

Feasibility Study
Medicinal
Plants
in District Chitral



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Prepared by



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PREFACE

This Medicinal Plant feasibility study is one of a series of five such studies developed for the Chitral Area Development Project, a project of THRIVE Pakistan. The purpose of the assignment was to identify a number of key products in Chitral and three neighboring valleys and to provide the necessary information to enable small-scale business operators wishing to enhance their incomes in sustainable ways. This feasibility study is intended to be a significant contribution of the CIDP project for the communities of Chitral.

The feasibility study has been prepared for those potential entrepreneurs and businesspersons who want to start a new business or to expand an existing business in Chitral and the surrounding valleys. The feasibility study provides all of the relevant information required to establish a successful Medicinal Plant business.

In addition to outlining socio-cultural ideas about Medicinal Plant, financial information and a business plan, the study provides key recommendations for creating brands and boosting sales. A tabulated format in Microsoft Excel with all details is also part of this study: it contains all of the relevant calculations and links required to operate the business models.

The information, costs and numbers used in the feasibility study were collected from actual sources and resources from Chitral in 2014. Potential users of this feasibility study are expected to reconfirm current prices and to conduct a short assessment or validation of this feasibility study, prior to starting a business or investing in the sector.

We would like to take this opportunity to convey our sincere thanks to all the stakeholders involved, including the FCG Human Capital Team, the Thrive Management team, and the local Support organization of Chitral all of whom provided excellent support and input in numerous ways.

The feasibility studies are available at the CIDP (THRIVE) website, the Chitral Chamber of Commerce website and the Chitral Agriculture and Horticulture Departments.

The “CIDP Team” wishes the users of this document and those who initiate businesses the best of luck and success in their business endeavors.

The THRIVE and CIDP Teams January 2015

DISCLAIMER

This feasibility study was conducted by FCG Human Capital Private Limited for the Community Improvement Development Project (1st May, 2009 – 31st December, 2014) for THRIVE Pakistan. The project was funded by Norwegian Government. The facts and figures used in the feasibility were collected during the assessment in the fourth quarter of 2014. The users of this feasibility study are expected to re-evaluate the prices, costs and resources prior to establishing the enterprise. The user is solely responsible for all costs incurred while establishing a business based on this study.

Every effort has been made to ensure that the costs quoted are accurate and that all details of establishing or expanding a Medicinal Plant -focused business have been taken into account. Individual inputs and results will vary depending on factors such as the value of the Rupee, the number and market strength of competitors, the demand for medicinal plant and its by-products in different places, the availability of skilled workers and natural factors.

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BACKGROUND

The THRIVE CIADP Project in Chitral commissioned FCG Human Capital (Private) Limited to conduct a Value Chain Analysis (VCA) of Medicinal Plants in Chitral District in 2014. That study gathered information from collectors, traders and exporters, local and other vendors, Government officials, members of Local Support Organisations, Community-based Organisations and NGOs, and consumers.

In a VCA an ‘enterprise’ is considered to be a part of an integrated chain which links all of the stakeholders, from the initial producers to the ultimate consumers. The Medicinal Plants VCA provided detailed information about the quantities of medicinal plants collected, collection intensities in different locations, levels of input by men and women and processing, transportation, and marketing.

This Feasibility Study shows how, based on the information gathered in the VCA, local entrepreneurs can increase their returns at different stages of the medicinal-plants value chain. That may be through strengthening existing enterprises or establishing new ones. The Feasibility Study provides information and suggests processes that will lead to improvements in collecting, packaging, transporting and marketing medicinal plants. The Study addresses both the ‘big picture’ - such as strategies and export marketing - for the District and the potential for establishing small and medium enterprises related to medicinal plants.

BACKGROUND

Chitral District is rich in medicinal plants which have been used for generations in foods, as remedies for illness and as cosmetics. The ecology of the District makes it a unique repository of medicinal plants which are free of pesticides, whether they are collected in the wild or grown in small gardens.

