

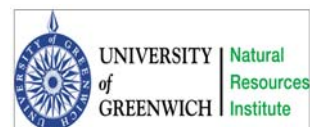
Marula Oil Value Chain Analysis

Final Report

December 2012



Commissioned by the Millennium Challenge Account Namibia
with funding from the Millennium Challenge Corporation



Value Chain Analysis 3

Marula Oil Value Chain Analysis

PROJECT DETAILS

Project Name:	Value Chain Specialist Component (CRIAA SA-DC / PhytoTrade Africa) of the Indigenous Natural Products Producer and Processor Organisations Sub-Activity
Project ID:	MCAN/COM/RFP/3C01001-A
Project Sponsor:	Commissioned by the Millennium Challenge Account Namibia with funding from the Millennium Challenge Corporation
Value Chain Specialist:	Mr Cyril Lombard, PhytoTrade Africa
Report Prepared by:	Miss Katie Beckett, PhytoTrade Africa
Acknowledgements:	Sincere thanks to Michel Mallet of CRIAA SA-DC and Cyril Lombard of PhytoTrade Africa for guidance and comments.
Final Report Submission Date:	31 January 2013
Cover photo:	Credit: PhytoTrade Africa

CONTENTS

Acronyms	4
1. Aims and Objectives	5
2. Introduction	5
3. The Market for Marula Oil: Cosmetic and food	7
3.1 <i>Cosmetic oil</i>	7
3.2 <i>Food oil</i>	10
4. Marula oil value chain context: Processes, actors and challenges	10
a. Harvesting and kernel processing	11
b. Consolidation and processing into oil	11
c. Local, regional and international sales and distribution	12
d. International market: Regulatory hurdles	16
5. Value Chain Competitiveness	17
5.1 <i>Certification</i>	17
5.2 <i>Technologies, Business Models and Intellectual Property</i>	20
6. Issues to address	23
7. Value Chain Upgrading: Finding and recommendations	25
References	27

Tables and Figures

Table 1: Nomenclature and <i>Sclerocarya birrea</i> examples	6
Table 2: Consumer products containing Marula oil	9
Table 3: Processes and roles along the value chain	13
Table 4: Pricing along the value chain	16
Table 5. Minimum Price and Premium Information, Fairtrade Standards.	19
Figure 1: Products launched in 2012 which contain Marula oil	8
Figure 2: Marula Oil value chain	22
Figure 3: Bioprospecting	23
Figure 4: Access and Benefit Sharing Process	25
Box 1: Pricing breakdown for Marula oil from EWC	23

Acronyms

BABS Regulations	Bioprospecting, Access and Benefit Sharing Regulations
BSA	Benefit Sharing Agreement
BSI	Body Shop International
CFT	Community Fair Trade (The Body Shop)
CRIAA SA-DC	Centre for Research Information Action in Africa - Southern Africa Development and Consulting
EWC	Eudafano Women's Cooperative
EWMM	Eudafano Women's Marula Manufacturing Pty Ltd
FOB	Free on Board
GIZ	Deutsche Gesellschaft fur International Zusammenarbeit (German Development Cooperation)
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis and Critical Control Points
IBR	Indigenous Biological Resource
INP	Indigenous Natural Product
IP	Intellectual Property
KAP	Katutura Artisans' Project
kg	Kilograms
MTA	Material Transfer Agreement
MCA-N	Millennium Challenge Account – Namibia
MET	Ministry of Environment and Tourism
ml	Millilitres
NCR	North Central Regions
PPO	Primary Producer Organisation
PhytoTrade	PhytoTrade Africa
QC	Quality Control
SPO	Small Producer Organisation
TTC	Tulongeni Twahangana Cooperative
US	United States
VAT	Value Added Tax

1. Aims and objectives

Cold-pressed Marula oil for the cosmetic market is an important product produced by rural communities in Namibia and has reached over 50 tonnes in the period between 2000 and 2011 (Mallet, M. pers comm., 2013). The first commercial export of 1 tonne was in 2000 following product and market research conducted from 1996 to 1999. Despite market demand continuing to grow for Marula oil, it is clear that supply is not responding at the same rate. This therefore creates shortages within the market which must be addressed. Through mapping and analysis the value chain for Marula oil, it is possible to identify constraints, upgrading opportunities, new routes to market and knowledge gaps that must be addressed in order to enhance current activities. Along with the narrative of these activities, supply chain diagrams provide a visual representation of the flow of products and information, and the relationships that exist between the actors in the chain. This value chain analysis focuses specifically on Marula kernel oil from Namibia. This oil is primarily destined for the cosmetic and personal care market and only small percentage goes into the local food market as food oil. It is important to consider the two end markets separately as there are differences in the value chains and the end markets are clearly distinct. Based on the findings of the value chain analysis, preliminary recommendations will be made with the aim to develop the current supply chain, grow the capacity of the actors involved and fundamentally diversify and increase the size of the end market for Marula oil.

2. Introduction






Sclerocarya birrea (Marula) kernel oil is used traditionally in Namibia in skin and hair care, and as food oil. As a result of its traditional uses and its beneficial properties such as moisturising, Marula oil has been introduced and taken up as a cosmetic ingredient by the beauty and personal care sectors across the world. The kernel oil is now found in a large number of finished products, some of which are manufactured by the leading cosmetic houses and beauty brands, and others which are niche and emerging brands. It is clear that market demand exists for Marula oil as a cosmetic ingredient and new products continue to be launched based around the oil, some of which are described in greater detail in the body of this report.

Marula trees are widely distributed throughout Southern Africa and significant resources are found in Namibia, Botswana, Zimbabwe as well as Zambia and Malawi, Swaziland, Mozambique and South Africa. The fruits of the trees are rarely eaten fresh as they can cause stomach problems, but the juice is fermented naturally into a traditional beer/wine, used to make Marula jam, or used to make an unfermented soft drink which is diluted with water. Marula oil from the kernel is known to have good stability and is sometimes used in products to prevent oxidation. This is another factor which makes it interesting for cosmetic manufacturers who are increasingly searching for natural alternatives to many of the synthetic preservatives. In the four North-Central Regions of Namibia, it is reported that there is a history of intensive Marula use, and so much so that traditional law and customs have evolved around it (Lam *et al.*, 2011; Botelle, A., 2001). The Marula trees in the regions are also semi-domesticated and many trees are tenured to individual households and people have been known to established homesteads near to Marula trees as they are also indicative of superior soils. It is also often the women of the family who tend to the Marula trees and are involved in the trade of the products derived from them, and in the past decade, Marula products have become

increasingly important as an additional source of household income (Lam *et al.* 2011; den Adel, 2010; Leakey, 2002).

The kernels from the Marula tree are rich in oil and protein and are eaten as a snack, and made into a cooking and condiment oil, locally known as Ondjove in the North Central Regions. Marula oil, its production and its application are explored further throughout this report and a value chain which is currently operating in Namibia is presented in Figure 1. Table 1 provides descriptions of the various plant parts from the Marula tree.

Table 1: Nomenclature and Sclerocarya birrea examples

Term	Definition	<i>Sclerocarya birrea</i> photo
Fruit	The fleshy product of the tree that contains the seed. The fruit pulp can be eaten and is used to make alcohol-fermented and non-alcoholic drinks, and more recently jams.	
Seed	The central part of the fruit that is surrounded by the pulp and contains the kernels in a hard shell/envelop. The Marula seed contains two or three compartments which hold the kernel. These compartments are closed by a plug (eye) which must be removed to release the kernel. (Picture – cracked open)	
Nut, pip, stone	Other terms for seed.	As above
Kernel	The inside part of the seed is removed after the hard shell is cut open (decortication). The kernel is the oil-bearing part of the seed that can be pressed for oil.	
Crude Oil	A natural, unrefined oil in its pure state (the crude oil is generally decanted to separate solids particles in suspension by gravity).	
Filtered Oil	Oil that has been filtered to remove solid particles in suspension. The size of particles removed depends on the filter size. Ultra-filtration would remove micro-organisms and most contaminants.	

