Devil’s Claw Value Chain Analysis

Final Report

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Value Chain Analysis 2

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PROJECT DETAILS

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### Acronyms

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<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABS</td>
<td>Access and Benefit Sharing</td>
</tr>
<tr>
<td>CITES</td>
<td>Convention on International Trade in Endangered Species of Wild Fauna and Flora</td>
</tr>
<tr>
<td>CRIAA SA-DC</td>
<td>Centre for Research Information Action in Africa - Southern Africa Development and Consulting</td>
</tr>
<tr>
<td>FLO</td>
<td>Fair Trade Labelling Organisation</td>
</tr>
<tr>
<td>GACP</td>
<td>Good Agriculture and Collecting Practice</td>
</tr>
<tr>
<td>GMP</td>
<td>Good Manufacturing Practice</td>
</tr>
<tr>
<td>HACCP</td>
<td>Hazard Analysis and Critical Control Points</td>
</tr>
<tr>
<td>IPTT</td>
<td>Indigenous Plant Task Team</td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for the Conservation of Nature</td>
</tr>
<tr>
<td>INP</td>
<td>Indigenous Natural Product</td>
</tr>
<tr>
<td>IRDNC</td>
<td>Integrated Rural Development and Nature Conservation</td>
</tr>
<tr>
<td>kg</td>
<td>Kilograms</td>
</tr>
<tr>
<td>MCA-N</td>
<td>Millennium Challenge Account – Namibia</td>
</tr>
<tr>
<td>MHRA</td>
<td>Medicines and Healthcare products Regulatory Agency</td>
</tr>
<tr>
<td>ml</td>
<td>Millilitres</td>
</tr>
<tr>
<td>MET</td>
<td>Ministry of Environment and Tourism</td>
</tr>
<tr>
<td>NNF</td>
<td>Namibia Nature Foundation</td>
</tr>
<tr>
<td>PPO</td>
<td>Producer and Processor Organisation</td>
</tr>
<tr>
<td>PhytoTrade</td>
<td>PhytoTrade Africa</td>
</tr>
<tr>
<td>QC</td>
<td>Quality Control</td>
</tr>
<tr>
<td>TAMU</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td>THR</td>
<td>Traditional Herbal Registration</td>
</tr>
<tr>
<td>US</td>
<td>United States</td>
</tr>
<tr>
<td>VAT</td>
<td>Value Added Tax</td>
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</table>
1. **Aims and objectives**

Through mapping and analysing natural product value chains it is possible to identify constraints, upgrading opportunities, new routes to market and knowledge gaps. Supply chain diagrams aid the analysis by providing a visual representation of the flow of product and information, and the relationships that exist between actors. This value chain analysis focuses on products from *Harpagophytum procumbens* and *H. zeyheri* from Namibia and will identify and map the key processes, actors, roles and responsibilities in the supply chain. Where possible, recommendations will be made to further develop the value chain of Devil’s Claw, with the aim to increase efficiency, product quality, and market size. The report considers the general trade of Devil’s Claw in Namibia and is not specific to the MCA-N Indigenous Natural Products (INP) Primary Producer Organisations (PPO) Sub-Activity. However, several examples of PPO activities are given as it provides concrete examples of processes and practices within Namibia where details are accessible.

Devil’s Claw products are found in a wide range of finished and consumer-ready products. This can include health food supplements, cosmetics & personal care products, teas, and veterinary products. As a result of this variation in end uses, the value chain becomes increasingly complex once the material has been exported and is further processed and distributed. This value chain analysis aims to take an overview and present the chain in simplistic way.

Within Namibia there is an ongoing initiative to secure the long term sustainable livelihoods of Devil’s Claw harvesters by engaging with industry and promoting Devil’s Claw which is traceable, meets agreed quality standards, is ethically produced and complies with Access and Benefit Sharing standards under the Nagoya Protocol. Devil’s Claw which meets the above requirements could then be marketed as ‘Premium Devil’s Claw’ and therefore be distinguished from other products available which are not produced with the same credentials. It is estimated that in 2011 approximately 30% of Namibian Devil’s Claw met the standards which would enable marketing as *Premium Devil’s Claw*. It should however be noted that despite the enthusiastic discussions on ‘Premium Devil’s Claw’ a strategy needs to be developed and a driver appointed. Once officially in place, the objective would be to increase the volume of Namibian Devil’s Claw which can be classed as ‘Premium’ and to create strong industry demand for the product. Following a PPO planning meeting held in Windhoek in December 2011 a timeframe of three years was agreed in which to reach the objective. This Devil’s Claw Value Chain Analysis is one step in the process of attaining *Premium Devil’s Claw* status by assessing the base line processes, actors and roles that are currently in place. It is likely that trading of ‘conventional’ Devil’s Claw will continue even after Premium status is achieved for some material as it has been expressed by suppliers that some international importers of Devil’s Claw are unlikely to change their practices and opt for the Premium option. Although not substantiated, this is likely to be linked to product price which is in turn linked to the level of harpagosides in the material. For this reason, industry engagement is crucial to the success of the ‘Premium Devil’s Claw’ product.

The reader is advised to read PhytoTrade Africa’s Devil’s Claw Market Brief (2010) and Market Update (October 2011) for more detailed information regarding the end consumer market for Devil’s Claw in Europe as well as patents, scientific research and clinical trials. A report by Texas A&M University (TAMU) was published in July 2012 and should also be considered in conjunction with this

2. Introduction

Devil’s Claw, *Harpagophytm procumbens* DC. ex Meisn and *H. zeyheri*, are known as the grapple plant and are found within the Pedaliaceae family. Both species are found in the Kalahari sand formation of Southern Africa including in Namibia, Zambia, Zimbabwe, South Africa, Mozambique, Botswana and Angola but it is not a desert plant per se.

Devil’s Claw has a long history of traditional use as a medicinal plant being used to treat conditions ranging from osteoarthritis to rheumatism and gastrointestinal complaints. Today it is best known for its treatment of osteoarthritis including joint pain and stiffness and also as a digestive aid. Currently Devil’s Claw is primarily harvested from wild populations surrounding villages and also in less accessible areas. For some time there have been discussions surrounding Devil’s Claw cultivation trials and enrichment planting programmes, both of which have been tested and established to a small degree. Harvesting Devil’s Claw from small plantations may offer some solutions to the conservation issues surrounding naturally occurring populations, but the role of harvesters and the location of plantations must be carefully considered to ensure benefits are retained for the harvesting communities. However, it is also necessary to factor in capital costs for fencing, irrigation and other inputs, and balance this against the profitability of the actions.

Enrichment planting is another and possibly more attractive approach which should be further considered within resource conservation programmes as it enables harvesting to continue from shared resources in the field. In 2010 the Ministry of Environment and Tourism (MET) in Namibia approved the National Policy on the utilisation of Devil’s Claw in order to facilitate the conservation and management of the species, and for the promotion of sustainable trade.

