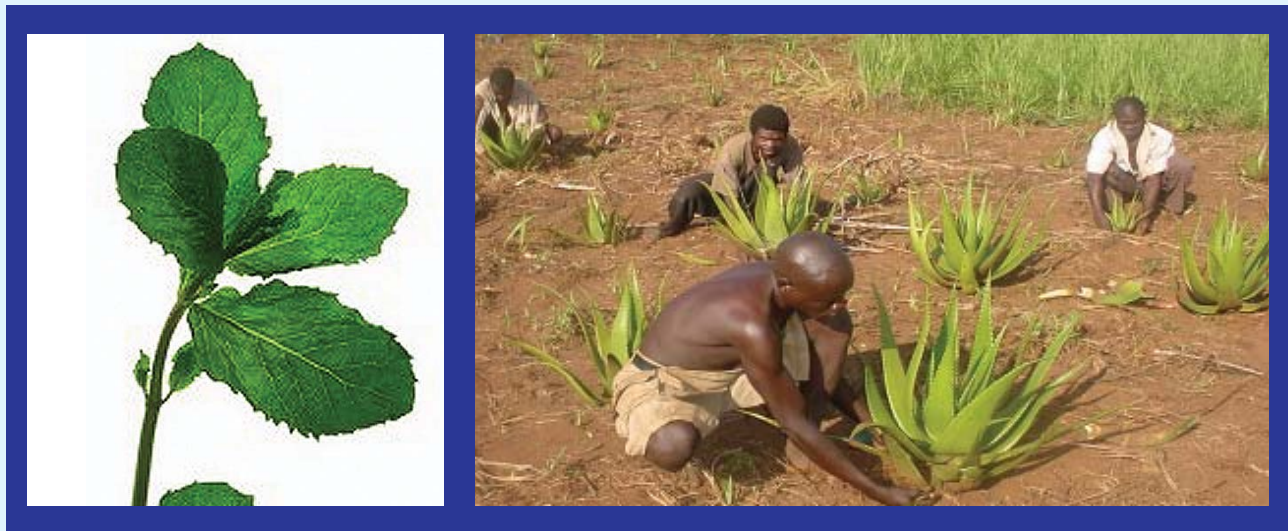




SECTOR ASSESSMENT

NATURAL INGREDIENTS FOR COSMETICS AND PHARMACEUTICALS (NICP)



November 2004

**Ministry of Tourism, Trade and Industry/United Nations Conference on Trade
& Development (UNCTAD) Export Development Programme
Implemented by UEPB**



UGANDA EXPORT PROMOTION BOARD

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Men harvest aloe vera - Tropical Aloe Ltd picture gallery

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LIST OF ACRONYMS

BUCODO	Budongo Conservation Development Organisation
BSO	Business Support Organisation
BTFP	Biotrade Facilitation Programme
CBI	Centre for the Promotion of Imports from developing countries
CITES	Convention on International Trade on Endangered Species
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
ECOTRUST	Environment Conservation Trust of Uganda
EU	European Union
GACP	Good Agriculture Cultivation Practices
GEF	Global Environment Facility
GMP	Good Manufacturing Practices
ICIPE	International Centre for Insect Physiology and Ecology
ICRAF	International Centre for Research and Agro Forestry
ISO	International Standards Organisation
ITC	International Trade Centre
KARI	Kawanda Agricultural Research Institute
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MTTI	Ministry of Tourism, Trade and Industry
MUK	Makerere University Kampala
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organisation
NCRL	Natural Chemotherapeutics Research Laboratory
NEMA	National Environment Management Authority
NFA	National Forestry Authority
NGO	Non-Governmental Organisation
NTE	Non Traditional Exports
PA	Protected Areas
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernisation of Agriculture
PSFU	Private Sector Foundation Uganda
PRIME/WEST	Productive Resource Investments for Managing the Environment/Western Region
SADC	Southern African Customs Union
SEP	Strategic Exports Programme
SME	Small and Medium Enterprises
TE	Traditional Exports
UEPB	Uganda Export Promotion Board
UIA	Uganda Investment Authority
UMA	Uganda Manufacturers Association
UNBS	Uganda National Bureau of Standards
UNCTAD	United Nations Conference on Trade and Development
UNCST	Uganda National Council for Science and Technology
UNDP	United Nations Development Programme

Foreword

The Natural Ingredients for Cosmetics and Pharmaceuticals (NICP) Sector Assessment is undertaken within the framework of the NICP Export Development Programme and the BioTrade Uganda Programme. The NICP Export Development Programme (EDP) is out to promote the trade in natural ingredients in Uganda for improved earnings, generation of employment opportunities, and to ensure sustainable utilisation of the resource base. The BioTrade Programme encompasses the NICP EDP, and promotes the trade and investment in biological resources in Uganda for improved livelihoods, export diversification, employment generation, etc.

Both programme initiatives are co-ordinated by Uganda Export Promotion Board and supported by United Nations Conference on Trade and Development, and the Centre for the Promotion of Imports from Developing Countries (CBI) of Netherlands.

Uganda Export Promotion Board (UEPB) is a Government parastatal supervised by the Ministry of Tourism, Trade and Industry and governed by a joint public/private sector Board of Directors' structure. UEPB is mandated to facilitate the development, promotion and coordination of all export related activities towards export growth on a sustainable basis.

The export business community is the target clientele of UEPB and includes exporters, business support organisations, policy makers, and producer associations. Service to the UEPB target group is through the following functions:

1. Policy guidance on issues of export development to Government and development of strategic frameworks for the operationalisation of policy and other national initiatives.
2. Promote Uganda's exportable products at the regional and international markets
3. Market research, product development and adaptation for current and potential exportable products
4. Export development skills at institutional and enterprise level through mainly the training function
5. Provision of trade information and export data

The NICP sector assessment and strategy has been formulated with the active involvement of the key actors mobilised through UEPB. The active participation registered during the sector assessment and strategy formulation process is hinged on the direct and indirect relationships fostered by UEPB with partner institutions through UEPB's central role in export trade development. Besides the co-ordination role through the BioTrade Unit, UEPB provided input to the market analysis component of the sector assessment. The recommendations and proposed strategic interventions highlight the potential role of UEPB in the development of the sector, in addition to the coordination role being played at present.

The UNCTAD BioTrade Programme activity has to date realised a number of achievements. A national pre-assessment study was undertaken as part of the Phase I activity, and a national programme designed based on the findings. The NICP enterprises were addressed in the document, and this constituted a significant reference material for the NICP sector assessment.

The second phase of the BioTrade Programme has been designed and will include the definition of the tradable natural products, assessment of these and ultimately design the strategy for development of these product groupings. The NICP sector assessment and strategy will form a basis for learning for this Phase II activity, and the NICP Sector Assessment and strategy will be accommodated within the main BioTrade Uganda Programme to be implemented thereafter.

Executive Summary

Global trade in natural ingredients has increased dramatically in the past ten years with trade in herbal medicines for example is estimated at □ 10 billion annually and is growing in excess of 10% per year (CBI Market Surveys [2003]). These developments on the global front are an opportunity that Uganda could harness based on the rich biodiversity and the ongoing interest by the private, public and civil society as witnessed in the diverse ongoing initiatives.

The natural ingredients sector is one of the least known and yet most active enterprises as reported in the National Pre-assessment Study 2003 by UEPB and UNCTAD. A further assessment is made of the sector at two levels, sector level and enterprise level, to highlight the key actors and issues influencing the trade in natural ingredients in Uganda.

Sector Overview

A multiplicity of actors is active in the sector including the public and private sector, development partners, and NGOs (community based, local and international). A number of initiatives are on going that directly support or compliment the trade in natural ingredients. Government and Development partners are involved in research and development, development financing, laboratory services, conservation and the enterprise support through programme and project approaches. It is however observed that the players in the sector act in oblivion of the existence of the others, and therefore no networks or coordination mechanisms are registered in the sector.

In regard to current policy frameworks, none explicitly supports the development of the natural ingredients but rather the sector is accommodated within the general development frameworks such as the Plan for Modernisation of Agriculture (PMA) and Poverty Eradication Action Plan (PEAP) policy that emphasise commercialisation of agriculture and the sustainable use of natural resources for poverty alleviation.

The production of natural ingredients is mainly by small producers across the country and wild collections also constitute a significant supply for the buyers. Commonly produced are Aloe (vera and ferox), Shea nut, Papain, Citronella, Lemon grass, Garlic, Prunus Africana, Warburgia, Pyrethrum, and Neem. The products are supplied in raw form with minimal value addition (drying). Out grower schemes are also a common practice for production where the buyer mobilises the small producers and buys off their supplies. Wild collections emanate from Protected Areas regulated by the Government. Enforcement of regulation is however very weak as cases of unsustainable harvesting and the depletion of the resource base are still reported. Products such as Shea butter are sourced from the communal lands that constitute private and public land ownership.

Processing is undertaken at two different levels, by small producers using rudimentary technologies (galvanised grinders, locally fabricated distillers, mortar grinders, etc) for powders and crude essential oils, and by large companies using modern technologies for extraction and distillation processes. No standards exist for the processing of natural ingredients in Uganda and the large companies tend to work along the buyers' specifications. It is interesting to note at this level that even the large companies producing extracts and essential oils still produce crude products - not refined to the buyers' specific requirements. It is therefore common to find companies contacting out the refining process to factories in Europe to complete the processing process.

In regard to trade in natural ingredients, no data is available in the country's statistical database (domestic and export). Companies have however exported raw materials, ingredients and finished products to the regional and a few international markets. Countries cited in the regional market are Kenya, Tanzania, South Africa, Rwanda, etc.

The local market for ingredients and finished good is very vibrant as demonstrated by the number of shops, kiosks, open markets, etc selling the products. A few industries produce herbal medicines and household and cosmetic products, but most of these use imported ingredients for the reason that the local suppliers did not meet their specifications.

Among key challenges cited as prohibitive to the development of the NICP sector are: The invisibility of the sector to policy makers and the public; Absence of an institutional co-ordination framework; Lack of national standards for the production and processing of extracts and essential oils for the local and international market; and Public research agencies' continued focus on scientific as opposed to applied research relevant to the business sector.

Enterprise Level

The majority of companies active in the sector are micro and small in nature, with small volumes, semi processed products and tend to supply the local and the regional markets. The second category of companies are the medium sized companies, these have out grower producer schemes, with in house or collaborative arrangements for research and development, producing for export and with direct linkages to buyers on the international market.

Both categories of companies however are faced with similar issues and challenges that are worth mentioning as listed here below:

Financing: The companies can not find appropriate funding structures to support infrastructural, technological and production related costs required for the efficient and sustainable production of natural ingredients. Banks consider the cultivation of natural ingredients as an agricultural activity and therefore prone to high levels of risk. High borrowing costs are the norm and therefore the existing financial institutions are not attractive to entrepreneurs. Most of the companies have either used family savings, received grants from development organisations such as GEF and ADF, or under joint ventures with international corporations.

