

**Project Profiles**  
**FOOD**  
**Processing Industry**

**Oil Mill, Cashew and Spice**



सत्यमेव जयते

Department of Food Processing Industries  
& Horticulture  
Govt. of West Bengal

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**মহঃ গোলাম রব্বানী**

ভারপ্রাপ্ত মন্ত্রী  
খাদ্য প্রক্রিয়াকরণ শিল্প ও উদ্যানপালন দপ্তর, পশ্চিমবঙ্গ সরকার

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## Foreword

West Bengal has the natural advantage of fertile soil, adequate water, and varied climatic conditions to produce a wide variety of food commodities. Farmer communities, private companies and processors of food products can be benefitted immensely from a vibrant food processing sector in West Bengal.

Entrepreneurs interested in investing in the food processing sector need good bankable projects to start their ventures, but the preparation of DPRs for such projects are both time-consuming and expensive. Besides, there is unavailability of good consultants for the same. The Directorate of Food Processing Industries recognizing this as a gap that needs to be filled up, has come up with this set of 21 DPRs of potential projects.

The aim of this set of project profiles is to further develop the food processing sector in West Bengal that meets its aspirations to become a leading state in food processing sector. Our goal remains to minimize post-harvest losses, stimulating employment and building a thriving entrepreneurship ecosystem which would benefit the state's economy and improve the quality of life. It is intended through these project profile documents to create a transparent, time-bound, responsive and positively inclined ecosystem to encourage food processing ventures in the state.

It is expected that these project profiles will help prospective entrepreneurs in the matter of ready DPRs, which may be edited easily to accommodate projects of varying scales. This would also result in savings of time and resources for the entrepreneur.

My department is committed to being by the side of entrepreneurs. This set of publications has been developed after considerable inputs from across the state to take ahead the food processing sector in the state.

Mohammad Ghulam Rabbani



## Table of Content

|                                  |               |
|----------------------------------|---------------|
| <b>1. Cashew Processing</b>      | <b>1-18</b>   |
| <b>2. Mustard Oil Extraction</b> | <b>19-36</b>  |
| <b>3. Rice Bran Oil</b>          | <b>37-54</b>  |
| <b>4. Processing of Spices</b>   | <b>55-72</b>  |
| <b>5. Annexures</b>              | <b>93-117</b> |



## Table of Content

|  | Page No. |
|--|----------|
| <b>Cashew Processing</b>               |          |
| Introduction                           | 1        |
| Promoters - Some specific requirements | 1        |
| History of the company                 | 1        |
| Finished Product and its Utility       | 1        |
| Market, Demand and major competitors   | 2        |
| Raw Material Requirement               | 3        |
| Manufacturing Process                  | 4        |
| SWOT Analysis                          | 5        |
| Financial aspects of the project       | 5        |
| ➤ Infrastructure Requirement           | 5        |
| ➤ Land and its development             | 6        |
| ➤ Project Timeline                     | 10       |
| ➤ Price of finished goods              | 10       |
| ➤ Working Capital Requirement          | 11       |
| ➤ Other Expenses                       | 13       |
| ➤ Depreciation                         | 14       |
| ➤ Repairs and Maintenance              | 15       |
| ➤ Cost of Project and Means of Finance | 15       |
| Financial Statements                   | 16       |
| ➤ P&L Statement                        | 16       |
| ➤ Projected Balance Sheet              | 17       |
| ➤ Breakeven Analysis                   | 18       |
| ➤ Cash Flow Statement                  | 19       |
| ➤ Debt Service Coverage Ratio          | 20       |
| ➤ BC Ratio, NPV and IRR                | 20       |
| Registration/Certification             | 21       |
| <b>Mustard Oil Extraction</b>          |          |
| Introduction                           | 23       |
| Promoters - Some specific requirements | 23       |
| History of the company                 | 23       |
| Finished Product and its Utility       | 23       |
| Market, Demand and major competitors   | 24       |
| Raw Material Requirement               | 24       |
| Manufacturing Process                  | 24       |

|  |    |
|--|----|
| SWOT Analysis                          | 26 |
| Financial aspects of the project       | 27 |
| ➤ Infrastructure Requirement           | 27 |
| ➤ Land and its development             | 27 |
| ➤ Size of the Unit                     | 27 |
| ➤ Machineries and Equipment            | 27 |
| ➤ Project Timeline                     | 29 |
| ➤ Price of finished goods              | 30 |
| ➤ Working Capital Requirement          | 30 |
| ➤ Other Expenses                       | 32 |
| ➤ Depreciation                         | 33 |
| ➤ Repairs and Maintenance              | 33 |
| ➤ Cost of Project and Means of Finance | 34 |
| Financial Statements                   | 35 |
| ➤ P&L Statement                        | 35 |
| ➤ Projected Balance Sheet              | 36 |
| ➤ Breakeven Analysis                   | 37 |
| ➤ Cash Flow Statement                  | 37 |
| ➤ Debt Service Coverage Ratio          | 38 |
| ➤ BC Ratio, NPV and IRR                | 39 |
| Registration/Certification             | 40 |

## Rice Bran Oil

|  |    |
|--|----|
| Introduction                           | 41 |
| Promoters - Some specific requirements | 41 |
| History of the company                 | 41 |
| Finished Product and its Utility       | 41 |
| Market, Demand and major competitors   | 42 |
| Raw Material Requirement               | 42 |
| Manufacturing Process                  | 42 |
| SWOT Analysis                          | 44 |
| Financial aspects of the project       | 45 |
| ➤ Infrastructure Requirement           | 45 |
| ➤ Land and its development             | 45 |
| ➤ Size of the Unit                     | 45 |
| ➤ Machineries and Equipment            | 45 |
| ➤ Project Timeline                     | 48 |
| ➤ Price of finished goods              | 48 |

|  |    |
|--|----|
| ➤ Working Capital Requirement          | 49 |
| ➤ Other Expenses                       | 50 |
| ➤ Depreciation                         | 51 |
| ➤ Repairs and Maintenance              | 52 |
| ➤ Cost of Project and Means of Finance | 52 |
| Financial Statements                   | 53 |
| ➤ P&L Statement                        | 53 |
| ➤ Projected Balance Sheet              | 54 |
| ➤ Breakeven Analysis                   | 55 |
| ➤ Cash Flow Statement                  | 56 |
| ➤ Debt Service Coverage Ratio          | 56 |
| ➤ BC Ratio, NPV and IRR                | 57 |
| Registration/Certification             | 58 |

## Processing of Spices

|  |    |
|--|----|
| Introduction                               | 59 |
| Promoters - Some specific requirements     | 59 |
| History of the company                     | 59 |
| Finished Product and its Utility           | 59 |
| Market, Demand and major competitors       | 59 |
| Raw Material Requirement                   | 60 |
| Manufacturing Process                      | 60 |
| SWOT Analysis                              | 61 |
| Financial aspects of the project           | 62 |
| ➤ Infrastructure Requirement               | 62 |
| ➤ Land and its development                 | 62 |
| ➤ Size of the Unit                         | 62 |
| ➤ Machineries and Equipment                | 62 |
| ➤ Project Timeline                         | 65 |
| ➤ Price of Raw material and finished goods | 65 |
| ➤ Working Capital Requirement              | 65 |
| ➤ Other Expenses                           | 67 |
| ➤ Depreciation                             | 68 |
| ➤ Repairs and Maintenance                  | 68 |
| ➤ Cost of Project and Means of Finance     | 69 |

|                               |    |
|-------------------------------|----|
| Financial Statements          | 70 |
| ➤ P&L Statement               | 70 |
| ➤ Projected Balance Sheet     | 71 |
| ➤ Breakeven Analysis          | 72 |
| ➤ Cash Flow Statement         | 73 |
| ➤ Debt Service Coverage Ratio | 73 |
| ➤ BC Ratio, NPV and IRR       | 74 |
| Registration/Certification    | 74 |

## Annexures

|   |       |
|---|-------|
| Annexure 1: Promoter's Profile                            | 77    |
| Annexure 2: Company Profile                               | 78-79 |
| Annexure 3: Cashew producing states in India 2015-16      | 80    |
| Annexure 4: Assumptions/Basis of the project              | 81    |
| Annexure 5: Interest on Bank Loan and Repayment Schedule  | 82-83 |
| Annexure 6: List of Equipment Manufacturers               | 83    |
| Annexure 7: Assumptions/Basis of the project              | 84    |
| Annexure 8: Interest on Bank Loan and Repayment Schedule  | 85-86 |
| Annexure 9: List of equipment Manufacturers               | 87    |
| Annexure 10: Assumptions/Basis of the project             | 88    |
| Annexure 11: Interest on Bank Loan and Repayment Schedule | 89-90 |
| Annexure 12: List of Equipment Suppliers                  | 91    |
| Annexure 13: Assumptions/Basis of the project             | 92    |
| Annexure 14: Interest on Bank Loan and Repayment Schedule | 93-94 |
| Annexure 15: Illustrative List of Equipment Manufacturers | 95    |



# Model Project Report on **Cashew Processing**





# Cashew Processing –Model Project Report

## Introduction

Cashewnut is one of the common snack foods in India. Moreover, cashew is again used for other products like biscuits, and confectionaries. West Bengal is ranked 8<sup>th</sup> in cashew production among all the states in India. The leader in production of cashew is Maharashtra followed by Andhra Pradesh and Odisha. The list of cashew producing states as per data available with National Horticulture Board for the year 2015-16 is given in Annexure 1. Total production for the year 2015-16 was 670.92 thousand MT. The total production increased to 745 thousand MT in 2016-17. It increased further in the year 2017-18 to 817 thousand MT. However, as per estimates the production in 2018-19 was down to 743 thousand MT (data source – National Horticulture Board). Based on the data available it is quite apparent that India has become more like a hub for cashew processing. Major imports for RCN is done from the African countries like Ivory Coast, Ghana, Tanzania, Mozambique, Togo, Gambia, Senegal to name a few. The quantum of cashew processed in India is far more than what is produced. Processed cashew is then exported to many countries in US, Europe and Middle Eastern Countries.

## Promoters - Some specific requirements

The details of the promoters will have to be obtained along with other information. The Proforma for promoter detail is given in Annexure – 2.

## History of the company

The project has been prepared as if a new set up is being made for the purpose of cashew processing. The same could be part of another company or a new company all together. The details of the existing company or the proposed company have to be obtained /presented in the project report. Proforma for company report is given in Annexure-3.

## Finished product and its utility

Cashews are considered to be low in sugar, rich in fiber, protein, and healthy fats. They also contain a variety of vitamins, minerals, and health-protective beneficial plant compounds. Cashew may also lead to weight loss, blood sugar control, and improvement in heart health. They are also a good source of copper, magnesium, and manganese. These minerals are considered important nutrients for energy production, brain health, and bone health. They also boost immunity. Nuts and seeds are considered major source of antioxidants, cashews are no exception. Antioxidants are beneficial plant compounds that keep your body healthy by neutralizing molecules known as free radicals which damage our system. As a consequence, this helps reduce inflammation and increases your body's ability to stay free from disease. Cashews are a rich source of antioxidants such as polyphenols and arylterpenoids.

Raw cashews are processed to cashew nuts, which is one of the popular dry fruits. These are consumed directly or converted to a variety of products like salted cashew nuts, Kaju Burfi, cashew curries etc. Cashew apple pulp, rich in carbohydrates is converted to beverages and well-known fermented drink known as Feni. Another important byproduct of cashew industry is cashew nut shell liquid (CNSL) which is produced from cashew shells. CNSL has multiple uses in paint industry. The CNSL can be considered as a versatile raw material with wide applications in the form of surface coatings, paints and varnishes, as well as in the production of polymers. Within this context, the chemical constituents of CNSL become promising in the development of new materials components. Once separated, CNSL can be used research and development of additives, surfactants, pharmaceuticals, pesticides, polymers, resins and others.

## Market, Demand and Major Competitors

Globally, India is the largest consumer of cashew. However, due to COVID-19, the price of cashew fell to the lowest it has been in the last 10-12 years. The value addition activities were affected negatively as a disrupted distribution channel tends to lower the value of end-products of cashew nuts in the market. The extended lockdown has hit consumption in India as well as demand. However, as per the latest report Cashew demand has been on the increase and so are the prices. The production of in-shell raw cashew in India was 743,000 metric ton in 2019. India is a major cashew growing country in the Asia-Pacific, positioned as the largest producer of raw cashew nut (RCN) globally, with 550,000 metric ton of cashew production per annum. In India, cashew is grown in the peninsular areas of Kerala, Karnataka, Goa and Maharashtra, Tamil Nadu, Andhra Pradesh, Orissa, and West Bengal.

Cashew nut cultivation is limited to coastal areas. But there is very high demand for cashew nuts and its products from all parts of the country. The demand for cashew nuts outstrips production. It is consumed by almost every household, but due to its high price it is beyond the reach of low income population.

India produces about 7-8 lakh MT of cashew nut per annum. About two third of cashew produced in the country is consumed locally. These are used in many sweet preparations, certain Farsan items, dessert preparations and ice-creams. The demand for cashew nut increases during festive occasions such as Diwali, Ramadan, Janmastami etc.

India accounts for 65 per cent of total cashew nut exports in the world and export cashew to more than 60 countries. During 2018-19 (April-January), India exported 56,595 MT of cashew nut valued at \$773.77 million (Rs.3,826 crore) to various countries. India is the hub for processing of cashew nuts due to availability of skilled labour. The raw cashews is imported for processing and are then exported to various countries. In other words, there is huge potential for export of this commodity. The Cashew Export Promotion Council of India (CEPCI) works towards the promotion of cashew nuts and cashew nuts shell liquid (CSLN). The guidelines for becoming member of CEPCI are available at <http://www.cashewindia.org>. Moreover, the domestic demand also showed an increase before COVID- 19 struck the world. It is expected that as things normalize, internal demand for cashew will also increase.

In this project it is visualized that in the initial phase the product will be sold through websites like Indiamart as well as to local shops in packs of 10 kgs. After say two years of gathering experience and knowledge about the market, the company can switch to direct marketing of processed cashew under its own brand name locally or through net based mechanism by collaborating with companies like Big Basket, Reliance, Amazon, etc. Export market can be tapped but given the huge demand in the domestic market itself, it would be better to establish itself first in the domestic market. COVID gave the export- oriented units a big shock. A new unit may not be able to sustain under such shocks. Hence it is better to have a mix of both domestic and export market by getting a foothold in the domestic market first and then make a foray in the export market.

**Note: In addition, details of localized competition, if any has to be mentioned while preparing the final DPR.**

## Raw Material Requirement

Cashews are a kidney-shaped seeds sourced from the cashew tree. It is a tropical tree native to Brazil but now cultivated in various warm climates across the world. “Raw” cashews are widely sold, but absolutely.

raw cashews are not at all safe to eat. This is so because it contains a poisonous substance known as urushiol. Urushiol is toxic and contact with it can trigger a skin reaction in some people. Cashew kernels are cooked in processing to remove this toxic liquid, and this resulting product is sold as “raw”. Although commonly referred to as tree nuts, and nutritionally comparable to them, cashews are really seeds. They’re rich in nutrients and beneficial plant compounds and make for an easy addition to many dishes.



**Raw Cashewnut from 15 different countries**

Raw material which is cashew seeds is produced in West Bengal in a limited amount. One can start cashew processing unit at any location in the country. However, a location should be decided strategically keeping in view availability of cheap labour. Most of existing units import raw cashew from other countries and hence ensuring timely availability of raw material would need careful planning.

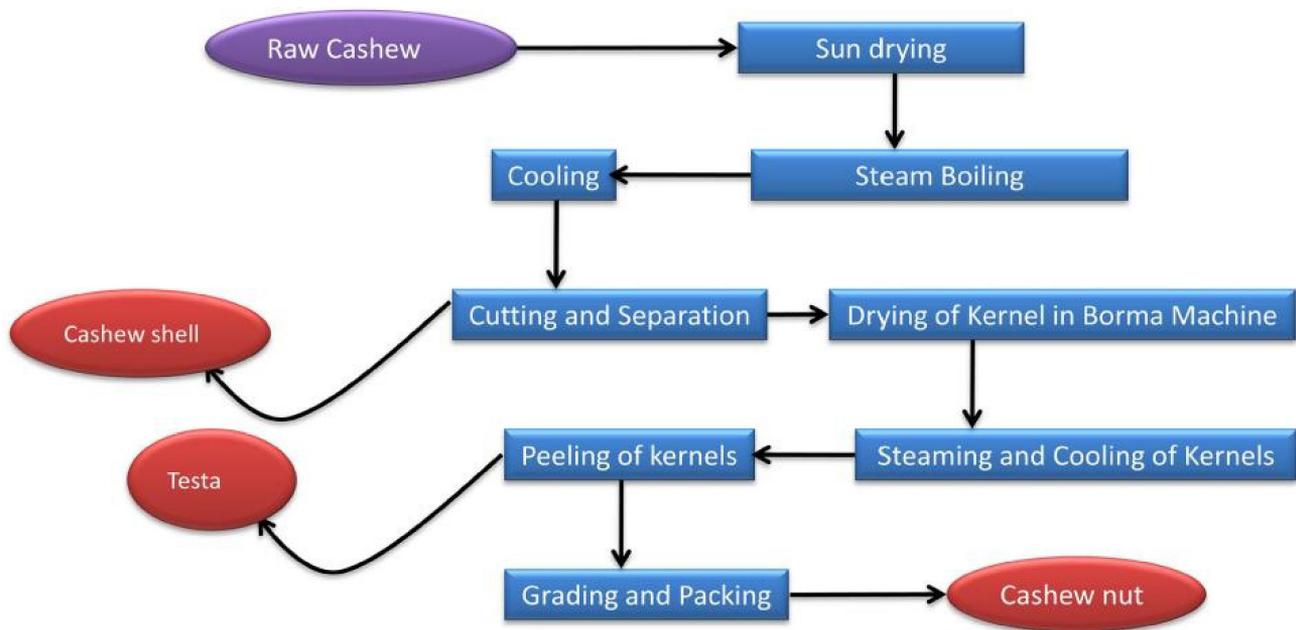
However, the units located in cashew growing areas have added advantage of readily available backward and forward linkages.

The proposed cashew processing unit will have installed capacity for processing of 500 MT raw cashews per year with 300 days operation. The only raw material required will be Raw Cashew nuts which will be either sourced locally or imported.

## Manufacturing Process

The process of manufacture for cashew nuts is well-established. The general process which is followed is explained here.

- Raw cashew nut is dried in sun and stored in gunny bags.
- The stored raw cashews are boiled by using steam in a boiler. The boiling helps in softening and loosening of cashew shells. It becomes easy to remove nut inside cashew seed after boiling.
- The shell of steamed cashew nut is removed by skilled labour by using cashew cutting hand operated equipment or by using automated machines for this job. We are using automated machine for this project
- The cashew shell is used to extract cashew nut shell liquid (CNSL), which is an important by- product of cashew industry. However, in this project, the shells will be sold and not processed further.
- The cashew kernels obtained are dried in a cabinet dryer. The outer reddish skin known as testa, is removed to obtain cashew nut after drying. The same is used in tannery industry and will be sold
- Actual recovery of cashew nut is around 22 per cent, whereas 70 per cent account for shell. Another 0.5% accounts for Testa (husk) and remaining amount is process loss.
- Cashew nut is graded on the basis of the colour, size and whether the kernel is broken or not. Sorting is done accordingly. There are companies making 58 or more grades of the processed cashew based on these factors. Prices vary from Rs.250/- for small broken pieces to Rs. 1250/- for the large full ones which are categorised as W180 grade. For this project we have taken an average price of Rs.850/- per kg.
- They are then packed, either in polythene packets and corrugated boxes or in tin containers or flexi packets.
- Tin containers or flexi-packets (for export) are also used. Nitrogen packaging is done in these cases with nitrogen and carbon dioxide being pumped in to ensure that the product has a longer shelf life. Such product packaging can have a life of about 9 months and if stored in cold storage will have a life of about 1 year.



## SWOT Analysis

|  |   |
|--|---|
| <p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>➤ Highly popular snack food among all age groups</li> <li>➤ Long Shelf life</li> <li>➤ Good food value</li> <li>➤ Used heavily in Sweet Making units</li> <li>➤ A popular gift during festivities</li> </ul>  | <p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>➤ Presently demand for processed cashew far outstrips production the same in India. Hence RCN is imported specially from Africa to produce processed cashew</li> <li>➤ Availability of skilled manpower</li> </ul>  |
| <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>➤ While cashew production in West Bengal has increased it has not happened with processing units</li> <li>➤ Scope for diversification within the domain like plain cashew, salted cashew, spicy cashew</li> <li>➤ Net based marketing possible</li> </ul> | <p><b>Threats</b></p> <ul style="list-style-type: none"> <li>➤ Covid like situation could hamper business due to disruptions in import of raw material if the unit is import dependent.</li> <li>➤ African comities are also getting into processing by setting up processing units. This could lead to problems with supply of cashew</li> </ul> |

## Financial Aspects of the Project

### Infrastructure Requirement

Any project preparation is based on a set of assumptions made which are close to the market reality. In this project the land used is own land or can be taken on lease from the government in any food park or industrial

area suitable for setting up such a project. The major components of a cashew processing unit are land, building, plant and machinery and civil works. List of all the assumptions made is given in Annexure 4. The land in this case is assumed to be own land which either has to be purchased or can be taken as borrower contribution. As the raw material will be imported, 300 working days have been taken which can be achieved by proper planning.

### Land and its development

A plot of approximately 4500-5000 sq.ft would be necessary for setting up a cashew processing factory of this scale. The land should be free from any encumbrance and shall be mortgageable. The land should be classified as non-agriculture. Permission for non-agriculture use, wherever applicable, shall be obtained for the land. The land can also be taken on lease from the government in any of the food parks or industrial areas. For the analysis here the land has been taken as own land. The same can be used as collateral security by the bank for financing

| Land and Building                                 |           |                  |               |
|---|-----------|------------------|---------------|
| Particulars                                       | Area reqd | Rate/sqft in Rs. | Amount in Rs. |
| Land cost for 5000 sq ft*                         |           | Own land         | 0             |
| Building cost @ 1430/-- per sq ft for 3500 sq ft. | 3500      | 1430             | 5005000       |
|   |           |                  |               |
| <b>Total cost</b>                                 |           |                  | 5005000       |

#### 1. Raw Cashew Grading System:

- a. CONVEYOR BELT SYSTEM FOR RAW CASHEW GRADING MACHINE: Conveyor Belt is used for loading of raw cashew nuts in to raw cashew grading machine.
- b. RAW CASHEW GRADING MACHINE: Raw Cashew Grading Machine is used for separation of raw cashew nuts according to size. Separation of raw cashew nuts help for mechanical shelling machines to facilitate in shelling, reduces the broken percentage.

#### 2. Raw Cashew Cooking System:

- a. BOILER AND COOKER SYSTEM: Boiler is used to generate steam for boiling of raw cashew nuts. Cooker is used for storing the raw cashew nuts for cooking. Cashew is steamed by saturated steam supplied from boiler. Uniform cooking possible due to continuous distribution network inside the cooker, which helps to loosen up kernel inside which improves the better scooping out percentage after shelling process.
- b. COOKER LOADING SYSTEM: To automatically load raw cashew nuts into the cooker.

#### 3. Automatic Cashew Cutting Line

- a. AUTOMATIC CASHEW CUTTING MACHINE: Cashew Cutting Machine is used to cut the raw cashew nuts.

#### **4. Automatic Scooping Line:**

- a. CONVEYOR BELT AND BUCKET ELEVATOR SYSTEM: Conveyor belt and bucket elevator system used for transfer of cutting machine's output on scooping machine. The Functionality of this system enables automated feeding to scooping machine, after shelling (Cutting) operation
- b. AUTOMATIC CASHEW SCOOPING LINE & SCOOPING TABLE: Scooping Machine is used for separate kernels, shells, uncut & unscooped materials. Vibratory Sieve separate the kernels. Shell separator system separate shells. Stroke box system is used to stroke unscooped materials for remove kernel from shell. Roller based mechanism separate unscooped and uncut materials.

#### **5. Cashew Kernel Drying System:**

- a. CASHEW ELECTRICAL DRYER: Cashew Electrical Dryer used for drying of kernels. The kernels after removal from the shells have to be dried in order to loosen the red skin (husk) adhering to the kernels for easy peeling.

#### **6. Cashew Kernel Humidification System:**

- a. HUMIDIFIER: Humidifier used for generate fog for moisturizing cashew kernel. This process is done to increase the moisture content of cashew kernels up to 5% before putting it into peeling machine. It helps to control the broken percentage. This is done in humidification chamber with circulation fans. It takes around 1-2 hours depending upon surrounding air humidity.
- b. EXTRA TROLLEY: Extra Trolley with trays for Humidification is necessary to ensure best use of capacity

#### **7. Cashew Kernel Peeling Machine:**

- a. CASHEW PEELING MACHINE: Cashew Peeling Machine is used to peel of husk from cashew kernel. Process that removing of Testa (husk) from cashew kernels known as Peeling

#### **8. Cashew Kernel Grading Machine:**

- a. PIECE SEPERATOR: Piece separator is used for separate wholes, Splits, JK/K, LWP, SWP, BB and powder.
- b. COLOUR SORTER: Required for sorting the cashew based on colour. White coloured cashew fetches better price in the market.
- c. CAMERA BASED SIZING MACHINE: Required to sort the cashew based on size. Colour and size of the cashew nut are the two most important factors. There is a roller type sizing machine as well which is much cheaper but camera based sizing machines have 95% accuracy in sorting, reducing manpower requirement to practically nil if we are willing to forego the 5% error.
- d. HUSK CLEANING MACHINE WITH SEPARATOR: Husk Cleaning Machine used for removal of cashew kernels and husks:
- e. GRADING TABLE:

## 9. Cashew Kernel Packing Machine

- a. TIN FILLING MACHINE: Tin filling machine used for filling of cashew kernels in tin boxes.
- b. DUAL VACUUM PACKING MACHINE (TIN AND POUCH): Pneumatic Auto Vacuum packing machine is used for increasing life of cashew kernels and long time storage. It helps to maintain quality of finished cashew kernels for longer shelf life.
- c. SCREW COMPRESSOR: This is required for sealing the tin boxes incase of tin packing, sieving and for using colour sorter. One unit of 20 HP should take care of all the three activities.

| Processing Equipment cost |  |          |           |                |
|---------------------------|--|----------|-----------|----------------|
| Sl no.                    | Machine  | Unit/set | Unit Cost | Amount in Rs.  |
| 1                         | Raw Cashew Grading System (1 conveyor belt and 1 RCN grading machine) (3 phase 415 V Power supply;   | 1        | 200000    | 200000         |
| 2                         | Raw Cashew Cooking System (1 set gas powered boiler and cooker and 1 cooker loading system) (3 phase, 415 V; 3 HP)   | 1        | 335000    | 335000         |
| 3                         | Automatic Cutting Line (6 Automatic Cashew Cutting Machine) (3 phase, 415 V; 1 HP)   | 6        | 145000    | 870000         |
| 4                         | Automatic Scooping Line (1 conveyor belt and bucket elevating system, 1 automatic scooping line and 3 scooping table (3 phase, 415 V; 5 HP)  | 1        | 545500    | 545500         |
| 5                         | Cashew Electrical Dryer (3 phase, 415 V; 18 HP)  | 2        | 235000    | 470000         |
| 6                         | Cashew Kernel Humidification System (1 Humidifier and 4 extra trolleys with trays) (single phase, 230V)  | 1        | 195000    | 195000         |
| 7                         | Cashew Kernel Peeling System (1 cashew peeling system - single phase 230 V and 1 compressor - 3 phase, 415 V; 1 HP)  | 1        | 330000    | 330000         |
| 8                         | Cashew Kernel Grading Line (1 Piece separator and 1 Husk Cleaning Machine both 3 phase 415V, (0.5 HP+1.0 HP), 1 colour sorter, 1 sizing machine ( both single phase 220 V), and 8 grading table) | 1        | 1807000   | 1807000        |
| 9                         | Cashew Kernel Packing System (1 tin/pouch filling machine - 3 pahse 415 V, 1 HP, one dual vacuum packing machine - 3 phase 415 v, 2 HP and 1 Screw Compressor3 phase 415 v, 10 HP)               | 1        | 565000    | 565000         |
| 10                        | Misc Items like food grade plastic containers, metal containers and lab testing equipment  | 1        | 300000    | 300000         |
|                           | <b>Total ex-factory cost</b>   |          |           | <b>5617500</b> |
| 10                        | Packing, forwarding, all government taxes, GST, insurance, transportation.   | Lump sum | 30%       | 1685250        |

Some of the issues which need to be pointed out regarding the cost of equipment are as follows:

1. Prices quoted on Indiamart or companies are generally excluding GST, transportation charges and installation charges as well as any other taxes applicable. Accordingly, an additional 30% has been taken on the ex-factory equipment cost.
2. Based on the searches on Indiamart, it is observed that there are two companies which are producing all machineries required for Cashew processing. They are Parivartan Kaju House and Italia International. There could be other companies as well giving a single window solution. It is suggested that it would be better for an entrepreneur to buy all equipment from a single vendor because of the following reasons.
  - a. There will not be any mismatch between equipment and automation would be smoother.
  - b. Single point of contact would not allow any blame game between vendors in case something goes wrong.
  - c. Power assessment would be better and line can be drawn accordingly
  - d. A single unit set up by any of these can be visited to get a clear overview.
  - e. Training would be much easier as it would from one agency
3. The packaging machine would depend on what volume we want to pack. If it is bulk packaging which we are targeting which is 10 kg pack, the machinery required will be different from the ones required for smaller packets. For this model project the equipment price taken is of bulk packaging having flexibility in packaging. It can make packets of 1kg, 2 kg, 5 kg, 10 kg and 25 kg.
4. List of equipment manufacturers is given in Annexure 6

| Miscellaneous fixed assets |   |       |           |               |
|----------------------------|---|-------|-----------|---------------|
| Sl. No.                    | Particulars   | Units | Unit cost | Amount in Rs. |
| 1                          | Electrical and water Connection                                 | 1     | 100000    | 100000        |
|                            | Air pollution control (Ventury cum packed bed Scrubber) 12.5 HP | 1     | 400000    | 400000        |
| 2                          | Chairs  | 11    | 2500      | 27500         |
| 3                          | Table   | 2     | 5000      | 10000         |
| 4                          | Computer  | 2     | 50000     | 100000        |
| 5                          | Printer   | 1     | 15000     | 15000         |
|                            | <b>Total</b>  |       |           | <b>652500</b> |

In case of an unit of cashew, it has been observed that the waste water if allowed to go in the soil does not pollute the ground water very much. A study conducted by the Central Pollution Control Board in 2007 focusing on pollution caused by cashew processing unit states the following

*Since the cashew nut processing units are discharging waste water on ground for years together, to assess the present status of ground water in and around the cashew nut units in Tamilnadu and*

*Kerala states ground water samples were collected and analysed for drinking water parameters. It is observed that the ground water quality is good and not yet contaminated by the discharges by the cashew nut processing units (page 17 of the report)*

On the other hand it states that since wood or other organic matter or gas is used in the boilers for steam generation, it may lead to air pollution. It suggests use of a Ventury cum packed bed Scrubber to control air pollution. Accordingly a cost of around 4 lakh has been taken for the purpose of Air pollution control in the project as stated above. More assessment may be required to obtain necessary clearance in this regard.

