A Value Chain Analysis of the Mezimbite Indigenous Forestry Project:

Towards Sustainable Economic Development for Communities While Combating Deforestation in Mozambique

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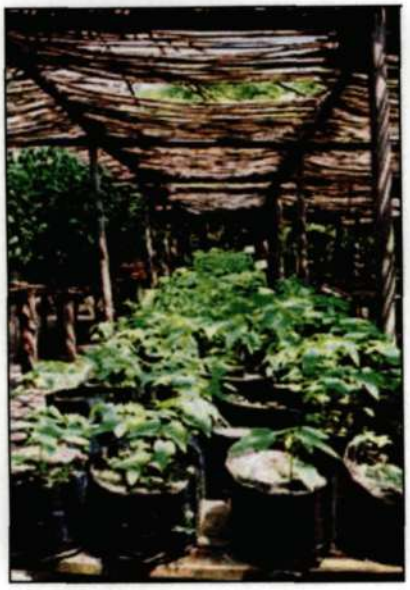

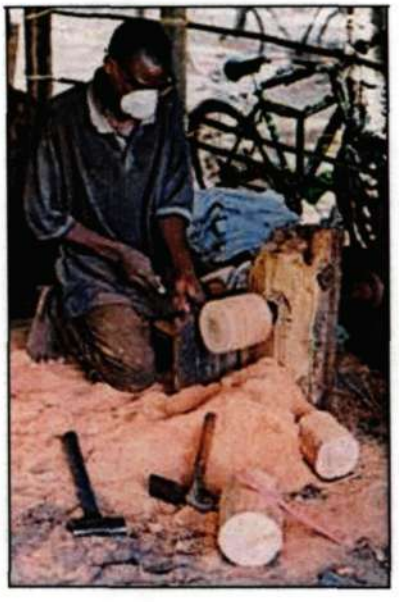

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Abstract

Tropical deforestation threatens both the livelihoods of people that inhabit forests and the environment. The Mezimbite sustainable indigenous forestry project in Mozambique aims to develop livelihoods and use community forest resources in a sustainable manner by harvesting timber and non-timber resources at an environmentally sustainable rate. The project brings together a private company, two communities that own forest resources, workers from other communities, and funding from external sources. Livelihoods are developed by transforming forest resources into a wide range of products such as furniture, doorframes, bracelets and household goods.

A value chain analysis of two of the projects most important product categories in terms of revenues, designer bracelets and furniture, reveals that the project captures important economic rents that give it the potential to become economically sustainable. The design and training skills of the project leader and the skills of turners and carpenters (human resource rents), combined with access to high quality hardwoods (natural resource rents) result in quality products of unique design that can be sold in high-end markets in Europe, the US and South Africa. These products can realise high margins because they are competitive with similar products that are less environmentally or socially friendly. The project also has access to marketing agents at reduced cost (marketing rents), while the personal network of the project leader (relational rents) brings in private customers to buy furniture, interior decorators who resell furniture, bracelet retailers, and a marketing agent. The environmental and social character of the project helps to secure the cooperation of the agents, gives the project access to grants from foundations and NGOs (financial rents), and it ensures access to niche markets of environmentally conscious consumers in Europe and the US.

Unfortunately, there are no infrastructural rents as the project site is not connected to the electricity grid, and no fixed telephone, fax or email is on site. It is also far away from markets, which leads to long delivery times and high transport cost, especially for furniture.

A number of recommendations are made in order to increase sales and strengthen the project's economic sustainability. These recommendation relate to functional, product and process upgrades of the value chain. Firstly, the project should consider bringing its furniture into retail stores to reduce dependency on relational rents, which requires development of a standard furniture collection with a catalogue. This also requires stocking furniture closer to the markets in the US, Europe and South Africa to reduce transportation cost en delivery times. Secondly, the bracelet collection should be reduced to small limited editions that change every twice a year. Thirdly contact with customers, agents and retailers should be improved, for instance by establishing a small office in the nearby city of Beira with email, fax and telephone and of a dedicated sales person.

The amount of wood that can be harvested under the sustainable management plan is large enough to deal with an increase of furniture and bracelet production. However, it remains unclear whether the economic benefits are large enough for the community to keep their support for the project. Only a small percentage of the sales revenues of the bracelets and furniture flow towards members of the forest communities and most jobs are created outside the community. I recommend that the project consider employing more people in the Mezimbite Forest Centre from the participating communities. In spite of low employment rates, community members receive fruit trees from the

nursery, degraded woodlands are reforested and income is derived from the sales of the other products manufactured in the project. An increase in sales and production would lead to higher benefits and more employment. A recommendation is that further monitoring and evaluation of the project take place to ensure dual goals of economic development and sustainable use of forest resources is achieved.

Preface

The work described in this dissertation was carried out in the School of Development Studies, University of KwaZulu-Natal, Howard College Campus, Durban, from January 2006 to December 2006, under the supervision of Richard Devey.

These studies represent original work by the author and have not otherwise been submitted in any form for any degree or diploma to any tertiary institution. Where use has been made of the work of others it is duly acknowledged in the text.

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Chapter 1: Introduction

1.1 Introduction

The rate of deforestation is high in tropical regions such as the Miombo woodlands in Southern Africa. Large areas are cleared or degraded because of agricultural usage and charcoal burning. There is overwhelming evidence that many people in tropical regions depend on forests and woodlands for their livelihoods[1] and the loss of woodlands threatens both the environment and livelihoods of people that are dependent on forest products (Adams 2001, Pearce and Brown 1994, Shepherd et al. 1993). If forests are to be preserved, ways need to be found to convert the value of forest into clear benefits for people making decisions over the forest. A number of community based sustainable forestry projects in southern Africa have shown some degree of success in forest preservation and creation of those benefits[2]. However, these benefits consisted mainly of direct usage of the natural resources by the local community members. An important question is how can cash income be generated through processing of forest products and marketing of these products in markets outside of the community. The Mezimbite sustainable forestry project in Mozambique aims to preserve the indigenous forest by providing local communities with economic incentives to manage the forest in a sustainable way. Not only are forest products harvested at sustainable rates, they are also transformed into a wide range of products such as furniture, doorframes, and accessories that are sold in domestic and international markets. The project appears to be economically, socially and environmentally sustainable. This research aims to analyse the economic sustainability of the project. It will use value chain analysis to find out how its most important products in terms of income are marketed and how much of their economic value is captured by people from the local community. It will try to uncover the specific factors (rents) such as skills and natural resources which enable the project members to earn their income and estimate the sustainability of these incomes over time. The research thus attempts to give new insights in the economic sustainability of the project, and tries to determine whether this specific project model will be able to create incomes for local community members elsewhere in the region while preserving the forest.

1.2 Development challenges of Mozambique

This section provides information portraying some of the social and economic development challenges faced by Mozambique, providing the broader context in which the Mezimbite project operates.

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[1] Clarke and Grundy (2004), Dovie (2004), Ellery et al. (2004), Kyle (2004), Lawes et al. (2004), Moshe (2004), Sahwney (2004), Shackleton et al. (2004), Shackleton and Shackleton (2004), Shackleton and Steenkamp (2004), Jones (2003), Nhantumbo et al. (2003), Anstey and De Sousa (2002), Mugabe et al. (2001), Wily (1999), Wickramasinghe (1997), Rietbergen (1993) and Shepherd et al. (1993).

[2] See for instance the studies of Jones (2003), Nhantumbo et al. (2003), Anstey and De Sousa (2002), Mugabe et al. (2001), Wily (1999) and Wickramasinghe (1997); these studies will be discussed in Chapters 1 and 2.

After almost five centuries of Portuguese colonial rule Mozambique became independent in 1975. The 1992 peace agreement between FRELIMO and rebel Mozambique National Resistance (RENAMO) forces ended 16 years of civil war in 1992 and in 1994 the first multiparty elections took place (World Bank 2006a). The civil war devastated social and economic infrastructure and as a result Mozambique became the poorest, most aid dependent and indebted country in the world (Kulipossa 2006). The country is still in transition and faces large problems such as unemployment, low agricultural production and very limited infrastructure and social services. It is estimated that the HIV prevalence among adults (15–49 years olds) was at 16.2 % in the period 2003-5 (World Bank 2006a), while the prevalence in the Sofala province where the Mezimbite project is located is much higher; in 2002 it was already at 26.5% (World Bank 2006b). AIDS is indicated to have reduced the annual per capita GDP growth by 1 percent (World Bank 2006a) and life expectancy is as low as 41.8 years (World Bank 2006c). As Kulipossa (1996 p41) argues: 'It [HIV/AIDS] compromises the country's ability to achieve sustainable development over the longer term.'

Despite these challenges, Mozambique has made substantial progress. Kulipossa (2006) finds that Mozambique has made a successful turnaround through economic and political reforms that has resulted in a long-lasting termination of the violent conflict, sustained improvement in human development indicators, and sustained economic growth. Real GDP growth since 1993 has averaged 8.1 percent and annual inflation has decreased every year from over 54 percent in 1995 to 6.3 percent in 2005 (World Bank 2006a). According to the World Bank (2006a):

> 'Sustained economic growth and increased spending in the social sectors contributed to a 16 percent decline in poverty in the six years from 1997, reaching 54 percent in 2003. Inequality remained low by regional standards, and progress was made toward the key Millennium Development Goals (MDGs) of infant mortality and primary enrolment. Gross primary enrolment rates increased from 60 percent in 1995 to 92 percent in 2000 and is at 110 percent for the period 2003-5.'

However, Mozambique is still considered one of the poorest countries in the world with a per capita income of $290 in 2003-2005. Mozambique has been identified to qualify for the Multilateral Debt Relief Initiative (MDRI), which will cancel the debt of some of the world's poorest countries at the World Bank, the International Monetary Fund and the African Development Fund if it meets certain criteria (World Bank 2006a). Furthermore it is highly dependent on foreign aid; more than 50% of government spending is financed by foreign aid (World Bank 2000 in Kulipossa 2006).

Since 1995 a number of poverty reduction strategy papers (PRSPs) have been formulated and implemented, mainly focusing on improving rural livelihoods, investment in human capital, building a disaster safety net and rebuilding physical infrastructure (roads, schools and hospitals), improving governance (decentralisation, public sector reforms and civil service reform) and structural reforms (efficient financial management, tax reform and land reform) (Kulipossa 1996).

Today Mozambique still faces a number of development challenges which are likely to impact upon any development project or business operation in the country. First of all, although education enrolment has increased spectacularly, the overall level of skills and education are low (Kulipossa

2006). World Bank statistics indicate that only 46% of people older than 15 are literate and that secondary and tertiary school enrolment were at only 10.8% and 1.2% respectively in 2003. Secondly Kulipossa (2006) mentions that corruption is increasing in government institutions and the country remains vulnerable to private manipulation of public power and funds (cronyism, corruption, rent-seeking and administrative morass).

One of the reforms in Mozambique that is of particular interest for the Mezimbite project is the land reform law. Nhantumbo et al. (2003 p 2) state that:

> 'The concept of use and benefit from natural resources for local communities in Mozambique occupies a central position in the formal government vision for rural development and has been given prominence in the policies that govern access to land use rights and forest and wildlife resources.'

The law permits the official registration of land that has been inherited or occupied through customary (traditional) systems. Land rights can be registered in the name of community management entities that hold these rights in trust and, under certain circumstances, they can negotiate use by third parties (Nhantumbo et al. 2003). Mozambique's abundant natural resources have been attracting considerable interest among foreign investors (Kulipossa 2006). For instance the past years have seen a strong increase of Chinese owned logging operations in central and northern Mozambique. Nhantumbo et al. (2003) argue that within the land law the interests of rural communities have been consciously balanced against the need to provide secure tenure of land and access to resources for the private sector, to encourage investment that results in employment opportunities and economic growth in rural areas. The law provides for partnerships between communities and the private sector. When communities use forest and wildlife resources for subsistence, local community rights to these resources are protected by law and representatives of the community may participate in decisions about the commercial exploitation of these resources. Furthermore, communities are entitled to financial benefits accruing from a percentage stake in the licensing revenues generated through the allocation, taxation and regulation of the use of resources.

This describes the law on paper but the reality is somewhat different. According to Nhantumbo et al. (2003) up until 2003 there were 37 applications for CBNRM, but only a small number had been approved due to conflict of interest between communities and private companies. Most of these conflicts were in multiple-use areas, but some were in protected areas where communities can have limited rights to use resources. Unfortunately the capacity for enforcing conservation is very low and as a result the Derre Forest Reserve, despite being a protected area and supporting the livelihoods of the resident communities, also features private sector logging activities. Even though the harvesting is illegal, licenses have been issued by corrupt government entities (Nhantumbo et al. 2003).

An important part of the law not mentioned by Nhantumbo et al. (2003) is that all land in Mozambique is owned by the state, which then grants it to a person or legal entity for usage, and these usage rights can be taken back by the state. However, anything that is built or changed or planted on the land remains the property of the owner, and, when land is expropriated, the state is

obliged to compensate for the loss of this property. In the case of a forest community this means that the land remains property of the state, but the trees planted on the land are property of the community.

Of particular relevance is the specific legislation regarding use of forest resources. Logging is not allowed in areas that are proclaimed as a national park or forest reserve. In addition only trees with a diameter larger than the legally specified minimum for that specific species can be cut, and logging is not allowed during the wet season because of the damage dragging logs through the forest will do to the soft soil. Furthermore, a license costing up to two million metecal[3] per cubic meter for the most expensive species must be obtained from the department of agriculture. For cutting wood and turning it into charcoal one also has to buy a license. Enforcement of these laws appears to be weak.

1.3 The Mezimbite sustainable indigenous forestry development project

Mezimbite is located in the largest contiguous patch of deciduous tropical forests in the world: the Miombo woodlands (Ashoka[4] 2002) which cover large areas of Mozambique, Zimbabwe, Malawi, Zambia and Angola. These woodlands are a typical example of tropical dry forests, of which 1.3 billion hectares exist worldwide (Shepherd et al. 2003). Just as most other tropical forests they are disappearing fast. Expanding populations and the use of resources for subsistence place substantial strain on this ecological region. Most people living in Miombo depend on fuel wood for cooking, heat, and light (Misana et al. 1996 in WWF 2006, Ashoka 2002), grazing pressures of communal livestock populations are considerable (Misana et al.1996 in WWF 2006), and slash and burn agriculture is common. According to Schwarz (2006) these factors together with uncontrolled burning account for 91% of deforestation, while commercial logging and logging for own use by communities accounts for 8% of deforestation. As discussed in section 1.2 the real causes of deforestation are the economic incentives and circumstances that initiate them, which in the case of Mozambique appears to be poverty, lack of employment opportunities and destructive agricultural methods. The deforestation in Mozambique is considered to be a dominant cause of the floods that occur in the rainy season (Ashoka 2002).

According to Schwarz the n'Hantanga community that presides over 20,000 hectares of woodlands was confronted with exactly the same problems: slash and burn subsistence agriculture was widespread and much of the forest disappeared for charcoal making. The known commercial species of timber were cut out some time ago, using labour at minimum wages, and the logs were exported to Zimbabwe and China. The forest resources were disappearing, and with it soil fertility.

[3] The metecal is the Mozambican currency; MTM, MT and MZM are all used as currency symbols. For this paper I will use MZM. Other currencies used in this paper are the US dollar ($) and the South African Rand (R). Exchange rates fluctuate frequently and for conversion of currency I have used the rates on 7th March 2006 when the fieldwork was conducted, that is $1=MZM 23,134.91=R6.23.

[4] Ashoka is a fund that supports so called 'social entrepreneuers' worldwide; social entrepreneurs are individuals who have set up a project that either helps people to develop and combat poverty, or preserves the environment

Some of the lesser known commercial species of trees still exist, and these were sold to wood turners, who used it to make wooden artefacts such as bowls, candlestick holders, animal figurines and bracelets. The wood turners would cut the trees in the forest and pay a fee to the local community. In addition they had to bribe policeman as they did not have the money to acquire a license from the Department of Agriculture to cut logs, thus making their activities illegal.

Recognising the forests were disappearing and to facilitate sustainable practices, Schwarz bought a plot of land in Mezimbite in 1994. This land is located around 80 kilometres from Beira on the main road to Maputo. He started up a nursery and a workshop to produce furniture and other wood products. Schwarz was educated as a designer in South Africa, and he trained how to design and manufacture wood products such as furniture. He has worked as a designer and architect, and taught design at Massachusetts Institute of Technology in the United States. He is well known in the design world and his network brings him many customers. He started working with the n'Hantanga community to gain access to a sustainable source of wood. He trained a small group of semi-literate men in the n'Hantanga community to identify and inventory what trees and other plants were in the forest. This information was used to calculate a sustainable yield for each species. A plan was introduced to the community to cut just the amount allowed by natural growth for a single year and then to replant it. Local community members were trained to identify and cut trees, and to process them into planks for furniture or machine ready blanks[5] for wood turners. For the replanting, a nursery was built and equipped and nurserymen trained. In order to create a culture of 'putting back into nature what you take out' schoolchildren in the community are involved in the collection of seeds for which they receive pocket money and planting the trees. In addition the nursery grows fruit trees which are distributed to community members together with training from the nursery men.

Simultaneously with the set-up of the activities in the community, Schwarz developed the Forest Center (MFC) in Mezimbite to manufacture furniture and other products. The MFC consists of a workshop where furniture and other wood products are manufactured, a storage facility for finished products, a shed where wood is dried, and a nursery. It is located on land owned by the project leader Allan Schwarz who lives on the site. Over the years, the range of products that is manufactured in Mezimbite from the resources in the community has expanded to a wide range of furniture, building components such as window and door frames and beams, bee honey and wax, kapok pillows and large wooden fruit dishes. In addition a range of smaller wood items for use in the household such as candlesticks, ice-cream bowls and egg holders as well as a wide range of bracelets are manufactured through two cooperatives of wood turners. The first of these is the Dondo cooperative which is located about 35 kilometres outside Beira. Prior to joining the project the Dondo cooperative sourced their wood in the n'Hantanga community and turned it into artefacts of poor design and quality for the tourist industry. They have now been trained by Schwarz to make his designs and produce high quality goods that are sold in and outside Mozambique for much higher prices than their original

[5] A blank is a round piece of wood that is used to make bracelets and other round objects. A blank is roughly of the diameter of the end product and is placed on machine that spins it round. The product is manufactured by pressing sharp chisels against the turning blank.

product range. The second cooperative is the Kanimambo cooperative. This is located in Manga, a suburb of Beira.

The International Trade Centre (ITC), an organisation linked to UNCTAD and the World Trade Organisation (WTO), helped to increase the training capacity and has funded equipment for the project. The ITC also helped with the extension of the program to the Kanimambo cooperative.

Meanwhile the community in Mosca do Sonho with 35,000 hectares of woodlands had heard about the project and approached Schwarz. With the assistance of the ITC, the project was extended to this community. The ITC also supported a drive to integrate the project into the mainstream markets, through developing a website (www.allanschwarz.com) and participation in the Ethical Fashion Show during the Paris Fashion Week[6].

The project makes for an interesting case for a number of reasons. First of all it has a large CBNRM component; the community members have control over the land and the resources, they have chosen to participate in the project, and they must govern the use of the resources according to the plan. The success of the project depends for a large part on the benefits of the project providing enough motivation to stop damaging activities such as charcoal production. Secondly, the leading force in the project is not a classical NGO but a private company owned by Allan Schwarz. Thirdly, not only people from within the forest community are involved, but also outsiders, as in the employees of the Mezimbite Forest Center and the two cooperatives. Fourthly, the focus on sales and marketing of products in high-end domestic and international markets is unique. The design and business skills of the project's entrepreneur as well as the access to sustainable tropical hardwoods are rents that could prove crucial in striving for economic sustainability. Lastly, the project's location in the Miombo region makes this case study representative of problems in tropical dry forests.

A preliminary interview with the project leader and an assessment of the financial records of the project were used to select the most important product groups in terms of revenues. Based on this the wooden bracelets and furniture were chosen as the products for this study. The wooden bracelets form an interesting case because they are sold on a continuous basis in South Africa and Europe, and currently expansion is sought into the United States market. The amount of foreign retailers selling these bracelets and the amount of bracelets produced and sold is rising, indicating a growing importance for the project. Furthermore, because the bracelets are manufactured by cooperatives who traditionally manufactured own designs for the local Mozambican market, it allows for an interesting comparison between the two markets in terms of product characteristics, size, sustainability and margins along the value chain. Furniture was chosen as a second unit for analysis because this product category currently generates the highest revenues for the project. According to Kaplinsky et al. (2003) wood furniture is the biggest low technology industry in the world in trade volumes, which grew by 36% between 1995 and 2000, and several developing countries are amongst the main exporters. Average prices however have been decreasing, while environmental awareness is of growing importance. From Kaplinsky et al. (2003) it becomes clear that furniture offers growth opportunities, but the mode of insertion into the global market is essential. In the case of Mezimbite

[6] The information about the project history was obtained from personal interviews with Schwarz and from an internal ITC document.

furniture sales consist of custom orders from either interior decorators in South Africa or private customers in South Africa and Mozambique at present. Most of these customers are from within the social network of the project leader. Research is necessary to determine whether this is a sustainable situation and whether other buyers are available. In contrast with the bracelets, furniture orders are highly erratic; as an example the month preceding the site visit no furniture was manufactured, while the next month an order of $15,000 was processed. Despite the erratic character of the furniture orders this category tends to be the biggest revenue earner for the project. The revenues and sustainability of both the bracelets and furniture appear to be essential for the project's economic sustainability. This hypothesis is explored in this dissertation.

1.4 Value chain analysis

In section 2.2 ('Sustainable development') I argue that the market benefits (sales of forest products) will tend to be the most important mechanism for forest preservation. This is certainly the case for the Mezimbite project. In fact the project is concentrated purely on capturing market benefits, in other words translating the value of the forest into real resource flows through processing of forest products and sale of these products in markets. This study will use the value chain analysis methodology to find out how the most important products – in the case of Mezimbite, wooden bracelets and wood furniture – are marketed, how much of their economic value is captured by people from the local community, and which rents such as skills and natural resources enable the project members to earn their income. 'The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production...delivery to final consumers, and final disposal after use' (Kaplinsky and Morris 2001 p4). Formal and informal workers and companies from different countries and sectors are increasingly linked with each other in complex economic networks and relationships, and value chain analysis (VCA) focuses on the power dynamics in networks and 'maps the distinct groups of firms within a chain and the types of workers engaged with them' (Navdi 2004 p21). This enables us to analyse the impacts of engagement in global markets on specific firms and their employees, in particular vulnerable and poor ones such as informal producers, woman, children, elderly, migrants and workers from ethnic minorities. It can help to identify 'poverty nodes' and can give a sense of the risks, vulnerabilities, and potential gains that developments in the chain can have for distinct groups of workers (Navdi 2004). VCA is particularly useful for new, poor producers and poor countries 'who are trying to enter global markets in a manner which would provide for sustainable income growth' (Kaplinsky and Morris 2001 p2). As Kaplinsky and Morris (2001) state, value chain research is important to understand the distribution of revenues arising from design, production, marketing coordination and recycling, and essentially these revenues accrue to those who can protect themselves from competition through possession of scarce attributes, referred to as economic rents.

Rents can be the result of either unequal ownership over scarce resources, such as hardwood forests, or created, for instance a brand name or design capabilities. Table 1.1 gives an overview of different rents:

Table 1.1: Different forms of economic rent (derived from Kaplinksy and Morris, 2001)	
Endogenous and constructed by the firm	Technology rents: having command over scarce technologies
	Human resource rents: having access to better skills than competitors
	Organisation rents: having superior forms of internal organisation
	Marketing rents: possessing better marketing capabilities and/or valuable brand names
Endogenous and constructed by group of firms	Relational rents: having superior quality relationships with suppliers and customers
Exogenous rents constructed by nature	Resource rents: having access to scarce resources
Exogenous rents constructed by parties outside of the chain	Policy rents: operating in an environment of efficient government, government constructs barriers to entry for competitors
	Infrastructural rents: access to high quality infrastructural inputs such as telecommunications
	Financial rents: access to finance on better terms than competitors

According to Kaplinsky and Morris (2001) governance within value chains involves setting of parameters for product, process and logistic qualifications that have consequences along the value chain and ensures that interactions between firms along the value chain are organised instead of random. The exercising of sanctions, ultimately exclusion from the production network, is essential to the functioning of governance. Three major types of governance are distinguished: legislative (setting standards), judicial (monitoring meeting of these standards) and executive governance (assisting value chain participants in meeting these standards). An important part of VCA is to analyse how a firm or industry can become more competitive, which Kaplinksy and Morris (2001) refer to as upgrading. They distinguish four forms of upgrading:

- **Functional upgrading:** changing the functions in the value chain that are conducted within the firm to improve added value. Examples are a furniture manufacturer who opens up retail stores to increase sales margins, or out-sources logistics and financial administration because external companies can perform these activities more efficiently
- **Product upgrading:** introducing new products or improving old products faster than rivals.
- **Process upgrading:** increasing the efficiency of internal processes
- **Chain upgrading:** moving to a new value chain, e.g. a furniture manufacturer starts making doors and window frames

1.5 Research objectives and questions

In order to analyse the economic sustainability of the Mezimbite project the research will address three major objectives and questions:

1. Objective one is to map the value chain for wooden bracelets and wood furniture. The related research question is: *What does the value chain look like for these products?* This question can be divided in a number of sub-questions:
    - What are the different types of organisations in the chain, what kind of functions do they perform and how are they linked?
    - What are the flows of goods, services and skills along the chain?
    - What are the employment levels, gross and net output levels along the chain?
    - How are the margins distributed along the value chain of this product, and how much of the total value is captured by the people involved in the project?
2. Objective two is to describe and analyse the structures in the value chain, and to analyse how they relate to the current economic sustainability of the project. The research questions related to this objective are: *Which factors are responsible for the division of activities and associated margins along the value chain? What is the current and future economic sustainability of the Mezimbite project?* Again there are a number of sub-questions that need to be answered:
    - Are there segments in the market for furniture and jewellery that have distinctly different customer requirements, and if so: can the project produce products and services that meet these requirements?
    - What are criteria for supplier selection of retailers and wholesalers in the value chain, and to what extent can the project meet these requirements?
    - What governance systems exist and who performs the legislative, judicial and executive governance? Of particular interest is the growing importance of standards for sustainable production of timber, especially those developed by the FSC[7]
    - Which rents exist within the value chain and which stakeholders preside over these rents? And consequently:
    - What are barriers to entry for different activities in the value chain, and are new entrants or existing players threatening to undermine the position of the Mezimbite project?
    - Which other power dynamics play a role in shaping the value chain?

[7] The Forestry Stewardship Council was founded in 1993 as an international non-profit organisation to support environmentally appropriate, socially beneficial, and economically viable management of the world's forests through creating an international labeling scheme for forest products, which provides a credible guarantee that the product comes from a well managed forest (Morris and Dunne 2003 p3). The FSC 'is an international association with members from environmental and social groups, the timber trade and the forestry profession, indigenous people's organizations, responsible corporations, community forestry groups and forest product certification organizations from around the world.' (FSC 2006). The FSC sets standards for sustainable forestry, and producers of wood and wood products that want to be certified need to hire a certification organisation that is part of the FSC which will perform inspections on site to assure compliance with these FSC standards.

- How competitive is the Mezimbite project in the furniture and jewellery market?

3. Objective three is to formulate possible improvements for the project. The research question here is: *How can the economic sustainability of the project be improved, and are there possibilities for upgrading in the value chain that can be undertaken by the Mezimbite project?*

1.7 Structure of this dissertation

In this chapter I have established the need to manage forest resources in a sustainable manner and introduced the Mezimbite project as a model that attempts to achieve this goal. I have outlined the methodology of value chain analysis as a way to analyse the economic dimensions of the project, and formulated research objectives and questions that will be used to analyse the economic sustainability of the project.

The next chapter consists of a literature review. Themes including causes of deforestation, the concept of sustainable development, economic models of sustainable development, community based natural resource management (CBNRM), and value chain analysis are developed in more detail here. For the theoretical framework I describe three models of sustainable economic development – neoclassical, ecological and neo-Ricardian models. I suggest the ecological and neo-Ricardian models of sustainable economic development are most relevant for this study given the nature of the Mezimbite project. Existing research on the woodcarving and furniture industries in Southern Africa is described in order to identify factors that may be relevant for the value chain analysis of the bracelet and furniture products.

The third chapter of this dissertation will give an overview of the methods used in this research, as well as the strengths and limitations of the research design and methods used.

Chapters 4 and 5 consist of a description and analysis of the research findings. These chapters will contain an overview of the value chains of the wooden bracelets and furniture (research objective one), and reflect on the structures within the value chain and the economic sustainability of the project (research objective two). Chapter 4 will describe and analyse the first stages of the bracelet and furniture value chain, from planting and harvesting the tree to the production stage. The value chain of sale and marketing of products will be described and analysed in Chapter 5.

Suggestions for how the economic sustainability of the project can be improved (research objective three) will be presented in Chapter 6. The conclusion and recommendations for future research are also presented in this chapter.

Chapter 2: Literature review

2.1 Introduction

This chapter begins with an examination of causes of deforestation. The second section will take a closer look at the concept of sustainable development; selected economic models of sustainable development are described with an analysis of which of these is most applicable as a theoretical foundation for the Mezimbite project. Community based natural resource management (CBNRM) as a model for sustainable development, economic and environmental sustainability of CBNRM projects, and private sector involvement in CBNRM projects are discussed in the third section. Attention is given to studies which used value chain analyses to uncover the economic aspects of forest products or markets that are relevant to the Mezimbite project in section four. To provide a foundation for the value chain analysis of the wooden bracelets and furniture manufactured in the Mezimbite project I discuss several studies about the wood carving and furniture industry in South Africa; rents that might be relevant to the Mezimbite case are identified.

2.2 Tropical forests and deforestation

Before we look at solutions to deforestation and strategies to prevent deforestation it is important to take a closer look at the reasons for deforestation and the kind of environmental degradation that threatens livelihoods. Even more important is to understand what drives people to actions that result in environmental degradation, for if one wants to prevent this degradation one needs to address the root of the problem rather than the symptom.

2.2.1 Importance of forests

Tropical forests and woodlands perform several essential functions. First of all tropical forests are home to a vast range of plants and animals, and their survival is thus essential for the conservation of biodiversity (Adams 2001, Pearce and Brown 1994, Poor 1993, Rietbergen 1993). Secondly, forests absorb pollution and waste (Blignaut and de Wit 1994), their ability to 'lock up' vast amounts of carbon is of growing importance in the light of climate change (Gah et al. 1996, Sioli 1985, Sutlive et al. 1981, 1980 all in Adams 2001; Poor 1993; Rietbergen 1993; Shepherd et al. 1993), and woodlands perform an important task of conservation of soil and water, which is of benefit for agriculture in the forest vicinity. Thirdly, they are important for the livelihoods of people; a large proportion of people living in or near forests and use forest products such as wood fuel, timber for construction and furniture, food in the form of vegetables, fruits and animals, fodder for animals and medicine, on a daily basis[8].

[8] Clarke and Grundy 2004, Dovie (2004), Ellery et al. (2004), Kyle (2004), Lawes et al. (2004), Moshe (2004), Sahwney (2004), Shackleton et al. (2004), Shackleton and Shackleton (2004), Shackleton and Steenkamp (2004), Jones (2003), Nhantumbo et al. (2003), Anstey and De Sousa (2002), Mugabe et al. (2001), Wily (1999), Wickramasinghe (1997), Rietbergen (1993), and Shepherd et al. (1993).

These products are either used for own consumption or processed and sold or traded. Often forests have a spiritual function (Eeley et al. 2004). In addition they have an aesthetic and recreational function; many people enjoy looking a forests and walking through them.