Technology: Limited information on modern technologies is cited and even when available, the technologies are very expensive. Technology gaps exist right from cultivation, processing to packaging levels of the product chain.

Research and Development (R&D): Research and Development is very expensive for the companies to undertake on their own. Collaboration arrangements have been initiated between the companies and research agencies, but this is some times expensive (if private agencies), while for public agencies, their priorities in most cases do not tally with the needs of the companies.

Standards: No local standards exist for the production and processing of natural ingredients. The companies are therefore faced with high operational costs attributed to efforts to comply to international standards or the buyer specifications. This ranges from certification, documentation to laboratory services, which services are limited and very expensive in Uganda.

By and large, the companies are faced with limited support from the public sector in regard to legislation, finances, standardisation, research, etc, elements that have to be streamlined at the macro level for their effective participation in the development of the sector.

Overall Recommendations

1. An institutional co-ordinating framework to integrate trade and environment related issues is necessary
2. Research and technology development work be tailored to the needs of the business sector.
3. Review the existing legislative framework for access to plant materials in light of the increasing trade demands
4. Develop national standards for raw material production and processing for natural ingredients
5. Equip and strengthen the existing laboratory infrastructure and manpower in the key BSOs (NCRL, UNBS, NDA) for the chemical analysis of natural ingredients
6. Design strategies for sector promotion for investment in industrial equipment for the processing of natural ingredients
7. Identify and facilitate linkages between enterprises and BSOs in areas of business financing, research, technology development, enterprise capacity development, etc
8. Enhance production and productivity through among others, group production practices, improved agronomic practices and value addition initiatives such as organic certification
9. Promote out-grower production schemes for increased supplies, quality enhancement and specialisation.
10. Develop enterprise level capacity through training in the formulation of marketing and promotion strategies, business planning, technical capacities, efficient production technologies, etc

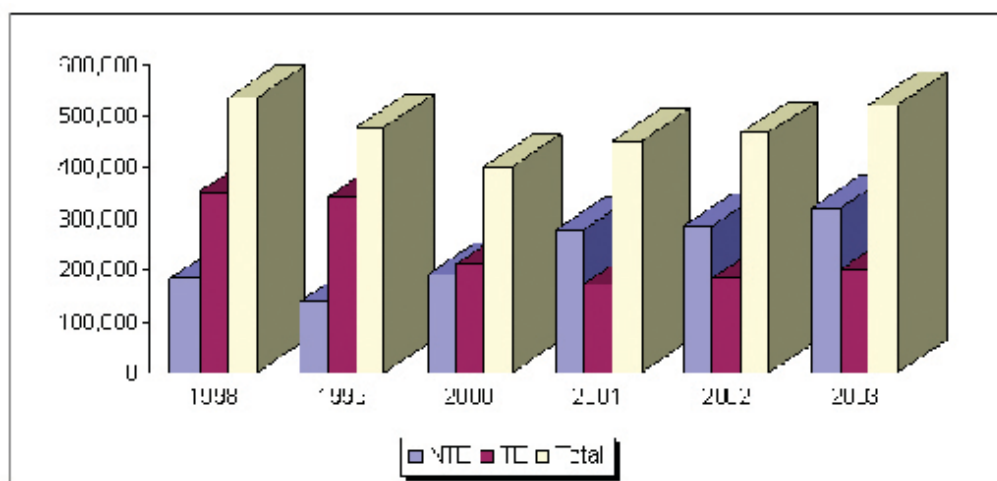
INTRODUCTION

Uganda is located in the heart of Africa and astride the equator. It is enriched with numerous eco-systems of forest, land, wetlands, open water, and savannah, all covering a total area of 241,038 sq.kms. Many of the country's ecosystems are entire reservoirs of genetic and species diversity, favoured by the high altitude of between 620m and 5,111m above sea level, and two rainfall patterns a year. These ecosystems provide a host of goods and services critical not only to the survival and cultural heritage of Ugandans, but also, to the national economy. The environment and natural resources are therefore fundamental to achieving Uganda's national long-term objectives of economic growth and poverty eradication.

Uganda's economy is hinged on agriculture, accounting for 40% of the GDP in 2002, and employing approximately 80% of its population (UBOS 2003). Tea, coffee, cotton, tobacco are the country's traditional cash crops, but these have suffered a huge set back and decrease in foreign earnings, attributed to falling commodity prices and increased competition on the world market. According to the UNCTAD LDC Report 2004, in the first half of 2003, the price of coffee was 17% of its 1980 value, while cotton was 33%.

The Non Traditional Crops such as fish, roses and cut flowers, vanilla, pepper, legumes, maize, ginger, etc have in the past 3 years emerged as more viable crops and have registered an increase in export earnings above the traditional exports as illustrated below:

Box 1.1: Comparative presentation of Uganda's Traditional and Non Traditional Exports



NTE - Non Traditional Exports TE - Traditional Exports

Source: Compiled by UEPB

The export trends illustrated in Box 1 above demonstrate the increased significance of NTEs to the country's economic growth, and these have likewise continued to receive resources, and strategic and political support towards the development of the sector. Among the interventions prevailing in the sector are development plans such as Plan for Modernisation of Agriculture (PMA) and Poverty Eradication Action Plan (PEAP), both aimed at transforming the agricultural sector as a business entity to enhance foreign exchange earnings and improve livelihoods. Specialised programmes such as the National Agriculture Advisory Services, the Strategic Exports Programme, and other donor initiatives, are aimed at improving production processes, value addition, and marketing of agricultural products. On the environment and conservation front, the National Environment Statue and the Draft National Environment (Access to Genetic Resources and Benefit Sharing) are also supportive frameworks aimed at conservation and sustainable use of natural resources, both complimenting the PEAP and PMA frameworks.

Plant biodiversity is of economic and social significance to Ugandans, and the establishment of the Natural Chemotherapeutic Research Laboratory by Government in 1964 demonstrates this. The laboratory is mandated

to carry out applied scientific research on natural products (plants, animal parts & minerals) to promote the use of herbals as alternatives to modern medicine, and supplements to cosmetic and culinary preparations. Uganda has 5000 plant species (H. Bakamwesiga, 1998), and only a fraction of this has been exploited for commercial purposes.

In order to sustainably use the country's biodiversity potential towards poverty alleviation and general improvement of the livelihoods of its people, the Government of Uganda requested UNCTAD's assistance in preparation of a Uganda Biotrade Programme. Uganda Export Promotion Board (UEPB) was selected to coordinate the initiation phase that commenced in May 2003. Based on the new partnerships created, UNCTAD convinced the Dutch Centre for the Promotion of Imports from Developing Countries (CBI) in 2002, to introduce the Export Development Programme for natural ingredients for pharmaceuticals and cosmetics (NICP) in Uganda. The NICP programme is operational at two levels: Support to BSOs to make an assessment of the sector issues and based on the outcomes formulate a sector strategy; and technical support and assistance to enterprises active in the natural ingredients sector to enter into the EU market.

A sector assessment is made with input from the key actors in the sector in Uganda, and with guidance from UNCTAD and CBI.

Methodological Approach

The assessment methodology was a combination of approaches as summarised here below:

1. Participatory Value Chain Analysis (VCA): A one day VCA workshop was organised with technical expertise from UNCTAD and CBI, aimed at identifying the key actors and analysing the issues along the supply chain (i.e production, processing, manufacturing, and marketing levels). The key outputs at this stage are VCA Maps defined along specific product groupings i.e ingredients for pharmaceutical use and ingredients for cosmetic use.
2. Based on the VCA product groupings, a series of stakeholder meetings were held to complete the VCA Maps and also to generate stakeholder input to the strategy formulation process.
3. Review of existing relevant literature
4. Consultation meetings with key actors in the public and private sectors
5. Stakeholder review workshop - of the draft document
6. Continuous technical input from UNCTAD, CBI and UEPB

This report presents the sector review made based on the above processes right from the production, processing and marketing levels of natural ingredients in Uganda. The global market is also presented in light of the products currently produced or with potential to be produced in Uganda.

Part I provides the market overview at the global, regional and local levels. Part II of the report focuses on a sector review of the key actors, product range and the issues at the different levels of the supply chain. Specific recommendations are made based on the conclusive remarks made at this stage.

Part III is the sector strategy proposal that is formulated based on the Part II outcomes.

PART I: OVERVIEW OF THE MARKET FOR NATURAL INGREDIENTS

1.1 Introduction

The market for natural ingredients can be analysed at two main fronts, the demand and supply capacities and the key actors at this stage, and subsequently at the global, regional and local. The principal market drivers for natural ingredients products are: (1) Growing consumer concerns about health, (2) Increasingly affluent groups keen to spend more on maintaining a youthful appearance, (3) The growing demand for “green products” or environmentally responsible products that also promote sustainable agriculture, fair trade certification to address the growing concern that labourers through out the product chain should earn a sustainable living wage.

The product range on the market mainly includes herbs/botanicals, essential oils, and extracts tailored to the pharmaceutical and cosmetic product groupings.

1.2 Demand

1.2.1 Global Level

Global demand for herbal medicines has increased dramatically during the last ten years. Trade in herbal medicines for example is estimated at □ 10 billion annually and is growing in excess of 10% per year (CBI Market Surveys [2003]). According to Nutrition Business Journal, global sales for herbs/botanicals accounted for 18.5 billion euros of sales in 2000.

Table 1.1: Top 14 selling botanicals in the US (2003)

1	Aloe leaf latex	8	Chamomile (Matricaria)
2	American ginseng root	9	Chaste tree fruit
3	Asian Ginseng root	10	Cranberry fruit
4	Bilberry fruit	11	Echinacea root
5	Black cohosh rhizome	12	Eleuthero root
6	Cascara Sagrada bark	13	Feverfew leaf
7	Cat's claw bark	14	Flaxseed (linseed)

It is worth noting that with over 5000 plant species, Uganda's potential to participate in the herbal market can not be underestimated. Aloe as a top seller exists in Uganda in forms of aloe vera and aloe ferox.

Table 1.2: Top selling medicinal plants in Europe

Product	Value (in US\$Million)		
Gingko	600	Garlic	200
Butcher Broom	120	Milk Thistle	80
Valerian	300	Hawthorn	140
Evening Primrose	110	Melissa	65
Horse Chestnut	250	Ginseng	140
Pygeum prunus africana	105	Nettle	60
Saw Palmetto	230	Phylum 1	25
Melilot	100	Bilberry	60
Bitter Orange Extract	220	Echinacea e. purpurea	120
Grape Seed	90	Chamomile anthemis nobilis	45
		Total	3,160

Source: M.K. Eaves, 1998 in Commonwealth, 2000

Market for cosmetics and toiletries was valued at □ 182 billion in 2002, indicating an increase of 3.5 percent compared to 2001. The strongest growth was in Eastern Europe at 11 percent. Western Europe represented almost 29 percent of the global cosmetics and toiletries market, with North America closely following with just over 27 percent of total sales. Asia Pacific (24%) ranked third and Latin America (9.5%) took fourth place. The remain-

ing 11 percent is accounted for by Africa and the Middle East, Eastern Europe and Australia.