### Project Timeline

The project to start off production would need around one year for implementation to be completed. The breakup for the same is given in table below:

| Activities                                   | Projected Time Period |
|--|-----------------------|
| Arrangement of finance                       | 3 months              |
| Building of premises/Acquisition of premises | 6 months              |
| Procurement of equipment                     | 2 months              |
| Recruitment of manpower                      | 1 month               |
| Training                                     | 1 month               |

As recruitment of manpower can be done along with procurement of equipment and the activity would not be part of the critical path, the total time taken would be 12 months for setting up the project and to reach a position to start production. Hence, one year moratorium has been taken. If “ready to move in” premises suitable for the project is acquired, then the timeline would come down by around 3 months. However, in this project it has been assumed that the unit will be set up on own land and costing has been done assuming the same.

### Price of finished goods

Cashew prices depend on the grade of the cashew, the best grade being W180. The Grading of cashew is done based on size, colour and breakage. Cashew nuts of large size without breakage and white in colour fetch the maximum price in the market. All the costs in the project as well as prices have been obtained from India mart website. The grade-wise prices of cashew are as follows:

| Grade     | Price/Kg |
|-----------|----------|
| W240      | 630/kg   |
| W320      | 580/kg   |
| W450      | 570/kg   |
| W210      | 850/kg   |
| W180      | 1300/kg  |
| W160      | 2000/kg  |
| W 2 piece | 560/kg   |
| LWP       | 600/kg   |
| SWP       | 610/Kg   |
| W 4 piece | 550/kg   |

W160 is the best quality grade available followed by W180. The common category of whole cashew available in the market is W210 and usually forms highest portion of output. Through the process, we also get broken cashew and cashew pieces which fetch much lesser price which again varies based on grades. These are generally used in hotels and sweat shops where they are further ground and used in various preparations. The smallest of the pieces can be sold at as low as Rs.240/kg. The larger the broken pieces, higher the price. Such broken pieces account for 6-7% in automated system. The assumptions made and the methodology of price calculation using weighted average method is given below:

| Price of finished goods calculation  |              |            |                        |
|--------------------------------------|--------------|------------|------------------------|
| Category of cashew after processing  | Price per kg | Percentage | Weighted average price |
| Very small pieces                    | 250          | 3%         | 7.50                   |
| Larger pieces                        | 400          | 4%         | 16.00                  |
| W210                                 | 850          | 85%        | 722.50                 |
| W180                                 | 1300         | 8%         | 104.00                 |
| <b>Weighted average price per Kg</b> |              |            | <b>850</b>             |

Price of cashew also varies depending on its colour and moisture content. As per the UNECE standards for cashew Kernels, it should not have more than 5% moisture. The colour of the cashew also is a very important factor in price realization. If the cashew colour remains white after roasting, it is considered to be of the best quality. If it turns off white, the price reduces.

The total bank loan component based on the assumptions made and unit costs taken would be as follows:

| Project Summary                   |  |                  |
|-----------------------------------|--|------------------|
| Project Cost excluding land       |  | <b>129.60250</b> |
| Preoperative Expenses             |  | <b>1.296025</b>  |
| Total Project Cost excluding land |  | <b>130.89853</b> |
| Own Contribution                  |  | <b>52.35941</b>  |
| Estimated Bank loan               |  | <b>78.539115</b> |
| Own Contribution in Rs. lakh      |  | <b>52.36</b>     |
| <b>Bank Loan in Rs. Lakh</b>      |  | <b>78.54</b>     |

In addition, interest cost of the first year will be capitalized as the project would need a moratorium for 12 months. This would increase the outstanding to Rs.85.74 lakhs at the end of the first year.

### Working Capital requirement

Working Capital requirement has been assessed keeping in view the banking requirements. Own contribution has been taken at 25%. However, before calculating the working capital requirement it is necessary to find out the overall raw material requirement, production and details of stock based on the assumptions stated before from which working capital requirement is generated. In the following tables details of working capital requirement is assessed.

| Raw Material requirement and cashew nut production          |            |
|---|------------|
| <b>Production computation</b>                               |            |
| Item  |            |
| Machine capacity per day (in tonne)                         | 2          |
| Working days per annum                                      | 300        |
| Processed cashew as percentage of RCN                       | 22%        |
| <b>Raw material (RCN) requirement in tonne</b>              | <b>600</b> |
| <b>Final output (after accounting for wastage) in tonne</b> | <b>132</b> |
| Packaging size in Kg  | 10         |
| No. of packages   | 13200      |
| <b>By products</b>  |            |
| Cashew shell for CNSL production as % of raw material       | 70%        |
| Cashew shell in tonnes                                      | 420        |
| Testa as % of raw material                                  | 0.5%       |
| Testa produced as byproduct                                 | 3          |

| Cashew Production for 5 years     |          |          |          |          |          |
|-----------------------------------|----------|----------|----------|----------|----------|
| Production Period                 | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| Capacity Utilisation              | 0%       | 45%      | 50%      | 55%      | 60%      |
| Raw material requirement per day  | 0        | 0.9      | 1        | 1.1      | 1.2      |
| Raw material required in tonnes   | 0        | 270      | 300      | 330      | 360      |
| Rate per tonne in Rs.             | 0        | 125000   | 131250   | 137813   | 144704   |
| Cost of packaging material per kg | 0        | 5        | 5.25     | 5.51     | 5.79     |
| Total Cost in Rs. Lakh            | 0        | 340.47   | 397.22   | 458.78   | 525.52   |

| Calculation of Sales                           |          |               |               |               |               |
|--|----------|---------------|---------------|---------------|---------------|
| Particulars                                    | 1st year | 2nd year      | 3rd year      | 4th year      | 5th year      |
| <b>Production of cashew</b>                    |          |               |               |               |               |
| Opening Stock                                  | 0        | 0             | 2.97          | 3.3           | 3.63          |
| Production in tonnes                           | 0        | 59.4          | 66            | 72.6          | 79.2          |
| Closing Stock                                  | 0        | 2.97          | 3.3           | 3.63          | 3.96          |
| Net Sales                                      | 0        | 56.43         | 65.67         | 72.27         | 78.87         |
| Sales price per packet of 10 kg incl packaging | 0        | 8500          | 8840          | 9194          | 9562          |
| <b>Sales value in Rs. Lakh</b>                 | <b>0</b> | <b>479.66</b> | <b>580.52</b> | <b>664.45</b> | <b>754.15</b> |
| <b>Byproducts</b>                              |          |               |               |               |               |
| Cashew shell in tonne                          | 0        | 189           | 210           | 231           | 252           |
| <b>Sales value in Rs. Lakh</b>                 | <b>0</b> | <b>9.45</b>   | <b>10.5</b>   | <b>11.55</b>  | <b>12.6</b>   |
| Testa in tonne                                 | 0        | 1.35          | 1.5           | 1.65          | 1.8           |
| <b>Sales value in Rs. Lakh</b>                 | <b>0</b> | <b>0.30</b>   | <b>0.33</b>   | <b>0.36</b>   | <b>0.40</b>   |
| <b>Sales in Rs. Lakh</b>                       | <b>0</b> | <b>489.41</b> | <b>591.35</b> | <b>676.36</b> | <b>767.15</b> |

Working capital requirement has to be evaluated based on the above-mentioned details. The same is given in the table below:

| Working Capital Assessment  |          |              |              |               |               |
|---|----------|--------------|--------------|---------------|---------------|
| Computation of value of closing stock and working capital requirement |          |              |              |               |               |
| Particulars   | 1st year | 2nd year     | 3rd year     | 4th year      | 5th year      |
| Finished goods inventory in kg  | 0        | 2970         | 3300         | 3630          | 3960          |
| Price of finished good/10 kg in Rs. including packaging material      | 0        | 8500         | 8840         | 9194          | 9562          |
| Total finished goods stock price in Rs.                               | 0        | 2524500      | 2917200      | 3337422       | 3786552       |
| Raw material inventory in tonne                                       | 0        | 54           | 60           | 66            | 72            |
| Price of Raw Material/tonne in Rs.                                    | 0        | 125000       | 131250       | 137813        | 144704        |
| Packaging Material per 10 kg  | 0        | 50           | 52.5         | 55.1          | 57.9          |
| Total Raw Material Stock Price  | 0        | 6809400      | 7944300      | 9175663       | 10510402      |
| Total value of stock  | 0        | 9333900      | 10861500     | 12513085      | 14296954      |
| Amount in Lakh  | 0        | 93.34        | 108.62       | 125.13        | 142.97        |
| Less Creditors in lakh  | 0        | 51.34        | 59.74        | 68.82         | 78.63         |
| Paid Stock in lakh  | 0        | 42           | 48.88        | 56.31         | 64.34         |
| Add sundry debtors in lakh  | 0        | 37.34        | 43.45        | 50.05         | 57.19         |
| <b>Total</b>  | <b>0</b> | <b>79.34</b> | <b>92.33</b> | <b>106.36</b> | <b>121.53</b> |
| <b>Own contribution @ 25%</b>   | <b>0</b> | <b>19.84</b> | <b>23.08</b> | <b>26.59</b>  | <b>30.38</b>  |
| <b>Working Capital requirement</b>                                    | <b>0</b> | <b>59.5</b>  | <b>69.25</b> | <b>79.77</b>  | <b>91.15</b>  |
| <b>Rounded off WC requirement from Bank in Lakh</b>                   | <b>0</b> | <b>60</b>    | <b>69</b>    | <b>80</b>     | <b>91</b>     |

The project is expected to generate sufficient cash and working capital limit is pegged at the requirement of the second year, first year being the moratorium for setting up the factory.

### Other Expenses

There are other expenses which may be also termed as running cost. They are mainly salary, and electricity charges. In addition, there is cost for transportation, marketing expenses as well as administrative expenses. The details of these expenses are given below:

| Labour and Staff Salary/wages |                         |                  |                        |               |
|-------------------------------|-------------------------|------------------|------------------------|---------------|
| Particulars                   | Wages/ Salary per month | No. of employees | Total Salary per month | Annual Salary |
| Manager                       | 30000                   | 1                | 30000                  | 360000        |
| Accountant                    | 25000                   | 1                | 25000                  | 300000        |
| Helper                        | 15000                   | 1                | 15000                  | 180000        |
| Plant Operator                | 20000                   | 1                | 20000                  | 240000        |

| Labour and Staff Salary/wages |       |   |               |                |
|-------------------------------|-------|---|---------------|----------------|
| Skilled labour                | 15000 | 4 | 60000         | 720000         |
| Unskilled labour              | 10000 | 3 | 30000         | 360000         |
| <b>Total Salary</b>           |       |   | <b>180000</b> | <b>2160000</b> |

| Projected Salary Expenses                   |          |             |              |              |              |
|---|----------|-------------|--------------|--------------|--------------|
| <b>Salary expenses Projection</b>           | 1st year | 2nd year    | 3rd year     | 4th year     | 5th year     |
| <b>Annual Salary expenses</b>               | 0        | 2160000     | 2376000      | 2613600      | 2874960      |
| <b>Salary expenses rounded off to lakhs</b> | 0        | <b>21.6</b> | <b>23.76</b> | <b>26.14</b> | <b>28.75</b> |

| Electricity Charges                   |           |               |               |               |               |
|---------------------------------------|-----------|---------------|---------------|---------------|---------------|
| <b>Particulars</b>                    | 1st year  | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Capacity Utilisation                  | <b>0%</b> | <b>45%</b>    | <b>50%</b>    | <b>55%</b>    | <b>60%</b>    |
| Consumption of power per day in units | 0         | 135           | 150           | 165           | 180           |
| Rate per unit in Rs.                  | 9.00      | 9.00          | 9.00          | 9.00          | 9.00          |
| Power bill per month in Rs.           | 0         | 30375         | 33750         | 37125         | 40500         |
| <b>Total power bill per year</b>      | <b>0</b>  | <b>364500</b> | <b>405000</b> | <b>445500</b> | <b>486000</b> |
| <b>Power bill in Rs. Lakh</b>         | <b>0</b>  | <b>3.645</b>  | <b>4.05</b>   | <b>4.455</b>  | <b>4.86</b>   |

| Packaging Cost                    |             |             |             |             |             |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>Particulars</b>                | 1st year    | 2nd year    | 3rd year    | 4th year    | 5th year    |
| Cost of Packaging per unit (kg)   | 0           | 5           | 5.25        | 5.51        | 5.79        |
| Total Production in kg            | 0           | 59400       | 66000       | 72600       | 79200       |
| <b>Packaging cost in Rs. Lakh</b> | <b>0.00</b> | <b>2.97</b> | <b>3.47</b> | <b>4.00</b> | <b>4.59</b> |

| Selling, transportation and administrative expenses           |          |                |                |                |                |
|---|----------|----------------|----------------|----------------|----------------|
| <b>Particulars</b>  | 1st year | 2nd year       | 3rd year       | 4th year       | 5th year       |
| Sales and branding expenses per annum                         | 0        | 1000000        | 1000000        | 1000000        | 1000000        |
| Admin Expenses  | 0        | 500000         | 500000         | 500000         | 500000         |
| Transportation charges  | 0        | 480000         | 480000         | 480000         | 480000         |
| <b>Total Expenditure on Sales, Admin &amp; Transportation</b> | <b>0</b> | <b>1980000</b> | <b>1980000</b> | <b>1980000</b> | <b>1980000</b> |
| <b>Amount in Rs. Lakh</b>                                     | <b>0</b> | <b>19.8</b>    | <b>19.8</b>    | <b>19.8</b>    | <b>19.8</b>    |

All these costs will be factored in later in the report while evaluating the financial benefits of the project

### Depreciation

Depreciation for equipment has been taken at 15% and for building at 10%. The methodology used for calculating depreciation is written down method wherein depreciation is calculated on the written down value. The depreciation calculation is as follows:

| Depreciation Calculation                           |          |                |                |                |                |
|--|----------|----------------|----------------|----------------|----------------|
| Particulars  | 1st year | 2nd year       | 3rd year       | 4th year       | 5th year       |
| Total value of equipment                           | 0        | 7955250        | 6761962        | 5747668        | 4885518        |
| Depreciation @15%                                  | 0        | 1193288        | 1014294        | 862150         | 732828         |
| Value at the end of the year to be carried forward | 0        | 6761962        | 5747668        | 4885518        | 4152690        |
| Total Value of building                            | 0        | 5005000        | 4504500        | 4054050        | 3648645        |
| Depreciation of building@10%                       | 0        | 500500         | 450450         | 405405         | 364865         |
| Value at the end of the year to be carried forward | 0        | 4504500        | 4054050        | 3648645        | 3283780        |
| <b>Total depreciation</b>                          | <b>0</b> | <b>1693788</b> | <b>1464744</b> | <b>1267555</b> | <b>1097693</b> |

### Repairs and maintenance

In case of new equipment including computers, generally a warranty for one year is given. Thus, the maintenance cost would be starting from the second year onwards. The maintenance services provided is usually at a service charge of 15% per annum. In case there are any major spares to be replaced the cost of that has to be borne by the customers. Given these general terms, it can be taken at 20% of the equipment cost per annum. The same would then be as follows:

| Cost of Maintenance            |         |
|--------------------------------|---------|
| Particulars                    | Amount  |
| Total fixed cost               | 7955250 |
| Maintenance cost in percentage | 20%     |
| Cost of Maintenance            | 1591050 |

### Cost of Project and Means of Finance

Based on the data presented above on cost of plant and machinery, working capital requirement, etc., the cost of the project and means of finance required can be summarized as follows:

| Cost of The Project |               |
|---------------------|---------------|
| (in Rs. Lakh)       |               |
| Particulars         | Amount        |
| Land & Building     | 50.05         |
| Plant & Machinery   | 73.03         |
| Misc. Items         | 6.53          |
| Working Capital     | 60            |
| <b>Total</b>        | <b>189.61</b> |

| Means of Finance    |        |
|---------------------|--------|
| (in Rs. Lakh)       |        |
| Particulars         | Amount |
| Own Contribution    | 52.36  |
| Term Loan from Bank | 78.54  |
| Working Capital     | 60     |
| total               | 190.9  |

The detailed repayment schedule of the term loan is indicated in Annexure 5. The interest for the first year is capitalized and loan outstanding accordingly increased at the end of the first year. It is assumed that the working capital limit given will be renewed every year for the next five years. Any increase in the working capital may not be necessary as the project should be able to generate sufficient profits and the internal accruals should be able to take care of additional working capital requirements. The summary of interest payment for working capital and term loan and principal repayment is given in the table below:

| Year-wise Interest on Bank Loan   |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|
| Particulars   | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| Interest on Term Loan in Rs.*   | 863940   | 849091   | 609347   | 369603   | 129861   |
| Interest on Term Loan in Rs.  | 864000   | 849000   | 609000   | 370000   | 130000   |
| Interest on working Capital   | 0        | 66000    | 66000    | 66000    | 66000    |
| Principal Repayment in Rs.  | 0        | 2179488  | 2179488  | 2179488  | 2179476  |
| Principal Repayment in Rs.  | 0.00     | 2179000  | 2179000  | 2179000  | 2179000  |
| Balance outstanding - end of the year   | 8718000  | 6539000  | 4360000  | 2181000  | 0.00     |
| * Interest on term loan has been capitalised at the end of the year leading to increase in the capital outlay. This has been done to account for the one year moratorium. |          |          |          |          |          |

## Financial Statements

The profitability of the project can be judged based on the financial statements generated based on the data presented in the series of preceding tables. Accordingly the projected profit and loss account, balance sheet, and cash flow statement along with breakeven analysis is presented in the tables below. During the moratorium period, the interest is charged by the bank which has to be capitalized to ensure that the same is repaid over a period of time. Capitalisation thus leads to increase in the loan quantum at the end of the first year which can be seen in the balance sheet.

| Projected P&L Statement           |          |               |               |               |               |
|-----------------------------------|----------|---------------|---------------|---------------|---------------|
| (in Rs. Lakh)                     |          |               |               |               |               |
| Particulars                       | 1st year | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Capacity Utilisation%             | 0%       | 45%           | 50%           | 55%           | 60%           |
| Gross Sale of cashew & byproducts | 0        | 489.41        | 591.35        | 676.36        | 767.15        |
| <b>Total</b>                      | <b>0</b> | <b>489.41</b> | <b>591.35</b> | <b>676.36</b> | <b>767.15</b> |

| Projected P&L Statement  |             |               |               |               |               |
|--|-------------|---------------|---------------|---------------|---------------|
| Cost of Production   |             |               |               |               |               |
| Raw Material Consumed  | 0           | 337.5         | 393.75        | 454.78        | 520.93        |
| Electricity Charges  | 0           | 3.65          | 4.05          | 4.46          | 4.86          |
| Depreciation   | 0           | 16.94         | 14.65         | 12.68         | 10.98         |
| Salary and wages   | 0           | 21.6          | 23.76         | 26.14         | 28.75         |
| Repair and Maintenance   | 0           | 15.91         | 15.91         | 15.91         | 15.91         |
| Packaging  | 0           | 2.97          | 3.47          | 4             | 4.59          |
| Selling & Admn Expenses  |             | 0.00          | 19.80         | 19.80         | 19.80         |
| <b>Total Cost of Production</b>  | <b>0</b>    | <b>398.57</b> | <b>475.39</b> | <b>537.77</b> | <b>605.82</b> |
| <b>Profit before interest and taxes</b>  | <b>0</b>    | <b>90.84</b>  | <b>115.96</b> | <b>138.59</b> | <b>161.33</b> |
| Interest on Term Loan*   | 0.00        | 8.49          | 6.09          | 3.70          | 1.30          |
| Interest on Working Capital  | 0           | 6.6           | 6.6           | 6.6           | 6.6           |
| <b>Total Interest Payment</b>  | <b>0.00</b> | <b>15.09</b>  | <b>12.69</b>  | <b>10.30</b>  | <b>7.90</b>   |
| Profit before Tax  | 0.00        | 75.75         | 103.27        | 128.29        | 153.43        |
| Income Tax   | 0           | 18.94         | 25.82         | 32.07         | 38.36         |
| <b>Net profit after tax</b>  | <b>0.00</b> | <b>56.81</b>  | <b>77.45</b>  | <b>96.22</b>  | <b>115.07</b> |
| <b>Term loan interest for first year capitalised to account for the moratorium</b> |             |               |               |               |               |

As can be seen, the unit would be in profits after tax from second year onwards. The amount of money generated, if the business is run and managed systematically is sufficient to finance the increased requirement of working capital.

| Projected Balance Sheet      |               |               |               |               |               |
|------------------------------|---------------|---------------|---------------|---------------|---------------|
|                              | Rs. In Lakh   |               |               |               |               |
| Particulars                  | 1st year      | 2nd year      | 3rd year      | 4th year      | 5th year      |
| <b>Liabilities</b>           |               |               |               |               |               |
| Capital                      |               |               |               |               |               |
| Opening Balance              | 0             | 52.36         | 109.17        | 186.62        | 282.84        |
| Own Capital Contribution     | 52.36         |               |               |               |               |
| Retained Earnings            | 0.00          | 56.81         | 77.45         | 96.22         | 115.07        |
| <b>Total-Closing Balance</b> | <b>52.36</b>  | <b>109.17</b> | <b>186.62</b> | <b>282.84</b> | <b>397.91</b> |
| Term Loan                    | 87.18         | 65.39         | 43.60         | 21.81         | 0.00          |
| Working Capital Limit        |               | 60.00         | 60            | 60            | 60            |
| Sundry Creditors             | 0             | 51.34         | 59.74         | 68.82         | 78.63         |
| <b>Total Liabilities</b>     | <b>139.54</b> | <b>285.9</b>  | <b>349.96</b> | <b>433.47</b> | <b>536.54</b> |
| <b>Assets</b>                |               |               |               |               |               |

| Projected Balance Sheet |               |               |               |               |               |
|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Fixed Assets            | 130.9         | 130.9         | 130.9         | 130.9         | 130.9         |
| Gross Depreciation      | 0             | 16.94         | 31.59         | 44.27         | 55.25         |
| <b>Net Fixed Assets</b> | <b>130.9</b>  | <b>113.96</b> | <b>99.31</b>  | <b>86.63</b>  | <b>75.65</b>  |
| Sundry Debtors          | 0             | 37.34         | 43.45         | 50.05         | 57.19         |
| Stock in Hand           | 0             | 93.34         | 108.62        | 125.13        | 142.97        |
| Interest capitalised    | 8.64          | 0             | 0             | 0             | 0             |
| Cash and Bank Balance   | 0.00          | 41.26         | 98.58         | 171.66        | 260.73        |
| <b>Total Assets</b>     | <b>139.54</b> | <b>285.9</b>  | <b>349.96</b> | <b>433.47</b> | <b>536.54</b> |

The project is generating healthy profit from second year with the first year being moratorium as presented above. The breakeven analysis indicates the level of operation at which the operations will breakeven and not incur any loss. It is necessary to identify the fixed and the variable costs.