Photos credited to PhytoTrade Africa and CRIAA SA-D

3. The market for Marula oil: Cosmetic and food

Marula is not a new product in the international market. Marula oil has been used in cosmetic formulations for more than 10 years in the international beauty market.



Marula is also widely recognised as a primary ingredient in the popular liqueur, Amarula. Amarula is said to be one of the fastest growing spirit brands by Drinks International and in 2011 sold 1.3 million 9-litre cases of the popular cream liqueur. Although this product is based on the fruit, it has resulted in consumer awareness of the tree and its African origin. This awareness will work in the favour of any future product launches, even if the products are derived from the seed and available in cosmetic products. However, in some cases, consumers have mistakenly referred to 'Amarula oil'. In regard to the market for Marula oil, there are several cosmetic and personal care products available on the market which contains Marula oil as an ingredient. In many

cases, the inclusion of Marula oil in the product is only known because of its inclusion in the ingredients list as required by the EU Cosmetics Directive and is not mentioned on the front of pack label. In addition, there are some products which focus their marketing around the inclusion of Marula oil and the story and beneficial properties around it. Table 2 provides a selection of products that contain Marula oil and indicates the level of ingredient promotion given by the brand on the product packaging. It should also be noted that brands often make good use of website space to talk about ingredients and the benefits they bring to products and the stories behind them. This is a crucial method of consumer interaction, along with social media interactions.

As an indication of the number of products available containing Marula oil, a simple 'Google Products' search finds over 500 products containing 'Marula Oil' and 90 products containing the terms '*Sclerocarya birrea* oil'. Although this is not exhaustive and there may be repetition in the listing of the products, it does show that Marula oil is an ingredients being used by the cosmetic industry and one which continues to be sought after by customers. This later point is also apparent in the number and frequency of purchase enquiries sent to PhytoTrade Africa for Marula oil, both from individuals and from manufacturers.

3.1 *Cosmetic oil*

Eudafano Women's Cooperative is the Community Fair Trade supplier of The Body Shop International who preferentially source Marula oil from them. They purchase refined Marula oil from Aldivia which is produced by EWC. The Body Shop is known as the first natural and ethical beauty brand and has over 2500 stores in more than 60 countries. The Body Shop has many products that contain Marula oil although this is not often the marketing focus of the ingredients. An example of this is the Beautifying Oils which were launched in 2012. Despite these body oil products, containing a significant proportion of Marula Oil, the products are marketed in varieties including Mango, Moringa, Coconut, Shea, Olive, Cocoa Butter and others. Despite Marula oil being recognised within niche market circles, the message that can be taken from The Body Shop's approach is that Marula is not yet widely enough recognised by mass market consumers and the use of 'Marula' as the key ingredient on the label would not encourage the consumer to lift the product off the shelf. A second product launched by The Body Shop in 2012 is the All-In-One BB Cream.

Again, despite this product containing Marula oil, it is only listed in the INCI names and not highlighted on front of pack.

Figure 1 Products launched in 2012 which contain Marula oil, a) The Body Shops Beautifying oil, b) The Body Shop All-In-One BB Cream, c) African Botanics Pure Marula oil



As mentioned, there are some products which focus their entire product lines around Marula oil and the efficacy it delivers to the consumer. One product worth noting which was launched in 2012 and has done exactly that is African Botanics (www.africanbotanics.com) which is a US company based in Los Angeles and whose brand focus is on 'craftsmanship, luxury and quality'. The products are sold throughout the United Kingdom in SpaceNK (uk.spacenk.com). Here, the Marula oil is marketed on the basis of its traditional use and origins in Southern Africa, along with the beneficial properties that Marula oil brings when used on the skin and hair. The efficacy of the products is based on the traditional use of the oil, as well as its chemical profile and the effects they have on skin structure and function.

Some of the key components that are used to market Marula oil to end consumers include antioxidants (tocopherol, phenolic compounds and flavanoids), essential fatty acids (Omega 9-oleic and Omega 6-linoleic), along with non-greasy texture and non-comedogenic properties. Based on these components, African Botanics state that Marula oil

- *Softens and minimizes the appearance of fine lines and wrinkles*
- *Improves and restores skin elasticity for a more youthful and radiant skin*
- *Improves skin tone and firmness*
- *Soothes irritation*

(<http://www.africanbotanics.com/the-beauty-of-marula-oil/>)

It has also been said that the anti-microbial and anti-inflammatory properties of Marula oil reduces the need for preservatives. This is an important feature for natural and organic products which look to reduce the use of preservatives. However, further analysis of this claim would be required if this is to be applied to products.

Table 2. Consumer products using Marula oil available in the international market

Company	Consumer Product	Price (volume)	Marula Oil Marketing	Position in ingredient list presented on pack
Cosmetic Products				
The Body Shop	Many products in body care, facial and make-up lines Beautifying Oil and BB Cream launched in 2012	£9.00 (100ml)	Community Fairtrade description, INCI ingredient list	Beautifying oil – 3 rd .
Clarins	<i>Pure Melt Cleansing Gel</i>	£19 (125ml)	Front of package and INCI ingredient list	11 th of 23
African Botanics	<i>Pure Marula Oil</i> and full product range	\$80 (63ml)	Brand focus	'100% Marula Essential Oil'
Esse	Rich Moisturiser	R315 (50ml)	INCI Ingredient list	5 th of 28
Melvita	<i>Extraordinary Night Cream</i>	£29 (50ml)	INCI Ingredient list	20 th of 41
	<i>Moisturising Serum</i>	£30 (30ml)		10 th of 35
Swazi Secrets	Marula Soap (full range)	£3.95 (75g)	Brand focus	1 st of 3
Trilogy	Many products including <i>Everything Balm</i>	£20.50 (95ml)	'Signature Oil' - Front of package and INCI ingredient list.	3 rd of 16
Motions	Marula Natural Therapy Hair and Scalp Oil	US\$ 6.79 (8oz.)	Key ingredient, front of pack and INCI ingredient list	4 th of 28
Darphin	<i>Aromatic Cleansing Balm</i>	£30.00 (40ml)	Product description and INCI ingredients list	16 th of 32
Schwarzkopf	<i>Schwarzkopf Bonacure Oil Miracle Light Finishing Treatment</i>	£24.95 (100ml)	INCI Ingredient list	6 th of 17
Burt's Bees	<i>Ultra Conditioning Lip Balm with Kokum Butter</i> and hair care products	£3.69	INCI Ingredient list	8 th of 26
Nuxe	<i>Cream Merveillance Rides d'Expression installees visible expression lines</i>	£33.90 (50ml)	INCI Ingredient list	12 th of 47

For many brands, it is increasingly important to have access to scientific data and efficacy data to provide efficacy evidence and mode of action. Claims are then often linked to the chemical and nutritional profile of the product to provide further substantiation. Marula oil is included in the current MCA-funded Innovative, Safe and Active Cosmetic Ingredients project which will investigate and report the safety, sensory, technological and efficacious properties of Marula and other Namibia oils. The results of this project will be available to Namibian stakeholders on completion of the project in December 2013. The results of this investigation may justify further analyses.