The major market for natural ingredients for pharmaceuticals is Europe, accounting for some 38 percent of the world market. Germany accounts for over 42 percent of the European market, followed by France (25%), Italy (9%) and the UK (8%). Below is a summary presentation of natural ingredients' imports into the EU in the period 1999-2001, in the 3 major product groupings:

Table 1.3: Imports by EU Member Countries of selected product groups of natural ingredients, 1999-2001

Ingredient Group	1999		2000		2001	
	Value (€)000's	Volume (tons)	Value (€)000's	Volume (tons)	Value (€)000's	Volume (tons)
Medicinal & aromatic plants	206,755	85,816	217,853	91,256	216,816	89,723
Medicinal & Vegetable saps and extracts	34,450	500	34,106	718	29,660	959
Vegetable alkaloids	170,058	1,826	266,900	2,590	256,295	2,215

Source: Eurostat 2002

According to the ITC US Market brief (2003), the US is one of the leading importers of natural ingredients, having imported a total of US\$ 1,715, 632,000 worth of natural ingredients. This far exceeded its exports valued at US\$ 1,323,451,000.

Table 1.4: US imports of selected essential oils and oleoresins used in cosmetics - 2002

Natural Ingredient	Top Supplier	Quantity (tonnes)
Capsicum oleoresin	India	174
	Spain	160
	Morocco	26
	South Africa	8
Eucalyptus oil	China	631
	Brazil	51
	Taiwan	50
	Germany	39
Lavender oil	France	414
	Spain	6
	Belgium	5.9
	Bulgaria	5.7
Spearmint oil	China	308
	India	144
	Canada	106
	Italy	4
Rose oil	Chile	1,145
	Pakistan	1,125
	France	699
	Bulgaria	347

Source ITC Market Brief 2003

The same study estimates an annual consumption growth rate of 1.2% in general while at the specific market level, different products have shown varying trends.

1.2.2 Regional Demand

Demand for raw materials and ingredients in form of extracts and essential oils has been registered mainly in the southern African countries such as Namibia, South Africa, Botswana and Zimbabwe. Kenya and Tanzania are also mentioned as destinations for raw materials, leaf and bark powders, and selected essential oils.

Below is an over view of the import bill and annual growth rate for natural ingredients in the COMESA and SADC economic blocs.

Table 1.5: Overview of regional demand for natural ingredients in the COMESA and SADC Regions of Africa

Region	Nature of Natural Ingredient	Import Bill in US\$ thousands	Annual Growth (1998 - 2000)
Common Market for Eastern and Southern Africa (COMESA)	Concentrates & aqueous distils of essential oils; terpenic by-products of essential oils	1,574	5%
Southern African Development Community (SADC)	Concentrates & aqueous distils of essential oils; terpenic by-products of essential oils	2,914	5%
Southern African Customs Union (SACU)	Concentrates & aqueous distils of essential oils; terpenic by-products of essential oils	2,075	5%
COMESA	Vegetable Saps and Extracts	5,022	2%
SADC	Vegetable Saps and Extracts	12,662	2%
SACU	Vegetable Saps and Extracts	11,131	2%

Source: http://www.trademap.net/Uganda/region_figure.htm; statistics, 2002

1.2.3 National/Local Demand

The local demand for pharmaceutical ingredients is relatively low with approximately 85% of the products used locally are imported while only 10 - 15% are produced locally. The local industries import over 50% of the raw material requirements mainly from India, Brazil, Israel, South Africa and Germany. This scenario illustrates, which has been confirmed by manufacturers that the products available were not tailored to their demands. Supply incapacities in respect of the inability to develop the product to the buyer's taste/interest. The majority of products (Moringa, Aloe, Warbugaria, Prunus, Quinine bark, etc) are available in the semi processed form ie dried leaves/bark, or as crude extracts, and not suitable for use by the local manufacturers.

A local market therefore exists for both conventional and herbal medicines as reinforced by the recent announcement by the Global Fund Initiative to procure anti-malarial drugs made in Uganda to a tune of USD 11m before the close of 2004. Deliberate effort has also been made by Government and development partners to promote the industrialization of this sector as part of the country's development efforts and also to reduce on cost.

The local cosmetic industry is also highly import dependent with products such as essential oils, perfume materials, toilet cleaning preparations etc, imported from South Africa, Brazil, Israel, Germany etc. According to UBOS, the value of natural ingredients imported as inputs for the cosmetic industry was at 20m Dollars (2002), a rise from 17m in 2001. Just as is the case with pharmaceuticals, cosmetic ingredients too have a local market that can be developed as long as the products produced can compete with the imported ingredients.

1.3 Supply Countries

The principal sources of natural ingredients especially to the United States are Turkey, Mexico and Spain for botanicals, and France, India and Argentina for essential oils and oleoresins. Among the African countries, South Africa only featured among the lead suppliers to the US Market in 2002.

Table 1.6: US imports of selected botanical raw materials used in cosmetics

Natural Ingredient	Top Supplier	Volumes (Tons)
Cayenne fruit	Spain	5,100
	Peru	3,465
	South Africa	1,540
	Chile	734
Ginger rhizome	China	13,138
	Brazil	2,366
	Thailand	2,178
	Costa Rica	1,287
	China	5,889
Green tea leaf	India	350
	Taiwan	190
	Brazil	169
	Egypt	98
Mint leaf (Peppermint & Spearmint)	China	63
	Mexico	50
	Germany	30
	China	4,511
	India	2,210
	Mexico	1,559
	Morocco	622
Thailand	502	
Other medicinal herbs used in perfumery and pharmacy	China	4,511
	India	2,210
	Mexico	1,559
	Morocco	622
Thailand	502	

Source: ITC Market Brief 2003

In the category of natural gums and resins, the same source cites Chad is the lead supplier of Gum Arabica, with 6,173 tons, followed by France with 5,993, Sudan with 1,170, and the UK with 920. As for beeswax, there is bleached beeswax from Germany (86tons), while unbleached beeswax and other insect waxes mainly originate from China (299tons).

The tropical countries top the supplier list for botanicals such as China, Peru, Brazil etc as demonstrated in the table above. The developed countries such as France, Spain, Germany constitute the supply base for essential oils and extracts, and these are said to import crude extracts and thereafter refine these for the advanced markets such as US. Uganda's location in the tropics is an added advantage to the above supply scenario for botanicals.

1.4 Price information

The prices can fluctuate widely depending on the raw material form and is also influenced by among others the following key factors:

- Quality factors: This is determined by the country of origin, the climate, the crop, the concentration of the ingredients and the extraction method.
- Economic factors: This is based on supply and demand. The supply is influenced by the size of the current crop, the carryover from previous crops and the existence of substitutes.

Box 1.2 provides some indicative prices for botanical extracts:

Box 1.2: Indicative price per kgm of botanical extracts, June 2003

	%	Price (US\$)	Price (€)
Asian ginseng root (Panax)	25	152	131
Black cohosh rhizome (Cimicifuga foetida)	2.5	85-89	73-77
Devil's claw secondary root tuber(Harpagophytum procumbens)	5	55-85	47-73
Echinacea angustifolia root	4	250	216
Ginkgo leaf (Biloba)	24/6	39-80	34-69
Milk thistle fruit (Silybum marianum)	80	78-80	67-69
St John's wort herb (Hypericum perforatum)	0.3/3.0	20-30	17-26
Saw palmetto fruit (Serenoa repens)	85-95	110-150	95-129
Willow bark (Salix Alba)	15	85	73

Source: ITC (June 2003)

Table 1.7: Global market price per kgm of selected essential Oils (August 2003 in US\$)

	2003 high	2003 low
caraway oil		
Egypt fwd fob	95.00	95.00
cardamon oil		
London, Rotterdam, Hamburg spot	215.00	165.00
London, Rotterdam, Hamburg cif	265.00	148.00
cassia oil		
China fwd	9.00	8.85
cedarwood oil		
China cif	3.10	3.00
cinnamon leaf oil		
Sri Lanka spot	7.90	7.60
Sri Lanka cif	7.70	6.10
cinnamon bark oil		
London, Rotterdam, Hamburg spot	250.00	200.00
citronella oil		
Sri Lanka spot	8.90	7.95
Sri Lanka cif	7.60	7.10
Java cif	7.50	4.70
China cif	6.95	4.50
clove leaf oil		
Madag spot	7.25	5.50
Indonesian spot	6.10	5.60
lemongrass oil		
Cochin spot	12.60	11.90
Cochin cif	11.50	10.75
lime oil		
Mexico spot	18.00	16.20
Mexico cif	16.50	15.50
nutmeg oil		
Indonesian spot	44.00	38.00
Indonesian fwd	42.00	36.00
Grenada c&f	37.50	37.00
orange pera		
Brazil spot	3.60	3.10
Brazil fob	3.50	2.70
patchouli oil		
Indonesian spot	30.00	22.00
Indonesian cif	32.00	20.00
vetivert oil		
Indonesian spot	68.00	66.50

Source: Public Ledger (August 2003)

1.5 Market access requirements

Tariffs, sanitary and safety regulations, phytosanitary certificates, general quality requirements; social and health & safety issues; CITES that govern trade in endangered species; packaging, marking and labelling, are some of the key market requirements impacting the trade in natural ingredients.

Most buyers in addition to the above requirements define their own quality requirements, such as Good Manufacturing Practices (GMP) and ISO 9000. GMP should be followed although certification may not always be required. It depends on the product or raw material, the buyer and existing legislation. Finished pharmaceutical and cosmetics products must be manufactured according to certified GMP standards. Certified GMP standards also exist for active pharmaceutical ingredients. Cosmetic ingredients and raw materials for pharmaceutical manufacture exported from developing countries may not necessarily require certification to GMP but all buyers will expect the supplier to understand and be implementing the requirements of GMP. The same applies to Good Agricultural Collection Practices (GACP). In the medium term it is expected that GMP certification will become standard requirements for all supply chains. The manufacturers of finished products will apply increasingly stringent requirements on their suppliers to ensure consistent manufacture, quality control and traceability.

Legislative requirements and GMP are even more important than ISO, since those requirements may determine whether or not the European importer makes the decision to enter into a relationship with a potential supplier. In some cases, the importer will assist the exporter with product adaptations so that traded products comply with the requirements.

Box 1.3: Examples of US Market entry requirements

- Good Agricultural and Collection Practices (GACPs)
- Good Manufacturing Practices (GMPs) certification (finished products, pharmaceutical actives)
- Registration of Foreign Facilities Under the Bioterrorism Act
- FDA Color Certification Programme
- Phytosanitary certificates
- USDA National Organic Standards etc

Source: ITC/BTFP market Brief 2003

Detailed information on these and other regulations is now readily available on the internet.

