

**Master of Science**  
**Technology and Resource Management in the Tropics and**  
**Subtropics**

**”Business Plan”**



**“Production of Motacu oil in Bolivia”**

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## **List of abbreviations**

S.R.L.	Sociedad de Responsabilidad Limitada
GmbH	Gesellschaft mit beschränkter Haftung
NIT	Número de Identificación Tributaria
GACP	Good Agricultural and Collection Practice
GMP	Good manufacturing Practice
HACCP	Hazard Analysis and Critical Control Points
ISO	International Organization for Standardization

## Introduction

The concept of business plan, for the production of “Motacu oil” in “Motacu Touch S.R.L.” in Bolivia is developed by Shritu Shrestha and Vanesa Rodríguez as a compulsory part of the exam of the lecture “business administration and economics”. The rule of economics is applied to accomplish this business idea. The latest and real site data were collected due to the availability of contacts and important basic information in Bolivia.

We carried out also a market study analysing the demand for such product and to identify our target group and to find out what are the opportunities and constraints. Finally the competition was also considered.

The focus is also given on the production techniques, and appropriate site location and design for the construction. The possible expenditures and costs are calculated in detail. As mentioned above, there is a previous project that addressed the production of Motacu oil in the traditional way in Bolivia (small scale), besides that we used the internet, and collected also key special information from our contact person in Bolivia (Miguel Amaya). These data are sorted and from that basis, many calculations were made with assumptions to analyse the formation of our company and to show the profitability at the end. The detail result is provided in the following report.

# 1. Company Idea

This Business Plan addresses the production of a nature wonder palm oil that comes exclusively from the rainforest located the Amazon region in Bolivia, South America. It grows widely there and we regard this product as a potential economic resource for this region, due to its rich properties for beauty care as a natural ingredient for cosmetics and due to the fact that it has not yet offered formally in the market. This product has also not being commercialized in larger scale and it is widely known by local population that have a tradition of using this lovely product since ancient times. Besides that, this organic oil is produced in a sustainable way and it does not involve the use of agrochemicals in the production mainly due to the fact that it is native to this area.

In this sense, we strongly believe that this business represents an interesting idea, that once developed can contribute to the strengthening of the use of non wood forest products (in this case Motacu) instead of promoting the ongoing destruction of forest that happens nowadays due to the limited appraisal of forest as only wood producer. In this way, would contribute to the maintenance of the tropical forest of this area.

Besides that through the carrying out of this project the trade of providing the Motacu seeds would provide a sustainable income for the rural communities of this region, who collect these seeds.

This idea took place due to the previous experience that a member of a group had in a Project in Bolivia where the production process of Motacu oil was analysed. That project reviewed a traditional extraction (with hammers and taking the oil with spoons) carried out by small communities in a protected area within a National Park in Bolivia. On that basis, we decided to take some of this information for our assumptions and propose a business considering possibilities of producing this oil in a big scale.

## 1.1. Overall Objective

To carry out a business plan for the production of Motacu oil coming from sustainable harvest in the Beni Department in Bolivia in a profitable way but also considering the contribution of this project to the maintenance of the tropical forest of this particular region in the Amazon.

## 2. Market Analysis

The demand our product was identified in the national and international market. Some results had shown that this oil is not offered in neighbouring countries. It is also important to mention that in Brasil the Motacu palm can also be found but in small quantities (Amaya 2006). In Brasil instead, a similar product is offered, which is called cusi o babasú oil that is treated further in the competitors sector.

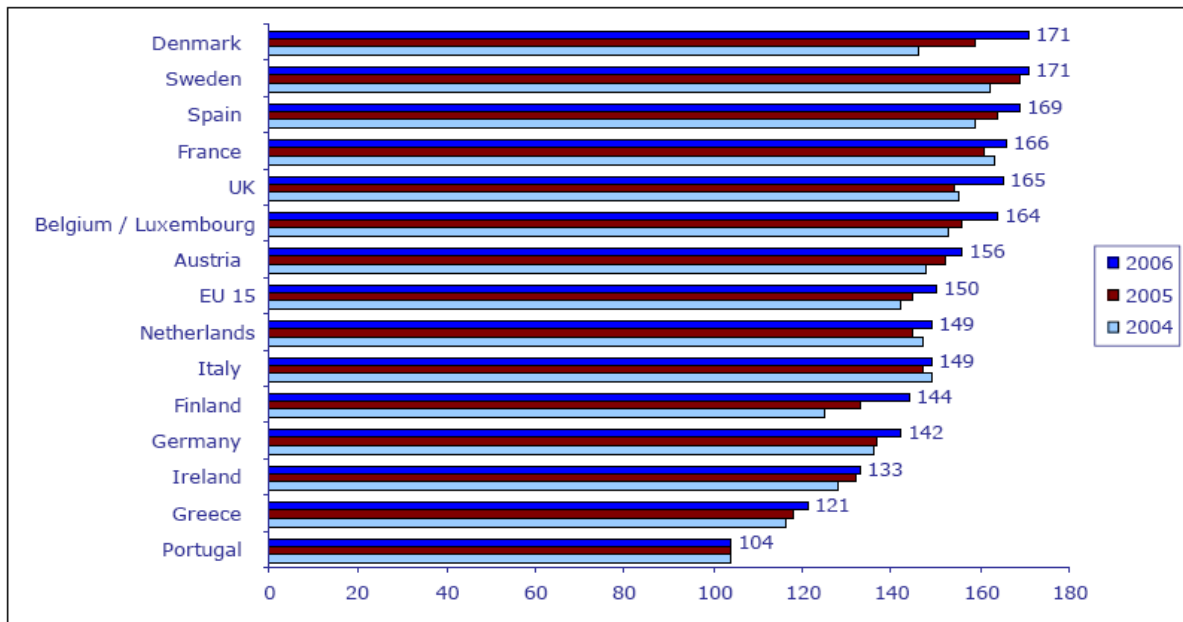
### 2.1. Industrial Demand - Target Group

The national market has at the moment a reduced demand for Motacu oil of 500 liters per year (Amaya 2006). Nevertheless, the target market identified by our Market Study is the European Union because it is worldwide the biggest producer of cosmetic products.

We considered the EU market as a target group because the results of the market study show that EU demand is increasing progressively and will continue to do so and there the biggest opportunities for the producers of natural ingredients in the sector of cosmetics can be found. This tendency of increasing demand is due to the growing worry that consumers have about their health, well being feeling and looking good. Other tendencies include the interest in the “natural” and “spa-at-home” and detox products, due to the fact that people search different ways of feeling well about themselves and escape the daily stress.

In the following figure, one can observe that the per capita consumption of cosmetics changed drastically. In 2004 France was the leading country, followed by Sweden and Spain. However in 2006, Denmark and Sweden reached the highest per capita consumption of cosmetics in the EU with € 171 per person, followed by Spain, France and the United Kingdom. The sustained growth in Spain is due to rising incomes and a population very keen on the use of cosmetics, especially fragrances. High growth rates in Denmark and Sweden are a more recent phenomenon (CBI 2007).

## 2 Market Analysis



**Figure 1.** EU per capita consumption of cosmetics, 2004-2006 in € (Colipa 2007. In: CBI 2007)

The estimation of the global market for active ingredients used in personal care products is estimated € 450 million in 2003 and € 650 million in 2009. The most important markets for this sector (natural cosmetic ingredients) are Germany, France, the United Kingdom, Italy and Spain (CBI 2007). In table 1 it is observed that within retail sales of cosmetics, skin care is the leading product group, and then follows hair care, toiletries, fragrances and perfumes and decorative cosmetics (Colipa 2007. In: CBI 2007).

