Tips & AusAid

SADC Trade

TRADE INFORMATION BRIEF

FIBRE

TRADE & INDUSTRIAL POLICY STRATEGIES

Australian Government
AusAID

Participation in international trade has become one of the most important factors in increasing the prosperity of countries. Yet for many developing countries, perhaps particularly for those in Sub-Saharan Africa (SSA), trade is viewed primarily from a defensive perspective, with a focus on the disruptive effects of imports rather than on the opportunities presented by increased access to world markets. A key reason is the existence of information market gaps that are often associated with trade facilitation and development in developing countries – information on the export performance and potential of many developing countries remains incomplete.

The TRADE INFORMATION SERVICE series of market briefs aims to contribute to bridging this information gap for existing producers in the Southern African Development Community (SADC) who may not have the financial resources to generate a fully fledged market research process. The briefs are not intended to act as the detailed export market intelligence that successful exporting requires, but rather as a basic first-cut analysis of export prospects, to allow enterprises to make the decision on whether to initiate further market research.

Each Trade Information Brief will cover a product cluster of particular interest to members of SADC. The cluster may represent an existing key set of export products with potential for expansion, or a relatively new set where there is an indication of competitive advantage for the region.

Contents

1.	INTRODUCTION	1
2.	THE PRODUCT CLUSTER	3
2.1.	Introduction to the Product Cluster	3
2.2.	Production Trends in Vegetable Fibres	4
2.3.	Trade in Vegetable Fibres	6
2.4.	BACKGROUND	18
3.1.	The Product	18
3.2.	Sisal in Tanzania	18
3.3.	Sisal in Kenya	20
4.	SISAL WORLD PRODUCTION	22
5.	OLD AND NEW USES	28
5.1.	Traditional Uses	28
5.2.	New Uses	31
6.	WORLD TRADE IN SISAL	39
6.1.	Price of Sisal and competitiveness with the price of polypropylene	44
7.	PROJECTS AND DEVELOPMENTS IN THE HARVESTING AND MARKETING OF SISAL	48
7.1.	United Nations Common Fund for Commodities	48
7.2.	New Mobile Fibre Extraction Device	50
8.	MARKET ACCESS	52
9.	CONCLUSION	54
10.	REFERENCES	55
10.1.	Useful Websites	57

TABLES

Table 1: Classification of Other Vegetable Fibres (HS Classification System) 3

Table 2: Production of major Vegetable Fibres by Region and Country, 2005 (Tons) 5

Table 3: World Trade in Vegetable Fibres by Variety 11

Table 4: Importing and Exporting Regions of Vegetable Fibres (Chapter 53) in 2005 (US$ millions) 13

Table 5: World Production, area harvested and yield of Sisal in 2005 (tons, ha, kg/ha) 25

Table 6: Use of Sisal and Henequen by Application 30

Table 7: Value of Sisal imports by leading nations 1995-2005, (US$'000) 40

Table 8: Leading Exporting Nations of Sisal 1995-2005 (US$'000) 42

Table 9: MFN and Preferential Tariffs for Sisal, Sisal Products and other fibre products for selected countries 52

FIGURES

Figure 1: Exports of Natural Fibres by quantity 1961 to 2005 (Million Tons) 7

Figure 2: Exports of Natural Fibres by Value 8

Figure 3: Prices of Natural Fibres, 1961 to 2005 10

Figure 4: World Production of Sisal (1900-2020) and Polypropylene Consumption (1960 – 2006) 22

Figure 5: World Production of Sisal 1975 to 2005 (tons) 24

Figure 6: Major Traditional Uses of Sisal and Hard fibres 29

Figure 7: World Sisal Production and World Consumption of Agricultural Twine 29

Figure 8: Consumption of Sisal and Henequen by Country 31

Figure 9: Minor or Emerging Uses of Sisal and Other Hard Fibres 32

Figure 10: Growth in world use of geotextiles (1970-2000) 35

Figure 11: Growth of Carpets produced from 'other vegetable fibres' 36

Figure 12: Year on Year growth rates of Carpets by Category, & % Share of Carpets from other vegetable fibres 37

Figure 13: World imports of raw sisal and processed sisal (tow & waste) 1990 to 2005 39

Figure 14: Importers of Raw and Semi-processed Sisal 1995-2005 ('000) 41

Figure 15: Exporters of Raw and Semi-processed Sisal 1991-2005 (US$ '000) 42

Figure 16: World Trade in Sisal Binder twine, Ropes and Cordage, & trade in synthetic twine and cordage 43

Figure 17: Crude Oil and Polypropylene Prices Jan 1998 to Sep 2005 (Index January 1998=100) 44

Figure 18: Sisal Prices Jan 2002 to Sep 2006 45

Figure 19: Co-movement of Sisal and Polypropylene Prices 46

Figure 20: Export Unit Prices of Leading Exporters (1960-2005) 46

Figure 21: Import Unit Prices for Leading Importers & South Africa (1990-2005) 47

1. Introduction

Sisal is by no means a new crop. It has been farmed for its fibre for over a century. In fact it was in Africa where the crop became a internationally traded commodity, and at one stage it was a leading export of Tanzania and, later, Kenya. The sisal industry flourished in Africa because the crop was particularly suited to being grown in the conditions and climate that prevail here, but also because it was a very labour intensive crop, that required large amounts of cheap labour to harvest it. As production levels grew, so the sisal industry in these countries achieved certain critical levels of development and economies of scale, and it made little sense to grow the crop elsewhere. Indeed entire regions in Tanzania and Kenya developed around the industry, as did port and transport facilities. But in the space of a few years, and with the introduction of synthetic fibres (produced from petroleum), sisal lost a vast chunk of its market share. The competition from synthetics as a substitute and the havoc it wrecked on the natural fibres market, was compounded by country specific situations (like the nationalisation of the farms in Tanzania and Mexico – another large producer), and the over-reliance of the sisal industry on only a few end products. Most sisal went into the production of agricultural twine (binder and baler twine) and various ropes and cordage. Critically the industry never invested enough research into alternative products, new production techniques, and new markets, and in the face of aggressive marketing from the large petroleum companies (and to a lesser extent forestry plantations – sisal can be used in paper manufacturing), sisal's market for twine and rope dwindled over the years. Even a well established commodity like cotton, of flax (from which linen is made) needs to be continually promoted and marketed to sustain its captive market.

Things are changing however, and the world is quite a different place to what it was in the late 60's and early 70's. For one, people are much more environmentally aware, and the keyword on many people's lips is sustainability. Sisal, as a natural fibre, suits this "new" frame of mind perfectly, and with the right amount of marketing, and targeting, it can become a major commercial crop once more. There is a great deal of research currently underway, most of which extols the numerous benefits that the sisal plant has. It can be used for many commercial applications, from composite materials in the automobile industry, to strengthening recycled paper, from "ethnic feel" carpets, rugs and wall-hangings, to geotextiles and building material fibre reinforcements. It can become the replacement for asbestos, be fed into bio-fuels or used in feedstock, and it still could regain some of its lost market share in twines and ropes, especially as the price of crude oil rises. Its past over-reliance on only one or two products has been identified as a major weakness by organisations such as the United Nations Common

Fund for Commodities, and much research into developing both products and processes, as well as potential markets has been invested in. In short it seems sisal is a crop for the future; and SADC is well placed to be a major producer of it.

Sisal grown in Africa has always had the best reputation for the highest quality. Simply put, it grows best here. And with advances in the processing methods, including the introduction of small portable machines that allow smallholders to access the value chain, sisal has a real future in the region. This TIB highlights some of this potential, as well as the production and trade statistics of sisal, briefly outlining its place in the natural fibres cluster, and some of the market access constraints. This TIB is not intended to be comprehensive at all, it is merely aimed at highlighting the potential of the crop to potential farmers, export agencies, donor agencies and policy makers, and putting it on the radar, so to speak. If SADC has a comparative advantage in a particular commodity, and one with that has huge potential not only for employment creation and empowering smallholder farmers, but also for forward linkages into many other sectors of industry, then SADC should be aware of it, and look to promote its development.

2. The Product Cluster

2.1. Introduction to the Product Cluster

Vegetable Fibres are included within Section 11 which covers all textiles, and are sometimes grouped together with other fibres that come from sources such as silk, chapter 50, and animals (predominantly wool), chapter 51. Technically speaking vegetable fibres include that which is obtained from the cotton plant, but due to the size of this industry it is included in its own chapter, Chapter 52. This TIB's discussion of vegetable fibres thus covers those covered under chapter 53: Other vegetable textile fibres, yarn and other products thereof, as described by the Harmonised Customs Classification System (HS1996/2002). The table below contains a summarised version of the articles that fall into the above chapters.

Table 1: Classification of Other Vegetable Fibres (HS Classification System)

Chapter 53: Other Vegetable Fibres	
5301	Flax, raw or processed but not spun; flax tow and waste (including yarn waste and garnetted stock)
5302	True hemp (Cannabis sativa L.), raw or processed but not spun; tow and waste of true hemp (including yarn waste and garnetted stock)
5303	Jute and other textile bast fibres (excluding flax, true hemp and ramie), raw or processed but not spun; tow and waste of these fibres (including yarn waste and garnetted stock)
5304	Sisal and other textile fibres of the genus Agave (henequen), raw or processed but not spun; tow and waste of these fibres (including yarn waste and garnetted stock)
5305	Coconut, abaca (manila hemp), ramie and other vegetable textile fibres, n.e.s, raw or processed but not spun; tow, noils and waste of these fibres (including yarn waste and garnetted stock)
5306	Flax yarn
5307	Yarn of jute or of other textile bast fibres of 5303
5308	Yarn of other vegetable textile fibres; paper yarn
5309	Woven fabrics of flax
5310	Woven fabrics of jute or of other textile bast fibres of 5303
5311	Woven fabrics of other vegetable textile fibres; woven fabrics of paper yarn

For most of human history, natural fibres have been relied upon to produce our clothes, cloths, carpets, cordage, paper, ships sails, and insulation and building materials. The use of natural fibres, both plant and animal, to meet our needs goes back thousands of years and one of the oldest recorded uses of plant fibre for fabrics is that of hemp which was cultivated in China as far back as 2800BC. In the second half of the 20th century, however, synthetic fibres (mostly derived from petroleum products) started making inroads into this, one of the worlds oldest industries. Large petroleum companies invested vast sums of money into researching synthetic fibres and their applications, and actively started marketing products in an attempt to capture certain segments of the market.

In the past couple of decades, synthetic fibres have dominated many textile and fibre markets, becoming widespread internationally since the 1970's. Most of this change can be ascribed to the technological revolution as well as a number of short term economic advantages of synthetics. More recently, however, there is a growing resurgence in the demand for natural fibres, and a move away from petrochemical based synthetic fibres. The pendulum seems to be swinging back again, and although it may still be many years before natural fibres gain anything near their former market share, there are still great opportunities that exist; the fibres market, and the downstream applications is a massive one, afterall. There are three main reasons for the resurgent interest in natural fibres. Firstly petrochemical based fibre production has undergone continuing rising costs, making natural fibres more cost competitive, than they were twenty years ago. Secondly synthetic fibres rely on precious non-renewable resources and incur environmental costs in their production. As consumers become more environmentally aware, so this becomes a more and more important factor in the purchase decision. Thirdly petrochemical based products pose a health risk in most applications, both from direct exposure and also from secondary exposure through soil, water and air pollution.

Natural fibres are either extracted from plants from the leaf, the inner bark or fruit/seed crop, or from animal wool/hair, or insect cocoon or from mineral product. Plant sources of fibre include cotton, hemp, kenaf, ramie, sisal, flax, linen, lime, jute, seagrass, bamboo and abaca. Animal sources of fibre include sheep, alpaca, llama, goat, and camel, and can be either wool, hair or leather. Insect fibre is predominantly from silkworm cocoons. For the purposes of this paper we introduce those natural fibres extracted from plants, and then focus on sisal, as it appears the most suited plant to the region.

2.2. Production Trends in Vegetable Fibres

Cotton dominates world production statistics, when included in the group of vegetable fibres, making up 86% of world production by gross weight (tons). This is due to the amount of cotton used in the production of clothing and other textiles. Cotton's major substitutes in the clothing industry are thus not from other vegetable fibres, but rather from synthetic fibres. The table below illustrates the complete dominance of cotton as a source of vegetable fibre across the world. If one were to exclude cotton however then jute, and jute like fibres, make up 76% of the other vegetable fibres by sheer weight. Flax accounts for roughly 20% and Sisal 9% by weight. This does not however necessarily reflect the value of production of these fibres, as jute is quite an inexpensive fibre source in comparison to the others. The table also shows the breakdown of production by region, and one can quite clearly see that East Asia, NAFTA and South Asia dominate world production of vegetable fibres. But what is also apparent is that in each region there are generally one or two countries that are major producers and account for most of the produce in that region, and the commodities are often restricted to major production levels in just a few regions/countries. Africa is a bit of an exception to this observation above, as there are no stand out

countries that lead the production levels by a great margin, and the all the commodities in question are produced in the continent.

In terms of cotton production, just under one quarter of the world's cotton is produced in China, one fifth in the United States, 18% in India and Pakistan, 8% spread out across Africa (1.4% in SADC), 7% in South America (Brazil), just 3.6% in Europe, and 5% in Uzbekistan. The majority of Flax is concentrated in Northe America, East Asia and Europe. The table below shows the total amount of flax produced as being 860 thousand tons, with China accounting for more than half of that. Unfortunately Canada's data on flax production is not reported to the FAO (nor that of the US), and therefore does not appear in the table below. According to the national Flax Council, Canada in fact produces over 1 million tons in 2005/06, meaning that it produces over half of the worlds output in this crop. In Africa, Egypt is the only major producer of flax, but in recent times production levels have tapered off to just 9,000 tons. Even though Egypt is where the cultivation of flax seed, and the production of linen, first started, the more temperate climates of Europe, parts of China and North America are more suited to its production.

Table 2: Production of major Vegetable Fibres by Region and Country, 2005 (Tons)[1]

Region	Total Fibres	Flax	Jute	Sisal	Cotton	%
East Asia	**6,212,500**	**470,500**	**83,000**	**16,000**	**5,643,000**	**24.7**
China	6,200,500	470,500	83,000	16,000	5,631,000	24.7
NAFTA	**5,365,636**	-	-	**26,636**	**5,339,000**	**21.3**
United States	5,201,000	-	-	-	5,201,000	20.7
South Asia	**4,704,304**	-	**2,920,133**	-	**2,588,178**	**18.7**
India	2,475,000	-	2,100,000	-	375,000	9.8
Pakistan	2,214,300	-	1,122	-	2,213,178	8.8
Bangladesh	15,000	-	801,000	-	-	0.1
Africa	**2,063,429**	**9,000**	**7,150**	**74,815**	**1,972,464**	**8.2**
Egypt	272,000	9,000	2,200	-	260,800	1.1
SADC	360,805	-	1,500	29,450	329,855	1.4
Tanzania	127,000	-	-	27,000	100,000	0.5
South America	**1,847,204**	**4,400**	**12,189**	**236,198**	**1,594,417**	**7.3**
Brazil	1,416,974	-	11,974	206,974	1,198,026	5.6
Middle East	**1,235,877**	**55**	-	-	**1,235,822**	**4.9**
Turkey	750,055	55	-	-	750,000	3.0
Europe	**900,193**	**380,793**	-	-	**519,400**	**3.6**
EU25	779,694	261,694	-	-	518,000	3.1
Rest Of Europe	120,499	119,099	-	-	1,400	0.5
South East Asia	**91,671**	-	**69,549**	**4,495**	**46,157**	**0.4**
Other	2,691,543	-	20,000	-	2,671,543	10.7
Uzbekistan	1,250,000	-	20,000	-	1,230,000	5.0
World	**25,141,777**	**864,748**	**3,113,385**	**382,664**	**21,613,517**	**100.0**
% Share	100.0	3.4	12.4	1.5	86.0	

Source: FAOSTAT and own calculations

1 This overview of world vegetable fibre production does not include fibre extracted from Hemp, Ramie, Abaca and others. The table also does not include certain countries that have not reported to the FAO. An example is Canada, a major Flax producer.

Jute (including Kenaf and allied fibres), as one can see from the above table comes mostly from South Asia, and from two countries in particular: India and Bangladesh. The Ganges Delta is responsible for more than 80% of world Jute production, mostly because of the conditions that exist there, but also because an industry has been developed there, with jute mills containing Hessian and sacking looms, and because hundreds of thousands of people have become involved and been employed in the labour intensive techniques for extracting fibres. Jute cultivation and the extraction of raw jute has indeed been an integral part of Bengali culture for centuries. The conditions required for Jute production, including large annual rainfalls, warm and humid conditions (between 24-37 degrees Celsius), alluvial soils rich in minerals from flooding, and proximity to large amounts easily accessible water (for retting), have meant that Jute has not easily been grown elsewhere. Apart from the Ganges Delta, Jute has been successfully cultivated in China, Vietnam, Thailand, and Pakistan. Kenaf, an allied fibre source, and close relative of Jute, has been grown in Africa for thousands of years, and is still grown in certain parts.

Sisal, although not historically from Africa, has been grown successfully for the past century or so, on African soils. Currently production of the crop is spread over three regions, South America, Africa, and Central/North America. South America accounts for the majority of the world production in Sisal (62%), with more than 90% of this coming from Brazil. In Mexico, where the sisal plant originated[2], Sisal is no longer commercially produced. Instead a close relative of it, Henequan, is used for fibres, with over 25000 tons being extracted in 2005. Africa's Sisal industry currently accounts for just under 20% of the world's output, but was at one stage responsible for more than half of the world's produce (in just two countries Tanzania and Kenya). Both Jute and Sisal have suffered in recent times because of the introduction, and successful marketing, of synthetic fibres, as well as the use of wood products to obtain certain fibres. In their traditional roles, in making twine, ropes, sacking etc, both of these products have become somewhat outdated, and thus production levels have diminished. However, people are starting to become aware of the unsustainable nature of using synthetic fibres, and of some of the less favourable (and often less well-know) properties and affects of using synthetic fibres.