According to The Chitral Times 22 species of medicinal plants used in the pharmaceutical industry have been identified in the highlands and pastures across the District. Some of the most popular plants, such as *Delphinium nordhagenii* (used as an anti-convulsant) and *allium barszczewskii* (a species of wild onion and garlic) are only found in Chitral. The main medicinal plants (i.e. those produced in the greatest quantities) are *Capparis spinosa* (Kaveer) also termed the “magical plant” of Chitral; *Mooruk* (*Glycyrrhiza glabra*) (licorice root) and *Ishpaar*, used as a spice. These plants are of superb quality, and some yield an annual harvest of more than eight tons each, according to local experts. *Glycyrrhiza glabra* (used to treat ulcers, exceme, indigestion and respiratory infection) and *Rehum emodi* (a variety of carnation), are used as teas to help alleviate stress and nervousness, promote healing of the skin and to increase vitality. The sap or resin of many plants is used to make extracts. Other uses include oils and infusions as well as a popular cold and flu remedy marketed as *Joshanda*.

Other medicinal plants include: *Allium sativum* (known locally as *wrezhnu*), *Amygdalus communis* L. (known locally as *Badam* [almond] and used in sweets, butters and edible and cosmetic almond oil), *Arceuthobium oxycedri* (known locally as *sarooz parting*), used for infections and inflammation, gastrointestinal complaints and to lower blood pressure), *Artemisia parviflora* Roxb. (known as *Kharkhaliech*), used to treat abdominal pain, lower blood pressure, treat diabetes and to rid the body of worms. Others include *Astragalus herstianus* Bth. (Known as *garmenzu*, the roots of which are used as a tooth brush called *miswak*).

The kinds of medicinal plants vary by place within the District: *Salajeet Beans* are grown in *Mastuj* and *Booni*; *coriander* is grown in *Drosh* and *Booni*; *black cumin* (*zeera*) is grown in *Mastuj*, *Booni* and *Drosh*; *kaveer* (*caper*) is grown in *Mastuj* and *Chitral*; *wild mushrooms* are collected and grown in *Drosh* and *Chitral*; *pudina* (*mint*) is grown in *Drosh*, *Booni*, *Chitral* and *Mastuj*; *mulberry* (*shehtoot*) is grown in

Chitral and Mastuj; poppy seed is grown in Booni, Chitral and Mastuj, and Shroshat and Shareenkaf, all local herbs, are grown in Booni, Chitral and Mastuj.

Kaveer (caper) is an example of an extremely versatile and valuable medicinal plant. It used to flavour many foods and in medicines as an antipyretic to cure pains, fever and flu, especially typhoid fever. Capers also reduce flatulence, and ease rheumatism, anaemia, arthritis and gout. In Ayurvedic medicine capers are used as hepatic stimulants and protectors, improving liver function. Capers have reported uses for arteriosclerosis, as diuretics, kidney disinfectants and tonics. Infusions and decoctions from caper root bark have been traditionally used for 'dropsy' (edema). Capers contain considerable amounts of the antioxidant bioflavonoid rutin. Caper extracts and pulps have also been used in cosmetics. Local people believe that on the roots of kaveer one can find "RPI" which is a cure for every disease. Women use the opened fruit called chantiq as a cosmetic.

The areas famous for kaveer are in the upper Chitral valley, especially the arid zones of Kaghlasht, Kushum, Surwaht, Ujnu, Saroza and Shahgram. The best time to collect the mature kaveer is late July. The collected fruits are washed, and then stored in big pitchers and when the pot is full it is partially filled with water and then capped to make it airtight. The pot is left for a week for fermentation; after a week the pot is opened and the fruits are dried carefully in the sun. Unfortunately, this rich nutritional and high value medicinal value plant is losing its importance and it is now hard to find good quality kaveer. There would seem to be a strong export potential for kaveer. Outside Pakistan, capers are a popular addition to many dishes.

Efforts have been made to protect the areas where the medicinal plants grow. Species like *Capperis pinosa*, *Glycyrohizagl-abra*, and *Rehumemodi* are regenerated and conserved in the Moleen Gol, Momy, Bomburate, Parsan and Birir Conservation Areas. Grazing has been banned in these areas with the active participation of the local communities. The Department of Environment has undertaken several steps to check the over-exploitation of the wild medicinal plants in the higher-altitude forests, as many of them have been declared endangered species by the world conservation body IUCN.

Plant collection, processing and use are most active in Drosh and Booni, perhaps because these areas lack medical facilities and allopathic medicines.

This Feasibility Study addresses overarching issues, and ways of achieving maximum results in the long term: for this there is a need for Strategic Planning – in the short, medium and long term - if the entire sector is to improve. Those strategies should outline the desired levels of public and private (including NGO) involvement, so that both support is provided and 'free enterprise' are encouraged.