**Table 1.** European market share cosmetics product groups, 2006, € billion, share of total sales (%), at retail sales prices (Colipa 2007. In: CBI 2007)

Country	Fragrances perfumes		Decorative cosmetics		Skin care		Hair care		Toiletries	
	€ billion	%	€ billion	%	€ billion	%	€ billion	%	€ billion	%
Germany	1.5	13.1%	1.1	9.7%	2.9	24.8%	2.8	23.8%	3.3	28.6%
France	1.8	17.0%	1.1	10.7%	3.3	31.2%	2.4	23.4%	1.8	17.7%
UK	1.3	12.8%	1.8	18.4%	2.1	21.0%	2.2	22.1%	2.6	25.7%
Italy	1.0	12.3%	1.1	12.8%	2.4	27.4%	1.9	22.2%	2.2	25.2%
Spain	1.7	22.8%	0.6	8.3%	1.9	26.4%	1.7	22.6%	1.5	19.9%
Netherlands	0.4	15.8%	0.3	11.8%	0.5	22.7%	0.6	23.1%	0.6	26.7%
Belg./Lux.	0.3	18.6%	0.2	11.6%	0.4	24.1%	0.5	28.7%	0.3	17.0%
Sweden	0.2	10.3%	0.3	19.9%	0.3	21.2%	0.4	24.5%	0.4	24.1%
Greece	0.1	10.9%	0.1	11.2%	0.4	28.9%	0.4	32.7%	0.2	16.4%
Austria	0.1	11.1%	0.2	16.0%	0.3	22.3%	0.3	24.8%	0.3	25.8%
Portugal	0.2	16.8%	0.1	5.8%	0.3	25.3%	0.3	30.2%	0.2	21.9%
Denmark	0.2	16.9%	0.1	12.2%	0.2	20.7%	0.3	30.5%	0.2	19.8%
Finland	0.03	4.6%	0.1	15.4%	0.2	26.0%	0.3	34.2%	0.1	19.8%
Ireland	0.08	15.2%	0.08	15.5%	0.1	19.9%	0.1	19.9%	0.2	29.5%
<b>EU 15</b>	<b>8.9</b>	<b>15.0%</b>	<b>7.4</b>	<b>12.3%</b>	<b>15.4</b>	<b>25.6%</b>	<b>14.3</b>	<b>23.7%</b>	<b>14.1</b>	<b>23.4%</b>



The "natural" market, although relatively small, is growing much faster than the overall cosmetics industry (20% annually in the last few years) due to the increase of consumer interest in natural products and safety across the board, increasing sales of natural cosmetics and the use of natural ingredients in conventional products. As a result, during the last few years, there is rise in the number of small and large companies in the market of natural products by the large mainstream manufacturers, retailers and organic food companies, as well as investments by financial firms (CBI 2007).

Germany have the largest markets in cosmetics and naturals account for 4% of cosmetics sales which may rise to 10% by 2012 (Cosmeticsdesign 2007. In: CBI 2007). Austria and Switzerland also have a high market share. The market is developing fast in the United Kingdom especially with most natural product launches. But there is shortage of organic product in the EU because of its high demand (Colipa 2007).

Our production of natural Motacu oil could be very supportive and fulfil the current demand of natural products.

### **2.1.1. Trends in natural cosmetics**

There is increase in the interest by customers in natural ingredients and products, product safety and protection against chemical ingredients. Its markets are enhanced by consumer demand and value added naturals that help boost sales for cosmetic companies and form a major product innovation drive. The major sectors for it for the coming years are skin care (with Germany as the major market), bath-shower products, body care, hair care and baby care (Cosmetics Design 2007. In: CBI 2007). Beside that, it fulfils the consumers' wide range of choice like innovative, traditional and modern. Figure 2 "shows the relationship between the volumes demanded on the EU market (which are highest for natural ingredients and still very limited for ethical certified materials), the degree to which the trend is established on the EU market for cosmetic ingredients, and the documentation need (which is lowest for natural ingredients, and highest for ethical ingredients)" (CBI 2007).



Figure 2. Adapted from Jones 2007. In CBI 2007

### 2.2. Price structure

For the price structure, it is important to consider the whole value chain that covers the full range of activities required to bring a natural ingredient for cosmetics from its conception to its end use, such as research and development, raw material supply and all activities of production, marketing and sales to international buyers. Activities could be limited within a single company or divided over different companies, and can cover a single geographical location or be spread over wider areas (CBI 2007).

#### 2.2.1. Trade channels for new ingredients like motacu oil

We, as a supplier of raw material and processed ingredients from Bolivia, have to promote new natural ingredients to EU processors, finished product manufacturers or even retailers to assess their interest. We have to supply ingredients or formulae which they have identified through literature as being of possible interest. On the top, many natural personal-care companies are interested in natural ingredients on the part of the founder, such as Ales Groupe, Aveda, The Body Shop, Yves Rocher and Rainforest Nutrition. For the continued interest and involvement in new product development, field trips to collect samples for further study in the company's laboratory may be carried out (CBI 2007).

#### 2.2.2. Opportunities and Threats

For exporters in developing countries an important opportunity is given in supplying exotic and Amazon ingredients: products with an interesting story of traditional use are especially appealing to considerable groups of EU consumers and are sought after by European buyers. Other opportunities lie in supplying organically certified ingredients and functional ingredients (CBI 2007). On this sense, our production has a huge potential due

to the fact that is an organic exotic production coming from Amazon and it also has an ancient traditional use in local communities.

One aspect of great importance that was identified was the EU requirements regarding quality and traceability. While the quality demands of EU buyers and EU legislation are becoming stricter, traceability acquires increasing importance. On this sense, suppliers in developing countries who have a system of tracing and tracking, well supported by documentation, have a competitive advantage in trading with EU importers. Suppliers who have implemented quality assurance systems like GACP, GMP, HACCP and ISO become even more attractive to potential EU buyers (CBI 2007).

Besides that a central opportunity lies in supplying EU market with organically certified ingredients. Opportunities exist especially for ingredients with properties that allow products to be made fully organic (CBI 2007).

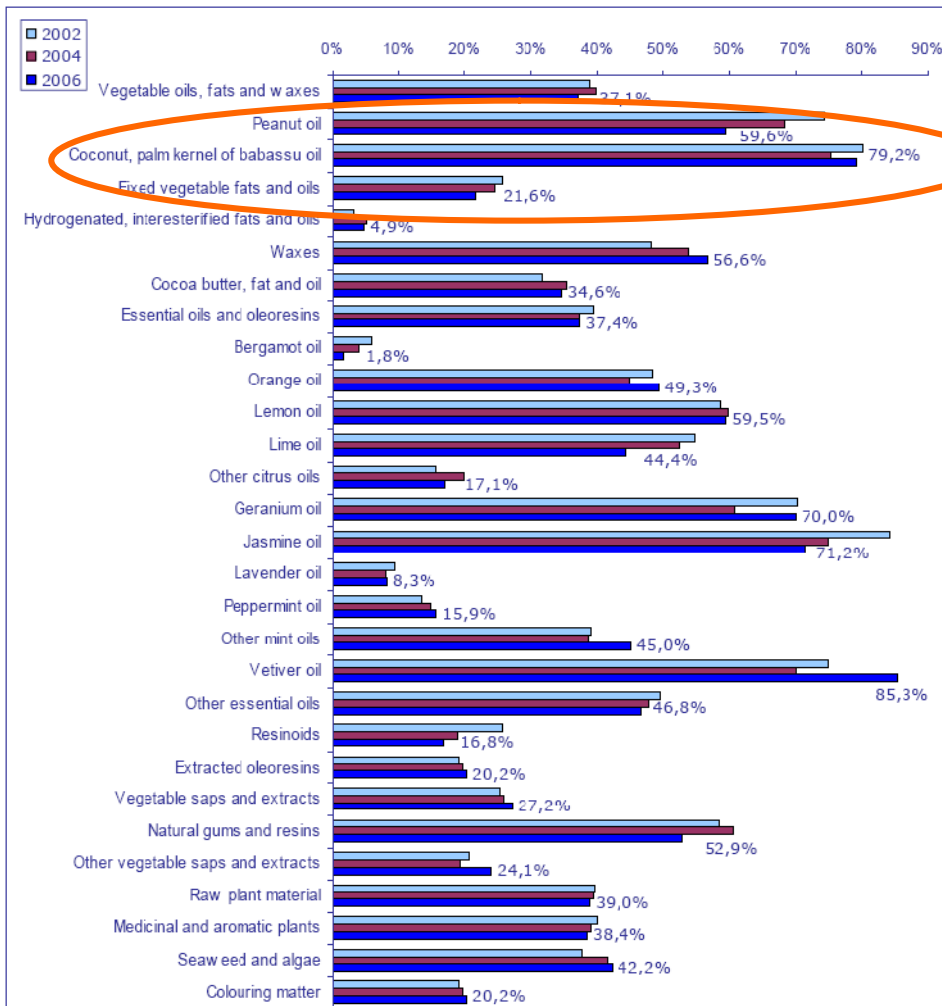
Considering these aspects, our company will definitely have a competitive advantage due to the fact that we have a complete system of registration and requirement of Certification of Origin for the purchase of our raw material that comes from areas strictly promoting sustainable development (organic harvesting) and that follow the GACP (Good Agricultural and Collection Practice) guidelines. Besides that, we will implement a quality assurance system - ISO 9000 in our production plant.