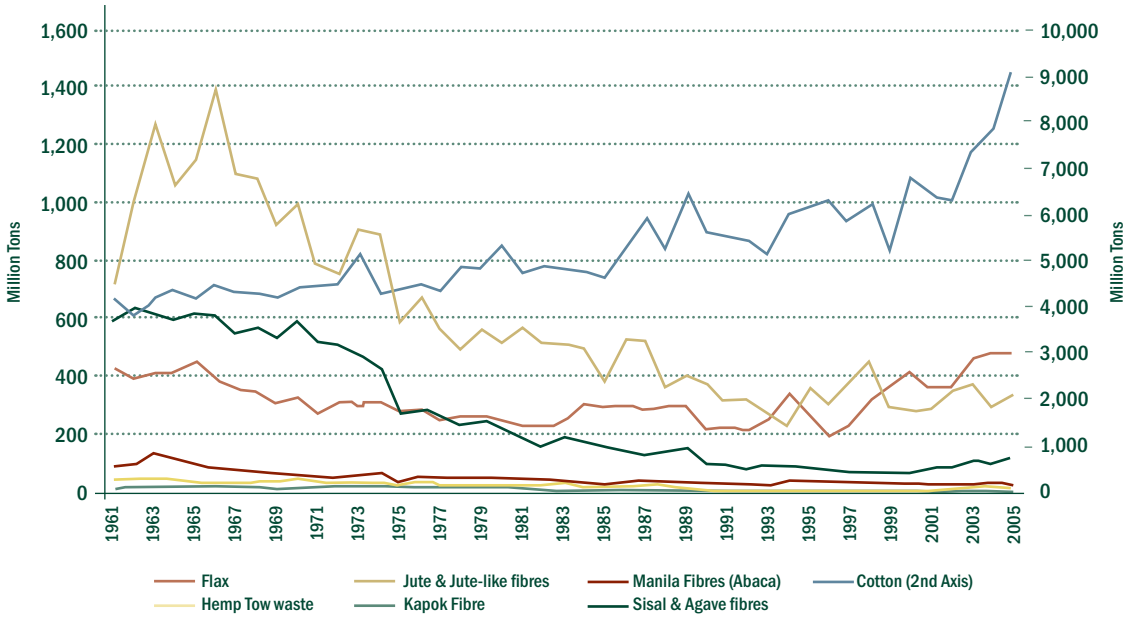
2.3. Trade in Vegetable Fibres

Trade in most natural fibres has suffered in the past half century due to the increase in man-made and artificial fibres as components and inputs in clothing and other textiles. The technology for producing artificial fibres (predominantly from petroleum products) has advanced significantly, and not only has efficiency of this production increased dramatically, but the number of uses and commercial applications for which synthetic fibres can be used for, have also increased over

2 Named for the port of Sisal in the Yucatan province

time. Ultimately this has resulted in lower costs of production through the increased size of the market and the related economies of scale. Synthetic fibres have thus substituted natural fibres, and have no become the preferred fibrous input in many instances. As these fibres are created also from petroleum by-products, the availability and cost of petroleum, and petroleum products, can affect their supply and price. With the dramatic increases witness in the consumption (and extraction) of petroleum over the past 50 years, predominantly as a result of increased use of transportation and there being more vehicles on the road, the availability of the petroleum by-products needed as inputs in the synthetic fibre-making process, have also increased. The prices of synthetic fibres have thus been declining, and almost consistently so for the past 30 or 40 years. Natural fibres by contrast have not been subject to nearly as much research and development, and as such, many of the processes used to produce them have remained the same for many years, and whilst the uses for artificially created fibres have increased over time, and the costs of producing them have decreased, the uses for natural fibres have stayed constant, and the costs of the land and labour used in their production have in fact increased. The prices fetched for the various natural fibres have thus tended to fall, as producers of textiles have opted to substitute their use for synthetic materials, but with costs increasing, and the number of applications remaining constant, the market for most natural fibres has gradually diminished. This is highlighted in the figure below (Figure 1), which shows the quantities of various natural fibres traded over the period, from 1961 to 2005 (in Millions of tons). Cotton is measured on the right hand axis.

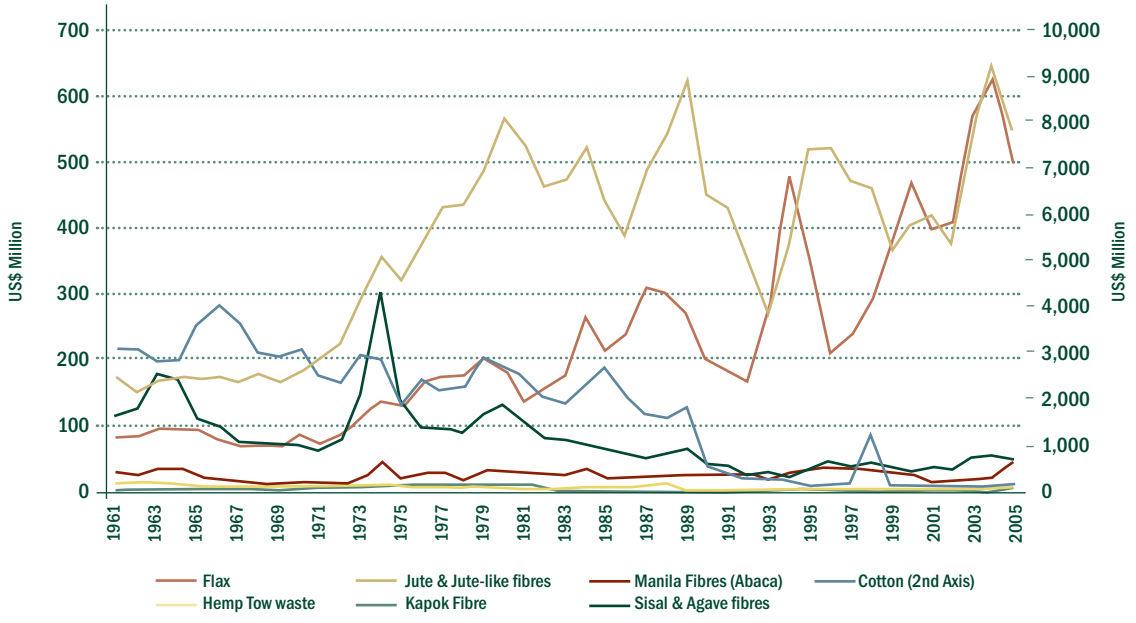
Figure 1: Exports of Natural Fibres by quantity 1961 to 2005 (Million Tons)



Source: FAOSTAT

Certain of the fibres, however, have managed to keep fairly constant over time, or even increase the quantities being trade. Whilst Jute and Sisal have seen a strong negative trend for most of the period shown, flax has decreased, but by far less than other fibres, and in recent times it has started to see increases in exports, and cotton has managed to increase consistently (apart from the obvious commodity cycles witnessed) for most of the 45 years shown. The other natural fibres shown, Manilla Hemp (Abaca), Kapok, and Hemp tow waste, are all rather insignificant in quantity, but even they have decreased for the most part. From the figure one can see that roughly 9 billion tons of cotton are now traded every year, which is roughly 40% of all the cotton produced[3] . Flax, the second most trade natural fibre, has just under 500 million tons traded per annum (perhaps more like a third of total production)[4] , whilst just one tenth of all Jute produced is destined for export. Roughly one third of world Sisal production is exported (although this doesn't include the large amount of Sisal that grows in the wild in Central and South America and across sub-Saharan Africa).

Figure 2: Exports of Natural Fibres by Value



Source: FAOSTAT

Another particularly important reason why synthetic fibres are often preferred to natural fibres, and one that has not been mentioned earlier, has to do with the regularity and consistency of supply, and the fact that the quantity supplied to the market is far more predictable for synthetic

3 This includes not only Cotton Lint, but also carded and combed cotton, cotton linter and cotton waste.

4 This includes raw flax, flax fibre and tow, and flax tow waste

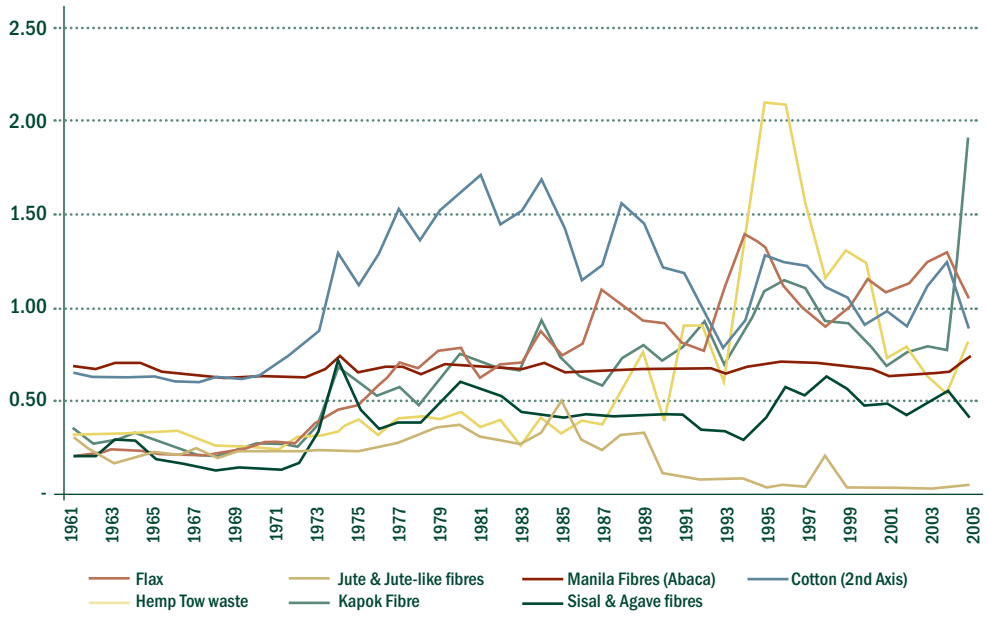
fibres than it is with natural fibres. Natural fibres, being plants products, or more specifically, the product of agricultural crops, have yields that are subject to temperature and rainfall fluctuations, droughts, floods, and good and bad harvests. As the yield fluctuates annually so does the amount supplied, and with it the price that can be fetched on the market. This is important for textile and clothing producers who must budget for the costs of materials, as well as the amount of fibres needed to produce what they themselves will then supply. Variable prices and quantities makes it difficult for producers to accurately cost products, and thus producers (especially producers of high volume and low mark-up products), are more likely to opt for synthetic fibres which with their more consistent levels of supply. Supply consistency also allows for one to be able to plan and budget accurately for production expansion, and/or for contracts that stipulate minimum quantities to be supplied in the future (in lieu of which there are often penalties attached). The figure below shows just how variable the market can be. Figure 2 shows the world trade figures for the various natural fibres from 1961 to 2005, showing that when the price swings are coupled with variable harvests, the result is large fluctuations in the value of commodities exported.

A very brief outline of cotton exports (measured on the right hand axis) from 1970 onwards, can serve to illustrate the issues that affects commodity markets, as the value of exports have fluctuated wildly (in dollar terms) over this period. Cotton production and exports, in value tems, rose significantly through-out the 1970's and reached a peak in 1980, before falling again the following year. Most of this rapid rise in value was due to a strong rise in the price of cotton, which had been driven by the strong demand. Similar rises and falls followed until 1989 where cotton exports hit an all time record high, in both value and volume terms. As more and more farmers from different regions around the world had begun to get involved in the crop, output levels had soared, but this had in turn created an over-supply, and the prices began to fall. In 1989 and 1990 prices fell by almost a third, and the lower than expected prices caused a lot of farmers around the world to cut back on production, and even forced some out of business.

In addition, the US implemented the conservation reserve program and placed 526,000 ha of cotton crop land under reserve. This was done in order to reduce the supply and help raise cotton prices. The resultant decreases in cotton production, did indeed allow for prices to increase again, but not straight away as prices continued to fall until 1993 where they hit a 20 year low. Part of this had to do with the substitution towards synthetic fibres use, and away from that of cotton, of many clothing and textiles products over the period. Prices only begun recovering after that, but they were never to regain some of the levels they achieved in the 80's. Any new demand in recent times has been met by increases in the production levels, by both existing and new producers, and not by reapidly increasing price levels. In short the market has become far more competitive. Figure 3 below illustrates the changes in prices for natural fibres from 1961 to 2005.

Flax is another natural fibre that has expanded its output in recent times, after suffering a long period of decreased, but similar to cotton, the value of its exports are subject to large swings which are the result of the interaction of the forces of supply and demand. Overproduction, and oversupply, one year leads prices to fall the next, which can lead to undersupply the following year, and ultimately for high demand to then raise the prices again. This is what one would expect from a commodity: being subject to classic commodity cycles. However, over the past 30 or so years the trend in average export prices for flax has been upwards. Sisal on the other hand, apart from a huge, and rather sudden, peak in 1974, has seen trade values steadily declining, while the price for its produce has remained at the same prices of the early 70's. Jute, the other major natural fibre has experienced a much more drastic decline in both price and value of the exported commodity. The main reason for this was the substitution of jute fibres for those of petroleum-based synthetics, and although the Bangladesh government has tried to subsidise its producers for many years, the upheavals that culminated in the emergence of an independent Bangladesh drove many traditional buyers towards the substitute fibres. Prices for jute never recovered as highlighted in Figure 3. Both Jute and Sisal have been used for similar products, such as burlap, sacks, rope, twine, mats and carpet backing, and the end-use products are key to understanding the ultimate demise of both commodities. Many of these commodities have been easily substituted for by synthetic fibres (consider the plastic-type bags now used for delivering manure/compost/feed etc). In the case of sisal, agricultural twine (that used for tying up bales, sacking harvests, stringing fields etc) has become the domain of polypropylene substitutes. For example the world's leading producer of agricultural twine is now a company called Polymer group, formerly a subsidiary of Exxon.

Figure 3: Prices of Natural Fibres, 1961 to 2005



Source: FAOSTAT

One may ask the question: why is it that production and trade in cotton (and more recently flax) has continued to increase and expand, when all the other fibres shown have had declining markets, and have become less and less profitable over time? Apart from the obvious answer outlined above, that many of the traditional uses for the natural fibres of jute and sisal are now performed by synthetic fibres, a large part of the difference probably lies in the product positioning of the other markets, research and development into these markets and alternative uses for their products, and ultimately, a certain level of marketing and advertising. One could, for example, buy bed sheets made from synthetic fibres, and one might even be persuaded of the advantages to doing so apart from simple cost considerations, such as the fact that they are water-resistant or something to that nature. However, one would most likely wish to buy linen sheets (from flax) or perhaps even those made from Egyptian cotton (with a really high thread count). This is an example of how successful marketing, and an established industry, has created a demand for a product, and entrenched it in consumer culture. There is no reason why certain items of clothing cannot be produced using the fibres of sisal (which are admittedly far more coarse than cotton or flax), and given the current trend towards natural products, and those have the least impact on the environment, one can begin to appreciate why product made from natural fibres could prove to be very successful in the near future. To add to this is the rising price of petroleum, which in turn impacts upon the many by-products created from it. These resources are, after all, finite. (See section 5.2: New Uses - for a discussion of some the new uses for sisal).

Table 3: World Trade in Vegetable Fibres by Variety

		Value US$ million		% Growth		% Share	
Product	**Product Name**	**2000**	**2005**	**96-05**	**00-05**	**1996**	**2005**
5301	Flax, raw or processed but not spun	470	527	10.5	2.3	51.4	63.5
5302	True hemp (Cannabis sativa L.), raw	10	10	1.4	0.3	2.2	1.3
5303	Jute and other textile bast fibres	59	119	9.3	15.1	12.9	14.4
5304	Sisal and other textile fibres of t	38	68	4.3	12.4	11.2	8.2
5305	Coconut, abaca (Manila hemp or Musa	91	105	1.4	3.0	22.3	12.7
	Total Raw	668	830	7.9	4.4	20.8	24.4
5306	Flax yarn.	324	373	7.5	2.9	37.9	50.9
5307	Yarn of jute or of other textile ba	178	255	3.8	7.4	35.6	34.8
5308	Yarn of other vegetable textile fib	192	105	-2.8	-11.3	26.5	14.4
	Total Yarn	693	733	4.1	1.1	25.5	21.6
5309	Woven fabrics of flax.	1,131	1,499	8.0	5.8	69.7	81.7
5310	Woven fabrics of jute or of other t	155	170	0.0	1.9	15.8	9.3
5311	Woven fabrics of other vegetable te	147	165	0.6	2.3	14.5	9.0
	Total Woven Fabrics	1,432	1,834	6.1	5.1	53.7	54.0
Grand Total		2,793	3,397	6.0	4.0		

Source: UNComtrade

As one can see from the table below (Table 3), trade in vegetable fibres is broken up into three categories, raw, yarn, and woven fabrics. The table shows the current state of trade in natural fibres other than cotton (those classified under the chapter heading 53), and also the amounts traded between raw fibres, yarn made from the fibres, and woven fabrics. In terms of the value of trade one can see that woven fabrics, of the various fibres, make up 54% of trade under the chapter. Of that more than fourth fifths are woven fabrics of flax, or linen. The share of linen in total woven fabrics has been rising over the past 9 years, up from only 69% in 1996, due to the strong growth in demand. Trade in linen has risen 8% per annum over the last nine years. Conversely the share in woven fabrics made from jute or other vegetable fibres have been declining steadily, however they have experienced a little bit of growth in the past 5 years of 1.9% and 2.3% respectively. Altogether the share of woven fabrics, yarn and raw fibres, in the total chapter trade, have not changed much over the last decade.

The percentage of the traded raw fibres that are made from flax have also increased over the past decade, and now constitute 63% of raw fibres traded. The same is true of yarn made from flax, where this now constitutes over 50% of all natural fibre yarn traded, up from the 38% it held in 1996. The trends are therefore unmistakeable, the raw fibres, yarns and woven fabrics of the other major vegetable fibres have declined in their share of world trade over the past decade, mostly because of the substitution away from using natural fibres to produce agricultural twine and other such products. The growth in flax however illustrates the growing demand for fabrics and textiles made from natural fibres, which in turn illustrates the marketing that has successfully promoted such products, and has capitalised on the growing demand for all things natural and environmentally friendly.