PART II UGANDA'S NATURAL INGREDIENTS SECTOR

2.1 Introduction

Most of the activity in the NICP sector has been seen to actually belong to the environment and conservation arena and this is evidenced in the nature of the development programmes that have supported the NICP enterprises, and the positioning of the projects in the Government departments i.e in the Ministry of Lands, Water and Environment. It is therefore paramount that the relevance of Uganda's biodiversity to the natural ingredients sector be made in assessing the NICP sector.

The key actors and the marco situation in regard to the production, processing and marketing of natural ingredients in Uganda is reviewed through the VCA approach and is illustrated through the VCA maps for pharmaceuticals and cosmetics in the same section.

The last section is the enterprise analysis that further amplifies the issues raised at sector level as these influence and relate to the enterprise activities. Among these is enterprise management, financing, technology, information access, etc.

2.2 Uganda's Biodiversity, natural resources and development

Biodiversity refers to the range of variations or differences in living organisms and their environments, distinguished by the three levels of biological hierarchy; genes, species and ecosystems. Uganda's ecosystems provide habitats for several species, including mammals, plants, birds, fish, reptiles, amphibians and butterflies, among others.

Table 2.1: Records of Uganda Biodiversity Taxa

Taxon	Documented Numbers
Plants	5,000
Birds	1,008
Mammals	156
Butterflies	1,245
Dragonflies	210
Amphibians	98
Fish	320

(Source: H. Bakamwesiga, 1998)

There is growing recognition that a rich biodiversity is critical to poverty eradication and national economic growth. It is estimated that the biodiversity sector for instance contributed 54.4 % of total Gross Domestic Product (GDP) in 1998 including 32% of monetary and 84% of non-monetary GDP.

Available statistics show that, the annual value of non-timber forest products is estimated at Ug. Shs. 66 billion per year. (Pre-assessment Report May 2004).

Based on the stakeholder discussions and studies on access to non timber forest products, it is evident that herbs and botanicals have been the livelihood of the majority of Ugandans as reported in the IUCN extract below.

Box 2.1: Non-timber forest products

The term "Non-timber Forest Products" encompasses all biological material other than timber which is extracted from forests for human use. These include foods, medicines, spices, essential oils, resins, gums, latexes, tannins, dyes, ornamentals, plants, wildlife (products and live animals), fuel wood and wood based raw materials, notably bamboo, small wood and fibres. These are usually extracted using simple technologies to meet basic human subsistence needs and, emerging cottage industry.

(Source: IUCN, 1996)

The different eco systems are a source of various plant materials used in the pharmaceutical and cosmetic industry. In Uganda, very limited initiatives exist of cropped *Prunus africana* for instance, a bulk of the product is sourced from the forest ecosystem. Other products from the forest include *Warburgia*, *Hibiscus*, etc. Shea nut tree on the other hand is sourced from the savannah eco-system. Water based plants are also cited among plant materials used by the local communities in the formulation of medicines.

Access to the plant materials is regulated by the PA authorities. However these have cited continued habitat degradation as a result of a number of factors and exploitation is included. See table 1.2 on page 9.

Box 2.2: Causes of Biodiversity loss

Uganda's biodiversity is under threat from a number of sources such as;

- Over-harvesting and indiscriminate exploitation of economically and socio-culturally useful natural resources,
- Natural habitat loss (e.g. 7.9% of total wetlands have been converted to agriculture, forest cover declined from 45% in 1890 to about 20% in 1996).
- Invasion of ecosystems by alien species;
- Lack of recognition of indigenous knowledge and property rights.
- Pollution of ecosystems
- Trade in live plants, animals and denied parts. Five mammalian species are on the IUCN list of endangered species in Uganda (Mountain Gorilla, Black Rhinoceros, white Rhinoceros, African Dog and Rwenzori Black fronted Duiker).

Source: NEMA, 2004

It therefore goes without saying that as natural products are promoted for commercialization, the impact of this initiative on the eco-systems and the resource base should be carefully considered.

2.3 Production, Processing and marketing for natural ingredients in Uganda

The production, processing and marketing activities in the sector are undertaken by a multiplicity of actors and influenced by a diversity of processes. It is crucial to first and foremost list the commonly traded products, indicating the plant material and the product. The final products vary based on the specialization of the actors, this may take the form of raw materials, intermediary products such as extracts and essential oils, or finished products manufactured in Uganda.

2.3.1 Tradable Products

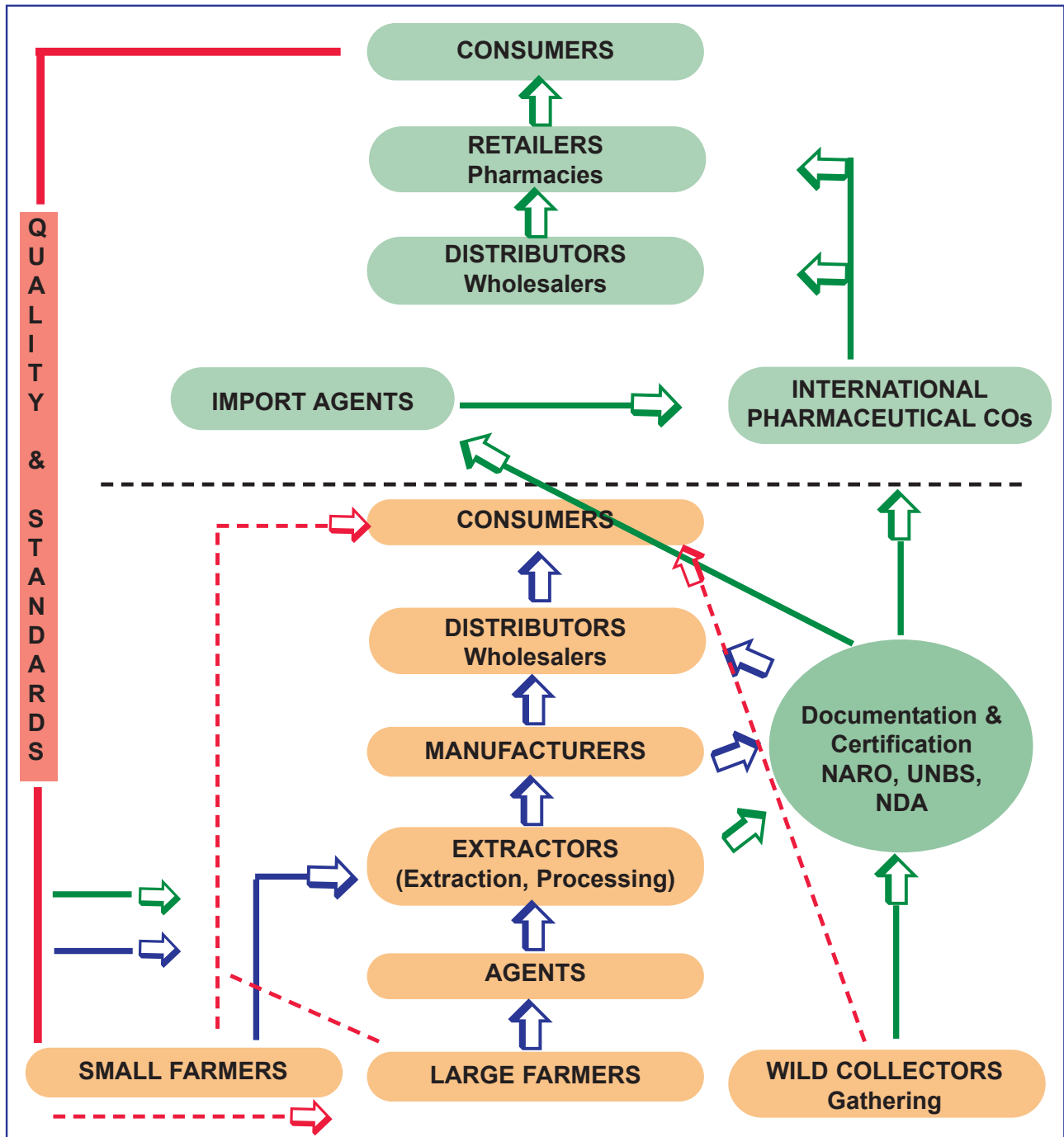
The list of products generated may not be exhaustive (see table 2b) as the data collected was based on secondary literature and stakeholder discussions at meetings and the workshop.

Table 2.2: Commonly traded plant materials in Uganda

Plant material	Biological name	Product
1. Pyrethrum		Crude Extract
2. Aloe	Aloe ferox & Aloe vera	White pulp, White gel powder, Liquid gel, Green epidemisis powder
3. Moringa	Moringa Oleifera	Essential oil & Gel, Leaf and Bark powders, Aloin
4. Shea nut tree		Butter, Refined oil
5. Bees		Bees wax, honey
6. Papaya		Papain
7. Citronella	Cymbopogon winterianus	Essential oil
8. Mutete	Cymbopogon afronardus	Essential oil
9. Lemon grass	Cymbopogon ciratus	Essential oil
10. Hibiscus	Hibiscus sabdarlifa	Powder
11. Neem tree		Oil, leaf and bark powders
12. Cassava		Starch
13. Garlic		Powder and oil
14. Ginger		Powder and oil
15. Black pepper		
16. Cardamom		Essential oil
17. Bongia		Dry leaves and Bark
18. Prunus africana	Prunus africana	Dry bark powder
19. Quinine		Dry Bark
20. Warburgia	Warburgia ugandaensis	Bark powder
21. African Potato		
22. Rosemary		Dry leaves and essential oils
23. Sesame		Oil seed
24. Avacado		Oil
25. Mushrooms		Dried

The Value Chain Analysis was made based on product groupings for pharmaceuticals and cosmetics within the above listing. VCA Maps were produced to reflect the processes along the product chain right from production to the market end — see figures 1 and 2 on the preceding pages.

