

Pre-Feasibility Study

DEHYDRATION PLANT



Small and Medium Enterprises Development Authority

Government of Pakistan

www.smeda.org.pk

HEAD OFFICE

6th Floor LDA Plaza Egerton Road, Lahore

Tel (042)111 111 456,

Fax: 36304926-7

helpdesk@smeda.org.pk

**REGIONAL OFFICE
PUNJAB**

8th Floor LDA Plaza,
Egerton Road,
Lahore.

Tel: (042) 111 111 456,
Fax: (042) 36370474

helpdesk.punjab@smeda.org.pk

**REGIONAL OFFICE
SINDH**

5TH Floor, Bahria Complex II,
M.T. Khan Road,
Karachi.

Tel: (021) 111-111-456
Fax: (021) 5610572

helpdesk.sindh@smeda.org.pk

**REGIONAL OFFICE
KHYBER PAKTUNKHWA**

Ground Floor
State Life Building The Mall,
Peshawar.

Tel: (091)111 111 456, 9213046-7
Fax: (091) 286908

helpdesk.KPK@smeda.org.pk

**REGIONAL OFFICE
BALOCHISTAN**

Bungalow No. 15-A Chamn
Housing Scheme Airport Road,
Quetta.

Tel: (081) 2831623, 2831702
Fax: (081) 2831922

helpdesk.balochistan@smeda.org.pk

September, 2011

DISCLAIMER

The purpose and scope of this information memorandum is to introduce the subject matter and provide a general idea and information on the said area. All the material included in this document is based on data/information gathered from various sources and is based on certain assumptions. Although, due care and diligence has been taken to compile this document, the contained information may vary due to any change in any of the concerned factors, and the actual results may differ substantially from the presented information. SMEDA does not assume any liability for any financial or other loss resulting from this memorandum in consequence of undertaking this activity. The prospective user of this memorandum is encouraged to carry out additional diligence and gather any information he/she feels necessary for making an informed decision.

For more information on services offered by SMEDA, please contact our website: www.smeda.org.pk

DOCUMENT CONTROL

Document No.	89
Prepared by	SMEDA-Punjab
Revision Date	September, 2011
Issued by	Library Officer

1. EXECUTIVE SUMMARY

Agriculture being the dominant sector of the economy contributes 21 percent to the GDP, employs 45 percent of the total work force, serves as a major supplier of raw materials to the industry as well as market for the industrial products and also contributes substantially to Pakistan's exports earnings. Agriculture sector showed a growth of 3.8 % in 2009-10. Pakistan grows over 5.8 million tones of fruits and more than 2.9 million tones vegetables every year. Among the fruits, mango, guava, citrus, apple, pears, banana and dates are the main products. Potatoes, onions and Garlic are the main vegetables grown in Pakistan. They are marketed nearly throughout the year but there is a lot of price variation between them.

Potatoes, onions and garlic are among the important cash vegetable crops in the country. They enjoy good market both within the country and overseas. They are also included in the list of essential kitchen crops.

Potatoes, Onion and Garlic are mainly produced in Punjab, while Sindh and Balochistan are the main producers of onions where as KPK is also taking major part in production of Potatoes, onion and Garlic.

Dehydration offers an economical and satisfactory means to extend the shelf life of vegetables and Fruits. The main advantages of dehydration are Light in weight and occupy much less space that the original, frozen or canned materials, cheap to pack compared to tinned materials, stable under ordinary storage conditions.

The dehydrated vegetables and fruits can serve as a good stand-by either for daily dishes or for off-season consumption. The advantages of dehydrated vegetables and fruits are for the housewives, caterers, farmers, suppliers and food manufacturing industries. Dehydrated vegetables and fruits produced scientifically under standardized conditions of acceptable quality have potential for exports, local consumptions, armed forces and inaccessible areas. Dehydrated vegetables are used as culinary vegetables and as industrial raw materials

This Pre Feasibility is being prepared by SMEDA on three vegetables including potatoes, onions and Garlic as product mix that has much demand in local industry. The other vegetables and fruits can be dehydrated on order to order basis

The estimated capital cost of the project is Rs.32.610 million for processing capacity of about 2000 tons/annum. In addition to this, a sum of Rs. 6.104 million is required as working capital. The total project cost is estimated at Rs. 38.713 million. The project shall be financed through equity contribution of 50% by Equity Contributor-Private Investor and 50% by Bank Loan. The project will be run by qualified professionals. Projected IRR, NPV and Payback of the proposed project are 33%, Rs. 36.060 Million and 3.05 years respectively.

2. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established with the objective to provide fresh impetus to the economy through the launch of an aggressive SME support program.

Since its inception in October 1998, SMEDA had adopted a sectoral SME development approach. A few priority sectors were selected on the criterion of SME presence. In depth research was conducted and comprehensive development plans were formulated after identification of impediments and retardants. The all-encompassing sectoral development strategy involved recommending changes in the regulatory environment by taking into consideration other important aspects including finance, marketing, technology and human resource development.

SMEDA has so far successfully formulated strategies for industries such as horticulture, including export of fruits and vegetables, marble and granite, gems and jewellery, marine fisheries, leather and footwear, textiles, surgical instruments, transport, dairy etc. Whereas the task of SME development at a broader scale still requires more coverage and enhanced reach in terms of SMEDA's areas of operation.

Along with the sectoral focus a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of viable business opportunities for potential SME investors. In order to facilitate these investors, SMEDA provides business guidance through its help desk services as well as development of project specific documents. These documents consist of information required to make well-researched investment decisions. Pre-feasibility studies and business plan development are some of the services provided to enhance the capacity of individual SMEs to exploit viable business opportunities in a better way.

This document is in the continuation of this effort to enable potential investors to make well-informed investment decisions.

3. PURPOSE OF THE DOCUMENT

The objective of this proposed Pre-feasibility is primarily to facilitate potential entrepreneurs with the investment information and provide an overview about the "Furniture Show Room Business". The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and marketing, finance and business management. The document also provides sectoral information and international scenario, which have some bearing on the project itself.

The purpose of this document is to facilitate potential investors of the Furniture Showroom business by providing them a macro and micro view of the business with the hope that the information provided herein will aid the potential investors in crucial investment decisions.

This particular Pre-feasibility is regarding setting up "Dehydration Plant". Our report is based on the information obtained by us from industry sources as well as our discussions with businessmen. For financial model, since the forecast/projections relate to the future periods, actual results are likely to differ because of the events and circumstances that don't occur as frequently as expected.

4. PROJECT INTRODUCTION

Pakistan is blessed with vast agricultural resources and has one of the best irrigation systems in the world. Pakistan's economy is agricultural and agriculture plays a vital role in the development of the country. Major crops like Cotton, Wheat and Sugar are the key players. Agriculture being the dominant sector of the economy contributes 21 percent of Pakistan's national income (GDP) and employs 45 percent of its workforce.¹

The total gross disbursement of agriculture credit increased by 9.4 percent amounting to Rs 233 billion during FY08-09 as compared to FY07-08. The increasing penetration of commercial banks in the agri-credit market reflects attractiveness of this market segment as relative margins were higher compared to that in the corporate sector.²

4.1 VEGETABLE AND FRUIT SECTOR

Within agriculture the horticulture i.e. fruits, vegetables and floriculture is an important sub-sector of agricultural economy. Pakistan grows over 6.2 million tones of fruits and more than 5.0 million tones vegetables every year. Among fruits, mango, guava, citrus, apple, pears, banana and dates are main products. Important vegetables and spices include potatoes, onions, tomato, chilies, garlic, ginger, cauli flower and a large variety of leafy, root and other crops.³

Vegetables are among the readily perishable commodities, which form an important part of global food supplies. Pakistan produces seasonal vegetables in abundance almost all the year round. A considerable proportion of these vegetables get spoiled before reaching the consumer. According to Agriculture Department, 30% of vegetables/fruits are wasted due to negligence and lack of processing facilities. These losses can be minimized by adopting scientific techniques to convert the surplus produce of the glut season into non-perishable products by way of preservation.