The table below (Table 4) highlights the areas from where chapter 53 commodities are currently exported (in 2005). As one can see from the table, the European Union makes accounts for over 40% of all vegetable fibre imports, and over 56% of all SADC exports in the group. The US$ 12.9 million that the region imports from SADC is just under 1% of its total imports in that category. Most of the EUs imports in the commodity come from EU member countries, followed by East and South Asia. The European Union is also the leading exporter of vegetable fibre products, however if one removes intra-EU trade (trade between EU members), then the leading exporting region is in fact East Asia. Most of East Asia's exports are, however, also destined for countries within the East Asian region (eg China and Vietnam exporting to Japan or Hong Kong). South Asia on the other hand, which is the third largest exporting region, exports vegetable fibre products predominantly to other regions, which include, in order of importance, the Middle East, the EU, NAFTA and East Asia. The EU accounts for 46%

of world exports, East Asia for 25.7%, and South Asia for 16.5%. However in terms of imports into SADC, East Asia (read China) accounts for more than half of SADC imports (50.2%), with South Asia accounting for roughly a quarter (27.6%), and the EU for 13.6%. In total SADC imports US$ 27.9 million worth of vegetable fibre products, and exports US$ 22.8 million, which is 0.8% and 0.7% of total world imports and exports respectively.

Table 4: Importing and Exporting Regions of Vegetable Fibres (Chapter 53) in 2005 (US$ millions)

	Exporting Region													
Importing Region	**EU25**	**East Asia**	**South Asia**	**Rest of Europe**	**Rest of Africa**	**S E Asia**	**South America**	**NAFTA**	**SADC**	**Middle East**	**World**	**% of World Imports**	**% of Total SADC exports**	**% of Imports from SADC**
EU 25	904.9	179.3	130.2	77.1	37.7	13.8	14.7	2.4	12.9	9.1	1,382.4	40.7	56.7	0.9
East Asia	301.9	500.6	50.4	4.4	17.9	27.6	17.7	1.4	4.1	0.3	927.2	27.3	18.2	0.4
Middle east	32.2	29.6	176.4	39.1	2.2	3.2	0.4	0.4	1.9	1.7	287.2	8.5	8.4	0.7
NAFTA	84.8	59.1	58.6	9.1	0.3	2.5	11.7	18.7	0.1	1.0	248.2	7.3	0.5	0.0
Rest of Europe	138.7	13.0	13.6	10.3	2.2	0.4	0.2	0.4	0.0	5.6	184.4	5.4	0.0	0.0
South Asia	23.7	42.4	79.6	0.1	1.3	2.3	0.3	0.5	0.7	0.2	151.2	4.4	2.9	0.4
Rest of Africa	54.1	8.8	13.9	1.5	2.2	0.1	0.8	0.0	1.5	1.5	84.7	2.5	6.6	1.8
S E Asia	17.0	13.7	7.5	0.2	1.0	2.5	0.1	0.1	0.2	0.1	42.4	1.2	0.8	0.4
South America	5.7	10.0	5.8	0.1	0.0	0.7	4.7	0.7	0.0	0.1	28.0	0.8	0.0	0.0
SADC	3.8	14.0	7.7	0.0	0.6	0.2	0.1	0.1	1.3	0.1	27.9	0.8	5.6	4.5
World	1,574.3	874.4	560.1	144.2	65.5	53.5	51.0	25.5	22.8	20.9	3,397.5	100.0	100.0	0.7
% World Exports	46.3	25.7	16.5	4.2	1.9	1.6	1.5	0.7	0.7	0.6	100.0			
% SADC imports	13.6	50.2	27.6	0.0	2.2	0.9	0.3	0.5	4.5	0.2	100.0			

Source: UNComtrade

The majority of vegetable fibres traded in the EU, is unsurprisingly that of flax (or really linen). 43% of vegetable fibre imports are made up of woven fabrics of flax, 20% is flax yarn, and 17.3% is raw flax. East Asia's imports are roughly similar, although woven fibres of other vegetable fibres makes up a relatively high 7.4%. NAFTA, the rest of Europe (all other European countries not in the EU), and the rest of Africa (all African countries not in SADC) have even higher proportions of flax products in their inputs, with imports of woven fibres from flax accounting for 57%, 75%, and 59% respectively. The Middle East, however, is rather interesting, importing just under half of their natural fibres imports in the form jute and jute like fibres. They are thus the largest market for jute and jute like fibres. Of the US$ 287 million market, jute products make up 73%, with US$ 135 million in the yarn of jute and jute like fibres, and US$ 72 million in the woven fabrics of jute. SADC is also quite interesting as their imports consist of just 37% of flax (raw, yarn or woven fabric). SADC imports a relatively high proportion of jute products (25%), and other vegetable fibres (33%).

In terms of exports, the EU exports little else but flax products (linen), whilst East Asia's exports of natural fibres are predominantly in the category of woven flax fabrics (60%).. South Asia's exports are mainly in the jute and jute like products (87%), and the exports from the rest of Europe are all woven flax products. East Asia also exports woven fabrics of other vegetable fibres (13.2% of their total, and more than two thirds of the world total), which includes value-added products made from sisal, hemp, and abaca. Most of this is destined for East Asia and Europe. This is an interesting category, as it represents an alternative market to the traditional market held by flax in the woven fabrics sector, and could prove a growth source in years to come. Most of SADC's exports are in the Sisal raw fibre sector (72% for raw sisal, and 4.2% for sisal yarn). This is predominantly because of Tanzania's industry. South America also has a large sisal industry, and it accounts for 58% of its natural fibre exports. It also exports abaca (roughly 22%).

As highlighted in Table 4 earlier, growth rates in the past five years for sisal and jute products have risen dramatically by 12.4% and 15.1% per annum respectively. This is a particularly promising sign, and could indicate that there exists a future potential for other natural fibre exporters other than those that export flax products. Various regions have shown strong growth in their imports of sisal and jute products, including the rest of Africa (75% pa for sisal and 82% pa for jute), East Asia (37% for sisal and 52% for jute), the Middle East (25% for sisal), NAFTA (17% for sisal and 20% for jute), and South Asia (16% for sisal). In fact the only major region that has not expanded its imports of one or both of the natural fibres is Europe. This is interesting phenomenon, and one that can be viewed as particularly promising. In most of the regions where imports of sisal and jute have risen substantially, the products imported have been the traditional products that often focus around the agricultural sectors – including such things as agricultural twine, burlap and Hessian sacking, rope, and other such products. One can only surmise that as petroleum fuel prices continue to rise, and therefore synthetic fibres have also rises, this has helped to make agricultural products more reasonable – especially as many of these regions experience great expansions in their agriculture. Another end product that has also experienced growth is that of carpets and rugs – where sisal and jute are used either to make the carpet itself, or simply the backing. In the case of the backing – the natural fibre is a substitute for synthetic fibres, whilst in the case of the carpet – those made from sisal and jute have a much more ethnic or traditional feel to them (this has great potential for future popularity in markets such as Europe and America). SADC interestingly has grown its exports of raw flax fibre rapidly in the past five years (52% pa), as well as flax yarn (20% pa), and woven fabrics of flax (21% pa). It has however also grown its imports of jute (69% growth per annum), other vegetable fibre yarn (16.3% pa), and woven fabrics of other vegetable fibres (50% pa). In all likelihood the other yarn and woven fabrics of other vegetable fibres probably refer to that made from sisal.

In terms of where the growth in exports has occurred – most of the additional jute raw fibres have come from South Asia (Bangladesh and India), which has seen exports grow by 17% per annum over the past five years. Other regions have also expanded growth of jute exports rapidly, but because the base off which the growth rates are calculated are so small in most of these cases, these growing exports are hardly worth noting. SADC for example has grown its raw jute exports by 46% per annum over the last five years, but this means that it is now exporting US$ 679 thousand, rather than US$ 100 thousand – i.e. relatively small amounts. In Europe the only natural fibre that has increased its exports dramatically in the last five years is that of hemp, and woven fabrics made of hemp. Much has been spoken of hemp over the last decade, and there are many who believe it is a wonder plant, and one that was falsely prohibited because of its associations with cannabis. The fact that the market is expanding so rapidly, although still not what one could consider a mainstream market, illustrates the growing conscious of Europeans as to the benefits, 'environmentally friendly' and 'natural' qualities of the crop and its products. It is therefore discussed in more detail later (see section 5.2). Most of the growth in sisal production has come from South America, who expanded exports from US$ 20 million in 2000 up to US$ 59 million in 2005 (23% per annum), and SADC who increased exports from US$ 23 million to US$ 33 million over the same five year period (7.6% per annum). Rest of Africa, East Asia and South East Asia have also expanded output of raw sisal rapidly by 12%, 10% and 50% respectively. This bodes well for the future of the crop, especially for SADC countries, and Tanzania. The big growth from East Asia is the exports in flax yarn and woven fabrics of flax.

2.4. Rationale for selecting Sisal as Focus

Based on the following reasons, which are explained in greater detail elsewhere in this TIB, sisal and the products thereof, have been selected as a commodity with huge potential for the SADC region:

- Of the various plants from the natural fibres cluster, Sisal is by far the most suited to be cultivated in African soil, as indeed it has been for more than a century. As a hardy, succulent member of the cactus family it is well adapted to surviving in the dry and sandy conditions that prevail in much of Africa. Poor soils and poor rains do not affect it as much as other crops, and it is drought resistant.

- Whereas prolonged droughts regularly bring about poor harvests in many other crops (and can be particular devastating to the industries that depend on these crops, and indeed to those that depend on them for food/livelihoods), the supply of sisal should be one of the more stable agricultural supplies.

- The fact that supply should (potentially) be stable (for an agricultural commodity) means that, potentially, the price of sisal could

be far more stable than that of other agricultural commodities. This is particularly important for the planning of many industries that rely on the crop. Indeed, with the current fluctuations, and general increases, in the price of crude oil, the prices of many synthetic substitute fibres is far less certain than often imagined (as is the level of supply).

- As crude oil prices increase, the prices of synthetics also rise. Regardless of what the supposed benefits of synthetic fibres for various applications are, as their prices attain certain levels, natural fibres will become more and more attractive as substitutes (almost a reversal of what occurred in the 1970's). Crude Oil is a finite resource, and so, ultimately, the price will rise.

- There is a growing consciousness in Europe, the US and elsewhere about the sustainability of certain resources (read crude oil), and the products that use them intensively, or are made from them (synthetic fibres). This is often attached to a sense of environmentalism, and a desire to purchase products that have been made in environmentally friendly ways (witness the rise and rise of organic produce). Both are particularly encouraging for the prospects of sisal – which could replace synthetic fibres in countless applications

- The research and development of new products and applications for sisal fibres recently has unveiled huge potential that could turn sisal back into a major commercial crop. Again, coupled with the above point (on sustainability, environmentalism and the changing perspectives of Europeans and other Westerners), many of these applications which may have been considered unfeasible in the past (often due to the greater economies of scale enjoyed by the large petroleum companies – or even forestry plantation companies) are now becoming not only feasible, but more and more likely to occur. Already large automobile companies are using Sisal fibres in composite materials for constructing some of their models, scoring points for sustainability and environmental friendly production techniques, whilst at the same time researching the many benefits of natural fibres which are improvements over synthetics in their own right

- Sisal also has an established history in Southern Africa for a reason, and became the leading export commodity of a country like Tanzania for a number of reasons, but chief among them was because of the quality of sisal that could be produced in the country, and the comparative advantages in doing so. Other SADC countries, with very similar soil conditions and climates, could just as easily produce sisal to a similar quality - and African sisal (predominantly from Kenya, Tanzania and Madagascar) already has a reputation as being the highest grade sisal in the world.

- Sisal is also, still, a very labour intensive crop, and again this suits the SADC region. Sisal production would create jobs, especially if many of the downstream applications are followed (for example there are applications for the use of sisal waste, once the fibre has been extracted, in the BioGas industry, whilst the fibre itself can be used in the paper industry, the handicrafts industry (rugs/carpets and other woven artefacts such as wall hangings and baskets), the agricultural industry etc. Sisal is already used in the automotive industry in South Africa.

- Thus Sisal has many forward linkages to other industries, and this is important not only for job prospects, but also for the development of other sectors of the economy. There is thus opportunities to move into the production of value-added processed goods, especially as many developed countries are starting to outsource labour intensive production processes to developing countries (with lower wages) to improve their price competitiveness, and compete against imports from elsewhere (Asia). This could enable large investments to flow into the region;

- At the same time Sisal plants already occur in many small holder farms across the region, and there exists much latent potential for the harvesting of these plants (with the right portable and inexpensive equipment). Should such harvesting occur, not only will there be additional raw sisal to feed into various production process, but sisal could become an important cash crop for many smallholder farmers. The cash from such a crop could be important for all sorts of reasons, not only for providing extra consumer spending ability (and thereby a multiplier process), but also by giving farmers valuable money to invest in other aspects of their farms.

- Finally because Sisal can be grown in marginal lands, the expansion of this industry need not come at the expense of other agricultural industries. Crops that produce a higher return per area of land, but that need good quality land (often needing to be irrigated/fertilised etc), can continue to be cultivated and harvested on this land. Sisal can be harvested from existing plants, or those planted in currently unutilised land.

3. Sisal: Background

3.1. The Product

Sisal is a perennial succulent plant from the Family Agavaceae, and the Genus Agave (similar to the Agave plant from which tequila is made). It is originally from the Yucatan province of Mexico, but in its commercial applications, has been spread to various cultivation destinations around the world – most noticeable of which are Africa (Tanzania and Kenya) and Brazil[5] . As a type of cactus, it is particularly hardy and not only survives, but can produce a marketable product in infertile and arid regions. The ability to farm sisal and produce a crop with numerous industrial applications, on land which is not suitable for much else, makes it an interesting crop for the SADC region. Most countries in SADC have large stretches of land where the cultivation of most crops is simply not feasible. The potential to use Sisal on African soil, however, has been known for some time now, and Sisal has an interesting place in African agricultural history, since its introduction in the late 1800's. It is now widespread throughout much of sub-Saharan Africa, although as a commercial crop it has tended to be concentrated in a few countries/regions. This is because historically, the industrial/commercial applications for the crop have been restricted to the fibres extracted from the leaves, and the machinery needed to perform this extraction has been relatively expensive. Thus, historically, it has needed to be grown on large ranches, with large scale production capabilities. It is also found on small-scale farms across the region, but often here the crop is grown as a hedge, for keeping cattle and other livestock from grazing crops (due it size, spiny leaves, and its unpalatable taste).

3.2. Sisal in Tanzania

The story of Tanzania's Sisal industry is one that is tied up with the story of Tanzania, its emergence from being a colony to independence, and its subsequent experiences with socialism. It is an industry which was once extremely profitable and dominated Tanzania's export basket, but now has shrunk to a fraction of its former glory. The sisal industry in Tanzania was started at the end of the 19th century (then German East Africa), when a German agronomist introduced the crop in the Tanga province in 1893. From the outset it was clear that the industry was going to expand rapidly, and become a major part of the Tanzanian

5 There are a number of related species which are cultivated and produced elsewhere, such as Henequen Hemp of Mexico, Maquey Sisal of the Philippines, and the Salvadorian Hemp of San Salvador.

economy. Tanga province and the surrounding region, where the plant was cultivated, soon saw massive investments in terms of railway's, roads, communication networks, and ports, and a huge influx of labour. Until the 1960'3 the industry accounted for almost 35% of the employed labour force. From 7 and a half tons exported at the turn of the century to over accounting for nearly half of the world's supply of hard fibres in the 1920's, to 200 000 tons in the 60's, the industry became know as the "white gold of Tanzania" (Sabea, 2001). However, in the space of a couple of decades the industry declined rapidly, and was soon considered to be a sunset industry, with production levels in 1998 reported at just 28 000 tons. The main reason for the industry's demise was undoubtedly the advent of synthetic fibres, but many other causes have been implicated by various authors and commentators. It seems that an unfortunate set of circumstances and a conjuncture of events in the decade following independence resulted in the deterioration of the industry. One such cause, often propagated with conviction, was the form of government and ownership that prevailed following the introduction of socialism. Nationalism of the sisal industry, it is often argued, killed it, although, sometimes the process through which the 'death' occurred is often misunderstood (of course in this paper we argue that this sisal industry is in fact not dead, but needing revitalization). Whilst currency volatility, policies regarding trade regulations, and the idea that public entities do not perform as well as private entities on world markets are often seen as root causes of the problems that abounded in the industry[6] , the main problem with public ownership was simply the process of transference of that ownership, and the management thereof, from the private sector.

As is often the case, the transfer of power was complex and involved the addressing of racial imbalances in ownership structures, as well as those between foreign and local ownership/management[7] . In Colonial times, black Africans were not allowed to progress beyond a certain point on the management hierarchy, and thus with the change in management structures there was immediately an impact in terms of competency and knowledge (Sabea, 2001). The process also saw the introduction of many smallholder farms, with the idea of spreading the industry to small (new) land owners in the region. This process however, was not implemented successfully, in part due to the structure of the industry at the time needing expensive machinery and therefore large economies of scale, and through other failures in training, establish-

6 In fact the Tanzanian Sisal Industry has been used for arguments by the IMF and others to show how

7 Many of the farms had been owned by British Companies, and Tanzanians had argued that they felt like foreigners on their own land

ment of collectives/collaborative organisations etc (problems which are common to African agriculture, even to this day). The next step in the nationalization process saw the government taking ownership of all but three of the largest sisal producing farms. One of the greatest downfalls of this step, it is also argued, was when those farms that were nationalized, and knowing their imminent fate, stopped investing in their land and allowed the farms to become less well maintained. This is an issue which is also not uncommon in Africa (one only has to look at the current situation of many farms in South Africa), but nevertheless could have resulted in farms that did not produce a crop that was of as good a quality in the years following the nationalization, and thus contributed in some part to the general demise of the industry. Corruption and mismanagement of the sisal estates are said to have followed, and the industry rapidly became uncompetitive.