2.2.2 Types of forest

Different people have different pictures and definitions of what a forest is, therefore it is important within the context of this paper to specify what is meant by forests. As Rietbergen (1993) states, most present day Europeans and North Americans think of forests as an area of continuous tree cover. This need not be the case and definitions must be derived with suitable qualification. The FAO defines forests as vegetation types where trees cover more than 10% of the land area, and this definition thus includes landscapes that most would call open woodlands or parklands. Two thirds of forests in Africa are in fact open forests (Rietbergen 1993), and much of the existing literature about forestry speaks about woodlands when they mean open forests. A second important point is that where the media often equates tropical forests with rainforests, there are many other types of tropical forests, such as mangroves, dry forests, cloud forests, riverine forests, freshwater swamp forests, and the earlier mentioned woodlands. A third important point is that while in present day Europe clear boundaries exist between forest and farm, many forests in developing countries are farmed and grazed which changes their composition and structure in spite of looking natural with a tree cover of indigenous species (Rietbergen 1993). Shepherd et al. (1993) state that this is the case for most tropical dry forests; for centuries they have been used by the population as grazing land or for agricultural purposes in long fallow cycles that enable the forest to recover. Poor's classification (1993) of forests according to the extent in which they have been modified by human activity offers a valuable overview of the different types of forests (Table 2.1):

Table 2.1: Classification of forests (derived from Poor 1993)

Natural forest	Primary forest	A	Virgin forest: unmodified by human activity; will contain gaps through natural death of trees as well as natural events such as landslides, and new trees will start to grow in those gaps
		B	Similar as above but composition and structure have been modified by hunting and gathering activities of indigenous people
	Secondary forest	C	Forests which have been subjected to a light cycle of shifting cultivation or in which cultivation has been abandoned so that full tree cover of indigenous species has developed
		D	Forests which have been subjected to various intensities of logging but still remain covered with tree or shrub cover of indigenous species and where tree growth is entirely derived from natural regeneration
		E	As above, but where regeneration has been supplemented by 'enrichment planting'
Non-natural forest		F	Tree plantations: original occurring tree species have been replaced by planted trees. Often only one tree species per area and all trees are the same age. Plantations frequently use exotic species
Degraded forest land		G	Areas that have been so intensively modified by cultivation fire or logging that they remain covered with grass or non forest weeds

The FAO (2005) estimates that 30% of the world's land area is covered with forest, and 36% of the world's forested area consists of primary forests. The forests in the Mezimbite project can be

classified as tropical dry forests, and are type secondary; they are a mix of the type C, D and E forests described in Table 2.1. There are also some areas that are degraded forestland. The current management plan uses selective logging with enrichment planting, and trees are replanted in degraded areas. Thus all forests in the project can be classified as type E forests, however, due to the low intensity of logging they remain close in appearance to type C forests.

2.2.3 Rate of deforestation and the scale of sustainable forest management

Despite their importance tropical forests are disappearing at an alarming rate. The FAO (2005) estimates that 7.3 million hectares of forest has been lost per year between 2000 and 2005, mostly in South America and Africa; this is an area that is about the size of Sierra Leone or Panama. On the other hand, the International Tropical Timber Organisation (ITTO, 2005) claims that the area of forest in their 33 member countries that is under sustainable management has grown from 1 million hectares in 1988 to 36 million hectares in 2005. However, a closer analysis of their statistics reveals that only 3% of the forest area of their members is sustainably managed[9], and only 0.9% of the total area of natural tropical forests is certified by independent organizations such as the FAO. These numbers clearly illustrate the limited acceptance of sustainable forest management, especially if one considers that woodlands and savannas are not part of these numbers because they are not considered as closed tropical forests by the definition of the ITTO.

2.2.4 Causes of deforestation

Much of the literature suggests the causes of deforestation are vast, complex and closely interlinked and this section aims to give a brief overview of the most predominant reasons only. Causes that are most often mentioned are clear felling for timber and partial or complete clearing for agriculture, pasture, forest plantations and wood-fuel. These causes are closely linked; for instance logging roads open up forest areas for colonization and logged forests are also easier to clear for agriculture (Adams 2001, Gillis and Repetto 1993). However, as Pearce (2002) and Adams (2001) point out, logging, agriculture and charcoal burning are not the causes of deforestation, the real problems are the economic incentives and circumstances that initiate them. Adams (2001) emphatically criticizes what he calls the 'neo-Malthusian' explanation of environmental degradation which points at overuse of natural resources as a result of overpopulation. Adams notes that Africa has a very low population density compared to other parts of the world and that there is much literature that suggests that a higher population density enables more intensive agricultural systems that can limit environmental degradation. Billsborrow and Geores (1994) and Kummer and Sham (1994) also question the link between population growth and deforestation. Thus there must be other factors at work.

Reed (2006), Bass et al. (2005), Adams (2001) and Blaikie and Brookfield (1993) emphasise the relationship between the political economy, poverty and forms of land degradation, such as soil erosion and deforestation. In this respect Adams (2001 p253) argues 'local environmental problems need to be seen as the product not only of local processes, but also of political economy at local,

[9] 2.1% of the total forest area is sustainably managed production forest (42% of which is certified), and 0.9% is sustainably managed protected forest; together this is 3% of the total area.

national and international scales', while Reed (2006) describes economic and political actors at multiple levels – local, meso and macro – who influence poverty and the environment. Unemployment and a lack of access to fertile land can force people to clear forest for agricultural use. After the nutrients in the soil have disappeared and no money is available for fertilizer or livestock the people are left with infertile land and no forest to supply them with other products. Lack of access to resources has thus caused poverty, which in turn caused environmental degradation, and a vicious cycle of degradation and poverty occurs. Many of the poor in the third world live in and suffer from degraded environments, and often they create or worsen degradation because their lack of resources forces them to resort to desperate and destructive measures (Adams 2001, Blaikie and Brookfield 1993). In such a situation the generation of sustainable, alternative sources of income is essential from environmental, economic and social perspectives.

The issue of deforestation through charcoal harvesting is another example of the relationship between poverty, environment and the political economy at different levels in society. Most Africans cannot afford other energy sources, and as a result 60% to 95% of energy consumption in sub-Saharan Africa comes from charcoal or firewood (Leach and Mearns 1993). Consequently large areas of forest in sub-Saharan Africa around cities are heavily degraded due to woodcutting for charcoal which is consumed in the growing cities (Ribot 1998, Leach and Mearns 1993). Here loss of forests is influenced by the demand for energy in nearby cities. Behind this demand lies the poverty of the population, rising oil and gas prices caused by a growing worldwide demand for energy, and political conflicts in oil producing regions.

Pearce and Brown (1994) point to three more root causes of deforestation. First of all there is often a clear case of market failure, as the one who benefits from forest clearing does not pay the costs for loss of soil, biodiversity, carbon storage, non-timber forest products and local people's livelihoods. Secondly markets do not exist for forest functions such as biodiversity, and carbon storage, and these functions are thus not valued. Thirdly there is failure of governments, who do not respond to market failures, or distort the market further by offering perverse incentives such as subsidies for clearing forests for farmland, fail to tax logging companies, and encourage inefficient wood processing industries. Gillis and Repetto (1993) also emphasize these points, and add that many non-forestry government policies also lead to deforestation. Examples are agricultural programmes that clear forest for crops such as rubber and palm oil and investments in mining, dams, roads that result in large scale destruction of forests. According to Gillis and Repetto (1993) governments tend to overestimate income and employment from logging, forest regeneration rates and the suitability of forest soils for agriculture. Soils under tropical forests are often nutrient poor and cattle ranging and mono-crop agriculture on these soils is often unsustainable. Simultaneously benefits from intact forests such as protective functions (e.g. watershed) and non timber products have been undervalued.

2.2 *Sustainable development*

The sustainable development approach, often defined as 'meeting the demands of today's generation without compromising those of future generations' views nature that is to be conserved as 'exploitable natural resources that can be managed to achieve both developmental and conservation goals' (Hulme and Murphree 2001 p1). It is important to find a balance between conservation and benefits for people involved (consumption), as a certain level of benefits is needed to facilitate conservation. If too many natural resources are harvested to create a high level of benefits, conservation, and thus the creation of future benefits, is threatened.

There is much discussion amongst academics and stakeholders involved in nature-based industry, conservation and development as to what exactly sustainable development is. It is also felt that the term 'sustainable' is often used inappropriately, either for projects or products that might be less environmentally damaging than their conventional counterparts (but are in fact still bringing irreversible damage to the environment) or in situations that have nothing to do with sustainable use of natural resources at all. It is therefore important to define what I regard as sustainable development in the context of this case study.

Faucheux et al. (1996) give a comprehensive overview of economic models of sustainable development. These models are useful to explore the balance between consumption/benefits and conservation, and to come to a definition of sustainable development of a natural tropical forest. In order to do so I will discuss the applicability of three groups of models of sustainable development as distinguished by Faucheux et al. (1996) – neo-classical, ecological and neo-Ricardian models – to the Mezimbite project.

2.2.1 Neo-classical models of sustainable development

In neo-classical economic models consumption, capital accumulation and optimal economic growth tends to be a function of labour and capital. Neo-classical models of sustainable development tend to distinguish between natural capital, e.g. oil, iron ore or timber, and produced capital, such as machines and houses, which are produced through processing natural capital with the help of technology and produced capital. Such models require a solution where the consumption per capita does not decrease over time, and the general conclusion tends to be that:

> '...a constant (or, more generally, non-diminishing) per capita consumption path can be maintained indefinitely, as long as the positive effects of technical progress and/or capital accumulation are sufficient (through substitution away from scarce natural capital and/or through improved factor productivity) to offset the negative effects of the exhaustion of natural resources, pollution, population growth, and intertemporal discounting...'(Faucheux et al. 1996 p3).

The assumption behind the model is thus that technology enables us to distribute natural capital with other forms of capital and/or to use a given amount of a natural resource more efficiently so that less natural capital is required per unit of product. I would argue that there are two problems with this

assumption and thus with the neo-classical approach to sustainable development. First of all, neo-classical models are too focused on the notion that welfare is derived from consumption of products. Secondly, although natural resources can be substituted the quality of substitutes, and/or the welfare derived from them, is not necessarily equivalent. Technology allows us to use steel and plastic for furniture instead of wood, but many people find that plastic furniture is not as aesthetic as wooden furniture. Although some forest functions might be replaceable by technology, for example the replacement of nature biodiversity storage by seed banks, other functions are harder to replace, for instance biodiversity storage of fauna. The recent interest in restoring forests and natural wetlands as a measure to combat drought and flooding illustrates that technology is not yet fully capable of replacing the watershed function of natural eco-systems. Furthermore, the aesthetic value of real forests is hard to replace by technology or capital. Therefore neo-classical models do not relate well to sustainable forestry.

2.2.2 Evolutionary models of sustainable development

Evolutionary models tend to break with the axiomatic equilibrium framework and linear interactions that are the basis of neo-classical economics. Instead of a deductive approach there is an inductive approach where models tend to be based on observations over a long period, that show complex interactions between socio-economic, technological and ecological systems. Technological change is not viewed as a logical outcome, or as a logical trajectory to a stable development equilibrium. Instead it is perceived to be the result of complex and multidimensional causes, and as a dynamic process that can lead to a disequilibrium (Faucheux et al. 1996). Faucheux et al. (1996) argue that these models assign a greater importance to economic policies as a means to influence outcomes, because technological change and development are the result of complex and dynamic processes rather than something that can be predicted in advance. Neo-classical models on the other hand appear to reflect the opinions of neo-liberal economists who advocate that the 'invisible hand' of the market will lead to the desired state of development as long as the government and other actors make sure that market forces are not bounded. This contrasts with other views that interventions are necessary because if markets are left unregulated this may lead to undesirable outcomes, due to market failures.

Although evolutionary models appear to be more realistic than neo-classical models they remain focussed on technological change.

2.2.3 Ecological economic models of sustainable development

Ecological models have in common with evolutionary models that development occurs as a result of complex, non-linear processes which do not necessarily result in a steady state equilibrium, as opposed to the neo-classical model. What makes ecological-economic models different is that they distinguish two systems: the ecosystem, which itself evolves continuously and contains natural capital, and a socio-economic system, which evolves continuously and transforms natural capital into produced capital. The two systems are open to each other and interact with each other, thus influencing each other's development. This concept is referred to as co-evolution and ecological

economic models try to map these interactions. In contrast with the neo-classical models ecological economic models appear to be based on the notion that there is limited substitution possible between natural and produced capital, as opposed to neo-liberal models where extensive substitution is possible. In the ecological-economic model of Perrings (1996), ecological systems create natural capital, which is used as an input for produced capital, produced in the socio-economic system. Development is defined as a function of produced capital, and an economy is said to be developing if the stock of produced capital is growing. This development is sustainable if the sum of natural and produced capital is growing (Perrings 1996). Because natural capital is the input of produced capital, within this model the development will end if no natural capital is left. This implies that for development to be sustainable at least some environmental resources need to be conserved. In this respect Beckenbach and Pasche (1996 p279-280) speak about 'ecological constraints of economic activity' and 'an ecological ceiling for the economy', which 'is not simply a number or an integral of a single function'. Perrings (1996) argues that in order to preserve irreplaceable natural resources the capacity of eco-systems to (re)create those resources should be preserved. Faucheux et al. (1996) note that if the capacity to create and renew natural capital is lost the ecosystem is likely to undergo irreversible changes. A crucial concept within ecological economic models is that not only the extent of the perturbing influence determines whether the system will undergo irreversible change, but also the amount of perturbing influences a specific ecosystem can take before it loses the ability to regenerate certain natural resources. The latter is referred to by Beckenbach and Pasche (1996), Faucheux et al. (1996) and Perrings (1996) as resilience, and the concept of resilience plays an important role in ecologic economic models. In the model of Perrings (1996) economic and ecological systems are presumed to be in a state of equilibrium in which produced and natural capital build up slowly over time. This slow build up tends to be broken by ecological shocks, such as forest fires or logging, or economic shocks such as wars. These shocks may move the system to a different equilibrium, in which case the effects of the shock might be irreversible. One could also argue that because the two systems are interlinked, a shock in the economic system is likely to lead to a shock in the ecological system, and vice versa. Perrings (1996) furthermore notes that the amount of perturbation influences the resilience, and if the resilience of the system is weak a minor deterioration of its state can have catastrophic consequences, while a major perturbation of the same variables may have very little effect on the systems. According to Perrings (1996) not only is the substitution of natural and produced capital limited, but so is the substitution between different forms of natural capital. The complementarity between species is still imperfectly understood, and the difficulty is to understand the minimum combination of resources that will still enable an ecosystem to function in the relevant economic and ecological sense.

Perrings's (1996) model implies that the risk of irreversible damage depends on the stability of a system, the amount of perturbing influences it already has endured and the effects of these on resilience, the size of the perturbing influence, and the species that are affected. Perrings (1996) therefore states that it is important to know how far the system is positioned from the equilibrium, and whether the equilibrium is stable. Furthermore he states that the conversion of natural and produced capital comes at a price; it reduces the resilience of ecosystems and this involves cost to prevent the system from shifting to a new equilibrium where both natural and capital stock will be declining.

According to Perrings (1996 p248) the problem when developing interventions or policies is that 'market prices do not tend to signal when a system is approaching the thresholds of resilience, as they are not adequate observers of the natural part of the system.' He notes that the problem is hard to solve as many key ecological process are hard to observe and control, and that the different equilibriums are not well defined. Under these circumstances the best that can be done is stabilising the systems at sustainable levels of activity.

Several elements of ecologic economic models seem to be applicable to the Mezimbite project. Firstly, forests grow slowly, and the natural resources of the forest are converted into produced capital. Some areas in the community's woodlands have undergone such severe damage that it has lost its ability to regenerate, and these areas are an example of degraded forest areas mentioned in Table 2.1. Other areas have undergone extensive logging of a few particular species, and although these species are underrepresented, the eco-system still has the shape of a forest. Furthermore the shocks in the ecosystem are likely to be caused by shocks in the socio-economic system, such as the war which has exacerbated poverty, and the rapid rise in population growth after the war which has increased the demand for agricultural land and resources such as charcoal. The current harvesting regime within the project also carries several elements of ecological-economic models. First of all an attempt has been made to determine the resilience of the forest, through the standing inventories that have been done. Perrings' notion of stabilisation and Beckenbach and Pasche's ecological ceiling of economic activity can be found in the annual allowable cut that has been calculated for the relevant tree species, based on a stabilisation of the amount and composition of mature trees in the forest. Furthermore, the project recognises the relationship between the economic and ecological systems. It tries to increase the level of produced capital within the communities while keeping the level of natural capital constant, which according to the definition in the model of Perrings can be regarded as sustainable development. On the other hand one could note that the harvesting regime is based on the assumption that the growth and renewal of trees is a linear function, while economic-ecological models argue that most processes are far more complex and non-linear. However, there appears to be little experience with this form of forestry, and the Mezimbite project might form a useful input for inductive studies about ecological processes that are preferred by advocates of evolutionary and ecological economic models. Another important factor that might not be accounted for by the ecological economic model is the replanting of trees that takes place within the project; the ecologic-economic models of Perrings (1996) and Beckenbach and Pasche (1996) do not devote much attention to the option to produce natural capital through artificial regeneration.

2.2.4 Neo-Ricardian models of sustainable development

Just as in ecological economic models the underlying vision of neo-Ricardian models is that of coevolution of the economic and ecological systems (Faucheux et al. 1996). However, in a neo-Ricardian model the two sectors are more closely linked and more interdependent. Furthermore these models place a larger emphasis on renewal of natural resources as both economic and ecological processes, whereas the ecological models are more focussed on conversion of natural capital into produced capital and see regeneration predominantly as a function within the ecological system. In

other words in the neo-Ricardian model produced capital and economic processes interact with ecological processes to regenerate and produce natural capital. According to Faucheux et al. (1996) the long-term economic viability depends on the ability of the economic and ecological structures to maintain and renew the level of natural capital and thereby the level of produced capital. These models thus share with ecological models the notion that some natural capital needs to be preserved in order to reach sustainable development. The neo-Ricardian model differs from the evolutionary and neo-classical models which assume that natural capital can be fully replaced with produced capital.

An example of a Neo-Ricardian model that seems very applicable to the Mezimbite situation is that of Erreygers (1996). The model assumes that certain natural resources are exhaustible but also renewable. It is thus assumed that the negative effects of production on natural resources are reversible. The analogy used by Erreygers is that of the production of corn. The assumption is that goods, labour and fertile land are used to produce corn, and that the outcome of such a cycle is a certain amount of corn as well as a lower quality of land. Furthermore the production of corn is positively related to the quality of land, and the quality of land can be restored in two ways: either through fallowing the land (the dominant option in ecologic economic models) or through restoring the land using labour, fertiliser and/or cultivation of crops that return nutrients into the soil such as clover. This model is easily applicable to forestry: wood used to produce timber products is exhaustible if one simply cuts down the forest, but a natural forest can be restored through selective felling of trees, followed by a long period in which no trees are felled (fallowing). Alternatively one can replant trees (land restoration) to speed up the regeneration of the woodland after harvesting trees. There is thus a balance between production and regeneration, and I would argue that such a system is economically and environmentally sustainable if over an extended period of time the natural resource base remains at a more or less constant level, thus allowing for a constant production of produced capital. It is likely that after production starts the resource level will decline because some mature trees have been felled and it will take a while before other trees have grown to that size, but at a certain level, it should remain constant. An interesting point of discussion in the light of the Mezimbite project is how irreversible the changes are to ecosystems once the ability of the system to regenerate itself has been lost due to perturbing influences, as has happened in some areas. Ecologic economic models suggest that they might be irreversible, but Erregyers model suggest that they might be restorable through economic inputs. Within the Mezimbite project degraded forests are replanted with a mix of indigenous species that are presumed to have originally occurred at the site but it is difficult, if not impossible, to measure whether this has led to an ecosystem that is comparable with the original situation.

Although the model of Erreygers appears to be very applicable to the Mezimbite project it is not completely suited, as it only considers one commodity or form of natural capital that performs one function. The model could be very applicable to plantation forestry that tends to have one species that is used for one product, and of which every specimen in a given area is harvested at the same time e.g. pine for the furniture industry and saligna for the paper industry in South Africa. The reality of the Mezimbite project is that the forest produces many 'products', such as timber, apiculture, watershed, and carbon storage, and it does this through a large diversity of species. Furthermore the model does

not deal with important issues such as the maximum sustainable yield, or resilience that are crucial for natural forests.

2.2.5 Sustainable development in the context of the Mezimbite project

The previous sections have shown that several elements of ecological economic models and the Neo-Ricardian model of Erreygers are relevant to sustainable forestry in a natural forest, of which the Mezimbite project is an example. A summary of the elements of the models relevant to the Mezimbite project are summarised in Table 2.2:

Table 2.2: Summary of characteristics of sustainable development models relevant to the Mezimbite project	
Ecological economic models	Ecological ceiling to economic activity
	Resilience
	Severe perturbation of ecosystem can damage natural reproduction capacity and lead to irreversible changes in the ecosystem
	Multiple species in complex interactions with each other, and limited substitution between species
Neo-Ricardian model of Erreygers	Produced capital/technology can be used to renew natural resources (in addition to natural regeneration)
	Linear model of conversion of natural to produced capital, and regeneration of natural capital through the system itself and the use of produced capital
Both Models	Limited substitution of natural capital by technology/ produced capital
	Co-evolution of ecology and economy

It is important to define the term sustainable development in the context of forestry in general and the natural forests in the Mezimbite project in particular. I will argue that economic development of a natural forest is sustainable if:

- Development occurs within the resilience and ecological ceiling of the eco-system, thus minimising the risk of a large irreversible change to the ecosystem and loss of natural processes of regeneration
- The level of produced capital increases over time without decreasing the level of natural capital; I would argue that natural capital of a forest is the ability to carry out the following essential functions: biodiversity storage, soil protection, watershed, carbon storage and production of timber and non-timber forest products. In addition to these essential functions one can claim that forests have an aesthetic, cultural and spiritual value, which is also part of the natural capital.
- The increase of produced capital (the economic gains) are sufficient to motivate the stakeholders to continue this form of development

This definition expresses the limited potential for substitution between natural and produced capital, as well as between different forms of natural capital. While a plantation forest can perform the function of timber production and carbon storage it is far less aesthetic, it does not store biodiversity, produces little if any non-timber forest products and it is probably not as good in soil protection and watershed[10].

Now that I have established a definition of sustainable development for the Mezimbite project, the important question is which economic incentives are likely to promote such a sustainable development of the forests in the n'Hantanga and Mosca do Sohno communities. If these communities have the property rights over a forest and thus can perform a cost-benefit analysis, we can expect the forest to be preserved if the economic and social benefits of a sustainable exploitation of the forest are larger than the opportunity costs of alternative uses. As Pearce (2002) states, there are three components of economic value: non-market benefits for communities (usage of forest products for own consumption), market benefits (sales of forest products) and non-use values (willingness of the global community to pay for conservation). Pearce (2002) emphasizes that costs and benefits only matter if they are associated with real resource flows. Unfortunately only few forests are special enough to receive money from the international community for conservation or to attract large amounts of tourists (Adams 2001) and markets for valuable functions such as water shedding, biodiversity conservation and carbon storage are not well developed (Pearce and Brown 1994). This leaves us with revenues from usage of forest products by people from the local community and from the sales of forest products through markets. With the latter the size of the revenue flow is a function of the quantity sold and the price that can be obtained for these products, and both are determined by supply and demand factors. Factors that determine the potential supply of forest products from a given community include:

- The maximum sustainable yield of the natural products. In the case of timber an inventory of the standing stock needs to be done, decisions made about the intervals between different cuts and the calculation of the 'annual allowable cut'. This should be set at a level that provides maximum harvest while ensuring that prospects for future sustainable harvests will not be declining (Poor 1993) and severely damaging other forest functions.
- The kind of products that are made and the amount of natural resource that is required to make one unit of the product.
- The skills that are available to manufacture and sell certain products
- The demand and prices that can be obtained for certain products, and thus their attractiveness compared to other products e.g. if the prices for furniture are low, the wood is more likely to be converted into doorframes than tables.

Factors that influence the demand and the price for the forest products of a given community include:

- the customer demand for that product category
- The supply levels on the market

[10] All trees in forest plantations tend to be harvested at once, exposing the soil for a period of time until the newly planted trees have develop to the stage where their roots are covering most of the soil and thus protect the soil from being washed away in the rain.

- The competitiveness of the product in relation to other suppliers on factors such as price, quality and delivery times.
- The existence of entry barriers to lucrative market segments
- The extent to which the community is able to market the product. For example: what is the market knowledge of the community, are there existing relationships with potential buyers, is there advertising budget and is it advertised well amongst potential buyers?
- Negotiation skills of the community
- The skills of external organisations that might participate in the economic process
- The value added; one can choose to sell raw logs, process the logs on site into raw planks, or make design furniture on that site

All these factors determine what can be produced from the natural resources that are available in the forest, how much can be produced and sold and against which prices, and thus the cash flows obtained by the people in the community. These factors will be the focus of a value chain analysis in this study.

2.3 Community Based Natural Resource Management

2.3.1 Property rights and deforestation

It is widely believed that one of the biggest problems of forests is that they are used and regarded as open access resources, i.e. people enter the forest freely and use it for all kinds of purposes without feeling responsible for its sustainability. The fact that the state often has the property rights of forests gives local communities limited abilities to regulate access. It also limits their ability to influence decisions about forest clearing and reduces their bargaining position to demand compensation when the government grants logging licenses. Adams (2001) suggests that if communities themselves owned the property rights of the forest their decisions are likely to be different in many cases. However, it is questionable whether community ownership in itself leads to a more sustainable use of forest resources and better livelihoods in the community. Not all communities have the will, knowledge and degree of organisation to develop a functioning system of regulated resource use, and as a result forests that are governed by communities may also be prone to overexploitation and thus environmental degradation. Rangan (1997) attempts to refine the discussion of state versus community governance by distinguishing between property, the right of exclusive ownership over a resource, and control, the regulation of use and access to a forest. Although this distinction is an important step forward this is still not an ideal and easy distinction; a community for instance might own the land on which a forest stands and have control in the sense it can regulate access, but if the forest has the status of a nature reserve the community cannot consume the resources. I would argue for a distinction between ownership, usage rights and control, where ownership is the legal entitlement to the resource, the usage right the right to consume the resource, and control the right to manage use and exclude others from usage. Adams (2001) gives many examples where ownership without control leads to unsustainable forest usage, especially if local communities have no usage rights because they are completely excluded from forest resources and do not profit from the closure

of the forest in other ways. What is needed to protect forests and improve livelihoods of forest communities is a pragmatic plan of who can use forests, for what and how to control access and usage. There are many different combinations of property, control, and usage with varying degrees of community involvement. Each may be placed on a continuum between complete protection of biodiversity with a state that owns the forest and controls it (though with employment of people from local communities as rangers or in eco-tourism operations), to what Adams (2001) calls multiple use areas for sustained production of natural resources, where agriculture and forestry coexist, and are owned and controlled by the community. Which form of governance is optimal should depend on the ecological and economic value of the forest, and the ability of the state, communities and other actors to carry out certain tasks. As Adams (2001) states, most environmentalists argue that for biodiversity preservation multiple use areas are a second best compared to outright protection, but that national parks should be supplemented with these areas. Therefore it is interesting to look at these multiple-use scenarios as a means of forest preservation. Recently scenarios in which forests areas are controlled by local communities, often referred to as community based natural resource management (CBNRM), have gained much attention, and therefore deserve a closer look.

2.3.2 The concept of community based natural resource management

CBNRM is based upon the notion of the natural environment being a common property resource of the community members living around and within it. CBNRM generally requires local communities to draw up a sustainable management plan for their natural resources, after which the government will hand over control and the use rights over these resources, with the right to recall control if bad management occurs. The community will thus become operationally and financially responsible for the management of these resources. The underlying hypothesis of CBNRM is that sustainable use is likely if local communities have secure property rights over the resource, can retain the benefits of use, and these benefits outweigh the cost of managing the resource (SASUSG 1997 and Steiner and Roy 1995 in Jones 2003). Often cultural and spiritual incentives also play an important role in determining community responsibility to land use (Jones 2003, Anstey and De Sousa 2002, Schafer and Bell 2002, Mugabe et al. 2001, Wickramasinghe 1997). One of the important mechanisms behind CBNRM is that as communities become fully responsible for the forest and start treating it as their own property they tend to regulate access in terms of who can use the forest, for which purposes and to what extent. This generally means that community members themselves draw up usage rules and police them, and outsiders are prevented from usage unless they pay compensation. But CBNRM does not necessary evolve around issues of access from outsiders or property rights recognised through the state. It can also refer to a situation where the forest is overused by the local community and in reaction to degradation and corresponding decrease of livelihoods the community draws up usage rules and polices these; the resource shifts from an unmanaged to a managed state.

However, control, usage rights and the ability to retain benefits are not enough to result in sustainable use of natural resources. Nhantumbo et al. (2003 p3) state that 'strong institutions are essential to establish clear rules of use and management of resources.' Furthermore, most CBNRM projects have an external organisation involved, which indicates that knowledge about sustainable

management, organization, the value of resources and ways to capture these resource values is often not present in the community itself.

2.3.3 Economic and environmental sustainability of CBNRM projects

CBNRM has been used in most Southern African countries but is practised on a large scale in Namibia as a government driven rural development strategy. In 2003 14 projects, so called conservancies, were registered and more than 30 were emerging. Approximately 5% of the landmass of Namibia and more than 30,000 people are formally involved in the conservancy programme (Jones 2003).

A large number of case studies show conservation of forests and regeneration of degraded woodlands occurs once these are fully managed by local communities. Wily (1999) studied two cases in Kenya where the forests became degraded after local communities with use rights lost these when the forests became state reserves. However, the state authorities did not have enough policing power to control access and usage, and local communities were no longer responsible for management. Rapid degradation was stopped after local communities regained control and usage rights over the forests and became fully responsible for conservation. They could regulate access and stop encroaching by people from outside the community. The state also allowed the communities to use forest products in a sustainable manner.

The Nhantumbo et al. (2003) study on the Mozambican Derre forest gives a detailed description of the livelihoods of local people and their dependence on forest products and small scale agriculture in the buffer zone of the reserve. Within the development project, that is backed by external donors, some commercial activities have developed such as beekeeping and carpentry. Honey, furniture, doors and coffins are sold at local markets against very low prices to cater for the low buying power of local people. However, there is no data about the income that is generated with these activities, and no analysis on whether these incomes are high enough to motivate the local communities to stop the harvesting of trees by Chinese operators in the area. These loggers operate with licenses that are in conflict with the law and have been issued by corrupt government officials (Nhantumbo et al. 2003). An important comment within the study is that CBNRM will only work if conservation is coupled with ways in which people can generate income, for which people need rights over resources, financial capital, knowledge, and access to markets. Nevertheless, one could question whether transforming valuable hardwoods into coffins that are sold against very low prices on the local market is the best usage strategy for a limited resource base, and whether this will generate more income than the wages and remittances the illegal loggers are willing to pay in order to acquire the valuable hardwoods in the area.

Mugabe et al. (2001) studied three CBNRM project in Zimbabwe where over usage of natural resources by local communities had led to degradation of woodland and wetland areas with loss of water catchments, severe erosion and loss of timber and non-timber resources. These communities took the initiative to start managing these resources to facilitate regeneration, with support from NGOs. In all three projects the wetlands and woodlands regenerated as a result. Nevertheless Mugabe et al. (2001) felt that the sustainability of the project was threatened because the economic benefits for most community members were too small. Access to natural resources was too restricted

and they were thus underutilised. For example, grazing within the protected area was restricted in the dry season even though there would be enough carrying capacity within the environment. Although the environment recovered in the project, the lack of economic benefits resulted in limited support from community members, thus threatening the environmental sustainability.

Nhantumbo et al. (2003) argue that outside involvement is essential for CBNRM projects to succeed. However, research demonstrates that this is not always the case. Anstey and De Sousa (2001) studied the community conservation programs of two indigenous communities in the remote Chimanimani mountains in Mozambique. For both they found that natural resources such as forest products and water for irrigation were effectively managed through local power structures, without support of government and non-government organizations. In Sri Lanka, Wickramasinghe (1999) studied four communities living on the edge of a large forest reserve of great biodiversity. The state officially limits access and usage of resources but is incapable of enforcement. The communities considered the forest as inherited from ancestors and felt responsible for the sustainability of the forest. Access was regulated amongst community members and other communities were refused access. Most of the community income was generated from hunting and gathering of wide variety of plants and fruits for food and medicine. Firewood, honey and poles for fencing and tools were also collected. The gathering was done in groups who shared benefits equally to enlarge the common feeling of responsibility, and using sustainable methods and quotas. The forest products were used for own consumption and sold in local markets, and formed the most important source of income for these communities. These incomes, together with the spiritual bond with the forest, gives the motivation to harvest sustainably and regulate access to the forest of people within the communities and from outside.