Demand for Devil’s Claw from export markets is highly variable and in theory the average demand of 350 to 500 tonnes is less than what is available in Namibia. However, this partly depends on the ratio of *H. procumbens* vs. *H. zeyheri* that is required. One objective of developing the Devil’s Claw value chain is to harvest sustainable volumes of raw material and enable as many harvesters as possible to follow sustainable, traceable and ethical practices. There are reports which suggest that the supply of *H. zeyheri* from Namibia has been supplemented with unofficial imports from Zambia and Angola. However, not all of the material is transported illegally and the fundamental problem is that the imported Devil’s Claw is subsequently exported as Namibian. Through the current permit system, there is no differentiation. Although there is now a ban in place in Zambia, it is fundamental that if future cross-border trade is continued, it is formalised with agreed terms of engagement and harvesting guidelines along with full export/import permits. This could lead to an increased resource base and would place Namibia and partner countries in a strong position to meet market requirements as demand increases for sustainable, traceable and ethical Devil’s Claw – *Premium Devil’s Claw*. However, pulling together Devil’s Claw sources from different countries is a contentious issue and will require comprehensive discussions before actions can be taken.

The latest export data for Namibian Devil’s Claw was presented at the end of December 2011. The volume exported in 2011 was significantly greater than that exported in 2010 and 2009. In 2011 (Jan-Dec) 621,935 kg of Devil’s Claw was exported. This compares with 335 638 kg and 378 702 kg in 2010 and 2009 respectively (MCA data, Dave Cole).
Figure 1 shows those countries that imported Devil’s Claw in 2011 from Namibia. It should be noted that the countries listed do not necessarily constitute the end consumer market for Devil’s Claw products. In some cases, Devil’s Claw material will be imported and processed and then exported as consumer products such as tablets or extracts. It can be seen that Germany is the largest importer of Devil’s Claw from Namibia followed by France, and Poland. To gain a deeper understanding of the market drivers and end users of the material, information would be required regarding the parties involved in the import and their individual customers. To maintain competitive advantage, this information is commercially sensitive and not readily shared. Some export and import data can be misleading. Although the data here shows Poland as a major importer, this is a result of the relocation of an extractor to the country. In turn, Brazil and China are another two markets which appear on the graph and these two emerging markets present significant opportunities for growth. It is important to understand the background to the data being presented and not only take it at face value.

Figure 1. Volume of Devil’s Claw exported from Namibia in 2011 (Jan-Dec).

Table 1 is provided to avoid confusion over the use of specific terms and their definitions. Photos of the Devil’s Claw components are also provided to put these terms into context for this value chain.

Table 1: Nomenclature and Devil’s Claw examples

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition/description</th>
<th>Harpagophytum procumbens photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tap root</td>
<td>Taproot can be up to 2 m deep.</td>
<td></td>
</tr>
<tr>
<td>Side tuber</td>
<td>Develop on fleshy side tubers growing from the mother tuber. Can be up to 25 cm long and 6 cm thick.</td>
<td></td>
</tr>
</tbody>
</table>
| Fruit | Large, up to 15 cm (H. procumbens) in diameter, have four rows of curved arms with re-curved spines. Fruits from January.

The fruits of H. procumbens and H. zeyheri are different in size and shape. The picture here represents H. procumbens. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flower</td>
<td>Tubular in shape, 5-6 cm long and normally light purple or pink, with yellow inside. Flowers from November to February.</td>
</tr>
<tr>
<td>Dried sliced secondary tuber</td>
<td>The sliced side tubers are dried on nets prior to bagging. The slices are approximately 5mm thick.</td>
</tr>
<tr>
<td>Extract</td>
<td>A substance made by extracting a part of a raw material, often using a solvent such as ethanol or water. Extracts may be sold as tinctures or in powder form.</td>
</tr>
</tbody>
</table>

3. **Market for Devil's Claw**

Devil’s Claw products are used throughout the world as herbal products with anti-inflammatory properties and are found in a variety of products, often targeting arthritis, joint health and mobility. Products with this focus often target elderly consumer groups and sports people. Devil’s Claw can also be found in digestive tonic products and cosmetics. Table 2 provides examples of products that are currently available in Europe.

The Devil’s Claw export market was built around *Harpagophytum procumbens* only. As mentioned previously, the other recognised sub-species within the same genus is *H. zeyheri*. This species is concentrated in northern Namibia along with Angola, Zambia and Zimbabwe and the two species share habitats in a number of areas but due to industry demand *H. zeyheri* has historically been less sought after as compound analysis had concentrated on *H. procumbens* making the market reluctant to include *H. zyheri* in their products. However, we are now seeing an increased number of products in the market which also include *H. zeyheri* on labels as there is clearer understanding that the harpagoside levels between the two species can be similar. Several monographs have been published for Devil’s Claw. Although the Canadian Devil’s Claw monograph specifies *H. procumbens* only, the European Medicines Agency in the UK published the ‘Community Herbal Monograph of *Harpagophytum procumbens* D.C. and/or *Harpagophytum zeyheri* Decne, Radix’ in 2008. This demonstrates the acceptance of *H. zeyheri* by regulators. Industry is also seen to follow suit and are increasingly incorporating *H. zeyheri* into products. The Traditional Herbal Registration (THR) process requires a statement of species included in finished product. Further information about the THR process is available in PhytoTrade Africa’s Devil’s Claw Market Brief and Upadate. In many of the accepted THR applications both species are listed. It is recommended the definition of ‘Premium Devil’s Claw’ includes both species to tie in with those registered manufacturers who will
drive the market for Devil’s Claw products in Europe. The difference between the two species lies importantly in the active components, namely the mix of iridoid glycosides. Further research is required for a fully comprehensive comparison of the two species as well as differences between different regions. In addition, further studies into the active compounds and their relative therapeutic activities are required to provide the scientific backing that the market is likely to demand. Although purely speculative, there may be potential for the different species to target different end product markets based on levels of activity (personal observation).

Table 2. Consumer products containing Devil’s Claw

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Retail Price (£/US$)</th>
<th>Devil’s Claw content / Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.Vogel</td>
<td>Atrosan Devil’s Claw tablets</td>
<td>£9.40 (30 tablets)</td>
<td>One tablet contains 480 mg of extract (as dry extract) from <em>H. procumbens</em> and/or <em>H. zeyheri</em>. Extraction solvent: Ethanol 60% V/V.</td>
</tr>
<tr>
<td>Vega Sport</td>
<td>Recovery Accelerator</td>
<td>US$ 39.99 (540 g)</td>
<td>One serving (27g) contains 150mg Devil’s Claw 6:1 extract</td>
</tr>
<tr>
<td>Arkopharma</td>
<td>Devil’s Claw Massage Gel</td>
<td>£7.69 (80 ml)</td>
<td>Devil’s Claw extract constitutes 30%</td>
</tr>
<tr>
<td>The Organic Pharmacy</td>
<td>Devil’s Claw Tincture</td>
<td>£10.50 (50 ml)</td>
<td>Aqua, Devil’s Claw, Rye Alcohol</td>
</tr>
<tr>
<td>Dodson &amp; Horrell</td>
<td>Devil’s Claw Root</td>
<td>£40.50 (2.5 kg)</td>
<td>100% Devil’s Claw Root</td>
</tr>
</tbody>
</table>

As discussed in PhytoTrade Africa’s Devil’s Claw Market Update (October 2011) Devil’s Claw products in Europe which are marketed as herbal remedies/supplements and which are not supported by a Traditional Herbal Registration (THR) from the MHRA cannot be legally be placed in the market. At the latest analysis, 12 THR had been granted for products containing Devil’s Claw. It should be noted that this does not equate to 12 consumer products as some manufacturers place
multiple products under one registration. It should also be noted that the registrations that have been made generally make reference to both *Harpagophytum procumbens* and *H. zeyheri* as product ingredients. These 12 leading manufacturers (listed in the Devil’s Claw Market Update) will be initially targeted with the promotion of *Premium Devil’s Claw* as they are currently regarded as the European leaders in Devil’s Claw consumer products. The enforcement of THR will reduce the total number of Devil’s Claw products that are available on the market and will therefore also impact on the demand of raw material. However, the impact of the loss of small brands from the market may not have a significant impact on Devil’s Claw demand. Those companies who order significant volumes and who are aware of issues such as ABS will complete the THR process and remain present. This does however remain to be fully seen. Demand for their products may also increase and so it is expected that the demand for *Premium Devil’s Claw* will rise over time.