4.2 POTATO, ONION AND GARLIC CROPS

Potatoes, Onions and Garlic are among the important cash vegetable crops in the country. They enjoy good market both within country and overseas. They are also included in list of essential kitchen crops. At the same time cultivation of potatoes and onions require lot of investment.

Potato is the fourth most important food crop in the world, with annual production approaching 325 million tons. More than one-third of the global potato output now comes from developing countries. A single medium-sized potato contains about half the daily adult requirement of vitamin C. Boiled potato has more protein than maize, and nearly twice the calcium.⁴

Onion is another important condiments widely used in all households to enhance flavor of foods. It not only provides flavor but also health promoting photochemical and nutrients. Onion consumption prevents gastric ulcers, growth of ulcer-forming macro-organisms. It is also a source of vitamin C, potassium, dietary fiber and folic acid.

¹ Economic Survey 2009-2010

² SBP's Annual Report 2009-2010

³ Pakissan news channel Feb 2011

⁴ Agricultural Marketing Report

Garlic is the second most widely used cultivated vegetable after onion. It has long been recognized all over the world as a valuable spice for foods and a popular remedy for various ailments and physiological disorders. Garlic is grown through out Pakistan and consumed by most of the people. It is used practically all over the world for flavoring various dishes. In Pakistan it is being used in several food preparations especially in dishes, curry powders, curried vegetables, meat preparation, tomato ketchup etc. Garlic is considered as a rich source of carbohydrates, protein, phosphorous.

4.2.1 Prices of Fresh Potatoes, Onions and Garlic

Due to seasonal and sensitive nature prices of potatoes, onions and garlic are regularly monitored at level not less than Economic Coordination Committee of the Cabinet (ECC). Price of potatoes, onions and garlic fluctuate highly. Potatoes and onions are perishable and unless handled efficiently will deteriorate in quality and consequently lose their marketability.

The potatoes have good storage life and facilities for their storage exist. Storage facilities for onions are non-existent. Garlic bulbs can be best stored for 3-4 months in well ventilated room. Storability is also affected by enzyme activity and the cultivars most suitable for storage generally have low ascorbate and polyphenol oxidase activity.

The potatoes are marketed throughout the year. In Pakistan, the climatic diversity enables their production around the year. In addition, fresh potatoes harvests are supplemented by releases from cold storage. Onions are traded from the fresh harvest due to the absence of long term storage facilities. This extreme variance in prices makes potatoes and onions production potentially both very profitable and very risky.

Generally prices are high at the beginning and late crop harvest, and during lean crop period. The peak harvest periods are usually met with market gluts leading to lowest prices. The prices of potatoes, onion and garlic vary from year to year, from the start of the season to the main supply period, from day to day and from market to market. A critical look at the prices pattern leads to the following:

- Prices for potatoes are lowest during **January to March** due to peak harvest months of main autumn crop.
- The prices are inversely related with production i.e. they are lower when crop size is high and vice versa.
- The prices are directly related to exports i.e. they are high when exports are high.
- Prices for onions are lowest during **December to April** due to peak harvest months (Lower Sindh crop). The prices also are low when Balochistan has bumper crop, the second largest producer of onions.
- Prices for garlic are lowest during **April to May**.

The inability of the farmers to adjust their production decisions to the fluctuating prices often causes market dips and shortages. This situation can be improved through effective market information, service guiding production and marketing decisions of the farmers.

4.3 AREA AND PRODUCTION

The table below shows that area under cultivation during the period from 2004-05 to 2008-09. The potato area increased by 20% while production increased by 31%. The Onion crop area increased by 1.25% while production decreased by 3.57%. The Garlic crop area increased by 21.36% while production increased by 14.3% as shown in table below:⁵

Table 4-1: Area of Cultivation

Year	Potato		Onion		Garlic	
	Area	Production	Area	Production	Area	Production
	(000ha)	(000 MT)	(000ha)	(000 MT)	(000ha)	(000 MT)
2004-05	276.7	2024.9	315.6	1764.8	16.2	55.9
2005-06	290.1	1567.9	367.5	2055.7	17.3	57.3
2006-07	329.6	2581.6	324.7	1816.4	19.2	62.3
2007-08	381.2	2539.0	378.3	2015.2	20.0	63.8
2008-09	358.3	2941.3	320.0	1704.1	20.6	65.2
Change (%)	20	31	1.25	- 3.57	21.36	14.3

Potatoes are mainly produced in Punjab, while Sindh and Balochistan are the main producers of onions as shown in the table below:⁶

Table 4-2: Province wise Production of Potatoes, Onions and Garlic

Province	Potatoes (000 tons)	Onions (000 tons)	Garlic (000 tons)
Punjab	2,782.7	300.52	24.87
Sindh	3.00	660.2	14.31
KPK	121	136.4	20.03
Balochistan	34.6	607	6.0
Total	2,941.3	1,704.12	65.21

⁵ Pakistan Agricultural Statistics, Ministry of Food, Agriculture & Livestock, Government of Pakistan, Islamabad, 2008/09

⁶ Pakistan Agricultural Statistics, Ministry of Food, Agriculture & Livestock, Government of Pakistan, Islamabad, 2008/09

5. DEHYDRATION

Dehydration offers an economical and satisfactory means to extend the shelf life of vegetables. The main advantages of dehydration over other methods of preservation being that the dehydrated products are:

1. Light in weight and occupy much less space than the original, frozen or canned materials.
2. Cheap to pack compared to tinned materials
3. Stable under ordinary storage conditions.

The dehydrated vegetables can serve as a good stand-by either for daily dishes or for off-season consumption.

5.1 DEHYDRATED PRODUCTS

There are a lot of vegetables and fruits which can be dehydrated. The major vegetables and fruits which are used in world as dehydrated are as follows:

Potato Fingers / Granules/ Powder	Coriander Leaves/Powder	Grape Fruit Juice Powder
Onion Powder/Flakes	Capsicum Slice	Lime Juice Powder
Garlic Powder/Flakes/Granules	Red Beet Juice Powder	Mango Juice Powder / Slices
Ginger Powder	Orange Juice Powder	Mushroom Pieces
Tomato Powder	Papaya Powder	Mustard Leaves
Green Chili	Banana Powder	Mint Leaves / Powder/ Flakes
Cauliflower	Bitter Gourd (Momordica Charantia)	Spinach Leaves
Carrot Flakes / Bits/ Powder	Curry Leaves	Pineapple Fruit Juice Powder
Cabbage	Fenugreek Leaves	

5.2 DEHYDRATION GUIDE FOR VEGETABLES AND FRUITS

A brief dehydration guide for major vegetables and fruits are given below. The dehydration plant can be used for these or any other product, vegetable and fruit but for convenient and considering some primary and secondary survey three major vegetables Potato, Onion and Garlic have been selected as product mix for the purpose of project feasibility.

5.2.1 Vegetables

All vegetables except onions and peppers and mushrooms should be washed, sliced, and blanched. Dehydration of vegetables products depends upon drying conditions and drying times.

- **Potato flakes**, monoglycerides, sodium acid phosphosphate, sodium bisulfite, citric acid, and **Butylated hydroxyanisole (BHA)** and the related compound **Butylated hydroxytoluene BHT** are phenolic compounds that are often added to foods to preserve fats.
- **Diced Potatoes**, Dehydrated potato dices, sodium bisulfate added to preserve quality.