Opportunity Rationale

As noted in detail above, Chitral is rich in medicinal plants, both wild and cultivated. There is good scope for strengthening existing and establishing new, sustainable and profitable businesses based on medicinal plants. This could provide opportunities to hundreds of unemployed people. Relatively few people are involved in the medicinal plant value chain, and most of those are involved because of their families' long-term involvement. On the one hand this means they have good knowledge of the plants, local ecosystems and seasonal factors. On the other hand, many remain limited by their own lack of up-to-date information about the plants (for example, new varieties and the potential for utilising the plants in cosmetics and other products). Few people are sufficiently aware of the business environment for medicinal plants, whether for expanding their business or establishing a new business.

There is a strong need for new information that will reduce losses, diversify by-products and improve packaging and marketing.

Women work alongside men during all steps in the collection, preparation and storage of the plants. The only exception is marketing: women traditionally work at the household level while the men engage in marketing. Thus, knowledge and skills acquisition could be arranged for men and women. A few women run their own medicinal plant businesses, so should be included in enterprise-development and home-based processing training.

If the limitations identified below can be addressed, it is reasonable to assume that the medicinal plants value chain can yield very good results for collectors and producers in Chitral. With national and worldwide demand for 'natural' products in foods, remedies and cosmetics, Chitral is well-placed to enter new markets. The remoteness of the District and its productive valleys, will lend itself to positioning plants from Chitral as a strong brand.

The problems to be addressed, and the potential for expansion, will vary by area, with Chitral being the most-advanced at present and the more remote areas requiring greater support.

Limitations

Studies have shown that Mastauj is under heavy biotic pressure due to deforestation for fuel and overgrazing by livestock: both practices have promoted soil erosion. Many species, such as juniper, have been drastically reduced over the past few years. Many of the medicinal plants are also used as fodder and firewood, which means they are not available for commercial purposes.

For the most part, collectors use traditional tools and collection methods are unscientific and unsustainable and threaten the long-term reproductive capacities of the plants. Continuous increases in the human and animal populations, as well as free grazing in the areas where the plants grow, are resulting in the loss of plant diversity. In some areas the high demand for medicinal plants has led to the erosion of forested areas. Many species, including juniper, have been drastically reduced over the past few years.

The lack of training in optimal and sustainable collecting methods inhibits both individual collectors and the medicinal plant sector as a whole, as does lack of knowledge on new varieties, up-to-date processing techniques, knowledge of packing and 'branding' and other marketing techniques.

There is no support from the Government for the medicinal plants sector. There is no research on plants, their uses, processing and by-products, packing and packaging tips, safe transport, price control, hygienic methods, safety and health or first aid during work, at any level. Nor is there any modern equipment available to utilize the medicinal plants on a bigger scale.

The Business Environment

As noted above, there is no lack of medicinal plants in the area. Some species are collected or produced in great amounts. The key business-related issues identified by local collectors and vendors and wholesale merchants are: long distances to markets; poor links to buyers and poor weather, which can result in small harvests and low quality plants or berries.

The medicinal plant business is seasonal. The peak collecting season is mid to late summer. Only walnuts and pine nuts are available year round. The dried or otherwise preserved plants are available year round, in people's homes, but these are in small quantities and are not available for commercial purposes. The only herb available in winter is the peel of the walnut plant which is used for cleaning and polishing the teeth.

There is almost no Government support – in extension services, research, disease-control, pest management, fertilizer use, packing, marketing, hygiene and safety - to this sector of the economy.

The majority of collectors and local vendors do not have sophisticated knowledge of the level of demand or the prices that plants can command outside the District. Even if they do have some idea, they are unable to affect local prices, since there is so much competition and many local collectors need cash in the short term.

Very few people have the business skills required to make feasible plans for successful enterprises. This is especially so when the medicinal plant business operators would be producing new by-products.

Most of the people currently involved in medicinal plants cite a low rate of return on their investment. While they operate as independent actors in the market, most individuals cannot command fair prices.

Most of the plants are sold to local people Hakeems. There is almost no sustained interest in medicinal plants by any commercial firms. The only exception is in Drosh, where some pharmaceutical firms buy the plants. They are mostly interested in “Salajeet”, Caper (Kaveer) or White Mint (Sufaid Poodina).