Opportunities in the local market are also worth developing. There are some consumer products, such as Devil’s Claw tablets, that are manufactured in Southern Africa (Namibia and South Africa) and placed on the Namibian market in stores such as independent pharmacies. There is also the informal traditional medicine market where selected tubers are harvested and used within communities.

Along with competing Devil’s Claw products which use material sourced from outside Namibia or from competing suppliers, competition also comes from ingredients such as turmeric, arnica and glucosamine and chondroitin, all which offer consumer similar joint health applications. Some of these products are likely to compete of price and also consumer awareness of the active ingredients. For Devil’s Claw to secure a significant percentage of the joint health market, it is important to understand what drives consumers purchase joint health products and what they expect from these products. Further scientific studies and clinical trials may be required to boost efficacy data which is increasingly demanded by consumers. This is particularly highlighted in the TAMU report (2012). Further details about competing products as well as end market sectors for Devil’s Claw including herbal medicines, food and beverage, veterinary, and cosmetics, are included in PhytoTrade Africa’s Devil’s Claw Market Update (October 2011).

4. *Devil's Claw Value Chain: Processes, actors and challenges*

The value chain can be split into sections where processes and actors can be identified and the relationships can be mapped. Those described in the following text and tables specifically highlight the actors and processes in the Namibian value chain for Devil’s Claw. Table 3 depicts the key processes, actors and roles involved and provides a description of the associated actions. This information has been difficult to obtain and will be added when it can be gathered. The information can be used as a tool to focus on key issues and opportunities to upgrade. As and when processes and actors in the chain change, the cost structure will also alter and this table will require periodic alterations and updates.

One challenge which lies within the supply chain is the variation in harpagoside level. It is not clear what the major factors that impact on the level of harpagoside in the extract. The impacting factors could range from the point of harvest through to primary processing (including drying) and storage methods. Other factors including plant growth conditions (soil, climate, location), and the age of the plant and its tubers may also impact on the chemical composition. There have even been differences recorded between tubers from the same plant, adding further levels of complexity. These factors
should be investigated further to understand the impact and mitigate against harpagoside deterioration where possible.

4.1 Harvesting and primary processing

Permits by the Ministry of Environment and Tourism (MET) are required in Namibia to harvest, buy, cultivate, transport, research and export Devil’s Claw. The harvesting permit requires permission from the landowner/traditional authority for the harvesting to take place on the specific land and also instructs the use of sustainable harvesting methods. Each permit is valid from the date of issue until the end of the harvesting season, which is limited from 1st of March to 31st of October by the conditions in the harvesting permits. The MET have the authority to remove harvesting permits if harvesting becomes unsustainable or if the permits are perceived to be misused.

Some harvesters harvest the raw side tubers from plants in relative close proximity to their homes, while others take trips further afield and spend several weeks (sometimes months) in temporary bush camps. Other harvesters will carry out both methods. Devil’s Claw harvesting is a time and energy consuming process. From past studies, it is reported that in order to harvest 15.75 kg of fresh tuber, equating to 2 kg of dried material, approximately three hours is spend digging and refilling the hole, and on average more than two hours is spent accessing the resource and returning (Cole and CRIAA SA-DC, 2003). Men generally dig using sticks and spades while women mainly use sticks only and dig less deep. Effort is also required in processing the material once having returned to the homestead or camp and involves removing the sand from the tubers, slicing it with stainless steel knives in approximately 5mm thick slices and placing them on shade nets to dry. Drying takes between three to five days and is conducted away from direct sunlight to avoid the deterioration of the harpagoside content. They are ideally dried on shade nets suspended in the air to ensure there is sufficient air circulating the material, although on some occasions by harvesters outside the PPO programme, the material is dried on the ground, directly reducing quality. Once fully dried, the slices are packed into polypropylene woven bags. 50kg sized bags can hold, on average, 25 kg of dried Devil’s Claw chips.

It is important to be clear about the meaning of traceability and what it involves. Traceable Devil’s Claw in Namibia means material which can be traced back to individual harvesters and for which records are kept to show this. Product traceability is a fundamental element of the growth of a robust market and contributes to the ethical status of ‘Premium Devil’s Claw’. Those harvesters that belong to registered PPO’s and Conservancies provide fully traceable material. Each bag of material sold, is labelled with the harvester number or name and the harvesting area (e.g. village code). The permit number and the organic licence number, if applicable, are written on the supporting documents. Individual buyers have established specific supporting documents which also serve as recording methods such as tax invoices which can then also be used to calculate the total harvested and sold at the end of each season. There are also opportunities to gather information such as harvester gender distribution.

Within Namibia CRIAA SA-DC, and other support organisations such as IRDNC and NNF, play a fundamental role in supporting the Devil’s Claw supply chain through the current funding of the MCA-N Indigenous Natural Products (INP) Primary Producer Organisations (PPO) Sub-Activity.
Devil’s Claw trainers of support organisations in Namibia also play a crucial role in the development of sustainable and ethical harvesting practices and establishment of purchase contracts. Training programmes cover sustainable harvesting, alongside organizing and supporting harvester groups, their roles and responsibilities, financial management, institutional training and proper filing and documentation of sales data and relevant documents. For the PPOs which are currently certified organic, the scope of support also includes preparation for and facilitating organic inspections, as well as implementing the required improvements.

Support is also provided in communication with the MET and Traditional Authorities, and during negotiations of buying contracts and pricing agreements with local exporters, as well as in lobbying groups such as the Devil’s Claw Working Group (DCWG) of Namibia and the San Support Organisations Forum. Interaction at this level is important to facilitate dialogue between relevant stakeholders and also drive forward ‘Premium Devil’s Claw’ on a national level.

The official Devil’s Claw harvesting season begins on the 1st March and runs until the 31st October. In 2011, 20 Primary Producer Organisations (PPOs) received support from one of the three support organisations (CRIAA SA-DC, IRDNC, NNF) implementing the MCA-N INP PPO Sub-Activity in Namibia. Those PPOs, which are either registered Communal Conservancies or Resettlement Farms and had fulfilled basic organisational requirements to be able to receive support, have been assisted with trainings to harvest sustainably and to sell traceable Devil’s Claw. Sixteen of these PPOs have sold their Devil’s Claw to Ecoso Dynamics while four PPOs in Omaheke Region sold to the Gamagu Company in Dordabis. The number of individual harvesters within each PPO varies and in 2011 ranged from 10 to 537. It is estimated that approximately 2100 harvesters are involved. Overall, the harvesting groups are represented by more female than male harvesters although this is not the case in every PPO. In regard to the 20 PPOs in 2011, a total of 102390 kg was traded with EcoSo Dynamics and the Gamagu Company which equated to a total income for harvesters and PPOs combined of N$ 2,355,236.