There are however other brands which base their marketing primarily on the story behind the ingredient and the traditional use in the country of origin. Information of this nature is in abundance

for Marula with a rich history of use, attractive photographs and inspiring producer stories. It is important that Namibian stakeholders recognise the importance of these, maintain and update the records, and promote them to potential customers.

3.2 Food Oil

In the past few years there has been activity around the development of Marula Food Oil for the local market in Namibia and also investigations into marketing the oil in Europe. Traditionally, Marula food oil has often been served on special occasions and to special guests, where in north-central Namibia it is referred to as *ondjove* (du Plessis and CRIAA SA-DC, 2008). It is traditionally produced using various local techniques. Most often, kernels are roasted on charcoal and hot water is added before oil extraction.

Marula food oil is not a new concept for product development using Marula nuts and in 2006, Marula food oil was identified as a priority product for development under funding from GIZ (formally known as GTZ) and IPTT. The decision to develop a culinary oil was made at a time when export demand had reduced and there was a need for product diversification. The lack of demand for cosmetic oil is not currently a problem. CRIAA SA-DC was contracted as the primary project partner. The project aimed to test Marula oils which had undergone various degrees of toasting to better understand taste preferences along with safety studies. Development of commercial-scale kernel toasting technology was also included in the project to enable production of the volumes of oil originally envisaged. Namibian stakeholders and funders have progressed in the development of the Marula food oil for the local market where market research has been conducted and a consumer ready product developed with labelling and packaging in place. This product will be launched into the local market imminently. However, the regional and international markets are also targets and there is still significant work to be done in this regard, specifically in relation to regulatory requirements (Novel Foods) and preliminary market research.

Within Europe, Marula food oil would fall under Novel Food Regulations and PhytoTrade Africa conducted preliminary investigations into the most suitable regulatory approval route to bring the product to market. It is likely that differently processed products including virgin oil, refined oil, and Marula oil from toasted kernels, would require different regulatory approvals, particularly where toasting is involved. Despite much of the ground work for Marula food oil having been achieved, or at least is in motion, there is still significant work to be done which would be both time and resource heavy. Further issues around regulatory approval are discussed in Section D.

4. Marula Oil Value Chain Context: Processes, actors and challenges

The value chain can be split into sections where processes and actors can be identified and the relationships can be mapped. Those described in the following text and tables specifically highlight the actors and processes in the Namibian value chain for Marula oil. Table 3 depicts the key processes, actors and roles involved and provides a description of the associated actions. In turn, Table 4 provides details of the current pricing structures for those involved in the supply chain. This information can be used as a tool to make recommendations about how to approach the high cost issues that the value chain faces. As processes and actors in the chain change, the cost structure will also alter and this table will require periodic alterations and updates.

a) Harvesting and kernel processing

Marula fruits when mature are approximately the size of golf balls and are yellow in colour. The fruits are mature from February (January at the earliest) to April/May in the NCRs. The exocarp is leathery and encloses the fruit pulp and a large nut. Two, or sometimes three, kernels are held within the woody stone in compartments which are closed by a hard plug (eye). These kernels which are rich in oil are removed from the stone and pressed for oil. Women are primarily involved the harvesting and processing of Marula nuts. The ripe fruits are gathered from under the tree and generally juice is manually extracted releasing the nuts/pips. The nuts are thereafter taken back to the homestead. It is here that they are dried (often in the sun) and then stored until decortication takes place. An axe is often used to crack open the nuts and a large needle or pin is used to pick the individual kernels out of the compartments in which they are held. The kernels are stored before bagging and being transported. At the Eudafano Association the kernels are consolidated ahead of collection for oil processing at EWC Factory. The price at which the kernels are sold is dependent on the buyer and whether they are sold directly into the local market, or whether they are sold to EWC. It has been suggested that the recent drop in supply of kernels may be partly a result of competing prices for kernels on the local market, where harvesters can get a better price per kg compared to the pricing from EWC. There is therefore less incentive to be part of an EWC Association and sell kernels into the network.

Based on 2011 data, more than 1000 women harvesters were involved in the trade of Marula kernels in Namibia and who are involved in EWC operations. EWC reported a total of 22 Associations within the cooperative, two of which were established in 2011. It should be noted that data gathered in 2011 was particularly low. The data for 2012 has not yet been compiled. There are other harvesters who are not involved in trade as part of the cooperative but who do harvest and trade on the informal market. The number of harvesters involved in the informal trade of marula kernels and on the local market is not known.

At the level of harvest, there is also the risk of chemical contamination of the fruits and kernels. Semi-processed nuts which are decorticated at, and stored around the homestead, are at greater risk of contamination. One way in which to reduce the risk of potential contamination is to decorticate the nuts in an environment which is controlled, such as a factory. This may also enable improved efficiency and enable the production of higher quality kernels. However, there are varying views about moving the decortication process to a factory and the impact this would have on current harvesters. It is a complex issue with the ultimate aim of ensuring the highest rates of return are achieved for the labour efforts involved. These issues should form part of proposed business model for EWC which also forms part of the Value Chain Specialist contract.

b) Consolidation and processing into oil

Eudafano Women's Cooperative (EWC) is said to be one of the largest Marula producers in Southern Africa, with Swazi Indigenous Products also being a key player. EWC provides a single point of contact for the external buyers of Marula oil from Namibia. The EWC factory, also known as the Eudafano Women Marula Manufacturing Pty Ltd (EWMM), is entirely owned by EWC. The EWC is a member of PhytoTrade Africa and works in close partnership with CRIAA SA-DC who has supported EWC in all phases of its development and continue to do so. The cooperative also receives support

from the Division of Cooperative Development and the Directorate of Forestry, both within the Ministry of Agriculture, Water and Forestry.

EWC is involved in the coordination, collection and processing of the Marula kernels on behalf of the members, and to some extent marketing of the oil. EWC buys the kernels from the Associations who in turn pay the harvesters. The factory in Ondangwa which belongs to EWC includes four hydraulic oil presses and a screw press for oil extraction, and six manually operated juice extraction presses. Without the addition of new machinery and advanced technologies, it will be difficult for EWC to scale up its operations, increase its turnover and develop their business. As discussed above, there are calls for decortication to also be carried out at factory scale to avoid potential contamination of homesteads, and to increase efficiency. Once the kernels have arrived at the factory, they are again weighed, recorded and quality is checked before being stored in the cold room until 1-2 days before processing begins. The kernels undergo up to three pressings, where they are continually mixed. After each pressing, the press is emptied, the kernels mixed and the kernels are pressed again. The oil from all three pressings is decanted into drums and 2-3 weeks later the oils is packed into jerry cans or 200-l drums, and stored in a cold room. Of the processed oil, a large proportion is shipped to Aldivia in France for further processing (refining and Ubuntu) and is sold into international markets. EWC are also responsible for quality control, documentation, harvest forecasts and inventory management. For the Namibian producers, the ownership of the oil ends at FOB (Free on Board) stage.

In 2011, the harvesters in association with EWC received a total of N\$ 199,500 for 9500kg kernels at N\$ 21/kg. 7600 kg Marula oil was exported (mainly from kernels from 2010) for Euro 112,400 (approx. N\$ 1.1M) while local sales are reported to have been marginal. In 2012 harvesters were paid approximately N\$575,000 for 25,000 kg kernels sold at a price of N\$ 23/kg. From this, 6080 kg Marula oil was exported for Euro 91,200 (N\$ 1.0M).