The prices paid locally will depend on many factors and will vary from year to year. These will depend on:

- The laws of supply and demand within Chitral and in the rest of Pakistan;
- The collectors’ knowledge of prices outside Chitral in a given year and their ability to command fair prices;
- The number of competitors collecting a specific plant;
- The quality of the plants in a given season;
- The state of the plants: processed plants (e.g. dried or steeped) bring greater financial returns than unprocessed ones;
- The market prices for by-products (i.e. whether the processing/extraction is done locally or whether the plants are sold to traders or commercial firms which will process the plants themselves).

Packaging: The simplest containers are used, with paper and plastic, cotton bags and cardboard boxes being the most common. Some people in Mastauj also use plastic containers. Chitral is the exception, since much of the produce is sold to tourists who demand good quality packaging.

Sales and Distribution: The medicinal plants have almost no significant ‘presence’ in the market. Links between the collectors/producers and the markets are minimal. Almost all of the plants are sold to households and to Hakeems in the villages. The Hakeem may have links with medicinal plant or herb dealers in other cities; otherwise the products are sold only within the villages.

Equipment Usage and Costs

It is clear that people outside Chitral city have no knowledge of the use of equipment for processing the medicinal plants – i.e. for sorting, grinding, collecting sap and extracting oils. Within urban Chitral, there is a strong demand for such equipment. This is most likely because plant producers in Chitral have interactions with Government, private and social sector organizations that have made them aware of the impact that equipment can have on their businesses.

The costs of equipment are rated as ‘very high’ and few people can afford it. However, no complex equipment is required and traditional means of grinding and oil extracting are used. Every household could buy a good juicer/blender, for between 5,000 and 10,000 Rupees. No calibration or specification is required. If the business were to function on a large scale, bigger machinery (i.e. de-hydration and grinding plants) might be required.

A small range of industrial scale machines is available in the market for grinding and extracting. The kinds and potential of plants produced in these areas should be assessed prior to finalizing the purchase of any machine. Interventions based on the use of machinery would revolutionize the medicinal plant sector. Some of the more complex drying and extracting machines can cost up to 40,000 Rupees. The electricity supply is often irregular and in the remote valleys is not available. No natural gas is available in the area. Liquid Propane Gas is use also used as an alternate source of energy for cooking, mostly in commercial areas. Pure water is available in the summer from natural sources.

There are a few sources of training for the more complex equipment, i.e. Ajmal College (Rawalpindi), AKRSP and other NGOs, and Government Institutes.

Competition

Booni has the highest amount of competition because it is a small area, with fewer products, while Mastauj has shown less competition due to low awareness and interest in this business. Drosh is also close to Chitral and is located closest to the Tunnel from Dir, so it has higher levels of herb and plant collection for the vendors, contractors and traders. The people of Drosh seem to be well aware of the medicinal plant products, perhaps because of the early arrival of spring. The relatively clement weather in Drosh provides a longer period during which people can move around and work. Competition varies by location, but is considered 'high' to 'very high' in all areas.

MARKETING

The only marketing other than sales to Hakeems consists of dried or processed plants being sold in local shops. There is a minor use of sales by telephone in Chitral. Many people (about 1/3 of those contacted during the feasibility survey) walk to the markets to sell their produce: others use public transport and a very few have their own means of transportation.

Some high-quality and high-quantity plants could be brought to the market in raw form and purchased from there by traders or pharmaceutical companies at very low rates. With value-additions of various kinds, these species could be properly processing before being sold and would fetch far higher prices.

There is almost no 'branding' of the medicinal plants in the District.

Knowledge and Skills Environment

The Capacity Needs Assessment indicates that household production requires only the most basic skills but there is a great demand for new skills in line with market opportunities and for new skills. Training in every stage of the value chain has been minimal so far, in relation to the scale of the need and demand. There is no training facility for any aspect of medicinal plants. The Government Agri-Research centers in Chitral and Drosh do not provide any support.

The Provincial Government arranged the first-ever training for more than 150 people in 2013. The collectors improved their collection practices and earned handsome amounts from their respective pastures. They were also linked for the first time to traders from the national market.