There are also significant levels of Devil’s Claw harvesting that take place outside the supported and trained PPOs but it is not clear how many producers in total are engaged. Many of those involved are not organised into harvester groups. There have been instances where the requests have been made for support in setting up harvesting activities and gain access to buyers. Although the provision of support may be possible for some areas, it is first necessary to establish whether there is sufficient Devil’s Claw present to render the collection economically viable and ecologically sustainable. Furthermore, other criteria must be fulfilled, such as free access to the Devil’s Claw resource and a basic level of organisation in the harvester group. This could be in the form of an elected Management Committee and a general willingness to work together and manage the communal resource jointly. There are some examples where private farms employ individuals to harvest Devil’s Claw on private land or individuals in communal conservancies employ harvesters to harvest on communal land as well as commercial farms without a valid MET harvest permit.

4.2 Consolidation, sorting and exporting

There are five known buyers of Devil’s Claw in Namibia who purchase the material for export, as well as for the production of finished products for the local market.
Purchasers are also required to report back to the MET with information regarding species harvested, number of bags, total weight purchased and harvesting permit numbers from those individuals or harvester groups bought from. In addition, exporters must apply to the MET for an export permit. The issuance of the permit is subject to a valid Phytosanitary Certificate (issued by the Ministry of Agriculture) and the import regulations of the destination country. The exporter is also required to report back to MET within 14 days of the transaction taking place with the exact quantities exported.

EcoSo Dynamics has exclusive purchase agreements to buy Devil’s Claw from many of the PPOs with who contracts are established with. These agreements generally run for three years and then will be renegotiated, although an annual price negotiation takes place. Another buyer in Namibia is the Gamagu Company (based in Dordabis).

The material is bought from the PPOs on specified, pre-arranged buying trips. The regularity of these buying trips varies depending on the quantity available for purchasing, the availability of transport and the agreements established with different buyers. This can range from monthly visits to only one buying trip per season. Multiple buying trips are preferred to ensure a regular income for harvesters. The quality of the material is usually checked by PPO representatives at the point of purchase. The representative of the buyer might also do spot checks before purchasing. The material is then re-checked once it is delivered to the processing site of the buyer. The processing site conducts handling, storage, repacking and quality control activities.

On receiving the dried, sliced material, the exporter can then take various routes to market the product. A small proportion of the material is further processed in Namibia into capsules, teas, veterinary products and other consumer-ready products. These are distributed within the local market for retailing in pharmacies and other outlets. Some of these products are also exported to South Africa where they are sold through similar outlets as in Namibia. However, due to small volumes, this is not a currently a significant income stream for producers of Devil’s Claw products in Namibia.

Different buyers and exporters of Devil’s Claw will have individual purchase and quality control practices in place although it is expected that they follow similar protocols. Typically, once the material is returned to the buyers processing and sorting site, the quality of each bag is checked including colour, levels of moisture and foreign matter. Depending on the quality the material is separated into two grades and the volumes delivered from each harvester are recorded. Batches are also tested for harpagoside levels. Traceability is crucial in the sorting process and Grade 1 material is marketed with batch numbers, species inclusion, quality (Organic, Fair Trade, Traceable or Conventional), year of harvest and a running batch number. This number is used on purchase sheets to ensure the continuation of traceable material through the supply chain.

A quality control report is prepared for each batch purchased and feedback is also provided to the PPOs concerning the delivered material. Where quality standards were not satisfactorily achieved, action points are provided to ensure future batches meet required standards.

Currently, Devil’s Claw is exported as sliced and dried raw material in bags of 20 or 25 kg, as well as being supplied to the local market as processed finished goods. Greater value addition would be achieved in Namibia by further processing prior to export, such as extract production. However, this
is likely to require significant investment in order to establish extraction and processing facilities that are in line with European and other export market standards. Although this could achieve a higher price compared to the raw materials, it is likely that some present customers are only interested in purchasing raw material as their business is in the provision of extracts.

4.3 Importing, processing and product manufacturer

The actors, roles and responsibilities contained within this section of the value chain are less clear compared to activities leading up to export. Within Namibia, a very small percentage (less than 1%) of Devil’s Claw raw material is used to produce finished products for the local market. This includes tablets for human consumption, Devil’s Claw tea and products for veterinary use (including equine). There are also opportunities to build the market for these finished products in other African countries, namely South Africa. However, accessing these markets requires networks and marketing channels, as well as the complying with the necessary regulations.

As described, the large majority of Devil’s Claw from Namibia is exported in a dried and sliced format to the international markets shown in Figure 1. This material is bound for a range of companies including extract manufacturers, cutters, tea manufacturers, tincture and pill manufacturers, veterinary herbal medicine manufacturers and further distributors. Appendix 1 provides a, non-exhaustive, list of companies who manufacture and/or supply Devil’s Claw extract and could therefore be potential customers for Premium Devil’s Claw from Namibia. Naturex, Arkopharma and Indena are three companies which produce Devil’s Claw extracts and are described in more detail below.

- Naturex provides a range of plant based ingredients for the food, beverage, flavour nutraceutical, pharmaceutical and cosmetic industries. Within the NATactiv product category, two Devil’s Claw products are listed. Harpagophytum procumbens and Harpagophyrum zeyheri are listed separately although both are composed of between 2.5% and 5% harpagosides. Within the NATpharma product list, Devil’s Claw (H. procumbens) is listed. This product is said to be for articlar pain and digestive disorders and contains 1.5% - 2.5% harpagosides. The extraction solvent is stated as ethanol 60% and the DER genuine is 3.5:5:1.

- Arkopharma is a pharmaceutical laboratory which specialises in phytotherapy, natural medicine and dietary supplements. They are the European leader for phytotherapy medicines and dietary supplements and have several brands offering a variety of plant based medicines. Devil’s Claw is one product which Arkopharma produce an extract from. According to their website, their manufacturing process (not product specific) use a process called cryogrinding to pulverise the active part of the dried plant by grinding it at low temperature, using liquid nitrogen to reach –196 deg C. The material is then sieved with the smallest particles (125 microns) being packaged and distributed. The other process described by Arkopharma is Supercritical CO2 extraction which produces and higher quality product and is described as ‘organic’.

- Indena offers Devil’s Claw within both the health food and pharmaceutical sub-sectors of the company. The material used is H. procumbens and the harpagoside content of the extract is stated as between 1.8% and 2.2%. Within the health food category, the material is said to
have biological activity on joint health whereas in the pharmaceutical arm, it states arthritis. This is an interesting marketing approach to target different end products and customer groups. In addition, the extract is Halal certified but it is not certified by EcoCert where a number of other products are.

Quality is of central to companies such as Naturex, Arkopharma and Indena and is integrated into every step of a products life cycle from harvest to consumer use. Box 1 lays out the quality checks that are carried to ensure product compliance. If further value addition is transferred to Namibian actors and extracts for the export market are produced in country, these quality control steps would be required to compete with European manufacturers.

**Box1: Quality Assurance and extraction production steps**

GMPs are applied throughout the entire production process. At the source of the raw material the following components are checked and controlled. Without full compliance to the control points the material will not be accepted for further processing.