In the past year, EWC has struggled to supply the international market with the volume of Marula oil required to meet demand. This threatens the trade of Marula oil from EWC unless future orders can be met on schedule. The reasons for drop in supply have been attributed to heavy rains and fewer fruits on the trees than normal, a drop in the number of harvesting members and in some instances, lack of enthusiasm. There are also difficulties around the accuracy of market forecasts from buyers, which change throughout the year and can leave harvesters and processors little time to adequately respond. It is clear there are issues on both sides of the value chain which have impacted on the supply of kernels and oil.

c) Local, regional and international distribution and sales

Marula oil is sold into the local, regional and international market in various forms (crude oil and refined oil) primarily for the cosmetic sector.

A small number of local sales take place at the factory where the oil is sold in bottles of 25 litre jerry cans. Due to the level of recent supply, priority has been given to exports to Aldivia and so there has been very little, if any, regional sales. With increased production, there would be greater scope for customer and market diversification.

In Europe the primary ‘importer’ of semi-processed Marula oil (crude and decanted) from EWC is Aldivia¹ who are based in France. Through Aldivia, Marula oil enters the cosmetic market as filtered oil and is either sold directly to manufacturers by or passes through their distributors; Surfachem in the UK, K3 in the US and Cosmetichem in South Africa. Aldivia market refined Marula oil (of which The Body Shop is the primary customer) and also Ubuntu Marula oil.

The oil is first decanted to remove sediment and is then filtered to remove bacteria and other contaminants including fungal spores and yeast. This process is necessary to reach the quality required by the cosmetic industry. Occasionally, customers buy the oil directly from EWC but are required to filter the product themselves. In order to add value locally, further processing and filtration could take place in Namibia and the product could then be sold directly into the market for cosmetic product manufacturing. However, in order for this to be a viable and successful option, the oil must be filtered in Namibia to a standard that is acceptable to European and American cosmetic manufacturers.

There are other known processors and suppliers of Marula oil who sell into the international market. Although the volume of oil sold by these companies is unknown, Marula oil is listed in their product portfolios. UK based suppliers include Earth Oil Plantations and Statfold Seed Oils, while those based in Southern Africa include Clive Teubes, Scatters Oils and Arch Personal Care. The producing groups that harvest kernels for these suppliers are not known. Further details of speciality oil suppliers and distributors are provided in the Cosmetic Oil Market Brief (January 2013).

Based on the three sections of the Marula oil value chain discussed above, Table 3 depicts many of the roles and responsibilities of the actors and which stretch from importing oil, through filtration of oil, to customer visits, trade shows, marketing materials and provision of samples. From the European processor, the oil is currently distributed to cosmetic manufacturers and formulators and is ultimately retailed to the end consumer. All processes and roles are crucial to a functional value chain, but the specific actors involved are subject to change.

Table 3. Processes and roles along the value chain

Process	Actors	Ownership	Description	
			Current roles	Alternative roles
Gathering and primary processing	Rural (women) harvester	Members of EWC	<ul style="list-style-type: none"> - Gathering fruits from trees - Juice extracted to release nut - Drying and storing at homestead - Cutting the nuts with an axe - Removing the kernels with flattened needle - Storage of kernels (closed bucket or bags) 	<ul style="list-style-type: none"> - Gathering ripe fruits fallen on the ground 3 possible options: <ul style="list-style-type: none"> a) Selling whole ripe fruits, or b) Selling ‘clean’ seeds c) Decorticating kernels from cleaned & depulped seeds - Sorting, storing - Bagging - Transport (delivery to

¹ Aldivia, based in France, specialises in sourcing, design and commercialisation of lipids of plant and vegetable origin for cosmetic and industrial use. More information can be found at www.aldivia.com.

			<ul style="list-style-type: none"> - Bagging of kernels - Delivery to intake point. 	intake point / buying centre).
Rural consolidation (bulking and onward selling)	Consolidators /collectors / Association	Individual Associations	<ul style="list-style-type: none"> - Consolidation and collection of kernels from harvesters. 	<ul style="list-style-type: none"> - Consolidation of whole fruits and/or whole nuts (uncracked). See 3 options above (a, b & c) - Weighing & recording and visual QC - Re-bagging of kernels - Transport to EWC factory
Processing into oil	Factory processor	EWC Factory	<ul style="list-style-type: none"> -Weighing, recording and quality check at factory - Kernels sorted, re-packed and stored (cold room) - Pressing into crude decanted oil - Drum stored in cold room - Sell to export market (and local market) - Staff management - Quality control. - Inventory management. - Facility and equipment maintenance. 	<ul style="list-style-type: none"> Different options depending on a, b & c above - Nuts cleaned (and/or disinfected) and cracked in factory conditions (HACCP/GMP) using industrial technologies. - Sorting by hand in sterile factory condition. - Pressing oil and filtration technologies. - Decant, quality control. - Marketing - Sell to local, regional and export market.
Storage	Local processors	EWC Factory	<ul style="list-style-type: none"> -Store in 220-l drums distribution. -Responsibility for losses, damage. 	
Export	Local processors	EWC Factory	<ul style="list-style-type: none"> -Documentation of materials for export. - Insurance. - ABS and other regulatory issues. - Transport over borders. 	
Import	European Processor	Aldivia	<ul style="list-style-type: none"> -Receive material - Transport over borders - Duties, taxes - Losses, delays, and damages 	<ul style="list-style-type: none"> - Receive fully processed oil. - Deliver to distributor or direct to manufacturer. - Transport over borders.
Additional processing	European Processor	Aldivia	<ul style="list-style-type: none"> -Quality control - Decant (losses) - Filter / centrifuge 	Not applicable

			<ul style="list-style-type: none"> (losses) - Quality control, stability testing - Compliance with regulations, safety tests - Package - Store 	
Sales and dispatch	European Processor	Aldivia	<ul style="list-style-type: none"> - Formulation and concepts - Marketing materials - Customer identification - Customer visits, trade shows - Processing orders including provision of samples and quotations - Customer negotiations - Dispatch - Inventory control - Returns and damages - Credit control - After sales service 	<ul style="list-style-type: none"> - Distributes oil that has been processed in Namibia - Distributors located globally - Marketing - Targets bioactivity and efficacy of ingredient, and harvester impact / African origin
Distribution (Aldivia sells directly to some manufacturers in some regions, and through distributors and agents in others so some roles are repeated here)	European Processor	Aldivia's distributors and agents	<ul style="list-style-type: none"> - Formulation and concepts - Marketing materials - Customer identification - Customer visits, trade shows - Processing orders including provision of samples and quotations - Customer negotiations - Dispatch - Inventory control - Returns and damages - Credit control - After sales service 	
Manufacturing	Cosmetic formulator/ brand/ manufacturer	Various manufacturers including contract manufacturers and own brands	<ul style="list-style-type: none"> - Manufacture cosmetic products - Compliance with regulatory requirements - Stock and inventory control - Returns and losses 	
Sales and distribution of consumer product	Cosmetic manufacturer / brand	Various	<ul style="list-style-type: none"> - Branding and positioning - Sell and distribute pure oil and formulated consumer products. 	