- **Potato Powder, starch**, Prepared from by products of diced and chips potatoes. And many more like, potato salts and other mix of products can be produced.
- **Slices**: Slice 1/8-inch thick. Dry 6-12 hours until crisp.
- **Onions**: Slice 1/4-inch thick. Dry 6-12 hours until crisp.
- **Chopped, Whole, Dried and Cut**, 100% chopped onions.
- **Garlic Powder, flakes and Salt**, Garlic powder and garlic salt are fine in meat rubs, and all these products are useful in a pinch, none of them has a great flavor of fresh garlic.
- **Tomatoes**: Dip in boiling water to loosen skins, peel, slice or quarter. Dry 6-12 hours until crisp.
- **Beans, green**: Stem and break beans into 1-inch pieces. Blanch. Dry 6-12 hours until brittle.
- **Beets**: Cook and peel beets. Cut into 1/4-inch pieces. Dry 3-10 hours until leathery.
- **Broccoli**: Cut and dry 4-10 hours.
- **Carrots**: Peel, slice or shred. Dry 6-12 hours until almost brittle.
- **Cauliflower**: Cut and dry 6-14 hours.
- **Corn**: Cut corn off cob after blanching and dry 6-12 hours until brittle.
- **Mushrooms**: Brush off, don't wash. Dry at 90 degrees for 3 hours, and then 125 degrees for the remaining drying time. Dry 4-10 hours until brittle.
- **Peas**: Dry 5-14 hours until brittle.
- **Peppers, sweet**: Remove seeds and chop. Dry 5-12 hours until leathery.
- **Zucchini**: Slice 1/8-inch thick and dry 5-10 hours until brittle.

5.2.2 Fruits

All fruit should be washed, pitted and sliced. Arrange in single layers on trays. Dehydrate at 135 degrees Fahrenheit. These can be pre-treated with lemon juice or ascorbic acid or it won't darken while you are preparing it for dehydration/drying. Just slice the fruit into the solution and soak for 5 minutes.

- **Apples**: Peel, core and slice into 3/8-inch rings, or cut into 1/4-inch slices. Pre-treat and dry 6-12 hours until pliable.
- **Apricots**: Cut in half and turn inside out to dry. Pretreat and dry 8-20 hours until pliable.
- **Bananas**: Peel, cut into 1/4-inch slices and pre-treat. Dry 8-16 hours until plialbe or almost crisp.
- **Blueberries**: Dry 10-20 hours until leathery.
- **Cherries**: Cut in half and dry 18-26 hours until leathery and slightly sticky.
- **Peaches**: Peel, halve or quarter. Pre-treat and dry 6-20 hours until pliable.
- **Pears**: Peel, cut into 1/4-inch slices, and pre-treat. Dry 6-20 hours until leathery.
- **Pineapple**: Core and slice 1/4-inch thick. Dry 6-16 hours until leathery and not sticky.
- **Strawberries**: Halve or cut into 1/4-inch thick slices. Dry 6-16 hours until pliable and almost crisp.



5.3 PROSPECTS OF DEHYDRATED VEGETABLES AND FRUITS

Dehydrated vegetables produced scientifically under standardized conditions of acceptable quality have potential for the following purposes:

1. **Local consumption:** It is difficult to state with certainty the size of demand of different dehydrated vegetables and Fruits in the retail market. Consumer's acceptance for such products would, however, be affected by the quality, presentation and price. Such quality products, with convenience in use, should make them quite popular among the consumers.
2. **Armed Forces:** The Army has great demand for dehydrated vegetables. Such demand increases during military exercises or war conditions. Certain private concerns which are dehydrating potatoes exclusively for armed forces are unable to meet their entire demand. The Director General Procurement (DGP) of Rawalpindi demands dehydrated potato, onion from local suppliers and manufactures to meet the need of the entire army.
3. **Inaccessible Areas:** Our Northern areas which get snow-bound during winter should also benefit from the dehydrated vegetables.
4. **Export:** There is a potential for the export of dehydrated vegetables. The demand for such products in the international market is increasing every year. But there is severe competition regarding cost and quality, Pakistan can compete with other countries in price and quality for the export of dehydrated vegetables.

5.4 ADVANTAGES OF DEHYDRATED VEGETABLES AND FRUITS

5.4.1 Food Manufacturing Industries

1. Consistent product quality
2. All-year-round availability of **dehydrated products.**
3. Little preparation labor
4. No wastage, no pollution
5. Minimum storage space requirement

5.4.2 House-wives and Caterers

1. Dehydrated vegetables offer quality along with convenience in storage, preparation and serving.
2. Dehydrated vegetables help in stabilizing the prices of seasonal produce.

5.4.3 Farmers and Suppliers

1. Easy disposal of harvested crop.
2. Stability in the price of produce. Any situation of over-production is likely to be buffered by outlets to the dehydration industry.

5.5 REGULATIONS TO DEHYDRATED PRODUCTS

The current Laws, Regulations and Government Duties on dehydrated potatoes and onion are as follows:

5.5.1 Custom Duties and Taxes

Chapter 7 and 11 of Custom Tariff and Trade Controls lists the tariff applicable to dehydrated potato and onion, which are as follows:

Table 5-1: Custom Duties and Taxes

HS Code	Description	CD %	ST %
07.01	Potatoes, fresh or chilled.		
0701.9000	Potatoes, fresh or chilled.	0	
07.03	Onions, shallots, garlic, leeks and other alliaceous vegetables, fresh or chilled		
0703.1000	Onion and shallots	0	
0703.2000	Garlic	0	
0710.1000	Potato, Frozen	15	
07.12	Dried vegetables, whole, cut, sliced, broken or in powder, but not further prepared.		
0712.2000	Onion; Whole Dried, Cut	15	
07.14	Manioc, arrowroot, salep, Jerusalem artichokes, sweet potatoes and sillier roots and tubers with high starch or inulin content, fresh, chilled, frozen or dreid, whether or not sliced or in the form of pellets; sago pith.		
0714.2000	Sweet potatoes	5	
11.05	Flour, meal, powder, flakes, granules and pellets of potatoes.		
1105.1000	Flour, meal and powder	20	17
1105.2000	Flakes, granules and pellets	25	17
11.08	Starches; inulin.		
1108.1300	Potato starch	10	17

5.5.2 Quality and Other Standards

At the moment there are two general, voluntary, standards with which manufacturers can comply: ISO 14001. Both standards are based on ISO 9000 series of standards for quality management. Safe Quality Food (SQF) has recently been introduced in the European Union. Finished dried vegetables must not be treated with water or steam to improve appearance or increase weight. Excessive drying is avoided as it affects the color of the product.

The other most significant practices which need to be observed in food processing unit are Hazard and Critical Control Point Analysis i.e. HACCP and Sanitary and Phyto-Sanitary standards (SPS) which relate to the protection of the raw material for food industry from the risks arising from the disease causing organism and other chemical additives etc. It also offers protection from disease carried out from plants, animals and pests. SPS measures are getting universal importance on allowing the import of food products.

6. MARKET ANALYSIS

6.1 MARKET SUPPLY

The supply of various crops depends upon harvesting season. A good harvest will result in large quantity of products availability in the market. The harvest seasons are given below:

Potato Harvest Season

November – April

Autumn crop from Punjab & KPK plains,
February – Mid March peak harvest period

July – October

High hills crop – KPK (mainly Swat / Mangora /
Kalam) and Balochistan

Onion Harvest Seasons

November – March

Lower Sindh

April – May

Upper Sindh

Mid April – July

Punjab

Mid July – October

KPK

August – November

Balochistan

Garlic Harvest Seasons

February – March

Sindh & Balochistan

April – May

Punjab

August – September

Northern Areas

In Pakistan 90% of potato crop is harvested in autumn a part of this crop is marketed fresh including both domestic and overseas markets and part of it goes into cold storages. Potato can be safely stored up to 6 months. The stored potatoes are then gradually released during the lean crop periods generally from June onwards. The size of the hill crop directly impacts price of stored potatoes. Commercial long-term storage facilities for onion do not exist. Therefore, onion crop can't be held beyond certain period and has to be marketed. The lacking processing facilities further compound the marketing problems of potatoes and onions.