Even within variable component there is always a part which is fixed. For example, even if the plant is not running there will be lights and fans which will be used for administrative work, people will have to be paid salary for those days as well, etc. Accordingly, a portion of the variable expenses have been taken as fixed cost to arrive at the contribution and the total fixed cost. Total fixed cost divided by the contribution (fixed cost ÷ Contribution) gives us the breakeven point. In this case the breakeven capacity utilization in year 2 comes at 24% capacity utilisation.

| Breakeven Point Analysis                              |               |                  |
|---|---------------|------------------|
|   | Rs. In Lakh   |                  |
| <b>Total Sale (Sales - opening WIP + closing WIP)</b> | <b>Year 1</b> | <b>Year 2</b>    |
| Net Sales   | 0.00          | 489.41           |
| Less: Opening Stock                                   | 0.00          | 0.00             |
| Add: Closing Stock                                    | 0.00          | 0.25             |
| <b>Total Production/Sales</b>                         | <b>0.00</b>   | <b>489.66</b>    |
| <b>Variable Expenses</b>                              |               |                  |
| Raw Material and Packaging                            | 0.00          | 340.47           |
| Interest on working Capital                           | 0.00          | 6.60             |
| Repair and Maintenance                                | 0.00          | 3.98             |
| Salary expenses                                       | 0.00          | 2.16             |
| Sales & Admin Expenses                                | 0.00          | 2.97             |
| Energy - Electricity                                  | 0.00          | 3.57             |
| <b>Total</b>  | <b>0.00</b>   | <b>359.75</b>    |
| <b>Contribution</b>                                   | <b>0.00</b>   | <b>129.91</b>    |
| <b>Contribution per unit</b>                          | <b>NA</b>     | <b>230214.42</b> |
| <b>Fixed expenses</b>                                 |               |                  |
| Interest on Term Loan                                 | 0.00          | 8.49             |

| Breakeven Point Analysis                           |             |              |
|--|-------------|--------------|
| Repair and Maintenance                             | 0.00        | 11.93        |
| Salary expenses                                    | 0.00        | 19.44        |
| Sales & Admin Expenses                             | 0.00        | 16.83        |
| Energy - Electricity                               | 0.00        | 0.08         |
| Depreciation                                       | 0.00        | 16.94        |
| <b>Total</b>                                       | <b>0.00</b> | <b>73.71</b> |
| Capacity utilisation                               | 0%          | 45%          |
| <b>Operating Profit</b>                            | <b>0.00</b> | <b>56.20</b> |
| <b>Breakeven point in physical units</b>           | <b>NA</b>   | <b>32</b>    |
| <b>Breakeven point in capacity utilisation (%)</b> | <b>NA</b>   | <b>24%</b>   |

| Cash Flow Statement                              |               |               |               |               |               |
|--|---------------|---------------|---------------|---------------|---------------|
| Rs. In Lakh                                      |               |               |               |               |               |
| Particulars                                      | 1st year      | 2nd year      | 3rd year      | 4th year      | 5th year      |
| <b>Sources of Fund</b>                           |               |               |               |               |               |
| Own margin                                       | 52.36         |               |               |               |               |
| Profit Before Interest and Tax                   | 0.00          | 90.84         | 115.96        | 138.59        | 161.33        |
| Depreciation                                     | 0             | 16.94         | 14.65         | 12.68         | 10.98         |
| Working Capital accretion                        | 0             | 60            | 0             | 0             | 0             |
| Term Loan accretion incl interest capitalisation | 78.54         | 8.64          | 0             | 0             | 0             |
| Creditors  | 0             | 51.34         | 8.4           | 9.08          | 9.81          |
| <b>Total</b>                                     | <b>130.9</b>  | <b>227.76</b> | <b>139.01</b> | <b>160.35</b> | <b>182.12</b> |
| <b>Uses of Fund</b>                              |               |               |               |               |               |
| Fixed Assets accretion                           | 130.90        | 0.00          | 0             | 0             | 0             |
| Stock in Trade - Accretion                       | 0             | 93.34         | 15.28         | 16.51         | 17.84         |
| Debtors - Accretion                              | 0             | 37.34         | 6.11          | 6.6           | 7.14          |
| Repayment of term Loan                           | 0.00          | 21.79         | 21.79         | 21.79         | 21.79         |
| Interest on Term Loan                            | 0.00          | 8.49          | 6.09          | 3.70          | 1.30          |
| Interest on working capital                      | 0.00          | 6.60          | 6.60          | 6.60          | 6.60          |
| Income Tax                                       | 0             | 18.94         | 25.82         | 32.07         | 38.36         |
| Accretion in Cash and bank Balance               | 0             | 41.26         | 57.32         | 73.08         | 89.09         |
| <b>Total</b>                                     | <b>130.90</b> | <b>227.76</b> | <b>139.01</b> | <b>160.35</b> | <b>182.12</b> |

The cash flow statement above indicates that there is very little or practically nil chance of cash related problem. The project generates sufficient cash, and the entrepreneur can maintain a healthy cash balance for any eventuality or a rainy day. There are risks like equipment failure and the repair time required for the

same, sudden problem with supply of raw materials for shipment not arriving from abroad, etc. These are unforeseen risks which always cannot be factored in. It is for these kinds of problems that a healthy cash balance is necessary for running a business. This project enables the entrepreneur to maintain healthy case balance.

| Calculation of DSCR                |             |               |               |               |               |
|------------------------------------|-------------|---------------|---------------|---------------|---------------|
| Particulars                        | 1st year    | 2nd year      | 3rd year      | 4th year      | 5th year      |
| <b>Cash Accruals</b>               |             |               |               |               |               |
| Depreciation                       | 0           | 16.94         | 14.65         | 12.68         | 10.98         |
| Profit before interest and taxes   | 0           | 90.84         | 115.96        | 138.59        | 161.33        |
| <b>Total</b>                       | <b>0</b>    | <b>107.78</b> | <b>130.61</b> | <b>151.27</b> | <b>172.31</b> |
| Repayments                         |             |               |               |               |               |
| Interest on Term Loan              | 8.64        | 8.49          | 6.09          | 3.70          | 1.30          |
| Term Loan Instalments              | 0.00        | 21.79         | 21.79         | 21.79         | 21.79         |
| <b>Total</b>                       | <b>8.64</b> | <b>30.28</b>  | <b>27.88</b>  | <b>25.49</b>  | <b>23.09</b>  |
| <b>Debt Service Coverage Ratio</b> | <b>0</b>    | <b>3.56</b>   | <b>4.68</b>   | <b>5.93</b>   | <b>7.46</b>   |

The debt service coverage ratio from second year is 3.62 and above indicating that the project should not have a problem in servicing the loan in the structure suggested which is a five-year loan including one year moratorium.

## IRR/NPV and BC Ratio

The calculation for internal rate of return (IRR) a, BC Ratio and net present value (NPV) is given below. The BC ratio is a healthy 1.21 considering a discount rate of 15%. The net present value of future benefits at a discount rate of 15% comes to Rs. 433.82 lakh. And the internal rate of return at 15% discount rate comes to 91% which essentially indicates that at 91% discount the net present value of benefits would be zero. This also acts as an indicator of the risk bearing capacity of the project.

| BC Ratio, NPV and IRR   |                |                |               |                |               |                |                | (Amt in Rs. Lakh) |
|-------------------------|----------------|----------------|---------------|----------------|---------------|----------------|----------------|-------------------|
| Costs and revenue items | 1st year       | 2nd year       | 3rd year      | 4th year       | 5th year      | 6th year       | 7th year       | 8th year          |
| <b>Fixed Costs</b>      | 130.899        |                |               |                |               |                |                |                   |
| <b>Variable costs</b>   |                |                |               |                |               |                |                |                   |
| Raw material            | 0              | 340.47         | 397.22        | 458.78         | 525.52        | 597.78         | 627.66         | 659.05            |
| Salary                  | 0              | 21.6           | 23.76         | 26.14          | 28.75         | 31.62          | 34.79          | 38.27             |
| Electricity             | 0              | 3.645          | 4.05          | 4.455          | 4.86          | 5.265          | 5.265          | 5.265             |
| Maintenance             | 0              | 15.91          | 15.91         | 15.91          | 15.91         | 15.91          | 15.91          | 15.91             |
| Sales and Admin exp     | 0              | 19.8           | 19.8          | 19.8           | 19.8          | 19.8           | 19.8           | 19.8              |
| <b>Total Costs</b>      | <b>130.899</b> | <b>401.425</b> | <b>460.74</b> | <b>525.085</b> | <b>594.84</b> | <b>670.375</b> | <b>703.425</b> | <b>738.295</b>    |
| Rate of discount        | 15%            |                |               |                |               |                |                |                   |

| BC Ratio, NPV and IRR         |          | (Amt in Rs. Lakh) |               |               |               |               |               |               |  |
|-------------------------------|----------|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|--|
| Present value of costs        | 2111.88  |                   |               |               |               |               |               |               |  |
| <b>Revenues</b>               |          |                   |               |               |               |               |               |               |  |
| <b>Sale of finished goods</b> |          |                   |               |               |               |               |               |               |  |
| Cashew                        | 0        | 479.66            | 580.52        | 664.45        | 754.15        | 849.91        | 887.34        | 922.86        |  |
| Cashew Shell                  | 0        | 9.45              | 10.5          | 11.55         | 12.6          | 13.65         | 13.65         | 13.65         |  |
| Testa                         | 0        | 0.3               | 0.33          | 0.36          | 0.4           | 0.43          | 0.43          | 0.43          |  |
| <b>Total</b>                  | <b>0</b> | <b>489.41</b>     | <b>591.35</b> | <b>676.36</b> | <b>767.15</b> | <b>863.99</b> | <b>901.42</b> | <b>936.94</b> |  |
| Rate of discount              | 15%      |                   |               |               |               |               |               |               |  |
| Present value of benefits     | 2545.70  |                   |               |               |               |               |               |               |  |
| <b>BC Ratio</b>               | 1.21     |                   |               |               |               |               |               |               |  |
| <b>Net Benefits</b>           | -130.9   | 87.985            | 130.61        | 151.275       | 172.31        | 193.615       | 197.995       | 198.645       |  |
| Rate of discount              | 15%      |                   |               |               |               |               |               |               |  |
| <b>NPV</b>                    | 433.82   |                   |               |               |               |               |               |               |  |
| <b>IRR</b>                    | 91%      |                   |               |               |               |               |               |               |  |

## Registration/Certification

There are four registrations necessary for MSMEs which are involved in food processing. A brief on the same is given below:

- GST:** GST registration in today's environment is a necessity for anyone doing a business. The entrepreneur must get himself registered for the same first. Many of the benefits given by central government is linked to GST registration. Necessary system should be put in place to file the GST return from time to time as per the rules laid down by GoI. (<https://reg.gst.gov.in/registration/>)
- FSSAI:** The processing units should follow the Food Safety and Standard Authority of India (FSSAI) act 2006. FSSAI Act is applicable pan India for all food products. It prescribes minimum standards, operating procedures, food safety norms, packaging & labeling norms etc. The new units need to take a license called FSSAI number from Food Safety and Standards Authority of India. The registration can be done at FSSAI website. (<https://fssai.gov.in/cms/registration.php>)
- UDYAM:** The entrepreneur may consider getting himself registered in UDYAM. (<https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm>).
- ISO:** ISO certification is a seal of approval from a third party body that a company runs to one of the international standards developed and published by the International Organization for Standardization (ISO). It is absolutely essential if one wants to venture into exports. Even for domestic sales this certification adds value. A person feels comfortable with ISO certification mentioned in the packaging

along with FSSAI registration. Various agencies are there doing this job of certification. One such site available is <https://legalwaycertification.com/iso/>. There are many other such agencies who have been authorized to issue ISO certification.

All three viz., GST registration, FSSAI registration and ISO certification has to be mentioned on the packaging. It is also important that these certifications are renewed as and when required.

For example, ISO certification is valid for 1 year in many cases. If so, the certification needs to be renewed every year.

In addition to the ones stated above, it would be necessary to take fire and pollution clearances. It would also be advisable choose a brand name for the product and secure the name with trademark. Having a trademark is useful for bulk sale and is necessary for direct marketing as well as exports.



# Model Project Report on **Mustard Oil Extraction**

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# Mustard Oil Extraction – Model Project Report

## Introduction

Oil seed crops occupy an important place in the agriculture and industrial economy of the country. India is perhaps the only country in the world having the largest number of commercial varieties of oil seeds. Mustard Oil is also one of the major oil seeds from which edible oil is produced. In Northern, Eastern, North-eastern and Central India, it is the most common medium for cooking food. Besides it is also used in preparation of Pickles. The Mustard Oil Cake is used as cattle feed.

Mustard oil is a fatty vegetable oil extracted from the mustard seeds. It is dark yellow in color and slightly pungent. There are generally three types of mustard oils depending upon the manner of extraction. The first is a fatty vegetable oil obtained by pressing the mustard seeds. The second one is an essential oil that is made by grinding the seeds, mixing them with water and extracting the oil through distillation. The third process involves infusing mustard seed extract with other vegetable oils such as soyabean oil. All three categories of oil have a pungent nutty taste and a strong aroma.

## Promoters - Some specific requirements

The details of the promoters will have to be obtained along with other information. The Proforma for promoter detail is given in Annexure – 1.

## History of the company

The project has been prepared as if a new set up is being made for the purpose of mustard oil extraction. The same could be part of another company or a new company all together. The details of the existing company or the proposed company have to be obtained/presented in the project report.

Format for company report is given in Annexure-2.

## Finished product and its utility

Mustard oil is extracted by pressing the mustard seeds is commonly used in India. It is an ancient oil that is said to be loaded with many health benefits. Mustard oil is full of Monounsaturated fatty acids (MUFA) which is very important for our health. Mustard oil is made from pressing the seeds of a mustard plant to produce a spicy oil. Mustard oil is popular in Eastern cooking although some American

chefs have begun experimenting with the oil, which has a heat and distinctive flavor to it. The mustard cake is considered to be a very good animal feed.

In Eastern and North Eastern India, it is hard to imagine life without a bottle of mustard oil at home. It is believed to have miraculous properties, and therefore is used as a remedy to treat cold, boost immunity, encourage hair growth, provide nourishment to skin (especially in case of babies who are massaged with mustard oil during winters and made to sun bathe for a dose of Vitamin D and also to strengthen the bones.

## Market, Demand and Major Competitors

Indian edible oil industry is composed of some 15,000 oil mills, 600 solvent extraction units, 250 vanaspati units and over 600 refining units. With around 8% of world oilseeds production, over 7% of global protein meal production, around 4% of world oil meal export, total oilseeds production of 23 mn tonne and 5.6 mn tonne of edible oil production, India is the fourth largest edible oil economy in the world valued at USD 16.5 bn (Rs 660 bn). India has a share of nearly 6% of global vegetable oil production, and yet over 40% of the edible oil availability in the market is sourced from imports. It is apparent from the data that there is room for setting up mustard oil mill for increasing domestic production.

*Note: In addition details of localized competition, has to be mentioned while preparing the final DPR based on where the unit is going to be set up.*

## Raw Material Requirement

Raw material requirement is Mustard and is freely available but is a seasonal crop. The price difference during harvesting season and later in the year could go up heavily during the rest of the year. For example in March 2021 the price of mustard in Rajasthan which is the largest producer of mustard was hovering around 5000-5500/- per quintal. The same in August has gone up to in majority of the Mandis beyond 7000/- per quintal and in some places beyond Rs.8000/-. Accordingly, it makes more sense to purchase as much raw material during harvesting season as possible as this would enable the entrepreneur to compete better in the market. However, the decision to procure for the whole year as against procuring from the market will depend on the following:

1. Cost of setting up a conventional storage godown and interest charges on it
2. Setting up a 5000 MT godown would mean having about 3 acre additional land.
3. There will be other investment like weigh bridge, etc.

In most of the cases money will not be a problem but availability of land will be a major issue. In this project we have not taken a large godown but a smaller space to store raw material for 1 month to avoid any problem of non-availability of raw material.

## Manufacturing Process

Generally for the purpose of edible oil the cold extraction commonly known as “Kachchi Ghani” is preferred because of the pungency and the taste by the people of North, North-eastern, Eastern and Central India. Given

the fact that people are moving down to western and southern region for livelihood and jobs, the demand for mustard oil is also increasing in these regions.

### **Oil extraction process:**

Before we go further, it is important to understand the two kinds of extraction process in oil extraction.

#### **Mechanical pressing or cold pressing**

Mechanical pressing is traditionally the most popular oil extraction process for oilseeds globally. It has been in use particularly by small and medium scale Oil extraction industries for commercial mustard oil extraction in some countries like Thailand. The procedure is less expensive and less labour intensive than using solvent extraction methods. The safety and simplicity of the procedure is an advantage over the efficient solvent extraction techniques. The process does not involve heat or chemical treatment, does making it an interesting alternative for conventional practises because of consumer concern for a natural and safe product. The mechanical pressing process is of two types namely, screw and hydraulic press. The screw press is also called in expeller. It is very simple, easy to maintain and can be operated by semiskilled workers. In comparison, the screw press or expeller is continuous and produces a slightly higher yield than the hydraulic press the process involves continuous pressing using expires within bracket screw press stop.

Expellers consist of a screw rotating inside a cylindrical cage or barrel and the material is fed between the screw and the barrel and then propelled by the rotating screw in a direction parallel to the axis. The gradual increase in pressure helps to discharge the oil which comes out of the process through the slot slots provided on the periphery of the barrel and the residual breast cake move in the direction of the shaft for discharge. However for the extraction process of mustard oil using this method, only about 9 to 10% of the brand weight was found to be extracted by pressing.

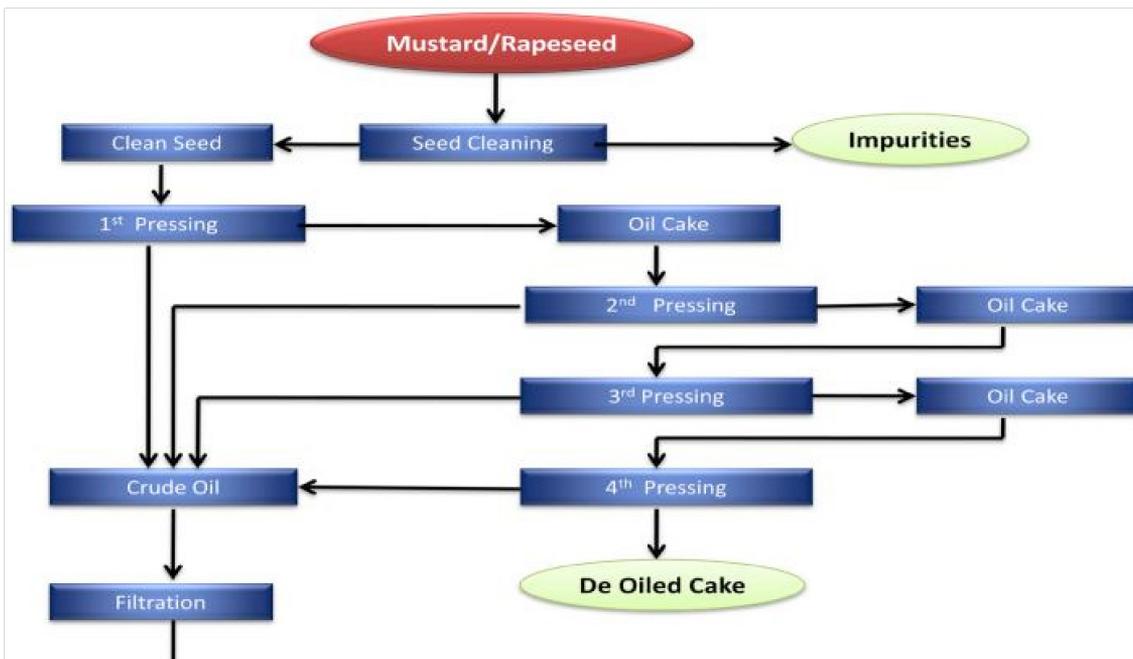
#### **Solvent extraction process**

The solvent extraction process can be used to recover oil from any materials with low oil content, or for free pressed oil cakes in order to obtain high oil content. Hexane is the most commonly used solvent for this method. It is relatively cheap and excellent for oil extraction.

Given the fact that oil extracted by Cold pressing/mechanical pressing is more popular, the project would be using this method for evaluation of the benefits of setting up of a Mustard Oil Mill. The process followed for this purpose is given below:

- Mustard /rapeseed is destined and cleaned
- The cleaned seed is pushed through oil expeller (first pressing) ➤ Oil expeller extracts oil and separates oil cake.
- This process is repeated 3 or 4 times to extract as much oil as possible. However, as the output in the third and fourth round becomes too low, the number of cycles of pressing has been restricted to 2 cycles in this project which also reduces the capital cost and space requirement.

- The crude oil so generated is put through the process of filtration. Refining is done by some but the market prefers only filtered mustard oil as it retains the pungent taste which gets lost in refining. Hence for this project refining has not been taken.
- The filtered oil is then packed in pet bottles/jars or tin containers pouch packets, sealed and sent to the market for sale.



## SWOT Analysis

| Strengths  | Weakness  |
|--|---|
| <ul style="list-style-type: none"> <li>➤ Mustard oil has a regular demand in Northern, Eastern, and North-eastern parts of India. People just cannot live without using mustard oil as one of the cooking medium in this region</li> <li>➤ It's a daily need product is every household in the region.</li> <li>➤ Considered to be one of the better medium for cooking from health perspective</li> <li>➤ De-oiled cake is considered to be a good animal feed and hence fetching reasonably good price as a byproduct</li> </ul> | <ul style="list-style-type: none"> <li>➤ With people becoming more and more health conscious, usage of oil goes down in the family</li> <li>➤ The smell of mustard oil is not liked by many people.</li> <li>➤ In the framework of the project presented, the project appears to be highly sensitive to capacity utilization. A dip in capacity utilization by 5% could lead to<br/><br/>The project making losses in the second year. However, the same can be managed by reducing the raw material stock to 15 days leading to lesser interest cost keeping the project in profit.</li> </ul> |

| Opportunities  | Threats  |
|--|--|
| <ul style="list-style-type: none"> <li>➤ With people migrating from one region to another for jobs, the demand for mustard oil is spreading in southern and western region of the country</li> <li>➤ Net based marketing gives a great opportunity to sell the product across the country by tying up with channels like Big Basket</li> </ul> | <ul style="list-style-type: none"> <li>➤ Local as well as national competitors</li> <li>➤ Mustard oil is costly when compared to other oils specially palmoline oil available in the world market and being imported heavily by India</li> </ul> |

## Financial Aspects of the Project

### Infrastructure requirement

Any project preparation is based on a set of assumptions made which are close to the market reality. In this project the land used is assumed to be own land. The major component of a Mustard oil processing unit is land, building, plant and machinery and civil works. List of all the assumptions made is given in Annexure 3. The space required would depend on the size of the unit.

### Land and its development

A plot of approximately 1 acre would be required for setting up an oil mill with necessary storage space for both raw material and finished goods. Covered area will be around 5000 sq ft which would include inventory storage for 1 month. Many unit even manage with 7-15 days of raw material stock which would further reduce the cost in terms of interest on working capital and boost profits. The land should be free from any encumbrance and shall be mortgageable. The land should be classified as nonagriculture. Permission for non-agriculture use, wherever applicable, shall be obtained for the land.

### Size of the unit

The plant and machinery could be such which would have flexibility of oil produced. The capacity also would vary based on what oil is being produced. The plant size is pegged at 16 tonne per day (three shifts) would cost around 4.35 Crore including working capital.

### Machineries and Equipment

Various machineries and equipment will be required for setting up the plant. A broad classification of the set of equipment required along with the overall price is given below in the table. This investment in plant and machinery is required for 16 tonnes per day raw material capacity.

| Processing Equipment cost |  |      |           |                |  |
|---------------------------|--|------|-----------|----------------|--|
| Sl no.                    | Machine  | Unit | Unit Cost | Amount in Rs.  |  |
| 1                         | Oil expeller   | 8    | 130000    | 1040000        |  |
| 2                         | Round automatic feeding kettle + magnet  | 8    | 30000     | 240000         |  |
| 3                         | filter press   | 4    | 120000    | 480000         |  |
| 4                         | Strong Table   | 4    | 10000     | 40000          |  |
| 5                         | Accessories /installation kit comprising of all required pipeline,etc.                   | 4    | 60000     | 240000         |  |
| 6                         | Essential spare parts for two years  | 4    | 35000     | 140000         |  |
| 7                         | Electric Motor 12.5 HP   | 8    | 45000     | 360000         |  |
| 8                         | conveyor with motor, gear box and starter  | 8    | 45000     | 360000         |  |
| 9                         | Automatic pouch packaging  | 1    | 650000    | 650000         |  |
| 10                        | Multipurpose storagetank for 3000 litres   | 1    | 40000     | 40000          |  |
| 11                        | Other small equipments like bucket, steel containers, etc (1 Set) and testing laboratory | 1    | 200000    | 200000         |  |
|                           | 100 KVA genset 3 phase   | 1    | 630000    | 630000         |  |
|                           | Total cost of equipment  |      |           | 4420000        |  |
|                           | Addl charges for GST, transportation, etc  |      | 30%       | 1326000        |  |
|                           | <b>Total cost of equipment incl GST, etc.</b>  |      |           | <b>5746000</b> |  |

- Prices quoted as per Tiney tech quotation received on request. Prices are excluding GST, Transportation charges and installation charges as well as any other taxes applicable. Accordingly, an additional 30% has been taken on the ex-factory equipment cost.
- Most of the prices available for Mustard Oil production are for turnkey projects wherein the firm takes up the responsibility of supplying all equipments and implementation of the project. In this case also it is the same
- It is suggested that it would be better for an entrepreneur to buy all equipments from a single vendor because the following reasons.
  - There will not be any mismatch between equipments and automation would be smoother.
  - Single point of contact would not allow any blame game between vendors in case something goes wrong.
  - Power assessment would be better and line can be drawn accordingly
  - A single unit set up by any of these can be visited to get a clear overview.
  - Training would be much easier as it would from one agency
- Plant equipment prices have been obtained from Tinytech Plants. The was done in order to enable scaling down easily and hence small expellers have been taken. The generator capacity also can be accordingly scaled down. However, the cost of pouch making equipment will in all probability cannot be reduced which may make the project unviable and may necessitate other modes of packaging and marketing.

The packaging machine would depend on what kind of packaging the entrepreneur wants. As direct marketing is being targeted in this case, packaging would be for 1 Litre packs and in pouch. Depending on what kind of packaging is preferred, the packaging equipment will undergo change. For example, other than pouch pack, it could be tetra pack, tin packing of 10 or 20 kg for bulk selling and bottle packing.

As there would be a need for transportation of bulk material specially finished goods (Mustard Oil) as well as byproduct (Deoiled bran), it would be necessary to maintain small transport vehicles. The cost of the same is given below:

| Vehicles for Transportation of goods | Units | Price/unit | Total Cost     |
|--------------------------------------|-------|------------|----------------|
| Small transport vehicle (1 tonne)    | 2     | 800000     | 1600000        |
| <b>Total Cost</b>                    |       |            | <b>1600000</b> |

The cost of building is given below. A 4000 sq.ft. building should be sufficient for having a plant of this size along with a storage space of 1000 sq.ft. The storage space required for storing raw material for 1 month and finished goods for 7 days has been factored within the building. Land has been taken as own land

| Land and Building                 |                 |                  |                |
|-----------------------------------|-----------------|------------------|----------------|
| Particulars                       | Area reqd       | Rate/sqft in Rs. | Amount in Rs.  |
| Land cost                         | own land 1 acre |                  | 0              |
| Prefabricated Godown              | 1000            | 234              | 234000         |
| Building cost @ 1430/-- per sq ft | 4000            | 1430             | 5720000        |
| <b>Total cost</b>                 |                 |                  | <b>5954000</b> |

### Project Timeline

The project to start off production would need around one year for implementation to be completed. The breakup for the same is given in table below:

| Activities                                   | Projected time period |
|--|-----------------------|
| Arrangement of finance                       | 3 months              |
| Building of premises/Acquisition of premises | 6 months              |
| Procurement of equipments                    | 2 months              |
| Recruitment of manpower                      | 1 month               |
| Training                                     | 1 month               |

Unless the project is implemented in a very planned manner, this timeline may not be achieved and the moratorium period required may become higher. It is suggested that the planning of the project as well as supply of equipments should be planned and executed in a time bound manner. The equipment supplier contacted (Tinytech) generally gives a commitment of supply of equipment in 50 days.

The total bank loan component based on the assumptions made and unit costs taken would be as follows:

| Project Summary                   |  |  |                 |
|-----------------------------------|--|--|-----------------|
| Total Project Cost excluding land |  |  | <b>14947000</b> |
| Own Contribution                  |  |  | <b>5978800</b>  |
| Estimated Bank loan               |  |  | <b>8968200</b>  |
| Own Contribution in Rs. Lakh      |  |  | <b>59.79</b>    |
| <b>Bank Loan in Rs. Lakh</b>      |  |  | <b>89.68</b>    |

In addition interest cost of the first year will be capitalized as the project would need a moratorium for 12 months. This would increase the outstanding at the end of the first year.

### Price of finished goods

The price of finished product has been kept at at Rs.180 per litre. This is similar to the going market rate but is cheaper than all the major brands. Small producers can mostly play around with the price initially to capture the market and then increase the same based on how well the sales go. Most of the common brands like Healthy and Tasty from Emami (192/-), Dhara (191/-), Fortune (194/-) are priced around 11/higher than the price taken in the project. Dabur cold pressed oil has priced its 1 litre bottle at Rs.270/hoping to exploit its brand name which is associated with ayurvedic products. With the organic tag Big basket is selling its brand BB Royal Mustard oil at Rs.329/-.

### Working Capital requirement

Working capital requirement has been assessed keeping in view the banking requirements. Own contribution has been taken at 25%. However, before calculating the working capital requirement it is necessary to find out the overall raw material requirement, production and details of stock based on the assumptions stated above from which working capital requirement is generated. In the following tables details of working capital requirement is assessed.