Figure 2.1: Pharmaceuticals Value Chain Analysis (VCA) Map



VCA MAP Key


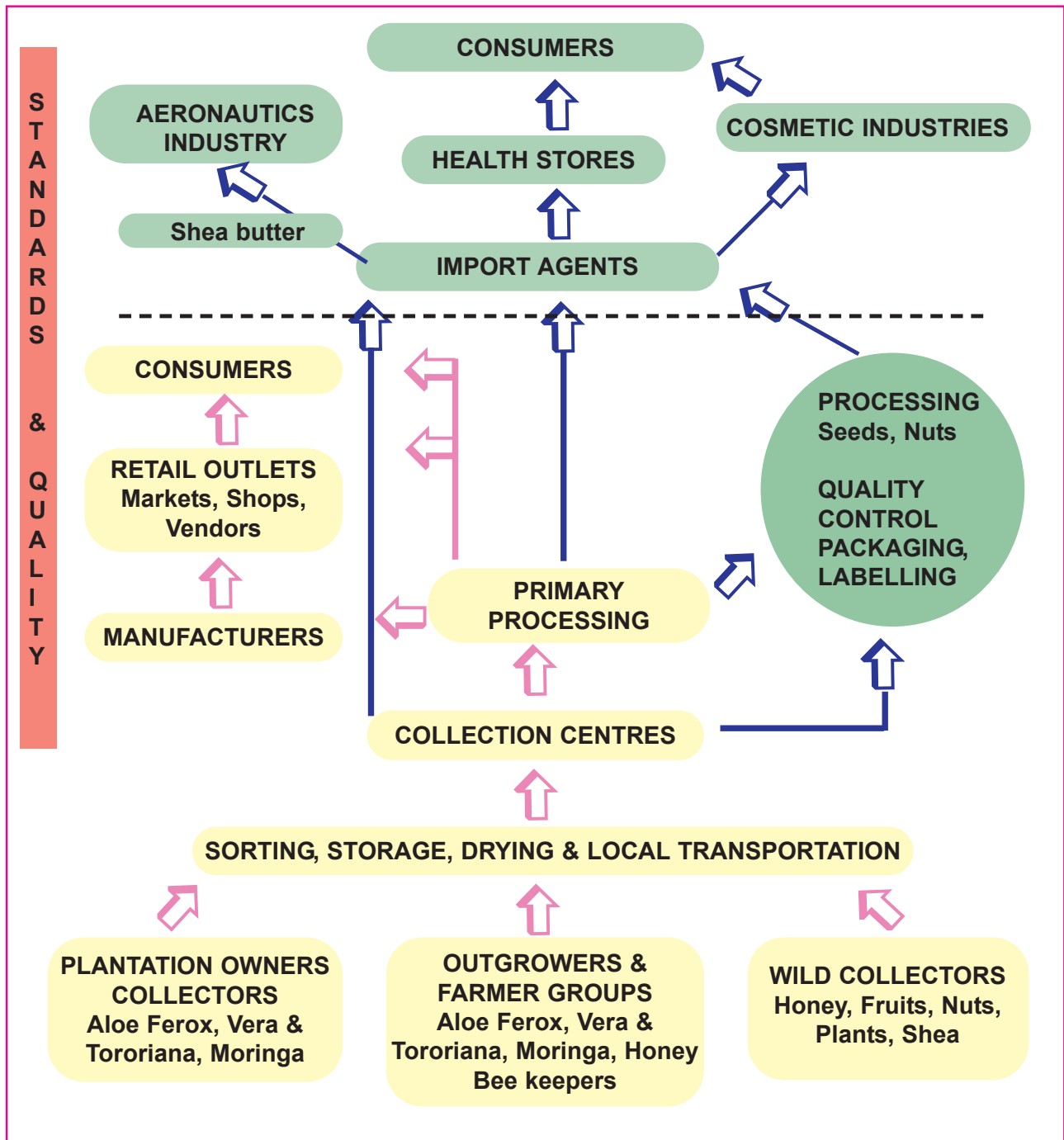
	Domestic Market
	Export Market
	Export Value Chain
	Domestic Value Chain
	Informal transactions

Figure 2.2: Cosmetics Value Chain Analysis (VCA) Map



VCA MAP Key

- Domestic Market
- Export Market
- Export Value Chain
- Domestic Value Chain
- Border

2.3.2 Production of raw materials

Raw materials produced for cosmetic and pharmaceutical use in Uganda are either cultivated or collected from the wild as illustrated in the VCA Maps on page 23. The production processes are further elaborated below.

Cultivation:

Small producers are found across the country and in the rural areas are cultivating raw materials from natural ingredients as a complimentary activity to the production of the traditional cash crops such as coffee, cotton, tobacco or tea. Production technologies used are basic, with limited external inputs and dependent on rain-fed agriculture. The farmers also rely on free seed from Government as part of the Government poverty eradication programmes.

The Out Grower Scheme approach is commonly used in the production of tobacco and sugar cane in Uganda. Farmers are mobilised to produce in groups and supplied uniform seed and trained by the mobilising agency. NGOs have also used the same approach in mobilising communities to enhance their production capacities. The scheme is typical for crops that are very specialised in nature and require for strict adherence to specific production practices. Companies producing natural ingredients are increasingly adopting the Out Grower production practice as well as a strategy for among others, high volumes, consistency in quality, traceability, timely delivery of the product, etc.

Box 2.3: The out grower approach to crop production

Agro-management Ltd and Lake Products and Services producers of pyrethrum extracts and Red Eye Bird Chillies respectively, are using the out grower approach to production of raw materials. The outgrower approach to production is most ideal as this allows for supply of uniform seed, specialised training, information sharing, certification and opportunity to enhance product quality at farm level. The out growers carry out the basic or preliminary processing on farm, while the companies undertake the final processing of the product based on the buyer's requirements.

Budongo Community Development Organisation (BUCODO) is a community based association producing lemon grass through the group approach. Farmers are provided with the basic inputs and training in the production of lemon grass, while the BUCODO secretariat that secured equipment through the Global Environment Facility process the raw material into a crude extract.

Wild Collections:

Wild plants and trees constitute a significant source for raw material and these are sourced from Government Protected Areas such as national parks and national reserves, and communal lands. Communities living adjacent to the national parks access the materials through laid out agreements with national park authorities. The plant varieties to be collected and their quotas are set and policed by the local and park authorities.

The commercialisation of plant materials has increased and this is attributed to external development programmes for communities adjacent to PAs that have promoted the use of non timber products for improved household earnings. With new information on the commercial value of the plant materials in the parks, the parks have witnessed increased pressure on the access to plant materials.

In the communal lands, the Shea nut tree and the Gum Arabica tree are the most common NICPs and these are located in the northern part of Uganda under semi arid conditions. The communities traditionally use the shea nut oil for food and cosmetic purposes, however with increased knowledge on the market potential, more private companies are harvesting the nuts.

These trees competes with other direct profitable uses such as fuel wood and charcoal, which has contributed to continued degradation of the resource base. Other competing activities include the opening up of land for cultivation as virgin land assures higher yield for the traditional cash crops such as tobacco, cotton and coffee. Tree harvesting for timber is also cited as a competing activity.

Production Challenges

- Limited access to technical information on product development and modern production technologies

- Lack of seeds and planting materials locally while imported seeds are costly and inaccessible to most farmers
- Lack of finances for construction of proper cleaning, drying and storage facilities.
- Inability of government to prioritise research for the crops
- Limited efforts at domestication of native species and thereby encouraging dependence on the natural resource base for continuous supply of raw material
- Increased importation of alien species which may compromise the preservation of native species
- Absence of specialised extension services for production and post harvest handling for pharmaceutical and cosmetic ingredients. The unique requirements of the sector cannot be met by the generic extension services currently offered by the LG Technical Departments or NAADS programme.



Figure 2: Land opened up for agriculture

Small volumes and unsustainable supplies as access to PAs is regulated by quotas

- Dwindling genetic resources due to unsustainable harvesting
- Over dependency on wild resources as domestication of wild plants is still low
- Competing user interests contributing to depletion of the natural resource base.

2.3.4 Processing of natural ingredients

The processing of natural ingredients into powders, extracts and essential oils is still very low in the country and is influenced by among others, factors of technology levels, internal technical capacities, capital investment, access to financing, etc. Like wise the company and the resultant products is influenced by these factors. The small

operators have for instance adopted primary processing technologies such as open air drying and processing into powder through pounding or grinding. Attempts at distillation have been based on equally rudimentary technologies such as is illustrated in Figure 3.

Any efforts beyond this level of semi processing carries finance and technology demands that are beyond the small farmers found in this sector.

The medium or relatively larger companies on the other hand, with modern technologies, in-house laboratory services, market linkages, etc. are very few. Value addition technologies bring their own challenges and the risks are far greater. Investment costs are very high and will be attractive only to the largest entrepreneurs.

The companies with Out Grower Schemes handle their total value addition processes right from sorting and drying at the collection centres to the processing factories. This is primarily aimed at quality assurance of the product. Some companies work through agents who collect the semi-processed raw materials across the country and deliver to the processing factories.



Figure 3: Rudimentary distilling equipment

Quality assurance is problematic among all producers as no standards exist for production of natural ingredients. No quality measures are imposed by the local regulators such as UNBS or NDA at this stage, products are only subjected to quality and safety measures in conformity with the buyer requirements.

2.3.5 Trade in natural ingredients

Raw materials for natural ingredients

Market opportunities for raw materials are very limited as most markets demand for processed and refined natural ingredients such as powders, gels etc, with strict quality requirements. As illustrated in the VCA maps, buyers/processors may buy directly from their out growers based on defined terms, or may also source through agents. The latter are considered an option especially at time of scarcity of the raw material such as the dry season as the small producers tend to rely on rain fed agriculture.

Intermediary natural ingredients

Most of the essential oils and extracts produced in Uganda require for further processing and companies therefore work through agents on the international market to have the products further refined before delivery to the final consumer. Packaging for intermediary products is based on buyer specifications including the required documentation. The market requirements as mentioned in Part I of this report are stringent and demand for laboratory testing among others.

While some products such as moringa, aloe ferox, and neem are either unknown or less familiar to the international scene and therefore face market entry constraints as these have to be introduced to the ingredients registration processes of for instance the EU or USA. These products however have a local market among producers of medicinal formulations and cosmetic products.

Challenges

- Crude product and therefore not attractive to the markets and attract low prices
- Absence of national quality standards at all stages of the supply chain which makes it difficult to obtain quality related certification for marketing purposes.
- Unreliable supply in case of large contracts due to small scale production.
- High operational overheads related to high production costs (electricity, water etc), insufficient technical expertise, etc.
- Unfamiliarity of some of Uganda's products on the international market.
- Limited market information on the global trends, prices, consumer preferences etc, tailored to the needs of the companies
- Competition from established brands and cheap generic drugs
- Globalised sourcing and marketing forces including cartels which have diminished the sector's comparative advantage yet limit access to international markets.

2.4 Manufactured / Finished products (not ingredients)

Approximately 85% of the pharmaceutical products used locally are imported, with only 10 to 15% produced locally (NDA Report 2003). The producer companies import over 50% of their raw material requirements mainly from India, Brazil, Israel, South Africa and Germany.

The reasons given by manufactures for the preference for the imported raw material is that the ingredients available were not processed to their standard specifications. This is also illustrated by the fact that most ingredients exported will not be used directly in pharmaceuticals but rather undergo some further processing steps.

The cosmetic industry on the other hand is highly import dependent, with products such as essential oils, perfume materials, toilet cleaning preparations etc, being imported from Brazil and South Africa. The value for imported cosmetic product inputs is 20m Dollars (2002), registering a rise from 17m in 2001 (UBOS).

The manufacturing of pharmaceutical and cosmetic products is regulated by the National Drug Authority (NDA),

Natural Chemotherapeutic Research Laboratory and Uganda National Bureau of Standards (UNBS). These provide guidelines for production such as GMP and quality standards in form of quality seals and certification. NDA and UNBS in addition also regulate all exports and imports to conform to the local and foreign market requirements.