The production seasons for the major vegetables and fruits are as follow:

Products	Main Varieties	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Potato	Diamont, Cardinal, Faisalabad white												
Onion	Phulkara, Swat-1, Chilltan red, Sariab-86												
Garlic													
Okra	Sabzpari, T-13, Pusa green												
Cucumber	Alpha beta, Japanese long green												
Tomato	Roma, Gala, Faisalabad-1												
Watermelo	Sugar baby, Charles ton												
Grapes	Bedana, Kishmish, Flame (seed less), Shunda Khani												
Peach	Floridison, Florida King, Robin, GA, 8A												
Apple	Tur Kulu												
	Shain Kulu												
	Amri												
	Galas												
Citrus	Sweet Orange (Mosumbi, Red Blood)												
	Mandarin (Kino)												
Mango	Sindhri												
	Chunsa												
	Dusheri												
	Langra												
	Began pali												

6.2 MARKET DEMAND

As mentioned above the production of potato and garlic increased by 31% and 14.3% but the production of onion decrease by 3.57 %, due to huge demand in local market the potato and garlic market recorded inclining tendency.

Increase in exports of Fresh vegetables is due to the fact that there has been a greater market access allowed by the European Union, overall increase in unit values of our export items, stable exchange rate, low inflation rate, lower mark-up rates, reduced tariffs, aggressive marketing, market diversification, abundant availability and reduced cost of finance.

The main elements of export strategy are reducing cost of doing business, increasing market access, technology, environmental & Security Compliance, encouraging export-oriented foreign investment, region-specific strategy, country & business image building and value addition.

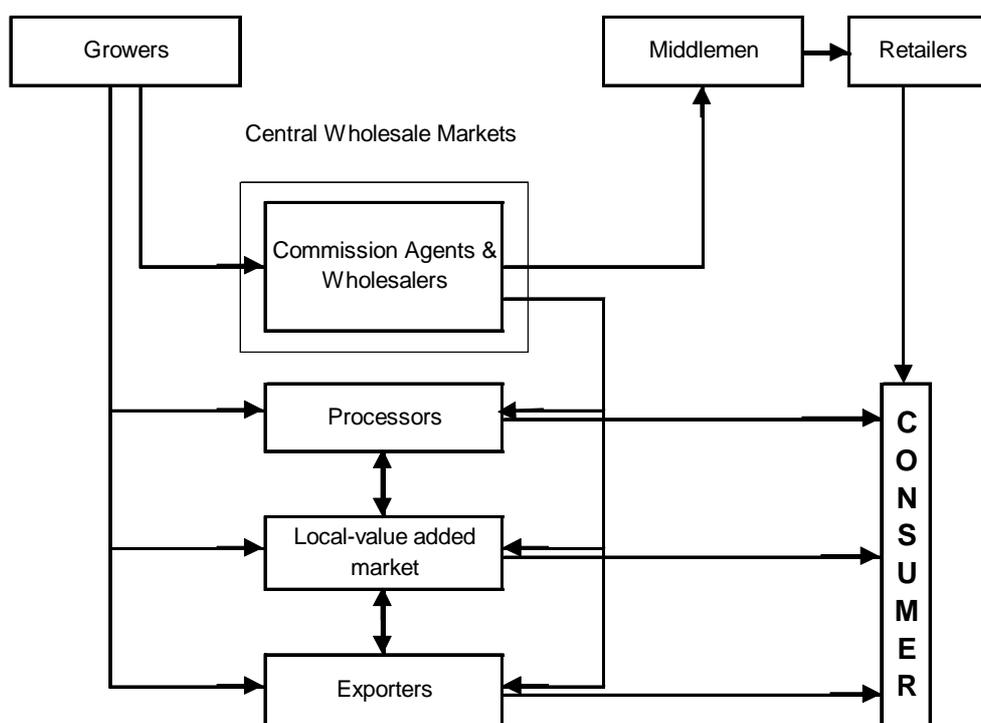
6.3 MARKET SUPPLY MECHANISM

The medium used for supply mechanism of vegetables and fruits from grower to consumer are as follows.

1. Wholesaler/Trader.
2. Commission Agent.
3. Pharia.
4. Retailer (Stall holder, Hawker)

Whereas most prevailing marketing channels for supply to end consumer are as follows.

1. Grower-Wholesaler -Comm. Agent -Pharia à Retailer - Consumer
2. Grower - Comm. Agent - Pharia - Retailer - Consumer
3. Grower - Comm. Agent - Pharia - Consumer.
4. Grower - Wholesaler - Comm. Agent - Retailer - Consumer



6.3.1 Export of Fresh Potato, Onion and Garlic

Good quality potatoes, onions and garlic have ready demand in the export markets especially in the food deficit regions of Middle and Far East. Owing to their nature, there is often a production dip which depresses the prices thereby forcing growers to divert to other crops. Thus hard earned export markets are lost besides shortage of these essential items within the country. Therefore, exports of potato and onions from the country have shown an erratic trend in the table below

6.3.2 Export of Fresh Potatoes, Onions and Garlic from Pakistan 2007 – 2009

Table 6-1: Export of Fresh Potatoes, Onion and Garlic

Years	In 000					
	Potato		Onion		Garlic	
	Qty (KGs)	Value	Qty (KGs)	Value	Qty (KGs)	Value
2007-08	151,624	1,540,889	35,430	468k167	5,813	121,583
2008-09	315,158	3,286,640	33,021	432,555	766	22,760

6.3.3 Market for Dehydrated Vegetables

Basically, dehydrated vegetables are used as culinary vegetables and as processed raw materials.

1. **Culinary vegetables:** Dehydrated vegetables are used as culinary vegetables by hotels, industrial canteens and housewives. These are also used in armed forces rations and emergency rations.
2. **Processed raw materials:** Dehydrated vegetables are used as industrial raw materials by a wide range of food manufacturing industries. Main users are:
 - i) **Soup mix industry:** The major dehydrated vegetables including tomatoes, onions, potatoes, carrots, peas and spinach is used for the purpose.
 - ii) **Other food Industries:** The following products utilize a variety of dehydrated vegetables
 - Dry mixes – ready meal mixes, stuffing mixes, spice mix (curry powder), and sauce mix.
 - Baby foods – both canned and dried baby foods.
 - Baker products – dehydrated potato products are used in the production of garnish pasties, pies and bread making.
 - Canned foods – dehydrated vegetables such as potatoes, carrots, and onions are used in canned stews and soups.
 - Processed meat – hamburgers, sausages and many delicatessen-type meat products.

In short, the market sectors which have demand for dehydrated vegetables are as follows:

1. Catering industry and Armed Forces Mess.
2. Dried soup manufacturers.
3. Other food manufactures.
4. Retail trade in dehydrated vegetables.