Capacity utilization in the second year has been kept at 70% as mustard oil is very much in demand in west Bengal and selling and market linkage should not be a problem. Moreover, the machinery operations are simple and should not take more than a couple of weeks to get fully used to it. Mustard Oil and de-oiled cake production in the first five years of the project is expected to be as follows:

| mustard Oil Production for 5 years - Raw material cost |          |          |          |          |          |
|--|----------|----------|----------|----------|----------|
| Production Period                                      | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| Capacity Utilisation                                   | 0%       | 70%      | 75%      | 80%      | 85%      |
| Raw material requirement per day                       | 0        | 11.2     | 12       | 12.8     | 13.6     |
| Raw material required in tonnes                        | 0        | 3360     | 3600     | 3840     | 4080     |
| Rate per tonne in Rs.                                  | 0        | 77500    | 81375    | 85444    | 89716    |
| Cost of packaging material per Kg oil                  | 0        | 2.5      | 2.63     | 2.76     | 2.9      |
| Total Cost in Rs. Lakh                                 | 0        | 2637.60  | 2967.37  | 3323.44  | 3707.74  |

| Calculation of Sales                            |             |                |                |                |                |
|---|-------------|----------------|----------------|----------------|----------------|
| Particulars                                     | 1st year    | 2nd year       | 3rd year       | 4th year       | 5th year       |
| <b>Production of mustard Oil</b>                |             |                |                |                |                |
| Opening Stock                                   | 0           | 0              | 31.36          | 33.6           | 35.84          |
| Production in tonnes                            | 0           | 1344           | 1440           | 1536           | 1632           |
| Closing Stock                                   | 0.00        | 31.36          | 33.60          | 35.84          | 38.08          |
| Net Sales in tonnes                             | 0           | 1312.64        | 1437.76        | 1533.76        | 1629.76        |
| Sales price per pack of 1 kg oil incl packaging | 0           | 180            | 189            | 198            | 208            |
| <b>Sales value in Rs. Lakh</b>                  | <b>0.00</b> | <b>2362.75</b> | <b>2717.37</b> | <b>3036.84</b> | <b>3389.90</b> |
| <b>Byproduct -Deoiled mustard cake</b>          |             |                |                |                |                |
| Opening Stock                                   | 0           | 0              | 47.04          | 50.4           | 53.76          |
| Production in tonnes                            | 0           | 2016           | 2160           | 2304           | 2448           |
| Closing Stock                                   | 0           | 47.04          | 50.4           | 53.76          | 57.12          |
| Net Sales in tonnes                             | 0           | 1969           | 2156.64        | 2300.64        | 2444.64        |
| Sales price per tonne                           | 0           | 27000          | 28350          | 29768          | 31256          |
| <b>Sales value in Rs. Lakh</b>                  | <b>0</b>    | <b>531.62</b>  | <b>611.41</b>  | <b>684.85</b>  | <b>764.10</b>  |
| <b>Total Sales revenue</b>                      | <b>0.00</b> | <b>2894.37</b> | <b>3328.78</b> | <b>3721.69</b> | <b>4154.00</b> |

Working capital requirement has to be evaluated based on the above mentioned details. The same is given in the table below:

| Working Capital Assessment  |          |               |               |               |               |
|---|----------|---------------|---------------|---------------|---------------|
| Computation of value of closing stock and working capital requirement   |          |               |               |               |               |
| Particulars   | 1st year | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Finished goods inventory in tonnes  | 0        | 31.36         | 33.6          | 35.84         | 38.08         |
| Price of finished good/kg in Rs. including packaging material   | 0        | 180           | 189           | 198           | 208           |
| Total finished goods stock price in Rs.   | 0        | 5644800       | 6350400       | 7096320       | 7920640       |
| Raw material inventory in tonne   | 0        | 336           | 360           | 384           | 408           |
| Price of Raw Material/tonne in Rs.  | 0        | 77500         | 81375         | 85444         | 89716         |
| Packaging Material per kg   | 0        | 2.5           | 2.63          | 2.76          | 2.9           |
| Total Raw Material Stock Price  | 0        | 26376000      | 29295000      | 32810496      | 36604128      |
| Total value of stock  | 0        | 32020800      | 35645400      | 39906816      | 44524768      |
| Amount in Lakh  | 0        | 320.21        | 356.45        | 399.07        | 445.25        |
| Less Creditors in lakh  | 0        | 80.05         | 89.11         | 99.77         | 111.31        |
| Paid Stock in lakh  | 0        | 240.16        | 267.34        | 299.3         | 333.94        |
| Add sundry debtors in lakh  | 0        | 48.03         | 53.47         | 59.86         | 66.79         |
| <b>Total</b>  | <b>0</b> | <b>288.19</b> | <b>320.81</b> | <b>359.16</b> | <b>400.73</b> |
| <b>Own contribution @ 25%</b>   | <b>0</b> | <b>72.05</b>  | <b>80.2</b>   | <b>89.79</b>  | <b>100.18</b> |
| <b>Working Capital requirement*</b>   | <b>0</b> | <b>216.14</b> | <b>240.61</b> | <b>269.37</b> | <b>300.55</b> |
| * WC requirement has been taken based on the requirement of the second year as the first year would be treated as moratorium period for setting up the project. |          |               |               |               |               |

The project is expected to generate sufficient cash and working capital limit is pegged at the requirement of the second year, first year being the moratorium for setting up the factory.

### Other Expenses

There are other expenses which may be also termed as running cost. They are mainly salary, and electricity charges packaging cost, and admin & marketing expenses. The details of these expenses are given below:

| Labour and Staff Salary/wages |                         |                  |                        |                |
|-------------------------------|-------------------------|------------------|------------------------|----------------|
| Particulars                   | Wages/ Salary per month | No. of employees | Total Salary per month | Annual Salary  |
| Manager                       | 30000                   | 1                | 30000                  | 360000         |
| Accountant                    | 25000                   | 1                | 25000                  | 300000         |
| Plant equipment Operator      | 20000                   | 6                | 120000                 | 1440000        |
| Unskilled labour              | 10000                   | 6                | 60000                  | 720000         |
| <b>Total Salary</b>           |                         |                  | <b>235000</b>          | <b>2820000</b> |

| Projected Salary Expenses                           |             |               |               |               |               |
|---|-------------|---------------|---------------|---------------|---------------|
| Salary expenses Projection                          | 1st year    | 2nd year      | 3rd year      | 4th year      | 5th year      |
| <b>Annual Salary expenses</b>                       | 0           | 2820000       | 3102000       | 3412200       | 3753420       |
| <b>Salary expenses rounded off to lakhs</b>         | <b>0</b>    | <b>28.2</b>   | <b>31.02</b>  | <b>34.12</b>  | <b>37.53</b>  |
| Electricity Charges                                 |             |               |               |               |               |
| Particulars   | 1st year    | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Capacity Utilisation                                | 0%          | 70%           | 75%           | 80%           | 85%           |
| Consumption of power per day in units               | 0           | 70            | 75            | 80            | 85            |
| Rate per unit in Rs.                                | 9.00        | 9.00          | 9.00          | 9.00          | 9.00          |
| Power bill per month in Rs.                         | 0           | 15750         | 16875         | 18000         | 19125         |
| <b>Total power bill per year</b>                    | <b>0</b>    | <b>189000</b> | <b>202500</b> | <b>216000</b> | <b>229500</b> |
| <b>Power bill in Rs. Lakh</b>                       | <b>0</b>    | <b>1.89</b>   | <b>2.025</b>  | <b>2.16</b>   | <b>2.295</b>  |
| Packaging Cost                                      |             |               |               |               |               |
| Particulars   | 1st year    | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Cost of Packaging per unit (200 grams)              | 0           | 2.5           | 2.63          | 2.76          | 2.9           |
| Total Production in kg                              | 0           | 1344000       | 1440000       | 1536000       | 1632000       |
| <b>Packaging cost in Rs. Lakh</b>                   | <b>0.00</b> | <b>168.00</b> | <b>189.36</b> | <b>211.97</b> | <b>236.64</b> |
| Selling, transportation and administrative expenses |             |               |               |               |               |
| Particulars   | 1st year    | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Sales and branding expenses per annum               | 0           | 500000        | 500000        | 500000        | 500000        |

|  |          |                |                |                |                |
|--|----------|----------------|----------------|----------------|----------------|
| Admin Expenses   | 0        | 120000         | 120000         | 120000         | 120000         |
| Transportation charges                                       | 0        | 960000         | 960000         | 960000         | 960000         |
| <b>Total Expenditure on Sales, Admin &amp;Transportation</b> | <b>0</b> | <b>1580000</b> | <b>1580000</b> | <b>1580000</b> | <b>1580000</b> |

All these costs will be factored in later in the report while evaluating the financial benefits of the project

## Depreciation

The depreciation calculation is as follows:

| Depreciation Calculation                           |          |                |                |                |                |
|--|----------|----------------|----------------|----------------|----------------|
| Particulars  | 1st year | 2nd year       | 3rd year       | 4th year       | 5th year       |
| Total value of equipments                          | 0        | 8993000        | 7644050        | 6497442        | 5522826        |
| Depreciation @15%                                  | 0        | 1348950        | 1146608        | 974616         | 828424         |
| Value at the end of the year to be carried forward | 0        | 7644050        | 6497442        | 5522826        | 4694402        |
| Total Value of building                            | 0        | 5954000        | 5358600        | 4822740        | 4340466        |
| Depreciation of building@10%                       | 0        | 595400         | 535860         | 482274         | 434047         |
| Value at the end of the year to be carried forward | 0        | 5358600        | 4822740        | 4340466        | 3906419        |
| <b>Total depreciation</b>                          | <b>0</b> | <b>1944350</b> | <b>1682468</b> | <b>1456890</b> | <b>1262471</b> |
| Total depn in Rs. Lakh                             | 0        | 19.44          | 16.82          | 14.57          | 12.62          |

## Repairs and maintenance

In case of new equipments including computers, generally they give a warranty for one year. Thus the maintenance cost would be starting from the second year onwards. The same in general is given at a service charge of 15% per annum. In case there are any major spares to be replaced the cost of that has to be borne by the customers. Given these general terms, it can be taken at 20% of the equipment cost per annum. The same would then be as follows:

| Cost of Maintenance            |         |
|--------------------------------|---------|
| Particulars                    | Amount  |
| Total fixed cost               | 8993000 |
| Maintenance cost in percentage | 20%     |
| Cost of Maintenance            | 1798600 |
| Maintenance cost in Rs. Lakh   | 17.99   |

## Cost of Project and Means of Finance

Based on the data presented above on cost of plant and machinery, working capital requirement, etc., the cost of the project and means of finance required can be summarized as follows:

| Cost of The Project                                    |               |
|--|---------------|
| (in Rs. Lakh)  |               |
| Particulars  | Amount        |
| Land & Building*                                       | 59.54         |
| Plant & Machinery                                      | 57.46         |
| Vehicles and Misc. Items                               | 32.47         |
| Working Capital  | 288.19        |
| <b>Total</b>   | <b>437.66</b> |
| *Land is assumed as own land and hence cost taken is 0 |               |

| Means of Finance                 |               |
|----------------------------------|---------------|
| (in Rs. Lakh)                    |               |
| Particulars                      | Amount        |
| Own Contribution                 | 59.79         |
| Term Loan from Bank              | 89.68         |
| Working Capital Own contribution | 72.05         |
| Working Capital                  | 216.14        |
| <b>total</b>                     | <b>437.66</b> |

The detailed repayment schedule of the term loan is indicated in Annexure 4. The interest for the first year is capitalized and loan outstanding accordingly increased in the end of the first year. It is assumed that the working capital limit given will be renewed every year for the next five years. Any increase in the working capital may not be necessary as the project should be able to generate sufficient profits and the internal accruals should be able to take care of additional working capital requirements. The summary of interest payment for working capital and term loan and principal repayment is given in the table below:

| Year-wise Interest on Bank Loan  |          |          |          |          |          |
|--|----------|----------|----------|----------|----------|
| Particulars  | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| Interest on Term Loan in Rs.*  | 0        | 969522   | 695778   | 422023   | 148278   |
| Interest on Term Loan in Rs. Lakh  | 0.00     | 9.70     | 6.96     | 4.22     | 1.48     |
| Interest on working Capital  | 0        | 23.78    | 23.78    | 23.78    | 23.78    |
| Principal Repayment in Rs.   | 0        | 2488632  | 2488632  | 2488632  | 2488588  |
| Principal Repayment in Rs. Lakh  | 0.00     | 24.89    | 24.89    | 24.89    | 24.89    |
| Balance outstanding - end of the year  | 99.54    | 74.65    | 49.76    | 24.87    | 0.00     |
| * Interest on term loan has been capitalised for 12 months leading to increase in the capital outlay. This has been done to account for the 12 month moratorium. |          |          |          |          |          |

## Financial Statements

The profitability of the project can be judged based on the financial statements generated based on the data presented above in the series of tables. Accordingly the projected profit and loss account, balance sheet, and cash flow statement along with breakeven analysis is presented in the tables below. During the moratorium period the interest is charged by the bank which has to be capitalized to ensure that the same is repaid over a period of time. Capitalisation thus leads to increase in the loan quantum at the end of the first year which can be seen in the balance sheet.

| Projected P&L Statement  |             |                |                |                |                |
|--|-------------|----------------|----------------|----------------|----------------|
| (in Rs. Lakh)  |             |                |                |                |                |
| Particulars  | 1st year    | 2nd year       | 3rd year       | 4th year       | 5th year       |
| Capacity Utilisation%  | 0%          | 70%            | 75%            | 80%            | 85%            |
| Gross Sale of mustard Oil  | 0           | 2362.75        | 2717.37        | 3036.84        | 3389.9         |
| Sale of Deoiled mustard cake   | 0           | 531.62         | 611.41         | 684.85         | 764.10         |
| <b>Total</b>   | <b>0</b>    | <b>2894.37</b> | <b>3328.78</b> | <b>3721.69</b> | <b>4154</b>    |
| Cost of Production   |             |                |                |                |                |
| Raw Material Consumed  | 0           | 2604           | 2929.5         | 3281.05        | 3660.41        |
| Electricity Charges  | 0           | 1.89           | 2.03           | 2.16           | 2.3            |
| Depreciation   | 0           | 19.44          | 16.82          | 14.57          | 12.62          |
| Salary and wages   | 0           | 28.2           | 31.02          | 34.12          | 37.53          |
| Repair and Maintenance   | 0           | 17.99          | 17.99          | 17.99          | 17.99          |
| Packaging  | 0           | 168            | 189.36         | 211.97         | 236.64         |
| Selling & Admn Expenses  | 0           | 15.80          | 15.80          | 15.80          | 15.80          |
| <b>Total Cost of Production</b>  | <b>0</b>    | <b>2855.32</b> | <b>3202.52</b> | <b>3577.66</b> | <b>3983.29</b> |
| <b>Profit before interest and taxes</b>  | <b>0</b>    | <b>39.05</b>   | <b>126.26</b>  | <b>144.03</b>  | <b>170.71</b>  |
| Interest on Term Loan*   | 0.00        | 9.70           | 6.96           | 4.22           | 1.48           |
| Interest on Working Capital  | 0           | 23.78          | 23.78          | 23.78          | 23.78          |
| <b>Total Interest Payment</b>  | <b>0.00</b> | <b>33.48</b>   | <b>30.74</b>   | <b>28.00</b>   | <b>25.26</b>   |
| Profit before Tax  | 0.00        | 5.57           | 95.52          | 116.03         | 145.45         |
| Income Tax   | 0           | 1.39           | 23.88          | 29.01          | 36.36          |
| <b>Net profit after tax</b>  | <b>0.00</b> | <b>4.18</b>    | <b>71.64</b>   | <b>87.02</b>   | <b>109.09</b>  |
| <b>Term loan interest for first year capitalised to account for the moratorium</b> |             |                |                |                |                |

As can be seen, the unit would be in profits after tax from second year onwards.

| Projected Balance Sheet      |               |               |               |               |               |
|------------------------------|---------------|---------------|---------------|---------------|---------------|
| Rs. In Lakh                  |               |               |               |               |               |
| Particulars                  | 1st year      | 2nd year      | 3rd year      | 4th year      | 5th year      |
| <b>Liabilities</b>           |               |               |               |               |               |
| Capital                      |               |               |               |               |               |
| Opening Balance              | 0             | 59.79         | 136.02        | 207.66        | 294.68        |
| Own Capital Contribution     | 59.79         | 72.05         |               |               |               |
| Retained Earnings            | 0.00          | 4.18          | 71.64         | 87.02         | 109.09        |
| <b>Total-Closing Balance</b> | <b>59.79</b>  | <b>136.02</b> | <b>207.66</b> | <b>294.68</b> | <b>403.77</b> |
| Term Loan                    | 99.54         | 74.65         | 49.76         | 24.87         | 0.00          |
| Working Capital Limit        | 0.00          | 216.14        | 216.14        | 216.14        | 216.14        |
| Sundry Creditors             | 0             | 80.05         | 89.11         | 99.77         | 111.31        |
| <b>Total Liabilities</b>     | <b>159.33</b> | <b>506.86</b> | <b>562.67</b> | <b>635.46</b> | <b>731.22</b> |
| <b>Assets</b>                |               |               |               |               |               |
| Fixed Assets                 | 149.47        | 149.47        | 149.47        | 149.47        | 149.47        |
| Gross Depreciation           | 0             | 19.44         | 36.26         | 50.83         | 63.45         |
| <b>Net Fixed Assets</b>      | <b>149.47</b> | <b>130.03</b> | <b>113.21</b> | <b>98.64</b>  | <b>86.02</b>  |
| Sundry Debtors               | 0             | 48.03         | 53.47         | 59.86         | 66.79         |
| Stock in Hand                | 0             | 320.21        | 356.45        | 399.07        | 445.25        |
| Interest capitalised         | 9.86          | 0             | 0             | 0             | 0             |
| Cash and Bank Balance        | 0             | 8.59          | 39.54         | 77.89         | 133.16        |
| <b>Total Assets</b>          | <b>159.33</b> | <b>506.86</b> | <b>562.67</b> | <b>635.46</b> | <b>731.22</b> |

The project is generating profit from second year with the first year being moratorium as presented above. It may also be observed that the profit jumps substantially in the second year which is solely due to increase in capacity utilization by 5% indicating the fact that the project is quite sensitive to capacity utilization. The breakeven analysis indicates the level of operation at which the operations will breakeven and not have any loss. It becomes important to identify the fixed and the variable costs. Even within variable component there is always a part which is fixed. For example, even if the plant is not running there will be lights and fans which will be used for administrative work, people will have to be paid salary for those days as well, etc. Accordingly, a portion of the variable expenses have been taken as fixed cost to arrive at the contribution and the total fixed cost. Total fixed cost divided by the contribution (fixed cost÷Contribution) gives us the breakeven point. In this case the breakeven capacity utilization in year 2 comes at 11% capacity utilisation.

| Breakeven Point Analysis                           |             |                 |
|--|-------------|-----------------|
| Rs. In Lakh  |             |                 |
| Total Sale (Sales - opening WIP + closing WIP)     | Year 1      | Year 2          |
| Net Sales  | 0.00        | 2894.37         |
| Less: Opening Stock                                | 0.00        | 0.00            |
| Add: Closing Stock                                 | 0.00        | 282.24          |
| <b>Total Production/Sales</b>                      | <b>0.00</b> | <b>3176.61</b>  |
| <b>Variable Expenses</b>                           |             |                 |
| Raw Material and Packaging                         | 0.00        | 2637.60         |
| Interest on working Capital                        | 0.00        | 23.78           |
| Repair and Maintenance                             | 0.00        | 4.50            |
| Salary expenses                                    | 0.00        | 2.82            |
| Sales & Admin Expenses                             | 0.00        | 2.37            |
| Energy - Electricity                               | 0.00        | 1.85            |
| <b>Total</b>                                       | <b>0.00</b> | <b>2672.92</b>  |
| <b>Contribution</b>                                | <b>0.00</b> | <b>503.69</b>   |
| <b>Contribution per unit (per tonne)</b>           | <b>NA</b>   | <b>38372.29</b> |
| <b>Fixed expenses</b>                              |             |                 |
| Interest on Term Loan                              | 0.00        | 9.70            |
| Repair and Maintenance                             | 0.00        | 13.49           |
| Salary expenses                                    | 0.00        | 25.38           |
| Sales & Admin Expenses                             | 0.00        | 13.43           |
| Energy - Electricity                               | 0.00        | 0.04            |
| Depreciation                                       | 0.00        | 19.44           |
| <b>Total</b>                                       | <b>0.00</b> | <b>81.48</b>    |
| Capacity utilisation                               | 0%          | 70%             |
| <b>Operating Profit</b>                            | <b>0.00</b> | <b>422.21</b>   |
| <b>Breakeven point in physical units</b>           | <b>NA</b>   | <b>212</b>      |
| <b>Breakeven point in capacity utilisation (%)</b> | <b>NA</b>   | <b>11%</b>      |

| Cash Flow Statement    |          |          |          |          |          |
|------------------------|----------|----------|----------|----------|----------|
| Rs. In Lakh            |          |          |          |          |          |
| Particulars            | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| <b>Sources of Fund</b> |          |          |          |          |          |
| Own margin             | 59.79    | 72.05    |          |          |          |

| Cash Flow Statement              |               |               |               |               |               |
|----------------------------------|---------------|---------------|---------------|---------------|---------------|
| Profit Before Interest and Tax   | 0.00          | 39.05         | 126.26        | 144.03        | 170.71        |
| Depreciation                     | 0.00          | 19.44         | 16.82         | 14.57         | 12.62         |
| Working Capital accretion        | 0.00          | 216.14        | 0.00          | 0.00          | 0.00          |
| Term Loan accretion              | 89.68         | 9.86          | 0.00          | 0.00          | 0.00          |
| Creditors                        | 0.00          | 80.05         | 9.06          | 10.66         | 11.54         |
| <b>Total</b>                     | <b>149.47</b> | <b>436.59</b> | <b>152.14</b> | <b>169.26</b> | <b>194.87</b> |
| <b>Uses of Fund</b>              |               |               |               |               |               |
| Fixed Assets                     | 149.47        | 0.00          | 0.00          | 0.00          | 0.00          |
| Stock in Trade - Accretion       | 0.00          | 320.21        | 36.24         | 42.62         | 46.18         |
| Debtors - Accretion              | 0.00          | 48.03         | 5.44          | 6.39          | 6.93          |
| Repayment of term Loan           | 0.00          | 24.89         | 24.89         | 24.89         | 24.89         |
| Interest on Term Loan            | 0.00          | 9.70          | 6.96          | 4.22          | 1.48          |
| Interest on working capital      | 0.00          | 23.78         | 23.78         | 23.78         | 23.78         |
| Income Tax                       | 0.00          | 1.39          | 23.88         | 29.01         | 36.36         |
| Accretion in cash & bank balance | 0.00          | 8.59          | 30.95         | 38.35         | 55.25         |
| <b>Total</b>                     | <b>149.47</b> | <b>436.59</b> | <b>152.14</b> | <b>169.26</b> | <b>194.87</b> |

The cash flow statement above indicates that chance of any problem with the cash is very little or so to say practically nil in the project. The project generates sufficient cash, and the entrepreneur can maintain a healthy cash balance for any eventuality or a rainy day. There are risks like equipment failure and the repair time required for the same, sudden problem with supply of raw material or shipment not arriving, etc. Now these are unforeseen risk which always cannot be factored in. It is for these kinds of problems that a healthy cash balance is necessary for running a business. This project enables the entrepreneur to have that.

| Calculation of DSCR                |             |              |               |              |               |
|------------------------------------|-------------|--------------|---------------|--------------|---------------|
| Particulars                        | 1st year    | 2nd year     | 3rd year      | 4th year     | 5th year      |
| <b>Cash Accruals</b>               |             |              |               |              |               |
| Depreciation                       | 0           | 19.44        | 16.82         | 14.57        | 12.62         |
| Profit before interest and taxes   | 0           | 39.05        | 126.26        | 144.03       | 170.71        |
| <b>Total</b>                       | <b>0</b>    | <b>58.49</b> | <b>143.08</b> | <b>158.6</b> | <b>183.33</b> |
| <b>Repayments</b>                  |             |              |               |              |               |
| Interest on Term Loan              | 0.00        | 9.70         | 6.96          | 4.22         | 1.48          |
| Term Loan Instalments              | 0.00        | 24.89        | 24.89         | 24.89        | 24.89         |
| <b>Total</b>                       | <b>0.00</b> | <b>34.59</b> | <b>31.85</b>  | <b>29.11</b> | <b>26.37</b>  |
| <b>Debt Service Coverage Ratio</b> | <b>NA</b>   | <b>1.69</b>  | <b>4.49</b>   | <b>5.45</b>  | <b>6.95</b>   |

The debt service coverage ratio from second year is 1.69 and above indicating that the project should not have any problem in servicing the loan in the structure suggested which is a five-year loan including one year moratorium.

## IRR/NPV and BC Ratio

The calculation for internal rate of return (IRR) a, BC Ratio and net present value (NPV) is given below. The BC ratio is at 1.08 considering a discount rate of 15%. The net present value of future benefits at a discount rate of 15% comes to Rs. 1074.61 lakh. And the internal rate of return comes to 161% which essentially indicates that at 161% discount rate the net present value of net benefits would be zero. This also acts as an indicator of the risk bearing capacity of the project.

| BC Ratio, NPV and IRR         |                |                |                |                |                |                |                |                | (Amt in Rs. Lakh) |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------|
| Costs and revenue items       | 1st year       | 2nd year       | 3rd year       | 4th year       | 5th year       | 6th year       | 7th year       | 8th year       |                   |
| <b>Fixed Costs</b>            | 149.47         |                |                |                |                |                |                |                |                   |
| <b>Variable costs</b>         |                |                |                |                |                |                |                |                |                   |
| Raw material                  | 0              | 2637.6         | 2967.37        | 3323.44        | 3707.74        | 4122.23        | 4328.29        | 4544.73        |                   |
| Salary                        | 0              | 28.2           | 31.02          | 34.12          | 37.53          | 41.29          | 45.42          | 49.96          |                   |
| Electricity                   | 0              | 1.89           | 2.025          | 2.16           | 2.295          | 2.43           | 2.43           | 2.43           |                   |
| Maintenance                   | 0              | 17.99          | 17.99          | 17.99          | 17.99          | 17.99          | 17.99          | 17.99          |                   |
| Sales and Admin exp           | 0              | 15.8           | 15.8           | 15.8           | 15.8           | 15.8           | 15.8           | 15.8           |                   |
| <b>Total Costs</b>            | <b>149.47</b>  | <b>2701.48</b> | <b>3034.21</b> | <b>3393.51</b> | <b>3781.36</b> | <b>4199.74</b> | <b>4409.93</b> | <b>4630.91</b> |                   |
| Rate of discount              | 15%            |                |                |                |                |                |                |                |                   |
| Present value of costs        | 12975.34       |                |                |                |                |                |                |                |                   |
| <b>Revenues</b>               |                |                |                |                |                |                |                |                |                   |
| <b>Sale of finished goods</b> |                |                |                |                |                |                |                |                |                   |
| 1 kg pack of mustard oil      |                | 2362.75        | 2717.37        | 3036.84        | 3389.90        | 3762.16        | 3957.12        | 4147.20        |                   |
| Mustard Oil Cake              |                | 531.62         | 611.41         | 684.85         | 764.10         | 849.57         | 893.20         | 937.86         |                   |
| <b>Total</b>                  | <b>0</b>       | <b>2894.37</b> | <b>3328.78</b> | <b>3721.69</b> | <b>4154.00</b> | <b>4611.73</b> | <b>4850.32</b> | <b>5085.06</b> |                   |
| Rate of discount              | 15%            |                |                |                |                |                |                |                |                   |
| Present value of benefits     | 14049.96       |                |                |                |                |                |                |                |                   |
| <b>BC Ratio</b>               | <b>1.08</b>    |                |                |                |                |                |                |                |                   |
| <b>Net Benefits</b>           | <b>-149.47</b> | <b>192.89</b>  | <b>294.575</b> | <b>328.18</b>  | <b>372.645</b> | <b>411.99</b>  | <b>440.39</b>  | <b>454.15</b>  |                   |
| Rate of discount              | 15%            |                |                |                |                |                |                |                |                   |
| <b>NPV</b>                    | <b>1074.61</b> |                |                |                |                |                |                |                |                   |
| <b>IRR</b>                    | <b>161%</b>    |                |                |                |                |                |                |                |                   |

The project on Mustard oil Production indicates that it is a profitable business. However, the same is because land cost has not been factored in and has been taken as own land.

## Registration/Certification

There are four registrations necessary for MSMEs which are involved in food processing. A brief on the same is given below:

1. **GST:** GST registration in today's environment is a necessity for anyone doing a business. The entrepreneur must get himself registered for the same first. Many of the benefits given by central government is being linked to GST registration. Necessary system should be put in place to file the GST return from time to time as per the rules laid down by Gol.

(<https://reg.gst.gov.in/registration/>)

2. **FSSAI:** The processing units should follow the Food Safety and Standard Authority of India (FSSAI) act 2006. FSSAI Act is applicable pan India for all food products. It prescribes minimum standards operating procedures, food safety norms, packaging & labeling norms. The new units need to take a license called FSSAI number from Food Safety and Standards Authority of India. The registration can be done at FSSAI website. (<https://fssai.gov.in/cms/registration.php>)

(<https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm>).

3. **UDYAM:** The entrepreneur may consider getting himself registered in UDYAM  
(<https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm>).
3. **ISO:** ISO certification is a seal of approval from a third party body that a company runs to one of the international standards developed and published by the International Organization for Standardization (ISO). It is absolutely essential if one wants to venture into exports. Even for domestic sales this certification adds value. A person feels comfortable with ISO certification mentioned in the packaging along with FSSAI registration. Various agencies are there doing this job of certification. One such site available is <https://legalwaycertification.com/iso/>. There are many other such agencies who have been authorized to issue ISO certification.
4. **AGMARK:** AGMARK, or Agriculture Mark, is the certification mark to assure the quality of agricultural products in India. AGMARK acts as a third-party guarantee for the agricultural products that are produced and consumed in India. AS the target would be initially to create a foothold in the country, it would be necessary to obtain necessary certification

All three viz., GST registration, FSSAI registration and ISO certification has to be mentioned on the packaging. It is also important that these certifications are renewed as and when required. For example, ISO certification is valid for 1 year in many cases. If so, the certification needs to be renewed every year. In addition to the ones stated above, it would be necessary to take fire and pollution clearances. It would also be advisable choose a brand name for the product and secure the name with trademark. Having a trademark is useful for bulk sale and is necessary for direct marketing as well as exports.