The product range in the cosmetic industry includes body jellies (based on natural extract/essential oil), creams, and lotions, hair shampoos, conditioners, gels, herbal soaps and gels, and household detergents based on natural formulations.

The large producers of cosmetic products include UK Industries, Movit Company, Avis Company and Mukwano Industries, in addition to the multiplicity of small operators such as Bester Associates, Ori's Natural Skin Care Ltd.

The production of pharmaceuticals on the other hand includes both conventional and herbal medicines, and producers include Kampala Pharmaceutical Industries, Uganda Pharmaceutical Industry, Joint Medical Centre, Medipharm, Rene Pharmacy etc, with formulations for tablets, syrups, ointments etc. For herbal medicines, Bull's General Agency (Salonpas), Tropical Aloelands, PECA Ltd, Herbal Concept, etc are among the renown companies for formulations for mainly syrups and ointments, and herbal powders.

Inability to access appropriate packaging materials was cited as a problem by the manufacturers, who use mainly high density plastic bottles as opposed to the ideal glass bottles. Consistency in the supply of the glass bottles was a problem as these are only imported yet the small producers may not afford purchasing these in bulk.

It is evident that an opportunity exists on the local scene for the supply of natural ingredients as long as these are processed to the buyers' requirements.

Challenges

- Poor Infrastructure
- Limited technical know-how
- Lack of modern production technologies
- Lack of product standards at the local and regional levels.
- Limited access to financing for machinery
- Lack of raw materials processed to the expectations of the manufacturers

2.5 Key actors in the natural ingredients' sector

2.5.1 Introduction

A multiplicity of actors is active in the sector including the public and private sector, development partners, and NGOs (community based, local and international). A number of initiatives are on going that directly support or compliment the trade in natural ingredients. Government and Development partners are involved in research and development, development financing, laboratory services, conservation and the enterprise support through programme and project approaches.

2.5.2 Sector Institutional over view

Summed up in a tabulated form is a list of the different actors including a brief description of their mandate and their key issues in relation to their potential role in the development of the NICP sector.

Table 2.3: Key actors and BSOs in the NICP Sector

Institution	Responsibility	Remarks
1. Natural Chemotherapeutic Research Laboratory (NCRL)	Research into natural materials used in traditional healing practices Advocacy activities for access to medicinal plant/genetic resources for equitable benefit sharing and sustainable utilisation	Public agency under the Ministry of Health. Basic infrastructure in place, however constrained by thin staffing levels, ill-equipped to match research increasing demands, etc
2. National Drug Authority (NDA)	Advises on policy issues and regulates pharmaceutical operations (imports, GMP certification, etc)	Public agency, however, constrained by limited technical capacities and modern testing facilities
3. Uganda National Council for Science & Technology	Policy formulation, research regulation, and technology development. Current relevant activities: <ul style="list-style-type: none"> ● Biotechnology and biosafety, ● Bio-prospecting ● Indigenous Knowledge ● Issuance of Material Transfer Agreements for research purposes 	Public agency under the Ministry of Finance, Planning & Economic Development. Characterised by thin staffing and limited funding support. Limited interface with the private sector in their research activities
4. National Forestry Authority	Protection and Management of forest resources Research and Regulation	Public agency and characterised by inadequate staffing Key interest in the commercialisation of non timber forest products
5. National Environment Authority	Monitor, supervise and co-ordinate all matters related to the environment in Uganda	Well structured at all administrative structures of Government and with favourable legislation and policies. Weak enforcement of legislation and policies
6. Uganda National Bureau of Standards	Quality standards development and regulation	Working on harmonisation of the East African quality standards. Offering testing and analysis services to private sector
7. National Agriculture Research Organisation (NARO)	Research and development in the agriculture sector. Undertakes training in production processes and also active in the multiplication and distribution of seed to farmers	Government prioritised research and mainly scientific in nature
8. Kawanda Agricultural Research Institute	Research and development focused on multiplication of Aloe, Citronella, and Moringa Oleifera.	Research activities within the framework of the Government development programmes
9. Makerere University Kampala (Departments of Botany, Zoology and Forestry, and Faculty of Science - Dept of Industrial Chemistry)	Research and Development	Academic in nature and not tailored to the interests of the private sector
11. Product marketing task committees	Moringa and Gum Arabica Task Force Committees tasked to identify markets for the products	Adhoc in nature and without the capacity to undertake market research and promotional programmes. Composition of the committee was limited mainly to producer groups, MAAIF and representative associations.
12. Ministry of Lands, Water & Environment	Implementing a Gum Arabica Project Focal point for CITIES	Gum Arabica project was conceived in the early 1990s and limited to the research function
13. Uganda Export Promotion Board	Mandated to facilitate, promote and co-ordinate all export activities on a sustainable basis	With support from UNCTAD and CBI, the Biotrade Programme is under formulation and is aimed at promoting trade and investment in biological resources. The natural ingredients sector is one area of focus in the Biotrade Programme

14. Uganda Investment Authority	Mandated to promote investment in Uganda (both Foreign Direct Investments and local investments)	Generic promotion of agribusiness, without special focus on the development of the natural ingredients sector.
15. Uganda Manufacturing Association	Membership based association that acts as an advocacy platform for the manufactures, provides market information and trade promotion events	Focused on the manufacturing and assembly industry with limited interest in agro-processing
16. Prime West/USAID Programme	Enterprise level support to biodiversity based activities. Focused on both sustainability and improvement of livelihoods	USAID funded programme concentrating only in the South western part of the country. Demonstrated interest in the domestication and promotion of commercialization species such as <i>Prunus africana</i>
17. UNDP/GEF/Small Grants Programme	These offer community level financial facilitation to biodiversity based activities with the over riding objective for conservation and improvement of livelihoods	Already supported two companies in the production of essential oils
18. ECO Trust	Conservation and provision of grants	Regional agency focused on agro forestry activities and interested in the domestication of wild tree species
19. ICRAF	Research and development of commercial tree varieties	
20. National Agricultural Advisory Services (NAADS)	Government agency mandated to streamline the provision of extension services to farmers through the demand driven approach to service delivery	These offer training, counseling and enterprise audit support services to SMEs
21. Ministry of Agriculture and Animal Industry (MAAIF)	Policy formulation and coordination of all agriculture related activities in Uganda. Regulatory body for export related standards such as HACCP and EURPGAP Issues the Phyto sanitary Certification	
22. Enterprise Uganda	UNDP-funded project focused on enterprise support	
23. Chemiphar Laboratory	Private company offering laboratory and testing services	Adequately equipped to international standards with facilities for testing ingredients.

The institutional multiplicity and diversity illustrates the support services available in the sector with a predominance of research and conservation agencies.

2.5.3 Specific sector opportunities

1. Conservation Initiatives: Uganda has been commended at the international level as one of the countries with good and sufficient policy frameworks for biodiversity conservation. This is evident in the number of institutions focused on research and conservation issues, with potential to mitigate the negative effects resulting from commercialisation i.e over exploitation, resource degradation, unsustainable harvesting practices, etc.

2. Related Research Efforts: Multiplication formerly wild species such as *Prunus africana*, *Waburgia* *Aloe ferox*, etc, and the advent of the Bio prospecting programme of UNSCT are initiatives containing elements of trade and environment. The increasing public and donor agency interest in the commercialisation of native species is an opportunity that not only assures of increased supply of the raw material, but also lessens the burden of over exploitation on the wild species.

3. Increased interest by agencies: The issue of trade and environment has gain public interest and this is demonstrated through the increased interest of research and conservation agencies, and trade agencies in the concept.

4. Development Partner Interventions: Programmes such as Prime West and GEF Small Grants offer opportunities for access to financial resources and technical know how. Other programmes of significance include the UNCTAD/CBI Programme focused on development of the natural ingredients sector and enterprise development.

5. Value addition opportunities: The key government policies such as PMA, SEP and NAADS have a strong element for value addition and therefore offer opportunities for support to enterprises and associations interested in agro-processing. In the same vein is government's industrialisation policy that

offers opportunities beyond the farm level.

2.5.4 Sector level challenges

1. Lack of integration between trade and conservation: It is clear that trade and conservation aspects have been treated so distinctly by the operatives that until only recently is relationship being sought.

2. Absence of networks and partnerships: Actors tend to work in isolation and oblivious of the other actors in the sector. This not only inhibits information sharing and networking, but also contributes to the duplication of efforts.

3. Limited Technical capacity: Testing facilities and required technical personnel were cited as limiting factors to the effective delivery of services by agencies such as UNBS, NDA and NCRL. The available expertise i.e students of Industrial Chemistry from MUK are not equipped with practical skills. Some companies use external testing services such as Chemiphar and other laboratories in UK and Netherlands.

4. Absence of national standards: The sector has no existing standard on the processing of natural ingredients into extracts, essential oils, saps, etc.

5. Focus on scientific research as opposed to applied research: Limited linkages to private sector research needs.

2.6 Enterprise Level Analysis

2.6.1 Introduction

Enterprises are the most dynamic category of actors in the NICP sector with an influx registered mainly in the past 5 years. These include the micro, small and medium enterprises and these are working at different scales of production and organisation, the issues however that affect them are almost similar. This section will focus on the technological, finance, marketing, technical capacity, etc, factors that influence the production and marketing of natural ingredients.

2.6.2 Technology

The technology demands differ based on the level of specialisation and effort to meet the buyer's ever changing demands. The companies are therefore faced with the need to continually upgrade their technologies to match up to the buyer's needs and thence be more competitive.

It is evident that the cost of technology for Ugandan companies is very high and the situation is worsened with their limited access to financing.

2.6.3 Technical capacities

The technical capacities of most the companies are very weak there is no formalized SME technical skills transfer system in Uganda for the small producers. The only relevant institution is Makerere University (MUK) that offers Industrial Chemistry and other natural science courses such as botany, that could benefit the sec-

Box 2.4: Technology demands at enterprise level

Agro Management Ltd is producing crude pyrethrum extracts through the solvent extraction method. The company lacks the necessary machinery and equipment to transform the crude extract into pale extract (a standardized product) but has found an innovative solution whereby pale extract is made under contract by a European company. Refining the crude extract is presently done in Germany at a cost of Euro 12/kilo of crude extract or Euro 12,000/ton of crude extract. Machinery and equipment for refining requires over US\$4.0m. Installing such equipment would likely be uneconomic because of capacity.

Tropical Aloe Lands are producing herbal remedies using Aloe ferox extracts. They however expressed the need to upgrade to produce Gel and Pulp powders, products with ready markets both locally and within the region. The company is working on fabricating a Steam Drier for this purpose, estimated to cost approximately \$8000.

tor, but these are inaccessible and unaffordable to the SMEs.

Production of natural ingredients requires for high technical knowledge and skills and this is absent in most of the enterprises. Apprentices are used who basically learn on the job, while some companies hire technical staff which is very expensive for the company.

2.6.4 Management Issues

Management incapacities exist at all levels of the supply chain, with both small and large companies equally affected by the inability to effectively manage their enterprises which in most cases are run as family entities. The management function is weak especially for the family led enterprises and companies in most cases did not possess business or even marketing plans, while operational costs are very high.