5. Garlic powder has utility in certain pharmaceuticals.

6.3.4 Local and International Market

Some units with limited capacity for dehydration of vegetables are operating in Pakistan. The economically viable units working in domestic market are:

- M/S Almaida Foods at 2-KM Multan Road –ECO Foods
- M/S Family Food in Gujranwalla
- Amir Foods in Faisalabad
- Perfect Foods Industries
- Falkon Foods
- Kinza Foods Chungi Amar sadhu-Bank Stop Lahore
- Army Plant at Noshera
- PCSIR in Sakardo, Lahore
- Agha Khan Research Centre in **Gilgit** Area

There are several un-organized individuals operating in domestic market who supply to Army and also fulfill demand by hotels and fast food restaurants. Apparent household demand for these products is limited. The general consumers have not yet been exposed to these products. The main local buyers of products are:

- Unilever former Rafhan Best food limited
- Shan Private Limited
- National Food
- Shangrila Foods
- Salman Foods
- Ahmad Food
- K.S Sulemanji Esmailji & Sons (Pvt.) Ltd.-Kolson
- K&N Foods-Raiwind Road
- Army & PIA
- and other hotels and fast food restaurants

The above mentioned companies by using dehydrated potato powder, flakes, starch, dried onion and other of this kind after value addition sell products e.g., Kolson used potato powder and starch for Slanty.

6.3.5 Export Market

There is no export of dehydrated products from Pakistan but after value addition food industries mentioned above including Kolson, National Food, Rafan Best Foods, Shan and other are exporting value added products to Middle East and Saudi Arabia.

The proposed export market for the dehydrated products can be in Middle East, Far East Asian countries like Singapore, Malaysia, Thailand and other European countries. The leading importing countries are also a good market for the export.

7. CRUCIAL FACTORS IN DECISION MAKING FOR INVESTMENT

7.1 STRATEGIC RECOMMENDATION

The industry for dehydration of vegetables and fruits in Pakistan can only survive in the present scenario on the strength of technical capabilities, product quality and cost competitiveness, which can be achieved in the following ways:

- The plant should be operated by technical staff/Food technologist to consider the quality standards of ISO, Food and Hazard Analysis and Critical Control Policy (HACCP).
- For high quality plan for growing raw material through contract farming.
- Keeping close interaction with the market demand and producing products in concurrence with the market requirements.
- The project employer should employ people who have a complete technical know how of the value added product mix to make project feasible.
- Product mix and value added production from by products of dehydrated vegetables can be a winning strategy like production of starch, flour, salts of onion, red chili, Potato and other vegetables and fruits.
- There is need to create awareness in a niche market to make regular use of the dehydrated vegetables. In domestic niche market there is not too much awareness regarding the dehydrated, dried and frozen products. That is why the usage of these products is only in industry.
- Promoting the products in a professional manner etc.
- Training for the personnel responsible for raw material procurement, plant operation and quality control.

7.2 SUCCESS STRATEGY

Following factors are the key in making the project profitable:

- Regular flow of local as well as Export orders is the key success factor for efficiently running of the project.
- Selection and procurement of consistent quality raw material would be another contributing factor for carrying out successful operations of proposed project.
- Production of quality products meeting the Health Standards of International level is necessary for Export sales.
- Competitive price of end products.
- Abundant supply of raw material.
- Cost efficiency through better management.
- Media campaign for the awareness of the retail customers.
- Availability of low cost skilled labor.
- The main elements of export strategy are reducing cost of doing business, increasing market access, technology, environmental & Security Compliance, encouraging export-oriented foreign investment, region-specific strategy, country & business image building and value addition.

7.3 WEAKNESSES

The major weaknesses in this field of business are:

- Poor-availability of suitable processing variety of raw materials at present.

- Lack of in-house quality control and testing facilities in conformity with the international standards.
- Lack of post harvest handling and long term storage facility.
- Existing technology obsolescence.
- Poor infrastructure facilities such as irregular power supply, high inland transportation cost and lack of cold chain facilities etc.
- The other major weakness in Pakistan food industry is the lack of coherence and co-operation amongst the processors and exporters due to which the problems can not be effectively addressed and tackled collectively.
- Non Availability of properly quality raw material at competitive prices, which fluctuate depending upon the harvesting season crop.

7.4 THREATS

The proposed project will be facing the following threat:

- Competition from the local unorganized sector (cottage industry).
- Increase in International competition with China, India and Eastern Europe.
- Imposition of Quality and Environment standards by importing countries.
- Decline in the average sale price for Pakistani products.
- Crop failure
- Influence of major local and foreign brands operating in the market
- Change in Government regulations
- WTO Agreement on Agriculture.

THE PROCESS AND PLANT LAYOUT

7.5 PROCESS DESCRIPTION

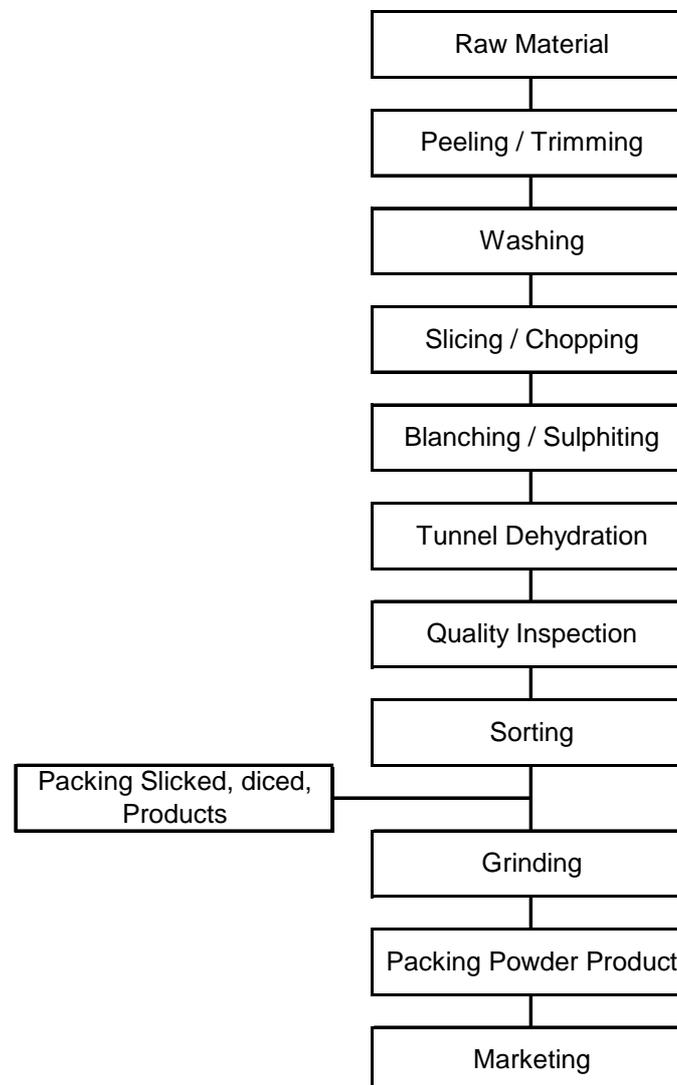
There are many methods used for dehydration like Sun drying, Kiln Drier but most distinctive and commercially used is Forced Draught Tunnel, consisting long chamber constructed by special bricks through which the trays of vegetables move on trolleys. In order to facilitate dehydration and to preserve original qualities during dehydration and storage the following process takes place:

- The fresh vegetables are prepared and subjected to pre-treatment operations prior to dehydration.
- The vegetable is first of all sorted carefully to remove the blemished/damaged pieces.
- Sorted vegetables are passed through a washer into a peeler. The peeled vegetable is trimmed, washed and sliced mechanically.
- The sliced material is spread on trays and stacked on trolleys.
- These trolleys, each loaded with about 50 kg of prepared/pre-treated material, are passed through the blancher
- These trolleys are then cycled through the Twin-Tunnel Dehydrator at regular intervals of time.
- The moisture is eliminated from the material under controlled conditions of temperature and humidity, using counter-current and/or con-current arrangement of hot air flow in the tunnels.