Retail of consumer products	Retailer / brand	Various brands such as The Body Shop and Clarins	- Consumer awareness activities, advertising - Retail consumer product	
Consumption	Consumer	Consumer	- Buy consumer product and use - Word of mouth marketing, social media (Facebook, Twitter)	

Table 4. Pricing along the current value chain (2012)

Responsibility	Actor	Product	Price
Harvester	EWC Associations	Decorticated nuts	N\$ 23.00/kg
Association EWC	EWC	Decorticated nuts	N\$ 0.5/kg N\$ 1/kg
Local processor	EWC Factory	Virgin Oil	N\$ 150/kg
Exporter	EWC Factory	Virgin Oil	Euro 15.00/kg
European processor	Aldivia (+5% commission to PhytoTrade)	Refined Ubuntu Oil	Euro 31.38/kg (23kg) Not known
Distributor	Eg Surfachem	Refined/Ubuntu Oil	Not known
Retail/Cosmetic manufacturer	The Body Shop	Consumer Product (Beautifying Oil)	£9.00 (100ml)

d) International market: Regulatory hurdles

As mentioned in Section X on the market for products derived from Marula, Regulatory approval would be required if the oil was to be introduced to the European market as a speciality food oil. The product would fall under the Novel Foods which is governed by the European Commission who consider foods and food ingredients that have not been used for human consumption to a significant degree in the EU before 1997. To market Marula oil as a food ingredient in the EU, an application must be submitted to an EU country authority which presents the scientific information and safety assessment report. Another potential route would be through the 'notification' procedure where the food assessment is based on 'substantial equivalence' of the food to another which is already on the market. This is a viable option for Marula food oil which could be presented as 'substantially equivalent' to another food oil from the same plant family. This route has been explored to some extent by PhytoTrade Africa but discussions may also be held with the competent authority for guidance. By gaining regulatory approval for Marula food oil in the EU, the procedure could be repeated in the United States (GRAS) and Canada (Novel Foods), which would greatly enhance market potential for the traditionally used product.

Although the regulations for Marula oil as a cosmetic ingredient are very different to that of a food ingredient they do still exist with a particular focus on finished cosmetic products for consumer use. This would apply directly to Marula oil where it is used as a massage oil and comprises of the majority of the product formulation, but more commonly Marula oil would be marketed as a

cosmetic ingredient to be used as one component of the formulation and therefore an ingredient. The new European Cosmetic Regulation (EC) No 1223/2009 will come fully into force on 11th July 2013. Some of the major changes which will appear in contrast to the Directive include the addition of the 'Responsible Person', country of origin notification, product claims, the Product Information File, and the detailed safety assessment. The information required in the safety assessment is where there is most relevance for Marula oil as in some cases, safety data will be required for individual ingredients. Product manufacturers may request scientific data on the ingredients they choose to include in products and this may relate to safety and efficacy. It is also important to note that all products marketed in the EU after 11th July 2013 must have a registered 'Responsible Person' in the EU. For example, if cosmetic manufacturer wishes to produce a Marula oil based cosmetic product and market it in the EU, they must have that product registered to a person/company in the EU. This could be a distributor or third party company if they have access to the Product Information File including safety data. Further details of cosmetic regulations in the EU, and other locations will be available in the Cosmetic Oil Market Brief (January 2013).

5. Value Chain Competitiveness

Marula oil is a product that is positioned alongside other natural niche cosmetic oils in the global market. In Europe and the United States, oils which fall under the exotic category, sometime with traditional use stories, are often sourced from Africa and South America, two regions also known for high levels of biodiversity and natural based products. The Cosmetic Oil Market Brief (January 2013) provides greater details of the competing products to Marula oil and other speciality oils such as those from the Amazon, and also outlines some of the pricing differences between the products. Regarding Marula oil as a food oil, there are other speciality oils in the market that it would positioned against such as Argan oil, Brazil nut oil and cashew nut oil. However, it is likely that Marula oil would be priced above all of these and would therefore need careful market research ahead of launch and going through the regulatory approval phase.

The competitive positioning of Marula oil is based on price, quality, reliability, supply capacity, and product attributes, such as certification and marketing properties. These components fall under all parts of the value chain from harvesting methods/protocols and forecasts, through to scientific substantiation and finished product labelling.

As mentioned in Section 4, a key factor in remaining competitive, is ensuring sufficient supply of kernels for processing and the supply of oil to buyers. This last year has experienced a notable lack of available oil and may force some customers to look elsewhere. A situation such as this could be damaging to EWC if concerns are raised about their ability to supply current demand and what production can be expected in subsequent years. It is fundamental to fully engage with key customers and produce forecasts which are as accurate as possible. Strong relationships and transparency with customers can tighten the commercial partnerships for future development.

5.1 Certification

As with other natural products, certification and quality standards will impact on the price points of the product. Organic certification is strongly recognised in the international market and many competing products, such as other natural cosmetic oils, carry the organic certification logos. Natural and organic are often combined and often match the profile of the consumer who would

purchase a product because it uses natural ingredients. In 2007, Marula oil produced by EWC and certified as Ecocert Organic was exported. Only one EWC association was certified as organic by Ecocert. However, the certification lasted only one year after the Board of Directors of EWC decided that an annual investment of N\$ 30,000 for certifier costs alone was unrealistic for the resources available and the perceived gain. The total cost of certifying all 17 Associations (the number of associations at the time) would be significantly higher. In total, 720kg was marketed Organic at premium price. This is comparable to the 6300kg of conventional oil that was exported in the same time period. It is also reported that there was some discontent between Associations as some had organic certification and therefore received higher prices, while others did not. At the time organic certification was in place, the price of organic was 150% of the conventional product price. However, it is important to keep this in context. Only a very small part of overall production was sold as organic. The price for organically certified Marula oil was Euro 22.48/kg while the price for conventional Marula oil was Euro 15/kg (2010). It is important to note that the price of Euro 15/kg has not changed since 2006 and remains unchanged in 2012.

If organic certification was to become an attractive option for future development of the Marula oil value chain in Namibia, it will be necessary to show there is demand for a certified product and establish a reliable and robust customer base. Currently the primary buyer of Marula oil from EWC is The Body Shop who buy refined oil from Aldivia. The Body Shop do include some organic ingredients within their product ranges and have launched a certified organic range called Nutriganics. A discussion with The Body Shop about future certification requirements, including that of Marula oil, could provide an important contribution to the development of a business plan for EWC. Organic certification would also open up other markets for Marula oil, and to those companies and brands which only manufacture products with organically certified ingredients. An example of a UK based brand which is entirely organic, is Pai Skincare (<http://www.paiskincare.com>).

Another certification mark of interest is Fairtrade. A review was carried out by Fairtrade in 2010 and a Standard was set. Access to the Fairtrade system would give producers the opportunity to profit from the Fairtrade Premium and encourage better organization of the producer groups and Associations. Certification and Fairtrade price setting was initially prompted by the Amarula brand owner, Distell, and PhytoTrade Africa. It is reported that at the time, both groups indicated their intention to become Fairtrade certified suppliers of Marula products although to date, there are no confirmed certified groups for Marula. Both PhytoTrade Africa and Max Havelaar France worked to collate data regarding the Namibian harvesters of Marula kernels. Marula oil is listed as a minor product which fits within the Fresh Fruit category when unprocessed. Groups of collectors have been certified by FLO-Cert as Small Producer Organisations (SPOs).

All Fairtrade certified products are assigned a Fairtrade Minimum Price and Premium which must be applied when marketing Fairtrade product varieties. Where the market price is higher than the Fairtrade Minimum Price, the producers should receive the current market price or the price negotiated at contract signing. Despite the standard being in place and pricing set, there are currently no certified Fairtrade producers of Marula oil in Namibia. Table 5 below, is the data presented by Fairtrade International on the webpage for 'Minimum Price and Premium Information' (<http://www.fairtrade.net/price-premium-info.html>). It should be noted that the prices in Table 5 are for the fresh fruit and not the kernels or oil. This has large implications on the price of kernels

(which are approximately 2% of the weight of the fruit) and could lead to an oil price which places it completely out the market as it is so high.

