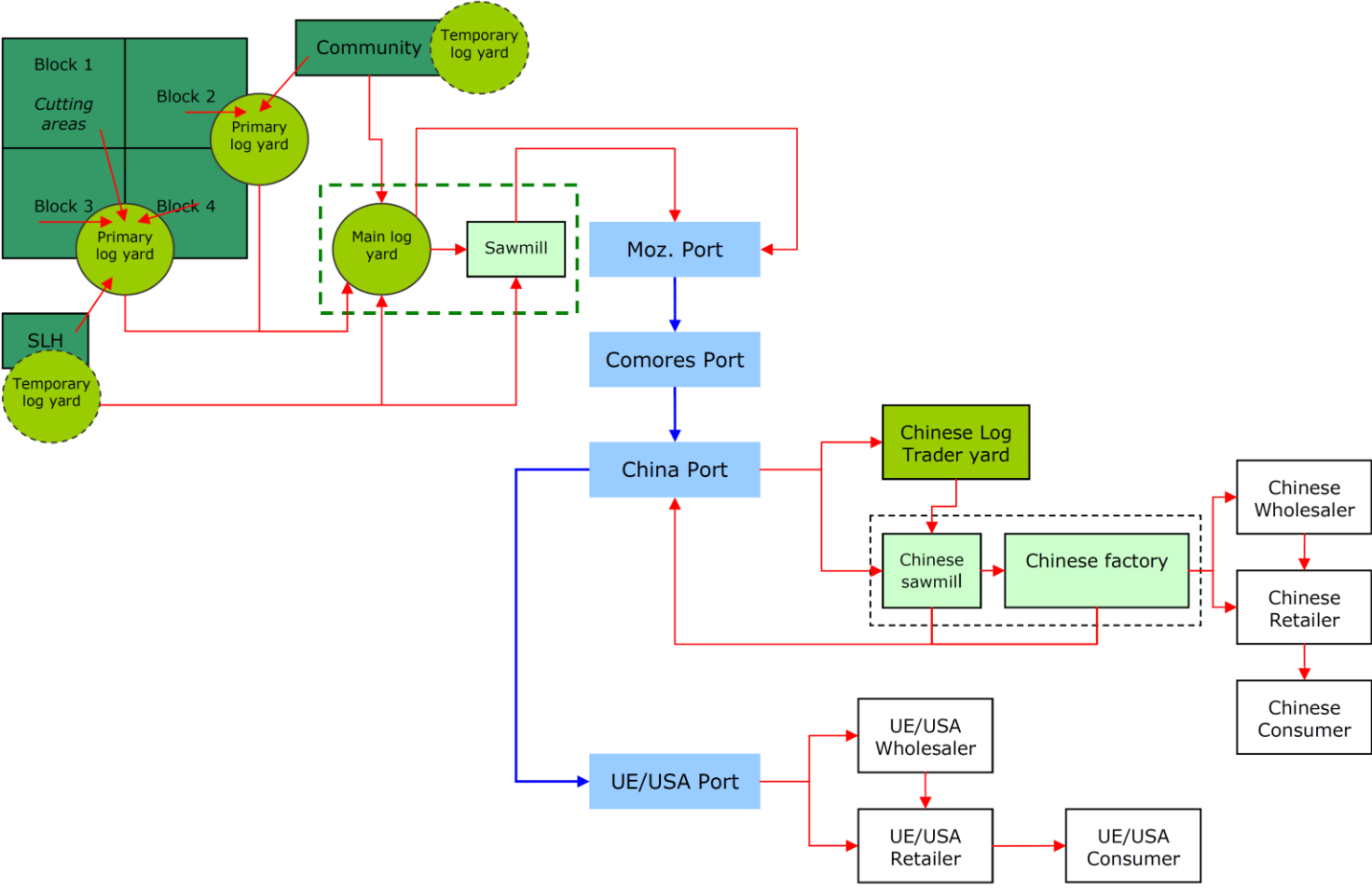
Source: Terra Firma (2007)

Figure A1. Timber Flow in Cabo Delgado



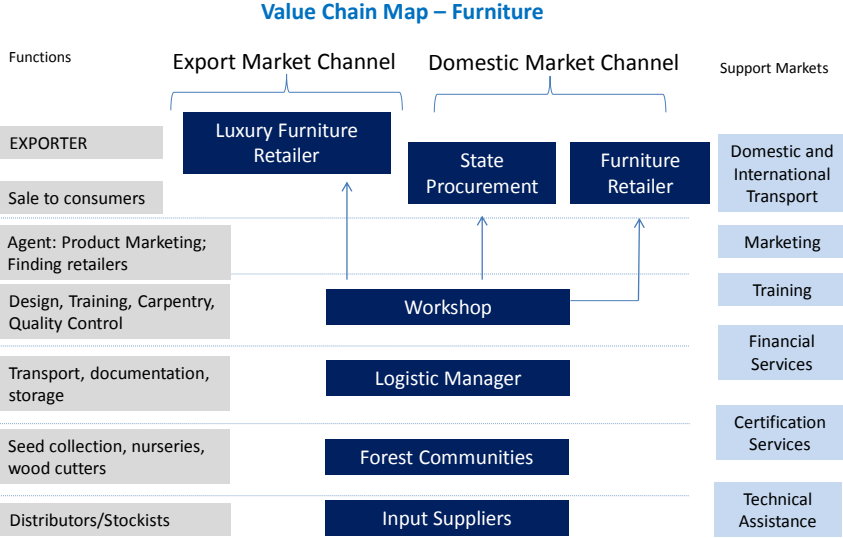
Source: Terra Firma (2007)