Another opportunity is that, with the constant increase of natural ingredient use, the supply of certain materials and especially organic products is falling short. This is specially pressing in relation to certain wild-collected raw materials (CBI 2007). The shortage of organic supply is of course an interesting opportunity for companies like ours in developing countries which are able to supply these products to EU companies.

### 2.3. Competition

The share of natural ingredients that was supplied by developing countries shows a more differentiated development within the different product groups (see figure 3). Concerning the selected natural ingredients, developing countries are particularly strong in the production and processing of vegetable oils such as coconut oil and peanut oil as well as waxes. The most important developing country suppliers of the selected ingredients are China, India, Brazil, Argentina, Indonesia and Morocco. The supply of many ingredients from developing countries is dominated by a single or several countries. Haiti is, for example, dominating the developing country supply of vetiver oil, Argentina the supply of lemon oil and Egypt the supply of jasmine oil (CBI 2007). Regarding this point, we intend to dominate the supply of our differentiated Motacu oil, due to our regional advantage of this species be limited to the territory of Bolivia, where we will operate.

## 2 Market Analysis



**Figure 3.** Share of EU imports of selected natural ingredients for cosmetics originating in developing countries, 2000-2004, % of imported value (Eurostat 2007. In CBI 2007)

The closest product identified as competitor would be the above mentioned babassu oil from Brasil. On one hand, it is considered important for the price fixation always considering this possible competitive product, that was obtained through direct contact with the producers of such oil in Brasil which ranged between 2.75 \$/L and 3.15 \$/L .

On the other hand, we regard of great importance the great opportunity that our target Market offers in terms of an increasing demand for such products of beauty care. In this sense, our product is clearly differentiated from competitors, and we have the regional advantage mentioned above. Besides that, we would guarantee the buyers a sustainable production of Motacu oil using certified organic raw material and by means of quality certification ISO 9000 for our company.

## 3. Product Definition

**Common and commercial name:**

Natural Motacú Oil / Aceite Natural de Motacu

**Scientific name:**

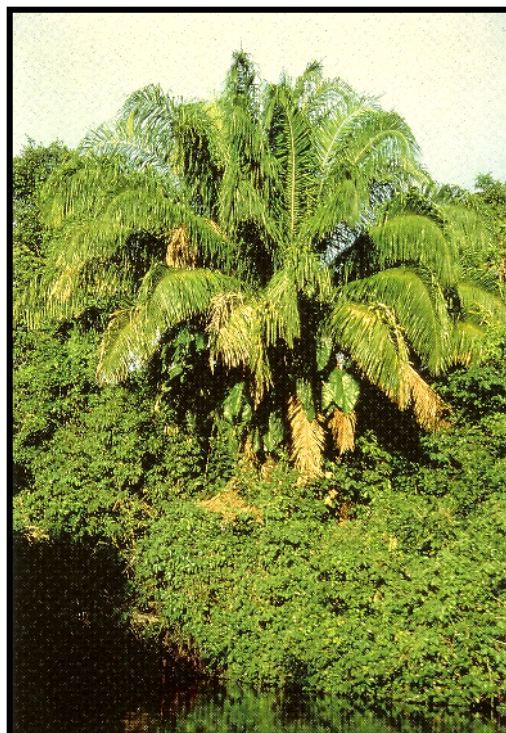
*Attalea phalerata*, Mart. Ex Spreng

**Synonym:**

*Sheelea princeps* (C. Martius) G. Kast



Typical Motacu kernels



Typical Motacu palm tree (Moraes 1996)

The Motacu palm offers multiple resources for different purposes. In many regions of La Paz, Cochabamba, Santa Cruz, Cobija and Beni departments in Bolivia the local people use this species for construction, food, cosmetics, and medicine. The different uses attributed to this palm are summarized in the Annex (Figure 1).

The Motacu palm is a neotropical solitary palm and reaches up to 10 m tall. The stem has a diameter up to 100 cm, is densely covered with persistent leaf sheaths, and terminates in a crown of 15-20 arching leaves. Inflorescences are interfoliar, unisexual, both staminate and pistillate. Inflorescences are normally present on the same plant, but apparently not at the same time. Infructescences are recurved, pendulous along the trunk, with 350-500 fruits, yellow-orange coloured at maturity. The endocarp is elliptic and 4-6.5 cm long; each fruit has 2-5 seeds (Moraes, Borchsenius y Blicher-Mathiesen 1996).

The fruiting peak period is from April till November. The palms are said to flower for the first time when 7-10 years old, where the stem is about a metre tall (Moraes, Borchsenius y Blicher-Mathiesen 1996). Each fruit reaches maturity in less than a month and the bright orangeish mesocarp has a sweet taste. Mature fruits have an average fresh weight of 57.1 g (small fruits) and 97.1 g (large fruits). These values give an estimate of between 20 and 45 kg fruits per infructescence. Both immature and mature fruits are harvested for oil extraction (Moraes, Borxhsenius y Blicher – Mathiesen 1996).

### 3 Product Definition

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The Motacu oil comes from the kernels of the wild Motacu palm and is rich in lauric and myristic acids, which melting points are close to human body temperature, resulting in when applied Motacu oil draws the heat from the skin to initiate melting. For that reason, the transfer of heat produces a cooling pleasant sensation on the skin. This oil forms a protective soothing layer on the skin that moisturizes it without leaving an oily appearance. Due to its characteristics this product can be used in a wide variety of cosmetics from shampoo, soap, cream, lotions, etc.

#### 3.1. Definition of production techniques - oil extraction

The dry season is the most appropriate for the extraction of Motacú oil (between June and September), but still mature fruits can be found until November. The process map can be visualized in detail in this section and it is described as follows. Then considering the seasonality of the product, we will buy the seeds in enough quantities for us to be able to produce the whole year taking into account that this product can be easily conserved in storage.

The actual collection capacity in Bolivia is enormous; nevertheless we aim at a stable production in short term of 120 000 L of Motacu oil per year, which would be obtained of the equivalent 1 200 Tons of Motacu seeds.

Initially the seeds will be collected in our Reception Centre, where we will proceed to buy the raw material from the local producers that bring the products from three different departments in Bolivia where Motacu is highly abundant. These suppliers have certified organic production and the possibility of supplying our demanded quantity of raw material. After the material has been received, its quality will be verified by our plant personnel (according to our quality standards) and gather and register in different stocks, which finally should be checked by our Production Manager, who will control that the selected stocks comply with our quality requirements. The material that does not meet our needs will be handed to the Responsible of the Carbon Area, who will register the amounts of these residues and will be after in charge of selling them to the fertilizer company BioCoco.

The regular process continues with the weighing of the seeds that will be then toasted for a specific period of time at low heat until obtaining our desired homogeneous colour. Later, the seeds are grinded and the endocarp cracked open with the grinder.


Then the crushed seeds are put in boiled water (relation is 4:1 water – crushed seed) for the liberation of the oil and the time assigned will be of 30 minutes. After that time, the oil lying on the surface and found in a milky form is separated from the water. Afterward the rest water will be evaporated to go on the next step of the process, which consists of the filtering of impurities.