# Model Project Report on **Rice Bran Oil**





# Rice Bran Oil – Model Project Report

## Introduction

Rice bran is the main source of rice oil. The majority of available bran continues to be used for animal feeds without being extracted for the oil. Rice oil, also called rice bran oil, has been used extensively in Asian countries. Rice oil is a minor constituent of rough rice when compared with the carbohydrate and protein content. Rice processing produces polished rice or the parboiled variety. In addition to two byproducts are also produced viz., husks (13%) which used as fuel and bran (8%) which is used as animal feed, as well as for edible oil production. In food industry, Rice is world's most important food crop and 67% of the people in the world eat rice. Rice bran oil is available in two grades viz., crude and edible. Crude Rice bran oil is used in soap making and in animal feeds, whereas hydrogenated oil can be used as a medium for cooking. Rice bran oil is truly The Worlds Healthiest edible oil, containing vitamins, antioxidants, nutrients and trans-fat free. It is not just delicate and flavorful, it can help lower cholesterol, fight diseases, enhance the immune system, fight free radicals and more.

## Promoters - Some specific requirements

The details of the promoters will have to be obtained along with other information. The format for promoter detail is given in Annexure – 1.

## History of the company

The project has been prepared as if a new set up is being made for the purpose of rice bran oil processing. The same could be part of another company or a new company all together. The details of the existing company or the proposed company have to be obtained/presented in the project report.

Format for company report is given in Annexure-2.

## Finished product and its utility

Rice bran oil is extremely light, versatile and delicious. It is used for any purpose where you use cooking oil. It is amazingly light, healthy and also good in taste. Rice bran oil is vastly superior to traditional cooking oils and can be considered nutraceutical (food as medicine) oil that is perfect for all your healthy cooking needs. Rice bran oil is quickly becoming a favorite in commercial frying to replace hydrogenated oils that contain transfat. This is due to rice bran oils health, flavor and performance benefits. Bran oil is used in the soap industry and to a limited extent refined to edible oil while the defatted bran meal is employed as an animal feed. Rice bran wax is an important by-product of rice bran oil industry. Rice bran wax can be used in the preparation of candles, polishes, cosmetics, emulsifiers and other industrial preparations.

## Market, Demand and Major Competitors

Indian edible oil industry is composed of some 15,000 oil mills, 600 solvent extraction units, 250 vanaspati units and over 600 refining units. With around 8% of world oilseeds production, over 7% of global protein meal production, around 4% of world oil meal export, total oilseeds production of 23 mn tonne and 5.6 mn tonne of edible oil production, India is the fourth largest edible oil economy in the world valued at USD 16.5 bn (Rs 660 bn). India has a share of nearly 6% of global vegetable oil production, and yet over 40% of the edible oil availability in the market is sourced from imports. It is apparent from the data that there is room for setting up Oil mills for increasing domestic production.

*Note: In addition details of localized competition, has to be mentioned while preparing the final DPR based on where the unit is going to be set up.*

## Raw Materials Requirements

Raw material requirement is rice bran which is a byproduct of the rice mills and is freely available. Of late the price of the same has gone up because of rice bran oil becoming more and more popular. The best way of going ahead would be to set up the plant in the area where there are a good number of Rice mills because it is the byproduct of these mills that will be used by the Rice bran oil plant. Setting it at a place away from rice mill clusters would mean increase in transportation cost which is unnecessary.

## Manufacturing Process

Generally, rice bran oil can be extracted by chemical solvents or pressed directly from rice bran. Here we recommend small capacity rice bran oil can choose expelling pricing method whereas large capacity takes the solvent making technique. We have to mention that hot extraction method which would obtain more oil yield and pure edible oil than the cold pressing method when it refers to rice bran oil production. The following three process steps are important which are raw material preparation, rice bran oil extraction and crude oil refining.

- Rice bran Raw Material preparation: Like other oil bearing materials, before making oil from rice husk these raw materials must be fully prepared. Rice bran is first screen and then heated by the steam process at a temperature higher than hundred degrees centigrade's to stop lipase hydrolysis In rice bran prior to extraction process.
- Extraction: You can extract the crude rice bran oil either by a mechanical process with oil prices or by a chemical method with solvent. After proper preparation, the bran is fully stabilised and sent to an extraction region where the oil is removed yielding two products which are highquality crude rice bran oil and defatted rice bran. Then the rice bran oil is pumped into into the refining machinery to generate different grades of rice bran oil. The refining process generally includes filtering, neutralisation, degumming, decolourisation, deodorization and de-waxing .

- Rice bran oil refining: Crude rice bran oil is further processed by the refining process which removes the majority of free fatty acids and provides oil with minimal processing is suitable for a variety of animal or agricultural applications. Edible oil bleaching normally leaves minor flavour and order compounds that must be eliminated by steam distillation before packaging. However those customers that require de-waxed oil have their oil go through the vaccine process before distillation. Steam distillation is the final step in the edible oil procedure and it is here that any off flavours and residual free fatty acids left in the oil are removed. Once the rice brand oil has been fully processed it is ready for packaging into retail bottles or bulk drums.

### **Oil extraction process:**

Before we go further, it is important to understand the two kinds of extraction process in oil extraction.

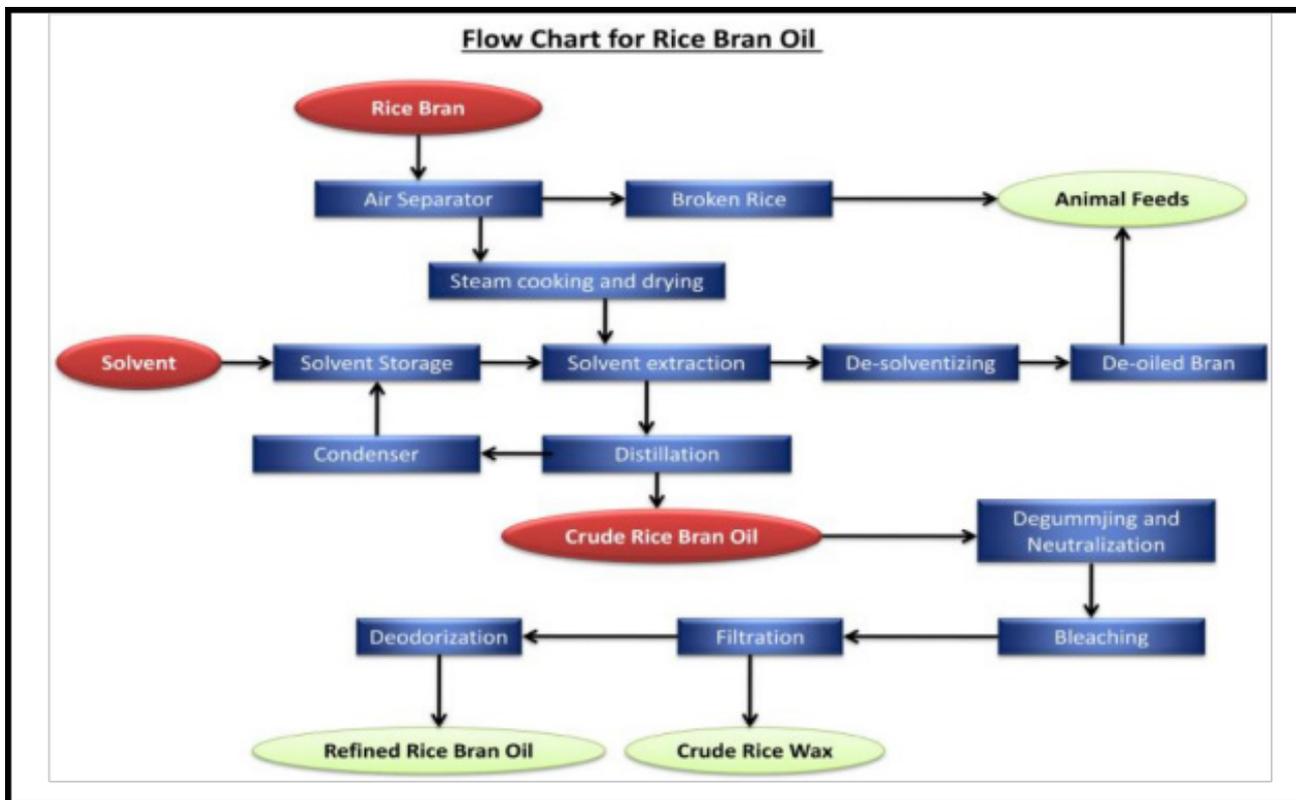
#### **Mechanical pressing or cold pressing**

Mechanical pressing is traditionally the most popular oil extraction process for oilseeds globally. It has been in use particularly by small and medium scale Oil extraction industries for commercial rice bran oil extraction in some countries like Thailand. The procedure is less expensive and less labour intensive than using solvent extraction methods. The safety and simplicity of the procedure is an advantage over the efficient solvent extraction techniques. The process does not involve heat or chemical treatment, does making it an interesting alternative for conventional practises because of consumer concern for a natural and safe product. The mechanical pressing process is of two types namely, screw and hydraulic press. The screw press is also called in expeller. It is very simple, easy to maintain and can be operated by semiskilled workers. In comparison, the screw press or expeller is continuous and produces a slightly higher yield than the hydraulic press the process involves continuous pressing using expellers within bracket screw press stop.

Expellers consist of a screw rotating inside a cylindrical cage or barrel and the material is fed between the screw and the barrel and then propelled by the rotating screw in a direction parallel to the axis. The gradual increase in pressure helps to discharge the oil which comes out of the process through the slot slots provided on the periphery of the barrel and the residual breast cake move in the direction of the shaft for discharge. However, for the extraction process of rice brand oil using this method, only about 9 to 10% of the brand weight was found to be extracted by pressing.

#### **Solvent extraction process**

The solvent extraction process can be used to recover oil from any materials with low oil content, or for free pressed oil cakes in order to obtain high oil content. Hexane is the most commonly used solvent for this method. It is relatively cheap and excellent for oil extraction Solvent extraction method is generally used for rice bran oil extraction.



## SWOT Analysis

### Strengths

- Increasing Demand due to its qualities from health perspective
- It's a daily need product
- The demand for Rice Bran Oil is very much on the rise which is apparent from its price.
- Raw material easily available in the state

### Weakness

- Big players rule the market and hence entry for a smaller player could be a problem.
- Have competition from Oilseeds like sunflower and safflower oil as well as Palmoline oil which is very cheap and imported heavily
- Market as of now is mostly restricted to home use
- Large investment necessary for setting up a plant of the scale envisaged in the model project report

| Opportunities  | Threats  |
|--|--|
| <ul style="list-style-type: none"> <li>➤ Market is expanding and if marketed properly, can be a very profitable business as may be seen in the data presented</li> <li>➤ While big players dominate the market in direct marketing, this leaves room for becoming a supplier to these brands</li> <li>➤ Most producers are from south India. However, you do have a few players in West Bengal also like Aditi Health Oils Pvt. Ltd.</li> <li>➤ Marketing channels like Sufal Bangla could be used for direct marketing</li> </ul> | <ul style="list-style-type: none"> <li>➤ Main competition from big players like Emami (healthy&amp; Tasty) and Fortune I direct marketing</li> </ul> |

## Financial Aspects of the Project

### Infrastructure requirement

Any project preparation is based on a set of assumptions made which are close to the market reality. In this project the land used is assumed to be own land. The major component of a Rice bran oil processing unit is land, building, plant and machinery and civil works. List of all the assumptions made is given in Annexure 3. The space required would depend on the size of the unit.

### Land and its development

A plot of approximately 3 acres would be necessary for setting up a rice bran oil plant. The land should be free from any encumbrance and shall be mortgageable. The land should be classified as nonagriculture. Permission for non-agriculture use, wherever applicable, shall be obtained for the land.

### Size of the unit

The plant and machinery could be such which would have flexibility of oil produced. The capacity also would vary based on what oil is being produced. The plant size is pegged at 300 tonne per day would cost around 16 Crore.

### Machineries and Equipment

Various machineries and equipments will be required for setting up the plant. A broad classification of the set of equipments required along with the overall price is given below in the table. This investment in plant and machinery is required for 300 tonnes per day capacity.

| Processing Equipment cost |   |       |           |               |
|---------------------------|---|-------|-----------|---------------|
| Sl no.                    | Machine   | Unit  | Unit Cost | Amount in Rs. |
| 1                         | Air Separator   | 1 set | 60000000  | 60000000      |
| 2                         | Steam cooking and drying machine                          |       |           |               |
| 3                         | Solvent storage tank                                      |       |           |               |
| 4                         | Solvent extraction machine                                |       |           |               |
| 5                         | De-solventizing machine                                   |       |           |               |
| 6                         | distillation machine                                      |       |           |               |
| 7                         | condenser   |       |           |               |
| 8                         | Degumming machine   |       |           |               |
| 9                         | Bleaching equipment                                       |       |           |               |
| 10                        | Filtration machine  |       |           |               |
| 11                        | Deodorisation machinery                                   |       |           |               |
| 12                        | Packaging Machine   |       |           |               |
| 13                        | Other small equipments like bucket, steel containers, etc |       |           |               |
|                           | Total cost of equipment                                   |       |           | 60000000      |
|                           | Addl charges for GST, transportation, etc                 |       | 30%       | 18000000      |
|                           | Total cost of equipment incl GST, etc.                    |       |           | 78000000      |

1. Prices quoted on Indiamart or companies are generally excluding GST, Transportation charges and installation charges as well as any other taxes applicable. Accordingly, an additional 30% has been taken on the ex-factory equipment cost.
2. Most of the prices available for Rice Bran Oil production are for turnkey projects wherein the firm takes up the responsibility of supplying all equipments and implementation of the project.
3. It is suggested that it would be better for an entrepreneur to buy all equipments from a single vendor because the following reasons.
  - a. There will not be any mismatch between equipments and automation would be smoother.
  - b. Single point of contact would not allow any blame game between vendors in case something goes wrong.
  - c. Power assessment would be better and line can be drawn accordingly
  - d. A single unit set up by any of these can be visited to get a clear overview.
  - e. Training would be much easier as it would from one agency

The packaging machine would depend on what kind of packaging the entrepreneur wants. As direct marketing is being targeted in this case, packaging would be for 1 Kg/1 Litre packs and in pouch. Depending on what kind of packaging is preferred, the packaging equipment will undergo change. For example, other than pouch pack, it could be tetra pack, tin packing of 10 or 20 kg for bulk selling and bottle packing

| Miscellaneous fixed assets |                                 |       |           |                |
|----------------------------|---------------------------------|-------|-----------|----------------|
| Sl. No.                    | Particulars                     | Units | Unit cost | Amount in Rs.  |
| 1                          | Electrical and water Connection | 1     | 1000000   | 1000000        |
| 2                          | Effluent treatment Plant        | 1     | 3000000   | 3000000        |
| 3                          | Chairs                          | 11    | 2000      | 22000          |
| 4                          | Table                           | 2     | 5000      | 10000          |
| 5                          | Computer                        | 2     | 50000     | 100000         |
| 6                          | Printer                         | 1     | 15000     | 15000          |
|                            | <b>Total</b>                    |       |           | <b>4147000</b> |

The kind of power requirement a plant of this size will have cannot be supported by generator system. Hence the cost of the same has not been accounted for as it would increase the project cost heavily. However, If it is still felt that a generator is a must, it may be stated that the cost could go up by around Rs. 65 lakhs for the kind of genset required. The other issue which needs to be addressed is effluent treatment. The requirement in this case is mostly for the oil and grease which comes out from washing. It may be stated that the kind of wastewater which comes out can be treated with Sedimentation process as well as biodegradation of the oil and grease in the water. It is estimated that it may take an investment of around 30 lakh for taking care of the effluent treatment.

As there would be a need for transportation of bulk material both raw material (rice bran) and finished goods (Rice Bran Oil) as well as byproduct (Deoiled bran), it would be necessary to maintain a number of trucks and small transport vehicles. The cost of the same is given below:

| Vehicles for Transportation of goods | Units | Price/unit | Total Cost      |
|--------------------------------------|-------|------------|-----------------|
| eight to ten tonne capacity truck    | 4     | 2500000    | 10000000        |
| 4-5 tonne truck                      | 4     | 1500000    | 6000000         |
| Small transport vehicle (1 tonne)    | 2     | 800000     | 1600000         |
| <b>Total Cost</b>                    |       |            | <b>17600000</b> |

The cost of building and warehouse/godown is given below. You will need a large godown to stock even raw material for one month as well as finished goods. It may be mentioned that the project even at a most conservative estimate shows very high profits. That is because of the fact that land price has not been factored in.

| Land and Building                             |              |                  |                 |
|---|--------------|------------------|-----------------|
| Particulars                                   | Area reqd    | Rate/sqft in Rs. | Amount in Rs.   |
| Land cost                                     | Own land - 5 |                  | 0               |
| Building cost @ 1430/-- per sq ft             | 5000         | 1430             | 7150000         |
| prefabricated Godown for storing raw material | 20000        | 200              | 4000000         |
| <b>Total cost</b>                             |              |                  | <b>11150000</b> |

The total bank loan component based on the assumptions made and unit costs taken would be as follows:

| Project Summary                   |  |  |                  |
|-----------------------------------|--|--|------------------|
| Project Cost excluding land       |  |  | <b>110897000</b> |
| Preoperative Expenses             |  |  | <b>1108970</b>   |
| Total Project Cost excluding land |  |  | <b>112005970</b> |
| Own Contribution                  |  |  | <b>44802388</b>  |
| Estimated Bank loan               |  |  | <b>67203582</b>  |
| Own Contribution in Rs. Lakh      |  |  | <b>448.02</b>    |
| <b>Bank Loan in Rs. Lakh</b>      |  |  | <b>672.04</b>    |

In addition interest cost of the first year will be capitalized as the project would need a moratorium for 12 months. This would increase the outstanding at the end of the first year.

### Project Timeline

The project to start off production would need around one year for implementation to be completed.

The breakup for the same is given in table below:

| Activities                                   | Projected time period |
|--|-----------------------|
| Arrangement of finance                       | 3 months              |
| Building of premises/Acquisition of premises | 6 months              |
| Procurement of equipments                    | 2 months              |
| Recruitment of manpower                      | 1 month               |
| Training                                     | 1 month               |

Unless the project is implemented in a very planned manner, this timeline may not be achieved and the moratorium period required may become higher. It is suggested that the planning of the project as well as supply of equipments should be planned and executed in a time bound manner. If the entrepreneur feels that this is a very tight timeline he may consider increasing the same.

### Price of Finished Goods

The price of rice bran oil in case of known brands is around Rs.150-155/- in the market. In order to compete and ensure that people get attracted the price has been kept at Rs.130 per litre. This is the tricky part as oil is the medium of cooking and people while buying should not feel that the price is too low for the product as one of the perception which people have is the a cheaper product may not be good in quality. Moreover, raw material availability and its price can also be an issue as rice millers would like to increase their profit by increasing the price of rice bran with the increasing popularity of the oil because of its health benefits.

## Working Capital requirement

Working capital requirement has been assessed keeping in view the banking requirements. Own contribution has been taken at 25%. However, before calculating the working capital requirement it is necessary to find out the overall raw material requirement, production and details of stock based on the assumptions stated above from which working capital requirement is generated. In the following tables details of working capital requirement is assessed.

Capacity utilisation in the second year has been kept at a very modest level of 40% as the market linkages has to be set up and brand has to establish itself in the surrounding locality. Rice bran Oil and de-oiled cake production in the first five years of the project is expected to be as follows:

| Rice Bran Oil Production for 5 years - Raw material cost |             |                |                |                |                |
|--|-------------|----------------|----------------|----------------|----------------|
| Production Period  | 1st year    | 2nd year       | 3rd year       | 4th year       | 5th year       |
| Capacity Utilisation                                     | 0%          | 40%            | 45%            | 50%            | 55%            |
| Raw material requirement per day                         | 0           | 120            | 135            | 150            | 165            |
| Raw material required in tonnes                          | 0           | 36000          | 40500          | 45000          | 49500          |
| Rate per tonne in Rs.                                    | 0           | 7500           | 7875           | 8269           | 8682           |
| Cost of packaging material per Kg oil                    | 0           | 2.5            | 2.63           | 2.76           | 2.9            |
| Hexane required per tonne of Rice Bran in ltrs           |             | 4              | 4              | 4              | 4              |
| Price of Hexane per litre                                |             | 50             | 52.5           | 55.13          | 57.89          |
| Total Cost in Rs. Lakh                                   | 0           | 2862.00        | 3380.94        | 3944.48        | 4555.76        |
| Calculation of Sales                                     |             |                |                |                |                |
| Particulars  | 1st year    | 2nd year       | 3rd year       | 4th year       | 5th year       |
| Production of Rice Bran Oil                              |             |                |                |                |                |
| Opening Stock  | 0           | 0              | 180            | 202.5          | 225            |
| Production in tonnes                                     | 0           | 3600           | 4050           | 4500           | 4950           |
| Closing Stock  | 0.00        | 180.00         | 202.50         | 225.00         | 247.50         |
| Net Sales in tonnes                                      | 0           | 3420           | 4027.5         | 4477.5         | 4927.5         |
| Sales price per pack of 1 kg oil incl packaging          | 0           | 130            | 137            | 144            | 151            |
| <b>Sales value in Rs. Lakh</b>                           | <b>0.00</b> | <b>4446.00</b> | <b>5517.68</b> | <b>6447.60</b> | <b>7440.53</b> |
| Byproduct -Deoiled Rice Bran                             |             |                |                |                |                |
| Opening Stock  | 0           | 0              | 1080           | 1215           | 1350           |
| Production in tonnes                                     | 0           | 21600          | 24300          | 27000          | 29700          |
| Closing Stock  | 0           | 1080           | 1215           | 1350           | 1485           |
| Net Sales in tonnes                                      | 0           | 20520          | 24165          | 26865          | 29565          |
| Sales price per tonne                                    | 0           | 6500           | 6825           | 7166           | 7524           |
| <b>Sales value in Rs. Lakh</b>                           | <b>0</b>    | <b>1333.80</b> | <b>1649.26</b> | <b>1925.15</b> | <b>2224.47</b> |
| <b>Total Sales revenue</b>                               | <b>0.00</b> | <b>5779.80</b> | <b>7166.94</b> | <b>8372.75</b> | <b>9665.00</b> |

Working capital requirement has to be evaluated based on the above mentioned details. The same is given in the table below:

| Working Capital Assessment  |          |               |               |               |               |
|---|----------|---------------|---------------|---------------|---------------|
| Computation of value of closing stock and working capital requirement   |          |               |               |               |               |
| Particulars   | 1st year | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Finished goods inventory in tonnes  | 0        | 180           | 202.5         | 225           | 247.5         |
| Price of finished good/kg in Rs. including packaging material   | 0        | 130           | 137           | 144           | 151           |
| Total finished goods stock price in Rs.   | 0        | 23400000      | 27742500      | 32400000      | 37372500      |
| Raw material inventory in tonne   | 0        | 3600          | 4050          | 4500          | 4950          |
| Price of Raw Material/tonne in Rs.  | 0        | 7500          | 7875          | 8269          | 8682          |
| Packaging Material per kg   | 0        | 2.5           | 2.63          | 2.76          | 2.9           |
| Total Raw Material Stock Price  | 0        | 31500000      | 31893750      | 37210500      | 42975900      |
| Total value of stock  | 0        | 54900000      | 59636250      | 69610500      | 80348400      |
| Amount in Lakh  | 0        | 549           | 596.36        | 696.11        | 803.48        |
| Less Creditors in lakh  | 0        | 137.25        | 149.09        | 174.03        | 200.87        |
| Paid Stock in lakh  | 0        | 411.75        | 447.27        | 522.08        | 602.61        |
| Add sundry debtors in lakh  | 0        | 82.35         | 89.45         | 104.42        | 120.52        |
| <b>Total</b>  | <b>0</b> | <b>494.1</b>  | <b>536.72</b> | <b>626.5</b>  | <b>723.13</b> |
| <b>Own contribution @ 25%</b>   | <b>0</b> | <b>123.53</b> | <b>134.18</b> | <b>156.63</b> | <b>180.78</b> |
| <b>Working Capital requirement*</b>   | <b>0</b> | <b>370.57</b> | <b>402.54</b> | <b>469.87</b> | <b>542.35</b> |
| * WC requirement has been taken based on the requirement of the second year as the first year would be treated as moratorium period for setting up the project. |          |               |               |               |               |

The project is expected to generate sufficient cash and working capital limit is pegged at the requirement of the second year, first year being the moratorium for setting up the factory.

### Other Expenses

There are other expenses which may be also termed as running cost. They are mainly salary, and electricity charges packaging cost, and admin and marketing expenses. The details of these expenses are given below:

| Labour and Staff Salary/wages |                         |                  |                        |                 |
|-------------------------------|-------------------------|------------------|------------------------|-----------------|
| Particulars                   | Wages/ Salary per month | No. of employees | Total Salary per month | Annual Salary   |
| Manager                       | 30000                   | 1                | 30000                  | 360000          |
| Accountant                    | 25000                   | 1                | 25000                  | 300000          |
| Helper                        | 10000                   | 1                | 10000                  | 120000          |
| Plant equipment Operator      | 20000                   | 10               | 200000                 | 2400000         |
| Skilled labour                | 15000                   | 7                | 105000                 | 1260000         |
| Unskilled labour              | 10000                   | 70               | 700000                 | 8400000         |
| <b>Total Salary</b>           |                         |                  | <b>1070000</b>         | <b>12840000</b> |

| Projected Salary Expenses                                     |             |                 |                 |                 |                 |
|---|-------------|-----------------|-----------------|-----------------|-----------------|
| <b>Salary expenses Projection</b>                             | 1st year    | 2nd year        | 3rd year        | 4th year        | 5th year        |
| <b>Annual Salary expenses</b>                                 | 0           | 12840000        | 14124000        | 15536400        | 17090040        |
| <b>Salary expenses rounded off to lakhs</b>                   | <b>0</b>    | <b>128.4</b>    | <b>141.24</b>   | <b>155.36</b>   | <b>170.9</b>    |
| <b>Electricity Charges</b>                                    |             |                 |                 |                 |                 |
| <b>Particulars</b>  | 1st year    | 2nd year        | 3rd year        | 4th year        | 5th year        |
| Capacity Utilisation  | 0%          | <b>40%</b>      | <b>45%</b>      | <b>50%</b>      | <b>55%</b>      |
| Consumption of power per day in units                         | 0           | 6000            | 6750            | 7500            | 8250            |
| Rate per unit in Rs.  | 9.00        | 9.00            | 9.00            | 9.00            | 9.00            |
| Power bill per month in Rs.                                   | 0           | 1350000         | 1518750         | 1687500         | 1856250         |
| <b>Total power bill per year</b>                              | <b>0</b>    | <b>16200000</b> | <b>18225000</b> | <b>20250000</b> | <b>22275000</b> |
| <b>Power bill in Rs. Lakh</b>                                 | <b>0</b>    | <b>162</b>      | <b>182.25</b>   | <b>202.5</b>    | <b>222.75</b>   |
| <b>Packaging Cost</b>   |             |                 |                 |                 |                 |
| <b>Particulars</b>  | 1st year    | 2nd year        | 3rd year        | 4th year        | 5th year        |
| Cost of Packaging per unit (200 grams)                        | 0           | 2.5             | 2.63            | 2.76            | 2.9             |
| Total Production in kg  | 0           | 3600000         | 4050000         | 4500000         | 4950000         |
| <b>Packaging cost in Rs. Lakh</b>                             | <b>0.00</b> | <b>450.00</b>   | <b>532.58</b>   | <b>621.00</b>   | <b>717.75</b>   |
| <b>Selling, transportation and administrative expenses</b>    |             |                 |                 |                 |                 |
| <b>Particulars</b>  | 1st year    | 2nd year        | 3rd year        | 4th year        | 5th year        |
| Sales and branding expenses per annum                         | 0           | 2000000         | 2000000         | 2000000         | 2000000         |
| Admin Expenses  | 0           | 480000          | 480000          | 480000          | 480000          |
| Transportation charges  | 0           | 1920000         | 1920000         | 1920000         | 1920000         |
| <b>Total Expenditure on Sales, Admin &amp; Transportation</b> | <b>0</b>    | <b>4400000</b>  | <b>4400000</b>  | <b>4400000</b>  | <b>4400000</b>  |

All these costs will be factored in later in the report while evaluating the financial benefits of the project.