- The partially dried material, containing 15-20% residual moisture, is taken out of the tunnels and stacked in a finishing bin (cabinet dryer type) for lowering the moisture level to about 4 to 5 %.
- The final product is packed in polythene bags and stored in hermetically sealed containers (**refers to a container that is designed and intended to be secure against the entry of microorganisms and thereby to maintain the commercial sterility of its contents after processing.**)

Note: Blanching is not needed for onions therefore boiler will not operate for onions. Similarly, grinding mill will only operate for the powder products of onions.

7.6 FLOW CHART FOR VEGETABLE DEHYDRATION



8. RATIONALE & JUSTIFICATION

Almost all vegetables, especially, Potatoes, Onion, Garlic, Tomatoes and Chilies etc. are available in the market. Dehydrated vegetables have long shelf life subject to high quality packing from 8 to 12 months. Current demand-supply indicates potential of good quality dehydrated vegetables in international markets with proper marketing arrangements.

There is a big export potential for these products in overseas countries especially Europe, Japan, United States and Middle East.

8.1 SURPLUS OF RAW MATERIAL

There is surplus of vegetables and during the harvesting season large quantity of vegetables are wasted due to lack of proper storage and preservation.

8.2 DIFFERENT HARVESTING SEASON

Due to different harvesting season, the vegetables are available around the year, so it can be processed through out the year and plant can achieve maximum production

8.3 PRICES OF VEGETABLES

During the season there is glut of vegetable which are available at a cheap price.

8.4 EXPORT POTENTIAL

Stable marketing and established export network adds sales growth and returns on investment.

8.5 SHELF LIFE

Compared to frozen fruits and vegetables for dehydration units less energy is required and product becomes more stable with long shelf life without the aid of any external facilities like refrigeration, high-priced packaging material, etc.

8.6 STORAGE

Proper storage is critical in maintaining high quality. Onions should be stored in cool, dry, and well-ventilated building at 40 to 45 F with a relative humidity of 64 percent. The ventilation system should provide about 1.5 cubic feet of air per minute every cubic foot of onions. Onions stored in this manner may be kept in good condition for many months. Garlic bulbs can be best stored for 3-4 months in well ventilated room.

8.7 BENEFITS TO FARMER

The proposed project will boost the demand of vegetables in the market and will results in better returns to the farmers.

9. THE PROJECT

9.1 VIABLE ECONOMIC SIZE

The proposed size of the project is capable to produce an average of 1,000 kgs dehydrated vegetables per day. Considering the Local market demand and Pakistan's export trends, initially the project would be able to receive and entertain such number of orders which are required for the project to be economically viable.

9.2 PROPOSED CAPACITY

The plant has a processing capacity of about 2,000 tons/annum on single shift with 360 working days basis. Production supported by duplicating the existing dehydration unit. Scale up beyond this capacity at a particular location is not recommended for the following reasons.

1. The cultivation of vegetables is not localized; it is rather spread over vast areas in the country.
2. Transportation of fresh commodity over long distances will be expensive and detrimental to the product quality.
3. A huge unit may cause shortage of vegetables in the area, unless it is supported by parallel large farms of vegetables.

It is, therefore suggested that at Lahore a medium capacity plant be installed and labour-intensive unit be encouraged. It would be unsuitable to install at one location a fully automatic huge unit (capacity 15,000 tons or more).

9.3 PROJECT

The details of the cost of project are as follows:

Table 10-1: Project Cost

	Rs.
Land – (8 Kanals @ 0.67 million per Kanal)	5,400,000
Building – Civil Works	19,125,000
Machinery & Equipment including Laboratory Equip.	5,551,000
Vehicle	840,000
Office Equip. and Furniture & Fixture	414,500
Preliminary Expenses	
Utility Connection Charges	750,000
Pre-Operating Staff Salaries	529,000
Total Preliminary Expenses	1,279,000
Working Capital	6,103,615
Total Project Cost	38,713,115

9.4 PROJECT FINANCING

The estimated cost of the project is Rs.38.713 million including the working capital of Rs. 6.104 million. The project will be based on 50% equity by Sponsors and the remaining 50% will be financed by the Bank Loan. The proposed equity participation includes:

Table 10-2: Debt Equity Ratio

		Rs.
Equity	50%	19,356,558
Loan	50%	19,356,558
Total	100%	38,713,115

9.5 PROJECT DETAILS

9.5.1 Location (Lahore)

Lahore region is rich in horticulture. Lahore has been established as one of the big markets for horticulture products grown in surrounding districts. The following are the important factors, which determine the viability of the Dehydration Plant at Lahore.

- Availability and supply of desired quality raw material.
- Sufficient supply of electrical power.
- An ample supply of water.
- Adequate facilities for effluent and waste disposal.
- Availability of suitable labour and technical staff.
- Access to transportation facilities.
- Proximity to proposed collection point of Lahore including whole sale Market, Cold Storage, Pulp plant, sorting, cleaning, grading & packing.

The most important factor is that Lahore has flow of vegetables from neighboring divisions/districts like Kasur, Gujranwala, Faisalabad, Sheikhpura, Sargodaha, Multan, Depalpur. The availability of quality raw material is possible and plant will be located near to main vegetable market along with facilities of utilities, fuel, transportation and waste disposal.



2 Second Best Location.

The second best location for the Dehydration plant is in Punjab at Faisalabad or Multan. It is also fast emerging as trade center of country. It is emerging as second Hub for the Pakistan.

9.5.3 Land

Keeping in view the proposed capacity, approximately eight (8) Kanals of land i.e. thirty six thousand (36,000) square feet is sufficient to set up the Dehydration Plant. An amount of Rs.5,400,000 has been allocated for the acquisition of eight (8) Kanals land in the area of Lahore However, cost of land may vary according to location.

9.5.4 Building

The Construction for infrastructure will be carried on an area of 22,500 sq.ft. The rest of the area will be left uncovered. The dehydrator & bins may be accommodated in a covered shed of cheap structure. The total cost of construction is estimated at Rs.19.125 million. The proposed building will comprises of the following:

Raw Material Store*	Inspection and Testing Laboratory
Processing Section	Packing Section
Twin Tunnel Dehydrator Hall	Finished Products Store
Finishing Bin	Admin Block
Washrooms	Flooring/driveways/pavements

***The store space required for raw material is assumed 450sq.ft for 30 days stock of 166,667 kgs on the basis of 5,556 Kg/day.**

9.5.5 Machinery and Equipment

The machinery, equipment and accessories required for dehydration of vegetables plant at Lahore are fabricated locally. Most advanced technology for drying parameter control, belt control and belt structure is also used. For this purpose international suppliers are also available to produce finished products confirm to national as well as international standards.

Alternatively the economies and scale can also be achieved by using spray drawing technology which is the best one available in international market and used by most of the international food processing companies. The technology not only can reduce the cost of production but also reduces the cost of manpower required and other related overhead cost up to 15 % percent as compare to locally fabricated machinery.