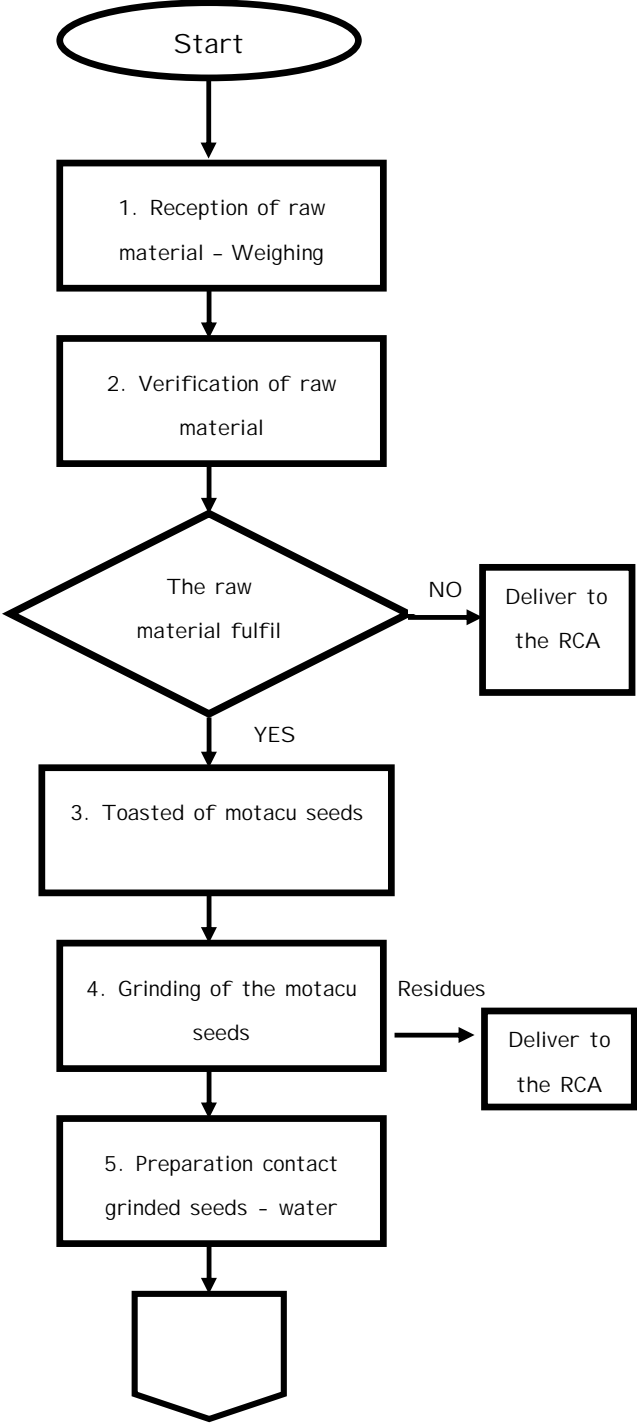
### **3 Product Definition**

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Once the impurities are separated, we will proceed with the respective packing of the product in plastic barrels which would finally be deposited in a cool appropriate environment in our Storage Area. See figure 4 for the processing detail.


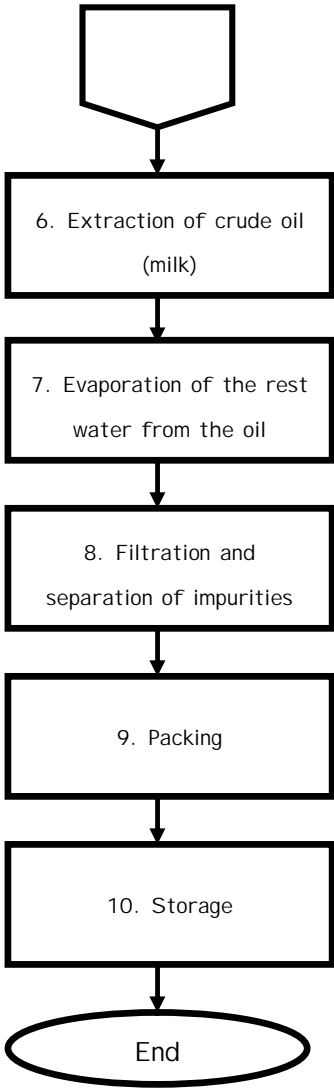
### 3 Product Definition

	<b>PROCESS MAP</b>	Code: PR-01 Revision: 0 Date: 15.05.08
	<b>EXTRACTION OF MOTACU OIL</b>	

Responsible	Process of obtaining of motacu oil	Observations
	 <pre> graph TD     Start([Start]) --&gt; Step1[1. Reception of raw material - Weighing]     Step1 --&gt; Step2[2. Verification of raw material]     Step2 --&gt; Decision{The raw material fulfil}     Decision -- NO --&gt; RCA1[Deliver to the RCA]     Decision -- YES --&gt; Step3[3. Toasted of motacu seeds]     Step3 --&gt; Step4[4. Grinding of the motacu seeds]     Step4 -- Residues --&gt; RCA2[Deliver to the RCA]     Step4 --&gt; Step5[5. Preparation contact grinded seeds - water]     Step5 --&gt; End{{}}         </pre>	<p>The whole process will be supervised for the production manager</p> <p>RCA: Responsible Carbon Area</p>
Plant personnel		
Plant personnel		
Production manager		
Plant personnel		
Plant personnel		
Process Supervisor		



### 3 Product Definition

	<b>PROCESS MAP</b>	Code: PR-01 Revision: 0 Date: 15.05.08	
	<b>EXTRACTION OF MOTACU OIL</b>		
Responsible	Process of obtaining of motacu oil	Observations	
Process Supervisor	 <pre> graph TD     Start([Start]) --&gt; Step6[6. Extraction of crude oil (milk)]     Step6 --&gt; Step7[7. Evaporation of the rest water from the oil]     Step7 --&gt; Step8[8. Filtration and separation of impurities]     Step8 --&gt; Step9[9. Packing]     Step9 --&gt; Step10[10. Storage]     Step10 --&gt; End([End])         </pre>		
Plant personnel			
Plant personnel			
Plant personnel			
Store Responsible			

**Figure 4.** Process of obtaining Motacu oil

# 4. Proposal

## 4.1. Site selection

The site selection for Motacu Touch S.R.L. is done considering the factor like: easy access to expressway transportation systems; a good labour market; an attractive site with suitable restrictions, including setback requirements, limitations on outside storage, types of firms allowed, sign and billboard control, trees and shrubs to be left, etc.; a pleasant community with good services, a low crime rate, and an understanding of the needs of manufacturing employees; availability of rail service; good truck transportation; good terrain characteristics; low cost of site development; availability of public transportation; avoidance of excessive urban development; far or without disturbing heavy traffic through residential or business areas (Lee et al. 1999).

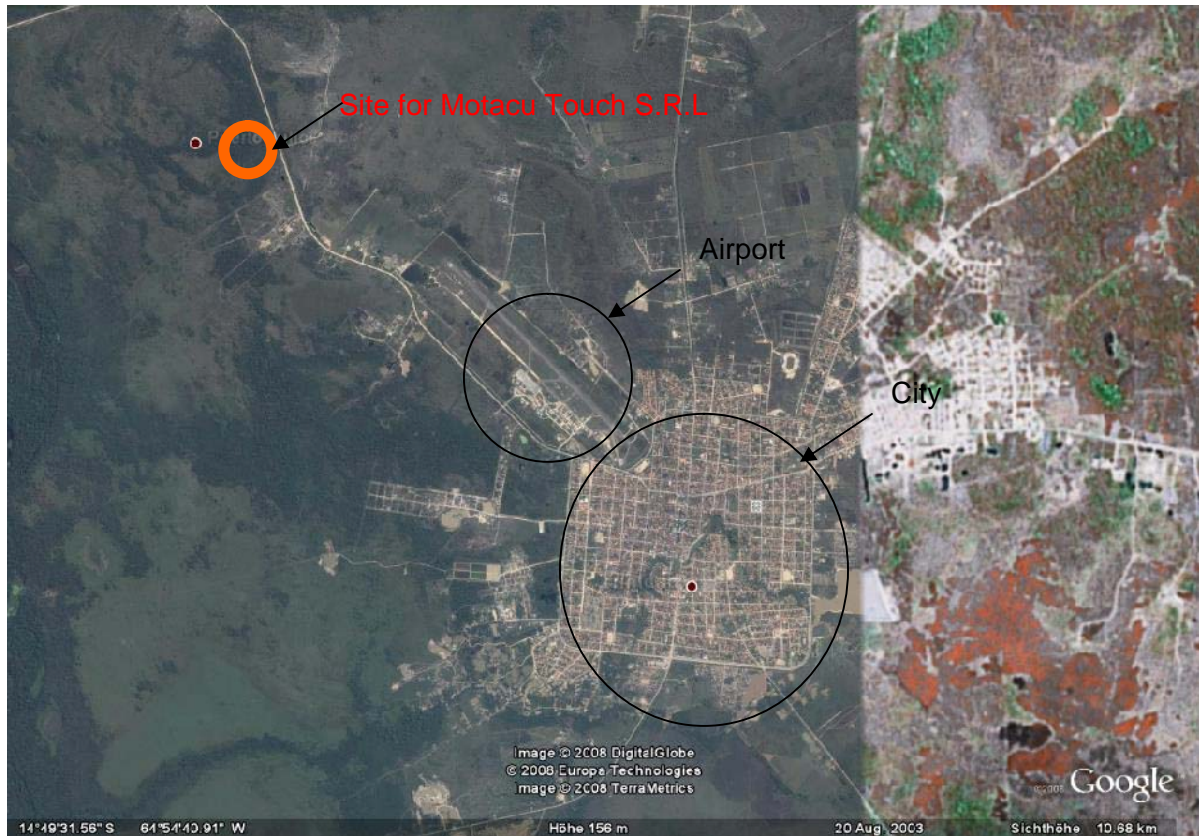
Considering the above, we selected Trinidad, Beni department in Bolivia (figure 5) which is one of the richest places for Motacu palm also. See Annex- figure 4 for the view of palm trees forest in Beni. As we are collecting seeds from all over Bolivia, we approximately calculated the distance of other cities where Motacu seeds are available from Trinidad which is shown in Annex- Table 1.