Although these CBNRM studies are useful as a context for this study, it is important to note that they tend to focus on the use of natural resources for subsistence. None of the projects described are based on large scale transformation of forest products into consumer products, and trade of these products in markets outside the vicinity of the community. Within CBNRM studies much emphasis is placed on conflicts within the community over resources and the mechanisms in which the community regulates access and usage over these resources. Rangan (1997) points out that community resources such as forests might be privatized or captured by minorities, in which case the state should be able to intervene. The studies from Nhantumbo et al. (2003) and Schafer and Bell (2002) in Mozambique find that the committees involved in the project do not represent everyone in the community, and are dominated by traditional authorities. Sarin (1998) finds that different social and ethnic groups as well as men and women use different forest products, or the same products differently, which leads to conflict; for instance gum trees are used by men for gum production and by women for firewood. These studies imply that the community should never be regarded as a homogeneous entity in which all people are represented, have similar interests, and equal voice.

2.3.4 Private sector involvement in CBNRM

Many CBNRM projects rely on private sector involvement in order to capture the value of natural resources. Private companies are either involved as development partners in designing the project, or the projects are government led but designed to attract private investors. Zimbabwe, Zambia,

Botswana and Mozambique all have programmes which are designed to attract private investors (Ashley and Wolmer 2003, Nhantumbo et al. 2003). South Africa does not have nationwide programs but has several projects where private companies manage national resources together with the community (Ashley and Wolmer 2003).

An example of the role played by private companies in CBNRM is the cooperation between the Durini group, a leading South American wood-processing group, and a number of indigenous communities in the Ecuadorian rainforest of the Esmeraldas region (Rival 2004). According to Rival (2004) agrarian reform in Ecuador allocated forest lands to rural communities of Chachi Indians under a communal land tenure regime. Groups of men from these communities tend to extract wood from forested land they own as a family or as a community, and sell it to a trader who has capital, a shop, a small sawmill, and/or close connections with large timber companies. The chainsaws they use are rented or lent from the middlemen or traded for timber. Sales of wood form an important source of cash income for most Chachi Indians who traditionally combine fishing and rotating cultivation on small plots of land with hunting and gathering, and Chachi families essentially use cash to pay for their children's college education, cover medical expenses and the cost of ritual and ceremonial activities. But on many occasions instead of asking a fair price for their timber the communities tend to ask directly for a range of services varying from food, medicine, fuel, equipment, cash advances, and financial aid in time of hardship, to services that ordinarily should be provided by the government, such as roads, schools, teachers' wages and college scholarships. The demands depend also on the capacity of the middleman (Rival 2004).

Rival (2004) suggests that the poor producers at the beginning of the commodity chain tend to be exploited by local middlemen and traders who realise substantial profits, and by white urban industrialists owning the processing plants who realise maximum profits. One of the companies that sourced from the Chachi Indians directly offering a combination of cash and services, as well as through middleman, was the Durini Group, which is a vertically integrated set of companies (logging, timber, veneer, plywood, furniture making, retailing companies, and more). Since the 1990s the group has aimed to source all of its wood from its own plantations and sustainably managed forests. It would like to acquire more private and forest concessions owned by the state, but due to agrarian reform, the fact that most of the easily accessible timber has been cut, and a lack of finance, this is not an option. To secure a sustainable source of wood the group formed partnerships in the early 1990s with small Chachi communities who own large areas of primary forest. Twenty-year exclusive agreements were signed for the sustainable harvesting of various soft wood species. The Durini group has obtained the legalisation of communal forestland on behalf of each community. A detailed forest management plan has been drawn up including standing inventories, environmental impact assessments, the evaluation of the non-wood forest products, a reforestation programme, and annual allowable cuts. The community has been zoned in areas for families, agriculture, timber harvesting, reforestation, and protected forest reserves. Furthermore the company has built roads, brought in machinery, and conducts sustainable forestry management techniques and low impact logging (Rival 2004). In exchange for the timber the communities receive between $3 and $7 per cubic meter of roundwood, and agroforestry schemes and various education and health projects have been designed and implemented by a team of agriculturalists, foresters, anthropologists, health workers

and social development specialists. For example. school buildings have been upgraded, teachers trained and paid and scholarships funded. Furthermore, in cooperation with NGOs capacity-building workshops have been organised (Rival 2004) and the overall agreement is monitored by several NGOs. From Rival's study it remains unclear whether the agreements can be considered fair or exploitative; Rival (2004) finds that the price paid to the communities is far below that of the market price of $20 to $35, but that the Durini Group defends its price by saying that markets prices depend on extraction, road building and transport cost, and these costs are high due to the remote location of the forests. The company furthermore claims that sustainable forestry and specifically reforestation is costly, that the market prices in Ecuador are twice as high as in neighboring Brazil and the world market for their products is very competitive. However, Rival has not translated the cost of road building, sustainable forest management and social development into a clear price per cubic meter, making it hard to judge whether the monetary value offered to the communities is consistent with the market price. But even if this monetary value was known, and it would be lower than the market price one cannot simply conclude that the communities are exploited. First of all through their social connections, knowledge and economic power private companies might be able to built infrastructure that is demanded by the communities for a fraction of the price than if they were to arrange it themselves. Secondly public goods such as education might improve livelihoods more in the long term, and thus be more valuable than cash which is Durini's claim (Rival 2004). One can imagine that agro-forestry projects can have a large impact on livelihoods, but it is likely that the community would have never been able to find the experts needed to set them up, would they have come up with the idea to hire them. Thirdly the sustainable management of the forest might lead to higher incomes in the future because the resources are not depleted. According to Rival (2004) communities are aware that prices are low because companies pay for the wood with services that the government should provide, but that they have no alternative way to obtain these highly needed services. Rival (2004) concludes that although this example shows that the private sector can play an important role in promoting environmentally and socially sustainable forestry, the company-community partnership does not solve the unfairness of the wood trade and the undervaluation of the natural resource and primary producer; Rival appears to imply that the company primarily needs to make profit and therefore needs to remain competitive within the existing economic system, and this does not allow for higher transfers to the community. Instead the public sector should built roads and offer education and health care, so that the companies can pay a higher price to communities for their wood.

2.4 Economic studies of forest products

Several studies have focused on the economics surrounding people who transfer forest resources into end products and sell these. These describe the economics of a certain industry, and its impact on the livelihoods of the people involved and the resource base of raw materials. Value chain analysis or elements of this approach are often used to reveal the economics of the industry and reflect on its economic sustainability. These studies are important for a number of reasons. They illustrate how value chain analyses can be used to reflect on the economic sustainability of industries, organisations and individuals. They also help us to identify specific problems within the furniture and woodcarving

industry. It will be important to establish if these same problems are present within the Mezimbite project and if so, to understand how they are dealt with within the project and how they influence the economic sustainability of the project.

2.4.1 Value chain analysis of charcoal

Ribot's value chain analysis (1998) of the charcoal industry in Senegal provides some insight into economic sustainability of forest products. First of all it shows us how important rents can be in certain industries and how they lead to a certain distribution along the value chain. Secondly it shows the ability of the value chain methodology in revealing those rents. Thirdly harvesting of trees for charcoal is one of the largest contributors to deforestation in Mozambique, and this study shows how the division of rents such as property rights lead to deforestation and impoverishment of livelihoods of forest communities. Within the context of the Mezimbite project it is furthermore relevant as charcoal production is competing with the use of wood for furniture, bracelets and other products. Ribot's study reveals how merchants, through their personal contacts with government officials, can obtain permits for woodcutting. These permits are not based on ecological capacity but limit competition and thus create rents for merchants. Merchants furthermore have capital to pay woodcutters and transporters in advance, as well as pay a sum to village chiefs for access to village services such as food and shelter. They also have relational rents in the form of their relationships with Dakar wholesalers. These combined rents give them the biggest margins in the chain. The Guinean migrant laborers on the other hand are hired because of their lack of relationships with forest communities (a clear rent) but work for minimum wage as their poverty and lack of alternatives gives them a poor bargaining position. The communities have no natural resource rents as the forest belongs to the government; their only rent is the dependence of woodcutters on shelter and food. Consequently the revenues received by the chiefs, even if distributed to community members, are too small to compensate for the loss of forest resources.

2.4.2 The wood carving industry in South Africa

From Lawes et al. (2004) it becomes clear that the wood carving industry is present throughout in South Africa and is largely oriented on production of carvings for the local market; manufacturing for the tourist market is more recent and less widespread. Shackleton and Steenkamp (1994) give a detailed analysis of the wood carving industry in the Mpumalanga lowveld area, based on a large body of research both from themselves and others, using many elements of value chain analysis. Nkuna (2004) researched carver traders in nearby Hazyview using a value chain analysis framework and Jacobsen and McKean (2004) studied the carver traders near St. Lucia. These studies are relevant because they give a clear indication of the problems the industry is facing. The bracelets and household goods, such as bowls, of the Mezimbite project are manufactured by independent woodcarvers who share many characteristics with their South African counterparts. Many of the issues in the industry that influence the economic sustainability can be observed within the Mozambican crafts industry as well, and therefore I find it appropriate to reflect on the South African

findings in detail. Much of the economic sustainability of the Mezimbite project will depend on the presence of these issues within the local industry and how they are dealt with within the project.

Steenkamp (1999) identified two important categories of carvers in the Mpumalanga lowveld, roadside carver vendors and home carvers. Home carvers work from home where they have sheltered workshops and their family helps with production. They use hardwoods and decent tools, including power tools. Their main produce is utilitarian goods such as bowls, spoons, walking sticks, and mortar and pestles, many of which are produced for the local market; bracelets and candlesticks are less frequently produced. Some home carvers also produce furniture, and those who do have considerably higher incomes (Shackleton and Steenkamp 2004). Products are either sold directly to traders and retailers, or to 'runners' (middlemen) (Shackelton 1993 in Shackleton and Steenkamp 2004; Steenkamp 1999). Carver vendors work from roadside shelters on main tourist routes and make animal figurines such as birds, giraffes and leopards which they sell directly to tourists (Steenkamp 1999). The carvers are all male and mostly between 20-30 years of age (Steenkamp 1999b in Shackleton and Steenkamp 2004), and they use very simple home made tools and softer woods while carving (Steenkamp et.al 1996 and Moloi 1999a in Shackleton and Steenkamp 2004). This group is more transient as they see carving as a temporary source of income in times of unemployment (Steenkamp 1999 in Shackleton and Steenkamp 2004).

Both groups source their trees from the surrounding woodlands. The levels of harvesting are unsustainable and desirable species for carving and carpentry, most notably kiaat, are increasingly becoming scarce. Carvers have showed little interest in the long term benefits of planting trees and projects to encourage growth and planting of trees by local carvers have failed. More successful were attempts to use carvers for removal of alien species such as jacaranda, as they found the wood is soft and easy to work with. Typical responses to wood scarcity include: a shift to species that were previously regarded as less desirable; a shift to younger trees; opening of new harvesting sites further away; revisiting old sites to use discarded 'waste' wood; increasing efficiency by using electric tools; and production of smaller items out of wood that was previously discarded (Shackleton and Shackleton in Shackleton and Steenkamp 2004). A growing cross border trade in wood from Mozambique has been observed (Steenkamp 1999 in Shackleton and Steenkamp 2004).

Apart from the increasing problem of sourcing wood Shackleton and Steenkamp (2004 p421) identify a range of other factors that hamper income generation:

> 'Buyers and external organisations have identified poor quality, inability to deliver on schedule, low level of supply, a limited production range and a lack of individuality, innovation and creativity'

The carvers specialise in certain objects and items are standardised and homogenous across producers. Product innovation is limited by isolation and lack of exposure to new ideas, but also carvers are resistant to experimentation, preferring to stick to proven, low risk products (Steenkamp 1999b in Shackleton and Steenkamp 2004). Costs associated with new product development are often prohibitive to producers who live on a day by day basis. Yeatman (2004 p404-405) citing a similar study of woodcarvers in South Africa argues that 'a possible solution would be to have buyers

assess the market and work with the carvers to produce craft that meets the changing demands and taste of the consumer.'

Another problem identified by Shackleton and Steenkamp (2004) is lack of access to markets. Roadside carvers sell directly to tourists, while home carvers sell to middlemen or traders in local markets. Formal sector craft and curio shops were main buyers but they have switched to imports which they perceive to be of higher quality and more sellable. Only 15% of their products are now local, and sales from home carvers has switched to informal markets at scenic points in the area. Outside actors such as development agencies, NGO's and the SANPARKS have facilitated in creating more organised informal markets. Within these markets traders, mostly women, sell local crafts together with imports from Swaziland and Zimbabwe. Prices paid by informal sellers are only around 25% to 50% of what crafters actually want; the informal seller's margins range between 100% and 200%, and sometimes go up to 250%. Formal retailers generally have higher margins, up to 400% sometimes. Bistow-Bovey (1998 in Shackleton and Steenkamp 2004) claims that tourists (especially South Africans) expect to pay very little for locally produced crafts, and that until they are prepared to pay more producers and vendors are trapped in a situation in which they are forced to sell at unrealistically low prices; prices are so low traders cannot afford transport home or food for their family. One could say that the demand for their products is simply too low, and that unless they improve design, originality and quality, consumers will not be willing to pay more for their products. Furthermore Shackleton and Steenkamp (2004) note that the only barrier to entry into the industry is technical skills, which are generally learned on the job as people work as apprentices for skilled craftsmen for several months before working on their own. This implies that as soon as earnings improve new people will enter the market, as there are few employment alternatives and entry barriers are low, thereby creating more competition, which, unless the new carvers tap into a new niche market, is likely to result in either a downward price spiral or a decrease in sales per carver. SANPARKS together with donors and corporates invested in a joint marketing initiative for the traders. This initiative runs highly organised outlets at two Kruger National Park gates, the products of which fetch higher prices for traders. The outcomes are uncertain as there are many conflicts amongst traders and nearby roadside vendors undercut prices. Other collective organisations of carvers, set up with outside intervention, have been less successful as they were prone to serious infighting and conflicts over revenues and resources. Furthermore organised business skills and product development workshops have had little effect. (Shackleton & Steenkamp, 2004).

Production and income of carvers is very irregular as it is influenced strongly by the tourist season, access to wood, size and species of wood, cash flow and success with selling stock. Most carvers are likely to experience months without income. Few crafters were able to provide accurate estimates of production, sales and income and no records were kept by any of the producers. Using 2000 price levels Shackleton and Steenkamp (2004) estimate the incomes of R3,603, R15,648 and R10,486 for home carvers, home carvers making furniture and roadside carvers respectively. The difference in cost levels between home carvers and roadside carvers is large; home carvers spend a lot of money on wood, as they obtain hardwood as opposed to cheaper or free soft wood of exotic tree species, they use power tools instead of simple hand tools, and they pay part of their margin to traders and retailers as opposed to selling directly to the public.

According to Shackleton and Steenkamp (2004) low incomes are also a result of the fact that the price of carvings is not linked to different tree species and their quality and availability, but on size of the crafts, and that cracking and borer result in 14% waste of finished goods. Interestingly carvers themselves perceive as important limitations to grow the lack of credit facilities (and thus the inability to purchase or hire tools, wood, and transport), wood scarcity, poor business and organisational skills and a limited market for their products. .

From the research of Shackleton and Steenkamp (2004) it becomes clear that the industry in its present form is economically and environmentally unsustainable. Woodcrafters compete directly with formal sector factory goods and a large influx of high quality African imports. The local direct sales niche market is small and already full, and they are unable to compete in the export or wholesale markets because of poor quality, unoriginal design and inability to produce on schedule. Entering these markets requires increased specialisation and cooperation amongst producers within a factory or workshop situation. However, attempts to organise crafters in groups have failed and as individuals they are not able to reach the necessary economies of scales. Private sector partnerships similar to agricultural outgrower schemes[11] have also been suggested, since these would provide capital to set up bulk production and guarantee sales in new markets for at least some products (Shackleton and Steenkamp 2004).

Nkuna (2004) in his analysis of the trader vendors in Hazyview exposed similar problems of sustainability. Nkuna found informal, self-employed workers producing crafts on the roadside which they sold to tourists on the roadside as well as to retailers and general dealers (domestic and international). The latter have the means to brand, market and sell crafts not only in Hazyview but in markets where they are demanded at appropriate prices at the right time. The lack of business skills and general lack of understanding of how the market and (export) trade works resulted in low incomes for traders. The few traders who diversified their products (in fact a form of design) and understood markets achieved significantly higher incomes. The increasing scarcity of wood is a big threat to the sustainability of the industry. Initially traders sourced wood from surrounding forests but as wood becomes scarcer they have to travel long distances to source it, and many have switched to less desirable trees such as the jacaranda. In contrast with Shackleton and Steenkamp's (2004) findings, Nkuna's vendors find that wood scarcity and quality does influence price: crafts made out of ebony, red mahogany, ivory or blackwood fetch considerably better prices, suggesting improved rents for those with access to these types of wood. Nkuna found that lack of capital, business knowledge and design skills of carver vendors limits functional upgrading (opening a shop), process upgrading (faster production) and product upgrading (diversification) and as a result the industry is uncompetitive and unsustainable. Furthermore it was found that their roadside location makes them vulnerable to bad weather conditions and theft.

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[11] Agricultural outgrower schemes involve a large private company that provides inputs such as seeds, fertiliser and pesticides as well as training to farmers, and agrees to buy the crops after the season for a price that is agreed in advance. Outgrower schemes are common in Southern African countries such as Zambia and Mozambique for cash crops such as tobacco and cotton.

Jacobsen and McKean (2004) investigated the carver vendors near St. Lucia in KwaZulu-Natal. These carvers have shifted from traditional Zulu items such as headrests and spoons sold to local people to making figures of local animals which they sell to tourists. They occupy 12 stalls on the road between St Lucia and Matubatuba. Each stall is operated by three carver vendors and sells only four carvings a week, leading to a meagre income of R 50 per week per carver which is well below the minimum wage in South Africa. The traders source the wood from the nearby Dukuduku forest, but access and harvesting is not regulated. At present it is not known whether this is ecologically sustainable and whether this will lead to supply problems in the nearby future. The study mentions little about product quality and diversification, but all carvers seem to specialise in animal figurines made out of the same wood, hence it is likely that products across stalls are very homogenous.

2.4.3 The wood furniture industry

Relevant literature on the furniture industry is sparse, but the value chain analysis of the South African furniture industry by Kaplinksy et al. (2003) is very relevant for this study. According to Kaplinsky et al. (2003) the furniture industry is the biggest low tech industry in the world with trade growing fast but unit prices decreasing even faster. The global value chain is dominated by large transnational retailers with both retail outlets and suppliers in many countries, who sell low cost furniture. For example, IKEA has more than 300 outlets in three continents and it buys from 2,000 suppliers in 52 countries. In addition there are small-scale retailers who purchase directly from a small number of suppliers in a limited number of countries. A third group that can be distinguished is the specialized medium-sized wholesalers who source from many countries and sell to retail outlets, predominantly in a single country or region. Some of these have more than 1,500 suppliers and even the smaller specialized buyers will typically source from more than 100 suppliers.

Design is a critical success factor in the market. Small retailers tend to have no own design capabilities, and often sell into price sensitive standard markets such as garden furniture. They are in essence "*design-takers*". The wholesalers are more "*design intermediaries*" who provide advice to producers or put them in contact with designers in end-market countries. As Kaplinsky et al. (2003 p 20) state:

> '[Wholesalers'] competitive advantage arises from the disjuncture between producer and retailer - as one of these buyers put it, "even if you get the design 95% right, that small 5% will lose you customers and retailers do not want to take the chance".'

Global retail chains are "*design makers*", who invest significant resources in design as direct control over the design process is critical for them.

Environmental concerns about the sources of wood and the type of finishes used (water based) are rising rapidly in the developed market, and environmental certification such as the FSC standards is thus gaining importance. This has serious implications for developing countries: 'for most developing countries, this threatens exports because their timber industries have traditionally drawn on indigenous hardwood forests' (Kaplinsky et al. 2003 p23). The South African furniture industry grew rapidly in the 1990s but simultaneously experienced a large drop in prices. The quality, delivery

reliability and design capabilities of South African manufacturers was lower than that of competitors, and the industry competed on price. However, the prices had dropped to a point at which export was becoming unprofitable. To improve the sustainability the industry had to upgrade to a new value chain of hardwood products, upgrade product quality, improve local design capabilities and upgrade processes within firms and between firms. However, South Africa has no sources of indigenous hardwoods and although it is easy to obtain FSC approval for softwoods because they come from plantations, this excludes the industry from quality product markets. Saligna, an Australian eucalyptus species, was readily available because it was widely planted for the mining industry that no longer required it. Saligna is a hardwood that can be stained to look like precious hardwood species such as mahogany and teak, but it was much cheaper than these species. The availability of saligna at favourable prices offered an option for the industry to move into high quality furniture with higher margins. However, the furniture sector must compete with the paper and pulp sector for saligna. Presently the latter sector is able to pay prices for saligna that the furniture sector cannot match because it produces low quality furniture. To secure access to this source of hardwood the furniture industry has to improve quality and design. Furthermore there are few saw mills, and these are geared to cutting softwood in a sellers market, producing at unpredictable intervals with varying quality and inconvenient specifications. The Saligna Cluster, a cooperation between all actors in the value chain, was formed to address these issues. The cluster has had mixed success. It focused on supply of wood for the factories and inter-firm inefficiencies, and it managed to improve these dimensions substantially. On the other hand the cluster was not able to initiate an upgrade of marketing and design, nor improve within firm inefficiencies (Bessant et al. 2003; Kaplinsky et al. 2003).

The International Trade Centre (ITC) study on the wooden furniture market in the EU (2005) is also relevant here. According to the ITC the EU is the biggest exporter of wooden furniture as well as biggest importer with 47% of the market. Consumer preferences for wooden furniture are based on durability, and there is a shift from veneers and laminates to solids, although the former are still important in the budget segment. There is also a shift to lighter coloured woods like beech, birch, and maple. An interesting observation is that 70% of imports are said to be of Hevea wood, also called rubber wood, which has a light even appearance and thus can be easy coloured to look like mahogany, oak, cherry or walnut. It has the advantage that it is cheap and can compete in price with flat-pack furniture out of reconstructed wood panels.

The ITC (2005) also comes to the conclusion that design, as in functionality and appearance, as well as quality, are very important. There are no laws concerning product quality but quality standards of importers, producers and customers are very high. Furthermore there are laws considering packaging; the exporter is responsible for packaging which should be of recyclable materials only.

According to the ITC (2005) some importers stopped importing from developing countries due to problems with quality, suggesting that the latter is a major factor for competitiveness. An area where legislation does play a role and thus sets industry standards is safety (mostly relating to fireproofing) and health. The ITC also notes that the large media exposure about environmental issues has led to an increasing environmental awareness amongst consumers and that environmental

sustainability is becoming increasingly important in the European market. In this respect they refer to the growing importance of environmental certification, in particular FSC, the best known certifying scheme.

Finally, it is important to note that there are no tariff barriers for African furniture manufacturers in the EU as there are currently no specific import duties on furniture (ITC 2005).

The above studies are relevant for establishing both criteria for sustainable development and economic rents for value chain analysis.

Chapter 3: Methodology

3.1 Research strategy

Value chain analysis (see section 1.4) provides the framework for the methodology in this study. The Mezimbite sustainable forestry project (see section 1.3) is the case study on which value chain analysis was conducted. The furniture and bracelet value chains were selected for value chain analysis (section 1.3) as specified by Kaplinsky and Morris (2001). Multiple sources were used to collect data, including semi-structured interviews (face to face and telephonic), on site observation and analysis of project documents. Examples of interview questions are presented in Appendices 1 and 2.

3.1.1 Mapping the value chain: selecting respondents

The first step was to map the different type of actors in the value chain and their functions. Observations on site and information from the project leader were used to identify the different functions in the value chain and people within the project that could be interviewed. The initial idea was to interview at least two workers for every stage along the value chain of both products. Only one woodcutter was present and could be interviewed because the project was visited in the wet season when the woodcutters are not active – by Mozambican law woodcutting is not allowed at that time of year due to the damage it will do to the forest. Also, the core position of wood transport and production coordination was not filled because the previous employee died and a suitable replacement had not yet been found. Only one nursery was visited and one nurseryman was interviewed because the project nurseries are spread over large distances. The following respondents were interviewed in depth:

Table 3.1: List of Mezimbite respondents interviewed

Code	Position	Linked to product
Project leader – Schwarz	Owner of Sofala investments, manager of the project, designer of bracelets and furniture	All products in the project including bracelets and furniture
Woodcutter A	1 woodcutter who is acting nurseryman outside cutting season	Furniture and bracelets and all other timber products
Nurseryman A	1 nursery man	Furniture and bracelets
Main carpenter	1 carpenter	Furniture
Apprentice carpenter	1 apprentice carpenter	Furniture, household appliances
Turner DA, DB and DC	3 wood turners from Dondo cooperative	Bracelets, household appliances
Turner KA and KB, Kanimambo coordinator	2 wood turners from Kanimambo cooperative as well as their administrative head	Bracelets, household appliances
Quality controller	1 quality controller	Bracelets, household appliances

To establish a picture of the value chain of bracelets in the local market I decided to interview traders outside the Mezimbite project. Thus, in addition to the above respondents, short interviews were conducted with the owner of the Inchope wood turning cooperative, which produces bracelets and other wooden crafts for the local market, and ten informal street traders of wooden crafts in Inchope, Beira, Tofu and Maputo.

The project is spread over many locations, and street traders have been interviewed in even more locations. Figure 3.1 represents a map of Mozambique and the locations of communities, cooperatives, street traders and the Mezimbite Forest Centre have been added to the existing map. The Sofala province, where the project sites are is located in the centre of Mozambique and is quite far from major centres of economic activity such as Maputo and South Africa. The insert contains an enlargement of the Beira region.

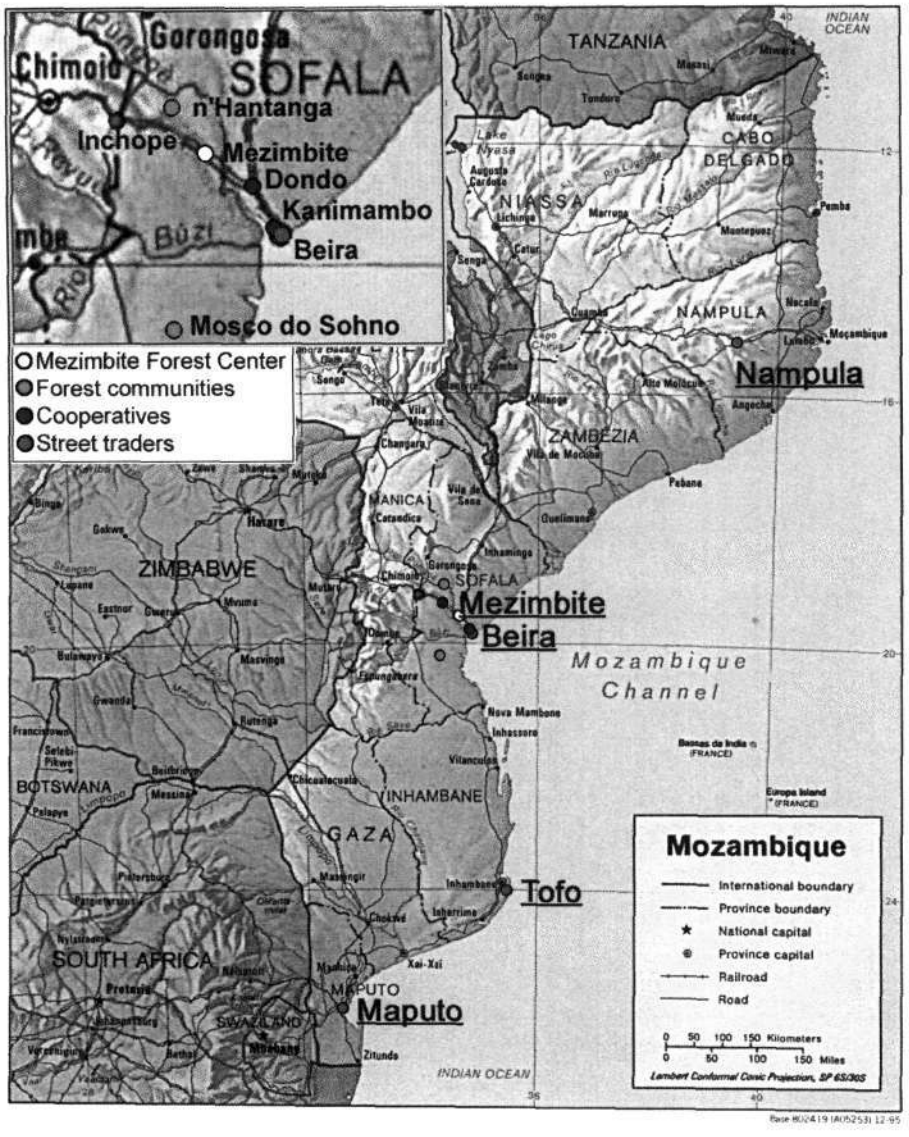

Figure 3.1: Research locations and locations of the Mezimbite project

To capture information from stakeholders further up the value chain (moving toward the customer) the project leader was asked to compile a list of individuals and organisations that buy furniture and

bracelets on a regular basis, and these people were contacted. Since there are no retailers that sell the project furniture, alternatives were found in two stores that sell hardwood furniture to the same high-end of the market as the project. Several people in the Beira region identified a specific furniture manufacturer in Beira as producing high-end furniture for the local market, and also operating with the goal of being environmentally sustainable. They use hardwood from a forest concession owned and operated by the company, which they claim to operate on a sustainable basis and in cooperation with the local communities. The managing director of this company was thus interviewed to get another perspective on the production of furniture in Mozambique. The company is an interesting case as they own the full value chain from tree planting and cutting to retailing; all of their produce is sold through their two stores in Maputo and Beira in Mozambique. In addition they have chosen to become FSC certified in contrast to the Mezimbite project. The second furniture manufacturer is located in South Africa and was a personal acquaintance. This manufacturer was added because he does not use hardwood from a sustainably managed operation (mahogany from Ghana) and sells most furniture to upmarket retail stores in South Africa. The manufacturer also use saligna, which has been identified as a possible alternative for tropical hardwood from indigenous forests, and they have moved from a small-scale operation that produces custom orders for interior decorators just like the Mezimbite project to a large scale operation that now sells mostly through retailers. The three manufacturers thus range from having an independently developed environmental sustainable approach to a more mainstream FSC certification and finally a non-sustainable approach. The furniture retailers in South Africa and the US, and the interior decorators were identified by other respondents as important sources of information.

As for the bracelet value chain, all respondents (the two agents and the gallery owner) were identified by the project leader. Unfortunately gaining access to other retailers proved to be difficult, hence only one retailer has been interviewed. Table 3.2 gives a complete overview of the people interviewed in this stage:

Table 3.2: List of agents, customers and manufacturers interviewed for value chain analysis					
Code	**Description of Organisation**	**Location**	**Linked to Mezimbite products**	**Interview method**	**Details**
Manufacturer-retailer Mozambique	Manufacturer and retailer of hardwood furniture, sources own wood	Mozambique	No	Personal visit	Owns the whole value chain, sustainable source of wood, sells only in Mozambique market
SA manufacturer	Manufacturer of hardwood furniture	South Africa	No	Personal visit	Environmentally non-sustainable source of hard wood, use of saligna for non-visible parts
SA furniture retailer	Retailer of hard wood furniture	South Africa	No	Personal visit	Sells furniture for the SA manufacturer, was responsible for procurement of a large chain store that is the biggest customer of that manufacturer
SA agent	Marketing consultant,	South Africa	Yes	Telephone	Agent for furniture, bracelets and other wood products; assists with the marketing in South Africa
US Agent	Model and marketing consultant for ecological products in fashion industry	New York, USA	Yes	Telephone	Agent for bracelets and furniture, assist in marketing in the USA
US furniture retailer	Retailer of contemporary sustainable produced furniture	New York, USA	Does not sell yet but is familiar with the project and its furniture	Telephone	Sells only contemporary style furniture that is sustainably produced. Sources mainly from manufacturers and traders in North America
SA Interior decorator	Interior decorator	South Africa	No	Personal visit	Sells furniture from the SA manufacturer and others to clients in South Africa
SA gallery owner	Gallery that sells fine craft, tribal and folk art	South Africa	yes	Telephone and email	Fine craft, tribal and folk art gallery that sells bracelets, chairs and other wood products such as bowls

All respondents were the owners and managers of the organisation or, in case of the agents, operated independently.