Table 5. Minimum Price and Premium Information, Fairtrade Standards.

Status: 17. Dec 2012							
Product (specific product standard)	Product variety	Price applies to	Currency / Quantity x Unit	Price level / *special price conditions	Fairtrade minimum price	Fairtrade premium	Valid from
Marula (Fresh Fruit)	Organic	Africa (SPO)	USD / 1 kg	EXW	Easy Entrance	0,025	15. Jul 2010
Marula (Fresh Fruit)	Conventional	Africa (SPO)	USD / 1 kg	EXW	Easy Entrance	0,025	15. Jul 2010

However, despite potential market demand, it is acknowledged that the certification process is not a simple one and requires significant resources, both financially and human based. For EWC to obtain organic certification and retain it, support to individual Associations would be required to reach the level of organisation and detailed documentation required to meet the standards. The benefits of certification and the impact on pricing, must be shown to move back along the value chain to the

harvesters and primary processors, if its implementation is to be supported.



It should be noted that Fairtrade and Ecocert Organic are only two certification labels out of many which would be available to Marula oil. Certification comes in many forms other than, natural, organic and fair trade, such as Kosher and carbon neutral. It is important that any certification which is sought is best suited to the target customer base and for this market research is required and products defined. In addition, companies may not necessarily be set on having officially certified ingredients, but will purchase those which follow the principles of fair trade and

ethical sourcing. A key example of this is The Body Shop and their Community Fair Trade (CFT) programme. The programme is designed to provide access to a market that would otherwise be out of reach to the producers and communities involved. BSI have published a Community Fair Trade Charter which lays out the criteria for inclusion of supplier in the programme, suppliers' commitment to The Body Shop and The Body Shop Commitments to the CFT suppliers. The Charter is available to download from www.thebodyshop.com/content/pdf/cft-charter.pdf. The key criteria principles for inclusion in the CFT programme include;

1. **Supplier Group:** CFT suppliers are socially motivated and commercially viable groups.
2. **Marginalised Communities:** BSI wants to direct the benefits of its trade to marginalised communities throughout the world.
3. **Environmental Awareness and Respect for Biodiversity:** 'Protect the Planet' is a core value for BSI. CFT suppliers' operations and their interaction with the environment, should be in accordance with this stance.

4. **Demand for the product:** BSI wants to establish long term direct relationships with the suppliers of its key ingredients

As discussed earlier in the report, Marula oil from EWC is one of several ingredients included in the CFT programme at The Body Shop. This is a key commercial partnership for EWC and every effort should be put to maintaining it.

5.2 Technology, business model and intellectual property

In order to remain competitive and increase the production of Marula oil from Namibian producers, there is a need to increase the efficiency of the methods currently employed, namely the methods of decortications and the extraction of oil. There are some who believe that by moving away from artisanal production, and adopting industrial extraction practices would reduce the risk of contamination while also increase the capacity of production, ultimately increasing sales. An investigation of new technologies formed part of the MCA-Namibia funded Oils project which will be finalised in the second quarter of 2013. With the introduction of such technologies, the producing associations could move up the value chain where higher margins and greater profits are possible. These ideas will be incorporated into discussions around revising the business models of producing organisations in Namibia, also in conjunction with CRIAA SA-DC.

A new business model for Marula oil producers should pay special attention to issues including the production of filtered oil and meeting quality requirements of manufacturers who producer consumer-ready products. Achieving this would enable a significant increase in value as well as the production of consumer products in Namibia using locally produced ingredients.

It is also necessary to highlight the potential role of IP in capturing the value of Marula oil. As well as being linked to the Maruline patent published by Aldivia and PhytoTrade Africa but also due to work carried out by Light Years IP (<http://www.lightyearsip.net>). IP value capture is designed to be a highly effective way of permanently and sustainably changing the position of low-income producers. It focuses on using Intellectual Property business strategies to help producers take more control of their products and increase their share of export income. Specific to Marula oil producers in Namibia, Light Years IP made the following conclusions/recommendations from their study.

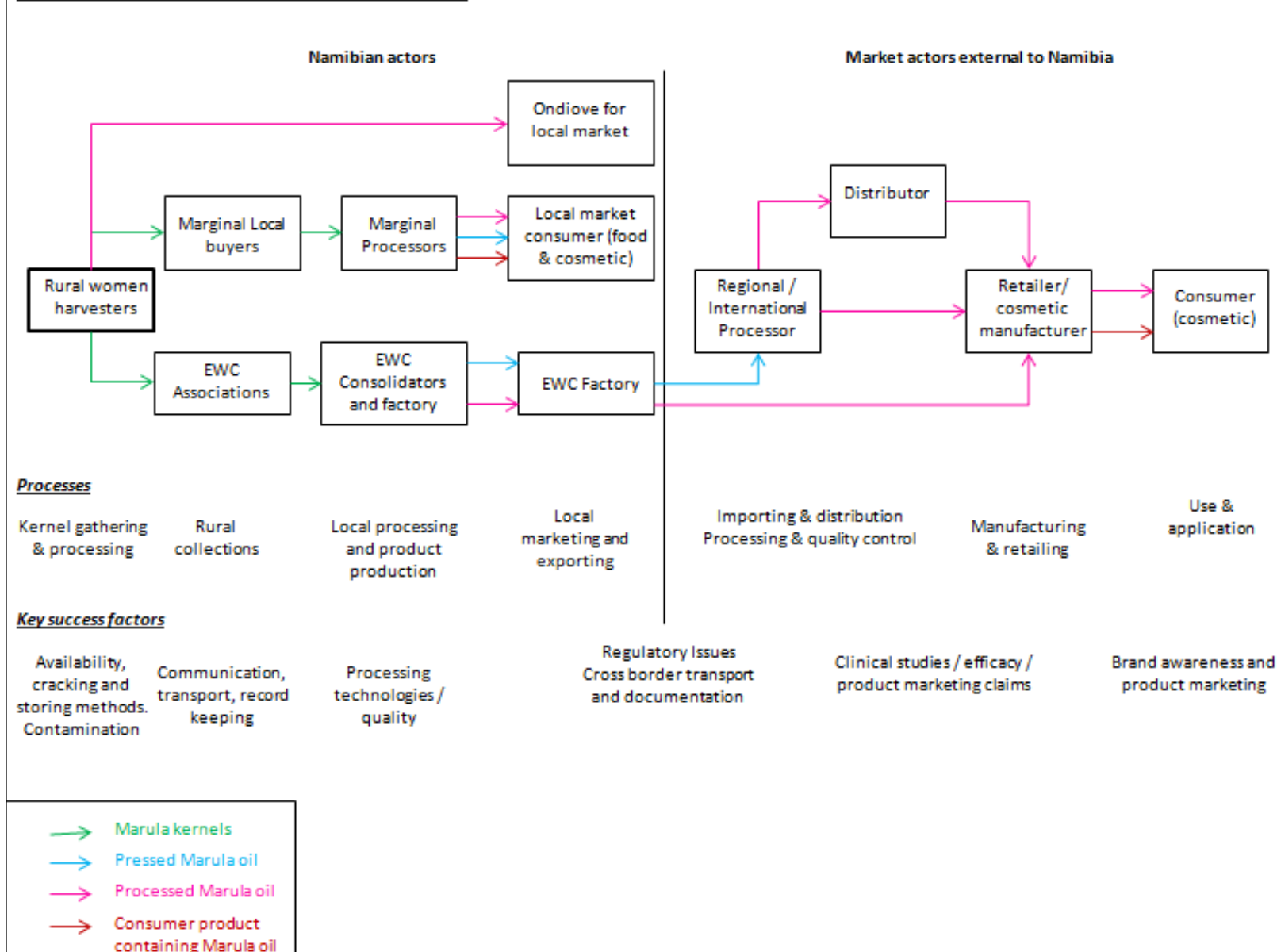
'While marula producers are well organised and have even patented a by-product of marula, Marulene, there is still potential for marula producers to consolidate and refine the positioning of their product in retail. As there is clearly a niche market for this unique oil, marula oil producers could generate more than the current income levels of \$22,000 if business strategies with IP were in place to popularise the ingredient, expand its usage, and ensure that Southern African producers, using traditional techniques, were the only recognised suppliers with no synthetic simulations being acceptable. This type of IP strategy could triple export earnings. Further earnings might also follow with the expansion of its use in premium branded products'.