- GACP inspection and qualification
- Harvesting period and method, drying conditions and storage
- Botanical identification of the plant and plant part
- Quarantine of the biomass under monitored conditions
- Microbiological and chemical analyses
- Control of contaminants including pesticides, heavy metals and aflatoxins

The extract manufacturing process also includes various controls and check points. These are implemented on;

- Grinding
- Extraction parameters including solvent type and extraction conditions (temperature, pressure and time)
- Concentration and purification
- Drying
- Packaging and labelling
- Cleaning of equipment

Before the finished product is distributed to customers, final analyses are conducted by the manufacturer to ensure it complies with product specifications. Analytical methods such as HPLC and NMR are used along with reference standards and data is provided in the Certificate of Analysis. Along with physical and microbiological analyses of the finished product, analytical controls are also in place and include;

- Content of active components
- Content of impurities, heavy metals, pesticides and residual solvents
### Table 3. Processes and roles along the value chain

<table>
<thead>
<tr>
<th>Process</th>
<th>Actors</th>
<th>Ownership</th>
<th>Description</th>
<th>Current roles</th>
<th>Alternative roles</th>
</tr>
</thead>
</table>
| Harvesting                            | Rural harvester                     | PPOs (Conservancies or Resettlement Farms)    | - Harvesting tubers  
- Sorting  
- Slicing and drying  
- Bagging  
- Delivery to intake point.  
- Partake in training  
- Enrichment planting |                                                                                |                                                                                                                                  |
| Rural consolidation (bulking and onward selling) | Harvesters /collectors                  | PPOs (Conservancies or Resettlement Farms)    | - Consolidation and collection from harvesters.  
- Weighing & recording, visual QC, re-bagging, delivering to buyer. |                                                                                |                                                                                                                                  |
| Sorting                               | Local processors                     | EcoSo Dynamics                                 | - Sort / Grade  
- Quality control (GMP)  
- Inventory  
- Re-bag  
- Staff management.  
- Facility and equipment maintenance.  
- Sell to export market (and marginally locally). |                                                                                | Further value addition - Production of extract in line with EU standards |
| Storage                               | Local processors                     | EcoSo Dynamics                                 | - Store  
- Responsibility for losses, damage. |                                                                                |                                                                                                                                  |
| Export                                | Local processors                     | Eg, EcoSo Dynamics                             | - Documentation of materials for export.  
- Insurance.  
- ABS and other regulatory issues.  
- Transport over borders. |                                                                                |                                                                                                                                  |
| Import                                | Manufacturer / Distributor outside Namibia | Eg, Naturex / Arkopharma                     | - Receive material  
- Transport over borders  
- Duties, taxes  
- Losses, delays, and damages |                                                                                | - Receive fully processed extract  
- Deliver to distributor or direct to manufacturer.  
- Transport over borders. |
| Additional processing                 | Processor outside Namibia             | Eg, Naturex / Arkopharma                     | - Quality control  
- Standardise Harpagosides  
- Compliance with regulations, safety tests  
- Package  
- Store |                                                                                | Not applicable                                                                 |
| Sales and                             | European                            | Eg, Naturex /                                 | - Formulation and  
- Distributes extract that |                                                                                |                                                                                                                                  |
<table>
<thead>
<tr>
<th>Process</th>
<th>Distributor</th>
<th>Concepts</th>
<th>Services</th>
</tr>
</thead>
</table>
| Dispatch | Processor | Arkopharma | - Marketing materials  
- Customer identification  
- Customer visits, trade shows  
- Processing orders including provision of samples and quotations  
- Customer negotiations  
- Dispatch  
- Inventory control  
- Returns and damages  
- Credit control  
- After sales service |
| Distribution (either of raw material or Devil’s Claw extracts) |  |  | - Formulation and concepts  
- Marketing materials  
- Customer identification  
- Customer visits, trade shows  
- Processing orders including provision of samples and quotations  
- Customer negotiations  
- Dispatch  
- Inventory control  
- Returns and damages  
- Credit control  
- After sales service |
| Manufacturing | Joint health /Veterinary / Tea/ Cosmetic/ brand/ manufacturer | Various manufacturers including contract manufacturers and own brands | - Manufacture consumer products  
- Compliance with regulatory requirements  
- Stock and inventory control  
- Returns and losses |
| Sales and distribution of consumer product | Manufacturer / brand | Various | - Branding and positioning  
- Sell and distribute finished products. |
| Retail of finished products | Retailer / brand | Various brands such as health food shops, pharmacies, online | - Consumer awareness activities, advertising  
- Retail finished product |
| Consumption / use | Consumer / use by medicinal practitioner / vet | Consumer / use by medicinal practitioner / vet | - Buy consumer product and use  
- Word of mouth marketing, social media |

Arkopharma concepts - Marketing materials - Customer identification - Customer visits, trade shows - Processing orders including provision of samples and quotations - Customer negotiations - Dispatch - Inventory control - Returns and damages - Credit control - After sales service

has been processed in Namibia - Distributors located globally - Marketing - Targets bioactivity and efficacy of ingredient, and harvester impact / African origin

Distribution (either of raw material or Devil’s Claw extracts)

Manufacturing - Manufacture consumer products - Compliance with regulatory requirements - Stock and inventory control - Returns and losses

Sales and distribution of consumer product - Brand owner - Sell and distribute finished products.

Retail of finished products - Consumer awareness activities - Retail consumer product

Consumption / use - Buy consumer product and use - Word of mouth marketing, social media

Manufacturing

Retail of finished products

Consumption / use
For those PPOs being supported by the Programme, the buying price (generally a minimum prices to harvesters that can be revised later in the season) of Devil’s Claw raw material from the harvesters is, when possible, determined before the harvesting season starts and agreed by both parties. The buying price will include the per kg price to be paid to harvesters, as well as the amount to be received by the PPO as a remuneration for the overall management of the Devil’s Claw resource and the successful interaction with the buyer. Ideally the harvesters are be paid on day of purchase, but the PPO will generally receive payment for the total kilograms sold at the end of the harvesting season. It should however be noted that the payment structure differs between PPOs. To promote value chain development the purchaser of Devil’s Claw must remain transparent in all interactions with the PPOs and share market information including export prices (and exchange rates).

In 2011, the 20 PPOs in Namibia supported by MCA-N INP PPO Sub-Activity traded in Devil’s Claw with EcoSo Dynamics and Gamagu cc. The price per kg ranged from N$ 20/kg to N$ 30/kg. This range in pricing is due to the lower market price for *H. zeyheri* compared to *H. procumbens* and can also be linked to the quality of the material supplied, established customer trust, and evidence of fair trade relationships. It also varies between suppliers. In some areas only *H. zeyheri* is available, whereas other regions can supply a mixture, or only *H. procumbens*. The ratio of species, quality of each species, market linkages, and reputation of each exporter leads to a variation in pricing.

5. **Value Chain Competitiveness**

*Premium Devil’s Claw* from Namibia will be a key development in the value chain to enhance competitiveness. As described, this product is aimed at the key companies who have obtained THR and significant effort will be required to raise awareness of its credentials compared with other Devil’s Claw supplied to the market. Suppliers of *Premium Devil’s Claw* will be required to maintain fully traceable practices and build strong customer relationships with buyers. Although the initial focus will be on the European market and THR companies, it should also, in due course, be extended to other international and regional market, with the final objective of a global recognition of Premium Devil’s Claw versus other available products.