3.1.2 Mapping the value chain: establishing flow of goods

After the different actors in the value chain were identified, the next step was to identify the flow of goods and services along the chain, employment levels and gross and net output levels. For the activities within the project these were available from the project records for the first months of 2006. Unfortunately much information had been lost through a recent theft of a computer and disks. Further along the chain (telephone) interviews were used to estimate these levels. The division of margins along the value chain as well as the total value captured by the people involved in the project was known in detail by the project leader. This information was verified through interviews with employees and from the project records. On the other end of the value chain agents and retailers of bracelets and furniture as well as other furniture manufacturers were asked what their mark-up is on the goods they trade and to explain what percentage of this mark-up is used to cover labour costs, procurement of raw material or finished products, other costs such as rent and finally how big their profit margin is.

Margins of street traders were estimated through interviews with these traders in which they were asked for the sales price, the source and buying price of their products, as well as other costs such as those of transport of their products from the place where they are sourced to the trading location. Furthermore the cooperatives were asked to whom they tend to sell products and for what prices. Working conditions of employees and wood turners were established through several visits to production centres and other project sites, and through interviews with workers. Worker interviews were also used to estimate their incomes and to reveal income improvements as a result of the project and employee rents such as education, skills or social contacts that gives them access to certain jobs and incomes.

To reveal power structures and governance systems the project leader as well as organisations such as agents and retailers up the chain were asked questions about which organisation inside the chain and outside the chain designs, monitors and executes rules such as design specifications, quality standards, delivery times and environmental standards. In general the interviews with people in the upstream part of the value chain were split into three sections: sales, procurement and competition. Regarding sales they were asked what type of customers they sell to, what market trends are present and if there are different segments and what their demands are. It was then asked how these demands influence procurement, and which other criteria are used for supplier selection. Finally they were asked to identify their competitors, and what rents are crucial for them to compete with them. In all the interviews with agents, manufacturers, retailers and the interior decorator the respondents were specifically asked about the role of environmental and fair trade standards, environmental and fair trade consciousness of their clients and end-consumers and what role, if any, these issues play in their business. More specifically it was asked whether clients take these issues into consideration when buying furniture or bracelets and whether they are prepared to pay more for a product that in environmentally sustainable and/ or fair trade. Finally respondents were asked to identify possibilities for upgrading in the value chain, new trends within the market, and new possible competitors or product substitutes that will impact on the current composition of the value chain.

3.1.3 Assessing economic sustainability of the project, possible improvements and upgrading in the value chain

The information from the interviews was transcribed and analysed in conjunction with the existing literature presented in Chapter 2. The findings and analysis are presented in Chapters 4 and 5. Chapter 6 discusses the economic sustainability of the project based on these findings, and looks at which key rents the Mezimbite project possesses and how they impact on the economic sustainability. The results from the interviews and the literature from Chapter 2 were also used to formulate possible improvements for the project (research objective three), and more specifically possibilities for upgrading in the value chain. A key underlying question is whether the rents that are captured in the project can be used more effectively and if other rents need to be acquired.

3.2 *Strengths and limitations of the research*

3.2.1 Strengths of the research design

Much of this research focuses on the rents obtained in the project that enables it to be economically sustainable and thus to offer economic incentives to the forest communities to manage their forests sustainably, and value chain analysis is very well suited to uncover these rents. This aspect has rarely been researched before and as such the outcomes of this research should be a valuable addition to existing knowledge about sustainable forestry in developing countries. Furthermore the problems of the Mezimbite area appear to be representative for most of the Miombo woodland region, although one must add that this can only be confirmed when more case studies have been done.

3.2.2 Limitations of the research design

There are three limitations that arise from the design of the study. The first and second limitation are caused by the fact that limited time and financial resources make it necessary to limit the scale of the study to one sustainable forestry project, and two products out of the wide range that are produced within that project. The first limitation of this study is that although this study will give an insight in why this particular project might have been successful, and will allow for a discussion about how these findings apply to other cases, other projects need to be studied to reach stronger conclusions about what makes forestry projects economically sustainable. The second limitation of this study is that because the value chain of bracelets and furniture has been chosen only the livelihoods of a limited amount of people will be researched, and only to an extent to what benefits they derive as a result of these products. As a result there will not be a complete picture about the livelihoods of the complete community, and conflicts arising from it.

The third limitation is that it is difficult to establish within this study whether the project is environmentally sustainable. The effects of sustainable management practices on the forest composition can only really be seen after several decades or perhaps centuries, but the project has run for less than a decade, and thus it is impossible to conclude that it is environmentally sustainable.

3.2.3 Practical problems during the research and possible consequences

An important practical limitation that occurred during the fieldwork is the limited economic knowledge and skills of people interviewed. Respondents who were self employed, such as street traders and wood turners from the cooperatives, had very limited knowledge about their average earnings in a month and their cost levels. They tended to know how much things such as a trunk of wood cost and how much they earn when selling an individual item, but they could not seem to translate this to aggregate figures on a monthly or weekly basis. They also seem to struggle to calculate their real income or profit, as in the revenues minus the cost. Furthermore, the self-employed people produced and or traded a wide variety of goods, but they were generally not able to tell which products they sell most or what percentage of their income is derived from specific products such as bracelets. Consequently it has proved difficult to construct monthly incomes for these respondents, or even to

find out what their earnings were before they started working in the project. This problem mostly applies to the activities of street traders and the cooperatives that manufacture the bracelets and other small wood items such as bowls and candlestick holders. This problem is not unique to this study. Shackleton and Steenkamp (2004) mention similar problems in their various studies of the wood carving industry in South Africa. Within the furniture value chain it proved to be difficult to establish the margins upstream in an absolute sense of the project because furniture is a very heterogeneous product category. Prices depend on the size of the item, the wood used, the design, and the market. Furthermore there were no retailers or interior decorators interviewed that buy and sell the furniture of the project. Respondents were however willing to reveal their margins as percentage of the buying price of furniture, which does enable us to get some idea of the distribution along the value chain. Another problem regarding the furniture value chain has been the difficulty in estimating and comparing the transport cost of finished furniture products.

Finally a note must be made about the interviews that were conducted with project employees, laborers in the coops and the street traders. The interviews were conducted in Portuguese with the help of an interpreter whose knowledge of the English language was limited, and therefore some nuances or information might have been lost in the translation.

Chapter 4: Findings and analysis: local activities

4.1 Introduction to Chapters 4 and 5

The findings of this study are presented in Chapters 4 and 5. This chapter will start with an overview of the legal, organisational, economic and financial structure of the project. This is followed by a brief discussion of the furniture and bracelet value chains in order to provide a context to the more detailed discussions at the different levels of the value chain. This is followed by a discussion of the bracelet and furniture value chains from the forest to physical production. Characteristics of the marketing and the markets for bracelets and furniture are discussed in Chapter 5.

4.2 A closer look at the structure of the Mezimbite Project

4.2.1 Organisational, legal and economic structures

As mentioned in Chapter 1 the project is structured as a private company, Sofala Investments Limitada, owned by Schwarz. The company owns the right to use a plot of land in Mezimbite. The company also owns the buildings of the workshop and equipment such as the electrical power tools, the generator and the mobile saw mills. The people that work in Mezimbite, such as the nurseryman, carpenters and quality controllers are employees of the company and receive a salary. They do not pay for the cost of the project, nor receive part of the profit in the event that profit would be made. They have no formal influence in the operation of the company; all decisions are effectively taken by Schwarz. Schwarz also designs all of the products that are sold, trains personnel, runs the finances of the project and is responsible for marketing and sales. His diverse activities in combination with the large geographical spread of the many different locations in the project, and consultancy work mean that Schwarz spends little time at individual project sites. He also travels much between sites and within Southern Africa and this means he is often hard to contact.

The personal finances of Schwarz are merged with those of the project. He does not draw a fixed salary from the company, but instead he takes money out of the project to finance his daily expenses. Furthermore money earned from activities that are not directly related to the project, such as consulting, is often used to pay for operational expenses. Most investments have been financed through use of his personal savings. For instance at the start of the project equipment was bought for around $200,000 and financed through his savings. In addition to the personal financial resources of Schwarz there is occasional support from NGO's. In the start-up phase a grant was received from the Ashoka fund, and several grants have been received from the ITC; for 2006 an amount of $30,000 has been promised for the bracelet project. In addition the ITC has assisted by providing expertise that was used for activities in the project, such as the training of the wood turners, and In 2005 a grant of $60,000 was received to finance the start of a natural oils project. Although the amalgamation of personal and project finances can be a reason for concern about the fairness of distribution of profits or the spending of the grants, it appears that the amount of money that Schwarz takes out of the

project is far below a market related salary for his activities, and certainly less than what he would be able to earn as a designer in the United States.

The cooperatives are separate entities from the project. The Dondo cooperative is an informal enterprise that is owned and governed by around 17 wood turners who share equally in the decision making and the costs. It is less clear how the profits are divided as some members perform tasks for others, but it appears that most members sell their own products and thus have their own piecework based income. The Dondo cooperative was the first to start making bracelets and other small household goods for the project. In contrast the Kanimambo cooperative is now an officially registered company, and much of the daily operations are managed by an administrator. According to the administrator the members receive 55% of the sales of the products they make, while 20% goes to the administrator and 25% is used for the cost of the cooperative such as the maintenance of the building. The members make products for the company of Schwarz and they receive a price per finished good. They are free to decide whether they want to work within the Mezimbite project.

The forests used in the project are owned by the n'Hantanga and Mosca do Sohno communities, which are both located in the Sofala province near Beira and Mezimbite. They govern an area of 20,000 hectares and 35,000 hectares respectively. They have not registered their land with the government to get official ownership. The law does give them the right to own the land based on customary right, but according to Schwarz they do not recognise the right of the government to give them land that they regard as their own land in the first place; they prefer the customary rights to the official rights. The land does not have a special status such as that of a forest reserve that would inhibit the harvesting of trees.

The cooperation of the communities in the project is on a voluntary basis, although it is unclear to what extent the cooperation in the project reflects the wish of individual community members. The people from the community that work for the project are appointed by Schwarz and the *regulo* (chief) of the community. They are paid through Sofala Investments and are practically employees of the company.

4.2.2 The project's economic and financial status

It is important to realise that although furniture and bracelets will be the main focus of this study the model used in the Mezimbite project is based on the generation of a large set of nature products. The underlying philosophy is that none of the individual products on its own will generate enough income to generate economic sustainability in the long run. The annual yields are limited to what is biologically sustainable, and these yields are relatively low because they come from a natural environment with a high biodiversity. So instead of having a high yield of one natural resource, as for instance a mono-culture pine plantation would deliver a high yield of wood, there is a small yield for a larger variety of products. These small yields need to be transformed into a variety of products such that the revenues of all these products together can lead to economic sustainability. As an example, the revenues from apiculture are not a big enough incentive for a farmer to transform the forest into a field, but combined with the revenues from a small timber extraction is becomes a lot more interesting. An overview of the different products that are developed or will be developed in the near future is provided in Table 4.1.

Table 4.1: Products from the Mezimbite project			
Category	**Product group**	**Products**	**Status**
Timber products	Furniture	Tables, benches, chairs, cabinets, dressers, beds, garden furniture	Sold to individual customers and interior decorators in the US, Mozambique and South Africa
	Household goods	Bowls, egg holders, candle holders, dessert bowls, large plates	Made by cooperatives, sold by retailers in South Africa
	Building components	Window and door frames, beams	Sold to individual customers in Mozambique
	Jewellery	Bracelets	Made by cooperatives and sold by retailers in Mozambique, South Africa and Europe
Non-timber products	Natural oils	Food oils, oil for cosmetics and fuel	Experimental phase; some oils are produced and tested. Sunflower oil is produced and sold on a small scale, and there are plans for the cultivation of Jatropha trees for the production of bio diesel
	Fibre	Ropes, thatching of roofs, kapok pillows	Fibres are used for building on Mezimbite project sites, and some kapok pillows have been produced
	Apiculture	Honey and wax	Both are produced and used in the communities and the project but the critical mass is not yet reached to sell to third parties
	Seeds	Decorative seeds	Sales to other nurseries is not commercially viable; the equipment needed to achieve a quality that is high enough is expensive while prices are low. Seeds however can be used for decoration, but they are not yet sold.
	Fruits and nuts		Not yet collected and sold, although cultivation of fruit trees in the community is part of the project
Abstract products	Eco tourism		There are no plans to start this yet
	Consultancy	Forestry, design, woodworks, oils etc.	Working in the project has provided Schwarz with knowledge that enables him to work on a consultancy basis. This is currently an important source of income
	Carbon Storage		The market in carbon credits is not yet developed

Although there is activity in many categories, significant income comes from four categories: furniture, household goods, building components and jewellery. Furniture has been the biggest earner, followed by building components. Both are custom orders and rather erratic. The household goods and jewellery (bracelets) generate less revenue but each accounts for around 10 to 15% of the project income. Interestingly consultancy is a big earner of income; the consulting early in 2006 was related to the growth and production of bio-diesel. Although consultancy is a personal income of Schwarz and intuitively has nothing to do with the communities it is the experience gained in the project that enables Schwarz to do the consultancy, the benefits of which are used to cover the cost of the project. The level of revenues needed to cover the operational costs and make some investments in new machinery for new products is around $180,000 per year. At this time between 50% and 75% of the cost are covered by revenues of the sales of products mentioned in Table 4.1, but the project is still dependent on the consultancy income and grants from NGOs. Figure 4.1 shows two examples of products made in the project.

Figure 4.1: Window and doorframes awaiting transport to the customer (left) and large plates awaiting sanding and polishing by the apprentice carpenter (right).

It is important to realise that in addition to the financial revenues from the product sales that are needed to sustain the project and the salaries paid to employees there are also non-financial benefits, mostly for the communities. The honey and wax derived from the apiculture can be used for own consumption or sold on markets in or outside the community. The same is true for the fruit harvested from the fruit trees provided by the project.

Another important realisation is that not all the physical products in Table 4.1 are derived solely from a natural forest; the oils and fruit trees are an example of agro-forestry, where agriculture in practised within the forest areas without necessarily removing tree cover. This concept is not unique to the project: in section 2.2.2 the different definitions of a natural forest and the notion that boundaries between agriculture and forest tend to be 'fuzzy' in most developing countries (Rietbergen 1993; Poor 1993) was noted. The land of the communities that participate in the project cannot simply be classified as one of the types of forest as mentioned in Table 2.1. In reality they are a combination of perhaps all the different types of forest in the table; there are degraded woodlands, woodlands that have regenerated after agricultural activities, woodlands that have been logged but are still under indigenous tree cover and agricultural plots where all tree cover has been removed. The Mezimbite project aims to keep existing woodlands under indigenous tree cover and regenerate degraded woodlands by replanting those indigenous tree species that would naturally occur at those spots.

Many degraded woodlands are in fact tracts of forest that were cleared for agricultural use but are now abandoned because the soil fertility is no longer sufficient to produce food. In these areas replanting of indigenous trees is often mixed with agricultural crops such as Jathropha trees (used for oil production) that bring some essential nutrients back into the depleted soil and stimulate tree growth. Furthermore, improving agricultural yields and incomes can reduce the need to clear forest land for agriculture.

4.3 *The furniture and bracelet value chains*

4.3.1 A brief overview of the value chains

Before discussing the two value chains in greater detail I will give a brief overview of the value chains (Figure 4.2). One can look at the collection of seeds and growing of trees either a starting point of the process, as it leads to the growth of trees that will be harvested later, or an end point, as the new trees are to replace the ones that have been harvested and transformed into end products. Both visions are right in a way, but I will regard it as a starting point of the cycle. The seeds are collected by schoolchildren and germinated in the nursery, after which the young trees are planted in the forest by the nurseryman and woodcutters. The woodcutters from the community then identify the trees that can be cut and fell them. After the tree has been felled the log is transformed into raw planks for furniture or blanks for turning; this involves pruning of side branches, debarking, splitting and sawing. The logistics manager than transports the planks and blanks by truck to the Mezimbite Forest Center where they are air-dried for six to eight months. After the planks are dried the carpenters employed by Sofala Investments will use them for furniture or building components (i.e. beams and doorframes) which are manufactured in the workshop in Mezimbite. Once ready the furniture is transported directly to the end customer, as they are all custom made. There is currently no wholesaler or retailer and much of the furniture is sold through interior decorators, who perform essential functions in the chain; they influence or even determine the model, quality and or style of the furniture and where it is bought. They also pay for the furniture, and they might add their own margin on the furniture when they sell it to their customers. Their customers include hotels, lodges and companies.

The household goods and the bracelets are made by the turners in the cooperatives, who are paid on a piecework basis. Once these products are finished the members can come to the workshop in Mezimbite where an employee of the project performs a quality check. The quality controller will then note the amount of pieces that meet the quality standard after which the turner will receive his money. The quality controller will discuss the reason for rejecting certain pieces and if and how they can be improved to meet the quality standard. Finally the pieces will be added to the stock in the store room, from where they are shipped to the retailers in Mozambique, South Africa, Europe and the United States. There are two agents who help with the marketing of the bracelets.

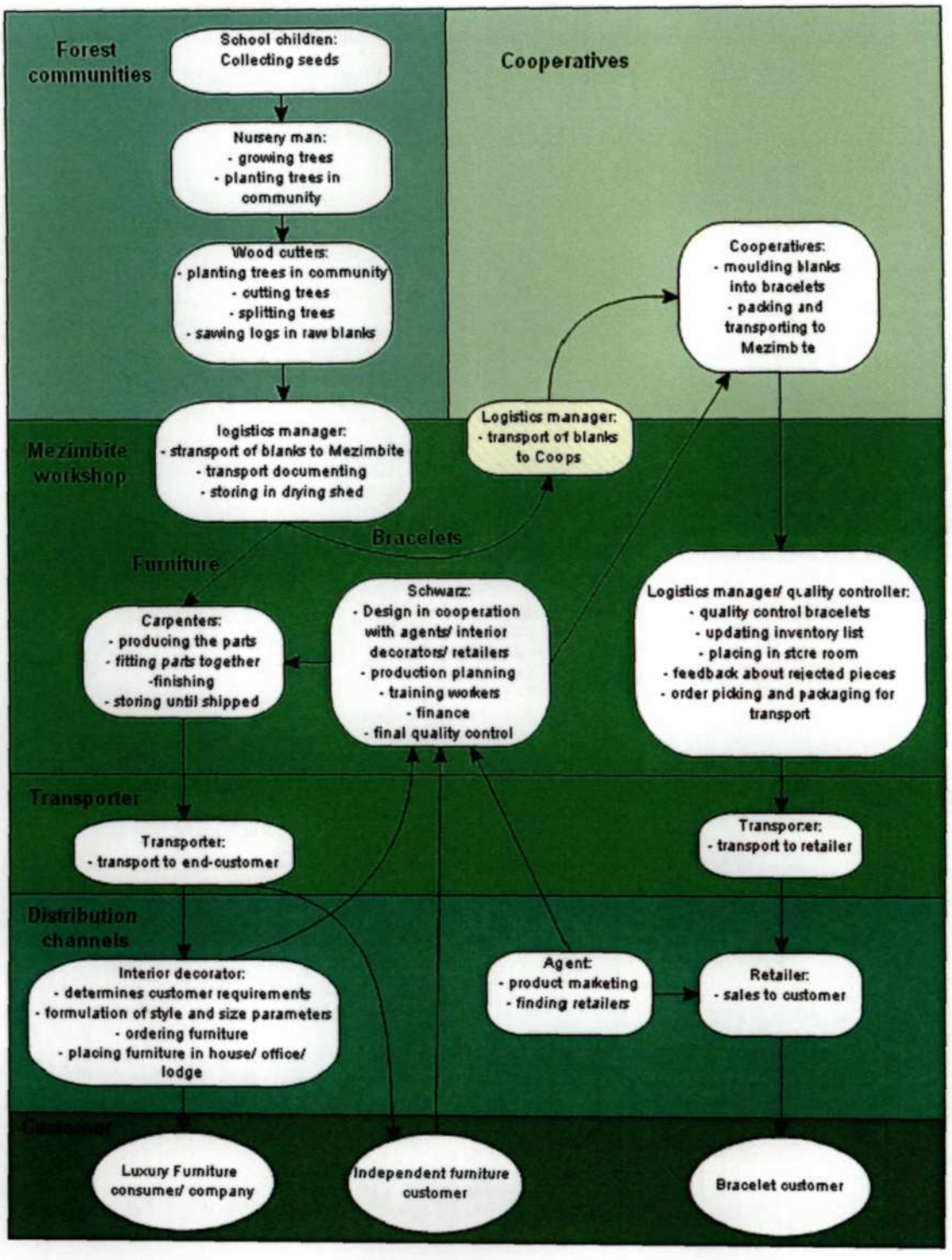

Figure 4.2: The bracelet and furniture value chains from the Mezimbite project

4.3.2 Nurserymen

The first link in the value chain is formed by the nurserymen. Both communities have three nurserymen who perform several essential tasks. They grow trees from the seeds that are collected by the schoolchildren. The trees that are grown are to replace the trees that are cut in the community, and are therefore the same indigenous species. The same species will be replanted as the one that is cut down, although they are sometimes replanted in a slightly higher density than they would naturally grow in order to improve the timber quality[12]. The trees that are grown in the nursery are also used to replant degraded areas. In those cases the community members and Schwarz try to estimate what the natural mix would have been in that specific area, based on characteristics such as soil and micro climate and a national inventory that was done in colonial times. The woodcutters together with the nurseryman will then plant that mix, and during the planting the nurseryman acts as a foreman who manages the process.

In addition to the tasks that are directly related to the production of the timber products the nurseryman also grow fruit trees and vegetables. These are distributed amongst community members together with training on how to grow them. The nurseryman have received training from the project manager that enables them to carry out these functions. The distribution of these fruit trees with the associated education has the potential to improve the livelihoods of the whole community.

The nurserymen are from the communities and appointed in cooperation with the *regulo*. The nursery man who was interviewed was from the n'Hantanga and is related to the *regulo*. There are no special skills or education needed to become a nurseryman; the respondent for instance had no formal education other than primary education, and had been a soldier followed by several years of unemployment before he started working at the nursery. He and others have been trained by Schwarz. Nurserymen work the whole year round and they earn a fixed monthly income; the respondent earns MZM 1,200,000 per month, although he started on 700,000 four years ago when he started working.

The nurseries (Figure 4.3) are located in the MFC and the two communities. The location in the communities reduces the cost of transport of the trees to the forest area in the community where they are planted, but this makes supervision of the workers difficult. Workers can be unreliable, as was illustrated when the nurseryman who was scheduled to take over the Mezimbite nursery arrived three days late. The plants need to be looked after every day as water evaporates fast in the heat of these areas. The strategy adopted by Schwarz is to employ three men to make sure that at any time at least one of them is present to look after the plants in the nursery. This is obviously more costly. It is questionable whether this approach leads to people taking responsibility, but in any case it is likely that at least two nurserymen are needed to allow for weekend days and travel to family. Distances in Mozambique are large and the roads are often in poor condition, making travel a time consuming experience.

[12] Planting trees closer together will generally result in taller and straighter trees.

Figure 4.3: The nursery of the Mezimbite Forest Centre

4.3.3 Woodcutters

Each community has at least three woodcutters who are responsible for the logging. The woodcutters have several tasks:

- Identifying the trees that can be cut, although they are under a strict regime where to cut and how much of each species to cut.
- Felling trees without damaging the surrounding vegetation or the wood from the tree itself
- Pruning (taking off the branches) and debarking
- Splitting the tree; the core of most trees is unsuitable for further processing
- Sawing the raw logs into planks or splitting them into blanks for turning; examples of turning blanks can be seen in Figure 4.4

Figure 4.4: Turning blanks drying in the Mezimbite Forest Center

Simple hand tools such as axes and handsaws are used for the felling of the trees. For sawing off the blanks a mobile sawmill is used of which there are two available, both owned by Schwarz, and the woodcutters are assisted by more experienced machine operators that have been working with the project since the beginning. In addition to these tasks the woodcutters also:

- Participate in the replanting of the trees and the collection of seeds for the nursery
- Water new trees once a week and do some pruning for three months after the replanting
- Practice coppice management; some trees grow back with about four to five shoots after they have been cut down. The woodcutters need to select the shoot that is most likely to produce good timber (tall and straight) and cut the other shoots away.

The underlying philosophy in assigning these tasks to the woodcutters is to grow a culture where people put something back in nature if they take something out.

The nurserymen and woodcutters (Figure 4.5) are from the community and are selected in cooperation between Schwarz and the *regulo*. There is no previous education needed, and the woodcutters tend to be subsistence farmers without much formal education. Training takes approximately 13 days. Although the work is not complicated there is a certain amount of talent needed to be able to do the job properly. As Schwarz states 'you can train them until a certain level, but to do it well the guy must actually have a certain talent. Everybody wants the job but only a few can do it'. Many things can go wrong if the tree is not cut down in the proper way: the tree can be cut off too high, thus losing valuable timber; it can split while cutting down; it can fall too hard causing either small impact fractures in the wood or the whole log to crack; and if the direction of the fall is not managed properly it can damage surrounding trees and other vegetation. Hence the wood cutters need to be able to plan the direction of the fall, cut the tree in a certain way it falls in that direction, and use ropes to guide the fall of the tree. Another important part of their job is to maximise the amount of planks or turning blanks that comes out of a log, and one can imagine that this will take some planning and puzzling before one actually starts sawing or splitting. A lot of wood can be lost by cutting the blanks too short to use them for certain parts of furniture.

In both communities there are three woodcutters making a total of six. These six are remnant from a much larger group of around 20 woodcutters trained by Schwarz; the rest were not skillful enough, but half of them still perform other seasonal work in the project, such as beekeeping. The training and hiring is basically a trial and error process in which people are trained, tested and replaced with others until the right people have been found.

Woodcutters do not work the whole year around because by law they are not allowed to cut trees during the rainy season from September to April, so the peak of their work is in the dry season. The replanting on the other hand takes place in the rainy season, though mostly in the beginning of the rainy season. They work eight months of the year for around four to five hours per day and they combine their labour with subsistence farming. To increase their overall productivity and to maximise the yield per tree they are paid per prepared blank; there is a table of payment depending on the size of the blank, but the average pay is $1 per blank that is used for a bracelet. According to Schwarz they can do about 60 of those blanks per week, which means that they will earn around $240 a month during the four months of the dry season. The prices for furniture blanks are higher because they are bigger, but they can produce less of them during a week and thus the earnings are similar. When one

recalculates the earnings over the year, the woodcutters earn around $18.50 per week (for a part time job).

Figure 4.5: Woodcutter (left) and nurseryman (right) in the Mezimbite Forest Centre

4.3.4 The logistics coordinator

After the woodcutters have processed the logs into planks and turning blanks these need to be transported from the communities to the Mezimbite Forest Centre to be dried. The planks are then used in the Mezimbite workshop where they are turned into furniture or custom woodworks (window frames, door frames and beams) whereas the turning blanks are transported to the cooperatives where they are turned into bracelets or other products such as bowls, egg holders and candlestick holders. This is normally the task of the logistics coordinator. The person in this function is an employee of the project and uses the pick-up truck owned by the project. The logistics coordinator is also responsible for the documentation and permits needed to cut the wood and transport the planks and blanks. The logistics coordinator also has to keep track of the inventories of inputs and finished products, perform quality checks, discipline workers and look after the vehicles. The incumbent is paid a base salary of $200 per month, with a variable component of another $200 linked to targets such as servicing the car at regular intervals, making sure the goods end up undamaged in storage, presenting accurate stock lists, and making sure the permits for felling trees and transporting logs are in order. The logistics coordinator needs to be reasonably educated to be able to perform this function: a high school education, computer literacy and a drivers license are required. Last year the logistics coordinator died of what the project leader believes to be an AIDS related illness. The

position is currently open because people with the required education level are hard to find in the region.

4.3.5 The wood turners

The work

Figure 4.6 illustrates how the wood turners work: a round piece of wood, the 'blank' is mounted on a turning axle that is powered by an electric engine using a rubber belt. The turner presses a variety of sharp chisels against the fast turning wood to 'mould' the blank into the shape of the final product. Once the final shape has been achieved it is sanded, and polished with beeswax and natural oils from the Mezimbite project.

Figure 4.6: A turner of the Dondo cooperative making crockery and bracelets. In the foreground one can see several designer bracelets made out of the almost black pau preto wood that have just been turned.

The cooperatives

Whereas the production of furniture and most other products happens 'in house' the production of the bracelets and household goods is outsourced to the cooperatives in Dondo and Kanimambo. The Dondo coop is located about 35 kilometres outside Beira on the main road towards Zimbabwe, Maputo and Malawi, whereas the Kanimambo coop is located in Manga, a suburb of Beira. The members of the Dondo coop were manufacturing wood products such as candlestick holders, mortar and pestles and bracelets for the tourist market and the local market. The stream of tourists from Zimbabwe that used to visit the beaches around Beira has dried up as a result of the political turmoil, and few other tourists come as far north as Beira. This left the cooperative without a large tourist

market in the region. The local population is generally too poor to afford their products. Schwarz estimated that prior to joining the project the wood turners were earning less than MZM 300,000.00 ($12 at the time of the study) a month on average. Working conditions were unsafe and the coop could not pay their energy bill or acquire new raw material. Furthermore the quality of the product was low, the designs out of date and working methods were inefficient and wasteful. Schwarz estimates that since the cooperative has joined the project the amount of products from own designs for the local market has dropped to 25% of their production, and 50% and 25% respectively of their current production is of designer bracelets and household goods for the Mezimbite project.

The wood turners

Wood turners are not highly educated people; most of them have not more than some primary education, and one turner had one year of secondary education. The profession itself is learned on the job, none of the respondents had enjoyed any form of official, institutionalised education. It is hard to estimate how long it takes before a person can be considered as a skilled wood turner; it all depends on the variety of products one makes and what one considers as a satisfactory quality. Just as with many other professions, it also depends on the talent that a person has, and his eagerness to learn. One turner estimated that it took him one year to learn the profession, whilst another estimated the learning period at two years. The same person also estimated that it took one to three months of training to make a product for the project. According to Schwarz it takes only three months of solid training to become a 'world class' turner. Turners entered the profession because a family member was already a turner or simply by coincidence; they met a turner and it seemed a good way to make a living. As a Dondo turner stated:

> "I learned it from a man who was working in Dondo, I was a fisherman. At the time I was a fisherman, I found a small piece of black wood and I put in the fireplace. That man came and said to me "why are burning that, that is money". I said "that is firewood, how can I make the money? Take it!" Than I looked at how he was working, he was making a long candlestick [holder] and he sat on the side of the road. A car stopped and bought the candlestick. I was suffering to catch fish and I said to I don't want to become a fisherman. I talked to that man, I stayed with him and worked for him until I knew how to make woodwork. I married a woman from the family of that man." (Turner DC)

According to Shackleton and Steenkamp (2004) the only barriers to entry for the carving industry in South Africa were technical skills, which are generally learned in several months as one works as an apprentice for a skilled craftsman. The same appears to be true for the turners in Mozambique, although a turner will need to invest a considerable amount of money in an electric engine and tools like saws and chisels to work on his own; Schwarz estimates these costs at $300. The latter is probably the reason behind the formation of cooperatives, because these costs can then be shared.