Figure A2. Chinese Timber Supply Chain (Cabo Delgado)



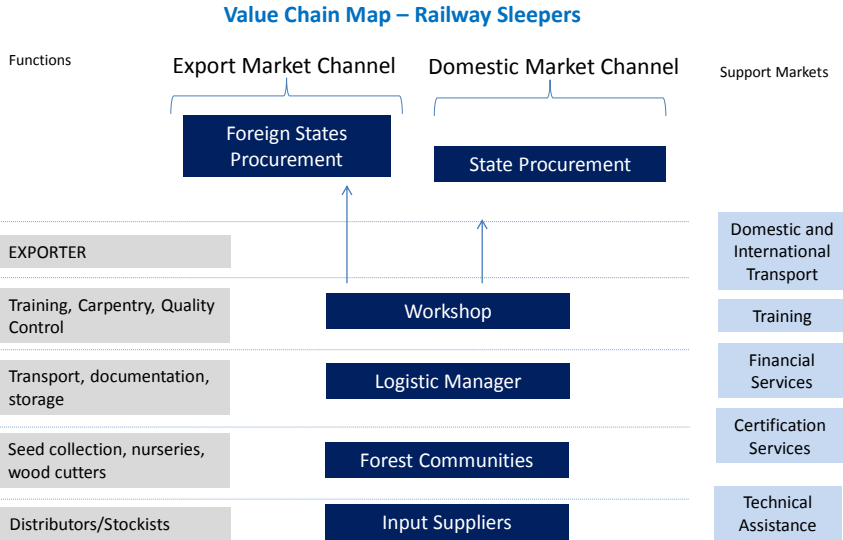
Source: Terra Firma (2007)

Figure A3. Value Chain Map - Furniture



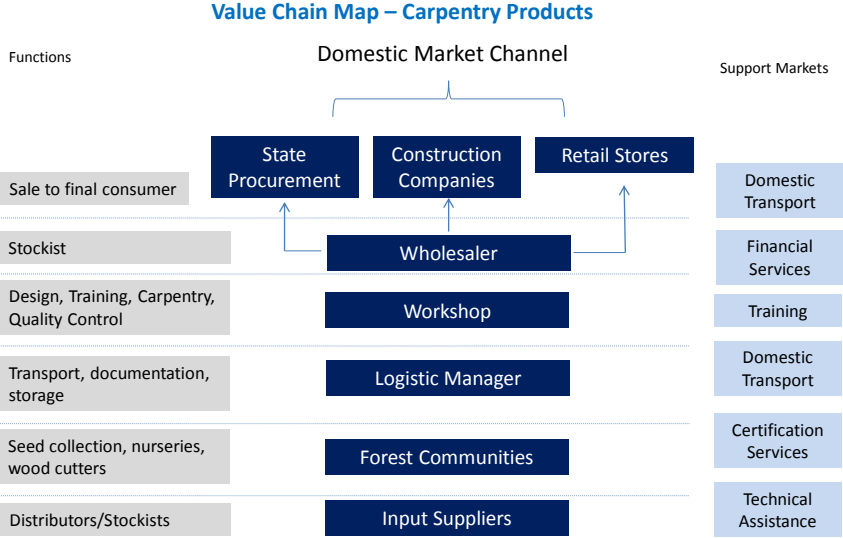
Source: Author

Figure A4. Value Chain Map – Railway Sleepers



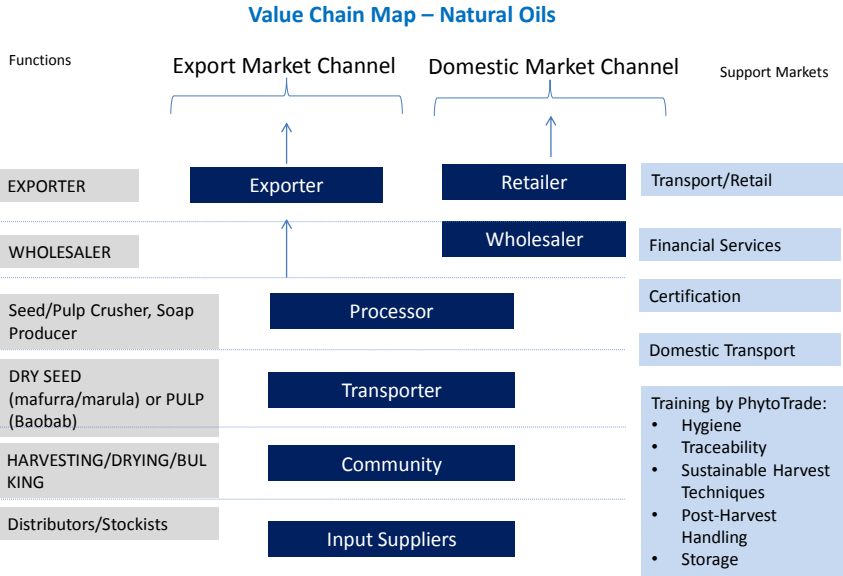
Source: Author

Figure A5. Value Chain Map – Carpentry Products



Source: Author

Figure A6. Value Chain Map – Natural Oils



Source: Author