In addition, the companies operate in isolation and very suspicious of each others' activities. No networks exist for information sharing or exchange in any of the relevant areas such as research and product development.

2.6.5 Marketing and Promotion

Absence of marketing plans and promotional tools is typical among the majority of companies. The marketing function is considered a general function and therefore no effort or finances are invested in marketing and promotion of the products. This has contributed to invisibility on the local, regional and international scenes.

2.6.6 Testing and Laboratory Services

The companies cited insufficient testing and laboratory services in the country as a key bottleneck. Buyers demand for detailed documentation on the product and the processes as a prerequisite for trade. Even at the stage of promotion, i.e trade fairs, companies are for instance expected to possess basic laboratory equipment to meet some of the basic needs, but most companies send samples to laboratories in UK and other parts of the EU for the required service.

2.6.7 Financing

The finance institutional framework includes commercial banks, development banks, and micro finance institutions. The scope of services available are however not tailored to the specific needs of the enterprises and instead categorised among the high risk lending category.

The enterprises on the other hand are also not attractive to lending by the financial institutions in light of the absence of business plans and limited assets as few companies possess capital investments. This is with the exception of a few companies that are a joint venture with multinational companies who have been successful in borrowing funds.

Development partners also constitute a category of funders for the production and processing of natural ingredients as mentioned earlier. UNDP/GEF/SGP have provided funding to a tune of \$50,000 to community based associations to support sustainable utilisation of the resource base while at the same time the activity provides an opportunity for revenue generation.

Box 2.5: Case of development funding for production of natural ingredients

BUCODO is a community based association in Masindi District that received distillation equipment to the tune of \$and training support from UNDP/GEF/SGP to produce citronella oil through a group farming scheme for their membership. The programme further created linkages with ICIPE in Nairobi Kenya to provide research and development support to the association.

Ntugamo Women's Environment Group is another case of UNDP/GEF/SGP programme support, and these also received equipment worth \$..... for the distillation of citronella and lemon grass oil based on raw materials produced by the members of the association.

By and large, personal and family savings are the main source of venture capital for the bio-enterprises with donor support rated as second to this. The financial institutions were rated by the entrepreneurs as the least interested in the bio sector and therefore not willing to provide support.

Challenges

- Limited access to finances for installation of standard modern processing equipment
- Lack of national standards for the various processes i.e drying, extraction, distillation, etc
- Absence of technical schools/institutions for SMEs
- Inadequate technically skilled manpower
- Lack of affordable laboratory facilities locally for determining chemical compositions of plants from different provenances.
- Inadequate technologies available which do not conform to international standards
- Lack of information on alternative more efficient and cost effective processing methods.
- Unsustainable supply of raw materials as these depend on the small producers and wild collectors
- Absence of networks and partnerships within the industry to take advantage of opportunities for synergies and information sharing
- High finance borrowing costs
- High capital expenditure costs
- Available expertise (i.e Makerere University's students of Industrial Chemistry) not equipped with adequate practical skills
- Absence of national and international standards
- Inadequate laboratory services which necessitated sending of samples for analysis abroad hence suffering high operational costs
- Limited knowledge on international/foreign markets (prices, buyers, competition, trends etc)
- Poor labelling i.e no information on the benefits, recommended method of administration, expiry dates, etc

3.0 Conclusions and Recommendations

3.1 Sector level

Market opportunities for a wide range of natural products as ingredients for the pharmaceutical and cosmetic industries exist at local, regional and international levels. While the numerous actors are active in the sector, these operate oblivious of the market opportunities available and of each other's existence.

The sector is largely unknown and without a coordinating institutional framework and limited support policy instruments to support the development of the sector.

3.1.1 Sector specific recommendations and options

(a) Research

○ Need to create direct linkage between the research efforts and business in areas of industrial technology development, domestication of species, improved plant species, etc.

○ Active dissemination of research findings

○ Direct linkages to the agro-zoning process aimed at enhancing the marketing of selected products for export

(b) Co-ordinating Institutional framework

○ Need for a coordinating institutional framework to among others, take advantage of the new developments in the sector as initiated by Government or development partners, initiate policy changes or improvements, and coordinate sector activities and information exchange.

○ Need for an institutional framework to address the marketing issues for natural ingredients such as information provision, promotion, information generation, etc

(c) Enterprise level support

Promote enterprise level support programmes by development partners and Government, tailored to the specific enterprise needs in areas of business planning, marketing strategies, enterprise management, access

(d) Quality and Standards

○ MAAIF to develop guidelines for production of natural ingredients for pharmaceutical and cosmetic purposes

○ UNBS to develop national standards for production of extracts and essential oils

○ UIRI to develop guidelines and sources for production technologies for extracts and distillation equipment

○ Government to strengthen the existing testing and laboratory services such as NCRL, UNBS, and NDA through infrastructural and technical support.

(e) Investment Promotion

The sector requirements in respect to mainly capital investment and international marketing amplify the need for FDI to develop the sector. Uganda Investment Authority should therefore focus on attracting investors in mainly the processing industry (extraction and distillation).

3.2 Enterprise Level

The enterprises in the sector are predominantly small scale and therefore unable to individually organise themselves to attract market for their products. Low value addition is registered among the producers and the sector is characterised with limited FDI initiatives.

3.2.1 Enterprise specific Recommendations and options

1. Promotion of group production schemes such as Out-growers, Cooperatives, and Associations, aimed at enhancing supply, improve traceability, enhance quality, reduce operational costs and encourage specialisation among others.

2. Consider value addition initiatives such as organic certification to enhance product competitiveness

3. Companies should understand buyers requirements - needs/expectations

4. Negotiation skills development through training and other support arrangements

5. Need for enterprises to improve promotional information - brochures, websites, business cards, logos
6. Enterprises to take advantage of the available trade promotion BSOs and internet to access market information
7. Increase direct investment in internationally acceptable equipment for the production of natural ingredients
8. Invest in business marketing and promotion at all levels of the market chain
9. Seek for capacity building programmes to enhance enterprise performance, understanding of the VCA approach and buyer requirements, and also as a basis to attract financing
10. Adopt cost saving and efficient production mechanisms i.e Cleaner Production
11. Enhance productivity through improved agronomic practices

REFERENCES

1. The International Trade Centre (ITC) Market Brief 2003
2. CBI Market Surveys on natural ingredients for pharmaceutical and Cosmetic Industries (2003)
3. UNCTAD/UEPB, National Bio Trade Pre-assessment Report May 2004
4. UNCTAD Linking International Trade with Poverty Reduction, LDC Report 2004

Appendix I Stakeholder Consultation List

NO.	NAME	ORGANISATION	CONTACT
1	Mr. Ivan Lule	Uganda National Council of Science & Technology (UNCST), Kampala.	Tel: 075 2 548 933 Email:uncst@starcom.co.ug
2	Mr. Abel R. Kaahwa	Uganda Industrial Research Institute (UIRI), Kampala	Tel: 077 2 406 502 Email:uri@utlonline.co.ug
3	Mr. James Agela	SD Agriculture Hitech (U) Ltd, Kampala	Tel: 077 2 457 007 Email:sdahul@yahoo.com
4	Mr. Arthur Mpeirwe	ACODE Consultant, Kampala.	Tel: 077 2 404 799 Email:ampeirwe@acodeu.ug
5	Mr. Nilesh Kanabar	Lake Products and Services Ltd, Kampala.	Tel: 077 2 524 800 Email:lake@source.co.ug
6	Mr. Keith Bitamazire	RVTPL, Masindi	Tel: 077 2 479 569
7	Mr. M. W. Kiribedda	Herbal Concepts (U) Ltd	Tel: 077 2 550 003
8	Mr. Patrick Okoed	Commodity Dealers, Kampala.	Tel: 077 2 312 853
10	Mr. Vincent M. Mulindwa	Maluma Estate Ltd. Kampala.	Tel: 077 2 454 142 Email:maluma@yahoo.com
11	Mr. Aggrey Masiko	MMS Aluminum, Kampala.	Tel: 077 2 440 295
12	Mr. Joseph Abuni	BUCODO Kampala.	Tel: 077 2 733 927 Email:bucodod@africaonline.co.ug
13	Mr. Eric Kuhuluka	Tropical Aloe Land, Kampala.	Tel:077 2 326 855 Email:troaloelds@yahoo.com
14	Ms. Nuluyati Nabiwande	CBCI / Sham Shak, Kampala.	Tel: 071 610 273 Email:nnuluyatin@yahoo.com
15	Mr. A. M. Alia	ATWATA, Lira.	Tel: 077 2 532 304
16	Mr. Henry Obalim Banyana	Uganda Honey Association, Kampala.	Tel: 041 271 799 Email: uha@infocom.co.ug
17	Mr. Patrick Latigo	Agro Management (U) Ltd Kampala.	Tel: 077 2 874 753 Email: agrmgt@yahoo.com
18	Ms. Ida Batwala	Tulibara Estates LtdKampala.	P. O. Box 8349 Kampala Tel: 077 2 456 610
19	Mr. James Muhumuza	Tropical Aloe Lands Kampala.	Tel: 077 2 460 171 Email: troaloelds@yahoo.com
20	Ms. Juliet Bamutta	Uganda Moringa Development Co. , Kampala.	Tel: 077 410 490 Email: jbamuta@utlonline.co.ug
21	H.E Godfrey Lukongwa Binaisa	Bio - Lukongwa Ltd Kampala.	
22	Mr. Brian Gitta - Seruwagi	Savannah International, Kampala.	Tel: 077 2 507 464
23	Prof. Richard Kasawuli	Uganda Moringa Development Co. Kampala	
24	Mr. Anthony D. Bagaati	Savannah Organic Produce Kampala.	Tel: 077 2 685 103
25	Ms. Nakalema Binaisa	Bio - Lukongwa Ltd. (Information) Kampala.	Email: nakalema@hotmail.com
26	Mr. Robert Peter Akeny	Ori Skin Care Ltd, Kampala.	
27	Mr. Tony Badebye	Herbal Concepts, Kampala.	Tel: 077 2 491 371
28	Mr. Zamba Duku	Savannah Organic Produce Lira.	Tel: 077 2 685 103 Email: zduku@yahoo.com
29	Dr. Juliet Okecho	National Drug Authority, Kampala.	Tel: 041 271 799/347 391
30	Mr. Ori Kahana	Ory's Natural Skin Care, Kampala.	Tel: 077 2 500 179
31	Dr. Sophy Musana	Kawanda Agricultural Research Institute, Kampala	Email: sophymusaana@yahoo.com
32	Hon. Fred Omach	Member of the Republic of Uganda Parliament, Parliament Avenue, Kampala.	
33	Chairman, Moringa Task Force	President's Office.Kampala.	
34	Mr. Nelson Omagor	Bio Trade Lead Consultant Kampala.	
35	Mr. Ojakol	Ministry of Trade Tourism and Industry, Farmer's House, Parliament Avenue., Kampala.	
36	Mr. Mulumba	Botanical Gardens, Entebbe	
37	Executive Director UNBS	Nakawa Industrial Area, Kampala	
38	Dr. Grace Nambatya	Natural Chemotherapeutic Research Laboratory, Kampala.	
39	Mr. Jamil Katende,	Mukalakasa Ltd, Kampala.	