The detail of Machinery and Equipment is as follow:

Table 10-3: Machinery and Equipment Detail

Items	Number	Unit Cost	Total Cost (Rs)
Sorting Conveyors (18 'X2')	1	150,000	150,000
Washing Tanks (6'x2-1/2x2-1/2')	2	80,000	160,000
Rotary Washing Machine-ss3 16	2	250,000	500,000
Peeling Machine	2	80,000	160,000
Chopping Machine-s.s	2	50,000	300,000
Slicing	1	230,000	230,000
Dicing Machine	1	25,000	325,000
Blanching / Sulphiting Tank	1	5,000	45,000
Steam Blancher, Trolley Load (3' x3' x6')M.S	1	5,000	65,000
Twin Tunnel Dehydrator	1	800,000	800,000
Trolley-Dehydrator	24	30,000	720,000
Drying Trays Aluminium Frame	600	400	240,000
Finishing Bins			
Finishing Chambers (13'x3.5'x7')-Complete	1	150,000	150,000
Drying Trays-Finishing Bin	40	400	16,000
Trolleys-Finishing Bin-M.S	2	45,000	90,000
Grinding Mill-S.S	1	200,000	200,000
Threshing Machine	1	150,000	150,000
Working Tables S.S (10'x4")	2	40,000	80,000
Storage Vessels (10x4)	3	60,000	180,000
Plate form Scale 200 M.T capacity	1	150,000	150,000
Steam Jacketed Kettles S.S Capacity 100 Kg.	2	45,000	90,000
Boiler (Steam Generator)	1	40,000	40,000
Laboratory Equipments etc.	1	300,000	300,000

Storage Conveyors SS	2	75,000	150,000
Rotto Sealer Machine	1	210,000	210,000
Poly Sealer-Paddle	1	50,000	50,000
Total			5,551,000

9.5.6 Office Equipment, Furniture and Fixture

The estimated cost of office equipment and furniture & fixture required for the proposed project is Rs.414,500.

Table 10-4: Office Equipment Detail

Items	Number	Unit Cost	Total Cost (Rs.)
Executive Table	1	25,000	25,000
Computer and other Tables	6	8,000	48,000
Sofas	1	20,000	20,000
Store Rags / Shelves	5	15,000	75,000
Chairs	15	2,500	37,500
Fans & Lights	20	3,000	60,000
Carpet, Curtains, etc.	1	25,000	25,000
Fire Extinguisher	5	7,000	35,000
Computer + UPS	2	28,000	56,000
Printer Laser	1	18,000	18,000
Fax	1	15,000	15,000
Total			414,500

9.6 MANPOWER

Table 10-5: Staff Salaries

	No.	Monthly Salary per Month	Per Year
Director/CE	1	50,000	600,000
Production Staff:			
Boiler Man	2	12,000	288,000
Mechanic-cum electrician	2	10,000	240,000
Preparation line daily wagers	15	7,000	1,260,000
Plant Operator	3	10,000	360,000
Pre-treatment line workers	3	7,000	252,000
General Duties	1	7,000	84,000
Watchman/ Gateman	2	7,000	168,000
Total Production Staff:			2,652,000
Admin. & Accounts:			

Purchase Officer	1	25,000	300,000
Accountant	1	15,000	180,000
Laboratory Technician	1	12,000	144,000
Ware house In charge/Clerk	1	10,000	120,000
Admin. & Accounts:			1,344,000
TOTAL			3,996,000

9.7 FUEL AND ELECTRICAL POWER

An industrial connection of natural gas is required at the plant site. Average daily consumption of the gas is 12 Hm³ for vegetables. Natural gas has been charged at Rs. 383/Hm³.

The factory site will be connected with a WAPDA power connection. Average daily consumption of electricity is 900 KW depending on the number of unit operations involved in the process. The costing has been done @ Rs. 15.00/unit. A 100 KVA transformer has been assumed to be required.

10. FINANCIAL PROJECTIONS

10.1 PROJECTED BALANCE SHEET

YEAR	Start up	1	2	3	4	5	6	7	8	9	10
FIXED ASSETS	31,330,500	29,609,700	28,029,968	26,576,226	25,235,461	23,996,380	22,849,145	21,785,142	20,796,797	19,877,420	19,021,080
	31,330,500	29,609,700	28,029,968	26,576,226	25,235,461	23,996,380	22,849,145	21,785,142	20,796,797	19,877,420	19,021,080
Preliminary Expenses	1,279,000	1,023,200	767,400	511,600	255,800	-	-	-	-	-	-
	32,609,500	30,632,900	28,797,368	27,087,826	25,491,261	23,996,380	22,849,145	21,785,142	20,796,797	19,877,420	19,021,080
CURRENT ASSETS											
Accounts Receivables	-	11,364,636	15,086,554	18,791,142	22,173,547	26,164,785	30,874,447	36,431,847	42,989,580	50,727,704	59,858,691
Stocks	-	8,833,333	11,728,500	14,616,146	17,261,670	20,392,483	24,098,581	28,486,794	33,683,964	39,840,713	47,135,931
Advances to Employees	-	338,600	391,556	430,712	473,783	521,161	573,277	659,304	725,235	797,758	877,534
Tools & Spares	-	277,550	305,305	335,836	369,419	406,361	446,997	491,697	540,866	594,953	654,448
Cash & Bank Balances	6,103,615	9,605,139	21,071,284	31,473,486	45,407,741	62,855,421	84,638,845	111,119,624	142,857,171	180,630,299	225,343,514
	6,103,615	30,419,258	48,583,199	65,647,321	85,686,161	110,340,211	140,632,147	177,189,266	220,796,816	272,591,427	333,870,117
TOTAL ASSETS	38,713,115	61,052,158	77,380,567	92,735,147	111,177,421	134,336,591	163,481,292	198,974,408	241,593,613	292,468,847	352,891,197
CAPITAL EMPLOYED REPRESENTED BY:											
SHARE CAPITAL											
1,935,656 Shares @ Rs.10/- each	19,356,558	19,356,558	19,356,558	19,356,558	19,356,558	19,356,558	19,356,558	19,356,558	19,356,558	19,356,558	19,356,558
UNAPP. PROFIT/(LOSS)	-	8,647,305	22,427,284	35,239,393	51,469,921	71,641,505	96,879,149	127,375,227	163,704,949	206,757,810	257,539,280
	19,356,558	28,003,862	41,783,841	54,595,951	70,826,478	90,998,063	116,235,707	146,731,784	183,061,507	226,114,368	276,895,838
LONG TERM LIABILITIES											
Finance Lease	-	-	-	-	-	-	-	-	-	-	-
Long Term Loan	19,356,558	18,337,791	16,300,259	14,262,727	12,225,194	10,187,662	8,150,129	6,112,597	4,075,065	2,037,532	(0)
Others	-	-	-	-	-	-	-	-	-	-	-
	19,356,558	18,337,791	16,300,259	14,262,727	12,225,194	10,187,662	8,150,129	6,112,597	4,075,065	2,037,532	(0)
CURRENT LIABILITIES											
Creditors	-	14,572,284	19,129,495	23,674,737	27,881,985	32,856,278	38,739,406	45,699,650	53,936,773	63,687,958	75,234,872
Utilities Payable	-	138,220	166,971	201,733	243,764	294,588	356,049	430,376	520,268	628,989	760,487
	-	14,710,504	19,296,467	23,876,470	28,125,749	33,150,866	39,095,455	46,130,026	54,457,041	64,316,947	75,995,359
TOTAL	38,713,115	61,052,158	77,380,567	92,735,147	111,177,421	134,336,591	163,481,292	198,974,408	241,593,613	292,468,847	352,891,197