Underlying *Premium Devil’s Claw*, the competitive positioning of the product from Namibia relies on four key components; price, quality, reliability and supply capacity (volume). Ensuring that all these components are acceptable and agreed is fundamental to develop a strong and robust market. The product must be shown to be sustainably harvested and that conservation and fair trade practices are in place. Due to the increasing demand for natural, organic and sustainable/ethical products by both industry and consumers, *Premium Devil’s Claw* is likely to be required to show this on a very practical level which can be communicated to consumers to driver products purchase decisions.

Furthermore, ingredient quality is fundamental in ensuring repeat orders from buyers, processors and manufacturers. Some quality issues have been reported for Devil’s Claw such as mould development and black colouring of the material if it has not been sufficiently dried or if a stainless steel knife has not been used. It is also reported that there is a clear difference in quality between
materials that has been dried on nets versus that which has been placed directly on the ground. Those that are dried on the ground can become contaminated with sand particles and are at greater risk from contact with animals and insects.

It is also crucial not to overlook the importance of strong customer relations where communication channels are clear, efficient, and queries receive rapid and informative responses. By building relationships with local, regional and international customers, greater insight into market dynamics and demand may be achieved and repeat orders are more likely. Suppliers of Devil’s Claw in Namibia with a good customer service record would be expected to hold a significant competitive advantage.

Overall, the main factors that influence the price of Devil’s Claw, through to the harvester level in order of importance, include demand, price, volume available and exchange rates. Although it is clear that quality is crucial in maintaining customers, these other components are key in determining the end supplementary income that is received by the harvesters.

5.1 Standards and Certification

The current Devil’s Claw supply chain from Namibia already incorporates quality standards and certification marks into its practices. Good Manufacturing Practice (GMP) will soon be fully in place at certain buyer facilities and Good Agricultural and Collecting Practice (GACP) is planned for at the PPO level. Both these standards are globally recognised and provide product quality assurances. In regards to third party certification, there has been limited activity in Namibian supply chains. EcoCert has been implemented once but the process requires significant time and resources. There are currently three PPOs with organic Ecocert certification: Nyae Nyae Conservancy, N’Ja Jaqna Conservancy and the Kyaramacan Association (KA). This standard is also globally recognised and adds competitive advantages to the certified products particularly due to the growing market for sustainably and ethically produced natural products. When a product is certified by Label such as EcoCert, it is then possible to use the label of product packaging and marketing materials. However, strict display guidelines must be adhered to.

Additional opportunities lie with FLO Certification which revolves around the Fair Trade movement. This is regarded as one of the most recognised certification marks and if there is demand for a FLO certified product by industry, this certification could significantly boost sales for Namibian Devil’s Claw. Within FLO Certification, Devil’s Claw would fall under the standard for ‘flowers’ which includes tubers. However, the certification process is time and resource consuming and a cost benefit analysis should be conducted to ensure it will bring sufficient returns through increased sales for the certified harvesting groups over and above what is achieved through EcoCert Fair Trade certification. There are also other certification schemes which consider fair and ethical harvesting practices. Schemes such as FairWild, which was established in 2008, promotes the sustainable use of wild-collected ingredients, with a fair deal throughout the supply chain. Another example would be the Soil Association’s Ethical Trade standard which it combines with its organic standards. As listed on the Fair Trade website (http://www.fairtrade.org.uk), product categories of potential relevance to Devil’s Claw under current application include beauty products and herbal tea. Herbal supplement and remedy products are not included within the list and following an online search for such products with Fair Trade certification, few, if any, were found. This raises the question of the impact certification would have on market access given current applications. However, if Devil’s Claw is introduced into new applications such as beverage products, there would likely be a larger
market for Fair Trade certification. The same applies to cosmetic products and Devil’s Claw is already found in a handful of cosmetic and personal care products. One example, which has recently been discontinued, was Bio Etic’s Organic Balm with Devil’s Claw and made reference to ‘fair trade’ on its label.

In addition to external, third party certification, PhytoTrade members operate under the PhytoTrade Africa Ethical Biotrade Charter. Members work towards full compliance using an assessment matrix and are guided by PhytoTrade’s executive office, ensuring that all practices meet the stated environmental and ethical standards. The Matrix also aims to build capacity of harvesters involved in the trade of natural products and to develop fully transparent and sustainable business relationships between harvesters, manufacturers and consumers. Although this is not a third party certification process, it does prepare PhytoTrade member’s for external certification by marks such as EcoCert, lowering the transaction costs.

Compared to some other joint health products on the market such as glucosamine, Devil’s Claw also has the competitive advantage of being a natural, organic and, in some instances, an ethically produced product. Devil’s Claw can be positioned as an exotic ingredient which is supported by producer stories and the benefits the trade has brought to harvesting communities. These components will also be included in the definition of Premium Devil’s Claw.
6. **Other Issues impacting on the value chain**

6.1 *Access and Benefit Sharing Legislation*

National regulations in South Africa seek to regulate the bioprospecting permit system applying to both the discovery and commercialisation of indigenous biological resources (IBR). It includes the export of any IBR from South Africa, and import into South Africa, for bioprospecting purposes and requires documentation including research and export permits, followed by a bioprospecting permit, and Benefit Sharing and Material Transfer Agreements. The South Africa legislations require benefit sharing agreements to be put in place for simple, uncomplicated biotrade, even if no new molecules or traditional knowledge is involved. The regulations present implications for the production of complimentary herbal medicines, cosmetics and any other products derived from indigenous biological resources imported to South Africa. This would affect any Devil’s Claw material imported to South Africa for product development. Namibian legislation on bioprospecting issues will also be developed and it will be important for stakeholders to be involved in the dialogue with policy makers to ensure the requirements enable trade and innovation while protecting biodiversity and traditional knowledge¹.

6.2 *Sustainable harvesting regional legislation*

Devil’s Claw is not listed within the IUCN’s Red List or on under CITES regulations. However, there appears to be confusion over conservation status of the genus and according to Kew’s species record the conservation status has not been evaluated globally but is assessed as Least Concern (LC) in the IUCN Red List criteria in South Africa. In Botswana, *H. procumbens* is assessed as Lower Risk – Near Threatened. In Namibia, Botswana and South Africa, Devil’s Claw is listed as a protected species and legislation has been put in place for its protection including the harvesting, transport and export permits which are described above. There are large areas in Namibia (National Parks and commercial farmlands) where Devil’s Claw is not harvested and this was one contributing reason not to include in the CITES list.

Currently the primary threat to Devil’s Claw is over harvesting of the tubers but this can be reduced by sustainable harvesting practices, where the tap root or “mother plant” is left in the soil along with sufficient side tubers to enable regeneration, and through continuous resource monitoring. It is reported that overall, those involved in the harvesting and trade within the 20 supported PPO’s are aware of the fragile nature of the resource and the importance of its protection. Devil’s Claw provides a cash income which would be lost if the species were eradicated from surrounding areas and there is an important feeling of ownership of the environment within some communities. In several areas harvesters have developed their own systems to preserve the resource such as rotating harvesting areas from year to year, and leaving areas un-harvested which are producing small tubers to let the plants rest. Other harvesters are practicing selective harvesting. Only every second or third mature plant is harvested so that the same area can be harvested the following season. Another reported approach is to only harvest from one side of the plant, leaving the other fully intact, until the following year. In some easily accessible areas, such as those close to villages, there are signs of overharvesting. However, this should not be taken to mean that the Namibian population as a whole is threatened. Devil’s Claw is abundant in large rangelands, many of which

are never harvested as they are in areas which are difficult to access. These observations are in reference to general Devil’s Claw harvesting in Namibia and are not making specific reference to those involved in the PPO programme.