**Figure 5.** Map of Bolivia with site location

### 4.2. Site Description

Trinidad is a small old city but newly developed. Airport links to the city area and new roads are being constructed for the further connection within Trinidad. Our site is located along the road, far from the city core without disturbing the city dwellers (See figure 6). Figure 7 show the view of the road and figure 8 shows the land for the construction.



**Figure 6.** View of Trinidad showing the location of Site (Google earth 2007)



**Figure 7.** View of road (Worldisround 2008)



**Figure 8.** Land for the construction of Motacu Touch S.R.L. (Worldisround 2008)

### 4.3. Construction proposal

As the site is selected near the road for easy transportation and communication, special consideration is done in noise and vibration countermeasures, protection from fire, toxic and explosive substances, air conditioning, escape routes and intended or possible extension ( Baiche et al. 2000). Figure 9 shows the extension possibility in the site.

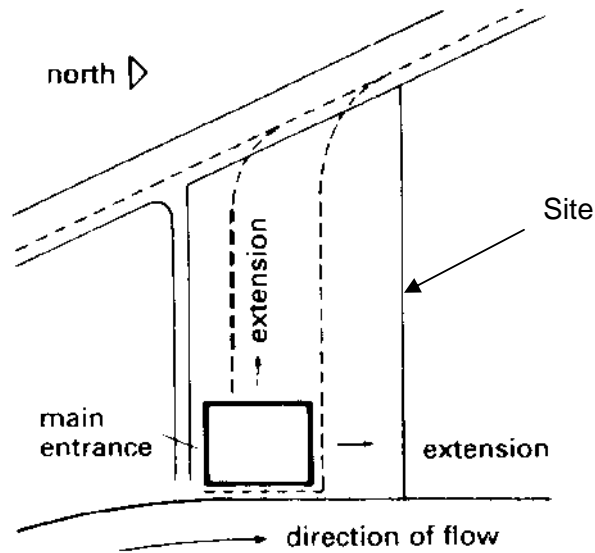


Figure 9. Site with extension possibility (Baiche et al. 2000)

Figure 10 shows the building plan which is done in such a way that production area is connected to stores and supply area on one side, and administration and auxiliary area on the other side. The proposed area for the construction is shown in table 2.

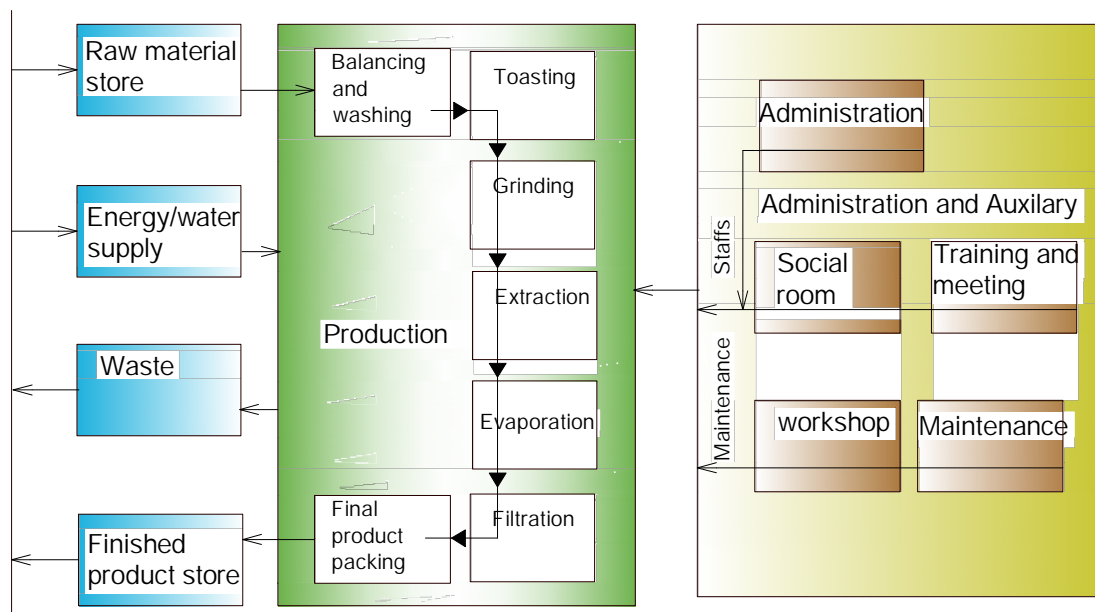


Figure 10. General floor planning and work flow

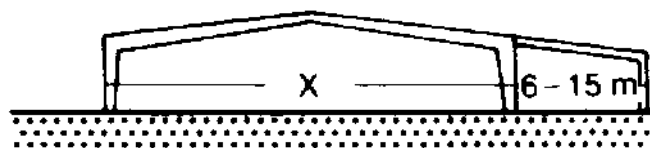
## 4 Proposal

**Table 2.** Area proposed for the construction of the building

S.No	Name of the space	Area (m <sup>2</sup> )
	<b>Store</b>	
1	Raw material store	80
2	Energy and water Supply	20
3	Waste	40
4	Finished product store	60
5	Circulation and others	200
	<b><u>Total store area</u></b>	<b><u>400</u></b>
	<b>Production</b>	
1	Working area	350
2	Circulation	150
	<b><u>Total production area</u></b>	<b><u>500</u></b>
	<b>Administration and Auxiliary</b>	
1	Administration	60
2	Social room and toilets	60
3	Training and meeting	50
4	Workshop and maintenance	40
5	Circulation	90
	<b><u>Total Administration and auxiliary area</u></b>	<b><u>300</u></b>
	<b><u>Total building area</u></b>	<b><u>1200</u></b>
	<b><u>Total land area</u></b>	<b><u>4000</u></b>

### Construction detail proposal

A single storey Production shed is selected with the advantage of low building cost, daylight, high floor possibility, can be built on difficult site and low accident risk. Figure 11 shows the selected shed design. The direct connection between store and production is shown in figure 12. The standard size is selected for the layout of office space in the administration (see Figure 13) (Baiche et al. 2000).



**Figure 11.** Shed design with expansion module (Baiche et al. 2000)

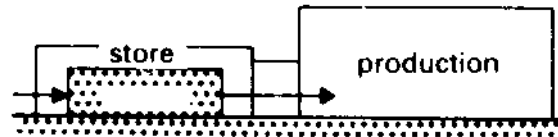


Figure 12. Connection system between store and production (Baiche et al. 2000)

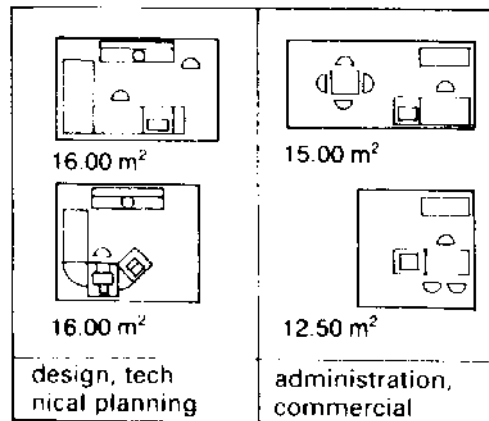


Figure 13. Typical workstation (Baiche et al. 2000)

### 4.4. Organisation of the Company

#### 4.4.1. Legal form of organisation

The name of our Company will be “ Motacu Touch S.R.L”.