In 1998 the Tanzanian government began the process of reversing the nationalization of the Sisal industry, hoping that by privatizing the sector, they might be able to save, or even rejuvenate the industry, and in the process, aid the Tanga region, which is, once again, particularly poor and vulnerable. Whether this, and other programs which have subsequently been implemented will be able to reverse the demise and negative trends in production and export earnings remains to be seen. What is important however is that the structure of the industry still remains, even if in a ghostly form that reflects a former glory. Should Sisal be adapted to a wide range of new, modern, applications, and should it regain some of its competitiveness, then the region might easily be able to reinvent itself.

3.3. Sisal in Kenya

Sisal in Kenya although not nearly as involved, nor complex a history as that of Sisal in Tanzania, is still quite a long one, and Sisal has been a major export crop in the past for the country. Following the success that was experienced with sisal in Tanzania, and due to the fact that farming conditions in Kenya often resemble those in their neighbour, entrepreneurs attempted growing Sisal for export relatively shortly after the first crops has been cultivated in Tanzania. Such was the success of the ventures that soon a booming industry was formed. However, the crop never really gained as important a status as it did in Tanzania, and unlike her neighbour, when the going got tough, and synthetic fibres started claiming the market for the products that sisal had always been grown for, Kenyan farmers were far more ready to drop sisal and move onto new crops.

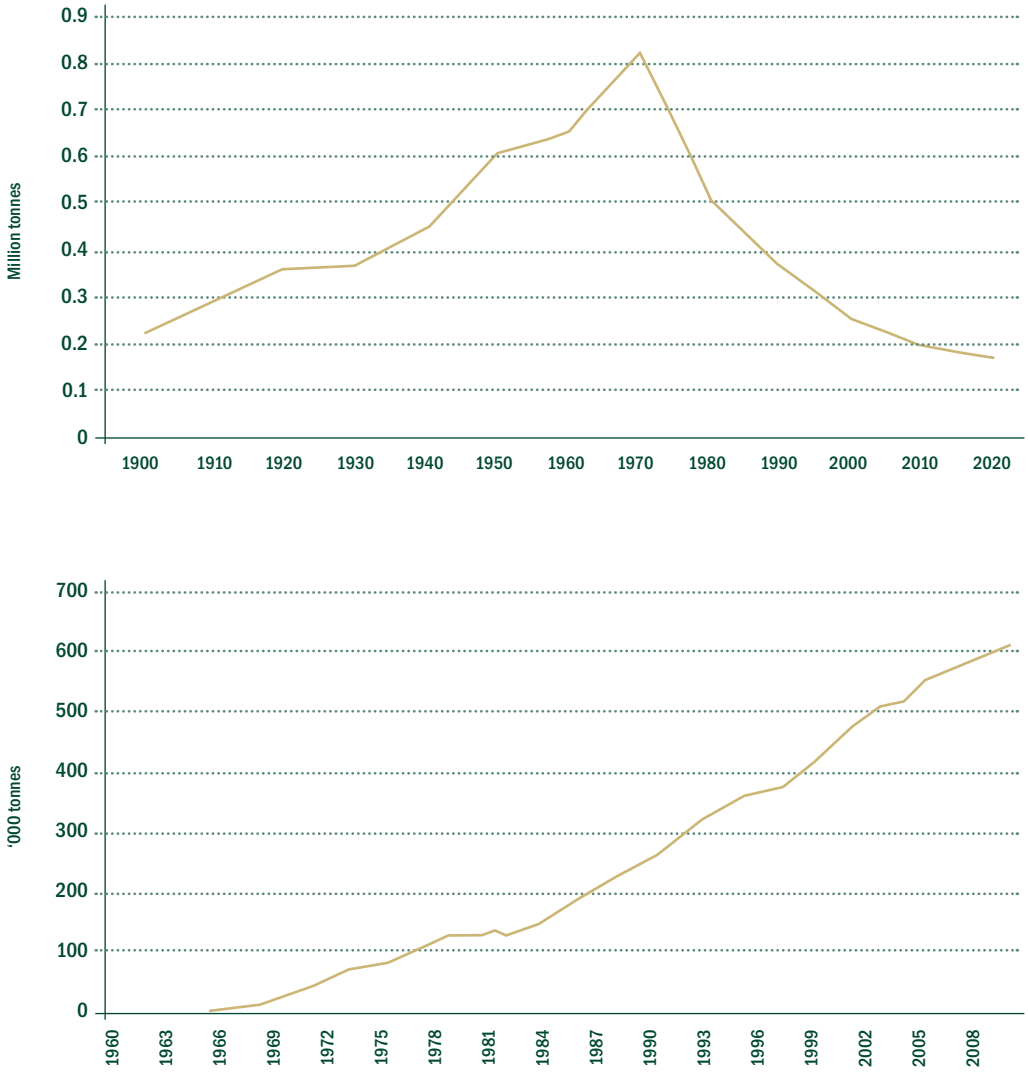
Kenyan producers were also quick to react, , once it became apparent that the crop had a future again, and more recently they have had great success with the crop again. Kenya is now the second larg-

est exporter of sisal in the world, and at the forefront of a resurgent market. The multitude of new applications for the crop, combined with the research and various projects undertaken to resurrect the sector, have benefited the industry in Kenya greatly (many of these projects have been undertaken with funds from the UN and other such organisations), and producers in Kenya have been quick to adapt to the new markets, wherever they have arisen in the past decade or so, and have been interesting in adopting new techniques and practices. Government promotion and regulation agencies have also been important in the revival of the industry, and similar to past (and positive) efforts in the flower industry (eg: the Kenyan Flower Council), the Kenyan standards authority has enhanced the reputation of Kenyan sisal, while investment promotion agencies market the crop and attempt to attract foreign investment (see Kenyan Export Processing Zones Authority, 2005. for example).

4. Sisal World Production

As mentioned earlier, Sisal production reached a peak in the 1970's, after which something rather dramatic occurred to the market. This dramatic event was the introduction of synthetic fibres, which have been steadily increasing in production, and gaining market shares of various textile markets, since the 70's. The figure below illustrates the historic levels of production of sisal.

Figure 4: World Production of Sisal (1900-2020) and Polypropylene Consumption (1960 – 2006)



Source: Mackie 2004

Sisal's core market was that of agricultural twines (cordage) and sacking, and polypropylene not only penetrated this market, but captured over 55% in just 14 years. The market for sisal was thus decimated, and sisal prices started falling. This was followed by falling production levels. The figure above depicting production of sisal includes the author's estimation of how the production figures would look in from 2000 onwards. This has in fact not been the case (as illustrated in Figure 5 and

More generally, as one can clearly see from the table, all the major producers of sisal are countries with warm and tropical climates; climates which are obviously similar to that of Mexico, from where the sisal plant originates. Interesting to note is how many of the largest producers are African countries, and indeed countries from the SADC region.

Table 5 below), and sisal production has seen positive growth recently.

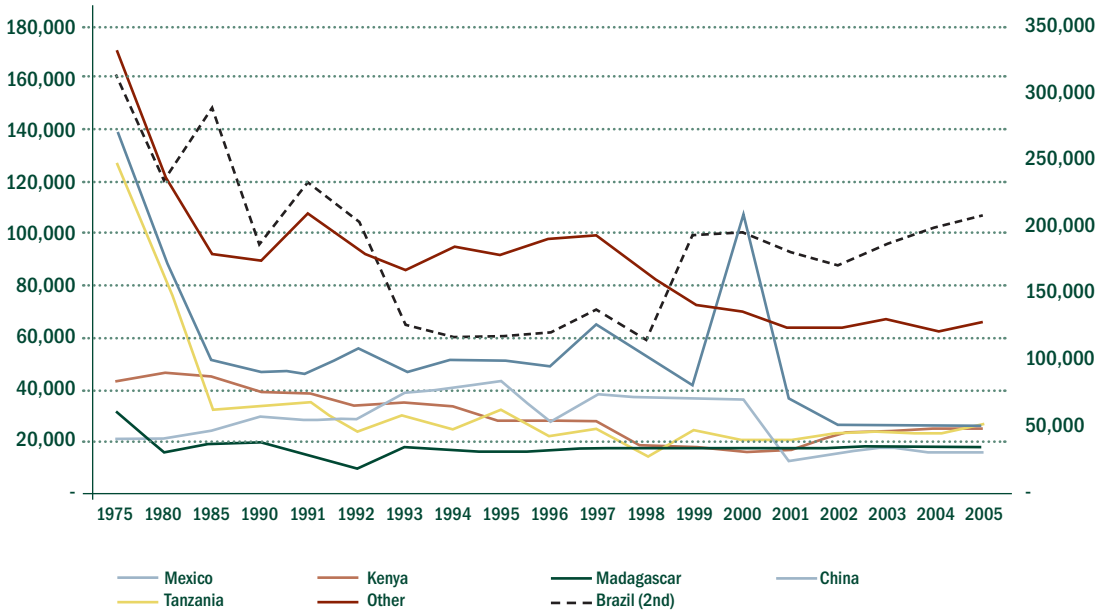
In terms of where Sisal has been produced, world production of sisal over the last 30 years has been dominated by just a few countries around the world, but Brazil is the leading producer by some way. Following the proud history of sisal production in Africa earlier in the 20th century, and Tanzania's dominance in the crop in the 40's and 50's, Brazil has been producing roughly half of the worlds output for the last quarter century. The other large producers are, in order of magnitude, Tanzania, Mexico, Kenya, Colombia, Madagascar, China and Cuba. The figure below, however, highlights how production levels, apart from small peaks in 1980 (in the case of Brazil) and in 1991, have been declining constantly since 1975 across all countries. Since 1998 Brazil has managed to turn production levels around a little, and output has risen sharply, barring a slight decline in 2001 and 2002. Most of the other major producers have continued to cut back on production levels over the past decade. This is also illustrated in

More generally, as one can clearly see from the table, all the major producers of sisal are countries with warm and tropical climates; climates which are obviously similar to that of Mexico, from where the sisal plant originates. Interesting to note is how many of the largest producers are African countries, and indeed countries from the SADC region.

Table 5. More recently, however, some producers have begun increasing production levels, following a number of marketing ventures aimed at improving the end-product markets, and the extraction techniques (yield). The resultant increased demand in world trade, brought about by new products, has seen the beginnings of a resurgence of the sisal grower's fortunes[8] .

8 It is difficult to see on the graph due to the scale, but Tanzania and Kenya's industry has begun to grow again (see table 5 below)

Figure 5: World Production of Sisal 1975 to 2005 (tons)



Source: FAO & own calculations

As one can see from the table the leading producers of sisal around the world have all reduced the area under sisal cultivation over the past 10 years, with the exception of Colombia, China, and Nicaragua. However over the past five years many of the countries listed have experienced growth, and some have had relatively large growth rates, especially Tanzania and Kenya. These growth rates in the two African countries correspond to new ventures and programs (often aimed at smallholders) that have been undertaken in the two countries; some of which are designed to process and sell the sisal that already exists in these countries on small-holder plots, whilst others are simply at improving/increasing the uses of sisal in world markets. One such plan (which is discussed further in section 7: Projects and developments in the harvesting and marketing of Sisal) makes use of small mobile de-cortifying machines, and uses a model based on that used in Brazil for the past quarter decade, to unlock the latent potential of sisal in the region and as a cash crop.

More generally, as one can clearly see from the table, all the major producers of sisal are countries with warm and tropical climates; climates which are obviously similar to that of Mexico, from where the sisal plant originates. Interesting to note is how many of the largest producers are African countries, and indeed countries from the SADC region.

Table 5: World Production, area harvested and yield of Sisal in 2005 (tons, ha, kg/ha)[9]

	Country	Volume Tons	Growth 00-05	Growth 95-05	Share %	Yield Kg/Ha	Area Hectares	% change in Area
1	Brazil	206,974	1.3	5.8	53.8	862.3	240,019	-6
2	Tanzania	27,000	5.6	-1.7	7.0	587.0	46,000	-23
3	Mexico	26,636	-24.4	-6.3	6.9	761.0	35,000	-41
4	Kenya	25,000	8.5	-1.1	6.5	1,000.0	25,000	-38
5	Colombia	21,445	2.1	-3.0	5.6	1,224.5	17,513	11
6	Madagascar	17,000	-0.1	0.4	4.4	1,176.5	14,450	-89
7	China	16,000	-15.3	-9.5	4.2	2,944.9	165,200	48
8	Cuba	11,730	0.2	-3.9	3.0	1,038.1	11,300	-25
9	Haiti	5,500	-0.7	-2.4	1.4	500.0	11,000	-54
10	Nicaragua	4,350	1.2	1.1	1.1	820.8	5,300	21
Selected Countries								
16	South Africa	1,260	-8.1	-7.2	0.3	630.0	2,000	-57
18	Mozambique	600	-	-5.0	0.2	200.0	3,000	-14
19	Angola	500	-	-	0.1	1,111.1	450	-63
25	Malawi	90	-	1.2	0.0	200.0	450	-13

Source: FAO & own calculations

One must remember that sisal is a particularly hardy crop, and one that needs very little in the way of maintenance. Although the crop grows better in warmer climates, because it needs little in the way of water and nourishment (being a type of cactus, or succulent, and storing water in its thick and waxy leaves), growing sisal in unfertile and arid lands is relatively easy. It certainly requires less water and is less dependant on having the correct mix of soil nutrients, than other crops. One can thus cultivate sisal in rather barren lands, and without having a good irrigation system in place. Sisal is also plagued by very few diseases and pests, especially in Africa where it is sometimes even difficult to get rid of. It is thus particularly suited to the region, especially as a crop to be grown on marginal lands that are unlikely to be used for anything else.

Even though there has been a declining international market for the crop (since the introduction of synthetic fibres), and the resultant prices fetched for sisal have fallen, the crop may still be well worth growing, if the opportunity cost of using the land for other crops is low enough. Over the past couple of decades, many farmers have left the business, as margins have declined, squeezing farmers out or turning them to more profitable ventures. The revenues earned (and prices fetched) have remained at similar levels to thirty years previously, whilst the costs of labour, transport, various inputs (tractors), marketing and

9 % Change in Area refers to the change in total planted sisal area in hectares from 1995 to 2005

other costs have all risen. Perhaps more importantly the opportunity cost of the land used to grow the crops, and indeed, that of the farmers time, have also increased. Sisal is also unfortunately a relatively labour intensive crop (leaves need to cut, and individually handled), and the wage bills can thus be very high. At the same time however, this factor, along with its climatic requirements, has made the crop ideally suited to the African continent in the past. Sisal could never be grown in high wage areas[10] . This paper argues, however, that because the crop need only be grown on marginal lands, with little in the way of maintenance/ fertiliser/irrigation etc, the mark-up needs only to be mildly positive for it to be considered as a feasible option, especially when one considers the alternative uses of the land, which are in the case of marginal lands, in all likelihood, even less profitable. To that end, the international price of sisal, albeit still particularly low in comparison to what it once was, does not need to rise much, to warrant the use of the often less-than prime land, especially in situations where that land is not currently being used at all. With the new models of extracting fibre from sisal grown on small-holder farms and using mobile de-cortifying machines to extract the fibre relatively inexpensively, and the emerging 'new' products, uses, and markets for the crop, this argument becomes all the more valid.

Another pertinent point about agriculture and the potential for sisal in Africa, has to do with the nature of the majority of farms in sub-Saharan Africa. Most are smallholder farms, operating with little or no economies of scale, and many are subsistence agricultural farms, where the farmers maintain a few livestock and a couple of crops intended only to feed themselves and their families. In addition the farmers often grow cash crops which they sell at local markets. Sisal is already used widely in the region as a hedge to keep livestock away from- or to demarcate- crop land, and could therefore be harvested and utilised as a cash crop, without any additional planting required. In addition, those parts of small holdings that are not currently in use, perhaps because of their unsuitability to most normal crops (maize etc) could also be planted with sisal. The crop thus holds much potential for smallholders in the region as a cash crop, if supply sides mechanisms and marketing processes are put in place.

Returning to

More generally, as one can clearly see from the table, all the major producers of sisal are countries with warm and tropical climates; climates which are obviously similar to that of Mexico, from where the sisal plant originates. Interesting to note is how many of the largest producers are African countries, and indeed countries from the SADC region.

10 There are some who believe that this is one of the main reasons why synthetic fibres were promoted (and even supposedly subsidized) in the sixties and early seventies, so that the processing company's – mostly located in the developed world could gain control of the supply of the fibres they used, and regulate the industry better.

Table 5, there are three possible reasons why the growth in production and increased exports of raw sisal, between 2000 and 2005, have not been met with increased acreage, as shown in the table above. The first is that the estimation of acreage only occurs every few years or so, and thus the data might be somewhat out of date. The second reason, which is probably more likely, is that given the decline in the past of the industry, there are more than likely a number of ranch's with excess capacity, that are able to step up production should they need to. In addition, in certain cases in Kenya and Tanzania, where new smallholder schemes are being implemented, the amount of sisal being grown (or the acreage dedicated to the growing of sisal) has probably not increased, even if output has. Thus for now, the planting of sisal is unlikely to increase substantially in the short term, or at least not until the market has expanded significantly, to absorb excess capacity, or un-utilised existing hedge planting. The final possible reason why the area planted and harvested has decreased even as output and exports have increased is the yield that is obtained from the sisal plantations. With new technologies utilised in extracting the fibre from the plant, getting a higher yield from an existing plantation is entirely feasible. Indeed in Kenya and Tanzania, there is a large drive to not only increase yields, but also to utilise more of the crop. There is also the possibility of, farming the sisal them more intensively (i.e planting the plants closer together, adding irrigation, more labour etc). Finally there is the possibility that sisal is growing on more productive land, although for most countries this is unlikely, as it is a low profitability crop. In the case of China,

More generally, as one can clearly see from the table, all the major producers of sisal are countries with warm and tropical climates; climates which are obviously similar to that of Mexico, from where the sisal plant originates. Interesting to note is how many of the largest producers are African countries, and indeed countries from the SADC region.

Table 5 reports that the area under cultivation has increased dramatically over the past couple of decades, but output has declined significantly. These figures seem rather odd, especially when one considers that the yield statistics have in fact risen, rather than fallen. One of the sets of figures must therefore be wrong, and in this case it is the acreage statistics (other sources estimate current acreage at 12,000 ha – see FAO 2001 for example). China actually has plantations of sisal on relatively rich lands, and lands that are capable of taking irrigation, and growing other, more lucrative crops. Thus, in the future, it is likely that Chinese production of sisal will decrease substantially, or more to less productive lands.