## Depreciation

The depreciation calculation is as follows:

|                              |  |  |               |
|------------------------------|--|--|---------------|
| <b>Bank Loan in Rs. Lakh</b> |  |  | <b>672.04</b> |
|------------------------------|--|--|---------------|

| Depreciation Calculation                           |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Particulars</b>                                 | <b>1st year</b> | <b>2nd year</b> | <b>3rd year</b> | <b>4th year</b> | <b>5th year</b> |
| Total value of equipments                          | 0               | 99747000        | 84784950        | 72067207        | 61257126        |
| Depreciation @15%                                  | <b>0</b>        | <b>14962050</b> | <b>12717743</b> | <b>10810081</b> | <b>9188569</b>  |
| Value at the end of the year to be carried forward | 0               | 84784950        | 72067207        | 61257126        | 52068557        |

|  |   |                |                |               |               |
|--|---|----------------|----------------|---------------|---------------|
| Total Value of building                            | 0 | 11150000       | 10035000       | 9031500       | 8128350       |
| Depreciation of building@10%                       | 0 | <b>1115000</b> | <b>1003500</b> | <b>903150</b> | <b>812835</b> |
| Value at the end of the year to be carried forward | 0 | 10035000       | 9031500        | 8128350       | 7315515       |

### Repairs and maintenance

In case of new equipments including computers, generally they give a warranty for one year. Thus the maintenance cost would be starting from the second year onwards. The same in general is given at a service charge of 15% per annum. In case there are any major spares to be replaced the cost of that has to be borne by the customers. Given these general terms, it can be taken at 20% of the equipment cost per annum. The same would then be as follows:

| Cost of Maintenance            |          |
|--------------------------------|----------|
| Particulars                    | Amount   |
| Total fixed cost               | 99747000 |
| Maintenance cost in percentage | 20%      |
| Cost of Maintenance            | 19949400 |
| Maintenance cost in Rs. Lakh   | 199.49   |

### Cost of Project and Means of Finance

Based on the data presented above on cost of plant and machinery, working capital requirement, etc., the cost of the project and means of finance required can be summarized as follows:

| Cost of The Project                                     |         |
|---|---------|
| (in Rs. Lakh)   |         |
| Particulars   | Amount  |
| Land & Building*  | 111.50  |
| Plant & Machinery                                       | 780.00  |
| Vehicles, Misc. Items & Pre-op Exp.                     | 228.56  |
| Working Capital   | 494.10  |
| Total   | 1614.16 |
| * Land is assumed as own land and hence cost taken is 0 |         |

| Means of Finance                 |         |
|----------------------------------|---------|
| (in Rs. Lakh)                    |         |
| Particulars                      | Amount  |
| Own Contribution                 | 448.02  |
| Term Loan from Bank              | 672.04  |
| Working Capital Own contribution | 123.53  |
| Working Capital                  | 370.57  |
| total                            | 1614.16 |

The detailed repayment schedule of the term loan is indicated in Annexure 4. The interest for the first year is capitalized and loan outstanding accordingly increased in the end of the first year. It is assumed that the working capital limit given will be renewed every year for the next five years. Any increase in the working capital may not be necessary as the project should be able to generate sufficient profits and the internal accruals should be able to take care of additional working capital requirements. The summary of interest payment for working capital and term loan and principal repayment is given in the table below:

| Year-wise Interest on Bank Loan  |          |          |          |          |          |
|--|----------|----------|----------|----------|----------|
| Particulars  | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| Interest on Term Loan in Rs.*  | 0        | 7265382  | 5213981  | 3162577  | 1111174  |
| Interest on Term Loan in Rs. Lakh  | 0.00     | 72.65    | 52.14    | 31.63    | 11.11    |
| Interest on working Capital  | 0        | 40.76    | 40.76    | 40.76    | 40.76    |
| Principal Repayment in Rs.   | 0        | 18649116 | 18649116 | 18649116 | 18649096 |
| Principal Repayment in Rs. Lakh  | 0.00     | 186.49   | 186.49   | 186.49   | 186.49   |
| Balance outstanding - end of the year  | 745.96   | 559.47   | 372.98   | 186.49   | 0.00     |
| * Interest on term loan has been capitalised for 12 months leading to increase in the capital outlay. This has been done to account for the 12 month moratorium. |          |          |          |          |          |

## Financial Statements

The profitability of the project can be judged based on the financial statements generated based on the data presented above in the series of tables. Accordingly, the projected Profit and loss account, Balance sheet, and cash flow statement along with breakeven analysis is presented in the tables below. During the moratorium period the interest is charged by the bank which has to be capitalized to ensure that the same is repaid over a period of time. Capitalisation thus leads to increase in the loan quantum at the end of the first year which can be seen in the balance sheet.

| Projected P&L Statement     |          |               |                |                |             |
|-----------------------------|----------|---------------|----------------|----------------|-------------|
| (in Rs. Lakh)               |          |               |                |                |             |
| Particulars                 | 1st year | 2nd year      | 3rd year       | 4th year       | 5th year    |
| Capacity Utilisation%       | 0%       | 40%           | 45%            | 50%            | 55%         |
| Gross Sale of Rice Bran Oil | 0        | 4446          | 5517.68        | 6447.6         | 7440.53     |
| Sale of Deoiled Rice Bran   | 0        | 1333.80       | 1649.26        | 1925.15        | 2224.47     |
| <b>Total</b>                | <b>0</b> | <b>5779.8</b> | <b>7166.94</b> | <b>8372.75</b> | <b>9665</b> |
| Cost of Production          |          |               |                |                |             |
| Raw Material Consumed       | 0        | 2700          | 3189.38        | 3721.05        | 4297.59     |
| Cost of solvent             |          | 72            | 85.05          | 99.23          | 114.62      |
| Electricity Charges         | 0        | 162           | 182.25         | 202.5          | 222.75      |
| Depreciation                | 0        | 160.77        | 137.21         | 117.13         | 100.01      |
| Salary and wages            | 0        | 128.4         | 141.24         | 155.36         | 170.9       |

|  |             |                |                |                |                |
|--|-------------|----------------|----------------|----------------|----------------|
| Repair and Maintenance   | 0           | 199.49         | 199.49         | 199.49         | 199.49         |
| Packaging  | 0           | 450            | 532.58         | 621            | 717.75         |
| Selling & Admn Expenses  | 0           | 44.00          | 44.00          | 44.00          | 44.00          |
| <b>Total Cost of Production</b>  | <b>0</b>    | <b>3916.66</b> | <b>4511.2</b>  | <b>5159.76</b> | <b>5867.11</b> |
| <b>Profit before interest and taxes</b>  | <b>0</b>    | <b>1863.14</b> | <b>2655.74</b> | <b>3212.99</b> | <b>3797.89</b> |
|  |             |                |                |                |                |
| Interest on Term Loan*   | 0.00        | 72.65          | 52.14          | 31.63          | 11.11          |
| Interest on Working Capital  | 0           | 40.76          | 40.76          | 40.76          | 40.76          |
| <b>Total Interest Payment</b>  | <b>0.00</b> | <b>113.41</b>  | <b>92.90</b>   | <b>72.39</b>   | <b>51.87</b>   |
| Profit before Tax  | 0.00        | 1749.73        | 2562.84        | 3140.60        | 3746.02        |
| Income Tax   | 0           | 437.43         | 640.71         | 785.15         | 936.51         |
| <b>Net profit after tax</b>  | <b>0.00</b> | <b>1312.30</b> | <b>1922.13</b> | <b>2355.45</b> | <b>2809.51</b> |
| <b>Term loan interest for first year capitalised to account for the moratorium</b> |             |                |                |                |                |

As can be seen, the unit would be in profits after tax from second year onwards. The project has enough margin even at 40% capacity utilization.

| Projected Balance Sheet      |                |                |                |                |                |
|------------------------------|----------------|----------------|----------------|----------------|----------------|
| Rs. In Lakh                  |                |                |                |                |                |
| Particulars                  | 1st year       | 2nd year       | 3rd year       | 4th year       | 5th year       |
| <b>Liabilities</b>           |                |                |                |                |                |
| Capital                      |                |                |                |                |                |
| Opening Balance              | 0              | 448.02         | 1883.85        | 3805.98        | 6161.43        |
| Own Capital Contribution     | 448.02         | 123.53         |                |                |                |
| Retained Earnings            | 0.00           | 1312.30        | 1922.13        | 2355.45        | 2809.51        |
| <b>Total-Closing Balance</b> | <b>448.02</b>  | <b>1883.85</b> | <b>3805.98</b> | <b>6161.43</b> | <b>8970.94</b> |
| Term Loan                    | 745.96         | 559.47         | 372.98         | 186.49         | 0.00           |
| Working Capital Limit        | 0.00           | 370.57         | 370.57         | 370.57         | 370.57         |
| Sundry Creditors             | 0              | 137.25         | 149.09         | 174.03         | 200.87         |
| <b>Total Liabilities</b>     | <b>1193.98</b> | <b>2951.14</b> | <b>4698.62</b> | <b>6892.52</b> | <b>9542.38</b> |
| <b>Assets</b>                |                |                |                |                |                |
| Fixed Assets                 | 1120.06        | 1120.06        | 1120.06        | 1120.06        | 1108.97        |
| Gross Depreciation           | 0              | 160.77         | 297.98         | 415.11         | 515.12         |
| <b>Net Fixed Assets</b>      | <b>1120.06</b> | <b>959.29</b>  | <b>822.08</b>  | <b>704.95</b>  | <b>593.85</b>  |
| Sundry Debtors               | 0              | 82.35          | 89.45          | 104.42         | 120.52         |
| Stock in Hand                | 0              | 549            | 596.36         | 696.11         | 803.48         |
| Interest capitalised         | 73.92          | 0              | 0              | 0              | 0              |
| Cash and Bank Balance        | 0              | 1360.5         | 3190.73        | 5387.04        | 8024.53        |
| <b>Total Assets</b>          | <b>1193.98</b> | <b>2951.14</b> | <b>4698.62</b> | <b>6892.52</b> | <b>9542.38</b> |

The project is generating healthy profit from second year with the first year being moratorium as presented above. The breakeven analysis indicates the level of operation at which the operations will breakeven and not have any loss. It becomes important to identify the fixed and the variable costs. Even within variable component there is always a part which is fixed. For example, even if the plant is not running there will be lights and fans which will be used for administrative work, people will have to be paid salary for those days as well, etc. Accordingly, a portion of the variable expenses have been taken as fixed cost to arrive at the contribution and the total fixed cost. Total fixed cost divided by the contribution (fixed cost÷Contribution) gives us the breakeven point. In this case the breakeven capacity utilization in year 2 comes at 8% capacity utilisation.

| <b>Breakeven Point Analysis</b>                       |               |                 |
|---|---------------|-----------------|
|   | Rs. In Lakh   |                 |
| <b>Total Sale (Sales - opening WIP + closing WIP)</b> | <b>Year 1</b> | <b>Year 2</b>   |
| Net Sales   | 0.00          | 4446.00         |
| Less: Opening Stock                                   | 0.00          | 0.00            |
| Add: Closing Stock                                    | 0.00          | 1170.00         |
| <b>Total Production/Sales</b>                         | <b>0.00</b>   | <b>5616.00</b>  |
| <b>Variable Expenses</b>                              |               |                 |
| Raw Material and Packaging                            | 0.00          | 2862.00         |
| Interest on working Capital                           | 0.00          | 40.76           |
| Repair and Maintenance                                | 0.00          | 49.87           |
| Salary expenses                                       | 0.00          | 12.84           |
| Sales & Admin Expenses                                | 0.00          | 6.60            |
| Energy - Electricity                                  | 0.00          | 158.76          |
| <b>Total</b>  | <b>0.00</b>   | <b>3130.83</b>  |
| <b>Contribution</b>                                   | <b>0.00</b>   | <b>2485.17</b>  |
| <b>Contribution per unit (per tonne)</b>              | <b>NA</b>     | <b>72665.79</b> |
| <b>Fixed expenses</b>                                 |               |                 |
| Interest on Term Loan                                 | 0.00          | 72.65           |
| Repair and Maintenance                                | 0.00          | 149.62          |
| Salary expenses                                       | 0.00          | 115.56          |
| Sales & Admin Expenses                                | 0.00          | 37.40           |
| Energy - Electricity                                  | 0.00          | 3.24            |
| Depreciation  | 0.00          | 160.77          |
| <b>Total</b>  | <b>0.00</b>   | <b>539.24</b>   |
| Capacity utilisation                                  | 0%            | 40%             |
| <b>Operating Profit</b>                               | <b>0.00</b>   | <b>1945.93</b>  |
| <b>Breakeven point in physical units</b>              | <b>NA</b>     | <b>742</b>      |
| <b>Breakeven point in capacity utilisation (%)</b>    | <b>NA</b>     | <b>8%</b>       |

| Cash Flow Statement              |                |                |                |                |                |
|----------------------------------|----------------|----------------|----------------|----------------|----------------|
|                                  |                |                |                |                | Rs. In Lakh    |
| Particulars                      | 1st year       | 2nd year       | 3rd year       | 4th year       | 5th year       |
| <b>Sources of Fund</b>           |                |                |                |                |                |
| Own margin                       | 448.02         | 123.53         |                |                |                |
| Profit Before Interest and Tax   | 0.00           | 1863.14        | 2655.74        | 3212.99        | 3797.89        |
| Depreciation                     | 0.00           | 160.77         | 137.21         | 117.13         | 100.01         |
| Working Capital accretion        | 0.00           | 370.57         | 0.00           | 0.00           | 0.00           |
| Term Loan accretion              | 672.04         | 73.92          | 0.00           | 0.00           | 0.00           |
| Creditors                        | 0.00           | 137.25         | 11.84          | 24.94          | 26.84          |
| <b>Total</b>                     | <b>1120.06</b> | <b>2729.18</b> | <b>2804.79</b> | <b>3355.06</b> | <b>3924.74</b> |
| <b>Uses of Fund</b>              |                |                |                |                |                |
| Fixed Assets                     | 1120.06        | 0.00           | 0.00           | 0.00           | 0.00           |
| Stock in Trade - Accretion       | 0.00           | 549.00         | 47.36          | 99.75          | 107.37         |
| Debtors - Accretion              | 0.00           | 82.35          | 7.10           | 14.97          | 16.10          |
| Repayment of term Loan           | 0.00           | 186.49         | 186.49         | 186.49         | 186.49         |
| Interest on Term Loan            | 0.00           | 72.65          | 52.14          | 31.63          | 11.11          |
| Interest on working capital      | 0.00           | 40.76          | 40.76          | 40.76          | 40.76          |
| Income Tax                       | 0.00           | 437.43         | 640.71         | 785.15         | 936.51         |
| Accretion in cash & bank balance | 0.00           | 1360.50        | 1830.23        | 2196.31        | 2626.40        |
| <b>Total</b>                     | <b>1120.06</b> | <b>2729.18</b> | <b>2804.79</b> | <b>3355.06</b> | <b>3924.74</b> |

The cash flow statement above indicates that chance of any problem with the cash is very little or so to say practically nil in the project. The project generates sufficient cash, and the entrepreneur can maintain a healthy cash balance for any eventuality or a rainy day. There are risks like equipment failure and the repair time required for the same, sudden problem with supply of raw material or shipment not arriving, etc. Now these are unforeseen risk which always cannot be factored in. It is for these kinds of problems that a healthy cash balance is necessary for running a business. This project enables the entrepreneur to have that.

| Calculation of DSCR                |             |                |                |                |               |
|------------------------------------|-------------|----------------|----------------|----------------|---------------|
| Particulars                        | 1st year    | 2nd year       | 3rd year       | 4th year       | 5th year      |
| <b>Cash Accruals</b>               |             |                |                |                |               |
| Depreciation                       | 0           | 160.77         | 137.21         | 117.13         | 100.01        |
| Profit before interest and taxes   | 0           | 1863.14        | 2655.74        | 3212.99        | 3797.89       |
| <b>Total</b>                       | <b>0</b>    | <b>2023.91</b> | <b>2792.95</b> | <b>3330.12</b> | <b>3897.9</b> |
| Repayments                         |             |                |                |                |               |
| Interest on Term Loan              | 0.00        | 72.65          | 52.14          | 31.63          | 11.11         |
| Term Loan Instalments              | 0.00        | 186.49         | 186.49         | 186.49         | 186.49        |
| <b>Total</b>                       | <b>0.00</b> | <b>259.14</b>  | <b>238.63</b>  | <b>218.12</b>  | <b>197.60</b> |
| <b>Debt Service Coverage Ratio</b> | <b>NA</b>   | <b>7.81</b>    | <b>11.7</b>    | <b>15.27</b>   | <b>19.73</b>  |

The debt service coverage ratio from second year is 7.81 and above indicating that the project should not have any problem in servicing the loan in the structure suggested which is a five-year loan including one year moratorium.

## IRR/NPV and BC Ratio

The calculation for internal rate of return (IRR) a, BC Ratio and net present value (NPV) is given below. The BC ratio is a healthy 1.35 considering a discount rate of 15%. The net present value of future benefits at a discount rate of 15% comes to Rs. 6514.70 lakh. And the internal rate of return comes to 124% which essentially indicates that at 124% discount rate the net present value of net benefits would be zero. This also acts as an indicator of the risk bearing capacity of the project.

| BC Ratio, NPV and IRR         |                |                |                |                |                |                |                | (Amt in Rs. Lakh) |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------|
| Costs and revenue items       | 1st year       | 2nd year       | 3rd year       | 4th year       | 5th year       | 6th year       | 7th year       | 8th year          |
| <b>Fixed Costs</b>            | 1120.06        |                |                |                |                |                |                |                   |
| <b>Variable costs</b>         |                |                |                |                |                |                |                |                   |
| Raw material                  | 0              | 2862           | 3380.94        | 3944.48        | 4555.76        | 5218.62        | 5936.16        | 6712.68           |
| Salary                        | 0              | 128.4          | 141.24         | 155.36         | 170.9          | 187.99         | 206.79         | 227.47            |
| Electricity                   | 0              | 162            | 182.25         | 202.5          | 222.75         | 243            | 263.25         | 283.5             |
| Maintenance                   | 0              | 199.49         | 199.49         | 199.49         | 199.49         | 199.49         | 199.49         | 199.49            |
| Sales and Admin exp           | 0              | 44             | 44             | 44             | 44             | 44             | 44             | 44                |
| <b>Total Costs</b>            | <b>1120.06</b> | <b>3395.89</b> | <b>3947.92</b> | <b>4545.83</b> | <b>5192.9</b>  | <b>5893.1</b>  | <b>6649.69</b> | <b>7467.14</b>    |
| Rate of discount              | 15%            |                |                |                |                |                |                |                   |
| Present value of costs        | 18807.09       |                |                |                |                |                |                |                   |
| <b>Revenues</b>               |                |                |                |                |                |                |                |                   |
| <b>Sale of finished goods</b> |                |                |                |                |                |                |                |                   |
| 1 kg pack of rice bran oil    |                | 4446.00        | 5517.68        | 6447.60        | 7440.53        | 8550.23        | 9731.93        | 10985.63          |
| <b>Total</b>                  | <b>0</b>       | <b>4446</b>    | <b>5517.68</b> | <b>6447.6</b>  | <b>7440.53</b> | <b>8550.23</b> | <b>9731.93</b> | <b>10985.63</b>   |
| Rate of discount              | 15%            |                |                |                |                |                |                |                   |
| Present value of benefits     | 25321.79       |                |                |                |                |                |                |                   |
| <b>BC Ratio</b>               | 1.35           |                |                |                |                |                |                |                   |
| <b>Net Benefits</b>           | -1120.06       | 1050.11        | 1569.76        | 1901.77        | 2247.63        | 2657.13        | 3082.24        | 3518.49           |
| Rate of discount              | 15%            |                |                |                |                |                |                |                   |
| <b>NPV</b>                    | 6514.70        |                |                |                |                |                |                |                   |
| <b>IRR</b>                    | 124%           |                |                |                |                |                |                |                   |

The project on Rice Bran oil Production indicates that it is a highly profitable business. However, the same is because land cost has not been factored in and has been taken as own land. A 4-5 acre nonagricultural land may cost around 7.5 to 10 crore in a district like Burdwan where the maximum rice mills are located. Moreover, the same would not be as profitable if done on a smaller scale. While the projected would still be viable, even then, the profitability naturally would come down.

## Registration/Certification

There are four registrations necessary for MSMEs which are involved in food processing. A brief on the same is given below:

1. **GST:** GST registration in today's environment is a necessity for anyone doing a business. The entrepreneur must get himself registered for the same first. Many of the benefits given by central government is being linked to GST registration. Necessary system should be put in place to file the GST return from time to time as per the rules laid down by GoI.  
  
(<https://reg.gst.gov.in/registration/>)
2. **FSSAI:** The processing units should follow the Food Safety and Standard Authority of India (FSSAI) act 2006. FSSAI Act is applicable pan India for all food products. It prescribes minimum standards operating procedures, food safety norms, packaging & labeling norms. The new units need to take a license called FSSAI number from Food Safety and Standards Authority of India. The registration can be done at FSSAI website. (<https://fssai.gov.in/cms/registration.php>)
3. **UDYAM:** The entrepreneur may consider getting himself registered in UDYAM (<https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm>).
4. **ISO:** ISO certification is a seal of approval from a third party body that a company runs to one of the international standards developed and published by the International Organization for Standardization (ISO). It is absolutely essential if one wants to venture into exports. Even for domestic sales this certification adds value. A person feels comfortable with ISO certification mentioned in the packaging along with FSSAI registration. Various agencies are there doing this job of certification. One such site available is <https://legalwaycertification.com/iso/>. There are many other such agencies that have been authorized to issue ISO certification.

All three viz., GST registration, FSSAI registration and ISO certification has to be mentioned on the packaging. It is also important that these certifications are renewed as and when required. For example, ISO certification is valid for 1 year in many cases. If so, the certification needs to be renewed every year. In addition to the ones stated above, it would be necessary to take fire and pollution clearances. It would also be advisable choose a brand name for the product and secure the name with trademark.

Having a trademark is useful for bulk sale and is necessary for direct marketing as well as exports.



# Model Project Report on **Processing of Spices**

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# Processing of Spices (powdered Spices)

## Introduction

Indian spices are known for its flavours and India is aptly named as the home of spices as well as the land of spices. In addition to being the leading producer and exporter of spices in the world the country has the most prominent domestic spice market in the world. China is the second largest producer of spices. Out of the 109 spices all over the world, 52 of them are grown in India. India produces around 5.75 million tonnes of spices from an area of 3.21 million ha. The share of spices in the total agricultural export is around 6% and India's share in world spice trade is 40 to 50% by volume and 25 to 30% by value. The major spice producing states in India are Andhra Pradesh, Gujarat, Rajasthan, Karnataka, Madhya Pradesh and Tamil Nadu. The various kinds of important spices produced in India are pepper, cardamom, chilli, ginger, turmeric, Seed spices, et cetera.

## Promoters - Some specific requirements

The details of the promoters will have to be obtained along with other information. The Proforma for promoter detail is given in Annexure – 1.

## History of the company

The project has been prepared as if a new set up is being made for the purpose of cornflakes processing the same could be part of another company or a new company all together. The details of the existing company or the proposed company have to be obtained/presented in the project report. Format for company report is given in Annexure-2.

## Finished product and its utility

India has diverse soil and climate and agricultural regions which provides the opportunity to grow a variety of spice crops. These are low volume and high-value spice crops play a unique role in Indian economy by improving the income of the rural people. The demand for Indian spices is very high in other countries and hence we have a good scope of exports. However, for exports special license has to be taken.

Spices by nature can improve the palatability and the appeal of dull diets. Its flavours stimulate salivation and promote digestion. It improves health and has antibacterial and preservative properties. The strong preservative quality of many spices even made them ideal for embalming in olden days.

## Market, Demand and Major Competitors

The demand for spices both domestic and international is high. As stated earlier India is the largest producer of spices and 90% of the production is consumed domestically. Covid19 outbreak also gave a boost to spices

consumption because of the belief that it increases immunity. In the financial year 2020, India exported spices worth over Rs.250 billion. India is an exporter to over 180 countries. In the financial year 2019, the United States, Bangladesh, and the United Arab Emirates accounted for more than half of the spices exported in terms of value.

Domestically there are big corporate producing processed spices. There are also local players producing comparatively smaller quantities and targeting only the local market. While demand for spices is increasing, the location of the unit has to be carefully decided upon based on which market the entrepreneur would like to cater.

*Note: In addition details of localized competition, has to be mentioned while preparing the final DPR based on where the unit is going to be set up.*

## Raw Materials Requirements

The raw material required is different kind of spices. The raw Material procured has to be pre-treated one. In this project the processing of the spices starts after that. Because of the fact that the spices are having high quantum of microbes, It becomes necessary to pre-treat Either by Ethylene oxide or irradiation or steam treatments or by using high hydrostatic pressure. Ethylene oxide is most commonly used and for practical and safety purposes is normally diluted with 80% carbon dioxide. However, ethylene oxide treatment is banned in many countries like Japan and some of the european nations because the same has been labeled as a carcinogen by the world health organisation. Accordingly depending on which market the entrepreneur wants to target he has to be clear about the pretreatment given to the harvested spices.

One can go in for processing different kinds of spices. When powdered spices are taken up, it could be for different spices. Combinations of spices to prepare things like sambhar masala, Chhole masala, etc., could also be considered but for that the knowledge of these combinations is necessary and also a deep knowledge of the market. For example preparing sambhar masala in West Bengal and trying to sell it locally may not work out as having dosa, idly or medu wada is not a rule here. The most commonly used powdered spices are chilli, dhania, jeera, black pepper and mustard in West Bengal. It is assumed that the entrepreneur would sell his produce in the local market initially to create a brand or will tie up with brands like Big Basket to sell the produce in bulk. For our project initially the combination taken is that of Red Chilli, Dhania and jeera powder at a proportion of 1:1:2. The same needs to be factored in for price of raw material and price of finished goods. Turmeric powder is also required but different grinding machine is used for the same. In case it is decided to diversify further the same can be procured later after the business and brand with three products stabilizes.

## Manufacturing Process

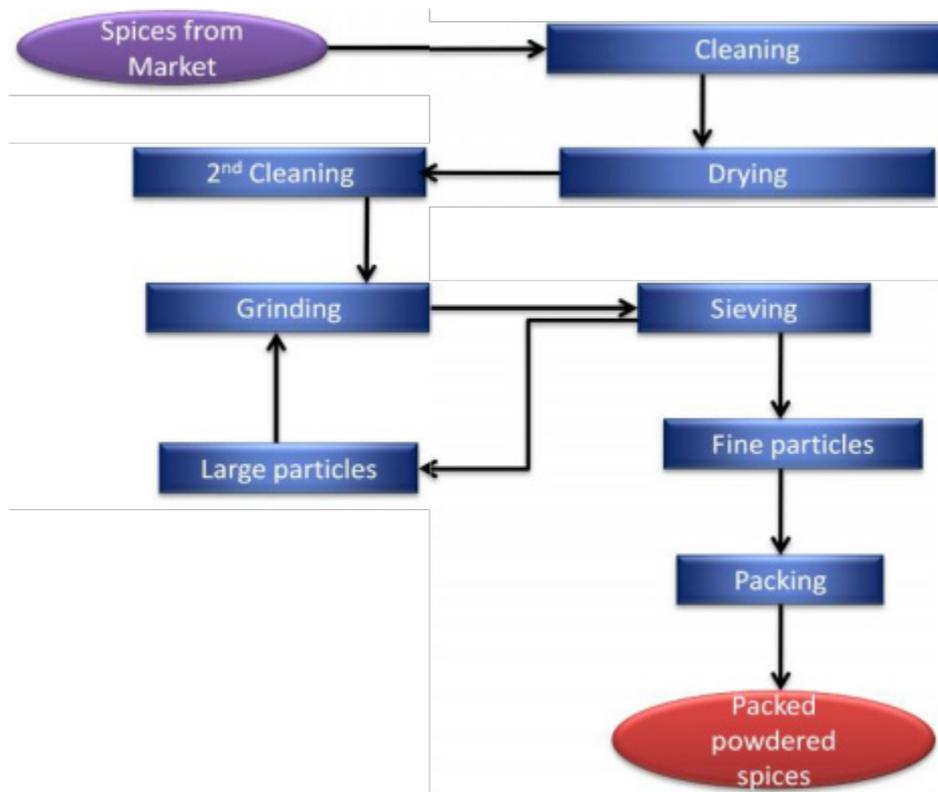
The process for manufacturing of powdered spices is well-established. The general process which is followed is explained here.