The turners tend to work eight hours a day and five to seven days per week; the turners are self employed and not forced to be at work at certain times. However, many choose to work seven days a week provided there is wood available and the electricity has not been cut off because the bill

has not been paid. The working conditions of the turners are primitive and they work in a very dusty environment which makes them prone to respiratory diseases. They also run the risk that wood splinters end up in their eyes that can damage their eyesight, which would make them unsuitable for the profession of wood turner. The tools they work with can also be dangerous; some of them do not have proper handles, which can lead to dangerous cuts, again jeopardising their future ability to earn a living. Traditionally no protective gear is used in the workshop, and there is little attention for safety. One of the initiatives of the Mezimbite project is to educate people about safety, stressing the importance of repairing the handles of tools and to provide the workers with free safety glasses and mouth protection. However the discipline of workers to use the equipment has been very low, Every visit the turners are reminded by the project leader to use the protective gear, but adoption appears to be slow. During my visits only a few turners were observed using the safety equipment provided (Figure 4.7).

Figure 4.7: Turner of the Dondo cooperative using safety glasses and dust cap while making designer bracelets. The mound of sawdust clearly illustrates that much of the wood ends up in sawdust.

The turners appear to have limited business and financial skills. During interviews they were not able to give a clear overview of the different cost in their business or to give an estimate of their monthly revenues, costs and profit. In addition they do not seem to be able to relate the cost to

individual products or people, and there appears to be little financial planning. Incomes also appear to be highly eratic and limited records of sales and finances are kept. As mentioned in section 3.2.3 this made it difficult to estimate the incomes of turners. These findings are consistent with those of Schakleton and Steenkamp (2004). Monthly income estimates from turners themselves ranged from MZM 8 million per month and MZM 6 million per month down to MZM 500,000, but it is not clear whether these are gross or net revenues (revenues after deduction of the cost of the cooperative). The estimates were furthermore all from members that work frequently for the project and are thus likely to be higher than those who predominantly make products for the local market.

The turners appear to be the only breadwinners in their family, although two turners mentioned that their wives were engaged in agriculture. However, one turner did not regard this as work. Considering the fact that most families in the region have a plot of land for small scale agriculture, and that agricultural work (by woman) might not be perceived as work it is likely that other turners who mentioned they were sole breadwinner do in fact have family members that supplement the family livelihood through agricultural work. It is also possible that the subsistence of the families is based on agriculture, and the woodturners supplement the basic livelihood with a small cash income.

The production of designer bracelets for the Mezimbite project

If the cooperatives work for the Mezimbite project they are provided with the wood for free, which arrives in machine ready blanks. Out of this wood around 25 different models of bracelets are made. These models can be subdivided in three lengths: 20mm, 40mm and 75mm, for which the turners receive $0.70 (MZM 16,200), $1.40 (MZM 32,400) and $2.00 (MZM 46,300) respectively. All 25 models are made in five different diameters to accommodate different wrists. Several examples can be seen in Figure 4.8.

Figure 4.8: Several models of designer bracelets, made out of pau preto.

It is difficult to estimate how much time the turners need to produce a bracelet; their own estimates are respectively four per day, five per day, 12 per day to 30 per day, while Schwarz's estimate is 10 to 12 bracelets a day. Possible reasons for this large discrepancy is the large variety in sizes and models, and a difference in productivity levels, possibly caused by a difference in experience, skills and work ethic between turners. Both cooperatives were visited twice and never during these four occasions were more than five people out of the 14 Dondo and 17 Kanimambo turners observed to be working. In fact, reliability of production and labour productivity is a large problem for the project. As Schwarz states: 'if they feel like working or need money they can work very hard for two weeks, and when they have enough money the motivation often drops and they will do nothing for the rest of the month.' Unfortunately retailers want to order goods just before they need them, but according to Schwarz it can take a long time before a relatively small order is completed and even if ample time is given orders are seldom completed within the agreed time frame. On top of that shipment to the US and Europe can take a month. This means that production needs to be planned ahead of sales, and a relatively large stock needs to be kept. This represents a possible risk because in fashion it can be difficult to predict which models will sell best.

Linked to the productivity issues is the availability of turners that have enough skill to make the products. It takes up to three months of training before a wood turner can make a bracelet of the quality that is needed. Over the past years 36 turners have been trained, four of which are now also instructing others. Unfortunately almost half of the trained turners are no longer working with the project. Seven have died, mostly of what is suspected by Schwarz to be AIDS related illnesses, and six are working for other employers, either in Mozambique or in South Africa. Their improved skills make them more valuable and thus more susceptible to 'poaching' by the competition. Another three have dropped out of the profession of wood turning altogether. At this moment 9 turners are always producing for the project, but sometimes this goes up to 20 turners. Given the losses of skilled labour new people need to be trained on a continual basis in order to keep enough skilled people to produce. A training facility at the MFC started operating in June 2006 and one of the most experienced turners who has already been functioning as an instructor has been employed to work there.

Another intervention that has been made to keep productivity levels up is the introduction of monthly production minimum per employee: every worker needs to produce enough to earn a minimum of $30 a month, otherwise they are no longer allowed to work for the project. Schwarz states that he has based the $30 lower limit on World Health Organisation's estimate that an income of $1 a day in rural Mozambique is enough to lift a family out of poverty. If a person is not prepared to work hard enough to earn this amount Schwarz rather gives another person a chance. One could argue though that the $30 limit is rather arbitrary, as poverty levels depend on a number of other factors such as the ability of other family members to generate additional income and the size of the household.

To retain a high product quality strong quality control is needed. Several visits a month are needed to the cooperative to ensure quality, and roughly once a week the ready made products are taken to the MFC where a quality check is performed. The turners will than receive their payment based on the number of bracelets that meet the quality standards. The bracelets that meet the quality

standard are added to the stock, and the quality controller will discuss the reason for rejecting the other pieces, and evaluate if and how the bracelet can be reworked to meet the quality standards in the future. This feedback is regarded as essential by Schwarz, as the turners have invested a lot of time in that piece, and need to learn how to avoid further rejects in the future.

The cooperatives function as independent enterprises and thus need to take care of their own cost and organisation. Their most important costs in addition to the wood, which if they work for the project is provided free of cost, are the electric engines, electricity to operate them, maintenance on the building and simple hand tools. The electric engines are second hand and bought from local traders for prices around MZM 1,000,000 to MZM 1,500,000 and they typically last between 2 to 5 years. There is a clear suspicion that most of them are stolen; Schwarz has not been able to find a shop that sells them for that price, and an electric engine that was stolen from his workshop ended up in the Dondo cooperative which had bought it from a trader. The electricity is a large cost and is estimated to be between MZM 1,600,000 and MZM 2,000,000 per month, although the electricity for project work is paid for by the project. There is no clear estimate of what is spent on maintenance of the building used by the cooperative.

As a consequence of the limited business skills and financial planning of the turners there is often no money to pay the electricity bill. It also appears to be common to run out of wood for the production for the local market, presumably due to poor planning. When the cooperative runs out of wood there is no money either to pay communities where they harvest or to rent a car for transportation. Traditionally the cooperatives would have to wait until some of their products were sold, or another source of income was found to pay the bills, and they would not be able to continue the production during that time. Now the project gives money every month to the cooperatives to pay the electricity bills to make sure they can keep up the production. Having noted these problems, organisation of the Dondo cooperative appears to have improved since they started participating in the project:

> "Now we like to work for Mister Allan, because there are many advantages since from the beginning, there was no bookkeeping, no accounts. Now that we work with him we see the advantage of keeping accounts...This coop was not well organised. Now that we start working with Mister Allan we see things are a little more organised. Maybe if we stay like this we will register [as an official company]...A few years ago the electricity was cut off here, now with help of Mr. Allan we have electricity" (Turner DA).

Nevertheless from the interviews and observations on site in became clear that the Dondo cooperative is still not very well organised. Their building is in a poor state (Figure 4.9), indicating that no regular maintenance is performed. The turners indicate that the cooperative is still not an officially registered company, which leads to problems with local authorities. The individual members receive income based on their production, but when the costs need to be paid they are split equally over the members, instead of the being based on usage of the facilities. Someone who produces few products receives few revenues but still pays the same part of the cost as anyone else. There has also been some conflict between members, and as a result some members left and formed a new cooperative in

Inchope. The conflicts still appear to persist; turner DB stated: "You know we are working like a cooperative, so everyone has his different ideas and mentalities and that can be difficult", whereas turner DC stated 'Now the cooperative has a bit of problems, I would like to work for one boss, would be better for me to work for Allan'.

Figure 4.9: The Dondo cooperative

The Kanimambo cooperative gives a more organised impression (Figure 4.10). Their building is only five years old and looks relatively well maintained. In addition to the 17 turners there is one administrator who was asked to join the cooperative three years ago. The administrator is the only person amongst all the respondents involved in the project with several years of secondary education. In addition to that he has been educated to be a supervisor and administrator in a UNESCO led project. The administrator is responsible for the maintenance of the building, the administration of the cooperative, and quality control and sales of the products. The turners in the cooperative are required to pay 25% of their income towards maintenance of the building and other costs. In addition to that they pay 20% of their revenues as a salary to the administrator. Furthermore they registered themselves as an official company two years ago, for which they paid MZM 3,000,000 to the council of Manga. The authorities required a production permit as well as permits for the harvesting of wood, and they needed to be an official company to acquire the permits.

Figure 4.10: Members of the Kanimambo cooperative are packing a large order of bracelets, egg-holders and small candlestick holders for transport to the MFC where they will be inspected and stored awaiting transport to the retailers.

Manufacturing of bracelets for the local market

As mentioned, the cooperatives also manufacture bracelets that are sold on local markets in Mozambique. The quality and design of these products is markedly different. The cooperatives make only three different models, and these are almost identical to the ones produced elsewhere in Mozambique. In fact only four different models were traded by the street traders visited in Maputo, Tofo, Beira and Inchope, which can be seen in Figure 4.11. All four models had the same half round shape on the outside; only the width differs, with a small or narrow width bracelet and a medium width bracelet being the most common models. The wider model and a bundle of seven very thin bracelets were more scarce as they were only seen at the Inchope market and with three Maputo street traders. The types of wood that are use are sandalwood, matacha, mopane and pau preto.

Figure 4.11: The four different models of bracelets sold on local markets, manufactured by a turner from Dondo selling his stock in Maputo

The finishing of the bracelets is not as smooth as those that are manufactured for the MFC, most notably on the inside. Furthermore there are no standard diameters to accommodate different wrist sizes and, according to Schwarz, the producers tend to use shoe polish to make them shine but this does not penetrate the wood completely, which makes the bracelets crack if they are transported to drier climates. This finding is consistent with those of Steenkamp in South Africa (1999b in Shackleton and Steenkamp 2004) who stated that carvers specialise in certain objects and items that are standardised and homogenous across producers, and quality tends to be poor. The poorer quality means that local market bracelets can be produced in 10 to 15 minutes (turner KA and KB) which is markedly quicker than the designer bracelets. The downside is that the turners need to source their own wood for these local market bracelets, and they estimated to spend a quarter to one third of their working time cutting the wood, for which they use simple hand tools, and transporting it to the cooperative (turner DB, DC and Kanimambo administrator). In addition to cutting the wood they need to transform the log into machine ready blanks, which can take the same amount of time as harvesting the wood itself (Turner DC). This means that turners who only produce for the local market spend half to two-thirds of their time harvesting and preparing wood, and therefore it is questionable whether they actually spend less time when producing bracelets for the local market. Sourcing the wood itself is also costly: turner DB mentioned that they pay MZM 2,500,000 for a cubic meter of pau preto and MZM 1,000,000 for transport. On top of that they would normally have to pay the license to the agricultural department of MZM 2,000,000 per cubic meter, but most harvesting is done illegally. Perhaps they need to bribe officials as well because they harvest illegally. It is not clear how much wood is used per bracelet because the turners make a wide variety of products from every log and they keep no records how many products have been manufactured out of that log or what the size of that log was. This means that they have little knowledge about the real cost price of a product, and consequently the profit per product.

Sales of the low quality bracelets on the local market

Personal observations and interviews with wood turners, street traders and the project leader suggest that there is a lively interregional trade in wooden crafts in Mozambique. The actual retail of the

bracelets is confined to street sellers in areas that are frequently visited by tourists and where there is a local population with buying power. In Beira there are two places where street traders congregate. The first one is opposite a restaurant and camping site on the beach and the other opposite a beach club with a swimming pool; both places are popular with tourists and expatriates living in Beira. The bracelets are just one of the items the traders sell, others being statues of people and animals, mortar and pestles, candlestick holders, small boxes, chairs and chess sets. The traders report that they buy their goods from a variety of cooperatives in the region, amongst them the Dondo and Kanimambo cooperatives, and that their sales are highly erratic. They only sell a few bracelets each week. They only pay the turners for their products once they have been sold.

As mentioned earlier the Dondo cooperative experienced some internal conflicts, and some of the members broke away to form their own cooperative in Inchope where they are close to an important transport node, which offers trading opportunities while at the same time they are closer to the source of wood. There are plans to incorporate the cooperative into the Mezimbite project in the near future but currently they are just supported with free safety equipment such as safety glasses and respiratory protection. The Inchope cooperative currently makes bracelets and other products which are sold at the local roadside market 500 meters from the cooperative, together with wood products from a large cooperative nearby. Inchope is located where the main road from Maputo towards the north of Mozambique intersects with the main road from Beira towards Zimbabwe and Malawi. Due to its location a large informal market has formed along the roadside. A large variety of woodcrafts is sold to traders, who sell them in Zimbabwe or the tourist places along the Southern coast such as Vilankulo, Tofo, and Maputo. The sales volumes are high; the two stalls claim to sell around 60 bracelets of the most common types and a total of 200 bracelets per day, although this seems to be a fairly high estimate. The prices however are very low; the cooperative only receives MZM 3,000 for small and MZM 6,000 for large bracelets, which are sold at the stall for around MZM 5,000 and MZM 10,000 respectively. Again, the turners only receive the money after the products have been sold. Every two months the turners travel with a large bag of goods to Maputo to sell them for a better price. The small bracelets are sold for MZM 25,000 while the bigger ones are sold for MZM 35,000.

Street traders were also interviewed in Tofo (Figure 4.12), which is one of the many tourism hot spots along Mozambique southern coast and located roughly halfway between Maputo and Beira. It is a popular stop-off for backpackers as well as South African tourists due to its excellent beaches, scuba diving sites and fishing waters. Around ten street traders are all located in an abandoned building on the beachfront of Tofo, and the traders interviewed stated that all traders work together in a cooperative and that they make many goods, amongst them the bracelets, from logs bought in the Beira region. Retail prices here were on average 33% higher than in Beira, probably due to the larger demand from the greater number of tourists.

Figure 4.12: Trader in the informal market of Tofo polishing a small bracelet made out of pau preto. Note that the bracelets are identical to those in figure 4.11

In Mozambique's capital Maputo seven street traders were interviewed (Figure 4.13); one in the municipal market, which is a market in a enclosed market area with fixed stalls that are open every day, and five in the Saturday craft market on the pavement of one of the busy streets in the center of Maputo, and one across the road of the Saturday market. Interestingly enough the traders in Maputo sell not only to tourists; they estimate that 30% to 50% of their bracelets are bought by consumers from Maputo. Perhaps the economic development that is concentrated in the south of Mozambique has created more purchasing power with the local population than elsewhere, and the people do not see the bracelets as a typical tourist's souvenir. The sales prices were almost identical across traders, with most traders asking MZM 100,000 for a medium size bracelet and admitting to drop to MZM 75,000 depending on the negotiation skills of the buyer; only one trader sold bracelets from Nampula, which is in the North of Mozambique, for MZM 200.000 claiming the quality was better, and bracelets from Beira for MZM 50,000. The traders mentioned a variety of sourcing strategies. Two traders on the crafts market told that they go up to Nampula to buy raw logs, which they turn into bracelets in Maputo. The trader in the municipal market and one trader in the Saturday morning market claimed they buy ready made bracelets in Maputo for MZM 35,000 from traders from Nampula, and two claimed to be living in Maputo but were originally from the Nampula area where they frequently go back to buy the bracelets, again MZM 35,000 was mentioned. Nampula is an exhausting 35 hours by bus from Maputo, and the travel costs MZM 1,500,000 one-way.

Figure 4.13: Street traders on the Saturday crafts market in Maputo. The bracelets in the foreground are identical to those in Figure 4.11 and 4.12

The bracelets in figure 4.11 were manufactured by an independent wood turner from Dondo and sold across the road from the Saturday crafts market. The medium size bracelets were sold for MZM 35,000. He tends to work for 2 months after which he travels down to Maputo to sell his supplies over the period of a month. The travel alone costs him MZM 1,200,000 return including the luggage. The retail and wholesale prices mentioned by the traders are depicted in Table 4.2:

Table 4.2: Quoted wholesale and retail prices for low quality bracelets sold in Mozambique

Source	Quoted Wholesale price (MZM)				Quoted retail price (MZM)			
	Small size	*Medium Size*	*Large size*	*No particular size*	*Small size*	*Medium Size*	*Large size*	*No particular size*
Schwarz				7,500				20,000
Turner DA	7,000	15,000	20,000					
Turner DB				35,000				50,000
Turner DC				15,000				20,000 - 25,000
Dondo turner (not from cooperative) in Maputo opposite the Saturday morning market	Manufactures own bracelets					35,000	50,000	
Kanimambo administrator		35,000				50,000 - 75,000		
Inchope turner and Inchope retailer	3,000	6,000			5,000 (inchope) 25,000 (Maputo)	10,000 (Inchope) 35,000 (Maputo)		
Beira street traders	Not willing to reveal price				35,000	50,000		
Tofo street traders	They told that they manufacture their own bracelets					75,000		
Traders in Saturday craft market and municipal market in Maputo	20,000	35,000 - 50,000			40,000-50,000	75,000 - 100,000		
	Some traders claim to make own bracelets							

Discussion of the local markets for bracelets

There appears to be a large variation in both wholesale and retail prices for bracelets, which makes it difficult to compare the revenues of these bracelets for the cooperatives with the revenues from the designer bracelets manufactured for the Mezimbite project. There are a number of possible explanations for these differences. Firstly prices seem to depend on the place where they are sold, with higher prices being charged in major market areas in Maputo and Tofu. Secondly, prices depend on the negotiation skills of the traders and customers; most street traders indicated they negotiate with buyers, and turners also indicated that prices for the same product tend to fluctuate. A third reason for the difference could be the existence of runners (middleman) similar to those mentioned by Shackelton (1993) and Steenkamp (1999a; both in Shackleton and Steenkamp 2004) in their study of the South African wood craft industry. Turner DC for example mentions that their selling prices are different for different people and that they sell bracelets for MZM15,000 to men 'who bring it to the local market'. Perhaps the traders in Maputo who claim to buy their bracelets in Nampula in fact buy them from middleman from Nampula who travelled down to Maputo. There are indications that the turners and traders might disguise the source of their bracelets. Based on ten years of experience in the trade of wood crafts Schwarz finds that most of the products are bought in the Beira region, but the traders will tell otherwise to protect their source in fear of competition. He also adds that many of the woods that Maputo turners use are actually from south and central Mozambique. Nampula is often mentioned as a source of raw logs or finished bracelets because it is so far away that foreigners are not likely to go up there and look for bracelets. If traders are in fact trying to protect their source, they might also claim to manufacture their own bracelets while in fact they buy them from middlemen or directly from turners. There are several indications that support Schwarz's theory that the traders might disguise the source of bracelets and raise doubt about the prices mentioned by the turners. To start with, the difference in wholesale prices mentioned by turners and traders is too large to be explained by the existence of middleman and differences in negotiation skills only; the differences do not make sense for a product that is so standardised that only four different models are produced in the whole country. It is for instance not likely that the Kanimambo cooperative can sell their bracelets for MZM 35,000 to the street traders in Beira while one and half hours away in Inchope they are sold for MZM 10,000. Similarly why would a street trader from Maputo spend MZM 3,000,000 and 6 days to travel up and down to Nampula to buy bracelets for MZM 35,000 while he can buy them in Inchope for MZM 10,000, or for MZM 35,000 from the turner from Dondo that sits across the road in Maputo. Furthermore it is strange that only one trader in the Saturday craft market mentions the Beira region as a source whilst the production in the region is large, turners from the region frequently travel down, and people in the region mention Maputo traders as their clients.

Based on the discussion above it appears that whole sale prices for bracelets around Beira are close to the ones mentioned by the first Dondo turner is MZM 7,000 for a small, MZM 15,000 for a medium size and MZM 20,000 for a large bracelet. Once the bracelets arrive in Maputo the small bracelets are probably sold for around MZM 25,000 while the medium size ones are sold for MZM 35,000; either directly to customers or to the Maputo based traders.

Despite the many traders and turners that are active in the industry demand for woodcrafts and the bracelets in particular seems limited. Several turners mentioned that is has become harder to

sell products on the local market, and they only sell a few products at a time. Another problem mentioned by the turners is that the traders in Beira only tend to pay the cooperatives once they have sold the products, and the Kanimambo administrator told that sometimes they do not receive the money at all.

Summary

If we place our analysis of the wood turners in the light of the research findings of Shackleton and Steenkamp (2004) and Nkuna (2004) as presented in Chapter 2, we can see many similarities in the findings. As with their South African counterparts researched by Shackleton and Steenkamp (2004) and Nkuna (2004), the turners of the Dondo and Kanimambo cooperatives:

- Have a lack of business skills: they have no idea about the real cost price of their products, and financial and operational planning is poor
- Traditionally produce a limited product range of poor quality products with a design that is identical to that of their competitors: they only manufacture four different models of bracelets, of which identical copies can be found everywhere in Mozambique. The durability is questionable and the finishing rough. In addition, none of their other products for the local market are unique in design quality or differentiated in any other way from their competitors
- Suffer from a lack of access to markets: the main markets for their products are located hundreds of kilometers away in Maputo and the tourist beaches on the Southern Coast. They are thus forced to sell to traders, with a significant loss of margins as a result, or to go down to these markets themselves. They have no access to international markets or shops in Mozambique.
- Have difficulty delivering products on schedule
- Suffer from a lack of demand combined with low product prices. The only barrier to entry the industry is technical skills, which can be learned on the job. As Shackleton and Steenkamp (2004) argue, this implies that when earnings improve new people will enter the market, thereby creating more competition that is likely to result in either a downward price spiral or a decrease in sales per turner. There are indications that this has happened in Mozambique; there are few employment opportunities in Mozambique making wood turning a relative attractive option. The interviews with traders, turners and Schwarz suggest that in addition to the Inchope, Kanimambo and Dondo cooperatives there are many more cooperatives and independent turners in the Beira region. The competition amongst traders is fierce, with many stalls selling the same products to few buyers, and traders and turners indicating they only sell a few products per day.

Perhaps the low productivity in the cooperatives is the result of the limited demand and high number of turners in the industry; there is simply an overcapacity that makes it ineffective to work hard and produce more, because there is no demand for more products.

Shackleton and Steenkamp (2004) suggested two interventions that could improve the condition of the craft producers in South Africa. Firstly, buyers should assess the market and work together with the carvers to manufacture products that meet the taste and demands of the consumer. Secondly, private partnerships should be formed in the form of an outgrower scheme, as this will provide capital to set up bulk production and provide a guaranteed market for at least some products. Interestingly enough the Mezimbite project has done this. It assesses the demands of the consumer

and attempts to design products that meet these demands. And it has formed a partnership with cooperatives that carry the characteristics of out grower schemes that are common in agriculture in Southern Africa. It provides inputs in the form of wood, tells the turners what they should produce and trains them to implement this, and it guarantees to buy the products that meet the predetermined specifications for a predetermined price. The crucial question for the sustainability of the project is whether these interventions have improved the livelihood of the turners; if this is not the case chances are the cooperatives will stop working with the project.

The first measure of success is whether incomes of the turners have improved since they started working. Direct questions did not deliver any clear answers, but based on the information presented in the previous section it appears that the prices received per bracelet are roughly twice as high for the ones produced in the project as for the ones sold on the local market. The manufacturing costs for the designer bracelets are lower as the wood is provided through the project and the transport to the cooperative and the electricity is paid by the project. Although the time spend to produce one designer bracelet might be four times as high as one for the local market this is likely to be compensated by the fact that the turners do not need to spend time on cutting the wood and preparing it for the turning machine. Furthermore due to the overcapacity in the sector time does not seem to be a limiting factor. In any case none of the turners complained about the price they receive for the designer bracelets, and those who were asked directly (Kanimambo administrator, turner KA and KB) all seemed to find the price they received for the designer bracelets fair in comparison with the revenues for bracelets for the local market. Perhaps more important than the difference in price is the fact that within the project they are sure to receive their money, and they receive it all at once when they hand over the products. The crucial difference between working for the project and the local market seems to be the difference in the volumes of products they can sell. The demand for bracelets and other wooden crafts appears to be low in the local market, especially when compared to the project, which orders hundreds of bracelets every month. These high volumes give the turners the opportunity to earn a good income. Just before turner DC was interviewed he had handed over ready made products, mostly bracelets, for the value of MZM 6,200,000 ($276.80). The second Dondo turner stated that 'If I work a day for mister Allan I can earn MZM 700,000 [$30.20] or MZM 800,000 [$35,50] a day'. This seems to be consistent with Schwarz's claim that hard workers who work 40 hours per week can make as much as $150 to $200 per month. It appears that the project has led to a large increase in the incomes of at least some of the turners of the Dondo and Kanimambo cooperative. The underlying reason for income improvement is that the product quality has improved through radical quality control and training, the design has improved and there is now access to new markets.

Other benefits for the turners in addition to higher incomes are that their position on the labour market has improved due to the upgrading of their skills, and that safety equipment is provided. The improvement in worker safety might not be perceived as very important by the turners, but it can prove to be very important for their livelihoods. Despite these positive effects of the project, there are still important problems at the cooperatives, most importantly the inability to produce goods on schedule, the loss of skilled turners, and the inability to mange product quality independently.

4.3.6 Quality control and transport of bracelets

According to Schwarz and the quality controller the wood turners will come to the MFC with their finished products once a week on average, where a quality controller will analyse the finished products, and store the approved pieces in the warehouse (Figure 4.14). Once orders arrive from the retailers, the quality controller is responsible for assembling the order and packing the bracelets in boxes. This is a precarious process where a lot of packaging material is used to make sure the bracelets arrive at their destination undamaged. The coordinator or project leaders will then post the boxes by registered mail or courier to the retailers. A considerable amount of cost is involved in this process; the average costs per bracelet are $1.95 on packaging material and $1 on postage.

The quality controller is thirty years of age, has received primary educaton and is employed on a fixed salary of MZM 770,000 per month (the previous quality controller was earning MZM 1,200,000). He has worked for the Dondo cooperative previously, and has also been employed as a construction worker and machine operator in a nearby sugar factory. He used to be the assistant to the quality controller who died recently.

Figure 4.14: A turner shows his production of designer bracelets at the MFC for quality control; he received $276.80 for his production that month (left). The quality controller in the bracelet storage facility (right).

4.3.7 The carpenters in Mezimbite and other furniture manufacturers

After the planks are dried they are used for furniture and building components. These are all manufactured by the carpenters employed on the Mezimbite project in the workshop at the MFC (Figure 4.15). The manufacturing process is mostly by manual labour, although a wide selection of power tools such as electric saws and sanders is available.

Figure 4.15: The carpentry workshop of the Mezimbite Forest Centre

There is one main carpenter (Figure 4.16) who is responsible for the furniture manufacturing. He is assisted by up to four other people. He is 50 years of age and has worked as a carpenter all his life. He used to live and work a few 100 kilometres north of Mezimbite, but when his employer ran out of work three years ago he moved to Mezimbite with his family to work for the project. Someone had told him about the project work and he was fortunate that a carpenter was needed when he arrived to ask for work. He is illiterate (but numerate) and has no official education but has learned the profession on the job, and he is able to make furniture from scratch to a finished product according to the design specifications of Schwarz. The main carpenter works on a fixed salary of $55 per month whereas the apprentice carpenter earns $35 per month, and a production bonus of 20% of the ex-works price of every furniture piece is divided amongst the people that were involved in making that specific piece.

Figure 4.16: The main carpenter and the apprentice carpenter working on a table in the MFC (left). The main carpenter working on a table in the Mezimbite workshop, with Schwarz inspecting the work in the foreground (right).

Good quality carpenters are scarce in Mozambique; both Schwarz as well as the Mozambican manufacturer indicate that it takes around five years to train a good carpenter. The carpenter himself claims that it took him only a year to be able to make his first chairs and tables, but it is questionable whether that was a piece of furniture of a more complex design or of the quality that is required by customers in markets such as Europe or the United States. In any case, the project is vulnerable to the loss of the main carpenter, give the scarcity of skilled carpenters and long training time required. There are two ways of dealing with this problem i.e. skills transfer and adaptation of the production process. If new people can be trained during the production process and thus the skills of the main carpenter can be transferred to a bigger group the vulnerability will be lower. At the moment there are three apprentice carpenters which indicates that this is at least attempted, although it is unclear to what extent there is a more institutionalised learning program that monitors and enhances progress amongst the apprentices. The second approach is an adaptation of the production process towards job specialisation. The production process is split up into several smaller, individual tasks that can be learned faster. Instead of one person being responsible for a whole chair and thus being able to manufacture every part of that chair there will be a person making the legs, another making the seats, a third one mounting the parts together and a fourth one finishing it off. This approach is being used by the South African manufacturer, who stated:

'Beyond us two [the owner/managers] and one other person there is nobody in that factory that can make a table from start to finish. There is no one that can make a chair. We are not creating carpenters. There are a couple of guys in there who are more dynamic and you can take them out of one process and move them into another [process] without problems. But if you give him a piece of furniture and say now produce it it does not work. We try it every now and then and we fall on our arse. They are more machinists or finishers as opposed to craftsmen.'

Their employees had no carpentry skills whatsoever when they came into the factory, but they can be trained within a number of weeks to make a certain part. A disadvantage of this method is the dependency with the process; one mistake in the chain affects all the other steps in the process. As the manufacturer states, it takes a lot more time to teach people how to cooperate in a production chain and work as a group than to teach a new employee how to produce an individual part. And even in their production system they are dependent on knowledge transfer. They had to invest a lot of personal time training the first people but they are now at a stage that their employees can teach new personnel themselves. What is interesting is that even in their production system individual talent plays a significant role; whereas one person was able to lead a group within three weeks, others took a lot longer to learn their tasks. Nevertheless, it is likely to take less time than the five years it takes to create a craftsman.

Although job specialisation can thus reduce the dependency on scarce skills it is more related to production volumes and efficiencies. As the South African manufacturer states:

'To have 50 guys each make a chair from scratch to finish makes no sense. Rather train someone to do one thing really well. There is nothing that anyone in that factory can produce better than I do. But I would have to work extremely hard to produce the same amount of legs that John does every day. They are so efficient at that one task, you cannot beat them.'

On the other hand there is a need for people in the production process who can make a piece of furniture from scratch, because this allows them to understand and solve problems in the production process and perform quality control. The absence of such a person means that at all times at least one of the owners needs to be present at the factory. Considering the amount of time the project leader of the Mezimbite project spends away from the MFC it is essential to have knowledgeable carpenters in the Mezimbite workshop at all times. Relying on one main carpenter is therefore a risky strategy. Furthermore in the current situation in which furniture volumes are low and inconsistent craftsmen are needed who are multifunctional, because it is too expensive to employ a large number of specialists in this situation. It makes little sense to have four people that can just make a part of a chair when there are only four chairs produced that month. But if one employs multi-functional people then one has the flexibility to take people out of the production of chairs and into tables or window frames. From a worker perspective multi-functionality empowers workers, because they can work in more environments and are less dependent on their current employer. Craftsmen also tend to earn

more than machine operators and enjoy a higher social status. However, if skilled people are hard to find one either has to increase the production volumes of one product to a level that justifies job specialisation or train craftsmen. But because it takes five years to train a carpenter training does not solve an immediate skills gap, and thus one needs to train people before the skills gap is likely to occur. Unfortunately training and worker skills is an area where the HIV/AIDS pandemic has a large impact, because more people need to be trained to compensate for the loss of skilled workers that die.