'As the popularity of marula and other natural ingredients begins to rise, small companies based in Africa have expressed their need to assert intellectual property protection. Due to the informality of the trade, retailers are often able to reap the

benefits of using of using the name 'marula' in their products, while the producers are virtually forgotten. A business strategy that may focus around certification and distribution aspects could be employed to protect Africa producers from future misuse of their products' (Light Years IP).

The African IP Trust (<http://africaniptrust.org/>) is another organisation to be aware of in regard to IP issues around Marula oil. They advocate for and directly assists African producers to secure IP rights. The value chain analysis does not seek to comment in depth on how Marula IP issues should be dealt with, but aims to highlight the issue and some of the key companies engaged. A further and separate discussion is recommended between Namibian producers and stakeholders.

Figure 1: Marula Oil Value Chain (December 2012)



6. Issues to Address

- *Pricing of the oil*

It is necessary to address the price of Marula oil from EWC. Despite pressures from key customers to keep the price at current figures or even below, it is clear that the current pricing structure does not allow for sufficient margins for harvesters or processors.

Taking The Body Shop as an example, and in comparison to other Community Trade Ingredients, Marula oil is the most expensive. However, when comparing to other natural oil ingredients in the market, there are several which carry higher prices such as Ximenia oil. The price of Marula oil must increase to meet the costs of production with sufficient incentive for EWC and Aldivia to grow the market and bring in new customers. A price structure will be discussed among the various stakeholders in Namibia and with Aldivia to ensure proposed figures are plausible and bring maximum benefit to harvesters and processors. Box 1 below details the current costs and pricing of the decorticated kernels through to the ex-works oil exported to Aldivia.

Box 1. Pricing breakdown for Marula oil from EWC.

Key Pricing Figures: Eudafano Women's Cooperative, Namibia

Marula kernel (decorticated) price paid to producers: N\$25.00/kg new price for 2013, agreed.

+ Margin Association & EWC: N\$1.50/kg but could increase to N\$2.00/kg

Eudafano Factory (EWMM) collects with their truck at Association and covers the cost of procurement: at least N\$1.00/kg on average

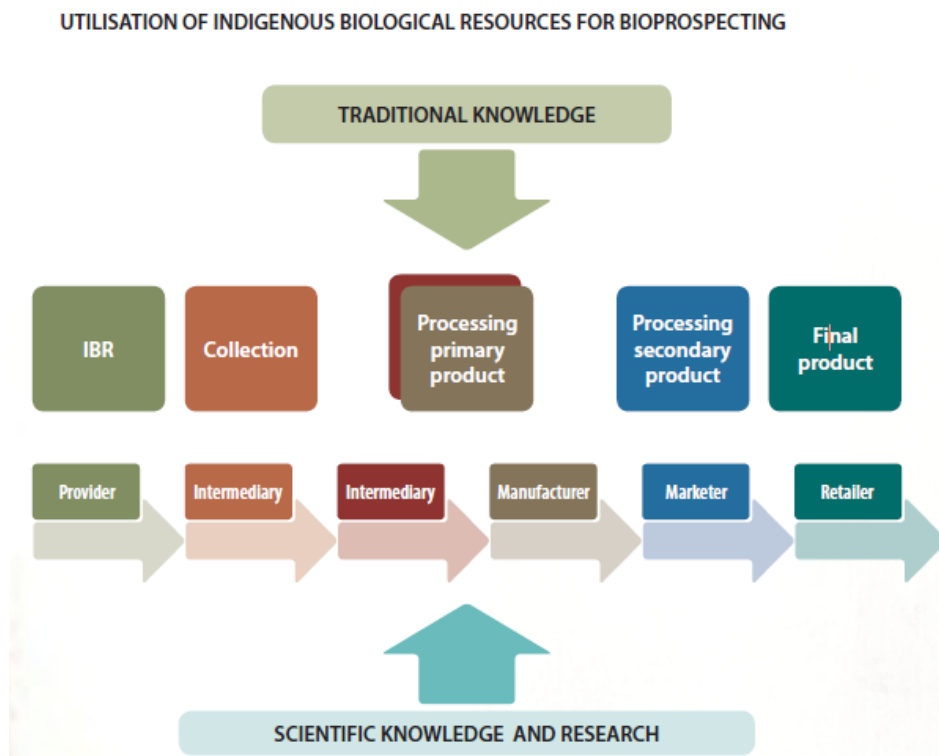
Therefore factory gate costs for Marula kernels: >N\$25.50/kg (2012 data)

Ex-factory price for Marula oil exported to Aldivia was €15/kg but is due to be increased to €18/kg in 2013 (FOB).

- *Access and Benefit Sharing Legislation*

Access and Benefit Sharing Legislation continues to evolve as countries define the rules of the regulation and how they will be implemented. The issues are complex and cannot be fully explored in the context of this report, but a comprehensive review has been prepared by Wynberg *et al.* (2012) on South Africa's Regulatory Framework which would be beneficial to the reader. This report presents the figure below to depict when the use of natural resources would be described as bioprospecting.