5. Old and New Uses

The FAO's common fund for commodities has a partnership between 104 member states and three intergovernmental organizations, and is established within the United Nations as a financial institution aimed at helping member states develop their commodities markets and industries. The fund has two main objectives – commodity development measures aimed at improving the structural conditions in markets and enhancing the long-term competitiveness of various commodities, and commodity market development activities which aim at assisting developing countries in functioning in a global environment, facilitating private sector initiatives and price risk management. Development of commodities includes research, product and quality development, the introduction and adaptation of new technology used elsewhere, improved marketing etc.

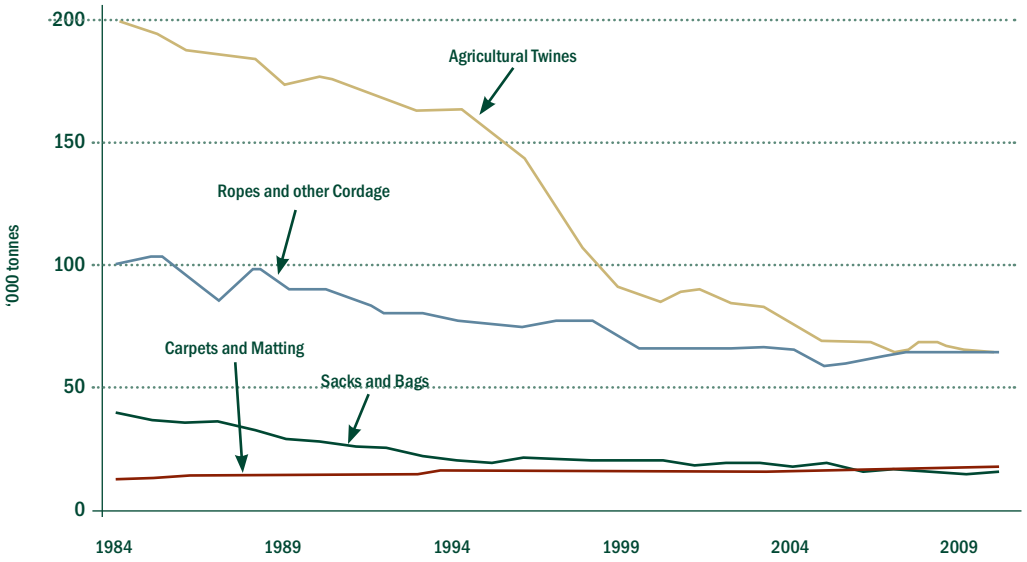
One of the funds main projects in the natural fibres section is that aimed at developing the market for sisal and henequen, and currently being implemented in Kenya and Tanzania. This project has been attempting to not only reduce production costs and improving fibre extraction techniques, but also in increasing the uses of the end product (and thereby the market) In a seminar in 2000, Brain Moir of the FAO, in addressing the seminar stated how the Intergovernmental Group on Hard Fibres was attempting to assist the natural fibres market on two fronts; the first by reducing the erosion of the market to synthetics, and the second by increasing the scope of products and end uses for various natural fibres. He warned however, that the program had a long way to go before delivering any significant results.

As seen earlier in the trade statistics – it appears that some of the initiatives are beginning to have some positive effects, and certainly the project in East Africa is starting to reap returns as both Kenya and Tanzania have been expanding their output and exports.

5.1. Traditional Uses

The figure below (Figure 6) shows the main traditional uses of sisal in the international market. It is evident that many of the traditional uses have declined significantly over the past 20 years or so, as has been described elsewhere in this paper. In fact as far back as the early 1960's, before the introduction of polypropylene and synthetic fibres, many in the industry recognised the fact sisal industry relied particularly heavily on just one or two products, and this over-reliance could be problematic in the future. Indeed, with the introduction of synthetic fibres, and the loss of market share to the new competitor, producers of sisal suffered badly. In addition the worlds consumption of agricultural

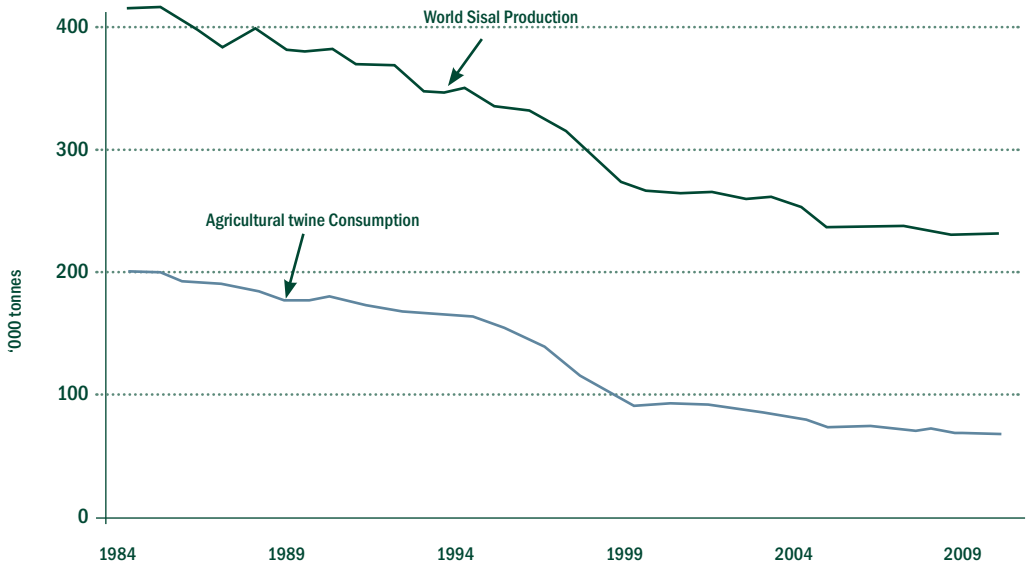
Figure 6: Major Traditional Uses of Sisal and Hard fibres



Source: Mackie 2000

twines also decreased, especially that of baler twine with the introduction of the pick-up baler trucks (see Figure 7). The combined effect was to reduce the sisal industry to a shadow of its former self, and where it had once accounted for 750 000 tons in 1973/4 to just 260 000 tons in 2000.

Figure 7: World Sisal Production and World Consumption of Agricultural Twine



Source: Mackie 2000

Other traditional uses have also suffered over the past 20 years or so (as indicated in Figure 6), and Ropes and Cordage, and Sacking and Bags have also been affected strongly by the introduction of polypropylene and other synthetic fibres. This figure however from 2000 onwards, is merely a projection or estimate, based on the author's perception of the market. With the strong growth that has been occurring recently, it must be highlighted that these projections, are underestimated, and consumption of sisal for many of its various uses have infact been rising recently, especially with the increased demand from countries such as China.

The table below, Table 6, shows how in the past consumption of sisal was centred on that of traditional uses, and backs up the figures shown previously. In 1973/74, at the height of the world market for sisal, over 50% of it went into the production of harvest twines, 10% into packing/binging twines, 10% into ropes and general cordage, and a further 14.7% into padding and sacking (this was predominantly for the mattress and automotive industries, where sisal was used for stuffing/padding of upholstery). Thus 90% of all uses were for it's 'traditional' uses. Carpets/wall coverings and paper products made up the remaining 70,000 tons.

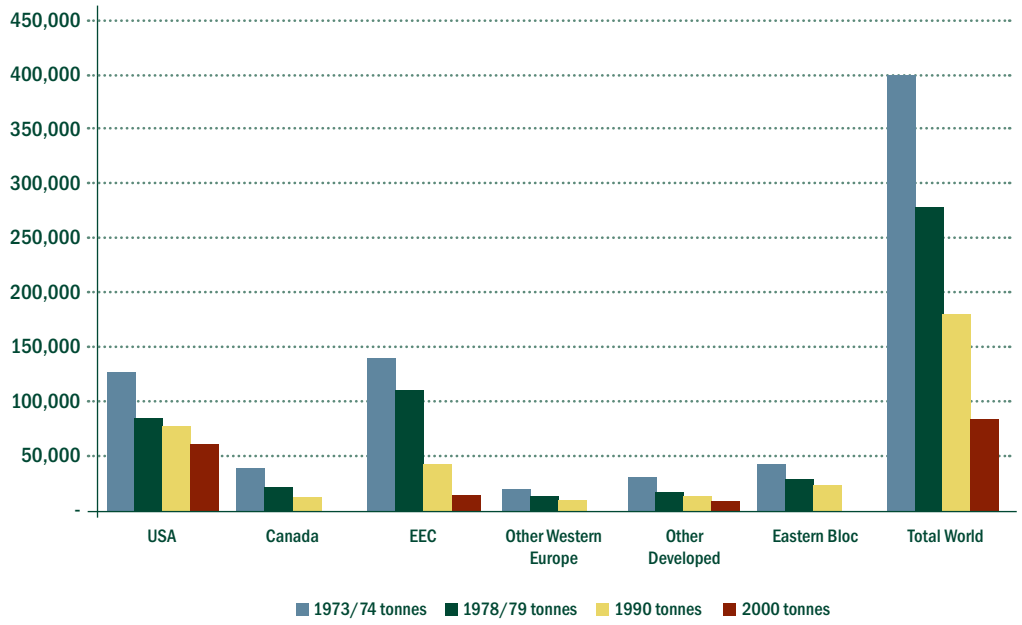
Table 6: Use of Sisal and Henequen by Application

	1973/74		1990		2000	
Application	**Quantity tonnes**	**Share %**	**Quantity tonnes**	**Share %**	**Quantity tonnes**	**Share %**
Harvest twines	400,000	53.3	180,000	45.0	84,000	32.3
Packing/tying twines	82,000	10.9	88,000	22.0	72,000	27.7
Ropes, general cordage	80,000	10.7	-	-	-	-
Padding, sacking, chopping	110,000	14.7	70,000	17.5	12,000	4.6
Total Traditional Uses	672,000	90.0	338,000	85.0	168,000	64.6
Carpets, wall coverings	38,000	5.1	12,000	3.0	20,000	7.7
Paper incl. kraft, and other	40,000	5.3	50,000	12.5	72,000	27.7
Total world use	750,000	100	400,000	100	260,000	100

Source: Landon 2000

The table clearly demonstrates how production levels have fallen across most of the traditional industry's, but how some of the less traditional industries have faired better. Hardest hit over the period, by the introduction of synthetic fibres and general declines in world consumption was the harvest twines sector, falling from 400,000 tons to just 84,000 tons. By all accounts this sector is unlikely to recover any time soon. Packing/tying twines has declined, but not by nearly as much as other sectors. Paper, although considered to be a new application of sisal, has been using sisal for some time now. This sector has shown relatively strong growth, and in conjunction with a number of recent research projects seems set to become a large, and growing, consumer of sisal fibre.

Figure 8: Consumption of Sisal and Henequen by Country



Source: Landon 2000

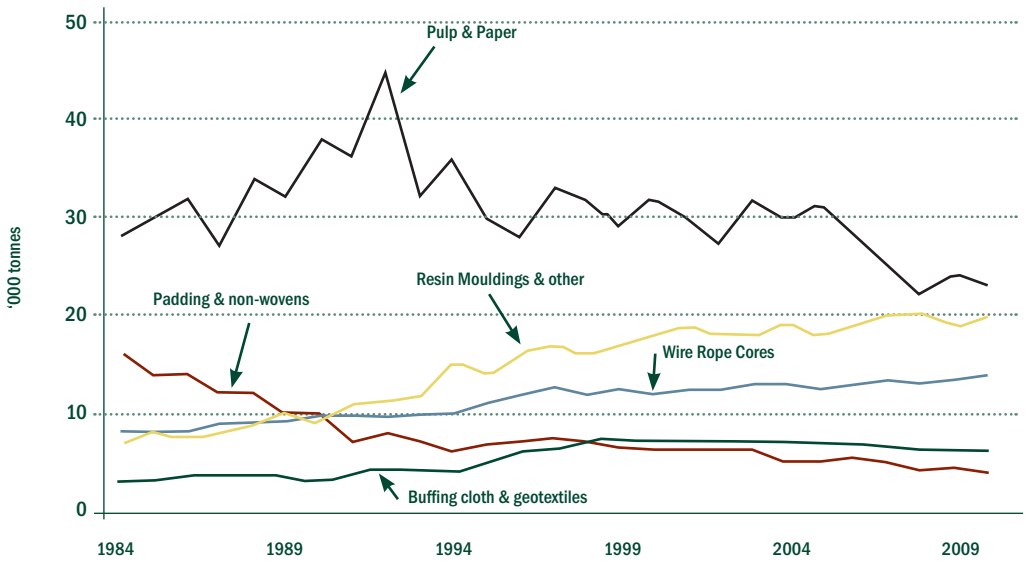
Figure 8 above shows how consumption of sisal baler and binder twine (harvest twine) has changed over the three decades from the 70's to 2000. One can see that whilst consumption fell away dramatically in the Europe and other developed countries around the world, the United States has continued to consume relatively large quantities of sisal twine, about half of which is imported. The market for harvest twine is thus , sadly, a lost cause, and one that marketers of sisal should probably avoid. The market for tying twines is still significant, and apart from the EU and the US, many of the sisal producing countries use the twines themselves in their agriculture. Indeed, over the past twenty years or so many of these twines have entered the agricultural systems of neighbouring countries and regions, and thus various African countries such as Egypt and those of central Africa, as well as the Middle East, South Africa, Pakistan, India, China and South America, now use the twines in their farming techniques. This is important for future growth of the industry, as these countries/regions are all experiencing rapid growth in their agricultural sectors, and with the prices of polypropylene rising (see sector 6.1: Price of Sisal and competitiveness with the price of polypropylene), they are likely to continue using sisal twine.

5.2. New Uses

There are also numerous new product offerings that are emerging and seemingly have great potential. The figure below is taken from Mackie (2000), and shows his estimates of the market for these so-called 'non-traditional' sisal uses. However, at the time of writing the

prospects for the sisal industry where much bleaker than they are today, and most of these 'new' product estimates should really be revised upward, especially that of resin mouldings, pulp and paper, and buffing cloth and geotextiles.

Figure 9: Minor or Emerging Uses of Sisal and Other Hard Fibres



Source: Mackie 2000

New uses in for sisal can be divided into a number of categories:

- Composite materials that use natural fibres to reinforce the materials. Examples abound in the automotive industry, water vessels, and other transport equipment. In addition some composites have been used when reinforcing plastic polymers in such things as plastic water tanks, portable toilets, various casings and storage containers.

- In the paper industry, sisal fibres can be used to strengthen other pulp from softwoods, hardwoods, and non-wood sources, as well as in recycled paper. In addition they have a very high strength and tear ratio, therefore also lending themselves to speciality products (types of paper or card that wont tear easily)

- In the growing industry of geotextiles sisal fibres can be used extensively, for filteration systems, separators, road overlays and sub layers, earth retainers and reinforcement layers, mulching, and tension membranes. There major appeal is for environmentally friendly applications.

- Natural fibres have been used in carpets/rugs since time immemorial. Sisal fibres make especially hard wearing carpets/rugs, that can withstand heavy use. In addition they create an authentic traditional or cultural feel, that, if marketed correctly, could have large markets in the US, EU, and other western countries. Sisal can also be used for various handicrafts, including baskets, wall hangings, woven handbags.

- There are many other uses for natural fibres as green fibres. With increasing consciousness about sustainability and environmentalism, natural fibres are increasingly being used to substitute for synthetic fibres. They can also, often, be used as low cost fibre sources. Additional applications include being used in building materials, particleboards, insulation boards, human food and animal feed, cosmetics, and medicine. Buffer cloths, bath accessories (loofers and scrubbers), different types of padding and insulation, and wire rope cores (escalator wires) are more examples of potential commercial end-uses. They can also potentially be used in clothing, and there are suggestions that a drink similar to that of Tequila, which is made from other agaves species, can be distilled from the sisal plant. The key to all these markets however, is having the research (with all the relevant properties reported and tested), and having successful marketing campaigns. In the SADC region sisal is often used for the weaving of traditional rugs/mats and other handicrafts (baskets, handbags etc). It could thus be used as a novelty, craft item.