In the light of these efficiency issues it is important to consider the product range one is producing, for which the classification of Kotler (1997) is very useful. Kotler distinguishes between the assortment length, depth and width. The width refers to the number of product lines one manufactures or sells, e.g. furniture and building components, the length refers to the number of products per product line, e.g. dining tables, chairs and beds for the furniture product line, while the depth refers to the number of models or variations per product, e.g. the different models and sizes of dining tables. A focus on fewer product lines (a lower assortment width), fewer products (a lower assortment length) and fewer models per product (a lower assortment depth) makes production easier and reduces the dependency on skills. Alternatively retailers or customers might demand a wide, long and deep assortment, and reducing assortment width, length and depth might decrease access to important marketing channels or customer segments. The interviews with the different manufacturers, retailers and the interior decorator have shown that manufacturers have different approaches. However, most manufacturers concentrate on one product line, furniture. For retailers and decorators it is more common to sell other lines such as curtains, pillows and lamps. But the Mezimbite project does not manufacture product lines that are complementary, and a comparison with other manufacturers on assortment length and depth is therefore more useful. Figure 4.17 shows different manufacturers and their assortment length and depth:

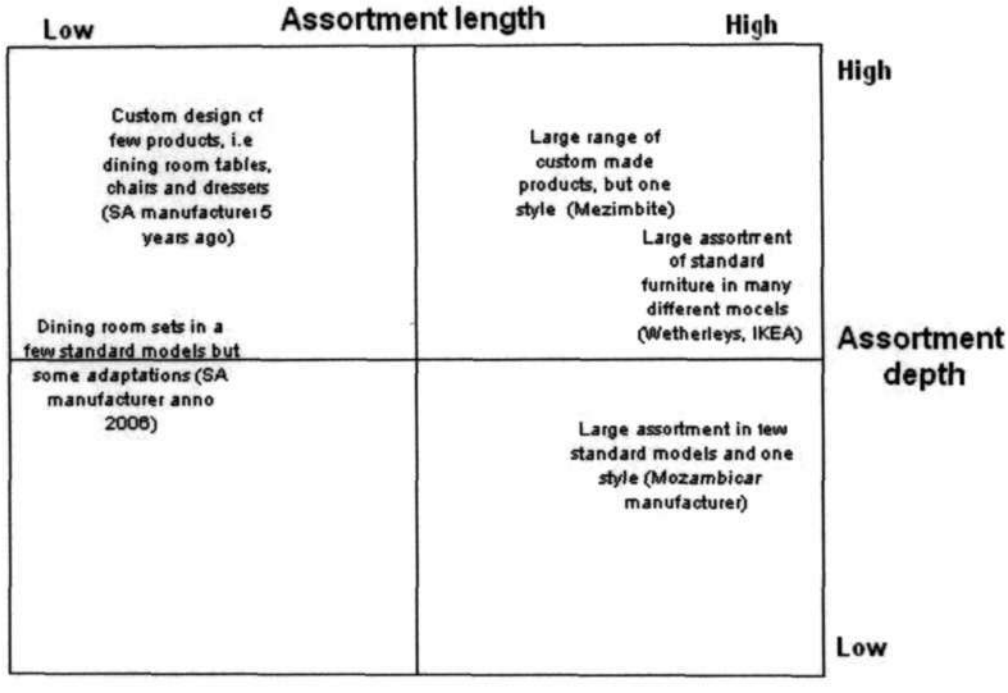

Figure 4.17: Assortment length and depth for various furniture manufacturers

The Mezimbite project has a large assortment length because it makes every kind of furniture: from beds to drawers, chairs, benches, dining room tables to garden furniture. The depth of the project's range is also large; the cheapest 1.8 meter dining table comes at an FOB[13] price of $330, while the most expensive one is priced at $1,000 FOB, with several options in between. The difference in the models is the wood used, the design and the quality of the joinery and other parts. In addition every order is a custom order which leaves a lot of choice for customers, for instance four person, six person or eight person sized tables can all be produced. The only thing that limits the depth is the fact that all furniture is of the same style; a contemporary, elegant style with some African influences, which Schwarz refers to as 'African Zen meets Bauhaus'. Large furniture stores such as IKEA in Europe and Wetherlys in South Africa, which design and produce most of their furniture themselves, have an even longer range of furniture including office, kitchens and bathroom furniture. However, even though they might have ten different dining room tables on the floor their assortment depth is potentially smaller than that of Mezimbite because they do not have custom made products. Once again the style is consistently contemporary.

The Mozambican manufacturer manages the complete value chain including their own retail stores in Beira and Maputo, and therefore has a long range of products from office desks to dining rooms and beds. However, their assortment depth is lower, as it produces only two or three standard models of most items, all in the same classic style. The South African manufacturer on the other hand has a short assortment because they have specialised in dining rooms, and only make dining room tables, chairs and servers. They started out by making custom orders for interior decorators, but they have switched to making standard ranges for retailers, although they still do the occasional custom order on the side.

From the interviews with the two retailers and the interior decorator it became clear that specialisation in a few furniture items at the level of the manufacturer appears to be common within the furniture industry, or at least in South Africa and the US. Every manufacturer also has his own style and preferred material. This means that retailers and interior decorators need to source from a large number of manufacturers to offer a full range of furniture, preferably in different materials and styles, to their customers. The interior decorator sources from at least 10 different furniture suppliers because one does only beds, another one specialises in cane furniture, a third one in sofas and the fourth one in pine furniture. According to the SA manufacturer custom furniture manufacturing is common as well, but the custom manufacturers sell mostly through interior decorators with whom they have a personal relation. As mentioned they themselves started off that way and they still sell some custom work through interior decorators. The retailer and interior decorator all mention that occasionally they place custom orders; the demand for custom is high, but the high cost is a barrier for their clients. According to the SA manufacturer the step from custom order manufacturing to wholesale is extremely difficult, both financially and technically. If one wants to get onto a shop floor one needs a large workforce and a continuous supply. In their case they used to make five tables per

[13] Free on Board; the price does not include the cost of transportation from the place of production to the customer.

month and suddenly needed to manufacture 20 large dining room tables because their first customer had 20 stores. As the cost increases for showroom models and personnel to deal with increased volumes the margins drop as the wholesale price for furniture tends to be lower than the price one can charge for a custom order. The SA manufacturer made a loss for the first six months of wholesale, and financed this through the custom orders. They also found that they only make money on one key item, the dining table, but to sell that piece in a store they need a number of supporting items such as benches, chairs and sideboards in the same style 'that barely make money at all, they just turn over'. It is important to realise though that the SA manufacturer took a particularly big step by switching from custom orders to supplying the largest upmarket furniture chain in South Africa. One could start by simply supplying one or two independent retailers in the country, such as the SA retailer who sells around 20 hardwood tables a month, but these are divided over four to five suppliers.

In the light of the discussion about job specialisation, assortment width, length and depth and the different production requirements for manufacturers who enter the wholesale market it is interesting to note that Schwarz estimates the current maximum production in Mezimbite to be around 20 large pieces a month. According to Schwarz production is limited by the available skills, but not by the supply of wood as the maximum sustainable harvesting rates is not yet reached. At the same time the agents in South Africa and the US are trying to get the furniture into retail stores. In order to cope with an increased demand a semi-industrialisation plan has been developed, and second hand machinery has been obtained that will be installed over the coming months. The idea is to have teams of four to five people with some degree of job specialisation working simultaneously.

4.4 Employee characteristics and working conditions

The different groups of people that are involved in the Mezimbite project, both those directly employed at the MFC and those in the cooperatives, share several interesting characteristics.

First of all the education levels are very low, none of the employees interviewed had received secondary education, or a formal training of any sort; professions are simply learned on the job. The education of several workers appears to have been limited and interrupted by the civil war as they were soldiers.

A second characteristic is that there are clear signs that most workers are directly influenced by the HIV/AIDS pandemic in the region. Several employees and turners have died recently, and their illness is believed to be AIDS related. One employee mentioned that two out of four children were seriously ill, and a turner mentioned that six out of his twelve children have died.

Thirdly there appears to be a strong gender bias in the woodcraft and carpentry industry. During the visits to the MFC, the factory of the Mozambican furniture manufacturer, the cooperatives and the street traders not one woman was observed to work in the industry. No specific research has been done on this topic, but these observations could imply that the woodcraft and carpentry industry in Mozambique is regarded by society as 'mans work' and is not accessible for women. Scheyvens (1998) finds that forestry in the Solomon Islands is considered to be men's work, although woman often support their husbands by providing food in the field and carrying sawn timber. It is possible that this gender bias is present in other industries and aspects of Mozambican society. As mentioned in

the section about the turners there are indications that agricultural work by woman is not considered as work. The fact that no women are employed in the project is not a project specific policy but appears to reflect the existing gender bias in the Mozambican society. Scheyvens (1998) advocates that the inclusion of woman into forestry, e.g. by involving them in tasks such as drawing up forest inventories, monitoring and silviculture, can offer advantages, because woman have extensive knowledge of forest resources, appear to be more interested in sustainable use of natural resources, and are more likely to use money earned from forestry related production in a responsible way.

The importance of talent and the absence of recognised education and qualifications for the professions necessary in the project make the selection of employees an expensive and time consuming business. Only after a person has been trained and paid a wage for some time can one judge whether the person is suitable for the job. But not only talent is important; work ethic and general working skills play an important part as well. Throughout the different positions in the value chain reliability, job dedication and responsibility, and the ability to work autonomously are factors that can influence labour productivity. Observations showed that although most people are present at their workplace for 40 hours a week the time that people effectively spend working appears to be considerably lower. This is largely due to the limited ability and/or will of people to take full responsibility of a task and solve problems along the way to reach the desired result. If a problem occurs people tend to wait until the project leader or another person with knowledge returns to tell them what to do, rather than taking responsibility themselves to find a solution and carry on with the task at hand. In the absence of a person with authority many workers do not show up at work at all. This means that frequent supervision is necessary. Because frequent supervision is not always possible many of the workers have a performance-based salary. However not every position or all work can be performance based, particularly when the variety of tasks is too high or frequently changing. In such instance workers normally start on a temporary contract until they are proven to be productive.

In addition to a salary workers enjoy a variety of additional benefits. If they choose to attend school in the evening their books and school fees, roughly $50 per annum, are paid for by the project, providing they pass the course. The underlying idea is to increase education levels and thereby productivity. If they fail the cost will be discounted from their salary. Employees that are ill will receive free medical aid; the cost for this program is around $50 per month in total. Workers are also provided with a free lunch and breakfast; the latter acts as a stimulus for people to arrive at work on time, as the kitchen closes precisely when work is supposed to start. There are two guards on duty at night and on weekends, and shifts are rotated amongst employees who receive free dinner and 50% of their daily salary in return, or for workers on a performance based salary the reward is $1.70 per shift.

4.5 Forestry economics of the project

When compared to the rainforests in the wet tropics the forests in the Miombo region receive far less rain and therefore grow slower and trees occur in lower densities. This slow growth can be considered as a mixed blessing; it lowers the annual allowable cut but it produces hard wood of high quality and aesthetic. The most well known and commercially traded species in the region are kiaat or umbila,

chamfuta, pau preto and panga panga. The Mezimbite project also uses songololo. All these trees grow in a mixed age forest. The economic-ecological assumptions underlying the project are that most tree species take between 100 and 120 years to mature and a piece of forest can be entered to selectively cut every 40 years. The first time when the forest is entered the biggest trees are cut and replanted. After 40 years the forest is entered for a second time when the trees are cut that were just to small to harvest the first time, and this continues until the fourth time a 120 years later when the trees are harvested that were replanted after the first cut. The sustainable harvest in the woodlands of the communities that are working on the project is around three trees per hectare for every cut. In other words, every 40 years three trees can be cut in a hectare of forest. These three trees will deliver one cubic meter of wood. One of the areas where the project differs from conventional logging operations is in second recovery; parts that are normally thrown away (off-cuts) such as branches and crotches are used to make small components such as chair legs. After the trees have been harvested a number of other processes reduce the percentage of wood that make up the end product. First of all the tree needs to be debarked and split to take the core out which is to difficult to use. Than the log is further split into turning blanks or sawn into planks for furniture, processes in which much of the log ends up on the floor as sawdust, edges, and bark. The next step is the air-drying of the wood, which happens in open air sheds on the Mezimbite site and takes between eight to ten months. Sometimes it is dried in a solar kiln in which case it takes around 10 days for inch thick wood, but the capacity of the solar kiln is very limited and it is expensive to set up; most of the wood is thus air dried. As the wood is drying it will lose another 10% of its volume. Eventually pieces need to be cut out of the blanks, shaved and sanded and by the end of the process only a small percentage of the tree ends up as furniture or a bracelet. The percentage gained through second recovery as well as the percentage of the raw log that ends up as a log is different for every tree species, and even differs per individual tree. Each tree has a unique shape and character of the wood; for instance some species such as pau preto, which is used for bracelets, tend to have more and thicker branches than others such as chamfuta, which is a furniture timber, and thus results in more off cuts. The percentage of the log that is found in the end product furthermore depends on the type of product that is made, and the specific design of that product. A breakdown of the yields for bracelets made out of pau preto and furniture out of chamfuta is given in Table 4.3:

Table 4.3: Usage of wood in furniture and bracelets				
	Chamfuta furniture		**Pau preto bracelets**	
Raw logs per hectare	100%	$1m^3$	100%	$1m^3$
Second recovery	20%	$0.2m^3$	50%	$1.5m^3$
Total raw wood	120%	$1.2m^3$	150%	$1.5m^3$
Left over as planks/ turning blanks after debarking, splitting and sawing and drying	50% of raw wood	$0.6m^3$	30% of raw wood	$0.45m^3$
Left over as finished end product	40% to 50% of blanks	$0.24m^3$ to $0.3m^3$	20%	$0.09m^3$
Second recovery for usage of other products				$0.09m^3$
Percentage of tree that ends up as end product	20% to 25%, or 24% to 30% when compared to conventional methods		6% bracelets + 6% other products, or 9%+9% when compared to conventional methods	

From Table 4.3 the amount of wood that actually ends up as a finished product is very low; on average 20% to 25% of a chamfuta tree ends up as a piece of furniture, depending on the design of the furniture. However, when one compares this to conventional logging methods where just the main stem of the tree is used, yield is higher by 24% to 30%. In other words per hectare $0.24m^3$ to $0.30m^3$ of wood ends up in furniture, whereas without the second recovery only $0.20m^3$ to $0.25m^3$ would have become furniture. It is interesting to compare these with the percentages mentioned by the South African furniture manufacturer; they claim that 40% of the log ends up in furniture. They say their supplier delivers the wood sawn according to their specifications to their factory, but they still cut 20% away. They seem to be much more efficient, but they work with mahogany which might have higher yields than the species like chamfuta. Secondly their design is much simpler and more square than that of the furniture manufactured in Mezimbite, which has more elegant and round forms which are likely to cost more wood. Thirdly their 40% applies to mahogany which they only use for their table tops, in itself a very square and simple piece, when compared to the rounder legs of the table. Parts that are not prominent such as table legs are made of saligna, which has yields that are much lower than that of mahogany or pine, because it is difficult to cut and dry. Sixty percent of saligna seems to be lost during the drying process because the wood cracks easily when dried.

For the bracelets the percentage that ends up as an end-product seems very low. When one looks at the production process this is logical. A solid piece of wood is put on the turning machine, and to make a bracelet it needs to be hollowed out, and the whole center ends up as wood shavings. With the carving of the shape on the outside another large part of the wood ends up as shavings. However by cutting the blanks in such as way that they exactly fit a bracelet a small piece is left over that can be used for other products instead of turned into sawdust. Whereas before the turner would press his chisel against the turning blank to make it into the length of the bracelet he now saws it off in the right length leaving a small part that might be too small for a bracelet but enough for an egg-holder. Despite these interventions still only 12% of a tree ends up as a product.

In addition to the species that grow in a same age forest the communities also have some mahogany which has a much shorter growth cycle of 40 years. Mahogany grows in forests where all

the trees are the same age; it naturally occurs in areas where a natural disaster such as storm has cleared an area. Both communities now have some mahogany 'plantations' where 20% of mahogany trees are planted in a mix with 80% of other indigenous species, all in the same age. After 40 years all the Mahogany can than be cut.

It is important to realise that the harvesting regime as pointed out here was developed after a standing inventory of the community forests, and usage of existing biological knowledge about growth cycles of the species found in the forests. As Schwarz admits, only in 120 years time can one get an impression if this methodology is ecologically sustainable and does not affect the structure and the composition of the forest to a large extent. One aspect of the project which might influence the ecology is the density of replanting: trees that are cut are replanted in slightly higher density than in which they would normally occur, in order to improve the timber quality. Whether this will have a far reaching effect on the ecology is yet unknown. And even if there is a change in forest composition it would be questionable whether this was the result of the project or external factors such as climate change or air pollution. According to Schwarz the results are encouraging and show that it is 'going the right way', but the project has only been running for around ten years, which is too short a time to make any definite conclusions about the real sustainability of the process. Furthermore there is no research available about this kind of forestry model.

Despite the low amount of trees that can be harvested annually and the large losses of wood along the process the supply of wood is currently not the limiting factor for production at the moment, according to Schwarz. The maximum capacity of the forest is far from being reached. For example, the annual allowable cut allows over 4,000 bracelets to be produced, although this would mean some reductions in the volumes of other products. Regarding furniture, the maximum production capacity is 20 large pieces (such as tables) per month and the limit is determined by the skills and labour capacity, and not the supply of wood. The average monthly production seems to be far below 20 large pieces and sales seem to be the real limiting factor.

Chapter 5: Findings and analysis: the markets for designer bracelets and furniture

5.1 Introduction

In this chapter I will discuss the marketing and sales components of the value chain for bracelets and furniture as well as the characteristics of the markets for these products. I will start with an analysis of the bracelet and furniture markets. I will reflect on issues such as supplier selection by retailers, customer demands, cooperation and conflicts in the value chain, entry barriers, rents and the competitiveness of the products of the Mezimbite project. I will also give a detailed description of the margins along the value chain. I will then reflect on the importance of the ethical background of products, specifically environmental sustainability. A discussion on the economic sustainability of the Mezimbite project concludes the chapter.

5.1.1 Market Structure

The wooden designer bracelets fall into a larger market of jewellery and fashion accessories. On one hand they compete with jewellery such as bracelets, necklaces, rings and earrings made out of gold, silver and gems. On the other end they compete with cheaper forms of these objects, often referred to as fashion accessories, made out of materials such as plastic, ordinary metals and wood. Where the former are sold mainly in jewellery stores and sometimes more exclusive department stores and fashion boutiques, the latter are sold in a wider variety of clothing stores, department stores, boutiques and sometimes curio shops. Prices and demand for both jewellery and accessories are determined by design, brand and authenticity. The big difference between jewellery and fashion accessories is that prices for jewellery are partly determined by the amount of silver, gold and precious stones used in the object. There is an objective factor that determines the price in addition to the subjective factors of design, authenticity and brand, as there are verifiable prices on global commodity markets for precious metals and stones. Alternatively, for fashion accessories such as plastic or metal bracelets the material cost are so low that it hardly plays a role in the sales price; the retail price is purely subjective. In other words, where a jeweller can tell you that a bracelet that contains a certain amount of gold (of a certain quality) will cost a given amount of money, there is no typical price for a wooden bracelet because the material itself has little value. However, both the golden and wooden bracelet will have a higher price if it carries the name of a designer label such as Gucci, and has a beautiful and original design. With retail prices between $30 and $60 (Table 5.1) the wooden bracelets from the Mezimbite project appear to fall somewhere in between the two categories, or arguably in the low end of the jewellery market. The prices that can be raised for the Mezimbite bracelets is largely determined by the authenticity, design and the value of a designer label attached to it because the tropical timber itself is not such as precious commodity such as gold.

Table 5.1: Retail prices of the Mezimbite designer bracelets			
Size	Price South Africa	Price Europe	Price USA
20 mm	R185	€ 25	$30 - $35
40 mm	R250	€ 40	$48 - $53
75 mm	R310	€ 50	$60 - $65

According to the US agent most of the competition comes from well-known fashion brands that have branched out into jewellery and accessories. The brands themselves hire a designer who will design the bracelets for them, because design is generally not a skill they have in their own company. Design seems to be the most important product criteria in the market; first and foremost customers need to think of it as a beautiful product, but also as something they would like to wear. The brand or label attached to the product is important because well known, established brands have a certain image, and people often choose brands because these values appeal to them, and or they want to signal to the outside world that they endorse these values. For instance a woman might buy a Gucci bracelet because in her opinion the brand stands for style, glamour and success, but also because she wants her friends to see her as stylish and successful. Authenticity is a somewhat more complex criterion, linked to the originality of the product and also the exclusivity; what are the chances that somebody you know has seen the bracelet before and will have the same bracelet? The three criteria of design, brand and authenticity also influence each other; a brand that consistently comes out with products of excellent design will be known for that, and people who wear that brand are more likely to be regarded as stylish. In contrast, if a brand that is known for its excellent, trendy design brings out a bracelet, the design of that bracelet is more likely to be regarded more beautiful than if the same bracelet would appear on the market without a brand name.

5.1.2 Current sales and distribution

The Mezimbite designer bracelets are currently sold to a variety of galleries, fashion boutiques and gift shops in Mozambique, South Africa, the United Kingdom, Italy and France. Many of the contacts with the European fashion retailers have come from the participation in the Paris Fashion Week and through personal contacts of Schwarz. These personal contacts are also a key factor behind the sales in Mozambican stores. The craft, tribal and folk art gallery in Johannesburg, South Africa that sells bracelets and furniture from the project is also run by a personal acquaintance of the project leader. There are another three to four galleries around Johannesburg that sell the bracelets as well as gift shops of private game parks in South Africa.

There are currently two agents that assist in the marketing and sales of bracelets and furniture; one is located in Johannesburg, South Africa and a second one in New York in the US. They define marketing and promotional strategies for their areas, develop promotional materials and identify and approach potential retailers. The South African agent has sent a photographer to Mozambique for professional pictures and developed the www.allanschwarz.com website that provides potential customers and retailers with background information about the project and the products. The US agent has created a fashion label, AD Schwarz, with a corresponding website www.adschwarz.com as well as promotional material for retailers. A professional photographer has made promotional photos in which the bracelets are modelled by the agent, who is a professional

model herself. She is actively searching for retailers in the US, but no retailer is actively selling the bracelets yet.

The involvement of the agents is more based on friendship, environmental and social ideology and sympathy with the project than commercial goals. The South African agent comes from the social network of Schwarz and works as a marketing consultant for a variety of companies in South Africa. She states that 'I don't make much on any of his sales, but we do actually design and marketing work for him for an actual fee, but it is negligible when compared to what is market related'. The US agent on the other hand does not charge for her time but will act as a wholesaler and retain around $4 of every bracelet sold. Her usual work however is not wholesale but modelling as well as marketing consultancy for brands in the fashion industry that have an element of social responsibility. Her participation is partly motivated by the social and environmental character of the project, as well as her expectation that distributing the products from Mezimbite will strengthen her image as a model and consultant. In addition to that she hopes to increase her income through the sales of the products through extending her image as a model onto the label, in a similar fashion as other models have done by putting their name onto a cosmetics or perfume range.

The current average production and sales is around 500 bracelets per month, or 6,000 per year in total. These 6,000 bracelets constitute around 10% of the income of the project. The distribution of sales over the months is highly erratic; monthly sales are generally around 300 to 400 pieces but there is a peak in sales before the spring fashion season in April-May, and again before the start of the autumn fashion season in September-October, while sales in the gift season in December can be as high as a 1,000 to 1,200 pieces. Because the production levels in the cooperatives are unreliable and the shipment times are long the bracelets need to be produced far ahead, e.g. the bracelets sold in December are produced in September and October. A rather large capital outlay is thus needed because the turners have already been paid for the production long before the money is received from the retailer. This problem is exacerbated by the fact that the woodcutters have been paid six months to a year before production started, and most South African retailers pay on consignment; they do not pay for the stock they receive but only for the sales they have made by the end of the month. Sales on consignment transfers the cost and risk of carrying stock from the retailer to the producer, and it lowers the risk of retailers when introducing new products. As a result the amount of capital needed in the project is high. If we assume that:

- every month 500 bracelets are delivered by the turners to the MFC, and paid for and added to stock
- bracelets are held in stock for three months before they are shipped
- Once they have been shipped it takes another four months before they are sold and the money arrives

Then the amount of money that is invested in bracelets at any given time is around $25,000 taking into account the cost price of the bracelets.

5.1.3 Supplier selection

When assessing the competitiveness of the Mezimbite bracelet chain it is important to look at how boutiques, galleries and department stores decide which products they will sell in their shops. According to agents and the gallery owner the most important for a retailer is that the products fit into the style of the store and appeal to its customers. Secondly there must be a decent margin on the product. For upmarket galleries and boutiques it is important to have products that stand out and catch the eye of the customer and that cannot be found elsewhere, because this can help them build an image and distinguish themselves from their competitors. They want the customer to come back for these exclusive products. Another important aspect brought forward by the agents and the gallery owner is the relationship between the supplier and the retailer; the retailers want to have frequent contact with their suppliers, and they want them to visit their store and understand their needs. They also want to be able to reach their suppliers easily to order goods, check the availability of stock and discuss problems with product quality. According to Schwarz the retailers are also risk-averse when it comes to holding inventory and trying out new products; they want to minimise investments and lower the risk to be holding inventory they cannot sell. However, they do not want to run out of stock, and want to be able to order products frequently and shortly before they are needed. The Mezimbite bracelets appear to have enough exclusivity, quality and authenticity to be sold in high-end stores and to help these stores distinguish themselves from competitors. Furthermore the sales margins are high enough to make them attractive for retailers; currently retailers in Europe and South Africa take a 150% margin.

A negative aspect of the project is that the MFC and the project leader are far away from the markets and difficult to reach. The project leader appears to be the only person in the project that speaks sufficient English to deal with customers, and who has all information about product characteristics, prices and stocks. The project leader is frequently away from the MFC and in locations without mobile phone coverage or internet, and consequently the agents and the gallery owner complained that they have problems contacting the project leader for information about stock, orders and product specifications. This makes it more difficult to order products, as well as to market them; the US agent for example was waiting for samples of bracelets that should have arrived but was unable to reach the project leader for weeks to check the status.

Another problem is that the project is not able to produce on demand for retailers, and it can take weeks before shipments of bracelets arrive. This situation is likely to present retailers with a dilemma. By selling the bracelets from the Mezimbite project they can distinguish themselves from competitors and they can earn a good margin on a product that is likely to sell well but the supply is surrounded with much uncertainty and the retailer may have to spend much energy in the process of obtaining prices, samples, placing orders and tracking the delivery of the order. Some of these issues are solved through the agents; they can visit suppliers and they know what their demands are. However, the agents do not hold stock and they face similar problems reaching Mezimbite. This means that there is a clear problem in the supply chain that needs to be solved in order to maintain a good relationship with retailers, and thus to ensure stable sales of the bracelets.

5.1.4 Consumer preferences

It is the general view of those respondents that deal with environmentally sustainable products that these products should be able to compete with their non-environmentally friendly or not-fair-trade counterparts on characteristics such as price, design and quality; being fair-trade or environmentally sustainable is not enough to make people buy your product. The underlying logic is that the segment of people that buy products just because they are fair trade or environmentally sustainable is too small. The agents, the gallery owner and the project leader argue that the design and quality of the bracelets is exceptional and can compete with their expensive competitors in the high-end market. The US agent states 'I have actually seen woman drooling over his product [the designer bracelets of the project] so we know it can actually sell.' The SA agent states that if she wears the bracelets people stop her in the street to ask her where they can find them. Apparently there is no equivalent in design and quality in the market, which makes it an authentic product. Furthermore the maximum sustainable production is 3,000 bracelets per month divided over around 25 different models, and sold in three continents, which will make it an exclusive product. The chance that you will find someone else with the same bracelet is small. According to the agents, the project leader and the gallery holder, the design, quality, authenticity and exclusivity make the bracelets suitable for what they call the luxury market: expensive products that are sold in a few selective places, and bought by affluent, well educated people for whom design, quality and exclusivity are more important than price. For some of these customers the environmental part will be important as well. In regards to the luxury consumer the US agent states:

> 'They [the luxury consumer] are looking at brands and brand distinction...they have good jobs, they are cultural connoisseurs; they are on top of their game and they probably make $250,000 per year. These are people who look for quality, they go for brands that they can relate to, brands that ensure them of a high profile image, quality is probably on top of their list, price is not an issue...also wanting exclusivity and authenticity; they want to know that not everybody is going to have this bracelet' (US agent).

She furthermore states that many of these cultural connoisseurs go to social events with a social activism and charity character, for instance forum discussions where third world development and environmental issues are debated. They are into social activism but at the same time into style and culture. The current strategy therefore is not to market the products as fair-trade or green products, but as exclusive products of great design and quality, that happen to have environmentally sustainability as a grounding principle. Although the agents do not want to market the bracelets as ethical products they do see the ethics as important, because it provides a story behind the product that makes the product more interesting and authentic, and thus different from competitors. It gives a retailer something to talk about when he shows the product and it gives buyers that are concerned about the environment and issues in developing countries a positive feeling. It also provides the buyer with an interesting story to tell to friends, and they can profile themselves as ethically concerned people. The US agent therefore sees the environmental aspect as a critical component of the AD Schwarz label, a brand that has the unique promise that it will combine great design with ethics.

5.1.5 Rents, entry barriers and competitiveness of the Mezimbite bracelets

Several conditions need to be met in order to become competitive in the jewellery and accessory market. First of all one needs products of world-class design, and these designs need to be translated into high quality products. Furthermore, fashion changes continuously and new models need to be designed to keep up with new trends. The US agent stressed the need to introduce new models every season (half year). The design skills of Schwarz and his skills to teach others how to turn these designs into quality products enable the Mezimbite project to overcome the design and quality entry barrier and thus to compete in the high-end of the market and acquire high prices for its products. Schwarz has designed over 25 different models, which is an indication that there is enough creativity to keep up with new trends. For this moment the US agent has chosen to market only five models as a limited edition, and replace these with five new models every season, which means that there is enough variety for the next five seasons.

Although the design and quality is unique the Mezimbite bracelets can be imitated. As the SA agent stated, if one has a good designer it is not hard to copy the design. In the long run the environmental and social background of the products might be the only distinguishing factor from competitors, together perhaps with the brand it carries that is built on these sustainable values. Most respondents felt that consumer interest in ethical products has been growing over the last years, and will continue to grow as consumers become more educated about environmental and fair trade issues. This would indicate that by the time competitors arrive on the market having products with stronger ethical basics might be an important competitive edge for the Mezimbite project.

The project also has access to natural resource rents. The bracelets derive much of their authenticity and quality from the fact that they are made out of wood that is very aesthetic and strong, which makes the bracelets beautiful to look at and durable. Access to these woods is likely to become increasingly difficult for competitors if the high rate of tropical deforestation continues. In order to be successful one also needs a marketing strategy for every local market; one needs to define which customers to target, in which shops to sell, and how to communicate with customers. This requires access to a person that understands the local market and can design such a strategy. The next step is that such a strategy is implemented; promotion material needs to be developed and retailers need to be approached. It is at this level where barriers to entry can be large; one needs to find people that can do this work and the fees that are paid are generally expensive. Creating a brand would normally cost tens of thousands of dollars. The creation of promotion material with professional photos that can be sent to retailers is cheaper and can be arranged for as little as $1,300, but one still needs to find someone that knows what the photos should look like and arranges the photo shoot. To enter the high end-market one needs a well designed website that accentuates the style of the bracelets and reinforces the imago of the product. Designing and creating such a website can cost thousands of dollars. It is at this level where the project has managed to create large rents, as it has agents that do this work for a fraction of the cost. In the case of the SA agent the involvement is based on a long standing personal relationship between Schwarz and the agent, which is an example of what Kaplinsky and Morris (2001) call relational rents. For the US agent the project offers the opportunity to profile herself and her work. In addition to that, the social and environmental goals of the project are

almost as important, or maybe an even more important, motivation for both agents. The fact that a project or organisation attracts, based on their goals, assistance in the form of labour (volunteer workers, sponsored experts), capital (grants) and services and goods against a reduced rate or for free is common. Kaplinsky and Morris (2001) have not identified this as a rent, but I would argue it can be an important rent, which I will refer to as a benevolence rent. The grants the project receives are an example of benevolence rents, and they can be important to finance equipment and overcome barriers to entry in markets.

A barrier to entry that is very specific for producers in Mozambique is the amount of capital needed to build up the buffer stock to counterbalance the unreliability of the production.