There is a broad demand for knowledge and skills in the following areas:

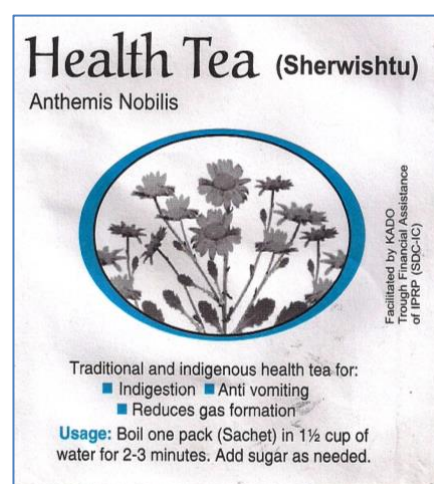
- Business-management skills (for men and women), including the strengths and weaknesses of competitors, the ability to create feasible business plans and financial planning;
- Improved collection and processing information and the use of processing technologies (household scale for women and larger scale for community organisations);
- Information on new varieties that could be collected and processed for use as condiments, cosmetics and natural remedies;
- Local, District-wide and 'down-country' marketing skills.

Marketing Strategy

Local Market: An improved packing and packing of the products is the key to success. There is a range of herbal products which are used locally and can be introduced in other areas direct to consumers with detail of product and its use.

The multiple packaging and sizes of the product will be suitable to reach customers in hotels, organic shops, herbal stores and local shops.

Wholesale Market: The major vendors like Hamdard, Qarshi, Marhaba, Salmans, etc. can also be reached if the plants and herbs are available in bulk. The vendors and buyers can also be consulted to inquire about the form of material they required (i.e. in raw form, ground graded or extracted).



RECOMMENDATIONS

There is a need for short, medium and long-term strategies that will guide the growth and development of the sector in useful ways.

Each geographical area has its own potential for starting new businesses since the men and women community members are aware of the medicinal plants' locations and properties and are to some extent skilled in processing their by-products. These potentials need to be 'mapped' and well-understood so that planning and forecasting are realistic.

Comprehensive botanical studies are required to safeguard the secure and enhanced production of these plants and to identify the additional medicinal plants and their potential by-products.

Efforts must be made to strengthen the environmental protection systems so there is a good balance between preservation and exploitation. While commercial uses can be greatly strengthened, this must not be at the 'expense' of the ecological niches.

Government research institutes should take up the challenge of conducting research on medicinal plants so that the commercial potential can be enhanced and people can derive more benefit. Medicinal plants should be added to the Extension Departments' training.

There is a need to synergize the Government and social sector organizations' strengths for the improvement of the local collectors. For example, these could include initiatives to organize local Hakeems and to arrange knowledge management courses that would increase sales.

Product-development training with specialized and sophisticated packing and with additional packaging information, (e.g. the name of the medicine and the purpose and use of the herb, as well as any required precautions) would increase the demand for these plants and products.

New and modern preservation technique should be adopted, where international standard can be followed for the promotion and international export of these plants.

The local communities should be mobilized and Village Management Committees formed and activated to build the knowledge base and the capacities of the local community members. It will be important to draw on existing knowledge of the medicinal plants and to promote skilful marketing so that growth is well-managed and is sustainable.

Established linkages with provincial, national and international markets are needed so that collectors can meet specific market demands (e.g. for foods, condiments, cosmetics and natural pharmaceuticals).

A comprehensive series of trainings is an essential need of the collectors to enable them to collect valuable, international standard plants and to identify premium packing standards which attract customers.

Producers should be exposed to national markets in Islamabad, Peshawar, Rawalpindi and Karachi. In the longer term, as the sector develops, innovations could include 'online' marketing.

FINANCIAL FEASIBILITY

Capital Requirements

The following capital requirement covers three stages of investment. The development stage is used to buy or rent land machinery, equipment and fixed assets. The second stage is to manage the expenses prior to starting the business, such as registration, marketing, and surveys, while the third stage is directly linked with production, the purchase of raw materials (that is, the Medicinal Plants and other raw materials used for medicines), paying salaries of staff and managing overheads such as utilities and rents.