One of the greatest potential uses for sisal is in composite materials. Using natural fibres to strengthen composites is certainly not a new idea, and in fact some of the first instances of such a practice were witnessed in Ancient Egypt where straw fibres were used to reinforce clay. More recently, fibre glass renewed global interests in composite materials, and glass fibres when used in combination with rigid setting resins, have been used in countless applications across a wide variety of industries. With increasing awareness of environment friendly practices and materials, there has been a renewed interest in using natural fibres, and substituting them for glass fibres. Natural fibres have many properties that make them desirable, inclideing weight saving, low raw material prices, and thermal recycling (which refers to the ecological advantages of using resources which are renewable). In the automotive industry, for example, Sisal is now being coupled with polyurethane to form a composite material that is used in linings and structural components for automotive interiors such as door panels and trunk liners. The benefits of using sisal include reduced vehicle weight and lower production costs. This use would be that under resin mouldings, and recently it has been exploding in the international automotive industries across the world. Much of this explosion has been driven by the cars manufactured for the EU market, as the consumers there are particularly environmentally conscious. Sisal, has a much better reputation

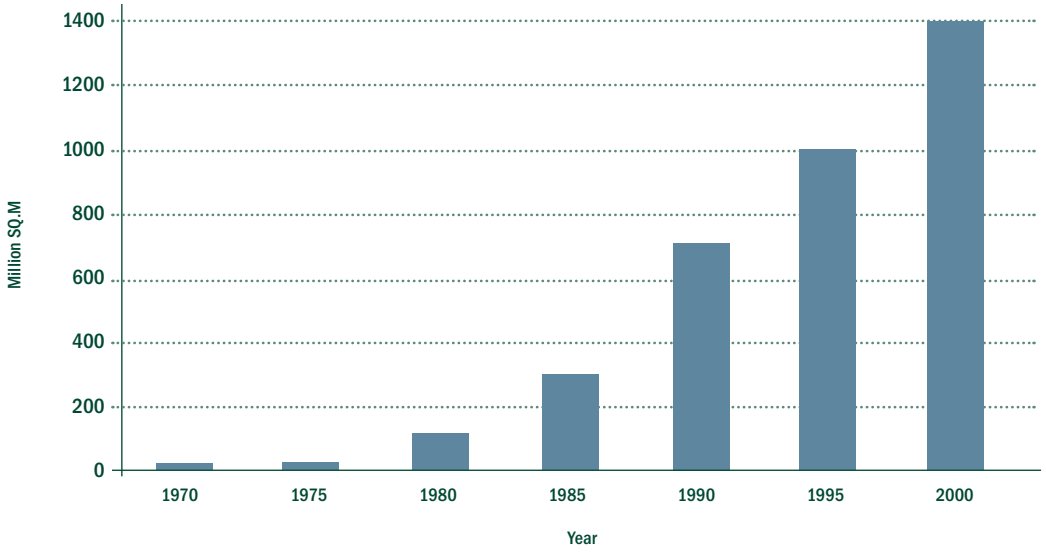
for being environmentally friendly, than its synthetic counterpart, and European consumers buy into that fact. An example of the growth in this market is the use of sisal in composite materials in the production of Mercedes Benz C-Class, with one such production facility in South Africa. This has help the DaimlerChrysler group achieve a better sustainability rating, as well as better ratings in the local employment ratings of the South African government when sourcing the sisal from local producers.[11]

Another market where Sisal could gain a stronger foothold is that of geotextiles – textiles which are used in the or near the ground to enhance the grounds characteristics (often used by civil engineers, landscape architects and geotechnical engineers). Currently geotextiles can be drawn from synthetic materials such as polypropylene, polyester and PVC or the natural fibres of jute, Coir, Sisal, Palm leaf etc. The natural fibres have many of the same properties that the synthetic fibres do, however they have one main advantage: that is they are biodegradable. This factor, and their general reputation for environmentally friendliness, could allow them to be used more and more in countries where the public have a developed concern for the well being of their environment. There are many uses of natural fibres in geotextile applications, and they include such applications as: separators, containers (earth retainers), reinforcement, filters (for drainage purposes), silt fences, mulching, tension membranes and other forms of lining, road sub base, and road asphalt overlays. The use of natural fibres can also be particularly effective if one is landscaping, and wishing to establish vegetation on a newly established bank/slope etc. The fibre matting (which could be Hessian, or sisal matting) allows for this in a most natural of settings.

The figure below (Figure 10) , taken from Smith (2000), shows the growth in use of geotextiles. He estimates that sisal, could be used in almost half of the total applications, so long as a number of steps are taken to competitive market the product. Such steps would include: proper (rigorous) research into the use of sisal for the applications, and the presentation to potential clients of reliable data on the matter; stable quantities supplied (quarenteed) and stable prices (as engineering projects are planned and budgeted for years in advance); reliable lead times for delivery, and reliable quality. Currently these are some of the factors that have allowed for synthetic fibres to capture much of the market, despite the fact that often their costs are significantly higher. Synthetic fibres, despite belief to the contrary, can cost anywhere from 2 to 5 times as much as competing natural fibres.

11 http://www.daimlerchrysler.com/dccom/0,,0-5-7153-1-513892-1-0-0-0-0-0-30-7145-0-0-0-0-0-0-0,00.html, or
http://findarticles.com/p/articles/mi_m3012/is_5_185/ai_n15660379 for example

Figure 10: Growth in world use of geotextiles (1970-2000)



Source: Smith 2000

Another exciting prospect for sisal is the use of it in the manufacture of paper. Although not a new idea, due to the amount of research currently underway, and various projects that are being implemented, this idea could pose bright prospects for the sisal industry in the future. Hurter (2000) estimates that global consumption of papermaking fibre would increase from 300 million tons in 1998 to 425 million tons by 2010, and that almost 70 million tons of this would be from recovered (recycled) paper. Sisal thus has excellent opportunities in the paper making industry as it has high strength properties that could be used a reinforcing additives in paper with high recovered fibre content (recycled paper becomes weaker and weaker every time it is recycled). In addition fast growing wood species, which are being used to make most paper these days, also require some reinforcing fibre, and especially for paper products designed for strength (types of card paper). The making of the paper itself would, in all likelihood, not use sisal products, as already there is an abundance of agricultural residues that can perform the task. However as these non-wood short fibre sources are used more and more for meeting the increasing demand for paper, so the demand for sisal could continue to rise.

Hurter's paper, which was presented at the FAO/CFC seminar held at FAO, Rome, in 2000, shows how sisal has many properties which make ideal to be used in the paper industry, with volumes that could become substantial enough to bring about a reform in the entire si-

sal industry. However, he underlines many of the problems facing the industry, not least of which is the current cost structures of sisal pulp production (which can be greatly reduced if certain methods were employed), the un-reliability of supply (as the only large mill in Brazil capable of delivery the quantities of pulp went into receivership some time ago), and the lack of consistent quality which wreaks havoc with paper making operations.[12]

One of the potential problems that faces sisal in this area is the power, relative size, and marketing strength of the companies that own massive forest plantations. For many years now, people have argued that foresty and wood products are in fact not an efficient source of fibre, not in terms of land use, water use, or energy use, and that many other plants, which much higher fibre contents, could replace them in various production cycles. Sisal is one of the better plant sources of fibre, especially long (and strong) fibres. There is almost a 'conspiracy theory' that abounds in certain circles decrying the continued use of wood and wood products for pulping and other products needing high fibre content, but in truth, the dominance of wood for use in these markets bears testimony to the marketing capabilities of the company's in the sector. They have managed to capture a market (provide the equipment, establish the value chains, and do the necessary research) despite their product being inferior to other products. What is needed therefore is for sisal, and other natural fibre, farmer/producer organisations to undertake marketing that might bring about a change in the status quo, and with enough backing (from organisations such as the UNs commodity fund) and if the product truly is superior, then surely it is only a matter of time before competitors enter the market and claim market share.

Figure 11: Growth of Carpets produced from 'other vegetable fibres'

Source: UN Comtrade & own calculations

12 See http://www.hurterconsult.com/tcf_sisal_pulp_2.htm for example

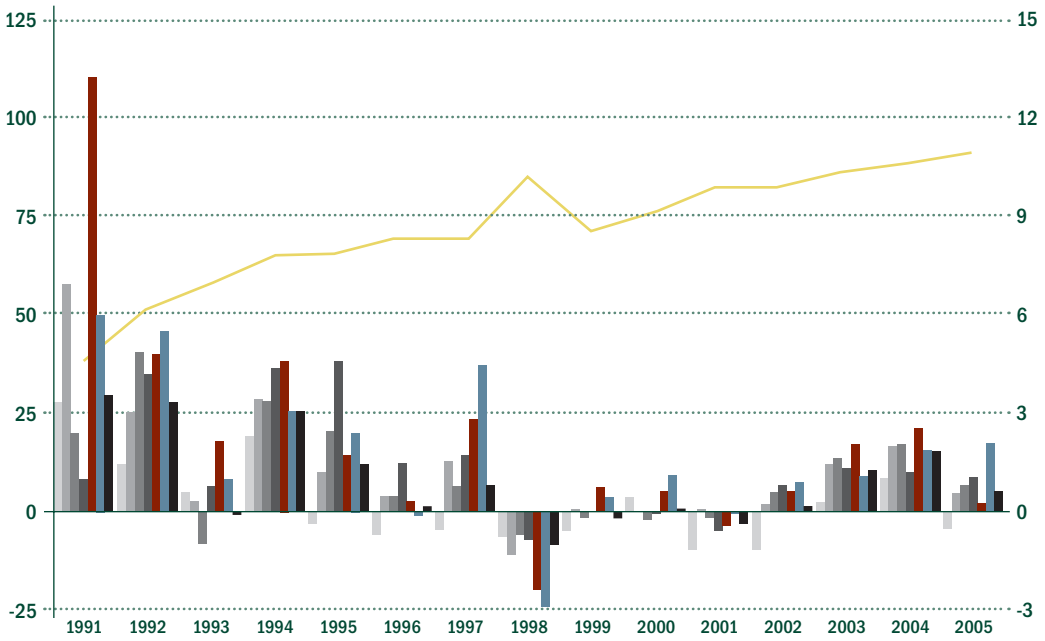
Another important market for sisal that has been growing recently is that of carpets. Although there is no direct data for the trade in sisal carpets, or carpets that include sisal fibres, yarn or textiles, one can get an idea from the following categories of traded commodities:

- 5702 – Carpets of woven yarns where 570239, 570249, 570259 & 570299 refer to those carpets made from yarns nes (i.e. not of cotton, animal hair, or man made fibres). A proportion of these carpets will be made from sisal (others will be made from jute, whilst coir carpets are normally listed separately)

- 5705 – Carpets from other textiles nes. Again a large proportion of these are sisal carpets.

As one can see from Figure 11 the world trade in these two categories has risen dramatically since 1990, by more than 9 times in the case of 5702, and by 6 times in the case of 5705. The growth is equivalent to 16% per annum (compounded) for 5702, and 13% pa for 5705, over the 15 year period, although one can see that from 1998 to 2002 the growth slowed, and was actually negative for some years. The figure below (Figure 12) shows the annual growth rates for the various carpet sectors (per HS code), with those in red representing the carpets in 5702 made from other vegetable fibres, and those in blue representing the carpets classified under 5705. The bars in black represent the total carpet sector.

Figure 12: Year on Year growth rates of Carpets by Category, & % Share of Carpets from other vegetable fibres (1991-2005)



Source: UN Comtrade & own calculations

One can clearly see, for most of the period under consideration, carpets made from "other vegetable fibres" have performed far better than those made from more "traditional" or "conventional" fibres, or from man-made fibres. More recently the entire carpet sector which experienced negative growth rates in 1998, 1999 and 2001, has recovered, as has the demand for carpets made from other vegetable fibres.

The yellow line represents the percentage share of all carpets traded that are made from other vegetable fibres (measured on the right axis), and again it is quite evident that as a proportion of total carpets, these are rising dramatically. From just over 4.5% in 1990, these are now over 11%, indicating changing consumer patterns in the demand for carpets. There are two points to highlight here; the first is that sisal carpets/mats are particularly hard wearing and tough, and have thus often in the past been used in showrooms and displays – they are thus well suited for use in many modern settings where the demand for longevity is high; and the second point is that with growing environmentalism and concern for sustainability, especially in Europe, sisal carpets make an ideal substitute for different synthetic fibres which do not share the same environmentally friendly reputation.

Finally, there are numerous other potential uses and/or applications that sisal is suitable for, which this paper has not mentioned. Many of these applications of sisal are not currently in use, either because of a lack of marketing or knowledge, or because of a lack of supply of the sisal raw material. Often the prices of the sisal raw material is also too high, because of the tiny levels of production of that particular variant or form, and the consequent lack of economies of scale. In most cases the raw sisal needs to be treated first before it is suitable, but this is the same for almost all commercial materials and fibres – regardless of whether they are synthetic or natural. The additional costs associated with production runs that are small, or not sufficiently developed, can therefore be debilitating, and can persuade producers to opt for other materials, especially if there is some doubt about the consistency and quality of supply. This is especially true of a raw material like sisal which has faced an almost continual decline since the seventies. Potential commercial uses of the material are often not sure about the future of sisal supplies, and they certainly do not want to invest in plant and equipment, and incur sunk costs, where they might have to switch to other processes and materials in the future. This has been one of the major stumbling blocks for many of the commercial possibilities of sisal in the past. The efforts of the UN common fund for commodities are helping greatly in this regard (see Projects and developments in the harvesting and marketing of Sisal)

6. World Trade in Sisal

Figure 13: World imports of raw sisal and processed sisal (tow & waste) 1990 to 2005

Source: UNComtrade

The figure above (Figure 13) illustrates world trade in sisal over the last 15 years. As one can see there was a rise in the trade values in the early nineties, then a decline from 1997 to 2000, and more recently, the value of world imports has been rising again. Also immediately noticeable from the figure is the rise in trade in processed sisal, or sisal tow and waste.

The table above shows the top twenty countries that imported sisal in 2005. China is far and away the leading importing nation, having increased its imports from almost nothing in 1995 up till its current import bill of over US$22 million. This phenomenal growth has been driven by the growth in various rapidly expanding industries, from the automotive industry through to the manufacture of different clothes, cloth-disks and different types of abrasives disks and buffs. Sisal is also used for bath products, loofers, scrubs etc, but perhaps the most important use of sisal in China is increasingly in the carpet and rug manufacturing industry. China currently sources two thirds of their imports from Brazil, and the rest from Africa (Kenya, Tanzania nad Madagascar). The second largest import market, Spain, has also been expanding rapidly, growing at over 12% per annum for the last five years. Users of Sisal in Spain include carpet companies, cutting/buffing disks and yarn manufacturers, but more recently their has been research done to produce paper (see for example the Celulosa de Levante pulp factory in Tortosa, Spain).

Table 7: Value of Sisal imports by leading nations 1995-2005, (US$'000)

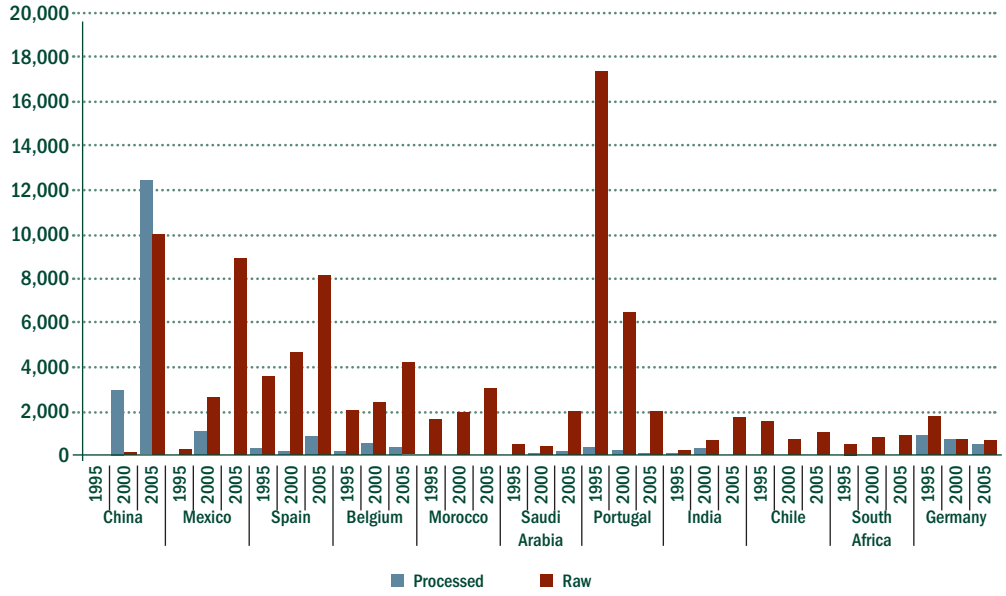
		Import Value in US$'000			Growth Rate (%)		Percentage Share	
	Countries	1995	2000	2005	00-05	95-05	1995	2005
1	China	64	3,074	22,447	48.8	79.7	0.1	32.2
2	Spain	3,867	4,880	8,936	12.9	8.7	7.0	12.8
3	Mexico	266	3,656	8,889	19.4	42.0	0.5	12.8
4	Belgium	2,147	2,901	4,556	9.5	7.8	3.9	6.5
5	Morocco	1,604	2,027	2,991	8.1	6.4	2.9	4.3
6	Saudi Arabia	482	445	2,224	37.9	16.5	0.9	3.2
7	Portugal	17,740	6,730	2,046	-21.2	-19.4	32.1	2.9
8	India	291	976	1,774	12.7	19.8	0.5	2.5
9	Egypt, Arab Rep.	1,680	275	1,241	35.2	-3.0	3.0	1.8
10	Germany	2,685	1,428	1,120	-4.7	-8.4	4.9	1.6
11	Chile	1,597	725	1,006	6.8	-4.5	2.9	1.4
12	South Africa	491	752	874	3.1	5.9	0.9	1.3
13	Indonesia	261	317	864	22.2	12.7	0.5	1.2
14	France	3,235	978	840	-3.0	-12.6	5.9	1.2
15	Italy	859	929	821	-2.4	-0.4	1.6	1.2
16	Netherlands	1,394	313	789	20.3	-5.5	2.5	1.1
17	Austria	550	662	739	2.2	3.0	1.0	1.1
18	Poland	1,803	814	582	-6.5	-10.7	3.3	0.8
19	Syrian Arab Republic	-	-	563	-	-	0.0	0.8
20	Japan	2,014	1,431	508	-18.7	-12.9	3.6	0.7

Source: UNComtrade & own calculations

Spain imports most of its sisal from Africa (Tanzania 30%, Madagascar 10%, and Kenya 9.7%). African sisal has a reputation of being better quality, with longer fibres. Mexico, Belgium and Morrocco also import significant quantities of sisal, and their markets for the commodity have been growing rapidly recently. Mexico is a relatively new market, as it is a historic exporter of the crop, but increased demand has outstripped supply in recent times and it has been importing from nearby Brazil (98% of its imports). Saudi Arabia is another relative new entrant into the market, and their use appears to still be agricultural. The majority of their imports come from Kenya and Tanzania (90%). Portugal was once one of the leading importers but their imports have declined rapidly. This follows various companies, such as Cordex (a baler twine producer) and others, decision to relocate operations to Brazil. Thus Portugal no longer imports much raw sisal. Many other countries, not on the list, have also begun importing raw sisal, and begun fledgling industry's, and as this paper discusses later, there are numerous opportunities for sisal to be used in 'new' products, some of which tap into the growing 'environment-friendly' approach of the developed world. These new country importers are spread across Africa, the Middle East, South East Asia, Eastern Europe and South America. Other interesting markets include Morrocco and India, both large producers of carpets. Within the last decade, Morrocco has stopped sourcing its sisal from Brazil, and changed to sourcing it from Kenya, Tanzania, and Madagascar. India currently also sources the majority of its sisal from Africa[13] .

13 For a list of websites of companies in India and China that produce sisal products, please see the annex

Figure 14: Importers of Raw and Semi-processed Sisal 1995-2005 ('000)



Source: UNComtrade & own calculations

Figure 14, above, divides the exports of the leading importing countries into the two components, namely raw sisal, and semi-processed sisal – i.e. tow and waste. Currently China is the only major importer of tow and waste products. All the other countries tend to import raw, unprocessed sisal products.