- The spices obtained from the market cleaned first. All foreign particles like mud, small stones, etc., are removed from the raw material at this stage.
- The spices are then dried to reduce the moisture content and cleaned again.
- The dried spices are then sent for grinding.
- The spices after grinding are passed through sieves to remove the larger particles if any. ➤ The spice powders are then packed in polythene packets and sealed

## SWOT Analysis

|   |  |
|---|--|
| <p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>➤ It's a daily need product is every household. No Indian food is cooked without spices</li> <li>➤ Spices also have there health benefits</li> </ul> | <p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>➤ Demand forecasting has to be very carefully done as there are large number of players both local and national</li> </ul> |
| <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>➤ People keen in looking for good quality spices. Product can be abig success if positioned accordingly</li> </ul>                               | <p><b>Threats</b></p> <ul style="list-style-type: none"> <li>➤ National level competitors</li> <li>➤ Highly automated plants can become a threat in the long run.</li> </ul>             |

**Flow Chart for spices Processing**



## Financial Aspects of the Project

### Infrastructure required

Any project preparation is based on a set of assumptions made which are close to the market reality. In this project the land used is assumed to be own land. The major component of a Spices processing unit is land, building, plant and machinery and civil works. List of all the assumptions made is given in Annexure 3. Raw material storage would be for about a month. Finished goods inventory would be for 15 days. The building would have a raw material storage room, one finished goods storage room, and the main processing room along with an office room and toilet. Space required would be of around 2500 sq. ft but for the project 3000 sq ft. has been assumed taking into account the possibility of future expansion.

### Land and its development

A plot of approximately 4000 sq.ft would be necessary for setting up a spices processing factory of this scale. The land should be free from any encumbrance and shall be mortgageable. The land should be classified as non-agriculture. Permission for non-agriculture use, wherever applicable, shall be obtained for the land.

### Size of the unit

The capacity has been restricted to 240 tonnes of spices per annum. It would be better to restrict the size of operation at this level because of two reasons. The raw material will be sourced from the local wholesalers. In the first 2 years, the brand would have to establish itself in the locality. Based on estimates this would be adequate to cater to the market surrounding the production area. Second reason is marketing of end product. As one has to go in for direct marketing, it would be necessary to have a brand which needs to be established in quick time in the last phase of the first year and beginning of second year. And then the same will get settled in a year or two and earn a good name if quality is maintained. It is because of all this the maximum capacity utilisation has been kept at a very conservative level with a room for even doubling the production from third year if the demand comes up. A combination of bulk sale and direct marketing can be tried out if the sales don't pick up in the first year or two.

### Machineries and Equipment

Various machineries and equipments will be required for setting up the plant The list of such equipment and number of such units required for setting up a Spices processing plant along with Miscellaneous fixed assets for which investment has to be made is given below. This would have a maximum capacity 800 kg @ rate of 8 hours per day. For 300 days in a year this would mean 240 tonnes per annum. Equipments listed takes care of a higher production. This is to overcome initial inefficiency as well as enable room for expansion in production beyond the levels assumed. In order to ensure that the work continues uninterrupted, a 20 KV DG genset has been provided for to take care of any power failure.

Mostly the effluent generated by a spices grinding unit will be dirt and organic matter in wastewater and the treatment of the same is necessary before it is released or it can even be recycled. The same has also been factored in the project cost

| Processing Equipment cost |  |      |   |           |               |
|---------------------------|--|------|---|-----------|---------------|
| Sl no.                    | Machine  | Unit |   | Unit Cost | Amount in Rs. |
| 1                         | Spice Cleaning Machine 2*2 i.e. 4 HP   |      | 2 | 90000     | 90000         |
| 2                         | Dry Destoner 5 HP  |      | 1 | 85000     | 85000         |
| 3                         | Dryer Machine 4 HP   |      | 2 | 160000    | 160000        |
| 4                         | Fully Automated spice grinder machine 6 HP   |      | 1 | 500000    | 500000        |
| 5                         | Packing machine 2 HP   |      | 1 | 450000    | 450000        |
| 6                         | Other small equipments like bucket, steel containers, etc as a set and a small testing lab         |      | 1 | 200000    | 200000        |
| 7                         | 20 KVA DG Set  |      | 1 | 230000    | 230000        |
| 8                         | Effluent Treatment   |      | 1 | 500000    | 500000        |
|                           | Total  |      |   |           | 2215000       |
|                           | Addl Cost for transportation, GST, Installation and training as a percentage of the equipment cost |      |   | 30%       | 664500        |
|                           | Total cost incl GST, etc.  |      |   |           | 2879500       |

1. Prices quoted on Indiamart or companies are generally excluding GST, Transportation charges, installation charges, travel cost and training as well as any other taxes applicable. Accordingly, an additional 30% has been taken on the ex-factory equipment cost.
2. Based on the searches on Indiamart, it is observed that there are companies supplying all the equipments giving a single window solution. It is suggested that it would be better for an entrepreneur to buy all equipments from a single vendor because the following reasons.
  - a. There will not be any mismatch between equipments and automation would be smoother.
  - b. Single point of contact would not allow any blame game between vendors in case something goes wrong.
  - c. Power assessment would be better and line can be drawn accordingly
  - d. A single unit set up by any of these can be visited to get a clear overview.
  - e. Training would be much easier as it would from one agency

The packaging machine would depend on what volume we want to pack. As we are targeting direct marketing in this case, packaging would be for say 100/200 grams to a maximum of 500 grams.

| Miscellaneous fixed assets |   |       |    |           |                |
|----------------------------|---|-------|----|-----------|----------------|
| Sl. No.                    | Particulars   | Units |    | Unit cost | Amount in Rs.  |
| 1                          | Electrical and water Connection                                       |       | 1  | 200000    | 200000         |
| 2                          | Chairs  |       | 11 | 2000      | 22000          |
| 3                          | Table   |       | 2  | 5000      | 10000          |
| 4                          | Computer  |       | 2  | 50000     | 100000         |
| 5                          | Printer   |       | 1  | 15000     | 15000          |
| 6                          | 1 ton Vehicle for transportation of raw material and processed spices |       | 2  | 800000    | 1600000        |
|                            | <b>Total</b>  |       |    |           | <b>1947000</b> |

Given the fact that the raw material would be procured from local wholesalers or from Indiamart, we need not stock raw material for more than a month. Only a room adjacent to the processing room would be made to store the raw material. No separate silo need to be created for this purpose. Similarly finished goods inventory would not be more than 15 days. The production would be managed accordingly. The finished goods will also be stored in a room adjacent to the production area. Two room of 400 sq ft each with racks should be sufficient for this purpose. A production area of 1800 sq ft and 400 sq ft for office room and toilet should be sufficient to set up an unit of this size. The project could be done on a 4000 sq ft plot. The total building cost is given in table below:

| Land and Building                 |                       |                  |                |
|-----------------------------------|-----------------------|------------------|----------------|
| Particulars                       | Area reqd             | Rate/sqft in Rs. | Amount in Rs.  |
| Land cost                         | Own land - 4000 sq ft |                  | 0              |
| Building cost @ 1430/-- per sq ft | 3000                  | 1430             | 4290000        |
|                                   |                       |                  |                |
| <b>Total cost</b>                 |                       |                  | <b>4290000</b> |

The total bank loan component based on the assumptions made and unit costs taken would be as follows:

| Project Summary                   |  |  |                |
|-----------------------------------|--|--|----------------|
| Project Cost excluding land       |  |  | <b>9116500</b> |
| <b>Preoperative Expenses</b>      |  |  | <b>91165</b>   |
| Total Project Cost excluding land |  |  | <b>9207665</b> |
| Own Contribution                  |  |  | <b>3683066</b> |
| Estimated Bank loan               |  |  | <b>5524599</b> |
| Own Contribution in Rs. Lakh      |  |  | <b>36.83</b>   |
| <b>Bank Loan in Rs. Lakh</b>      |  |  | <b>55.25</b>   |

In addition interest cost of the first year will be capitalized as the project would need a moratorium for 12 months. This would increase the outstanding at the end of the first year.

### Project Timeline

The project to start off production would need around one year for implementation to be completed. The breakup for the same is given in table below:

| Activity                                     |          |
|--|----------|
| Arrangement of finance                       | 3 months |
| Building of premises/Acquisition of premises | 6 months |
| Procurement of equipments                    | 2 months |
| Recruitment of manpower                      | 1 month  |
| Training                                     | 1 month  |

As recruitment of manpower can be done along with procurement of equipment and the activity would not be part of the critical path, the total time taken would be 12 months for setting up the project and to reach a position to start production. Hence, one year moratorium has been taken. If “ready to move in” premises suitable for the project is acquired, then the timeline would come down by around 3 months. However, in this project it has been assumed that the unit will be set up in own land and costing has been done assuming the same.

### Price of Raw material and finished goods

It is Imperative that there should be a basis for having a price for the raw material and finished goods specially when a variety of spices will be processed. In this model project report is has bveen assumed that red Chilli, Coriander and Cumin w ill be processed at 1:1:2 ratio. Accordingly for ease of calculation and understanding a weighted average cost of raw material and finished goods have been arrived at as per the details given below:

| Weighted Average price of raw material and finished goods |     |                           |                           |
|---|-----|---------------------------|---------------------------|
| Product mix red Chilli:Dhania:Jeera (1:1:2)               |     | Raw Material Prices Rs/kg | finished goods Rs/100 gms |
| Chilli  | 25% | 175                       | 30                        |
| Dhania  | 25% | 70                        | 15                        |
| Jeera   | 50% | 170                       | 35                        |
| Weighted Average price                                    |     | 146.25                    | 28.75                     |

### Working Capital requirement

Working capital requirement has been assessed keeping in view the banking requirements. Own contribution has been taken at 25%. However, before calculating the working capital requirement it is necessary to find out the overall raw material requirement, production and details of stock based on the assumptions stated

above from which working capital requirement is generated. In the following tables details of working capital requirement is assessed

Capacity utilisation in the second year has been kept at a very modest level of 50% as the market linkages has to be set up and brand has to establish itself in the surrounding locality. Processed spices production in the first five years of the project is expected to be as follows:

| Spices Production for 5 years                   |             |               |               |               |               |
|---|-------------|---------------|---------------|---------------|---------------|
| Production Period                               | 1st year    | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Capacity Utilisation                            | 0%          | 50%           | 55%           | 60%           | 65%           |
| Raw material requirement per day                | 0           | 0.4           | 0.44          | 0.48          | 0.52          |
| Raw material required in tonnes                 | 0           | 120           | 132           | 144           | 156           |
| Rate per tonne in Rs.                           | 0           | 146250        | 157219        | 169010        | 181686        |
| Cost of packaging material per 100 grams        | 0           | 2             | 2.15          | 2.31          | 2.48          |
| Total Cost in Rs. Lakh                          | 0           | 177.66        | 210.08        | 246.37        | 286.91        |
| <b>Calculation of Sales</b>                     |             |               |               |               |               |
| Particulars                                     | 1st year    | 2nd year      | 3rd year      | 4th year      | 5th year      |
| <b>Production of Spices</b>                     |             |               |               |               |               |
| Opening Stock                                   | 0           | 0             | 5.4           | 5.94          | 6.48          |
| Production in tonnes                            | 0           | 108           | 118.8         | 129.6         | 140.4         |
| Closing Sock                                    | 0.00        | 5.40          | 5.94          | 6.48          | 7.02          |
| Net Sales in tonnes                             | 0           | 102.6         | 118.26        | 129.06        | 139.86        |
| Sales price per packet of 100 gm incl packaging | 0           | 28.75         | 30            | 32            | 34            |
| <b>Sales value in Rs. Lakh</b>                  | <b>0.00</b> | <b>294.98</b> | <b>354.78</b> | <b>412.99</b> | <b>475.52</b> |

Working capital requirement has to be evaluated based on the above mentioned details. The same is given in the table below:

| Working Capital Assessment  |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|
| Computation of value of closing stock and working capital requirement |          |          |          |          |          |
| Particulars   | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| Finished goods inventory in tonnes                                    | 0        | 5.4      | 5.94     | 6.48     | 7.02     |
| Price of finished good/100 grams in Rs.                               |          |          |          |          |          |
| including packaging material  | 0        | 28.75    | 30       | 32       | 34       |
| Total finished goods stock price in Rs.                               | 0        | 1552500  | 1782000  | 2073600  | 2386800  |
| Raw material inventory in tonne                                       | 0        | 12       | 13.2     | 14.4     | 15.6     |
| Price of Raw Material/tonne in Rs.                                    | 0        | 146250   | 157219   | 169010   | 181686   |
| Packaging Material per 100 grams                                      | 0        | 2        | 2.15     | 2.31     | 2.48     |
| Total Raw Material Stock Price  | 0        | 1971000  | 2103671  | 2467008  | 2872990  |

| Working Capital Assessment   |          |              |              |              |              |
|--|----------|--------------|--------------|--------------|--------------|
| Total value of stock   | 0        | 3523500      | 3885671      | 4540608      | 5259790      |
| Amount in Lakh   | 0        | 35.24        | 38.86        | 45.41        | 52.6         |
| Less Creditors in lakh   | 0        | 8.81         | 9.72         | 11.35        | 13.15        |
| Paid Stock in lakh   | 0        | 26.43        | 29.14        | 34.06        | 39.45        |
| Add sundry debtors in lakh   | 0        | 5.29         | 5.83         | 6.81         | 7.89         |
| <b>Total</b>   | <b>0</b> | <b>31.72</b> | <b>34.97</b> | <b>40.87</b> | <b>47.34</b> |
| <b>Own contribution @ 25%</b>  | <b>0</b> | <b>7.93</b>  | <b>8.74</b>  | <b>10.22</b> | <b>11.84</b> |
| <b>Working Capital requirement in Rs. Lakh</b>   | <b>0</b> | <b>23.79</b> | <b>26.23</b> | <b>30.65</b> | <b>35.5</b>  |
| <b>* WC requirement has been taken based on the requirement of the second year as the first year would be treated as moratorium period for setting up the project.</b> |          |              |              |              |              |

The project is expected to generate sufficient cash and working capital limit is pegged at the requirement of the second year, first year being the moratorium for setting up the factory.

### Other Expenses

There are other expenses which may be also termed as running cost. They are mainly salary, rental charges for the premises and electricity charges. The details of these expenses are given below:

| Labour and Staff Salary/wages |                         |                  |                        |                |
|-------------------------------|-------------------------|------------------|------------------------|----------------|
| Particulars                   | Wages/ Salary per month | No. of employees | Total Salary per month | Annual Salary  |
| Manager                       | 30000                   | 1                | 30000                  | 360000         |
| Accountant                    | 25000                   | 1                | 25000                  | 300000         |
| Helper                        | 10000                   | 1                | 10000                  | 120000         |
| Plant Operator                | 20000                   | 1                | 20000                  | 240000         |
| Skilled labour                | 15000                   | 3                | 45000                  | 540000         |
| Unskilled labour              | 10000                   | 4                | 40000                  | 480000         |
| <b>Total Salary</b>           |                         |                  | <b>170000</b>          | <b>2040000</b> |

| Projected Salary Expenses                   |          |          |          |          |          |  |
|---|----------|----------|----------|----------|----------|--|
| Salary expenses Projection                  | 1st year | 2nd year | 3rd year | 4th year | 5th year |  |
| <b>Annual Salary expenses</b>               | 0        | 2040000  | 2244000  | 2468400  | 2715240  |  |
| <b>Salary expenses rounded off to lakhs</b> | 0        | 20.4     | 22.44    | 24.68    | 27.15    |  |

| Electricity Charges                   |          |          |          |          |          |
|---------------------------------------|----------|----------|----------|----------|----------|
| Particulars                           | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| Capacity Utilisation                  | 0%       | 50%      | 55%      | 60%      | 65%      |
| Consumption of power per day in units | 0        | 150      | 165      | 180      | 195      |
| Rate per unit in Rs.                  | 9.00     | 9.00     | 9.00     | 9.00     | 9.00     |
| Power bill per month in Rs.           | 0        | 33750    | 37125    | 40500    | 43875    |

| Electricity Charges       |   |        |        |        |        |
|---------------------------|---|--------|--------|--------|--------|
| Total power bill per year | 0 | 405000 | 445500 | 486000 | 526500 |
| Power bill in Rs. Lakh    | 0 | 4.05   | 4.46   | 4.86   | 5.27   |

| Packaging Cost                         |             |              |              |              |              |
|--|-------------|--------------|--------------|--------------|--------------|
| Particulars                            | 1st year    | 2nd year     | 3rd year     | 4th year     | 5th year     |
| Cost of Packaging per unit (100 grams) | 0           | 2            | 2.15         | 2.31         | 2.48         |
| Total Production in kg                 | 0           | 108000       | 118800       | 129600       | 140400       |
| <b>Packaging cost in Rs. Lakh</b>      | <b>0.00</b> | <b>21.60</b> | <b>25.54</b> | <b>29.94</b> | <b>34.82</b> |

| Selling, transportation and administrative expenses           |          |                |                |                |                |
|---|----------|----------------|----------------|----------------|----------------|
| Particulars   | 1st year | 2nd year       | 3rd year       | 4th year       | 5th year       |
| Sales and branding expenses per annum                         | 0        | 1000000        | 1000000        | 1000000        | 1000000        |
| Admin Expenses  | 0        | 480000         | 480000         | 480000         | 480000         |
| Transportation charges  | 0        | 480000         | 480000         | 480000         | 480000         |
| <b>Total Expenditure on Sales, Admin &amp; Transportation</b> | <b>0</b> | <b>1960000</b> | <b>1960000</b> | <b>1960000</b> | <b>1960000</b> |

All these costs will be factored in later in the report while evaluating the financial benefits of the project

## Depreciation

The depreciation calculation is as follows:

| Depreciation Calculation                           |          |                |                |               |               |
|--|----------|----------------|----------------|---------------|---------------|
| Particulars  | 1st year | 2nd year       | 3rd year       | 4th year      | 5th year      |
| Total value of equipments                          | 0        | 4826500        | 4102525        | 3487146       | 2964074       |
| Depreciation @15%                                  | 0        | 723975         | 615379         | 523072        | 444611        |
| Value at the end of the year to be carried forward | 0        | 4102525        | 3487146        | 2964074       | 2519463       |
| Total Value of building                            | 0        | 4290000        | 3861000        | 3474900       | 3127410       |
| Depreciation of building@10%                       | 0        | 429000         | 386100         | 347490        | 312741        |
| Value at the end of the year to be carried forward | 0        | 3861000        | 3474900        | 3127410       | 2814669       |
| <b>Total depreciation</b>                          | <b>0</b> | <b>1152975</b> | <b>1001479</b> | <b>870562</b> | <b>757352</b> |
| Total depn in Rs. Lakh                             | 0        | 11.53          | 10.01          | 8.71          | 7.57          |

## Repairs and maintenance

In case of new equipments including computers, generally they give a warranty for one year. Thus the maintenance cost would be starting from the second year onwards. The same in general is given at a service charge of 15% per annum. In case there are any major spares to be replaced the cost of that has to be borne

by the customers. Given these general terms, it can be taken at 20% of the equipment cost per annum. The same would then be as follows:

| Cost of Maintenance            |         |
|--------------------------------|---------|
| Particulars                    | Amount  |
| Total fixed cost               | 4826500 |
| Maintenance cost in percentage | 20%     |
| Cost of Maintenance            | 965300  |
| Maintenance cost in Rs. Lakh   | 9.65    |

### Cost of Project and Means of Finance

Based on the data presented above on cost of plant and machinery, working capital requirement, etc., the cost of the project and means of finance required can be summarized as follows:

| Cost of The Project                                    |        |
|--|--------|
| (in Rs. Lakh)  |        |
| Particulars  | Amount |
| Land & Building*                                       | 42.90  |
| Plant & Machinery                                      | 28.80  |
| Misc. Items & Pre-op expenses                          | 20.38  |
| Working Capital  | 31.72  |
| Total  | 123.80 |
| *Land is assumed as own land and hence cost taken is 0 |        |

| Means of Finance                 |        |
|----------------------------------|--------|
| (in Rs. Lakh)                    |        |
| Particulars                      | Amount |
| Own Contribution                 | 36.83  |
| Term Loan from Bank              | 55.25  |
| Working Capital Own contribution | 7.93   |
| Working Capital                  | 23.79  |
| total                            | 123.80 |

The detailed repayment schedule of the term loan is indicated in Annexure 4. The interest for the first year is capitalized and loan outstanding accordingly increased in the end of the first year. It is assumed that the working capital limit given will be renewed every year for the next five years. Any increase in the working capital may not be necessary as the project should be able to generate sufficient profits and the internal

accruals should be able to take care of additional working capital requirements. The summary of interest payment for working capital and term loan and principal repayment is given in the table below:

| Year-wise Interest on Bank Loan   |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|
| Particulars   | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| Interest on Term Loan in Rs.*   | 0        | 597305   | 428654   | 260001   | 91351    |
| Interest on Term Loan in Rs. Lakh   | 0.00     | 5.97     | 4.29     | 2.60     | 0.91     |
| Interest on working Capital   | 0        | 2.62     | 2.62     | 2.62     | 2.62     |
| Principal Repayment in Rs.  | 0        | 1533192  | 1533192  | 1533192  | 1533176  |
| Principal Repayment in Rs. Lakh   | 0.00     | 15.33    | 15.33    | 15.33    | 15.33    |
| Balance outstanding - end of the year   | 61.33    | 46.00    | 30.67    | 15.34    | 0.00     |
| * Interest on term loan has been capitalised for 12 months due to moratorium leading to increase in the capital outlay. |          |          |          |          |          |

## Financial Statements

The profitability of the project can be judged based on the financial statements generated based on the data presented above in the series of tables. Accordingly the projected Profit and loss account, Balance sheet, and cash flow statement along with breakeven analysis is presented in the tables below. During the moratorium period the interest is charged by the bank which has to be capitalized to ensure that the same is repaid over wa period of time. Capitalisation thus leads to increase in the loan quantum at the end of the first year which can be seen in the balance sheet.

| Projected P&L Statement                 |               |               |               |               |               |
|---|---------------|---------------|---------------|---------------|---------------|
|   | (in Rs. Lakh) |               |               |               |               |
| Particulars                             | 1st year      | 2nd year      | 3rd year      | 4th year      | 5th year      |
| Capacity Utilisation%                   | 0%            | 50%           | 55%           | 60%           | 65%           |
| Gross Sale of Spices                    | 0             | 294.98        | 354.78        | 412.99        | 475.52        |
| <b>Total</b>                            | <b>0</b>      | <b>294.98</b> | <b>354.78</b> | <b>412.99</b> | <b>475.52</b> |
| Cost of Production                      |               |               |               |               |               |
| Raw Material Consumed                   | 0             | 175.5         | 207.53        | 243.37        | 283.43        |
| Electricity Charges                     | 0             | 4.05          | 4.46          | 4.86          | 5.27          |
| Depreciation                            | 0             | 11.53         | 10.01         | 8.71          | 7.57          |
| Salary and wages                        | 0             | 20.4          | 22.44         | 24.68         | 27.15         |
| Repair and Maintenance                  | 0             | 9.65          | 9.65          | 9.65          | 9.65          |
| Packaging                               | 0             | 21.6          | 25.54         | 29.94         | 34.82         |
| Selling & Admn Expenses                 | 0             | 19.60         | 19.60         | 19.60         | 19.60         |
| <b>Total Cost of Production</b>         | <b>0</b>      | <b>262.33</b> | <b>299.23</b> | <b>340.81</b> | <b>387.49</b> |
| <b>Profit before interest and taxes</b> | <b>0</b>      | <b>32.65</b>  | <b>55.55</b>  | <b>72.18</b>  | <b>88.03</b>  |

| Projected P&L Statement  |             |              |              |              |              |
|--|-------------|--------------|--------------|--------------|--------------|
| Interest on Term Loan*   | 0.00        | 5.97         | 4.29         | 2.60         | 0.91         |
| Interest on Working Capital  | 0           | 2.62         | 2.62         | 2.62         | 2.62         |
| <b>Total Interest Payment</b>  | <b>0.00</b> | <b>8.59</b>  | <b>6.91</b>  | <b>5.22</b>  | <b>3.53</b>  |
| Profit before Tax  | 0.00        | 24.06        | 48.64        | 66.96        | 84.50        |
| Income Tax   | 0           | 6.01         | 12.16        | 16.74        | 21.13        |
| <b>Net profit after tax</b>  | <b>0.00</b> | <b>18.05</b> | <b>36.48</b> | <b>50.22</b> | <b>63.37</b> |
| <b>Term loan interest for first year capitalised to account for the moratorium</b> |             |              |              |              |              |

As can be seen, the unit would be in profits after tax from second year onwards. The project has enough profits even at 50% capacity utilization.

| Projected Balance Sheet      |              |               |               |               |               |
|------------------------------|--------------|---------------|---------------|---------------|---------------|
|                              | Rs. In Lakh  |               |               |               |               |
| Particulars                  | 1st year     | 2nd year      | 3rd year      | 4th year      | 5th year      |
| <b>Liabilities</b>           |              |               |               |               |               |
| Capital                      |              |               |               |               |               |
| Opening Balance              | 0            | 36.83         | 54.88         | 91.36         | 141.58        |
| Own Capital Contribution     | 36.83        | 0.00          |               |               |               |
| Retained Earnings            | 0.00         | 18.05         | 36.48         | 50.22         | 63.37         |
| <b>Total-Closing Balance</b> | <b>36.83</b> | <b>54.88</b>  | <b>91.36</b>  | <b>141.58</b> | <b>204.95</b> |
| Term Loan                    | 61.33        | 46.00         | 30.67         | 15.34         | 0.00          |
| Working Capital Limit        | 0.00         | 23.79         | 23.79         | 23.79         | 23.79         |
| Sundry Creditors             | 0            | 8.81          | 9.72          | 11.35         | 13.15         |
| <b>Total Liabilities</b>     | <b>98.16</b> | <b>133.48</b> | <b>155.54</b> | <b>192.06</b> | <b>241.89</b> |
| <b>Assets</b>                |              |               |               |               |               |
| Fixed Assets                 | 92.08        | 92.08         | 92.08         | 92.08         | 92.08         |
| Gross Depreciation           | 0            | 11.53         | 21.54         | 30.25         | 37.82         |
| <b>Net Fixed Assets</b>      | <b>92.08</b> | <b>80.55</b>  | <b>70.54</b>  | <b>61.83</b>  | <b>54.26</b>  |
| Sundry Debtors               | 0            | 5.29          | 5.83          | 6.81          | 7.89          |
| Stock in Hand                | 0            | 35.24         | 38.86         | 45.41         | 52.6          |
| Interest capitalised         | 6.08         | 0             | 0             | 0             | 0             |
| Cash and Bank Balance        | 0            | 12.4          | 40.31         | 78.01         | 127.14        |
| <b>Total Assets</b>          | <b>98.16</b> | <b>133.48</b> | <b>155.54</b> | <b>192.06</b> | <b>241.89</b> |

The project is generating healthy profit from second year with the first year being moratorium as presented above. The breakeven analysis indicates the level of operation at which the operations will breakeven and not have any loss. It becomes important to identify the fixed and the variable costs. Even within variable component there is always a part which is fixed. For example, even if the plant is not running there will be

lights and fans which will be used for administrative work, people will have to be paid salary for those days as well, etc. Accordingly, a portion of the variable expenses have been taken as fixed cost to arrive at the contribution and the total fixed cost. Total fixed cost divided by the contribution (fixed cost÷Contribution) gives us the breakeven point. In this case the breakeven capacity utilization in year 2 comes at 25% capacity utilisation.