Figure 3. *Bioprospecting*

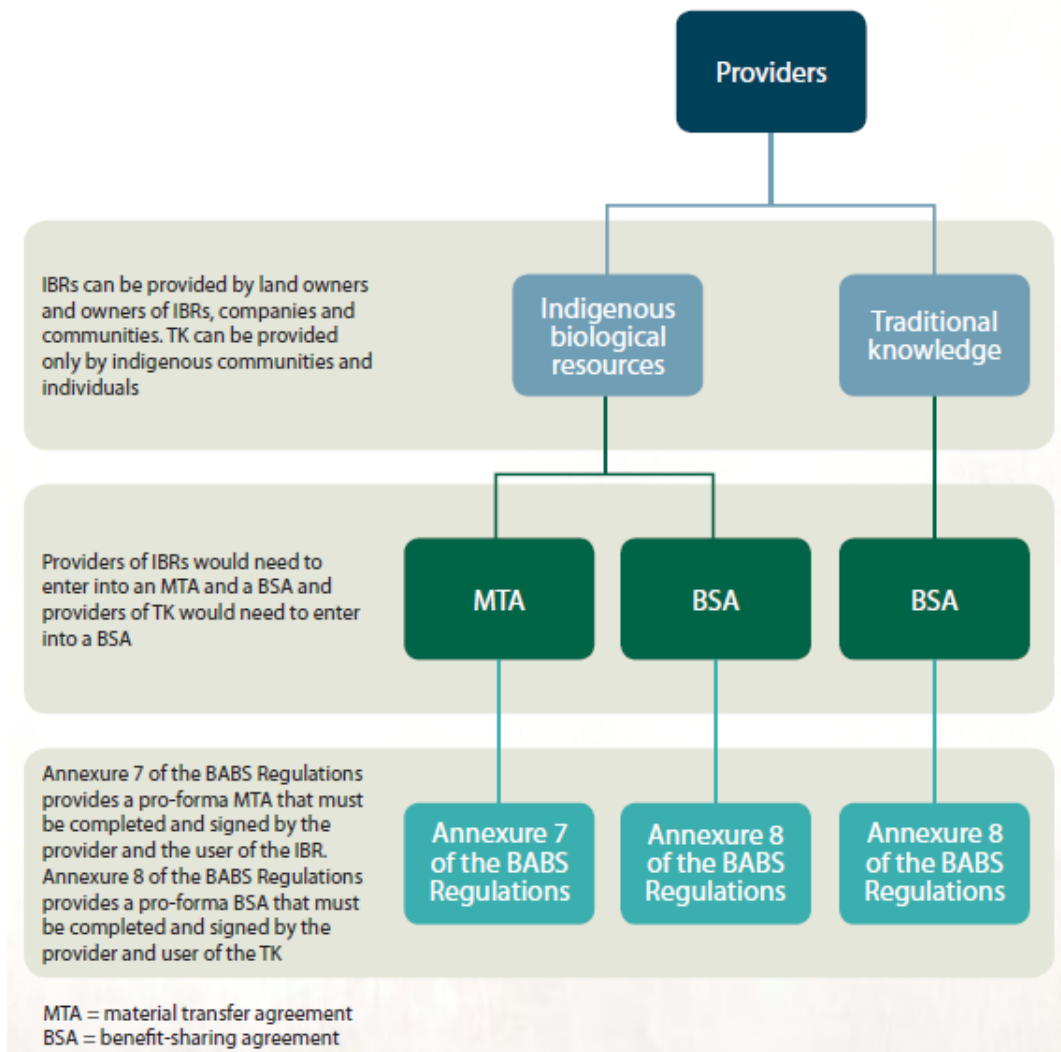


(Wynberg *et al.*, 2012)

In a practical sense, Wynberg *et al.* (2012) compiled the flow chart in Figure 4 as a guide to the ABS process for providers of indigenous biological resources and traditional knowledge. Providers of IBRs can include individuals, companies, landowners, or indigenous communities that control the IBR in question. The right to provide access to an IBR can be through ownership of the resource, or control over the land on which it grows. This is slightly different to providers of traditional knowledge which in many cases it falls to an indigenous community.

Figure 4 also makes reference to the Bioprospecting, Access and Benefit Sharing (BABS) Regulations which must also be adhered to. These Regulations, which have been in force since 2008, put in place a permit system relating to research, bioprospecting and export of IBRs between providers and users through benefit sharing and material transfer agreements.

Figure 4. Access and Benefit Sharing Process



(Wynberg *et al.*, 2012)

7. Value Chain Upgrading: Preliminary findings and recommendations

Based on the value chain analysis presented for Marula oil produced in Namibia, and the understanding of current processes and actors, several preliminary recommendations can be made to overcome current supply problems to enhance competitiveness, with the end goal being to increase income to Marula harvesters in Namibia. The recommendations given here will be revised as more detail of the value chain becomes apparent and as new developments are realised. This is expected to be a 'rolling' process.

- The Unique Selling Points of Marula oil for the cosmetic industry include the exotic and ethical nature of the ingredient which is communicated to customers through producer stories and the impact of the income the oil brings. The oil also has various skin benefits that can be communicated to the consumer based on chemical profile and traditional use.
- Marula oil pricing requires review and revision. Current prices at the level of EWC and Aldivia are not sufficient.

- Current barriers to business development includes reduced supply of kernels, processing technologies, Association dynamism, pricing, lack of scientific backing behind product, diversified routes to market.
- Technologies for improved decortication methods must be identified, tested and/or developed and implemented in Namibia with EWMM and in consultations with producing groups (EWC).
- Technologies for improved oil processing and quality management, including filtration, should be identified, assessed, developed and implemented in Namibia.
- Potential pesticide contamination must be identified, controlled and contained.
- Key cosmetic markets for Marula oil have been identified and targeted and strong communication channels should be developed around agreed terms of reference and maintained closely.
- Enhanced support should be provided to key customers (The Body Shop)
- As supply capacity increases new customers in the cosmetic industry must be identified to diversify the customer base of EWC.
- The importance of certification (organic, Fairtrade, etc) in today's market should be investigated and recommendations put forward to producing associations.
- The development of revised business model for EWC to increase supply capacity and diversify customer base.
- Marketing of the oil by actors outside Namibia including processors and cosmetic manufacturers is crucial to successful uptake by industry and consumers.
- Enhance consumer awareness of Marula oil as a cosmetic ingredient.
- Market research may be conducted both regionally and internationally to identify current target customers and potential new clients in the cosmetic sector.
- Use the results of the MCA funded INP project (Innovative, Safe and Active Cosmetic Ingredients) to provide additional ingredient support for new target customers.
- Develop the local market for Marula food oil
- Further investigate and quantify the international market for speciality food oils; the category in which Marula oil would likely sit (pricing, volume, territories).
- Revisit the discussion on Novel Foods for Marula Food Oil and the most appropriate entry route in to the European market.
- Lobby the Namibian Government and stakeholders to ensure that ABS regulations linked with the CBD and those defined in South Africa will not further impede the use of indigenous biological resources in cosmetic products.
- Domestication and propagation opportunities for Marula

References

- Botelle, A. (2001) A History of Marula Use in North-Central Namibia. *CRIAA SA-DC, Namibia*.
- Den Adel, S. (2010) Marula Resource Survey. *CRIAA SA-DC and IPTT (Namibia)*.
- Du Plessis, P., Mallet, M. and Amutenya, N. (2008) Summary report on Marula Food Oil project. *Prepared for IPTT/NAB/GTZ-MET Biotrade Programme*.
- Lam, H. and Vellema, S. (2011) The Eudafano Women's Cooperative in Namibia. IChA Working Paper, No. 5 / Partnerships Resource Centre working paper. *Wageningen University*.
- Leakey, R. (2002) Winners and Losers in Forest Product Commercialisation: Project Reports: Marula (*Sclerocarya birrea*). *Centre for Ecology and Hydrology and Department for International Development*. Online at <http://www.ceh-wallingford.ac.uk/research/winners/literature.html>
- Fairtrade International, Minimum Price and Premium Information. Accessed 31.01.2012.
[http://www.fairtrade.net/price-premium-info.html?no_cache=1&tx_zwo3pricing_pi1\[productType\]=145&tx_zwo3pricing_pi1\[country\]=0&tx_zwo3pricing_pi1\[submit_button\]=Go](http://www.fairtrade.net/price-premium-info.html?no_cache=1&tx_zwo3pricing_pi1[productType]=145&tx_zwo3pricing_pi1[country]=0&tx_zwo3pricing_pi1[submit_button]=Go)
- Gatland, B. and Loehrl, M. (2010) Fact Sheet, Fairtrade Standards for Baobab and for Marula. New opportunities for women in rural Southern African communities
- Light Years IP. Namibian Marula Oil: Scoping Study. Accessed 24.01.2013
http://www.lightyearsip.net/scopingstudy/namibian_marula_oil.aspx
- Wynberg, R. *et al.* (2012) South Africa's Bioprospecting, Access and Benefit-Sharing Regulatory Framework. Guidelines for Provider, Users and Regulators. *Department of Environmental Affairs, Republic of South Africa*. ISBN: 9780 621 40885 0.