The company will have the legal form of an association with limited liability for S.R.L. ('Sociedad de Responsabilidad Limitada' for our local case in Bolivia which is similar with GmbH 'Gesellschaft mit beschränkter Haftung' in Germany). This legal form has following advantages:

- Each partner has limited liability
- There is a possibility to employ a manager for the business administration
- The company owners has right to decide the number of shares they own
- The required amount of initial capital is low compared to a stock corporation.

To begin we will form a Company S.R.L. which is with limited liability by two members:

1. Shritu Shrestha
2. Vanesa Rodríguez

Each person has to invest 50% of equity capital which amounts to 54 932\$ in our case.

Then in Bolivia it will be necessary to obtain:

- NIT (Número de Identificación Tributaria) or a Tax Identification Number for the company.
- Registration at the Commerce Chamber of Bolivia, who allow practicing these activities in this country.

#### 4.4.2. Articles of Association

See Annex.

### 5. Investment Analysis

#### 5.1. Cost calculation

The cost calculation is done with the assumption based on current data taken from Bolivia. According to the calculated capacity of our company and the demand of our oil in market, we could produce 120 000 L of Motacu oil per year. To establish this, our total investment cost would be 274 660 \$. For this, shareholders will invest 109 864 \$ (40% of total investment) and our bank loan would be 164 796 \$ (60% of total investment). We will be paying our bank loan with the interest rate of 12% (according to the actual interest rate in Bolivia) in 10 years running time. Within these 10 years, our total interest would be 108 765.36 \$. Moreover, our total consumption and labour cost would be 0.5584\$/L and 52460\$ respectively. With all these, our self cost of product per litre in the first year would be 1.80 \$. But in the 10 years time it would be 1.16\$/L. These costs are shown to be low in comparison to the competitors (Brasil), which sell their product at around 2.75 – 3.15\$/L. The detail cost calculation is shown below.

##### 5.1.1. Assumption

General Assumptions	
Parameter	Specific Assumption
<b>Production</b>	120 000 L Motacu Oil p.a. (1 200 Ton seeds) 10 000 L per month (100 Ton seeds)
<b>Raw material</b>	10 kg Seed / L Oil
<b>Capacity</b>	455 L per day (4.5 Ton seeds)
<b>Work time/production time</b>	5 days/week, one shift of 8 hours (22 days per month)
<b>Selling prices Ex factory</b>	2.75 \$/L - 3.15 \$/L for babasu oil (only similar product). We intend to sell our product at 1.81 \$/L
<b>Place of production</b>	Trinidad - Beni Department - Bolivia
<b>Product</b>	Pure Motacu Oil



## 5.1.2. Calculation of the investment and depreciation costs

<b>INVESTMENT AND DEPRECIATION COSTS</b>			
<b>Description</b>	<b>Investment in \$</b>	<b>Depreciation in years</b>	<b>Depreciation in \$ p.a.</b>
Property 4 000 m <sup>2</sup> [10\$/m <sup>2</sup> ]	40 000	0	
Additional expenses (Transaction Tax - IT 1% + others)	4 500	0	
<b>SUM PURCHASE OF LAND</b>	<b>44 500</b>		<b>0</b>
<b>Exterior installations</b>			
Grading work (12 machine hours at 35\$/h)	420	20	21
Fence-Wall (ca. 10\$/m)	2 800	20	140
Electric installation	3 500	20	175
Gas instalation	4 000	20	200
<b>TOTAL OF EXTERIOR INSTALLATIONS</b>	<b>10 720</b>		<b>536</b>
<b>Buildings</b>			
Store	20 000	20	875
Production	25 000	20	1 550
Administration and Auxilary building	15 000	20	575
<b>SUM of BUILDING (50\$/m<sup>2</sup>)</b>	<b>60 000</b>		<b>3 000</b>
<b>Machinery</b>			
2 Receiving Balances (500 kg) assembly line + washing device	978	10	97.8
2 Roasting Machines (Natural Gas) 360-440 kg/h	5 000	10	500
Grinder	93 000	10	9 300
Boiler (cauldron)	13 500	10	1 350
Seperator Water - Oil	1 000	10	100
Filtration device	2 500	10	250
3 Tanks with Filling machine by volume (10m <sup>3</sup> )	2 000	10	200
<b>SUM of MACHINERY</b>	<b>12 4978</b>		<b>12 497.8</b>

## 5 Investment Analysis

<b>INVESTMENT AND DEPRECIATION COSTS</b>			
<b>Description</b>	<b>Investment in \$</b>	<b>Depreciation in years</b>	<b>Depreciation in \$ p.a.</b>
<b>Offsites/Extra Investment</b>			
Tools+Equipment	850	10	85
spare parts	1 000	10	100
Machinery assembly	462	10	46.2
Waste water purification	500	10	50
Office (furniture, pc. etc)	3 000	10	300
<b>SUM of OFFSITES</b>	<b>5 812</b>		<b>581.2</b>
<b>Engineering</b>			
Expenditure/planning	5 000	10	500
Licenses	150	10	15
ISO 9000 Certification + Implementation	2 500	10	250
<b>SUM of Engineering</b>	<b>7 650</b>		<b>765</b>

### 5.1.3. Total investment calculation

<b>TOTAL INVESTMENT AND DEPRECIATION COSTS</b>			
<b>Investment Goods</b>	<b>Investment Expenditures</b>	<b>Depreciation in %</b>	<b>Depreciation costs in \$</b>
Property	44 500	0	0
Exterior installations	10 720	5	536
Building	60 000	5	3 000
Machines	124 978	10	12 498
Off-sites	5 812	10	581
Engineering	7 650	10	765
Assembly of the plant	0	0	0
Unexpected	10 000	0	0
Circulating capital	11 000	0	0
<b>TOTAL INVESTMENT</b>	<b>274 660</b>		<b>17 380</b>

<b>TOTAL INVESTMENT AND FINANCING</b>	<b>274 660 \$</b>
40% own capital funds (shareholders equity)	109 864 \$
60% outside financing (bank loan)	164 796 \$

Interest: 12%  
10 years running time

**5.1.4. Consumption Costs**

<b>CONSUMPTION COSTS</b>			
<b>Expendable material</b>	<b>Consumption (kg) per Litre</b>		<b>\$/L</b>
Raw materials	10	0.05000 \$/kg	0.5
<b>Utilities</b>			
Water consumption (incl. wastewater) 80\$/month			0.008
Energy, Gas+Electricity (250\$/month)			0.025
Maintenance costs (120 \$/month)			0.012
Administrative costs (130\$/month)			0.013
<b>TOTAL (Cost per L of oil)</b>			<b>0.558</b>

**5.1.5. Labour costs**

<b>LABOUR COST</b>			
<b>Personal in Cost Centre</b>	<b>Number</b>	<b>Personnel Direct Costs / month</b>	<b>Total Cost in \$</b>
Director	1	1 000	12 200
Workers	8	120	11 712
Process Supervisors	2	400	9 760
Production and quality manager	1	800	9 760
Office & Accountant	1	500	6 100
Security	2	120	2 928
<b>TOTAL LABOUR COSTS (one shift)</b>		<b>15</b>	<b>52 460</b>

5.1.6. Calculation of financing costs

CALCULATION OF FINANCING COSTS				
Year	Balance of Debt, \$	Interest Rate %	Interest Costs paid per year	Repayment/Paying Bank loan (\$/year)
1	164 796.0	12	19 775.5	16 479.6
2	148 316.4	12	17 798.0	16 479.6
3	131 836.8	12	15 820.4	16 479.6
4	115 357.2	12	13 842.9	16 479.6
5	98 877.6	12	11 865.3	16 479.6
6	82 398.0	12	9 887.8	16 479.6
7	65 918.4	12	7 910.2	16 479.6
8	49 438.8	12	5 932.7	16 479.6
9	32 959.2	12	3 955.1	16 479.6
10	16 479.6	12	1 977.6	16 479.6
<b>Total Interest Paid</b>			<b>108 765.36</b>	
<b>Total Repayment</b>				<b>164 796</b>