The leading exporter is Brazil with over 40% of the world market. Recently their exports have increased by nearly 20% per annum (from 2000 to 2005). Half of their exports are destined for China and 30% is destined for Mexico. Brazil also has a large internal industry, and many European firms have been investing in Brazil to reduce costs Exports to both China and Brazil have been growing at unprecedented rates, and as a result Brazil has enjoyed growth of just under 20% per annum since 2000. Kenya, the second largest exporter currently supplies China (25% of its total exports), Spain (15%), Morocco (7%), India (6.5%), Belgium (6.5%), Indonesia (5%), Egypt (5%) and Saudi Arabia (3.5%). More recently Kenya has even started exporting to South Africa (US$ 518 000 in 2005). These exports are due to the increased demand for sisal brought about by car manufacturers in South Africa, and their demand for sisal in composite materials used in the manufacture of their cars. All of Kenya's leading markets, with the exception of Belgium, have been expanding rapidly recently (most in excess of 20% growth per annum).

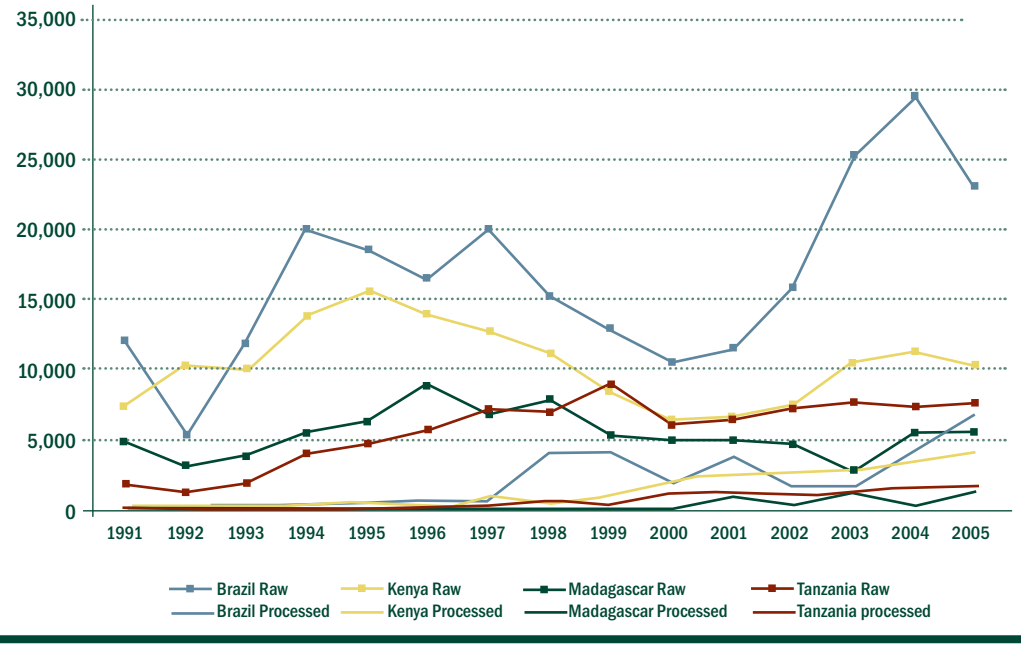
Table 8: Leading Exporting Nations of Sisal 1995-2005 (US$'000)

		Export Value in US$'000			Growth Rate (%)		Percentage Share	
	Countries	1995	2000	2005	00-05	95-05	1995	2005
1	Brazil	19,074	12,311	29,745	19.3	4.5	34.6	42.7
2	Kenya	16,209	8,461	14,742	11.7	-0.9	29.4	21.2
3	Tanzania	4,821	7,073	9,284	5.6	6.8	8.7	13.3
4	Madagascar	6,544	5,206	6,889	5.8	0.5	11.9	9.9
5	Germany	1,174	837	2,488	24.3	7.8	2.1	3.6
6	China	1,602	1,065	2,087	14.4	2.7	2.9	3.0
7	Spain	443	314	443	7.1	0.0	0.8	0.6
8	Philippines	70	55	427	50.5	19.9	0.1	0.6
9	Italy	213	163	416	20.6	6.9	0.4	0.6
10	South Africa	85	659	372	-10.8	16.0	0.2	0.5

Source: UNComtrade & own calculations

Tanzania's two biggest markets are Spain and China, accounting for 30% and 18% respectively. Very recently they have also started exporting to Saudi Arabia, and now export over US$ 1.5 million. Madagascar exports roughly 35% of its exports to Spain and 25% to China. They have been badly affected by the decrease in imports from Portugal, and this has retarded their overall export growth to just under 6%. 90% of Germany's exports are destined for Belgium

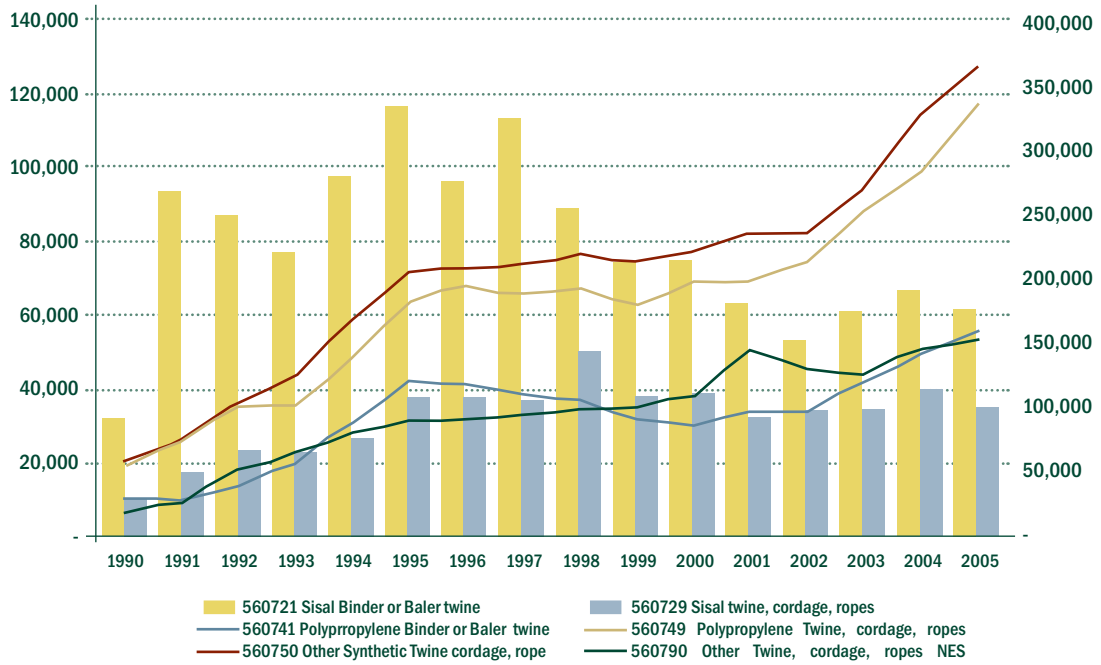
Figure 15: Exporters of Raw and Semi-processed Sisal 1991-2005 (US$ '000)



Source: UNComtrade & own calculations

The figure above (Figure 15) breaks down the performance of the leading four exporting nations into that between raw and semi-processed, over the last 15 years. Kenyan and Brazilian tow and waste are making good inroads into the market thanks to the strong demand from China. Tanzanian raw sisal is seemingly on the path to recovery thanks to various initiatives and projects (discussed earlier).

Figure 16: World Trade in Sisal Binder twine, Ropes and Cordage, & trade in synthetic twine and cordage (1990-2005)



Note: Sisal binder/baler twine and sisal other twine, cordage & ropes are measured on the left axis, all the other commodities items are measured on the right

Source: UN Comtrade & own calculations

Note: Sisal binder/baler twine and sisal other twine, cordage & ropes are measured on the left axis, all the other commodities items are measured on the right

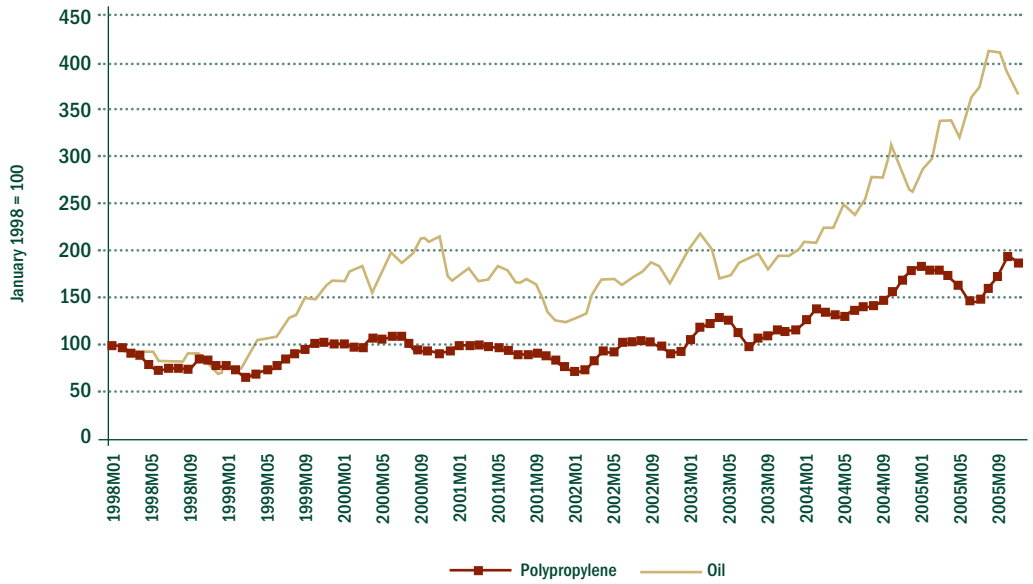
Figure 16 above once again highlights the demise of the sisal binder and baler twine industry, and also shows the stagnation of the sisal twine, cordage and rope industry, as alluded to in previous sections. The figure does show, however, that the total binder and baler twine, and other forms of twine, cordage and rope markets (mostly synthetic products) are by no means on the decline world wide; and should sisal producers be able to increase production levels of sisal for other applications, and thereby reduce overall costs through increased economies of scale, and should crude oil prices continue to rise, as they most probably will, then there is every reason to believe that the sisal industry can reclaim some of this growing market. There are not many technical reasons why synthetic fibres are chosen over sisal – sisal, as

history will attest to, is well suited to manufacture of such products. In fact much of the demise was circumstantial, or in the form of aggressive marketing of petroleum companies and a lack of response from the sisal industry. And consistent supply for producers is a key issue. Sisal, as far as agricultural crops go is one of the most consistent in terms of output and yield, hardly affected by drought, reliant only on how much is planted and harvested. Thus it could, and should, reinvent itself.

6.1. Price of Sisal and competitiveness with the price of polypropylene

Recent rises in the oil price have had a significant impact on a number of commodity markets. Sugar for example has experienced strong upward trends thanks to its substitution possibilities in the generation of energy. As sisal is a substitute for polypropylene, the price of polypropylene, which is derived from the petrochemicals industy, has a large affect on the competitiveness of sisal. Notwithstanding the technical reasons why people substitute synthetic fibres for sisal and/or other natural fibres, the recent oil price rises, can be expected therefore to increase the prospects for sisal exports. In the past the increasing returns to scale in the petrochemical industry, as well as a vertically integrated structure that has allowed flexible allocation of cost components along the processing stages for different by-products, has allowed the polypropylene fibres to enjoy cost advantages over natural fibres. This however is seemingly changing. At US$70 per barrel, polypropylene prices were at US$1500 per ton, in comparison to US$1000 per ton in 2003/04. The figure below highlights the rise in oil prices, and the resultant rise in polypropylene prices.

Figure 17: Crude Oil and Polypropylene Prices Jan 1998 to Sep 2005 (Index January 1998=100)

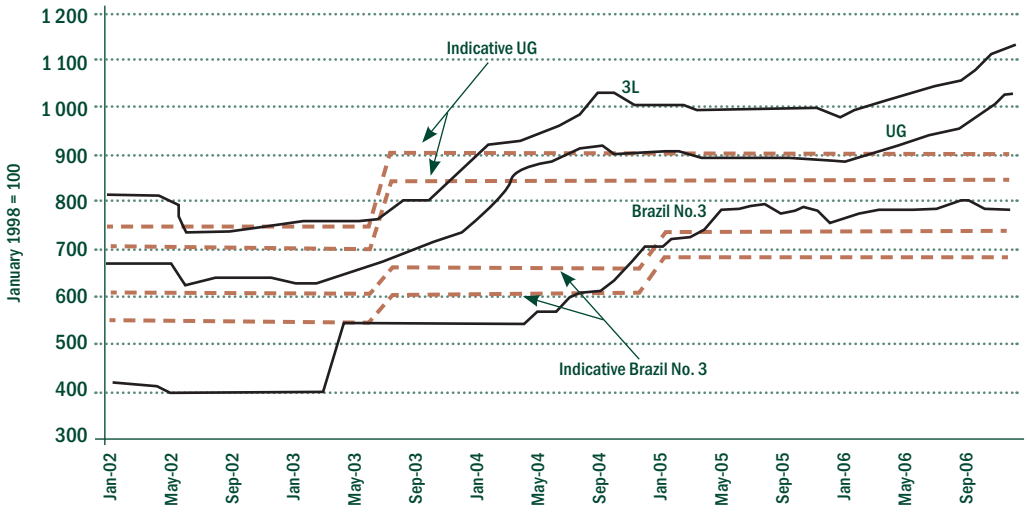


Source: FAO 2007a

As the price for Sisal is significantly less than that for Polypropylene following the recent rise in oil prices, the demand seems to shifting back towards baler twine made from sisal. This has also positively affected the prices for sisal on international markets, and prices are reaching levels that they haven't attained now for over a decade. This all bodes well for sisal farmers. Current prices of sisal are still below US$1100 per ton for 3L sisal (highest quality), whilst African UG sisal is now more than US$ 1000 per ton (see Figure 18 below). The sisal prices are also well above the indicative prices set by the IGG at its last meeting.

A study by the FAO (2000a) found that the prices of sisal and polypropylene move together, but that the direction of causality flowed from polypropylene to sisal. Unfortunately this means that currently sisal is a price-taker with regards to the demand for polypropylene and its substitutes. Fortunately however, with the current high crude oil prices, this has meant that sisal prices have also risen, and for many producers prices levels are now allowing production and exportation of sisal to be feasible again. As mentioned earlier though, it is important that sisal producer associations continue to market sisal for numerous new applications, to create less dependence on the agricultural twine market, and create a more stable demand for the commodity which is not dependant on the movement in the polypropylene market. Also shown earlier, much research and development has already occurred in this area.

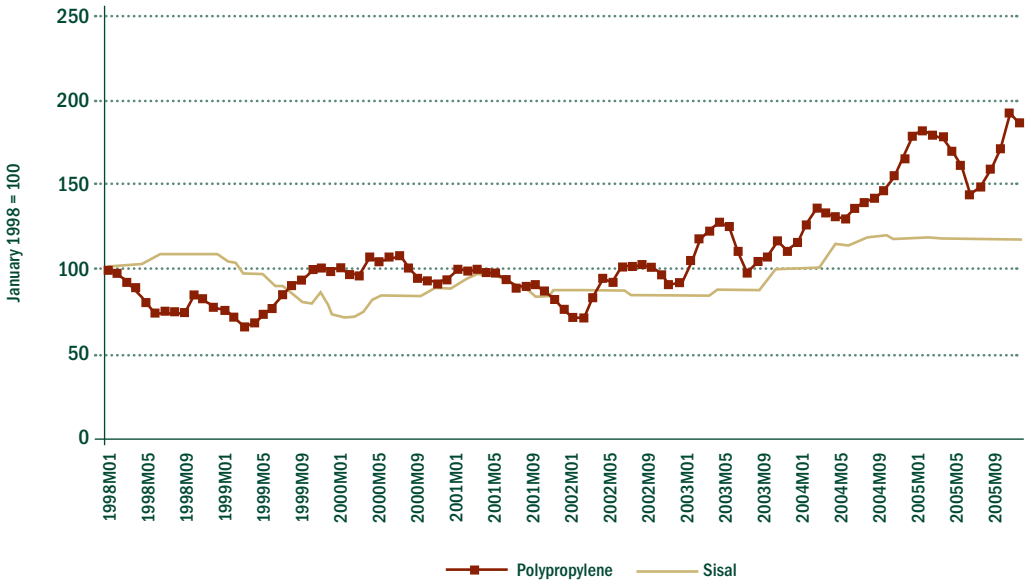
Figure 18: Sisal Prices Jan 2002 to Sep 2006



Source: FAO 2007b

The two following tables give an indication of how sisal prices have changed over the longer period. These are export and import unit prices, so they simply reflect the average price paid for a ton of sisal entering or exiting the country in question. What is immediately apparent from the first figure (Figure 20) is the cyclical nature of prices, again highlighting the nature of commodity markets, demand and supply interactions, and the fact that under-supply is often followed by over-

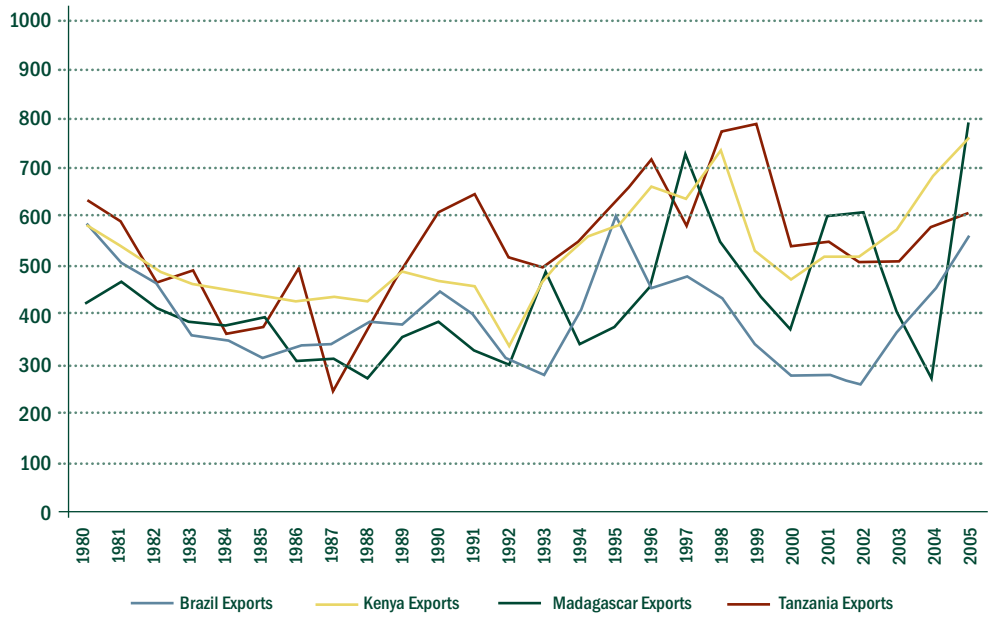
Figure 19: Co-movement of Sisal and Polypropylene Prices



Source: FAO 2007a

supply in a cycle. One can also see that generally prices of exported sisal from Africa have been slightly higher than that of Brazil due to the better quality (and reputation) of African sisal. Kenya and Tanzania's prices have moved together, obviously being close substitutes for each other, and supplying similar markets. All four countries have been experiencing price increases in exported sisal, and for Brazil, Tanzania and Kenya prices have been rising fairly consistently since 2002. The price increases are as a result of increased demand brought about by the correlation demand for sisal has with polypropylene prices, as well as the increased usage of sisal for new applications.