| Sr. | Investment Item | Amount (Rupees) | Percent |
|------------------|-------------------------------|------------------|---------|
| 1 | Fixed Assets | | |
| | 1.1 Machinery | 35,000 | |
| | 1.2 Fixed Assets | 3,500 | |
| Sub-Total | | 38,500 | |
| 2 | Pre-Operating Expenses | | |
| | 2.1 Pre-Operating & Marketing | 47,215 | |
| Sub-Total | | 47,215 | |
| 3 | Working Capital | | |
| | 3.1 Overheads | 140,500 | |
| | 3.2 Raw materials | 2,580,000 | |
| | 3.3 Salaries | 318,000 | |
| Sub-Total | | 3,038,500 | |
| TOTAL | | 3,124,215 | |

An amount of 3,124,215 Pakistan Rupees would be required to start the business. The amount will vary if changes are made in the production plan. The production plan is based on the purchase of raw materials from the local collectors. If a team of collectors is increased, it will reduce the cost of raw materials. The collectors can be trained in collection, processing and packing and packaging. The size, knowledge and skills of the collecting team of collection will have a direct impact on sale and profit margin.

| Source | Amount | Use |
|--------------|------------------|-----------------|
| Equity | 3,124,215 | Working Capital |
| Total | 3,124,215 | |

Production Plan

The enterprise will be economically viable, if the production plan shown below is followed. A huge variety of medicinal plants are available in entire Chitral. Since there is no proper collection mechanism available and these plants are not utilized commercially the potential for success is very high.

There are only a few commercial medicinal plant collectors available, of which only one person was found to be an entrepreneur (Mr. Subedar Khan, see Box),) who is doing this as a business. He has a team of two people to collect the plants and sell them in the local market from which he is earning 30-40,000 Rupees per month. The number of plants he is collecting through his team is very low. He is not aware of the demand for some of the major plants.

If the medicinal plant collection and processing business is started with basic research, and identifying the backward and forward linkages, it has a good chance of becoming a profitable business.

Subedar Khan told us that he collects “Moruk”. He collects 30 Kg per day and approximately 300-400 kg per month and sells it for Rs. 400 per Kg. (16,000) from one product. Similarly he sells other plants which gives him around Rs. 30-40 thousand in a month in the local market.

He has only two helpers to collect the plants for them.

Mr. Subedar Khan belongs to village **Momi in District Chitral NWFP**. He has four children, two sons and two daughters. His deceased father was a local *Hakim* and treated disease through medicinal plants. He used to watch and work with his father. After the death of his father he started his practice and remembered **Indigenous Traditional Knowledge (ITK)** on **MAP's**.

KADO intervened in the area to identify knowledgeable people regarding local practitioners using medicinal herbs. The people of village Momi gave the name of subedar Khan as a traditional healer. **KADO staff** held a meeting with him, identified him as a local *bakim* and provided a cupboard, register, pen, bottles and a soft board to him for his encouragement. They also gave him exposure to the Qarish Industry.

One day his wife during working in the house at night accidentally got burned in her leg due to burst out of diva a local lantern. Mr. Subedar Khan was a poor man did not take her to hospital. He decided to treat her at home with local traditional method. He collected *Artimicia enva* (Kharkhalich) with one goat horn. Burned goat horn to make it powder. Prepared mixture of *Aritmica enva* and goat horn powder and also added a little quantity of Sulphur with mixture. Started to apply on burn leg up to twenty days twice a day. After twenty days the burned area completely recovered. Mr. Subedar Khan not only save his money but also save the life of his wife. His wife has a great realization of the services and mutual understanding of the couple has increased.

| Product | Products | Production | | | | Unit Rate | Total Sale | Remarks |
|---------|---------------------|------------|-----|--------|-------|-----------|------------------|------------------------------|
| | | Qty | No. | Months | TOTAL | | | |
| 1 | Mutreej | 200 | 1 | 6 | 1,200 | 600 | 720,000 | 4 months operating in Summer |
| 2 | Kharkharach | 300 | 1 | 3 | 900 | 700 | 630,000 | |
| 3 | Moruk | 400 | 1 | 4 | 1,600 | 400 | 640,000 | |
| 4 | Phusook | 40 | 1 | 6 | 240 | 700 | 168,000 | |
| 5 | Tung Bala Tung | 120 | 1 | 6 | 720 | 500 | 360,000 | |
| 6 | Zoghur | 100 | 1 | 4 | 400 | 600 | 240,000 | |
| 7 | Heing | 5 | 1 | 2 | 10 | 30,000 | 300,000 | |
| 8 | Sonf | 100 | 1 | 3 | 300 | 800 | 240,000 | |
| 9 | Zeera Black | 30 | 1 | 4 | 120 | 700 | 84,000 | |
| 10 | Kaveer | 200 | 1 | 3 | 600 | 1,000 | 600,000 | |
| 11 | Salajeet / 50 grams | 1,000 | 1 | 2 | 2,000 | 50 | 100,000 | |
| | | | | | | | 4,082,000 | Per year |