## 5 Investment Analysis

### 5.1.7. Calculation of self costs

Self Cost in years 1-10											
	1. Year / L	1. Year	2. Year	3. Year	4. Year	5. Year	6. Year	7. Year	8. Year	9. Year	10. Year
Utilization of Capacity (%)	60%	60%	80%	100%	100%	100%	100%	100%	100%	100%	100%
Quantity produced in Litres	72 000	72 000	96 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000
<b>COSTS</b>											
Depreciation Costs	0.2414	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00
Financing Costs	0.2747	19 775.52	17 797.97	15 820.42	13 842.86	11 865.31	9 887.76	7 910.208	5 932.656	3 955.104	1 977.552
Labour Costs	0.7286	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00
Raw material & Utilisation Costs	0.5580	40 176.00	53 568.00	66 960.00	66 960.00	66 960.00	66 960.00	66 960.00	66 960.00	66 960.00	66 960.00
<b>TOTAL COSTS</b>		129791.52	141205.97	152620.42	150642.86	148665.31	146687.76	144710.21	142732.66	140755.10	138 777.55
<b>SELF COSTS/L oil</b>	1.8027	1.8027	1.4709	1.2718	1.2554	1.2389	1.2224	1.2059	1.1894	1.1730	1.1565

### 5.2. Price determination and Turnover / Revenue

Above calculation shows that, the self cost of our product would be 1.80\$/L in the first year and 1.15\$/L in the tenth year. In order not to encourage other possible competitors and also regarding the prices offered of similar products in Brasil, we decided to sell our product in 1.81\$/L. With this, our turnover would be 130 320\$, 173 760\$ and 217 200\$ in the first, second and tenth year respectively.

Price definition and Revenue			
Year	Output in L	Price \$/L	Turnover/Revenue, \$
1	72 000	1.81	130 320
2	96 000	1.81	173 760
3	120 000	1.81	217 200
4	120 000	1.81	217 200
5	120 000	1.81	217 200
6	120 000	1.81	217 200
7	120 000	1.81	217 200
8	120 000	1.81	217 200
9	120 000	1.81	217 200
10	120 000	1.81	217200

## 5 Investment Analysis

### 5.3. Cash- Flow and Dividend

Our cash flow and dividend in the first year would be 17 813.35\$ and 1 333.75\$ respectively. It increases each year and reach 81 686.41\$ of cash flow and 65 206.81\$ of dividend in the tenth year (See Fig. 14). That makes our total dividend of 505 178.32 \$ in 10 years time. This shows high profitability comparing to alternative uses of the investment like for example, keeping these amount in the Bank.

Cash flow										
	1. Year	2. Year	3. Year	4. Year	5. Year	6. Year	7. Year	8. Year	9. Year	10. Year
<b>Turnover / Revenue</b>	130 320	173 760	217 200	217 200	217 200	217 200	217 200	217 200	217 200	217 200
<b>Depreciation costs</b>	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00	17 380.00
<b>Labour costs</b>	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00	52 460.00
<b>Raw materials and utilities costs</b>	40 176.00	53 568.00	66 960.00	66 960.00	66 960.00	66 960.00	66 960.00	66 960.00	66 960.00	66 960.00
<b>Financing costs</b>	19 775.52	17 797.97	15 820.42	13 842.864	11 865.312	9 887.76	7 910.208	5 932.656	3 955.104	1 977.552
<b>Loss carried forward</b>										
<b>Profit before tax</b>	528.48	32554.03	64 579.58	66 557.14	68 534.69	70 512.24	72 489.79	74 467.34	76 444.90	78 422.45
<b>Taxes (18%)</b>	95.12	5 859.72	11 624.32	11 980.28	12 336.24	12 692.20	13 048.16	13 404.12	13 760.08	14 116.040
<b>Profit after tax</b>	433.35	26 694.31	52 955.26	54 576.85	56 198.44	57 820.04	59 441.63	61 063.22	62 684.81	64 306.41
<b>Cash flow (Net Profit + deduction)</b>	17 813.35	44 074.31	70 335.26	71 956.85	73 578.44	75 200.04	76 821.63	78 443.22	80 064.81	81 686.41
<b>Repayment credit</b>	16 479.6	1 6479.6	16 479.6	16 479.6	16 479.6	1 6479.6	16 479.6	16 479.6	16 479.6	16 479.6
<b>Dividend</b>	1 333.75	27 594.71	53 855.66	55 477.25	57 098.84	58 720.44	60 342.03	61 963.62	63 585.21	65 206.81

Total Dividend (10 years time): 505 178.3248\$

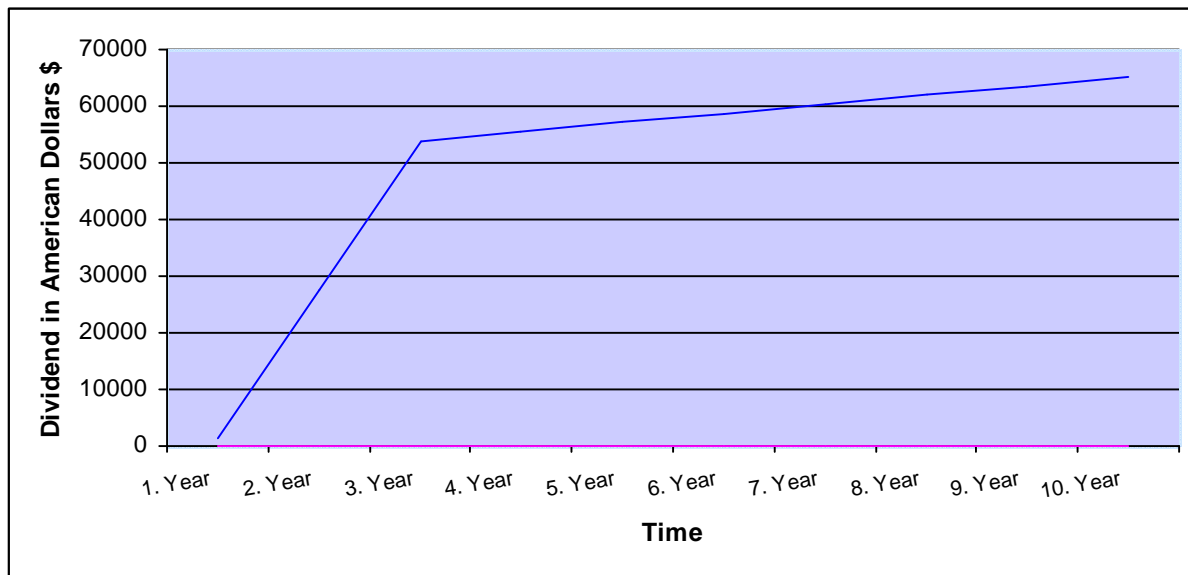


Figure 14. Evolution of dividend in ten years time

### 5.4. Equity Profitability

The interest made on equity on the first year resulted in 1.2% (60% of utilisation capacity) and increases considerably in the second year with 25.1% (80%) and getting around to 59.4% in the tenth year using full utilisation capacity.

Equity Profitability			
Equity (\$)	Dividend (\$)	Interest made on equity %	Time
109864	1 333.75	1.2	1. Year
109864	27 594.71	25.1	2. Year
109864	53 855.66	49.0	3. Year
109864	55 477.25	50.5	4. Year
109864	57 098.84	52.0	5. Year
109864	58 720.44	53.4	6. Year
109864	60 342.03	54.9	7. Year
109864	61 963.62	56.4	8. Year
109864	63 585.21	57.9	9. Year
109864	65 206.81	59.4	10. Year



### 6. Conclusion

With the calculation based on current market situation, we think it is profitable to start a new business of producing 'Motacu oil' in Bolivia. Considering the fact that the natural product is of high demand in the EU market, our target is to export our oil there, which will be used in producing fine quality beauty products. To be able to reach this potential market we plan to sell our product Ex Factory, which means we will not take the product until those markets. But if required, we will have to our clients' disposition the possibility of using the services from the Centre for the Commercialization of Organic Products, which have a long expertise in this area.