NO.	NAME	ORGANISATION	CONTACT
40	Mr. Twaha Lubowa	Bulls Agency - Salompas. Kampala.	
41	The representative for south-western region	Kabale Private Sector Promotion Centre	
42	The Biotrade representative mid-western region	Rift Valley Tourism Promotion Ltd, Masindi	
43	The Managing Director	Rubongi Cooperative Society	
44	The Executive Director.	International Institute of Alternative & Complementary Medicines.Kampala	
45	The Chairman	Primary Environment Care Association, Kampala	
46	The Chairman	Moringa Development Association, Kampala.	
47	The Executive Director	Reco Industries, Kampala.	Tel: 077 2 617 714
48	The Executive Director	National Agricultural Advisory Services (NAADS) Mukwasi House, Kampala	Tel: 041 347 843

Appendix II: Enterprises in the trade of natural ingredients for cosmetic and pharmaceutical use

FIRM, CONTACT PERSON & ADDRESS	PRODUCT/ SERVICE	LEVEL OF ORGANISATION	LOCATION	REMARKS
1. Tropical Aloelands Mr James Muhumuza P. O. Box 70646 Kla, Tel 077 2 460171 E-mail: troaloelds@yahoo.com	Aloe ferox based products	Low	Hoima and Kampala	Finished products for the local market
2. Kikorongo General Agencies Ltd Mr. Vincent Muhindo & Mr. Ibrahim Sabiti P. O. Box 54 Kasese, Tel 077 2 895430/462232	Prunus africana and Bongia tree production	Low	Kasese	Specialised in mass cultivation based on an out grower scheme
3. Chemiphar Laboratory P. O. Box 25525, Kla Tel 041 268832, 077 2 502316, Fax 041 268834 E-mail: chemiphar.uganda@chemiphar.com	Laboratory testing services related to extraction of essential oils	High	Kampala	Multi-national
4. Tibitondwa Estates Mr. John Magezi Tel 041 257313, 075 2 744555 E-mail: jmagezi@source.co.ug	Production of moringa	Low	Jinja	Cultivation
5. Maluma Estates Ltd Vincent Mulindwa P. O. Box 91 Kampala Tel 077 2 454142 E-mail: moringa-maluma@yahoo.co.uk	Hibiscus sabdarifa and moringa	Moderate	Mityana	Cultivation
6. Primary Environment Care Association Mr. Kenneth Opiro P. O. Box 23250 Kla Tel 077 2 653233	Finished products based on moringa leaf & bark powder, Prunus africana bark powder, Warburgia ugandaensis bark powder	Moderate	Kampala	Available on local market and trying to market ingredients to the EU
7. International Institute of Alternative & Complementary Medicines (IIACM) Dr Juuko Ndawula P. O. Box 28587 Kla Tel 077 2 637735/071 651811	Research and production of medicinal formulations	Low	Wakiso	Broad based initiatives including a clinic to dispense herbal finished medicines to the local market
8. Bwindi Fruit Farmers Mr Francis Kanyaruharo Tel 077 2 848815	Avocado Oil Project and Moringa Tea	Low	Kanungu	Cultivation
9. Rosa Bansanyukira Farm (ROBAFA) Mr J. B. Muganga P. O. Box 3760, Kla Tel 077 2 466305	Avocado oil	Low	Masaka	Cultivation and currently with 800 mature trees. In process of securing equipment for oil extraction
10. Herbal Concept (U) Ltd Mr Kiribedda Waheb & Mr Tony Wadebya Tel 077 550003 E-mail: nobel@doctor.com	Aloe vera products (fort, gel and drink)	Moderate	Kampala	Products on the local market

FIRM, CONTACT PERSON & ADDRESS	PRODUCT/ SERVICE	LEVEL OF ORGANISATION	LOCATION	REMARKS
11. RECO Industries Ltd Mr. Brian Rwabwogo Tel 041 232183	Papain, Red Eye Bird chillies	High	Kasese	Cultivation, processing and final products for the local, regional and international markets
12. Luweero Development Agency Mr Kijjambu Tel 075 2 650727	Moringa leaf production	Low	Luweero	Mobilisation of small producers for moringa cultivation
13. Servana International Ltd Mr Brian Gitta Tel 077 2 507464	Moringa leaf powder and moringa oil	Moderate	Mukono	Producing natural ingredients for local market
14. Confranet Consult Ltd Mr Richard Bakadde				
15. Moringa Development Association Mr Richard Kasawuli	Moringa leaf powder and oil	Moderate	Kampala, Wakiso	Mobilises producers of finished products and sources markets in the region
16. Agro Mgt (U) Ltd Mr Martin Obalim Tel 0486 23192 E-mail: agromgt@infocom.co.ug	Crude pyrethrum extract	High	Kabale	Already exporting to USA and Germany
17. Savanah Organic Mr Zamba Duku Tel:077 2 517566	Shea butter and sesame oil	Moderate	Kampala	Producing and exporting to USA. Installing processing equipment
18. Shamshak Int. Ltd Ms Nuluyati Nabwivande Tel 071 2 610 273/075 2 610 273	Garlic oil, ginger oil, aloe vera	Low	Kampala	Cultivation
19. Liz Ti Enterprises Ltd Mr. William Tibamanya P.O. Box 281, Ibanda Mbarara	Moringa oil	Low	Mbarara	Cultivation
20. Uganda Commercial Aloe vera Farmers' Association Mr Ali Ssesanga Plot 6 Rashid Khamisi Rd P. O Box 6179 Kampala Tel 041 345737 / 077 2 696702 E-mail: ssesangaali@yahoo.com	Aloe vera	High	Central Uganda	Cultivation
21. Excel Pharmaceuticals Ltd Kivumbi Wamala John P. O. Box 7281 K'la, Gayaza Rd Tel 077 2 841906, Fax 041 345597 E-mail johnkivumbi@yahoo.com	Pharmaceutical formulations and packaging	Moderate		On the local market
22. MAHO Co Ggayi Rustico Tel. 071 2 861 687	Aloe vera production			
23. Rift Valley Tourism Promotion Ltd Mr Keith Bitamazire P. O. Box 213, Masindi Tel 077 2 479569	Moringa cultivation	Moderate	Masindi	Cultivation

FIRM, CONTACT PERSON & ADDRESS	PRODUCT/ SERVICE	LEVEL OF ORGANISATION	LOCATION	REMARKS
24. Lake Product Services Mr Niles Kanabar P. O. Box 99 Jinja. Tel 077 2 524800	Red eye chillies Prunus africana African potato	High	Jinja	Involved in cultivation, semi-processing and export
25. Budongo Community Conservation and Development Organisation (BUCODO) Mr Madira D P. O. Box 357, Masindi Tel 077 2 733927	Essential oils from Ocimum kilimandischarium	High	Masindi	Involved in cultivation and production of essential oils
26. Rubongi Cooperative Society Mr Owor Jabwona Tel 075 2 527719	Citronella oil	Moderate	Tororo	Involved in both cultivation and extraction
27. Uganda Aloe Vera Growers Association	Commercial production for aloe vera	Low	Masindi	
28. Entrepreneur Mr. Kyamulesire	Commercial production of garlic for essential oils	Low	Masindi	Area under cultivation is 25ha
29. African Bee Keepers Mr Joseph Mayanja Tel 077 2 501 485	Honey producers	Moderate	Kampala	Involved in honey production & exports
30. Kasese Moringa Association D. Alima Tel 077 2 645770 / 823631	Moringa leaf powder	Moderate	Kasese	Already on local market
31. Entrepreneur, Producer Ms Margaret Ogellan P. O. Box 98, Kumi	Cassava Starch Producer	Low	Kumi	Processing starch as an ingredient for the pharmaceutical industry
32. NEEM Tree Association	Neem tree products for insecticide purposes			Mobilisation of cultivation
33. Ntungamo Women's Effort to Save the Environment	Citronella oil	Moderate	Ntungamo	Involved in cultivation, processing and marketing product to international markets
34. Kiyinda Agro-Food Enterprises	Hibiscus	High	Mityana	Cultivation
35. Rukararwe Partnership workshop for Rural development	Bee keeping and moringa leaf production	Moderate		With modern drying facilities
36. Kato Aromatics Mr Tamale Ismail, Conrad Plaza 3rd Floor, Ebb Rd, Kampala	Trial production herbal toothpaste (mutete grass based)	High	Kampala	Initial trial complete for mainly domestic market. Participated in Expo 1996 in Spain
37. SD Agri Hitech Mr Dennis Makuba P. O. Box 27761, Kampala. Tel 041 25338 E-mail: sdahul@yahoo.co.uk	Ginger oil and papain products	Moderate	Mityana	Cultivation based on out grower schemes. Yet to begin commercial processing
38. Guru Nanak Oil Mills Mr Surjit Singh P. O. Box 11198, Kla, Tel 77 604545, Fax 041 233863 E-mail: guruoil@yahoo.com	Shea butter	High	Lira	Involved in processing and export of product

FIRM, CONTACT PERSON & ADDRESS	PRODUCT/ SERVICE	LEVEL OF ORGANISATION	LOCATION	REMARKS
39. Olet & Anderson Afforestation, E.A Ltd Mr Jacques Anderson P. O Box 21727, Kla Tel 077 2 500283, 075 2 648834	Medicinal plants	Low	Apac	Reforestation based on native species and given access rights to the PA
40. Uganda Honey Bee Keepers Association Mr Ramsey Owot P. O. Box 7156 Kla Tel 041 271799, 077 2 495672 E-mail: uha@infocom.co.ug	Honey, Beeswax, Propolis	Moderate	Nakasongola	Training and production
41. Esco (U) Ltd Mr Phil Betts P. O. Box 7892 Kla Tel 041 284604	Papain, red bird's eye chillies	High	Kampala	Trading and on the export market
42. Bakwanye Trading Co. Ltd Mr Constantine Bwambale Plot 13/15, 3rd Street Kasese Tel 0483 44068	Papain	Low	Kasese	Already exporting products
43. Farmer's Network Ltd Kigumba, Masindi Mr Richard Parwot P. O. Box 1837 Kampala Tel. 077 2 428 198 E-mail: rparwot@yahoo.co.uk	Production of essential oils: - Citronella - Geranium - Corriandra - Rosemary - Ginger - Moringa oil	Moderate	Masindi	Cultivation
44. Uganda Moringa Development Company Ltd Mrs Julie Bamuta P. O. Box 5308, Kampala Tel 077 42 10490 E-mail: umdecol@hotline.com	Finished cosmetic products	Low	Kampala	Small scale manufacturing