The remote location of the product is a mixed blessing; it is helpful to create an authentic image of the products and provides retailers and buyers with an interesting story, but it makes delivery times longer and contact with the markets more difficult. These two problems need to be addressed to remain competitive in the long run.

5.1.6 Division of margins along the bracelet value chain

From the information collected in the research the margins in the value chain have been calculated (Table 5.2). The cost, margins and prices in this table are the average over the three different sizes, based on the assumption that the production and sales in equally distributed over these three sizes.

Table 5.2: Division of margins in the value chain of designer bracelets from the Mezimbite project

	Value chain SA and Europe		Value Chain with US Agent	
	Per bracelet	*Percentage of retail price*	*Per bracelet*	*Percentage of retail price*
Labour cost:				
Nursery	$ 0.15	0.3%	$ 0.15	0.3%
Woodcutters	$ 1.00	2.2%	$ 1.00	2.0%
Coordinator	$ 0.20	0.4%	$ 0.20	0.4%
Turners	$ 1.40	3.0%	$ 1.40	2.7%
Wood turner trainer	$ 0.10	0.2%	$ 0.10	0.2%
Quality control, inventory, dispatch	$ 0.05	0.1%	$ 0.05	0.1%
Medical expenses	$ 0.03	0.1%	$ 0.03	0.1%
Nightguards	$ 0.06	0.1%	$ 0.06	0.1%
Total labour cost for bracelets	***$ 2.99***	***6.5%***	***$ 2.99***	***5.9%***
Other cost:				
Consumables	$ 0.19	0.4%	$ 0.19	0.4%
Local taxes	$ 0.04	0.1%	$ 0.04	0.1%
Energy	$ 0.26	0.6%	$ 0.26	0.5%
Transport of blanks	$ 1.21	2.6%	$ 1.21	2.4%
Packaging of finished product	$ 1.00	2.2%	$ 1.00	2.0%
Shipping of finished product	$ 1.00	2.2%	$ 1.00	2.0%
Marketing	$ 1.30	2.8%	$ 4.30	8.4%
Depreciation and maintenace of equipment and buildings (10 years,15%)	$ 0.50	1.0%	$ 0.50	1.0%
Total other cost for bracelets	***$ 5.50***	***10.8%***	***$ 9.45***	***18.5%***
Total cost for bracelets	**$ 8.50**	**18.5%**	**$ 12.45**	**24.4%**
Trade margins:				
Costprice per bracelet	$ 8.50	18.5%	$ 12.45	24.4%
Profit margin project	**$ 9.90**	**21.5%**	**$ 10.95**	**21.5%**
Average factory price	$ 18.40	40%	$ 23.40	45.9%
Wholesale margin	**$ -**		**$ 5.83**	**11.4%**
Average wholesale price per bracelet	$ 18.40	40%	$ 29.23	57.3%
Retail margin	**$ 27.60**	**60.0%**	**$ 21.77**	**42.7%**
Average retailprice per bracelet	$ 46.00		$ 51.00	

Table 5.2 contains two different divisions of margins; the first one is the current division of margins for sales in South Africa and Europe, where the project sells its bracelets directly to the retailer. The second division is based on the scenario developed by the US agent, who would act as an agent/wholesaler. She proposed to raise the sales price by $5 per bracelet, of which $3 should be used for marketing purposes and $2 to either pay higher wages to workers or cover other costs in the project. The agent herself will receive a wholesale margin in this scenario.

The top part of the table shows how the cost price per bracelet is built up, and these costs are then expressed as a percentage of the retail price. These costs are based on a production and sales of 500 bracelets per month. Many of the labour and other costs in the project are not made specifically for the bracelets, and thus they should be attributed only partly to the bracelets. Only 15% of costs that are applicable to most products, such as the wages of night guards are attributed to the bracelets, as they constitute around 10-15% of the income of the project. Similarly, only 25% of costs that are only relevant for the wood products, such as the wages of the nurserymen, are attributed to the bracelets (the other wood products being household goods, furniture and construction materials).

The lower part of the table shows the different margins and prices along the chain. The factory price is the amount of money the project receives for the bracelets, and is the sum of the cost price and the profit margin. In the current value chain in South Africa and Europe there is no wholesaler and the factory price equals the wholesale price, which added with the margin of the retailer forms the retail price. Because there is not enough information about the cost structure of retailers it was not possible to split the retail margin into different cost components and a profit margin.

If one looks at the value chain it becomes clear that labour cost make up only 6.5% of the retail value of the bracelets. In fact only six people (three woodcutters and three nurserymen) per community benefit directly from the manufacturing of bracelets, and their wages are only 2.4% of the retail value; per bracelet only $1.15 ends up in the community itself.

The wood turners receive only 3% of the retail value, being $1.40. Transport of blanks, packaging and shipment of finished bracelets and marketing are all relatively large costs. In addition 1% of the sales price is reserved to cover depreciation and maintenance of equipment, such as sawmills, cars and buildings[14]. In total the cost of the bracelets are only 18.6% of the retail price, while the profit margin of the project is 21.5% of the retail price. Although this high margin might give rise to sentiments that the turners and communities are being exploited I would argue that this is not the case, and that the apparently high profit margin needs to be interpreted with caution for a number of reasons.

First of all the cost price does not yet contain a factor to cover the cost or value for design, which is the factor that determines most of the sales price. Although there is no money spent on design because Schwarz designs them, he as a person has opportunity cost; he can either sell his designs to other labels for a considerable amount of money or use them for the project, but if they are

[14] This is a rough estimate and should be interpreted with care. No financial administration was available regarding this subject. The figure is based on the project leader's estimate that $200,000 has been invested in the project assets, and the assumption that the cost for depreciation and maintenance are 10% of the value of assets per annum, of which 15% should be covered by the bracelets.

used for the project they must yield a financial return for him to make it worthwhile in the long run to 'invest' his design capacities in the project. In regard to the management and sales effort of Schwarz one could regard the profit as the economic return for these activities, but then one has to acknowledge that a profit margin is justifiable. I would argue that any well functioning company needs an operational and financial administration, especially when it increases in scale, and a sales person that can be reached by phone and email during workdays. However there is little administration done and agents and retailers complain about the lack of contact. Hence if the project is to remain sustainable it is likely that most of the profit needs to be used to reimburse the project leader for design and management efforts, and employ an educated person that can do the administration and sales, to provide this person with the telecom infrastructure needed.

A second reason for approaching the profit margin with care is the fact that there is no wholesaler in the value chain, but in order to grow the scale of the project wholesalers are perhaps needed in the future. Wholesalers can find new retailers, hold and manage stock and be in frequent contact with retailers thereby solving the need of retailers to order in short notice and have frequent contact with suppliers. Part of the profit margin will then be needed to pay the wholesaler.

Moving down the value chain the obvious thing to note is the large margin of retailers – 60% of the retail value. Once again, a natural reaction could be to conclude that retailers make exorbitant profits of the back of workers in developing countries, but to make that statement in the context of this study would be premature for two reasons. First of all there is not enough information about the cost structure of retailers, and chances are that most of their margin is needed to cover cost. Upmarket galleries and boutiques tend to be located in areas where rent is expensive, they need to employ well trained sales people, tend to have an expensive interior and they tend to employ window dressers on a frequent basis. Selling the bracelets in a Parisian gallery allows higher prices to be asked than on the street in Maputo, but this comes at a cost. The second aspect that deserves attention is that there is a large difference in price levels and wages between less and more developed countries; where a wood turner in Mozambique might be able to survive on one dollar per day the same turner in South Africa will need more money to afford the same goods and services, perhaps two or three dollars. The same applies for retailers; a retailer in Mozambique might be happy with a profit of two dollars per bracelet whereas the Parisian retailer needs ten dollars to earn the same purchasing power. Looking once again at cost, the salary of the person that would be employed by the Mezimbite project in Mozambique to handle orders and enquiries for retailers is probably a fraction of that of his counterpart on the other end of the phone that is employed by the upmarket Barneys department store in New York.

5.3 The furniture market

5.3.1 Market structure

Kaplinksy et al. (2003) segmented the furniture market according to the type of organization that buys and trades furniture, and distinguished between multi-store retailers, specialised buyers and one store retailers. This research revealed a slightly different market organisation. First of all in addition to these three distribution channels there is fourth channel in the form of interior decorators. Interior decorators

work for private individuals and companies, and they buy furniture for their clients either in a retail store where they tend to receive between 10 and 15% rebate on the retail price, or directly from manufacturers where they will pay a wholesale price. In some instances they will pass on part of that margin to their clients whom they charge an hourly rate for their service, and in other cases they will charge their clients a retail price and use the margin as a payment for their service. Interior decorators are mostly used by the hospitality industry and wealthy individuals who cannot or do not want to spend much time on decorating their house. Interior decorators are mainly active in the market for expensive high quality furniture, which is a smaller niche compared to the overall market. Nevertheless within that niche they perform an essential role. The Mezimbite Project and the South African furniture manufacturer sell the majority of their furniture to interior decorators; either directly, or in the case of the South African manufacturer, through retail stores where interior decorators shop. They estimate to sell the majority of their products through interior decorators. The US retailer estimates to sell 40% through interior decorators whereas the South African retailer acknowledged that the sales to interior decorators are essential for him to keep afloat financially. It appears producers of high quality furniture often start by selling exclusively through interior decorators; such was the route followed by the South African manufacturer and according to them is quite common; some of these companies will then move on to a wholesale or retail model whereas others never make it past this stage.

The second difference with the market structure painted by Kaplinsky et al.(2003) is that there are signs that vertical integration at the level of manufacturing and retailing is relatively common; several furniture manufacturers have started their own retail stores, and these stores sell the factory's furniture combined with that of independent manufacturers to complete their assortment. Wetherlys for example started out this way and is now a conglomerate of several factories that supply around 75% of the furniture in the stores. The remaining 25% is sourced from independent manufacturers, such as the South African furniture manufacturer, who offers products that they do not have the expertise to manufacture themselves. The South African manufacturer in turn is planning to open up an own retail store, whereas the Mozambican manufacturer sells all his furniture through his own two stores.

Although market segmentation through distribution channels provides us an insight into the structure of the market it is still somewhat rough for the purpose of this research. Other segmentation criteria, such as customer characteristics and product characteristics, being quality, material, and design, also deserve attention. If we look at the market according to product characteristics we can distinguish a clear low-end segment in Europe, the US and South Africa. Low-end furniture is low in price, and the materials used are mainly plastics, chipboard, rotan, softwoods such as pine, and chipboard with veneer. Flat-pack furniture, which is furniture that is packed in parts in a box and is transported by the customer himself who assembles it at his own place, has caught on, especially in Europe and to a letter extent in the US. The quality of low-end furniture can be good but due to the materials used it is usually not very durable. For example softwood such as pine is easily dented and changes colour quickly, while veneer is easily chipped and chipboard swells up and collapses when exposed to water. Because of the limited durability this kind of furniture is likely to be replaced every 10 years. If we look at customer characteristics, typical buyers of low-end furniture are young people

that are starting to live on their own and need something that is affordable and looks nice for now, and in ten years time they might replace it with something more expensive and permanent. This furniture is also popular with people that have a limited budget, or that like to change the style of their interior frequently. Although the product quality might not be the best often a lot of attention is devoted to design, as design together with price is the most important sales factor. This market segment tends to be volume driven: a store will sell large numbers of furniture from stock, but the product margins tend to be lower because of the lower sales price. Economies of scale are important and as a result this market segment is dominated in most countries by what Kaplinksy et al. (2003) refer to as multi store retailers, a classic example of this being the pioneers of flat-pack furniture, IKEA, but every country has its local varieties, such as Furniture City in South Africa. Alternatively one can find expensive furniture of high quality an durability and with more elaborate and exclusive designs. Materials that are often used are solid hardwoods of high aesthetic beauty, but in more contemporary furniture steel and coated woods are also used. A lot of high-end furniture tends to be sold in what Kaplinksy et al. (2003) refer to as one-store retailers, although there are several stores that are specialized in high-end furniture but have multiple outlets, for example Wetherlys which has 20 stores in South Africa. Compared to low-end furniture high-end furniture is a low volume business with higher margins. Quality and design are the crucial factors and price tends to be less important. Customers buy the furniture because they like the design and it fits into the style of their house and interior. Most customers will buy it with the idea that it will last them for a long time. The stock of high-end furniture stores is sometimes limited to a few best selling products, as is the case for Wetherlys, but mostly they carry no stock at all. When the customer decides to buy a piece of furniture the retailer will place an order with the manufacturer, who will deliver the piece of furniture to the customers house a couple of weeks or sometimes months later. Even more high-end is custom-made furniture i.e. furniture that is specifically designed for the customer or standard furniture with customer specific adaptations. This research has shown that the high end of the market is an area where interior decorators perform an important role.

The division of the furniture market into low-end and high-end or upmarket furniture is a fairly rough segmentation, and the segments described here are more extremes on both ends of the spectrum than clearly divided categories; all sorts of segments and combinations of these characteristics are likely to exist. The furniture that is currently produced in the Mezimbite project falls into the high-end segment; it is custom made solid hardwood furniture of high quality and elaborate design. Besides that the characteristics of the Mezimbite project imply that this is the high-end is the right segment to be in. The supply of wood is limited to the annual sustainable yield, which in turn is low because the trees grow slowly and only some species are suitable for furniture. This means that in order to become economically sustainable the revenues per unit of timber need to be as high as possible. In the long run the supply is the critical factor that limits sales, which is a different situation to a manufacturer of pine furniture of which the supply is not likely to be limited. The wood is tropical hardwood that is very strong and decorative, and thus very suitable for the manufacturing of expensive furniture. The focus of this research is thus on the so called high-end of the market, and all the respondents of this study were active in this segment, respectively in Mozambique, South Africa and the US. The analysis is focused on these markets although some reflections, mostly based on my

personal experiences, will be made regarding the European market as well since the EU is the biggest furniture importer worldwide (ITC 2005).

Role of manufacturer brands in the market

A very important characteristic of the furniture market across high- and low-end segments is the absence of manufacturer brands. Furniture in retail stores do not tend to carry a brand label from the manufacturer, nor is the name of the manufacturer mentioned in the store. Furniture tends to be sold under a model name that is invented by the store, and the same product is likely to be sold for different prices and under different names in different stores. It is thus the brand name and image of the store that plays a role in the buying decision of the customer rather than the manufacturer, although sometimes manufacturer and store are the same company. In this regard furniture is one of the few consumer products where manufacturer brands are not only uncommon but mostly absent, and this is an important difference from the bracelet market. Sometimes the designer is mentioned, as is the case of the US furniture retailer, but the designer is not always permanently connected to the actual manufacturer. This absence of manufacturer brands makes it extremely difficult for furniture manufacturers to build a customer preference for their product and to distinguish themselves from competitors. This places a lot of power at the level of the retailer versus the manufacturer, because a retailer can source from a different manufacturer without running the risk of losing customers if that manufacturer offers a similar product for a lower price. At the same time the absence of manufacturer brands and model names makes comparison between different stores more difficult for consumers, thus lowering competition on price. Although the absence of manufacturer brands makes it harder for manufacturers to distinguish themselves from competitors and create a consumer preference it also makes it easier for new competitors to entry the market. Perhaps this low entry barrier is the reason for the large number of small furniture manufacturers.

Kaplinsky et al. (2003) claim that the furniture industry is the biggest low tech industry in the world with trade growing fast, but that unit prices for low quality furniture were decreasing even faster. None of the respondents mentioned that demand in particular was rising or that prices were falling. The latter is consistent with the study of Kaplinksky et al. because all respondents are active in the high end of the market which is not sensitive to prices. The sentiment amongst respondents was that there is more than enough demand for high-end furniture, while Schwarz, the SA furniture manufacturer and the Mozambican furniture manufacturer-retailer claimed that there was an enormous demand for high-end furniture.

5.3.2 Current sales and distribution

The furniture that is manufactured is currently sold to either private customers or interior decorators. Both come from the private networks of Schwarz. For many years he has worked as a designer and architect in the United States and South Africa, and during that period he has built up an extensive network of people that know his style of design. Furthermore the number of people with a high disposable income in central Mozambique is limited and the project and Schwarz is well known in the area. At the same time there are few furniture stores in the region, especially those delivering quality furniture. This leads to additional orders from local people. Agents have started attempts to bring the

furniture in stores, but there is no shop yet that sells the furniture, apart from a gallery that sells some chairs. There appears to be no standard collection of furniture, and there is no sales material with pictures of furniture.

5.3.3 Supplier selection

In contrast with the study of Kaplinsky et al. (2003) there was little evidence that there is a clear distinction between 'design takers', typically the multi store retailers, and 'design makers', usually one-store retailers. All retailers and the interior decorator engage in design one way or another. The South African manufacturer receives occasional requests from retailers to change certain parts of furniture, but their multi store clients mostly take their designs without any comments. The South African retailer, with only one store, actually copies designs from Europe and the US and asks manufacturers to manufacture those for him. Perhaps the separation between design makers and takers is less common in high-end markets, or the vertical integration between retailers and manufacturers has led to a tighter cooperation in design. A very common cooperation on design is the development of exclusive lines for a shop; the manufacturer and retailer work together to design a product line that will be sold exclusively through that particular retailer. One could argue that exclusive lines are another example of the power that retailers have over manufacturers in the furniture market.

In addition to design, product quality was seen as crucial by all respondents. However, from the literature review and the interviews in this study it became clear that the word quality means different things to different people. Depending whom one speaks to it can mean:

- A high quality of the finishing and manufacturing – it looks perfect, all parts are painted clean and evenly, all surfaces sanded smoothly and are there no visible faults
- High quality materials used – solid hard wood instead of chipboard or pine
- High strength and durability of the furniture – it will not break easily or show signs of aging and usage
- A high continuity of production quality – the percentage of furniture pieces that come out of the factory with obvious manufacturing faults is low

Although good design, quality in finishing and manufacturing is common in the low-end of the market, strength and durability, and a high continuity in production quality is what distinguishes high-end from low-end furniture. This is usually achieved through the use of more solid and hard woods, high quality finishes and quality checks. Customers buy expensive furniture because they expect it will last decades as opposed to years, and retailers find durability and strength essential because it keeps the number of so called comebacks (furniture that needs to be replaced because it has quality problems) low. As mentioned transportation of high-end furniture is very expensive as it comes in one piece and thus takes up a lot of space. Furthermore high-end furniture stores do not tend to hold stock because of the lower volumes and higher cost per item, whereas interior decorators never hold stock. As a result the furniture is generally dispatched from the factory or distributor directly to the house of the customer. This makes exchange of furniture with quality problems expensive, because a truck will have to drive out to the customer to pick up the problem piece and come back later to bring back the repaired piece or a new piece. In addition a retailer is not able to influence the rate of comebacks through extra quality checks, because the furniture does not pass through the store. Also, comebacks

are not only a direct financial problem but they also damage the reputation of the store, as people that buy expensive furniture expect less problems with quality. Product quality is thus a crucial criterion for retailers when they select suppliers.

In addition to design and quality, stores and interior decorators also look at the margin they can make on a product, the delivery time of furniture, and the scale of operation of the supplier. The South African retailer demands a delivery time of four to six weeks, and that is also the time that the South African manufacturer needs. For the other respondents it was less of an issue; the Mozambican retailer-manufacturer even had a waiting list of four months. As the interior decorator states, ultimately it is up to the client, if they are prepared to wait. What is more of an issue than the length of the delivery time though is reliability, as in delivering at the date that was promised. In any case sooner is always better, and due to the limited skills and thus production capacity in Mezimbite, and its isolated location this can be an issue influencing sales. For the multi-store retailers scale of operation is also of vital importance, as they want to be sure that their suppliers will be able to produce large volumes and thus keep a reasonable delivery period within one or two months if their furniture turns out to be a bestseller.

Interior decorators appear to have similar criteria in regards to their suppliers, although personal relations appear to play a bigger role. Payment terms are a frequent source of conflict between retailers and manufacturers, with most retailers trying to pay only 30 days after delivery, while manufacturers want to be paid on delivery, or even receive a down payment when the order is placed. For custom made products, down payments upon placing an order appear to be common.

5.3.4 Consumer preferences

In accordance with Kaplinsky et al. (2003) design was seen as an important factor in the market; customers first and foremost buy furniture because they like the design, it fits physically in their home and it combines with the style of the house and other furniture. But the importance of design and taste regarding design is very different in Mozambique and South Africa compared to Europe and the US. The Mozambican and South African manufacturers design their own furniture but do not have any design skills in the form of specific education, and when compared to what is available in the European and American markets their designs appear rather old fashioned. Nevertheless their products appear to sell very well against high prices in their local markets. Both acknowledge that their designs are not sophisticated enough for the high-end American and European markets, and in the case of the Mozambican manufacturer that they will have to improve radically on design and quality to be able to export. The price of furniture in these markets seem to be more influenced by the materials used, i.e. tropical hardwoods versus chipboard or pine, than the design. Especially for dining tables customers want solid hardwood and are prepared to pay a higher price for this. Unique designs are crucial to gain entry into the high-end European and North American markets, more so than the material itself. The material is less important, as long as it is durable. Design seems to be the factor that influences the price the most, as the US retailer states: 'There is definitely a design premium; people are willing to pay for design.'

5.3.5 Transport of furniture

Transport of furniture is a high cost component in the high-end furniture market, because furniture tends to be heavy and take up a lot of space. Most furniture is transported directly from the manufacturer or wholesaler to the end-customer as retailers generally do not hold stock. No matter what the cost are of transportation, the customer always pays for it; either through a direct charge on top of the retail price or indirectly because the cost is already included in the retail price. Transportation costs depend on a large number of factors, including:

- The distance between the factory and the end-customer, or in case of a wholesaler the distance between the factory and the wholesaler and the distance between wholesaler and customer
- The number of items that is moved from one place to the next; it tends to be very expensive to transport one item, but if more items are shipped the cost can be divided over multiple items.
- The location of manufacturer, wholesaler and customer; if they are located near major transportation hubs, urban areas or on transportation routes the cost are likely to be lower than if they are located in more remote areas. For instance if the customer orders one table but lives in a densely populated area the order may be combined with other deliveries.
- Number of borders to be crossed; crossing borders tends to involve import duties, and customs clearance which can raise cost considerably, especially if few items at a time cross the border
- The size and weight of items

Because there are so many different factors influencing the cost it is difficult to estimate the cost of transportation. Interviews with the retailers, interior decorator and the manufacturers indicate that if the place of shipment (the factory or wholesaler) is located in the same country as the customer and the customer is located in an urban area the cost are around 10% of the retail value. Cost can rise very quickly if the customer lives far away from the shipment place, orders one or few items, and shipment cannot be combined with other customers. Transportation costs in the industry are generally kept low by transporting in bulk (a full truck load or container) from the factory to a distribution point or wholesaler close to major urban areas. From there items are transported to individual customers. It is at this point where the Mezimbite project has a major problem to become competitive in the retail market. It takes two to three days to transport furniture by road from Mezimbite to South Africa, and although there is a port in nearby Beira sending single items of furniture to Europe or the US is expensive and will take several weeks to months. Currently furniture is directly shipped on an order-by-order basis to customers, which is very expensive and only plausible if multiple items are bought by the same customer. The transportation costs are diverted towards the customer, but because no margin needs to be paid to the retailer the price including transport is still in line with alternatives. However, if a retailer is involved the furniture of the Mezimbite project is likely to become too expensive for customers compared to that of other manufacturers and the delivery times might be too long. This has been the main reason the Mezimbite furniture is currently not sold by the US furniture

retailer who is not willing to hold inventory, like many other shops in the high-end furniture market. If the project could find a way to hold stock in the US he would be willing to sell it.

5.3.6 Trend in the use of wood and rents in sourcing wood

Wood is a critical input for the furniture industry, and a large variety of woods are used in the industry. If one looks at the sources of wood and the types of wood over a long period of time there is much resemblance with neo-classical models of sustainable development that assume a substitution of natural capital with technology. Where perhaps 100 years ago most wood used in the industry came from natural sources, much of this has been replaced by wood from plantation forests. At the same time solid woods have been replaced to a large extent with chipboard and veneer. Furthermore the usage of steel, glass, plastic, bamboo and rattan has risen at the expense of wood products. Within wood products the dominant species have changed over time as natural occurring species became rare, design and taste changed and other species have become more abundant through the start of plantations. Europe for instance has seen a shift from darker species such as oak, mahogany and ebony to pine, birch and beech as lighter wood colour have become more in fashion. In South Africa for centuries furniture was made from indigenous species from natural forests such as kiaat, kamassi, yellowwood and stinkwood (McCracken 2004) but these species have been almost completely replaced by exotic species of pine and saligna grown in plantations. Kaplinsky et al. (2003) devoted much attention to the substitution of pine with saligna, as saligna is easy to colour and a harder material. There is some indication that this substitution has taken place; as mentioned the South African furniture manufacturer uses saligna for less visible parts of furniture such as the legs of dining room tables. The South African manufacturer also noted an increase in the number of saligna products on the South African market, and indeed up-market furniture stores such as Wetherlys or that of the South African retailer sell a wide range of saligna furniture. There are however indications that saligna is not a perfect substitute for tropical hardwoods. First of all saligna is not a full substitute for tropical hardwoods because it does not have the same aesthetic value. Secondly the price of saligna is rising, and for the South African manufacturer it is only 15% cheaper than the Mahogany they import from Ghana. They also expect the price to rise further because the demand increases as tropical timber becomes scarcer. Meranti from Indonesia for example is a popular timber in the construction industry, and used for beams, doorframes and doors, but the Indonesian forests are disappearing at an alarming rate (FAO 2005). Once the supply of meranti dries up the industry is likely to switch to the next alternative, being saligna. On the supply side local saligna becomes increasingly scarce as most wild saligna has been cut and plantations are not extended because they use too much water. In addition it is not as financially attractive yet to grow saligna for furniture as it is to grow pine for furniture or saligna for the paper industry. Pine can be sold and used for furniture three weeks after being cut, and there is little loss during the drying process. Saligna for the paper industry can be cut every 15 years and sold immediately, but saligna that is sold to the furniture industry needs to grow for 30 years, dry for six months after it has been cut, and during that process 60% is lost due to cracking. As a result of these supply side issues and the growing demand, South Africa imports saligna from other areas of Africa, and 'it is no longer the cheap local timber it used to be' (SA furniture manufacturer). Just as saligna is not a perfect substitute for other hardwoods, it is also not an

easy step up for pine furniture manufacturers who want to enter the high-end market, because the machinery used for pine is not suited for the harder saligna, and the designs are also not suited.

In conclusion we can state that the substitution from tropical hardwoods that has marked the past decades or perhaps century is likely to continue as hardwoods become increasingly scarce, but that more sustainable alternatives such as saligna are not full substitutes. For the Mezimbite project this means that there a clear case of a natural resource rent in the form of a sustainable access to high quality tropical timber. Considering the trend of declining hardwood availability, and rising prices for tropical hardwoods and their alternatives, this rent is likely to grow in importance over time.

5.3.7 Rents, entry barriers and the competitiveness of the Mezimbite furniture

In order to enter the high-end market of furniture one needs to be able to produce high quality, durable furniture. In South Africa high-end retailers do not put pine furniture on the shop floor, so having access to hardwoods and the skill and machinery to work with hardwoods can be seen as an entry barrier to the high-end of the market in South Africa. High class contemporary designs on the other hand are essential for the European and American markets, and design skills form a clear barrier to entry to these markets. The agents and the US retailer rated the design and quality of the Mezimbite furniture as appropriate to enter the market, and they expect the furniture line to do well if it enters the shop floor in both markets. Once again the design skills of the project leader are a rent that enable them to enter markets, while the ability to source hardwoods at a rate that is lower than the competition on a sustainable basis, and to work with these hardwoods are also important rents captured in the project. Its pricing and retail margin also appear to be competitive for the American market; it can bring dining room tables to the market for $660 (R4,130) up to $2,000 (R12,464) while granting the retailer a 100% margin. As a comparison, high quality dining room tables in New York retail from $1,100 up to $4,000. As the US retailers states, the market it is all about the subjective value, and it is hard to predict what a good price is for a certain product. 'you put a table on the floor for a certain price, and the market says either yes or no'. The environmental sustainability of the Mezimbite furniture also allows it to enter a 'green' market segment of people in the US and Europe who actively seek 'green' furniture, and this group appears to be growing. Within South Africa dining room tables in more upmarket stores typically retail around R6,000, but they can be found from R4,000 up to R14,000. For the interior decorator market the margins are correct, in fact the pricing seems to be designed for that market. There is a clear rent in the project that enables sales to interior decorators, being the personal network of the project leader, and his reputation as a designer.

As discussed in section about transport the shipping cost and times do not seem to be a problem for private individuals and interior decorators because they do not pay the retail margin, but it makes it less appealing for retailers in South Africa, the US and Europe to sell the furniture. To make sales in furniture stores economically viable a way must be found to ship furniture in bulk to end markets where inventory is held. There are three possibilities: a retailer needs to be found that is willing to hold inventory; a warehouse must be set-up; or a wholesaler must be found. Unfortunately all three options have their difficulties. Managing an independent distribution centre abroad from the remote location in Mezimbite seems unrealistic, most high-end furniture retailers do not hold inventory other than a few best selling items, and to find a wholesaler the sales volume must be considerably

higher than what it is now. In any case a rather small assortment of standard furniture items needs to be developed, because holding stock of custom furniture or a deep and long range of furniture does not make economic sense. Currently there appear to be standard models and lines of furniture but they only seem to exist in the mind of the project leader. The US agent mentioned this as a barrier to contact potential retailers and interest them for the product lines. The line has to be narrowed down considerably and well documented in brochures. Another barrier to entry for furniture retail is the manufacturing of showpieces for the shop floor; retailers indicated that in some occasions they are willing to carry part of the cost, but this would involve an investment form the Mezimbite project.

Just as in the market for bracelets, the difficulty in making contact as perceived by the gallery owner and the agents is a problem that is likely to prevent the products from reaching a retailer's shop floor. It is also likely that it makes the project less competitive versus other custom furniture manufacturers. Retailers and interior decorators need to be able to request information about products and running orders on a daily basis.

5.3.8 Division of margins along the furniture value chain

This section aims to give an overview of the distribution of margins along the value chain of wood furniture. It proved to be more difficult to construct a breakdown of the furniture value chain compared to the bracelet value chain. First of all cost price calculations for furniture that were available in the project were not as elaborate as those of the bracelets. Secondly reconstructing the cost price was more difficult because the range of furniture products is far more heterogeneous than the bracelets. The former come in different products (tables, chairs, cupboards) as well as models per product, and all products and models require different levels of input in terms of labour, energy, wood and consumables. The bracelets only come in three basic sizes and every model of a certain size requires similar input levels of labour and material. In addition the carpenters and apprentice carpenters work on a fixed wage plus production bonuses, and the monthly production of furniture is more erratic than those of the bracelets, making it harder to assign labour cost to an individual product. In order to give an impression about the margins along the chain estimates for the cost of labour, wood and other costs have been used that were provided by the project leader, and these have been applied to one specific item, dining room tables. These can be found in any furniture store and they were manufactured by all three manufacturers present in this study. A percentage has been added to the cost price to cover marketing cost equivalent to that for the bracelets. The transportation costs have been left out of this calculation because they depend on too many factors to translate it in a cost per dining table. The division of margins is displayed in Table 5.3:

Table 5.3: Division of margins in the value chain for hardwood dining tables				
Cost:	**Percentage FOB price**	**Cheapest Model**	**Most expensive Model**	**Percentage retail price**
Labour (wages of carpenters, night guards, medical cost, production bonuses)	25%	$82.50	$250.00	12.5%
Wood (nursery, woodcutters, transport, coordinator and taxes)	20%	$66.00	$200.00	10%
Consumables, packaging, depreciation and maintenance	26%	$85.80	$260.00	13%
Marketing	7.5%	$24.75	$75.00	4%
Cost price		***$259.05***	***$785.00***	***39.5%***
Profit margin project	22%	$87.45	$215.00	10.5%
FOB price/ direct sales price		$330.00	$1,000.00	50%
Gross retail margin	100%	$330.00	$1,000.00	50%
Of which is retail profit:	*15%*	*$99.00*	*$300.00*	*15%*
Retail price excluding transport		$660.00	$2,000.00	

The interviews revealed that gross margins for retailers are between 80% and 120% of the factory price, hence 100% has been taken here as an average. Of that margin generally 85% is needed to cover the cost of retailers, and 15% is profit. If we compare these margins with those in the bracelet value chain, we can see that:

- The percentage of the factory price and the retail price that is paid to workers is higher for furniture. If we assume that half of the wood costs are labour, as is the case for the bracelets, 40% of the FOB price and 17.5% of the retail price of furniture ends up in the hands of Mozambican workers, and 5% ends up in the forest communities as wages of the nurserymen and woodcutters. This is much higher than the 15% of the FOB price or 6.1% of the retail price that are labour costs in the case of the bracelets that is labour.
- The profit margin as a percentage of the sales price is much lower: 13% versus 19.8% for the bracelets
- The retail margin is lower than in the bracelet industry where it tends to be 150%

It seems that for the furniture less profit is taken and more is paid to workers. This is mainly the result of the production bonus of 20% of the FOB price that is paid out to the workers, on top of their fixed salary. Interestingly the South African manufacturer spends roughly the same percentage of the FOB price on labour, 30%, but their profit margin is only 15%, which is a lower than the 22% of the Mezimbite Project. A number of explanations for this difference are possible. According to the South African manufacturer and the interior decorator margins for sales to retail stores are lower than the margin on sales direct to customers and interior decorators, which tends to be between 25% and 50%. This would imply that if the project wants to increase scale and it needs retailers to do so it might be forced to lower the prices, or for instance take up a bigger part of the transportation cost of the finished product. Another possible reason could be the difference in wage levels between Mozambique and South Africa and other cost such as rent for a factory facility. A third possibility is the difference in cost for wood; the Mezimbite project spends 20% of the FOB price on wood, compared to 30% for the South African manufacturer. The wood in Mezimbite is obtained within the project, and

the margin for that activity stays within the project, whereas in the case of the South African manufacturer a German logging company takes a profit margin, and they need to transport the wood to South Africa.