We will have profit even if we sell our product in 1.81\$/L which is less compared to our competitor in Brazil (2.75 \$/L - 3.15 \$/L for similar product named babasu oil). Moreover, our dividend is also positive at the utilization capacity of 60%. Our objective is to use the potential of Bolivia in producing motacu oil in the profitable way that would further help in the sustainable development of the people living there without harming the nature.

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## Annex

### Article of Association

#### § 1 Name, Location

- (1) On the 15<sup>th</sup> of May of 2008 in the city of Trinidad, Beni Department in Bolivia, the company with the name ' Motacu Touch S.R.L.' of the form Sociedad de Responsabilidad Limitada according to the Código de Comercio (Decreto Ley No. 14379) Commercial Law is created.
- (2) The company is located in Trinidad, Beni Department, Bolivia.
- (3) The legal address of the company for terms of invoicing and others is the C. Jose Montero 956 Alto Motacuzal, Beni Department, Bolivia.

#### § 2 Purpose

- (1) The purpose of the company is to produce pure organic Motacu oil from Motacu kernels found in Bolivia directed to the cosmetic industry. Beside this, it will help in the sustainable development of the people living there without damaging the nature.
- (2) The company can take part in other companies and establish local branches.

#### § 3 Shared capital, Invested capital

- (1) The total capital of the company amounts to US\$ 109 864.
- (2) This capital is divided as follows:
  - Miss Shritu Shrestha, Architect of 27 years of age born in Kathmandu Nepal with the Passport No. 2555244, with an investment of US\$ 54 932 in cash.
  - Miss Vanesa Rodríguez, Engineer of 27 years of age born in La Paz Bolivia with Passport No. 3387654, with an investment of US\$ 54 932 in cash.
- (3) The above mentioned persons are the only partners of the company 'Motacu Touch S.R.L.'

#### **§ 4 Activity Obligation**

Each partner is obligated to be active due to an article of employment for the society as far as he or she is not exempted from the activity obligation by partner resolution.

#### **§ 5 Regulation over Business Shares**

The disposal of a business share or a part of a business share, in particular a transfer or a hypothecation, is permissible only with written agreement of all partners.

#### **§ 6 Management**

- (1) The company has one manager.
- (2) The managing director is obligated to obey the instructions of the partners, to especially consider the agenda set up by the partners and do designated business only with their agreement.

#### **§ 7 Representation**

- (1) The society is represented legally individually by a managing director, if he/she is an exclusive managing director or if the partners authorised him/her for the single representation. In all other respects the society is represented by a managing director together with an attorney.

#### **§ 8 Financial Year, End-of-Year procedure**

- (1) The financial year is the calendar year.
- (2) The Company starts on May 1<sup>st</sup> 2009.
- (3) The first financial year ends on December 31<sup>st</sup>, 2009.
- (4) The end-of-the year is to be set up by the managing director in the first three months of the financial year for the past financial year.

#### **§ 9 Distribution of Profits**

The partners have the claim of the yearly surplus plus a profit brought forward and less a loss brought forward from previous account. By resolution over the use of the result the

partners can refrain from the profit claim, in order to invest in the company. The distribution takes place in accordance with relationship of the business shares.

**§ 10 Duration of the company**

The company will remain open for undetermined time.

**§ 11 Cancellation Clause**

Each partner can quit the society relationship under adherence to one period from six months to the end of the calendar year.

**§ 12 Proclamations**

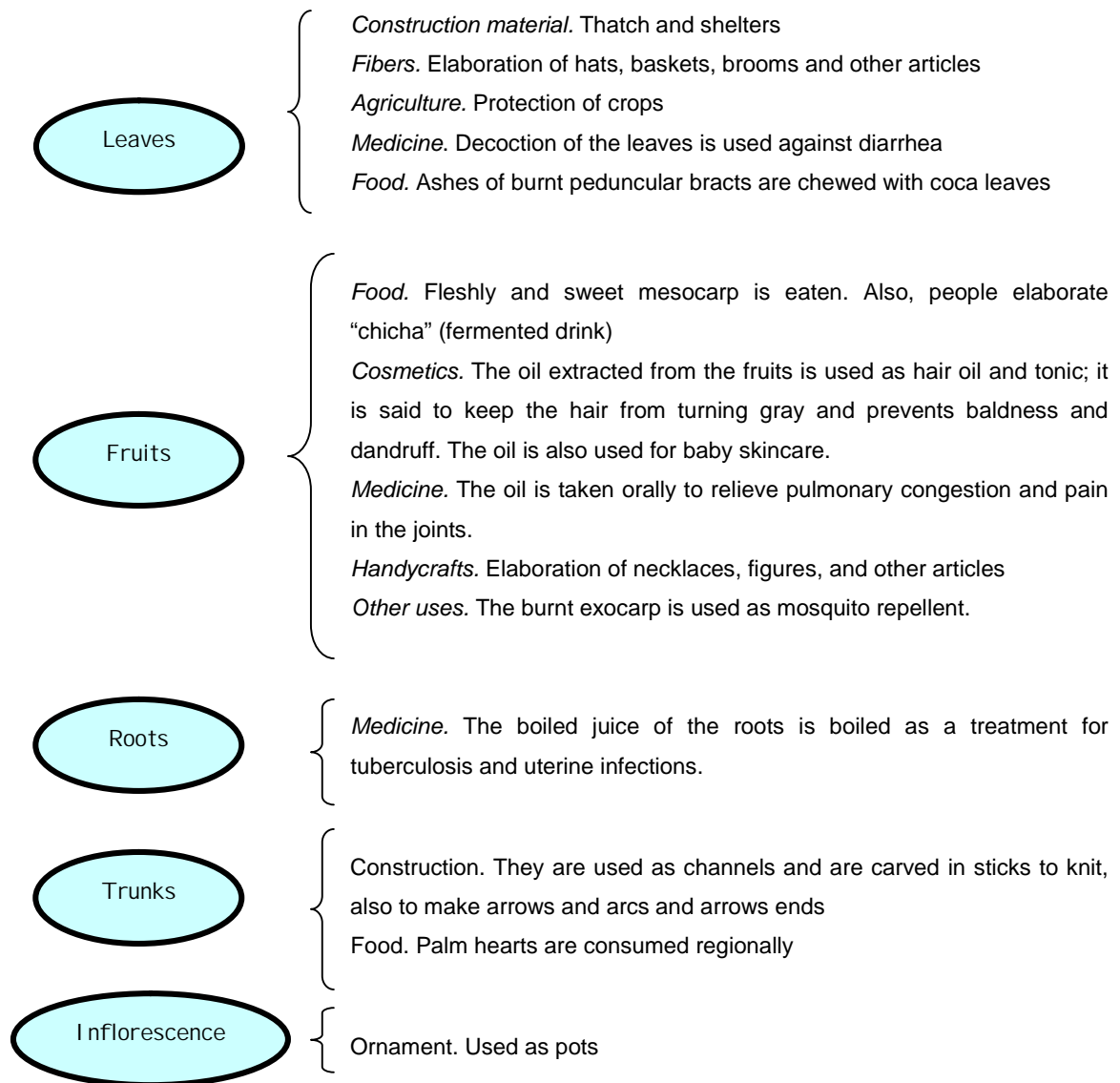
The proclamations of the society take place only in the federal legal gazette for the Republic of Bolivia in the presence of the distinguished Official Notary.

**§ 13 Establishment Expenditure**

The society bears the cost of the entry and proclamation (establishment expenditure) connected with the establishment up to an amount of altogether US\$ 5000.

**§14 Safeguard Clause**

If one or more regulations of the present contract should be or become invalid, then this is not to impair the remaining regulations. The partners commit themselves to agree, in this case, to what the partners would have wanted, if they had foreseen the invalidity of the regulations. If such a will of the partners cannot be recognized, then an appropriate regulation is to be agreed upon, which comes as close as possible to the economic sense of the questionable regulations.



**Figure 1.** Local use of Motacu



**Figure 2.** Motacu palm trees in Trinidad - Beni (Photos of Bolivia 2008)

<b>From Trinidad to</b>	<b>Approximate travel/ road distance (km)</b>
La Paz	453.33 to 492.75
Cochabamba	360.41 to 391.75
Santa Cruz	434.9 to 472.71
Cobija	681.34 to 740.59

**Table 1.** Approximate distance between Trinidad and other cities (Globefeed 2008)