10.2 PROJECTED INCOME STATEMENT

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Sales	136,375,632	181,038,651	225,493,698	266,082,564	313,977,425	370,493,362	437,182,167	515,874,957	608,732,449	718,304,290
Cost of Sales	116,578,274	153,035,964	189,397,896	223,055,880	262,850,226	309,915,250	365,597,199	431,494,183	509,503,665	601,878,978
Gross Profit	19,797,358	28,002,688	36,095,802	43,026,683	51,127,199	60,578,112	71,584,968	84,380,774	99,228,784	116,425,312
Operating Expenses:										
Operating Expenses	8,012,059	10,247,767	12,452,693	14,503,716	16,907,395	19,725,303	23,374,324	27,285,468	31,872,647	37,254,585
Depreciation	1,720,800	1,579,733	1,453,741	1,340,766	1,239,081	1,147,235	1,064,003	988,345	919,377	856,340
Amortization of Preliminary Exp.	255,800	255,800	255,800	255,800	255,800	-	-	-	-	-
	9,988,659	12,083,300	14,162,234	16,100,281	18,402,276	20,872,538	24,438,327	28,273,813	32,792,024	38,110,925
Operating Profit	9,808,698	15,919,388	21,933,569	26,926,402	32,724,924	39,705,574	47,146,641	56,106,961	66,436,760	78,314,387
Interest on Loan	1,161,393	2,139,409	1,894,905	1,650,401	1,405,897	611,260	-	-	-	-
Interest on Lease	-	-	-	-	-	-	-	-	-	-
	1,161,393	2,139,409	1,894,905	1,650,401	1,405,897	611,260	-	-	-	-
Profit before Tax	8,647,305	13,779,979	20,038,664	25,276,001	31,319,026	39,094,314	47,146,641	56,106,961	66,436,760	78,314,387
Taxation (see working)	-	-	7,226,554	9,045,474	11,147,441	13,856,670	16,650,564	19,777,238	23,383,899	27,532,917
Profit after Tax	8,647,305	13,779,979	12,812,110	16,230,527	20,171,585	25,237,644	30,496,077	36,329,723	43,052,861	50,781,470



10.3 PROJECTED CASH FLOW STATEMENT

YEAR	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
SOURCES										
FROM OPERATION										
Profit Before Tax	8,647,305	13,779,979	20,038,664	25,276,001	31,319,026	39,094,314	47,146,641	56,106,961	66,436,760	78,314,387
Add: Depreciation	1,720,800	1,579,733	1,453,741	1,340,766	1,239,081	1,147,235	1,064,003	988,345	919,377	856,340
Amortization	255,800	255,800	255,800	255,800	255,800	-	-	-	-	-
	1,976,600	1,835,533	1,709,541	1,596,566	1,494,881	1,147,235	1,064,003	988,345	919,377	856,340
	<u>10,623,905</u>	<u>15,615,511</u>	<u>21,748,205</u>	<u>26,872,566</u>	<u>32,813,907</u>	<u>40,241,549</u>	<u>48,210,644</u>	<u>57,095,306</u>	<u>67,356,137</u>	<u>79,170,727</u>
APPLICATION										
Capital Expenditure	-	-	-	-	-	-	-	-	-	-
Repayments of Loan	1,018,766	2,037,532	2,037,532	2,037,532	2,037,532	2,037,532	2,037,532	2,037,532	2,037,532	2,037,532
Tax Payment	-	-	7,226,554	9,045,474	11,147,441	13,856,670	16,650,564	19,777,238	23,383,899	27,532,917
Dividend Paid	-	-	-	-	-	-	-	-	-	-
- Cash	-	-	-	-	-	-	-	-	-	-
	1,018,766.19	2,037,532.37	9,264,086.12	11,083,005.91	13,184,974	15,894,203	18,688,096	21,814,770	25,421,432	29,570,449
SURPLUS / (DEFICIT)	<u>9,605,139</u>	<u>13,577,979</u>	<u>12,484,119</u>	<u>15,789,561</u>	<u>19,628,933</u>	<u>24,347,347</u>	<u>29,522,548</u>	<u>35,280,536</u>	<u>41,934,705</u>	<u>49,600,278</u>
INCREASE/(DECREASE) IN WORKING CAPITAL	6,103,615	2,111,834	2,081,916	1,855,306	2,181,254	2,563,922	3,041,769	3,542,988	4,161,577	4,887,064
NET INCREASE/(DECREASE)	<u>3,501,524</u>	<u>11,466,145</u>	<u>10,402,202</u>	<u>13,934,255</u>	<u>17,447,679</u>	<u>21,783,425</u>	<u>26,480,778</u>	<u>31,737,548</u>	<u>37,773,128</u>	<u>44,713,214</u>
OPENING BANK BALANCES	6,103,615	9,605,139	21,071,284	31,473,486	45,407,741	62,855,421	84,638,845	111,119,624	142,857,171	180,630,299
CLOSING CASH BALANCE	9,605,139	21,071,284	31,473,486	45,407,741	62,855,421	84,638,845	111,119,624	142,857,171	180,630,299	225,343,514



11. KEY ASSUMPTIONS

Table 11-1: Operating Expenses for the project

Description	Basis	Per Month	Per Year
Staff Benefits	5% of Payroll	5,600	67,200
Printing & Stationary	1,200 per month	1,200	14,400
Entertainment	400 per month	400	4,800
Local Freights	2% of Local Sales	116,907	1,402,885
Insurance	1% of Equipment. Cost	4,626	55,510
Traveling	10,000 per month	10,000	120,000
Telephone & Fax	5,000 per month	5,000	60,000
Water	9,000 per month	9,000	108,000
Electricity (Office)	2,500 per month	2,500	30,000
Legal & Professional Charges	400 per month	400	4,800
Exhibition/Marketing Visits	1 Visit @ Rs.20,000	1,667	20,000
Export Freight	7.0% of Export Sales	386,350	4,636,195
Selling Expenses	1.5% of Sales	10,022	120,269
Misc. Expenses	2,000 per month	2,000	24,000
		555,672	6,668,059

Table 11-2: Depreciation Assumption

Depreciation Method	Straight Line Method
Building depreciation rate	5%
Machinery & Equipment depreciation rate	10%
Office Equipment depreciation rate	10%
Furniture & Fixtures depreciation rate	10%
Vehicle	20%

Table 11-3: Working Capital Assumptions

Accounts Receivable in Days	30
Accounts Payable in Days	45
Raw Material Stock in Days	30
Store and Spares (% of Machinery)	10

Table 11-4: Production Assumptions

Description	
Production capacity Utilization (1 st Year)	80%
Capacity Growth Rate	10%
Maximum Capacity Utilization	95%
Sale price growth rate	18%

Table 11-5: Financial Assumptions

Plant Processing Capacity	2,000 MT		
Inflation Rate	10%		
Increase in Selling Price	18%		
Material Inputs and Out Puts	Potato	Onion	Garlic
Months of Purchasing	March to May	Nov to Feb: June to July	Aug. to Oct
Processing days	90	180	90
Average Prices on 2010 basis of fresh vegetables	11.97	28.3	194.9
Cost of Fresh Vegetables / Kg	Rs.13.00	Rs.28.50	Rs.195.00
Average Increase in Prices	21%	14%	19%
Dehydration Ratio (Fresh: Finished Dry)	6:1	10:1	4:1
Annual Processing Capacity in Kgs	2,000,000	2,000,000	2,000,000
Monthly Processing Capacity in Kgs	166,667	166,667	166,667
Fresh Commodities Processing Capacity / day	5,556	5,556	5,556
Preparatory-Line Losses %	10%	15%	15%
Prepared Material	5,000	4,722	4,722
Moisture Content	80%	88%	70%
Finish Product Per day	1,000	567	1,417
Finish Product Per Year (Kg)	90,000	102,000	127,500
Export Selling Ratio	40 : 60	40 : 60	40 : 60
Selling Price Export	Rs.278	Rs.479	Rs.1,044
Selling Price Local	Rs.209	Rs.335	Rs.731
Packing Cost	Rs.20	Rs.15	Rs.20
Average Daily Consumption of Natural Gas	12 HM ³		
Price of Gas / HM ³	Rs.383		
Average Daily Consumption of Electricity	900 KW		
Electricity Rate Per Unit	Rs.15.0		