Looking at margins in retail, the lowest margin was taken by the South African retailer, who would typically mark his product up with 80%, because he tried to be cheaper than his competitors. According to other respondents margins range between 80% to 130%, but 100% being the average. These margins appear to be high, but profits in retail are not that high as costs are high as well. Retailers need personnel in their stores, and may spend up to 50% of their margin on rent alone if they are located in a prime shopping area. Their profit margin appears to be between 10 and 20% of the retail value, which in real terms brings it to the same level as that of the manufacturers.

5.4 *The role of ethical criteria in the market for bracelets and furniture*

A classic question that seems to be raised in current literature and discussions about markets is whether there is a market for 'ethical' products and if there is a so-called price premium for these products. In other words, will consumers buy a product just because it is fair-trade or produced under environmentally friendly conditions, and are consumers willing to pay more for such products. Given the nature of the Mezimbite project these questions are relevant for both furniture and bracelets.

In line with the general opinion in discussions about the existence of a market premium there has been little evidence in this research that such a price premium exists. The bracelet and furniture agents, retailers and manufacturers did not believe there was a price premium. The general opinion of those interviewed was that either consumers simply do not care about the environmental status of a product or they see it as an added bonus but it plays little role in their buying decision. It was also noted by the respondent that there is an increasingly large group of people, mostly in Europe and to a lesser extent in the US, who have a preference for environmentally friendly products and even actively seek them. But most of them are not prepared to pay extra for those products or sacrifice quality; for example given the choice between a table that is FSC certified and one that is not they will choose the FSC certified one if it is sold at the same price and the quality is the same. The interviews with the agents and manufacturers showed that the percentage of people who care about green products appears to differ strongly by region. Consumers in Europe appear to be most concerned with the environment and the percentage of people in this market for which environmental aspects play a role in their buying decision is likely to be the largest. In the US that number is lower, and according to the US agent and US furniture retailer, such customers are confined to the East and West Coast of the country which are traditionally the areas with more liberal, educated and affluent people. In South Africa environmental criteria play a role in the buying decision of very few people. The SA retailer and the Interior decorator noted that none of their customers had ever asked them about these issues:

> 'The most they will ever ask is: "it is hard wood, is it going to crack?". They don't care where it comes from. Unfortunately not. I suppose it is quite sad, because one wonders if one day

there are going to be any trees left. But people worry more about other things. I don't think the source of the wood is even an issue.' (Interior decorator)

For the SA furniture manufacturer it does not play a role either, as this issue is not relevant to their suppliers. Sales people in a branch of their main customer, a large upmarket South African furniture retailer, stated that no one ever asks where the wood comes from or if it is from a sustainable source. The South African gallery owner was the only person who mentioned the environmental aspects of the products as important for sales, but a large part of her clientele is from Europe and the US, and she describes her clientele as educated, wealthy and well travelled people. The interviews with the respondents indicate that the importance of environmental aspects appears to be context dependent; it depends on education levels, disposable income, publicity about environmental and fair trade issues, and even per industry. The regional differences occur because disposable income, education and environmental publicity are very different geographically. Across respondents it was noted that education has a big influence, on the one hand because people with more education tend to be more interested in environmental issues, and on the other hand because people with more education tend to have a higher disposable income and therefore can afford to look at other product characteristics than price alone, such as quality, design and environmental sustainability. From the interviews with the agents, the US furniture retailer and the SA gallery owner it became clear that most environmental products are in the high end of the market, and aimed at well educated and wealthy people. Education levels are geographically different, and education levels on average tend to be higher in Europe and the East Coast and West Coast of the US than in the middle of the US and South Africa. In addition to that, for decades the European media has given much attention to environmental issues, whereas according to the US agent the media in the US has only now started to give attention to environmental issues such as global warming. From a personal experience I can say that compared to Europe the press in South Africa gives far less attention to environmental issues. Local concerns such poverty, development, unemployment and corruption appear to push these issues to the background, as was also noted by the SA furniture manufacturer.

All this suggests that perhaps many people do not care about environmental issues when they buy products because they do not know, and because they do not have the disposable income to buy environmentally sustainable products. As the US agent states:

> 'I am not talking about the middle of the US, they are not buying these products; one they cannot afford it and two they are not thinking about it at all. They have kids to feed and they are shopping at Wallmart'.

Regional differences in environmental awareness are also reflected in environmental legislation; the SA furniture manufacturer for instance explained that most paints and finishes they use are forbidden in Europe because they are considered to be environmentally damaging as well as damaging to workers health.

Another important contextual factor that relates to decision-making is ethical factors is the industry. For some food products, most notably coffee, there is a long tradition in fair trade. For years

crafts have been sold in Europe under fair trade labels, and more recently the clothing sector and the sports sector (soccer balls) have been linked to issues such as child labour. In the furniture industry environmental issues are important because it is obvious that a lot of wood is used to manufacture furniture. In addition, the US agent finds that there is more attention on the environment in the industry because many furniture designers are closely connected to the world of architecture, which has a long history in green design and building. The high-end fashion industry in the US and Europe on the other hand lags around ten years behind this trend, according to the US agent.

Although traditionally much emphasis is placed on the ethical awareness of consumers and their power to enforce environmental standards and working standards down the value chain the research has shown that the initiative does not always have to come from the consumer. The Mozambican furniture manufacturer for instance has implemented strong environmental and development standards in their production process even though their customers do not ask for it and in that sense it does not make them more competitive. They run large reforestation projects, have invested time and money to acquire FSC certification and they invest money to help local communities set up economically sustainable enterprises, knowing that this does not translate into higher sales volumes and prices in the short and medium run. Another example is the US furniture retailer who only sells furniture produced from environmentally sustainable harvested materials. They had the desire to sell environmentally sustainable furniture, and they have searched for a market in which they can be competitive with environmentally sustainable furniture, as opposed to aiming for a certain consumer segment and than adopting environmental criteria because their customers demand it. Currently they are active in a niche market of expensive high end furniture, but they aim to reach a bigger market by finding and developing cheaper products that will allow people with lower disposable incomes to buy their furniture. In addition to that there appears to be a large number of designers and producers of that kind of furniture as well as interior decorators who prefer to buy these products for their clients.

5.5 Corruption, business climate and crime

From the interviews with the project leader and the Mozambican furniture manufacturer it became clear that corruption and crime are serious constraints to development in Mozambique. The interview with the Mozambican furniture manufacturer was interrupted by a call from a truck driver who was stopped by a police officer demanding a bribe based on a difference of one digit between the vehicle registration licences and the transport papers, which was actually caused by a mistake from the government department that had issued the papers. The project leader was approached by local authorities to start a sustainable forestry project in the Derre region, but declined the offer after he found out that the proposed site was inside the Derre Forest Reserve where logging is illegal. The study of Nhantumbo et al. (2003) indicates that such occurrences are not unusual; they found that authorised government authorities involved in corrupt activities had issued licenses to private companies for logging inside the same Derre reserve. The project leader also mentioned that the system of charcoal harvesting in Mozambique is similar to the one in Senegal described by Ribot (1998), but with the difference that there are many individuals who operate on their own without

licenses and sell on the side of the road. I have observed many of these sellers and according to the project leader the police officers not to prosecute offenders in exchange for a bag of charcoal. The same appears to be true for the harvesting of logs by the wood turners; officially they need to buy the licenses from the government, and have transportation permits, but according to the project leader they bribe the officials instead. The latter was not confirmed in the interviews with the wood turners, although turner AB mentioned they only had to buy licenses if large quantities were harvested.

These incidences are only a few examples of many anecdotal stories about corruption that local people in general and business people in particular told me during my field visit, which indicates that corruption is a serious impediment to doing business in Mozambique. The strategy that is used by the Mozambican manufacturer and the project leader to deal with the corruption is to invest time and money to make sure they comply with all laws and regulations and thus cannot be forced by officers to pay bribes. Although this seems an adequate solution it means that much time and money needs to be invested in paperwork, and paying taxes and levies, and competitors might be able to have cheaper access to sources such as wood by bribing officials instead of paying taxes.

Another problem that was mentioned by the project leader is the low levels of service of the government and parastatel companies; a simple act of registering a company tends to be time consuming, and despite the fact that the MFC is located near major power lines, attempts to be connected to the grid have proved unsuccessful, forcing the project to buy and use a generator for energy.

Theft also appears to be a large problem for the Mezimbite project. In addition to the example in Chapter 4 of the electric engine that was stolen and ended up in the Dondo cooperative, Schwarz claims that many other goods have been stolen, which is why there are night and weekend guards employed.

5.6 Economic sustainability of the project

5.6.1 Economic rents and sustainability

The economic sustainability of the Mezimbite project can be evaluated by analysing economic rents. Table 5.4 shows the extent to which different economic rents are present in the Mezimbite project. The following scale has been used:

(++) Rent is present and is a strong competitive advantage

(+) Rent is present and is a competitive advantage

(+/-) Neither advantage nor disadvantage over competitors

(-) Rent is absent or in a negative form, and competitors who have these rents will have an advantage over the project

(--) Rent is absent or in a negative form, and competitors who have these rents will have a strong competitive advantage over the project

Table 5.4: Economic rents in the Mezimbite project			
	Type of rent	**Applicability to the project**	
Endogenous and constructed by the firm	Technology rents:	+/-	Competitors are likely to have superior technology but due to the small scale of production within the project and the low labour cost this is not likely to affect the project negatively
	Human resource rents:	++	Design, carpentry and woodturning skills of the project leader; trained wood turners and carpenters
	Organisation rents:	+	The incorporation of the forest community into the project produces access to the natural capital of hardwoods
	Marketing rents:	++	Access to marketing skills (the agents) at a reduced price, based on personal relationships and the ethical character of the project (Benevolence rent); access to niche markets of environmentally and socially conscious people,
Endogenous and constructed by group of firms	Relational rents:	+	Personal relationships with interior decorators, customers and the South African agent
Exogenous rents constructed by nature	Natural resource rents:	++	Access to sustainable source of high quality hardwoods that is large enough to reach production levels that will make the project economically sustainable
Exogenous rents constructed by parties outside of the chain	Policy rents:	–	Corruption, crime, red tape and a lack of service are a burden; competitors in countries with better service, lees crime and corruption and where the public sector stimulates the industry will have an advantage over the Mezimbite project
	Infrastructural rents:	– –	The location is far from markets, and roads in the region are extremely bad. Not connected to the electrical grid and telephone network. Cell phone coverage in the region is limited
	Financial rents:	+	The personal capital of the project leader made start-up easier and capital cost lower. The environmental and social components of the project frequently leads to substantial donations of NGO's and private foundations

The human resource rents (design and production skill), together with the natural resource rent (access to a sufficiently large supply of tropical hardwoods), leads to authentic products of high quality and design. These products together with marketing rents (as in the marketing done by agents against reduced cost), gives the project access to the attractive high-end furniture and bracelet markets. These markets appear to be growth markets with enough demand and prices that allow for healthy margins. Underlying the marketing and financial rents of the project is a benevolence rent. The sustainable principles of the project result in the marketing efforts of the agents at reduced cost, and provides access to growing niche markets of educated and economically well-off European and US consumers that are interested in buying environmentally sustainable products. The sustainable principles also provide access to grants and technical assistance from NGOs and foundations.

On the negative side, there are no infrastructural rents and policy rents. In these areas, especially infrastructure, competitors are likely to have an edge. Mezimbite is far away from markets, which leads to long delivery times and high transport cost, especially for furniture. All furniture is custom made and thus no stock can be held, and the cost of transportation are higher due to the volume and weight of the furniture. Furthermore telecom infrastructure is limited, making contact with markets more difficult and costly, and the fact that the project site is not on the electricity grid also makes production more expensive because generators have to be used.

Based on Figure 5.4 I would argue that the project incorporates various rents and thus has the potential to become economically sustainable. The products from the project are maketable, the furniture market is thriving and margins are healthy. If 6,000 bracelets and 100 large pieces of furniture of average quality are sold per year more than $180,000 of revenues will be generated, which, according to the project leader, will be enough to keep the project running. It is important to note that the supply of wood is large enough to reach these volumes, which means that the project can become economically sustainable. The Mezimbite project offers clear economic incentives to the communities in the form of wages of woodcutters and nurserymen, as well as agro-forestry projects. These incomes are sustainable over time and should ensure access to the hardwoods.

5.6.2 Threats to the sustainability of the Mezimbite project

Despite the important rents within the project that allow it to become economically sustainable, there are several factors that threaten the sustainability of the project. Firstly, the lack of contact with agents and retailers limits the sales of bracelets and furniture to existing retailers and customers, as well as growth in the number of retailers. For furniture, this is further limited by the high transportation cost, caused by the remote location, and the lack of a standard assortment and brochures that depict and describe the products. As a result the sales are not as high as could be expected given the quality and design of the products. Consequently the income for the project is not high enough yet to make it independent from the other income sources such as consultancy of Schwarz and grants, and it is not high enough to provide the project leader an economic compensation for design, marketing and management activities and to recover personal capital invested in the project.

A second potential problem is that the marketing relies heavily on personal rents and benevolence rents, but it is uncertain how sustainable these rents are in the future. Personal relationships are important in any business, and many charitable organisations manage to sustain for long periods of time based on favours and donations. However, the project is not a typical charity, and calling upon favours and altruism is less stable than providing agents with financial incentives. An increase in sales would enable the project to offer economic incentives to the agents.

A third concern for the sustainability is that the entire project is centred around the project leader Allan Schwarz. The essential functions of product design, training of workers, production management, financial management, sales and marketing are all performed by Schwarz. Sales, especially of furniture, are mostly based on the personal network of Schwarz. When Schwarz is travelling or ill many important processes stop functioning, which affects the earnings of all who participate in the project. If Schwarz were to depart, the project will more than likely cease to exist.

Another potential threat to the sustainability of the project is the dependence on skilled craftsmen. The foundation of a training centre for turners with dedicated trainers is an important step towards ensuring a sustainable production capacity. On the furniture side the attempts of skills transfer of the main carpenter to four apprentices is similarly important. The downside is that some of the root causes of the high turnover of skilled turners, HIV/AIDS and competition from other companies, have not yet been addressed. Although working for the project appears to improve wages and working conditions substantially for the wood turners, their earnings as a percentage of the total

sales revenues remains low. And because training of a carpenter takes five years the project is very vulnerable to the loss of the main carpenter until the apprentices have been trained.

5.6.3 Economic incentives for the n'Hantanga and Mosca do Sohno communities

From the studies of CBNRM discussed in Chapter 2 it became clear sustainability of these projects depends on the economic incentives received by members in the community – these must be sufficient to secure their support for the project in the long term. In this regard, an important concern for the overall sustainability of the Mezimbite project is the small percentage of the sales revenues of the bracelets and furniture that flows towards members of the forest communities in n'Hantanga and Mosca do Sohno. The sales of all timber based products, including the bracelets, furniture, household goods and construction materials, only results in six jobs per community: three nurserymen and three woodcutters. Most jobs created by the project are located outside the community and are filled by people that are not from the community. The wages of the nurserymen and woodcutters only account for 2.5% of the retail value of bracelets and 5% of the retail value of the furniture.

Despite this, there are no signs of exploitation of the community and their natural resources in general or of individual workers in particular. Working conditions are good, with medical aid, protective gear and schooling provided for workers, and working hours and workloads are fair. Furthermore there are no signs of excessive profits made by the project leader. Instead he invests his own financial resources in the project. Profit margins on furniture and bracelets are frequently used to subsidise other activities in the project from which the communities and workers benefit.

It is also important to note that the salaries from the bracelet and furniture production are not the only benefits for the community. Additional income is earned with the production of other products, such as apiculture, building components and household goods. There are also non-monetary benefits, for instance the fruit trees that are distributed, and the regeneration of degraded woodlands. Furthermore, the fact that the project has been running for over 11 years in the n'Hantanga community and that the Mosca do Sohno community requested to join the project indicates that the project has improved the situation within the communities and enjoys their support. However, more research is needed to establish whether the total benefits of the project are sufficient to provide the community with a strong enough economic incentive to manage the forest sustainably in the longer term, especially in a context of hardwoods prices that are likely to rise.

Chapter 6: Project improvements through upgrading, conclusion and recommendations for further research

6.1 *Introduction*

The main conclusion from Chapters 4 and 5 is that the Mezimbite project has access to attractive markets, that the margins and the supply of wood are high enough for the project to become economically sustainable, but that sales are too low. Several issues need to be resolved for the project to become economically sustainable. Possible improvements for the project (research objective three) that will address these issues will be formulated in this chapter. I will look at the possibility of upgrading in the value chain, and ways to profit more from current economic rents as well as how to make these rents more sustainable in the long term. I will end this chapter with a overall conclusion of the study and recommendations for further research.

6.2 *Improvements for the project through upgrading*

Kaplinksy and Morris (2001) distinguish four different types of upgrading: functional, product, process and chain upgrading. In this section I will discuss possible improvements for the Mezimbite project using their concept of upgrading, although it is often difficult to distinguish clearly between the different kinds of upgrading.

6.2.1 Functional upgrading

In order to make the sales of furniture more regular from month to month and grow the total sales volume the Mezimbite project should upgrade towards selling its furniture in retail stores. There are a number of retail scenarios possible. Firstly, the project could consider opening its own store in Beira and Maputo, just as the Mozambican furniture manufacturer-retailer has done. Judging from the latter operation the local demand for furniture is high enough, although the margins might be lower. In addition the location of Mezimbite will be an advantage over competitors as it is located closer to the shops than most competitors. A second scenario could be to cooperate with one or more retailers in the US or South Africa. Even cooperation with one smaller store could have a huge impact; the SA furniture retailer for instance sells between 10 and 20 hardwood dining tables per month from three different suppliers; cooperation with a store like this could mean stable sales of between three and seven dining tables per month.

For a retail model to work a way needs to be found to ship furniture in bulk to a distribution point close to the US, European and South African markets to reduce transport cost per item and the delivery time. To solve this problem the project needs to set up an independent warehouse or find a retailer or wholesaler who is prepared to stock furniture in these markets.

A third way in which the project can upgrade to a retail model would be to start sales through the website; the US furniture retailer claims that 40% of its sales are online. Because there would be no retailer involved the transport cost would be less of an issue for an online model. However, the delivery times might prove to be too long for consumers if no inventory is held in the US or Europe. Furthermore considerable marketing efforts are needed to attract visitors to the site, and it will be difficult to attract new buyers through the website. Nevertheless an online catalogue is likely to boost existing sales because it demonstrates to customers what the products look like.

6.2.2 Product upgrading

The Mezimbite project should consider reducing the assortment length and depth of the furniture range, and develop a standard range of furniture that is well documented in an (online) brochure with pictures, product descriptions such as size, style and material. This standard range is necessary to facilitate retailing. It could also consider specialisation on a few products (a low assortment length), e.g. dining room furniture, appears to be normal in the furniture industry, even for those manufacturers who do only custom orders. This study and the research of Kaplinsky et al. (2003) show that a long product assortment is not required by retailers, wholesalers and interior decorators as they are used to sourcing from many different suppliers. A more focussed assortment will be easier to market and it will also make it easier to reach economies of scale and reduce dependencies on scarce skilled labour, because task specialisation becomes possible. In addition, inventory management is easier; it is more costly and difficult to stock 40 items than 10.

For the bracelets it would also make sense to reduce the number of models that is produced at one point in time, and instead change the range every season, as proposed by the US agent. This would make production easier for the cooperatives as turners do not have to be trained to make so many different models at one period in time. It also reduces the complexity of the production, sales and warehousing process. Furthermore it reduces the size of the buffer stock and thus the amount of capital invested in stock. On the marketing side a constantly changing range will increase the exclusivity of the product and the authenticity of the brand.

6.2.3 Process upgrading

Arguably the largest barrier to sales and thus the economic sustainability of the project is the lack of contact with agents, retailers and direct customers. A possible solution would be to employ a salesperson who can mediate between them and the operation on the ground in Mezimbite. This person should be located near Mezimbite and Beira to facilitate contact with the workers about orders and physical checks on stocks and orders. Furthermore agents, retailers and customers should be able to contact the sales person during weekdays by phone, email and fax for inquiries about products, stocks, production times, shipping options and the status of running orders. Such a set-up would reduce the dependency of the sales on the project leader.

A second significant barrier to economic sustainability is the limited employment of community members on the project which results in low benefits received by the forest community members. This problem should be addressed by a policy to employ more people from the forest communities in the

MFC. Most jobs involve unskilled labour, with the majority of the training done on the job and consequently previous education does not play a large role, apart from the command of the Portuguese language and basic numeracy and literacy. Although employing people from the community in the MFC means they have to relocate to the vicinity of the MFC their improved financial status can still be seen as an important incentive for families dealing with unemployment. Furthermore, part of their income is likely to find its way back to the community in the form of remittances to family members.

Another possibility for process upgrading is the incorporation of the bracelet (and household goods) production, that is currently taking place in the cooperatives, into the MFC. Turners that already produce mostly for the Mezimbite project would be directly employed by the project and work in the MFC, as has already been done with the training of the turners. Already many turners in the cooperative practically operate as employees of the Mezimbite project; they work on a performance based salary, and inputs such as electricity and wood are provided by the Mezimbite project, as is the marketing and sales of their products. Moving them to the MFC would not involve large cost, it would make training, quality control and production planning and management easier, and reduce the cost of transportation of blanks and finished products in the chain. Although the movement of production to the MFC would make economic sense it might be less desirable from a social point of view. In the current situation turners that do not work for the project still profit from an improved organisation in the cooperatives as a result of the support from the project. If the best turners leave to work for the Mezimbite project, organisation and stability is likely to fall apart amongst the remaining members of the cooperative.

The third process upgrade that should be considered is a shift in the production of furniture manufacturing towards job specialisation. This upgrade is currently being considered by Schwarz. In the current situation it does not seem to be possible to upgrade the production to a more mechanised and specialised process, because the product range in furniture and in other chains such as the building components is too large for task specialisation to be an option. Furthermore if order volumes increase slightly it makes more sense to employ another highly skilled carpenter because this will reduce the dependency on the current carpenter and highly skilled carpenters are multifunctional and thus can be used for the full width of the product assortment. But if the project upgrades towards a retail model with a small and standardised assortment of furniture, job specialisation is likely to increase production efficiency, reduce the resources spent on training and reduce the dependency on skilled carpenters who are hard to find.

6.2.4 Chain upgrading

In contrast to the other forms of upgrading this study did not reveal any need for the project to become active in the value chains of additional products. On the contrary, a focus of attention on furniture and bracelets, perhaps combined with building components and household goods because of the strong links with those value chains, will probably be beneficial to the economic sustainability of the project. This study shows that the bracelets and furniture products have the potential to make the project economically sustainable, although it is not entirely clear if these products will deliver enough incentives to the forest communities to preserve the forest. Perhaps all the economic activities

mentioned in Table 4.1 need to be developed in order to provide the communities with these incentives in the long run. However, much can be gained from developing the sales of the bracelets and furniture.

6.3 Conclusion and recommendations for further research

This study shows that the model developed by the Mezimbite sustainable indigenous forest project has the potential to become economically sustainable and thus combat deforestation in communities with which it cooperates. Value chain analysis has shown that the project has the potential to successfully integrate two of its most important product categories, designer bracelets and furniture, into global value chains if it manages to make some essential functional, product and process upgrades. Arguably the most important reason underlying this success is that the project manager has chosen to manufacture quality products of unique design that can be sold in foreign high-end fashion and furniture markets for high margins. The products are not specifically marketed as green or fair trade products, nor bought by customers who want to contribute to a good cause. Instead, these products are bought because they are competitive with similar products that are less environmentally or socially marketable to consumers on factors such as quality, design and authenticity.

The project also appears to be environmentally sustainable as it has much in common with ecological economic models of sustainability. It has established an ecological ceiling to economic activity to avoid severe perturbation of the ecosystem that can damage natural reproduction capacity and lead to irreversible changes in the ecosystem. The project leaves the natural composition of the forest largely intact through: harvesting small amounts of many different species and replanting those with the same species; recognising that multiple species interact with each other in complex ways; and understanding that limited substitution between species is possible. The project also shares characteristics with the Neo-Ricardian model of Erreygers. In addition to natural regeneration it uses technology in the form of nurseries and replanting to renew the natural capital of the forest. The project shares with both models that it assumes that replacement of natural capital by technology or produced capital is limited. There are indications that the amount of wood that is needed to increase production and sales volumes to a level in which the project becomes economically sustainable, can be harvested:

- within the resilience and ecological ceiling of the eco-system, thus minimising the risk of a large irreversible change to the ecosystem and loss of natural processes of regeneration
- without decreasing the aesthetic, cultural and spiritual value of the forest as well as the essential forest functions of biodiversity storage, soil protection, watershed, carbon storage and production of timber and non-timber forest products

Nevertheless, despite the sustainable character of the project further research by experienced biologists will be needed to establish the ecological impact of the current activities, and thus to establish whether the Mezimbite project is environmentally sustainable.

An important question that has come forward during this study is whether the economic benefits for the community are large enough to keep their support for the project. Only a small percentage of the sales revenues of the bracelets and furniture flow towards members of the forest

communities, and most jobs are created outside the community. Nevertheless, community members receive fruit trees from the nursery, degraded woodlands are reforested and income is derived from the sales of the other products manufactured in the project. An increase of production and sales of bracelets and furniture is also likely to lead to an increase in benefits for the communities. Furthermore, the prolonged participation of the communities in the project suggests that the economic benefits for the community are sufficient to make the project sustainable. Further research that looks at livelihoods of community members in more detail seems to be appropriate. Such a study should take into consideration both the monetary benefits of all the products produced in the Mezimbite project, as well as the non-monetary benefits, such as those of the fruit trees in the nursery or forest products gathered in reforested areas.

Given the environmental sustainability of the project cannot be established in the short term and the uncertainty over whether the economic benefits for the communities are sufficient to provide members with enough incentives to support the project in the long term, it would be premature to claim that the Mezimbite project is environmentally sustainable, and that the project is a new model of sustainable development. However, the future looks promising and the project should be monitored closely in the future.

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Appendix 1 Interview questions for employees of the Mezimbite project

The questions below were used for the semi-structured interviews with employees of the Mezimbite project. At times questions were asked in different order than they appear below, and additional questions were added to obtain additional information and respond to interesting issues and topics brought up by the respondent.

1. What is your profession?
2. Can you describe your daily activities and responsibilities?
3. How many people perform this activity?
4. Which special skills/ training/ education are needed to do this job/ activities?
5. How did you acquire these skills/ did you have these skills before you started the job?
6. What education do you have?
7. How long have you been doing this job?
8. How did you get this job?
9. What is your employment status?
    - Formal job, fixed salary
    - Formal job, performance based salary
    - Formal job, fixed salary with performance based component
    - Informal, fixed salary
    - Informal, performance based
    - Own account worker
10. What is your salary per week (salaried worker) or what is your income (earnings minus costs) in an average week, a good week and a bad week? (own account workers/ salaried workers)
11. How many hours do you work per week?
12. Which problems and difficulties do you face in your work?
13. How many people are dependent on this income?
14. Is the income high enough to cover the costs of your household/ family?
15. Do you do other work/ have other income besides this job?
16. What kind of work did you do before you were working here?
17. What was your income before you started this work?
18. What could be improved in your work? What could make it easier, faster, better?
19. What would you like to do in the future, are you planning to change work?

Appendix 2 Interview questions for manufacturers, agents and retailers

The questions below were used for the semi-structured interviews with the furniture manufacturers, agents representing the Mezimbite project, and retailers selling products from the Mezimbite project. The questions were used as a guide and checklist to ensure all the important topics were covered. Often respondents answered multiple questions in their response to one question. In some cases questions were left out because they were not appropriate (e.g. the supplier section is not relevant for the agents) or additional questions were added to obtain more information and respond to interesting issues and topics brought up by the respondent.

General:

1. Can you describe your business/ profession/ economic activities?
2. What kind of products/ services do you sell?
3. How long have you been doing this for?
4. How many people work in the company, or on a specific product? Are these official jobs, informal, subcontracted, temporary workers?

Supplier selection:

1. Who are your suppliers?
2. Can you divide the suppliers according to key characteristics?
3. How much does your company generally sourced from these different companies?
4. Which factors play a role in sourcing decisions? (i.e. delivery times, quality, price, fsc certification or sustainability)
5. Can you rate these according to importance?
6. How do the different suppliers perform on each of these points?
7. How long has your relationship been with these companies?
8. How much cooperation is there, and in which areas?
9. What are the main sources of conflict?
10. How would you generally describe the relationship with these suppliers?
11. What role do environmental standard/ fair trade standards play in your supplier selection?

Consumer preferences

1. Can you describe your customers? What kind of people typically buy your products?
2. Can you group them according to certain characteristics?
3. What are your customers looking for, what are their requirements?
4. Are there certain trends in the markets?
5. How do these requirements influence your choice for suppliers?
6. Which channels do you use to sell your products?
7. What is the importance of environmental and social standards in your market? Do customers ask about it, are they actively looking for products?
8. Are consumers willing to pay a price premium for environmentally sustainable products?

Competitors

1. What kind of firms do you compete with? Can you name some competitors?
2. Can you group them according to their characteristics?
3. What are critical success factors for successful competition?
4. How does your company perform on these criteria?

Governance:

1. Are their certain industry wide standards for the production process or the product themselves?
2. Who sets these standards?
3. Who influences these standards?
4. Who controls these standards?
5. In which way are suppliers down the chain helped/ stimulated to meet these standards?
6. What are the consequences for a supplier if standards are not met?

Rents:

1. Which characteristics are crucial for a firm at your level in the value chain to operate successfully? Think about:
    a. Skills knowledge of personnel
    b. Contacts/ relationships
    c. Access to technology
    d. Access to capital
    e. Internal organisation
    f. Marketing/ brand names
    g. Government environment
    h. Infrastructure
    i. Access to scarce natural resources
2. Are their certain barriers to obtain these sources? How hard is it for a new competitor to obtain them?
3. And for your suppliers?
4. And for your customers?

Barriers to entry:

1. What are barriers to enter at the level of suppliers?
2. What are barriers to enter at your company level?

Upgrading in the value chain

1. Which process improvements in the value chain are necessary to become more competitive
2. Which product improvements in the value chain are necessary to become more competitive
3. Which functional changes should be made to become more competitive?

4. And for all 3: if to be made, how should the different companies in the value chain go about with it? Who should take the initiative, who should do what?