Resource surveys are time consuming and not considered to be an indicator of sustainable harvesting. For these reasons, they are not carried out annually in all areas of harvesting. However, continuous monitoring programmes are in place and run during harvesting season, and after, to maintain an understanding of the harvesting impacts on the Devil’s Claw population. Overall, it is reported that the Devil’s Claw populations in study sights is stable. If a single village or individual harvester is found to be harvesting unsustainably, the PPO will issue a warning. If practices are not shown to improve, the harvesting permit can be revoked and in some cases a fine may be issued by MET. Methods can be employed by trainers and consolidators to reduce the prevalence of over-harvesting. This may be in the form of targeted training. The quantity of harvested Devil’s Claw can be controlled by the number of bags distributed to harvesters as well as setting a harvesting quota for the season.

6.3 Cultivation/enrichment planting and climate change

Within Namibia, cultivation is more appropriately described as small scale enrichment planting. The African Wild Dog Conservancy, for example, planted a Devil’s Claw ‘garden’ a few years ago and has seen positive results. From 2002 to 2005, seeds were sown and the small plants were transplanted into a fenced plot. Approximately 300 plants were counted in 2012 in total and one harvest had taken place. As part of a trial, harvesters of two PPOs have been trained to sow seeds in areas surrounding houses and in due course planting the seedlings out in the field to enrich the resource. However, for this approach to be successful, the communities involved must already have established Devil’s Claw harvesting practices as those individuals planted out will become part of the shared resource. Not all plantation experiments have shown highly successful results and many factors can impact on the growth of the plants. Harvesters must provide the required care and conditions for the young plants to thrive including protection from grazing animals and insects, competitive species, along with sun exposure and optimum soil conditions. Other harvesting communities have expressed an interest in enrichment planting programmes and with sufficient training this could provide positive Devil’s Claw development opportunities. However, to make this economically viable, the issues of scale and price have to increase sales and result in higher revenue.

Crucially, enrichment planting should not be seen as an excuse to harvest unsustainably and rather an approach to promote increased raw material resources, eventually closer to the homesteads, and enhanced volumes. If cultivation activities are to be extended and formalised, it will be necessary to obtain a cultivation permit from the Ministry of Environment and Tourism.

The impact of climate change on Devil’s Claw populations in Namibia has not been fully explored although it is expected that if conditions become hotter and dryer in the Kalahari Desert, this will impact on the growth of the plants and as well as potentially shifting the active component composition. Although only speculative at this stage, the impact climate change will have on many species has been investigated through mathematical models and other approaches. It is also important to understand potential geographical shifts in populations if conditions change. Along with the species conservation approaches, the impact of climate change can be regarded as another
reason for cultivation trials and the investigating opportunities around the establishment of managed plots.

6.4 Adulteration and avoidance

It has been reported that on occasion stones, sand and wood are added to bags of dried Devil’s Claw in order to reach a higher weight and receive greater payment. In some cases the dried Devil’s Claw is adulterated with harpagoside-poor taproots or with other bitter African plants. This not only reduces the price for future harvesters and results in loss of return buyers, but threatens the conservation of the species as the taproots are removed and the plant cannot regenerate. As a result of this threat to market trust, harpagoside content is conventionally used as a marker of purity of Devil’s Claw extracts. Analytical tools can be used to avoid species substitution, concealment, and identify varying geographic origins, alongside adulteration. Tools including fingerprinting methods and mass spectrometry can be used to verify products and ingredients and further development of these methods may be important to enhance the robustness of the Devil’s Claw supply in Namibia. Another recent issue that was faced was the supply of very thick slices from some harvesters in an attempt to increase the weight of the bags. Thick slices do often not fully dry and therefore reduce the quality of the batches and lead to moulds forming on the Devil’s Claw. The thickness of slices can be monitored to ensure they are of a standard which will fully dry and avoid formation of unnecessary moulds.

6.5 Zambian ban on harvesting and export

In the first quarter of 2012, a suspension was placed on the harvest and export of Devil’s Claw in Zambia by the Zambian Government. This suspension will not be lifted until a review of Zambian policies have been conducted and a strategy established. It is understood that there has been significant imports of H. zeyheri from Zambia to Namibia. However, this material does not carry assurances of sustainable harvesting and is not traceable and would not meet the objectives of Premium Devil’s Claw. If the indications of this trade are correct, it is possible that a shortage of material will develop in the market this year if demand remains at the same level as in 2011. As discussed in the introduction, cross-border trade of Devil’s Claw may lead to increased opportunities for Premium Devil’s Claw from Namibia and partner countries by significantly extending the resource base. However, it would necessary be to engage with the Government to formalise any arrangements before partnering with harvesting groups outside Namibia. PhytoTrade Africa has members in Zambia who are also involved with Devil’s Claw and where there may be opportunities for collaboration. However, this fully depends on the current ban in place and developments announced by the Zambian Government. Another known source of Harpagophytm zeyheri is Angola. If a shortage in material or price rise does develop in association with the Zambian trade suspension, there may be increased cross-border trade with Angola where there are no quality or sustainability controls. This situation should be monitored. It is increasingly necessary to encourage the Zambian Government in its deliberations to establish protocols for trade and lift the suspension. If successful, similar agreements could also be negotiated with Zimbabwe and Angola, in order to works towards the establishment of Premium Devil’s Claw from Namibia, covering trade from partner countries.
7. **Value Chain Upgrading: Preliminary findings and recommendations**

Based on the value chain analysis presented for Devil’s Claw and the understanding of current processes and actors, several preliminary recommendations can be made to enhance competitiveness and market share, with the end goal being to increase income to Devil’s Claw harvesters in Namibia. The recommendations given here will be revised as more detail of the value chain becomes apparent and as new developments are realised. This is expected to be a ‘rolling’ process and which can be incorporated into local business plans of the Producing Associations.

It should also be noted that on conducting this value chain analysis is was apparent that several have been conducted previously and detailed reports providing in depth analysis and breakdown of Devil’s Claw supply chains exist. It is recommended that future analyses give greater focus to the market end of the value chain where the linkages and points of value addition are less clear along with the main actors and responsibilities. A better understanding of this later section would provide harvesting groups and buyers a deeper insight to the extent of market opportunities that exist. As a result of the value chain analysis, the bullet points below have been identified as topics and actions that could upgrade the current value chain for Devil’s Claw. This should not be viewed as a comprehensive or final list, but rather one which will evolve as the supply of Devil’s Claw from Namibia develops along with market demands. What remains unclear but of fundamental importance is the identification of funds, implementing organisations and the timeframe in which they should be achieved. A meeting between stakeholders is required to identify target funding opportunities and where human resource support can come from. Once funds and drivers are in place, timeframes can then be properly established.

- The definition and Unique Selling Points of **Premium Devil’s Claw** should be fully defined and agreed with by harvesters and buyers/processors in Namibia.
  - A clear strategy must agreed and a person/organisation put in place to drive it forward.
  - Customer needs should be investigated through targeted interviews with key industry player. The Voice of the Customer (VoC) is crucial to determine customer requirements.
  - Practical actions required to produce Premium Devil’s Claw should be defined and prioritised, with details of how to implement.
  - Marketing opportunities around Premium Devil’s Claw should be considered with the development of a marketing strategy.