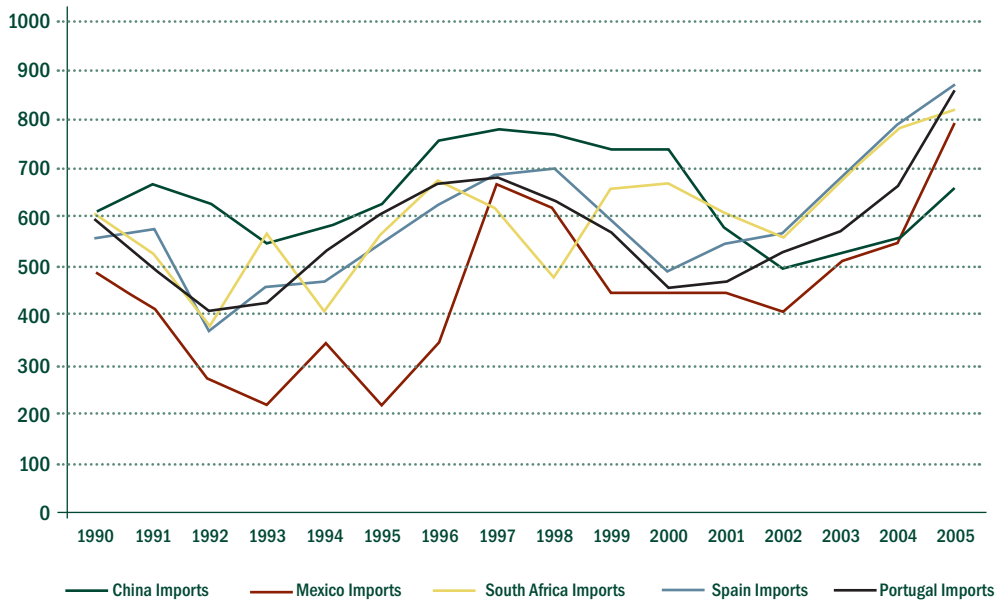
Figure 20: Export Unit Prices of Leading Exporters (1960-2005)



Source: FAO

In terms of import unit prices, one can also see that all the leading countries, and South Africa, have been experiencing higher import prices since 2002. Currently Spain and Portugal pay the highest average import price; these two countries also have the highest demand for sisal. The main reason for the higher prices that these two countries pay is because they import more African sisal, whereas China and Mexico import more sisal from Brazil. South African unit import price was just over US$800 per ton in 2005. Prices will have risen since then.

Figure 21: Import Unit Prices for Leading Importers & South Africa (1990-2005)



Source: FAO

7. Projects and developments in the harvesting and marketing of Sisal

7.1. United Nations Common Fund for Commodities

The United Nations Common Fund for Commodities (CFC) has a number of projects currently underway (with some nearing completion), that seek to develop the potential of sisal as a product to be grown in various developing countries around the world. The projects are centered around two themes; the first deals with product research and development, and the second is to do with the promotion (and creation) of markets for the sisal products themselves. The latter includes a lot of support], and market intelligence for farmers for developed countries, so that they might better understand the market and some of the inherent difficulties associated with it, whilst the former in concerned mainly with research into the farming and harvesting of sisal, and the development of sisal potential uses into feasible commercial alternatives. Some of the projects that are underway or nearing completion include the following

- A general project aiming in product and market development. It included product research in Tanzania and Kenya into various plant and tissues cultures, as well as development of machinery for better extraction and utilisation of sisal plants.
- The Cleaner integral utilization of sisal waste for Biogas and Bio Fertilizers
- Sisal to replace asbestos in cement composites
- A pilot facility for continuous sisal fibre extraction process
- Various other product and market development initiatives
- Some details of the projects follow:

Product and Market development of sisal and Henequen Products

The main objectives of this project were to (i) establish the feasibility of using sisal fibre in paper; (ii) develop new varieties of sisal that will be suitable for various end-uses; (iii) develop processes for commercial use of sisal wastes (FAO 2005). The project has been executed by UNIDO, and the major activities were:

- In Tanzania various types of research were conducted including:
  - Agronomic trials were conducted, particularly trials on alternative production systems, including highdensity planting and whole-of-plant harvesting;
  - Work on meristematic tissue culture was also conducted, and nurseries were establishment and the mass reproduction of selected stock commenced;

- ·A machine to recover flume tow was built and tested (and proved successful);
- Research on fibre extraction was conducted. A hammer mill was installed in the first part of 2003 to provide fibre to be tested for pulp production.

- In Kenya:
  - Variety trials were conducted. Data on four varieties were analysed;
  - Meristematic tissue culture trials were conducted, involving mass multiplication in the laboratory, establishment of field nurseries, and laboratory experimentation;

- Some of the project's outputs include:
  - technology for multiplication of sisal by tissue culture was enhanced, providing plantlets that are uniform and genetically pure;
  - technology for rapid mass propagation was developed;
  - the maintenance of sisal gene bank through the establishment of in vitro culture was established;
  - the development and installation of a flume tow recovery system;
  - an improved fibre extraction system capable of greatly increasing yields compared to the traditional system was developed. The cost competitiveness of the new system was determined by the ongoing fast-truck project that was initiated to supplement the main project;
  - optimal agronomic practices were also developed, including planting density, to maximize benefits

Cleaner integral utilization of sisal waste for BioGas and Bio Fertilizers

This activity was originally seen as forming part of the original sisal project, but it has now been approved as a separate grant-funded project. The objective of the project is to establish the technical and economic viability of producing gas and fertiliser from sisal waste. This will help in utilizing more of the sisal plant, and if it proves to be successful, it could help make sisal a more commercially viable option for many farmers. Currently activities are underway to construct of a pilot demonstration facility to produce biogas, whilst research is being conducted into the utilization of sisal waste from the bio-gas plant for the production of fertilizer. Ultimately this facility will be used to produce electricity, and the formulation of a national strategy for sound and environmentally friendly utilisation of sisal gas for energy production will hopefully be implemented

Sisal Development for sisal fibre to replace asbestos in cement composites

This 3-year project is designed to establish at a pilot level the technical and economic viability of the use of sisal fibre in the production of construction materials for the building industry. The emphasis is on assessing the potential for the replacement of asbestos fibres thus far frequently used in the building materials industry in Brazil. The project will determine both the technical as well as the financial feasibility of producing sisal-cement composites. The main project activities will focus on establishing the technical parameters of various mixes of sisal fibre and cement to meet the minimum performance criteria set by the regulatory authorities for products in the building industry.

If this project proves successful it could set a precedent for the use of sisal in many building applications in the African continent. Already there are numberous other non-profit organizations conducting research into the use of sisal fibre to reinforce building materials (see for example

The use of asbestos in numerous other applications is also banned in most countries around the world, because of its harmful effects on the respiratory systems of people (and it is carcinogenic). Sisal may therefore, with the correct research and development, be used to replace Asbestos in other applications (an example might be for car brake pads).

Operationalisation of a Pilot Facility for continuous Sisal Fibre Extraction/production process

This is a fast track program with a much shorter time frame, and it is looking at setting up and running two hammer mill's that can produce fibre of a adequate quality, and run a continuous operation. It was found in the original project that the hammer mill can produce fibre of adequate quality when two passes in the equipment are allowed, but that continuous operation is, however, not possible utilizing just one hammer mill. The scope of the supplementary fast-track project is to construct a second hammer mill and the necessary ancillary equipment to allow for two passes, continuous operations, in order to consolidate the results achieved so far and in particular to test the reliability of the system and to establish wear and tear of running parts, power consumption, water consumption and labour requirement and the cost of producing the fibre. Ultimately this might help to standardize a certain extraction method, and the costs associated with it, and thus provide better information to potential investors/producers as to the feasibility of growing sisal and the subsequent extraction, processing and selling of it.

7.2. New Mobile Fibre Extraction Device

One of the defining characteristics between sisal production in Brazil and that in Africa, is that in Africa, the production has historically tended to occur on large sisal ranches/plantations, whereas in Brazil the process is far more decentralized, and often the farms are relatively small. The main reason for this, is that in Africa the process-

ing facilities are concentrated in just a few estates, whereas in Brazil there are miniature hand fed decorticating machines, that are driven by small combustion engines and mounted to a set of wheels. These small machines are then towed by donkey's or pick-up trucks to where they are needed. The fibres are extracted from the leaves at the farm, and thus only the fibres are transported (Nkuba 1999, Brenters & Romijin 2002). This system has allowed for the smallholder producers to be more integrated into the production process, and has greatly increased the amount of sisal produced in Brazil. It has also made possible (and cost effective) the growing of sisal on farms that might otherwise have been too small to economically grow the crop.

The Brazilian method is particularly attractive for African (and SADC) countries, and sisal is already grown quite extensively throughout the region as a hedge crop, often used to demarcate fields or prevent cattle (and other animals) from grazing on crops. The introduction of small, portable, decorticating machines (perhaps run by small time businessmen, or leased by the agents themselves) could thus make sisal into a commercial crop for the region, as well as increasing the amount of sisal produced, and thus making many of the other projects mentioned above even more feasible. The sisal could still be used as a hedge crop. Brenters (2002) performed a cost benefit analysis, as well as a case study, to determine the feasibility of such a project (his reference country was Tanzania), and found that the project was indeed feasible. Subsequently there has been more research done on designing a prototype machine (see 7.2: New Mobile Fibre Extraction Device for example), and it seems this type of project is ready to be rolled out. Importantly, there is no reason why it cannot be implemented across the SADC region.

8. Market Access

The table below (Table 9) shows the tariffs for various countries/regions for selected line items that pertain to sisal, sisal products, and some of its substitute products. The tariffs under the heading MFN refer to those tariffs that the country/region applies to all WTO members under the concept of Most Favoured Nation (it is the standard tariff rate that an exporter can expect unless their country has a preferential tariff agreement, or belongs to a trade block). The heading "Pref" refers to numerous preferential trade agreements, to which the country in question extends preferential tariffs for certain items (see footnote 14). The selected countries in the table are those that import a large quantity of sisal or sisal products.

Table 9: MFN and Preferential Tariffs for Sisal, Sisal Products and other fibre products for selected countries (2005)[14 15]

Code	Description	China		Saudi Arabia		EU		USA		Morocco	
		MFN	Pref	MFN	Pref	MFN	Pref	MFN	Pref	MFN	Pref
530410	Sisal Raw	5	0	5	0	0	0	0	0	3	0
530490	Sisal Tow & Waste	5	0	5	0	0	0	0	0	3	0
530890	Yarn of Other Vegetable Fibres	6	0	5	0	4	4	0	0	33	33
531100	Woven Fabric of other Vegetable Fibres	6	0	5	0	5.8	5.8	0	0	33	33
560129	Wadding Products from textiles nes	10	10	5	0	3.8	3.8	4	4	40	40
560721	Sisal Binder or Baler Twine	5	5	5	0	12	12	0	0	50	50
560729	Sisal Twine (other), Cordage, Ropes	5	5	5	0	12	12	3.6	3.6	50	50
560741	Polypropylene/Polyethylene Baler Twine	5	5	5	0	8	8	2.7	2.7	50	50
560749	Polypropylene/Polyethylene Cordage, Ropes	5	5	5	0	8	8	4	4	50	50
570239	Carpets of yarn nes, woven pile, not tufted, not made up	14	14	5	0	8	8	3.6	3.6	50	50
570249	Carpets of yarn nes, woven pile, not tufted, made up	14	14	5	0	8	8	4	4	50	50
570259	Carpets of yarn nes, woven, not tufted, not made up	14	14	5	0	8	8	2.7	2.7	50	50
570299	Carpets of yarn nes, woven, not tufted, made up	14	14	5	0	8	8	2.7	2.7	50	50
570500	Carpets and textile floor coverings other	12	12	5	0	8	8	3.3	3.3	50	50

Source: UNComtrade Trains

14 Note: China's Preferential access refers to the preferential treatment extended by China to all African LDC's. These include Angola, DRC, Lesotho, Madagascar, Malawi, Mozambique, Tanzania, Zambia. Saudi Arabia's Preferential access refers to the GCC countries and not to any sub-Saharan African countries. The EU's Preferential rates are for GSP as well as for LDC countries (there is no difference between them for these items). The US preferential access refers to the AGOA agreement. The Moroccan preferential access is for LDC countries

15 The US MFN rates refer to the individual 8 digit tariff line that most corresponds to products of sisal. For example where 531100 also includes 17% of animal hair (53110020) the tariff is actually 14.5%, or where 570239 is referring to that made of cotton (57023910) and the tariff is 6.8%

As one can see from the table, the tariffs for the raw sisal, and the sisal tow & waste, are relatively low for all the countries/regions shown. SADC exporters could access the any of those markets, and export raw and unprocessed sisal commodities without having to worry about high tariffs that add significantly to the costs. As is most often the case, however, when it comes to processed goods (those that in this case use sisal as an input), the tariffs are much higher. This is generally the case so that the local producers, in the countries/regions concerned, are protected. A good example of this is the tariff structure of Morocco, where anything other that raw sisal (even including sisal yarn) is subject to particularly high tariffs – of between 33 and 50%. This tariff applies for countries getting MFN rates, as well as countries receiving the (supposedly) preferential treatment for being a "Least Developed Country" (under heading "Pref"). These high tariffs make it practically impossible for exporters to export to these markets, either because they will be unable to compete with local producers (if there are any in that particular good), or simply because the consumers in that market will find the good to expensive to purchase. The same tariff escalation is seen in the US, the EU, and in China, although the magnitude of the increase in tariffs isn't nearly as severe. Thus, for example, in the EU, whilst raw sisal enters in for free, sisal binder/baler twine enters in at 12%, which affords the European producers of binder/baler twine some protection. Whilst 12% may not seem as high as the 50% charged in Morocco, because of the increased competition in the EU market (and increased access to capital, machinery, technical know-how etc), the 12% is probably, in most cases, more than sufficient protection to eliminate, or at least greatly reduce, potential competition from abroad. Margins of these products are often very tight, especially once agents commission and transport costs are taken into consideration. Another example of a tariff structure designed to protect local producers is that of the US, where the tariffs on cotton commodities (not shown in the table above) is much higher than those that apply to the other vegetables fibres. Again this is regardless of whether one is looking at the MFN rates or the preferential rates. Still the market in the US for binder/baler twine is an attractive one, especially as the tariffs applied are zero. Saudi Arabia, and other Middle Eastern countries, are also attractive markets for most sisal commodities, especially as many of their industries are growing rapidly (they are historically a large carpet producing region, and with modern changes in the demand for carpets, as outlined briefly above, they might demand more raw sisal). China is another potentially attractive market for sisal and sisal products, although most of their imports are likely to be constrained to the raw materials (they already have a large industry that producers sisal products). One area that has been highlighted as potentially lucrative is the use of sisal for various agricultural applications (not just baler/binder twine) – and example is agricultural netting (like shade cloth). With tariffs at only 5% this seems like a good market.

9. Conclusion

The aim of this TIB was simply to outline the natural fibres industry and that of sisal, and to highlight the potential that exists in the market, and especially for producers in the SADC region. There are, of course, many constraints that still exist, and there is still much work that needs to be done, both in terms of research and product development as well as market development. However, the sisal industry is not a sunset industry, and with rising crude oil prices, and an increasing accountability on the part of firms for sustainability and environmentally friendly products and processes, the sisal industry seems set to recover. SADC countries need to be aware of this, and the organisations that help promote and develop the industries in the region need to think carefully about how SADC producers can tap into this market's future potential. Sisal has been given a second chance, and a new lease of life, but it still needs people to take it forward. Can SADC farmers and producers be the people who do this?

a

TRADE AND INDUSTRIAL POLICY STRATEGIES (TIPS) &

AUSTRALIAN AGENCY FOR INTERNATIONAL DEVELOPMENT (AUSAID)

partnership

AFRICAN GOVERNANCE FACILITY PROGRAMME
SADC TRADE DEVELOPMENT

TIPS is an independent, non-profit economic research institution active in South Africa and the Southern African region in pursuit of viable economic policy solutions to developing country needs.

AusAID manages the Australian Government's official overseas aid programme, which endeavours to advance Australia's national interest by helping developing countries to reduce poverty and achieve sustainable development.

Trade and Industrial Policy Strategies (TIPS)

814 Church Street
Arcadia 0083
PO Box 11214
Hatfield 0028
South Africa

t +27(0)12 431 7900
f +27(0)12 431 7910
e info@sadctrade.org
w www.sadctrade.org

Australian Government, AusAID

292 Orient Street
Arcadia 0083
PO Box X150
Pretoria 0001
South Africa

t +27(0)12 342 8267/3781
f +27(0)12 342 4201
w www.ausaid.gov.au