Markets, Machinery and Expansion

The market/sales point for the medicinal plants and by-products is the main “Pansari” Stores and medicine companies or the nearest villages, cities, or towns. As noted above, tourists can be a significant market. No heavy machinery is required. The cost of machinery for international standard packing will not be suggested to local people, keeping in mind their economic status.

The local producers can develop a business plan for expansion to meet international standards. If the quantity and quality of medicinal plants produced is not managed well (for example, if the medicinal plants are contaminated or if the containers are damaged, the “return on investment” will be reduced.

Fixed Assets and Machinery Required

All of the basic and required assets to start the business with minimum investment are listed below.

| Sr. | Description | Units | Price | Total |
|-------------------|-----------------|-------|-------|--------------|
| 1 | Stand | 2 | 500 | 1,000 |
| 2 | Large Spoon Set | 1 | 600 | 600 |
| 3 | Small Spoon Set | 1 | 300 | 300 |
| 4 | Knife | 2 | 200 | 400 |
| 5 | Tub | 2 | 600 | 1,200 |
| Total cost | | | | 3,500 |

Machinery

| Sr. | Machinery | Units | Price Per Unit | Total |
|--------------------|------------------|-------|----------------|---------------|
| 1 | Grinding Machine | 1 | 35,000 | 35,000 |
| Total Cost: | | | | 35,000 |

Materials

There are two types of material² required in any business, i.e. direct and indirect material. The indirect materials cost is those which are essential in any case, while the direct materials cost is associated with the quantity and number of units produced.

| Raw Materials | Unit Price of Materials | Quantity Needed | | Nos./ Months | Total Cost | Remarks |
|------------------|-------------------------|-----------------|--------|--------------|------------|-------------|
| | | Nos. | Rate | | | |
| Direct Materials | Mutreej | 200 | 400 | 4 | 320,000 | Yearly cost |
| | Kharkharach | 300 | 400 | 3 | 360,000 | |
| | Moruk | 400 | 300 | 4 | 480,000 | |
| | Phusook | 40 | 500 | 6 | 120,000 | |
| | Tung Bala Tung | 120 | 350 | 6 | 252,000 | |
| | Zoghur | 100 | 400 | 4 | 160,000 | |
| | Heing | 5 | 10,000 | 2 | 100,000 | |
| | Sonf | 100 | 500 | 3 | 150,000 | |

¹ A Pansari is a local herb dealer.

² The vendors' information for each material is provided in Annex 01.

| | | | | | | |
|-----------------------------|--------------------------|-------|-----|---|------------------|-----------------|
| | Zeera Black | 30 | 600 | 4 | 72,000 | |
| | Kaveer | 200 | 800 | 3 | 480,000 | |
| | Salajeet / 50 grms | 1,000 | 30 | 2 | 60,000 | |
| Indirect Materials | Wood | 10 | 500 | 4 | 5,000 | |
| | Plastic Bags | 20 | 300 | 4 | 6,000 | |
| | Printed Envelops | 2,000 | 5 | 4 | 10,000 | |
| | Plastic Bottles with Cap | 500 | 10 | 4 | 5,000 | |
| Total Material Costs | | | | | 2,580,000 | Per year |

Human Resources

There are two types of labour categories involved in the production. Direct labour is required throughout the project from start to end to manage each and every activity. It is advised that this labour category should be managed by the owner, or his relatives who are local people, to save on their accommodation, food, travel and other living costs.