- The Importance of sustainable harvesting, continuous resource monitoring and traceability must be continuously reinforced and communicated to industry and consumers. Target companies in the EU who have received THR.

- Investigate opportunities to grow the local market for consumer-ready Devil’s Claw products. Supplement this with boosted marketing efforts along with a review and possible reformulation of products offered.
- Develop the market for *Harpagophyum zeyheri*. A premium should be developed for *H. procumbens* and the price of *H. zeyheri* should also be brought up.

- Evaluate the demand for certified Devil’s Claw including organic, fair trade, Halal and others. Based on these findings, PPO certification programmes can be established with those PPOs interested.

- Marketing of Devil’s Claw currently focuses on the medicinal benefits of the product. For the export market this could be extended to include the ‘stories behind the product’ including harvesting practices, geographic location, and harvester stories.

- Conduct research into Harpagoside levels of the two species and also using different processing methods. Identify point in the supply chain where harpagoside levels are reduced by external components.

- Clinical trials of Premium Devil’s Claw would provide robust scientific backing for the efficacy of the product. This is particularly important for the US market but requires significant funding. Funding opportunities should be investigated, with one attractive option being from industry partners.

- Diversify target markets including supplements (elderly, sports etc), tea, skin care and cosmetics, and the pet market.

- Further development of cultivation and enrichment planting programmes along with an analysis of experiences and a cost/benefit evaluation.

- Investigate the impact of climate change predictions of Devil’s Claw distribution and supply capacity in Namibia. This investigation could be linked with propagation and domestication studies.

- Lobby the Namibian Government and stakeholders to ensure that ABS regulations linked with the CBD and those defined in South Africa will not further impede the use of indigenous biological resources in cosmetic products.

- Engage with Zambian and Angolan partners to discuss opportunities around combined resources and trade programmes. Dependent of Zambian Devil’s Claw harvest and trade ban.

References


PhytoTrade Africa (October 2011) Devil’s Claw Market Update

PhytoTrade Africa (2010) Devil’s Claw Market Brief
Appendix 1

Suppliers of Devil’s Claw Extract

A & A Nutritional International
A & A Pharmachem Inc.
A.H.A Int’l Co. Ltd
A.S.I Int’l Inc.
Acetar Bio-Tech Inc.
Active Organics Inc.
Advantage Botanicals Co. LLC
African Bush Products Inc.
AIC
Alchem USA Inc.
Alfa Chem
Amax NutraSource Inc.
Amazon Forest Inc.
Chemical Supply
Chemill Inc.
Chengdu Hawk Bio-Engineering Co. Ltd
Chongqing Imperial Bio-Chem Co. Ltd
American Botanicals
American Ingredients
American Sanjiang Bio-Fountain Inc
AppChem Co.
Asiamerica Ingredients Inc.
Aunutra Industries Inc. – East Coast
Aunutra Industries Inc. – West Coast
Avoca Inc
B &K Int’l Famarco Ltd.
Barrington Nutritionals
BattleChem Distribution Inc.
Beijing Refine Biology Co. Ltd
Coach Industries Inc.
Core Ingredients and Packaging
Dalian Huitong International Co. Ltd
Depont Molecular Co. Ltd
BI Nutraceuticals
Bio-Botanica Inc.
Bioactive Resources LLC
BioDynamic Resources
BioGin Biochemicals Co. Ltd.
Blue California
Blue Sky Botanics Ltd
Botaniex Inc.
BT Ingredients Inc.
Burgundy Botanical Extracts
Cactus Botanics Ltd
Changsha Huacheng Biotech Inc.
Changsha Organic Herb Inc.
DNP International
DONGYU USI
Du-Hope International Group
Dumoco Co. Ltd
Eastwest United Group Inc.
Ecuadorian Rainforest LLC
EFI Nutra LLC
Estratti Piante Officinali (EPO)
EUL International Herb Manufacturing Inc.
Eurochem Asia Ltd.
Euromed USA
Extracts & Ingredients Ltd.
Flacon Trading Int’l
FCC Products Inc
Federal Laboratories Chemical Corp
Fenchem Inc
Fortune Bridge Co. Inc
Frutarom USA Inc
Gaia Herbs Inc.
GCI Nutrients
Gencor Nutrients Inc.
General Ingredients Inc.
Global Botanical
Global Marketing Associates Inc.
Green Health Botanical Products Co. Ltd.
Guangzhou Meiren Biotech Co. Ltd
Healthco
Hebei Sanxin Industry Group
HerbKraft Inc
Himalaya Herb Stores
HP Ingredients
Hunan Nature Pharmaceutical Co. Ltd
Indena USA Inc
Ingredients By Nature
InvoBiologic
Internaturales LLC
Jiaherb Inc
Jiangsu Kanion Pharmaceutical Co. Ltd
Jianhe Biotech Co. Ltd.
JKH Ingredients Corp.
Josal Ingredients LLC
KAZ International Inc.
Kingchem LLC
Kingherbs Ltd.
Liberty Natural Products Inc.
Marcor Developments Corp.
Martin Bauer
Master Germany Co. Lts.
Maxsun Industries Inc.
Maypro Industries LLC
MJ Puehse & Co.
Modern Natural Products Monteloeder S.L.
MPT Delivery Systems Inc.
MTC Industries Inc.
Naturex Inc.
NHK Laboratories Inc
Ningbo Guoguang CAMT. Co.Ltd
Ningbo J&S Botanics Inc.
Nutraceuticals Int’l Group
Nutraland Ltd
Nutriglory Group Inc.
NutriPharm USA Inc.
Omnipharm LLC
Orcas Int’l Inc.
Orgenetics Inc.
P.L. Thomas & Co. Inc
Pacific Rainbow Int’l Inc.
Parchem – Fine & Speciality Chemicals
Paul Schueller Int’l Inc.
Pharm-Rx Chemical Corp
Pharmachem Laboratories Inc.
Pharmanutrients Botanical Corp
Pharmaline Inc.
Phytochem Int’l Inc.
PlusPharma Inc.
PPC PristinePro Corp.
Prime Nutrisource Inc.
Raw Deal Inc.
Refine Biology
RIA International LLC
San Francisco Herb and Natural Food Co.
Shaanxi Jiahe Phytochem Co. Ltd.
Shaanxi Kingsci Biotechnology Co. Ltd.
Shaanxi Maxsun Trading Co. Ltd.
Sionchem Qingdao Co. Ltd.
Southern Cross Botanicals Pty. Ltd
Sri Dhanalakshmi Industries
Starwest Botanicals Inc
Ingredients Division
Stauber Performance Ingredients Inc.
Stevia Canada/JG Group
Stiebs
Strategic Sourcing Inc.
Strong Ginseng & Herbs Industries Co. Ltd
Stryka Botanics – TX
Stryka Botanics headquarters
Suan Farma Inc.
Tiger Botanicals-Div. of Herbal Teas Int’l
To Your Health
Toumay Biotechnologies
Trafa Pharmaceutical Supplies Inc.
Triacro Industries Inc.
Unichem Enterprises Inc.
Vidya Herbs Pvt. Ltd.
Vitality Works
Watson Industries Inc.
Whole Herb Co., a Berje Inc. Group Co.
Wright Group, The
Wuxi Cima Science Co. Ltd
Zhejiang Medicines & Health Products i/E Co Ltd
Zhongbei Northland Bio-Chem Industry Co. Ltd.