The indirect labour can be hired when required, e.g. at the time of Medicinal Plant collection, packing and transporting.

| Category | Titles | No. | Months | Monthly Salary | TOTAL (Per Year) |
|------------------------|-----------------------------|----------|--------|----------------|------------------|
| Indirect Labour | Manager | 1 | 12 | 15,000 | 180,000 |
| | Marketing Person | 1 | 4 | 12,000 | 48,000 |
| Direct Labour | Collecting (picking) labour | 1 | 6 | 9,000 | 54,000 |
| | Processing | 1 | 3 | 12,000 | 36,000 |
| | | | | | |
| Total | | 5 | | 48,000 | 318,000 |

Overhead costs

The overhead costs are calculated on an 'assumption' (first year) basis: the costs for the next three years can be added with 10-20% increments. An estimated cost of transportation is added in the overheads. This will vary based on the type of vendors, suppliers and distribution channels adopted by the entrepreneur. The cost of transport can be included in the direct product costs.

| Sr. | Item | Monthly | Annual |
|-----|------------------------|---------|--------|
| 1 | Repair and Maintenance | 500 | 2,000 |
| 2 | Electricity | 1,000 | 12,000 |
| 3 | Telephone | 1,000 | 12,000 |
| 4 | Transportation | 30,000 | 90,000 |
| 5 | Depreciation | 500 | 500 |
| 6 | Refreshment | 6,000 | 24,000 |

| | | |
|----------------------------------|---------------|----------------|
| Overhead per Product Unit | 39,000 | 140,500 |
|----------------------------------|---------------|----------------|

Pre-Operating Expenses

The pre-operating expenses are required to manage the expenses prior to start a business, i.e. registration, market searches, and surveys if needed. If the search for locations is already done the cost can be reduced. For an existing business only additional promotion and expansion cost would be required.

| Sr. | Items | No. | Rate | Amount |
|-------------------------------------|--|-------|--------|---------------|
| 1 | Survey | | | |
| | Market Search | 1 | 40,000 | 40,000 |
| 2 | Promotion (Banners, Flyers, Stalls) | | | |
| | Banners (to place are shops and road side) | 24 | 50 | 1,200 |
| | Flyers for Outlets and Shops | 2,000 | 3 | 6,000 |
| | Stickers for Bottles | 5 | 3 | 15 |
| Total Pre-Operating Expenses | | | | 47,215 |

Profit Analysis

The profit is calculated on a one-year basis. The profit may increase from the second year, as most of the costs will be either reduced or removed - i.e. establishment, pre-operating expenses, fixtures, and assets.

| | | |
|---|-----------|------------------|
| Gross Sales | | 4,082,000 |
| Less: Returns & Allowances | - | |
| Net Sales | | 4,082,000 |
| Less: Cost of Goods /Materials Sold | 2,580,000 | |
| Labour | 318,000 | |
| Overheard | 140,500 | |
| Promotion | 47,215 | |
| Gross Profit | | 996,285 |
| Less: Administrative and Selling Expenses | - | |
| Operating Profit | | 996,285 |
| Net Profit before Tax | | 996,285 |
| Less: Estimated Income Tax | | NA |
| Net Profit After Tax | | 996,285 |

Break Even Analysis

There are three stages to arrive at the break-even point.

| | | | | | |
|---------------------|--|---------------------------|-----------|---------|---------------|
| 1. BEP – Sales | $\frac{\text{Annual Sales}}{\text{Annual Sales}} \times \frac{\text{Annual Fixed Cost}}{\text{Annual Variable Costs}}$ | $4,082,000 \times 38,500$ | | 150,606 | Rupees |
| | $4,082,000 - 3,038,500$ | | | | |
| 2. BEP – Production | $\frac{\text{BEP Sales}}{\text{Unit Selling Price}}$ | | 150,606 | 251 | Units |
| | | | 600 | | |
| 3. BE on Investment | $\frac{\text{Net Profit}}{\text{Total equity}} \times 100$ | | 996,285 | 31.89 | Profit Margin |
| | | | 3,124,215 | | |

**LIST OF VENDORS AND SUPPLIERS OF MACHINERY AND
EQUIPMENT FOR MEDICINAL PLANTS**

| S # | Name | Area | Contact # | Category |
|------------|---------------|---------------|---|-------------------|
| 1 | Subedar Khan | Momi (Shagor) | (0344-1980262) (leave a message to the receiver) | Producer / Trader |
| 2 | Shaukat Hayat | Sonoghur | 0334-9473864 | Producer / Trader |
| 3 | Dilnaz | Chitral | 0943-413308 | Trader |
| 4 | Ijaz Ul Haq | Khal | 0315-3660372 | Trader |
| 5 | Zahoor Ul Haq | Khal | 0312-4395491 | Trader |