| <b>Breakeven Point Analysis</b>                       |               |                  |
|---|---------------|------------------|
|   | Rs. In Lakh   |                  |
| <b>Total Sale (Sales - opening WIP + closing WIP)</b> | <b>Year 1</b> | <b>Year 2</b>    |
| Net Sales   | 0.00          | 294.98           |
| Less: Opening Stock                                   | 0.00          | 0.00             |
| Add: Closing Stock                                    | 0.00          | 7.76             |
| <b>Total Production/Sales</b>                         | <b>0.00</b>   | <b>302.74</b>    |
| <b>Variable Expenses</b>                              |               |                  |
| Raw Material and Packaging                            | 0.00          | 177.66           |
| Interest on working Capital                           | 0.00          | 2.62             |
| Repair and Maintenance                                | 0.00          | 2.41             |
| Salary expenses                                       | 0.00          | 2.04             |
| Sales & Admin Expenses                                | 0.00          | 2.94             |
| Energy - Electricity                                  | 0.00          | 3.97             |
| <b>Total</b>  | <b>0.00</b>   | <b>191.64</b>    |
| <b>Contribution</b>                                   | <b>0.00</b>   | <b>111.10</b>    |
| <b>Contribution per unit (per tonne)</b>              | <b>NA</b>     | <b>108284.60</b> |
| <b>Fixed expenses</b>                                 |               |                  |
| Interest on Term Loan                                 | 0.00          | 5.97             |
| Repair and Maintenance                                | 0.00          | 7.24             |
| Salary expenses                                       | 0.00          | 18.36            |
| Sales & Admin Expenses                                | 0.00          | 16.66            |
| Energy - Electricity                                  | 0.00          | 0.08             |
| Depreciation  | 0.00          | 11.53            |
| <b>Total</b>  | <b>0.00</b>   | <b>59.84</b>     |
| Capacity utilisation                                  | 0%            | 50%              |
| <b>Operating Profit</b>                               | <b>0.00</b>   | <b>51.26</b>     |
| <b>Breakeven point in physical units</b>              | <b>NA</b>     | <b>55</b>        |
| <b>Breakeven point in capacity utilisation (%)</b>    | <b>NA</b>     | <b>25%</b>       |

| Cash Flow Statement              |              |              |              |              |
|----------------------------------|--------------|--------------|--------------|--------------|
|                                  |              |              |              | Rs. In Lakh  |
| Particulars                      | 1st year     | 2nd year     | 3rd year     | 4th year     |
| <b>Sources of Fund</b>           |              |              |              |              |
| Own margin                       | 36.83        |              |              |              |
| Profit Before Interest and Tax   | 0.00         | 32.65        | 55.55        | 72.18        |
| Depreciation                     | 0.00         | 11.53        | 10.01        | 8.71         |
| Working Capital accretion        | 0.00         | 23.79        | 0.00         | 0.00         |
| Term Loan accretion              | 55.25        | 6.08         | 0.00         | 0.00         |
| Creditors                        | 0.00         | 8.81         | 0.91         | 1.63         |
| <b>Total</b>                     | <b>92.08</b> | <b>82.86</b> | <b>66.47</b> | <b>82.52</b> |
| <b>Uses of Fund</b>              |              |              |              |              |
| Fixed Assets                     | 92.08        | 0.00         | 0.00         | 0.00         |
| Stock in Trade - Accretion       | 0.00         | 35.24        | 3.62         | 6.55         |
| Debtors - Accretion              | 0.00         | 5.29         | 0.54         | 0.98         |
| Repayment of term Loan           | 0.00         | 15.33        | 15.33        | 15.33        |
| Interest on Term Loan            | 0.00         | 5.97         | 4.29         | 2.60         |
| Interest on working capital      | 0.00         | 2.62         | 2.62         | 2.62         |
| Income Tax                       | 0.00         | 6.01         | 12.16        | 16.74        |
| Accretion in cash & bank balance | 0.00         | 12.40        | 27.91        | 37.70        |
| <b>Total</b>                     | <b>92.08</b> | <b>82.86</b> | <b>66.47</b> | <b>82.52</b> |

The cash flow statement above indicates that chance of any problem with the cash is very little or so to say practically nil in the project. The project generates sufficient cash, and the entrepreneur can maintain a healthy cash balance for any eventuality or a rainy day. There are risks like equipment failure and the repair time required for the same, sudden problem with supply of raw material or shipment not arriving, etc. Now these are unforeseen risk which always cannot be factored in. It is for these kinds of problems that a healthy cash balance is necessary for running a business. This project enables the entrepreneur to have that.

| Calculation of DSCR                |             |              |              |              |              |
|------------------------------------|-------------|--------------|--------------|--------------|--------------|
| Particulars                        | 1st year    | 2nd year     | 3rd year     | 4th year     | 5th year     |
| <b>Cash Accruals</b>               |             |              |              |              |              |
| Depreciation                       | 0           | 11.53        | 10.01        | 8.71         | 7.57         |
| Profit before interest and taxes   | 0           | 32.65        | 55.55        | 72.18        | 88.03        |
| <b>Total</b>                       | <b>0</b>    | <b>44.18</b> | <b>65.56</b> | <b>80.89</b> | <b>95.6</b>  |
| <b>Repayments</b>                  |             |              |              |              |              |
| Interest on Term Loan              | 0.00        | 5.97         | 4.29         | 2.60         | 0.91         |
| Term Loan Instalments              | 0.00        | 15.33        | 15.33        | 15.33        | 15.33        |
| <b>Total</b>                       | <b>0.00</b> | <b>21.30</b> | <b>19.62</b> | <b>17.93</b> | <b>16.24</b> |
| <b>Debt Service Coverage Ratio</b> | <b>NA</b>   | <b>2.07</b>  | <b>3.34</b>  | <b>4.51</b>  | <b>5.89</b>  |

The debt service coverage ratio from second year is 2.07 and above indicating that the project should not have any problem in servicing the loan in the structure suggested which is a five-year loan including one year moratorium.

## IRR/NPV and BC Ratio

The calculation for internal rate of return (IRR) a, BC Ratio and net present value (NPV) is given below. The BC ratio is a healthy 1.73 considering a discount rate of 15%. The net present value of future benefits at a discount rate of 15% comes to Rs. 934.66 lakh. And the internal rate of return comes to 215% which essentially indicates that at 215% discount rate the net present value of net benefits would be zero. This also acts as an indicator of the risk bearing capacity of the project.

| BC Ratio, NPV and IRR         |                |               |               |               |               |               |               | (Amt in Rs. Lakh) |
|-------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------------|
| Costs and revenue items       | 1st year       | 2nd year      | 3rd year      | 4th year      | 5th year      | 6th year      | 7th year      | 8th year          |
| <b>Fixed Costs</b>            | 92.0767        |               |               |               |               |               |               |                   |
| <b>Variable costs</b>         |                |               |               |               |               |               |               |                   |
| Raw material                  | 0              | 177.66        | 210.08        | 246.37        | 286.91        | 332.16        | 382.58        | 438.7             |
| Salary                        | 0              | 20.4          | 22.44         | 24.68         | 27.15         | 29.87         | 32.85         | 36.14             |
| Electricity                   | 0              | 4.05          | 4.46          | 4.86          | 5.27          | 5.67          | 6.08          | 6.48              |
| Maintenance                   | 0              | 9.65          | 9.65          | 9.65          | 9.65          | 9.65          | 9.65          | 9.65              |
| Sales and Admin exp           | 0              | 19.6          | 19.6          | 19.6          | 19.6          | 19.6          | 19.6          | 19.6              |
| <b>Total Costs</b>            | <b>92.0767</b> | <b>231.36</b> | <b>266.23</b> | <b>305.16</b> | <b>348.58</b> | <b>396.95</b> | <b>450.76</b> | <b>510.57</b>     |
| Rate of discount              | 15%            |               |               |               |               |               |               |                   |
| Present value of costs        | 1285.82        |               |               |               |               |               |               |                   |
| <b>Revenues</b>               |                |               |               |               |               |               |               |                   |
| <b>Sale of finished goods</b> |                |               |               |               |               |               |               |                   |
| 100 gram pack spices          |                | 406.13        | 496.19        | 572.18        | 653.25        | 739.51        | 830.83        | 927.35            |
| <b>Total</b>                  | <b>0</b>       | <b>406.13</b> | <b>496.19</b> | <b>572.18</b> | <b>653.25</b> | <b>739.51</b> | <b>830.83</b> | <b>927.35</b>     |
| Rate of discount              | 15%            |               |               |               |               |               |               |                   |
| Present value of benefits     | 2220.47        |               |               |               |               |               |               |                   |
| <b>BC Ratio</b>               | <b>1.73</b>    |               |               |               |               |               |               |                   |
| <b>Net Benefits</b>           | <b>-92.077</b> | <b>174.77</b> | <b>229.96</b> | <b>267.02</b> | <b>304.67</b> | <b>342.56</b> | <b>380.07</b> | <b>416.78</b>     |
| Rate of discount              | 15%            |               |               |               |               |               |               |                   |
| <b>NPV</b>                    | <b>934.66</b>  |               |               |               |               |               |               |                   |
| <b>IRR</b>                    | <b>215%</b>    |               |               |               |               |               |               |                   |

## Registration/Certification

There are four registrations necessary for MSMEs which are involved in food processing. A brief on the same is given below:

1. **GST:** GST registration in today's environment is a necessity for anyone doing a business. The entrepreneur must get himself registered for the same first. Many of the benefits given by central

government is being linked to GST registration. Necessary system should be put in place to file the GST return from time to time as per the rules laid down by GoI.

(<https://reg.gst.gov.in/registration/>)

2. **FSSAI:** The processing units should follow the Food Safety and Standard Authority of India (FSSAI) act 2006. FSSAI Act is applicable pan India for all food products. It prescribes minimum standards operating procedures, food safety norms, packaging & labeling norms. The new units need to take a license called FSSAI number from Food Safety and Standards Authority of India.

The registration can be done at FSSAI website. (<https://fssai.gov.in/cms/registration.php>)

3. **UDYAM:** The entrepreneur may consider getting himself registered in UDYAM

(<https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm>).

4. **ISO:** ISO certification is a seal of approval from a third party body that a company runs to one of the international standards developed and published by the International Organization for Standardization (ISO). It is absolutely essential if one wants to venture into exports. Even for domestic sales this certification adds value. A person feels comfortable with ISO certification mentioned in the packaging along with FSSAI registration. Various agencies are there doing this job of certification. One such site available is <https://legalwaycertification.com/iso/>. There are many other such agencies that have been authorized to issue ISO certification.

5. **AGMARK:** AGMARK, or Agriculture Mark, is the certification mark to assure the quality of agricultural products in India. AGMARK acts as a third-party guarantee for the agricultural products that are produced and consumed in India. AS the target would be initially to create a foothold in the country, it would be necessary to obtain necessary certification

All three viz., GST registration, FSSAI registration and ISO certification has to be mentioned on the packaging. It is also important that these certifications are renewed as and when required. For example, ISO certification is valid for 1 year in many cases. If so, the certification needs to be renewed every year.

In addition to the ones stated above, it would be necessary to take fire and pollution clearances. It would also be advisable choose a brand name for the product and secure the name with trademark.

Having a trademark is useful for bulk sale and is necessary for direct marketing as well as exports.



# Annexure



## Annexure 1: Promoter's Profile

| Sl. No. | Particulars                               | Details                                      |                         |                 |         |                     |
|---------|---|--|-------------------------|-----------------|---------|---------------------|
| 1       | Name of the person                        |  |                         |                 |         |                     |
| 2       | Date of birth and Age                     |  |                         |                 |         |                     |
| 3       | Marital status                            |  |                         |                 |         |                     |
| 4       | Residential Address                       |  |                         |                 |         |                     |
| 5       | Educational Qualification                 | Item   | Name of School/ college | Year of Passing | Subject | Percentage obtained |
|         |   | Secondary                                    |                         |                 |         |                     |
|         |   | Higher secondary                             |                         |                 |         |                     |
|         |   | College                                      |                         |                 |         |                     |
|         |   | Post- Graduation                             |                         |                 |         |                     |
|         | Any Other (Pl. Specify)                   |  |                         |                 |         |                     |
| 6       | Training                                  | Specify training programmes attended, if any |                         |                 |         |                     |
| 7       | Past experience                           | Work Experience: Business Experience:        |                         |                 |         |                     |
| 8       | Aadhaar Number                            |  |                         |                 |         |                     |
| 9       | PAN Number                                |  |                         |                 |         |                     |
| 10      | Any police complaint against the promoter | Yes/No;<br>If yes please give details        |                         |                 |         |                     |

## Annexure 2: Company Profile

Is it an existing company? : Yes/No (If “Yes” the fill up table 1 and if “No”, go to table 2)

**Table 1 of Annexure 3 (for existing companies)**

| Sl. No. | Item                              | Details   |         |                                    |                                   |
|---------|-----------------------------------|---|---------|------------------------------------|-----------------------------------|
| 1.      | Name of the company               |   |         |                                    |                                   |
| 2.      | Year of establishment             |   |         |                                    |                                   |
| 3.      | List of investors/ shareholders   | Name  | Pan No. | CIBIL Score (enclose CIBIL Report) | Whether filing IT return (Yes/No) |
|         |                                   |   |         |                                    |                                   |
|         |                                   |   |         |                                    |                                   |
|         |                                   |   |         |                                    |                                   |
| 4.      | Products of the company           |   |         |                                    |                                   |
| 5.      | P&L Account and Balance sheet     | Please attach copy of balance sheet and P&L account for maximum of last 3 years. If company is less than 3 years old, then the same may be provided for the years of existence  |         |                                    |                                   |
| 6.      | Profit after tax                  | Financial Year  |         |                                    |                                   |
|         |                                   | Profit/Loss   |         |                                    |                                   |
|         |                                   | Turnover  |         |                                    |                                   |
| 7.      | Proposed location of the new unit |   |         |                                    |                                   |
| 8.      | Connectivity and other details    | <ol style="list-style-type: none"> <li>1. Whether the site is connected by motorable approach road? Yes/No</li> <li>2. Whether the Road is a metallic road? Yes/No</li> <li>3. Whether the area is a low lying area? Yes/No</li> <li>4. Any incidence of flooding in the last 5 years in the area? Yes/ No – If yes please mention the years</li> <li>5. Whether power connection available? Yes/No</li> <li>6. Whether drinking water supply available? Yes/No</li> <li>7. Whether water supply available for industrial activity? Yes/No</li> <li>8. Name of the nearest town/city</li> <li>9. Distance from the nearest town/city</li> <li>10. Nearest Police station - pl give name and distance</li> <li>11. Any other information – please specify</li> </ol> |         |                                    |                                   |

**Table 2 of Annexure 3 (for newly set up/proposed to be set up companies for the project)**

| Sl. No. | Item                                     | Details   |         |                                    |                                   |
|---------|--|---|---------|------------------------------------|-----------------------------------|
| 1.      | Proposed Name of the company             |   |         |                                    |                                   |
| 2.      | Expected date of establishment           |   |         |                                    |                                   |
| 3.      | Proposed List of investors/ shareholders | Name  | Pan No. | CIBIL Score (enclose CIBIL Report) | Whether filing IT return (Yes/No) |
|         |  |   |         |                                    |                                   |
|         |  |   |         |                                    |                                   |
|         |  |   |         |                                    |                                   |
|         |  |   |         |                                    |                                   |
| 4.      | Proposed location of the new unit        |   |         |                                    |                                   |
| 5.      | Connectivity and other details           | <ol style="list-style-type: none"> <li>1. Is it a non-agricultural land? Yes/No</li> <li>2. Whether the site is connected by motorable approach road? Yes/No</li> <li>3. Whether the Road is a metallic road? Yes/No</li> <li>4. Whether the area is a low lying area? Yes/No</li> <li>5. Any incidence of flooding in the last 5 years in the area? Yes/No – If yes please mention the years</li> <li>6. Whether power connection available? Yes/No</li> <li>7. Whether drinking water supply available? Yes/No</li> <li>8. Whether water supply available for industrial activity? Yes/No</li> <li>9. Name of the nearest town/city</li> <li>10. Distance from the nearest town/city</li> <li>11. Nearest Police station – pl give name and distance</li> <li>12. Any other information – please specify</li> </ol> |         |                                    |                                   |

### Annexure 3: Cashew producing states in India 2015-16

| Sl. No. | STATES/UTs     | Area in '000 ha | Production in '000MT |
|---------|----------------|-----------------|----------------------|
| 1       | MAHARASHTRA    | 186.20          | 220.00               |
| 2       | ANDHRA PRADESH | 185.57          | 95.50                |
| 3       | ODISHA         | 182.91          | 80.50                |
| 4       | KARNATAKA      | 125.86          | 73.00                |
| 5       | KERALA         | 87.01           | 72.00                |
| 6       | TAMIL NADU     | 141.33          | 58.00                |
| 7       | OTHERS         | 64.37           | 30.56                |
| 8       | WEST BENGAL    | 11.36           | 12.00                |
| 9       | CHHATTISGARH   | 13.70           | 8.00                 |
| 10      | GUJARAT        | 7.22            | 6.50                 |
| 11      | JHARKHAND      | 14.83           | 5.00                 |
| 12      | MEGHALAYA      | 8.50            | 5.00                 |
| 13      | TRIPURA        | 4.25            | 3.00                 |
| 14      | ASSAM          | 1.05            | 1.00                 |
| 15      | NAGALAND       | 0.50            | 0.54                 |
| 16      | MANIPUR        | 0.90            | 0.32                 |
| 17      | MIZORAM        | 0.00            | 0.00                 |
|         | <b>TOTAL</b>   | <b>1035.56</b>  | <b>670.92</b>        |

## Annexure 4: Assumptions/Basis of the project

| Particulars  | Value   | Unit   |
|--|---------|--------|
| Machine capacity for RCN per day in tonne                      | 2       | tonne  |
| Capacity Utilisation in the second year                        | 45%     |        |
| Increase in capacity utilisation per year                      | 5%      |        |
| Working hours  | 8       | Hours  |
| Working days per year  | 300     | Days   |
| Average working days per month                                 | 25      | days   |
| Processed Cashew nut as percentage of RCN                      | 22%     |        |
| Shell by product as % of raw material                          | 70%     |        |
| Testa/husk   | 0.5%    |        |
| Raw material Stock in Days                                     | 60      | Days   |
| Finished goods stock in days                                   | 15      | Days   |
| Interest on working capital and term loan                      | 11%     |        |
| Power Consumption in units per day @ 100% capacity utilisation | 300     | Units  |
| Preoperative expenses  | 1%      |        |
| Increase in sale price/year                                    | 4%      |        |
| Rate per 10 kg pack of of processed cashew in Rs.              | 8500    | Rupees |
| Increase in raw material & packaging cost                      | 5%      |        |
| Raw material cost per tonne                                    | 125000  | Rupees |
| Packaging material cost per kg including nitrogen requirement  | 5       | Rupees |
| Rate per tonne of Cashew shell                                 | 5000    | Rupees |
| Rate per tonne of Testa  | 22000   | Rupees |
| Increase in Rent every 3 years - own premises                  | 0%      |        |
| Creditors in percentage of the stock Value                     | 55%     |        |
| Debtors in percentage of the stock value                       | 40%     |        |
| Power tariff per unit consumed in Rs.                          | 9.00    | Rupees |
| Depreciation of plant and Machinery and office equipments      | 15%     |        |
| Depreciation of building                                       | 10%     |        |
| Own contribution in Working Capital                            | 25%     |        |
| Own contribution in Fixed Cost                                 | 40%     |        |
| Maintenance cost as Percentage of fixed cost                   | 20%     |        |
| Increase in salary expenses every year                         | 10%     |        |
| Repayment of term loan in months                               | 60      | months |
| Moratorium in months   | 12      | months |
| Income Tax   | 25%     |        |
| Variable cost under Repair and maintenance in percentage       | 25%     |        |
| Variable component in salary in percentage                     | 10%     |        |
| Variable component in sale & Admin expenses                    | 15%     |        |
| Variable component of electricity in percentage                | 98%     |        |
| Sales and branding expenses per annum in Rs.                   | 1000000 | Rupees |
| Misc Admin Expenses per annum @ 5000/- per month in Rs.        | 500000  | Rupees |
| Transportation expenses per annum @ 10000/- per week in Rs.    | 480000  | Rupees |
| Packaging Size in Kg   | 10      | kg     |

## Annexure 5: Interest on Bank Loan and Repayment Schedule

| Principal Repayment per month |             | 181624    |          |         |         |        |          |
|-------------------------------|-------------|-----------|----------|---------|---------|--------|----------|
| Year                          | Particulars | Amount in | Interest | Repayme | Closing | Annual | Projecte |
| 1                             | 1st Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 2nd Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 3rd Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 4th Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 5th Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 6th Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 7th Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 8th Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 9th Month   | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 10th Month  | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 11th Month  | 7854000   | 71995    | 0       | 7854000 |        |          |
|                               | 12th Month  | 7854000   | 71995    | 0       | 7854000 | 863940 | 0        |
| 2                             | 1st Month   | 8717940   | 79914    | 181624  | 8536316 |        |          |
|                               | 2nd Month   | 8536316   | 78250    | 181624  | 8354692 |        |          |
|                               | 3rd Month   | 8354692   | 76585    | 181624  | 8173068 |        |          |
|                               | 4th Month   | 8173068   | 74920    | 181624  | 7991444 |        |          |
|                               | 5th Month   | 7991444   | 73255    | 181624  | 7809820 |        |          |
|                               | 6th Month   | 7809820   | 71590    | 181624  | 7628196 |        |          |
|                               | 7th Month   | 7628196   | 69925    | 181624  | 7446572 |        |          |
|                               | 8th Month   | 7446572   | 68260    | 181624  | 7264948 |        |          |
|                               | 9th Month   | 7264948   | 66595    | 181624  | 7083324 |        |          |
|                               | 10th Month  | 7083324   | 64930    | 181624  | 6901700 |        |          |
|                               | 11th Month  | 6901700   | 63266    | 181624  | 6720076 |        |          |
|                               | 12th Month  | 6720076   | 61601    | 181624  | 6538452 | 849091 | 2179488  |
| 3                             | 1st Month   | 6538452   | 59936    | 181624  | 6356828 |        |          |
|                               | 2nd Month   | 6356828   | 58271    | 181624  | 6175204 |        |          |
|                               | 3rd Month   | 6175204   | 56606    | 181624  | 5993580 |        |          |
|                               | 4th Month   | 5993580   | 54941    | 181624  | 5811956 |        |          |
|                               | 5th Month   | 5811956   | 53276    | 181624  | 5630332 |        |          |
|                               | 6th Month   | 5630332   | 51611    | 181624  | 5448708 |        |          |
|                               | 7th Month   | 5448708   | 49946    | 181624  | 5267084 |        |          |
|                               | 8th Month   | 5267084   | 48282    | 181624  | 5085460 |        |          |
|                               | 9th Month   | 5085460   | 46617    | 181624  | 4903836 |        |          |
|                               | 10th Month  | 4903836   | 44952    | 181624  | 4722212 |        |          |
|                               | 11th Month  | 4722212   | 43287    | 181624  | 4540588 |        |          |
|                               | 12th Month  | 4540588   | 41622    | 181624  | 4358964 | 609347 | 2179488  |

|   |            |         |       |        |         |        |         |
|---|------------|---------|-------|--------|---------|--------|---------|
| 4 | 1st Month  | 4358964 | 39957 | 181624 | 4177340 |        |         |
|   | 2nd Month  | 4177340 | 38292 | 181624 | 3995716 |        |         |
|   | 3rd Month  | 3995716 | 36627 | 181624 | 3814092 |        |         |
|   | 4th Month  | 3814092 | 34963 | 181624 | 3632468 |        |         |
|   | 5th Month  | 3632468 | 33298 | 181624 | 3450844 |        |         |
|   | 6th Month  | 3450844 | 31633 | 181624 | 3269220 |        |         |
|   | 7th Month  | 3269220 | 29968 | 181624 | 3087596 |        |         |
|   | 8th Month  | 3087596 | 28303 | 181624 | 2905972 |        |         |
|   | 9th Month  | 2905972 | 26638 | 181624 | 2724348 |        |         |
|   | 10th Month | 2724348 | 24973 | 181624 | 2542724 |        |         |
|   | 11th Month | 2542724 | 23308 | 181624 | 2361100 |        |         |
|   | 12th Month | 2361100 | 21643 | 181624 | 2179476 | 369603 | 2179488 |
| 5 | 1st Month  | 2179476 | 19979 | 181624 | 1997852 |        |         |
|   | 2nd Month  | 1997852 | 18314 | 181624 | 1816228 |        |         |
|   | 3rd Month  | 1816228 | 16649 | 181624 | 1634604 |        |         |
|   | 4th Month  | 1634604 | 14984 | 181624 | 1452980 |        |         |
|   | 5th Month  | 1452980 | 13319 | 181624 | 1271356 |        |         |
|   | 6th Month  | 1271356 | 11654 | 181624 | 1089732 |        |         |
|   | 7th Month  | 1089732 | 9989  | 181624 | 908108  |        |         |
|   | 8th Month  | 908108  | 8324  | 181624 | 726484  |        |         |
|   | 9th Month  | 726484  | 6659  | 181624 | 544860  |        |         |
|   | 10th Month | 544860  | 4995  | 181624 | 363236  |        |         |
|   | 11th Month | 363236  | 3330  | 181624 | 181612  |        |         |
|   | 12th Month | 181612  | 1665  | 181612 | 0       | 129861 | 2179476 |

## Annexure 6: List of Equipment Manufacturers

1. **Parivartan Kaju House:** Plot No. D-46/1, Road No.20, Hojiwala Industrial Estate, Near Sachin GIDC, Surat – 394230, Gujarat, India. Phone: +91 9734432299, +91 9512497976; Website: [www.parivartankajuhouse.com](http://www.parivartankajuhouse.com); Email: [parivartankajuhouse@gmail.com](mailto:parivartankajuhouse@gmail.com)
2. **Italiya International:** C-67,68 B.R.C. Ind. Estate, opp. Dakshewar Mahadev Temple, Udhana GIDC, Surat, Gujarat 394220; Phone: 05216 503 277; Website: [www.italiyainternational.com](http://www.italiyainternational.com)
3. **Spectrum Industries:** C14,15&16 Yeyyadi Industrial Estate; Mangalore – 575008; Karnataka; Phone: +918242221018; Website: [www.spectrumindustries.org](http://www.spectrumindustries.org); Email: [Sales@spectrumindustries.org](mailto:Sales@spectrumindustries.org)
4. **Genset Manufacturers:** Kirloskar; TMTL (TAFE Motors and Tractors Limited), Greaves, Mahindra

## Annexure 7: Assumptions/Basis of the project

| Particulars   | Value    | Unit   |
|---|----------|--------|
| Machine capacity for mustard per day in tonne                   | 16       | tonne  |
| Capacity Utilisation in the second year                         | 70%      |        |
| Increase in capacity utilisation per year                       | 5%       |        |
| Working hours (three shifts)                                    | 24       | Hours  |
| Working days per year   | 300      | Days   |
| Average working days per month                                  | 25       | days   |
| Final product as a percentage of raw material                   | 40%      |        |
| Raw material Stock in Days                                      | 30       | Days   |
| Finished goods stock in days                                    | 7        | Days   |
| Interest on working capital and term loan                       | 11%      |        |
| Power Consumption in units per day @ 100% capacity utilisation  | 100      | Units  |
| Deoiled mustard cake as percentage of mustard                   | 60%      |        |
| Increase in sale price/year                                     | 5%       |        |
| Rate per 1 litre pack of mustard oil                            | 180      | Rupees |
| Increase in raw material & packaging cost                       | 5.00%    |        |
| Average price of mustard per tonne                              | 77500    |        |
| price of De oiled mustard cake per tonne                        | 27000    |        |
| Land  | Own land |        |
| Packaging material cost per 1 kg of mustard oil - Pouch packing | 2.5      | Rupees |
| Creditors in percentage of the stock Value                      | 25%      |        |
| Debtors in percentage of the stock value                        | 15%      |        |
| Power tariff per unit consumed in Rs.                           | 9.00     | Rupees |
| Depreciation of plant and Machinery and office equipments       | 15%      |        |
| Depreciation of building  | 10%      |        |
| Own contribution in Working Capital                             | 25%      |        |
| Own contribution in Fixed Cost                                  | 40%      |        |
| Maintenance cost as Percentage of fixed cost                    | 20%      |        |
| Increase in salary expenses every year                          | 10%      |        |
| Repayment of term loan in months                                | 60       | months |
| Moratorium in months  | 12       | months |
| Income Tax  | 25%      |        |
| Variable cost under Repair and maintenance in percentage        | 25%      |        |
| Variable component in salary in percentage                      | 10%      |        |
| Variable component in sale & Admin expenses                     | 15%      |        |
| Variable component of electricity in percentage                 | 98%      |        |
| Sales and branding expenses per annum in Rs.                    | 500000   | Rupees |
| Misc Admin Expenses per annum @ 10000/- per month in Rs.        | 120000   | Rupees |
| Transportation expenses per annum @ 20000/- per week in Rs.     | 960000   | Rupees |
| Packaging Size  | 1        | kg     |

## Annexure 8: Interest on Bank Loan and Repayment Schedule

| Principal Repayment per month |             | 207386        |          |                        |                 |                         |                               |
|-------------------------------|-------------|---------------|----------|------------------------|-----------------|-------------------------|-------------------------------|
| Year                          | Particulars | Amount in Rs. | Interest | Repayment of principal | Closing Balance | Annual Interest payment | Projected Principal Repayment |
| 1                             | 1st Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 2nd Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 3rd Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 4th Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 5th Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 6th Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 7th Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 8th Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 9th Month   | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 10th Month  | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 11th Month  | 8968000       | 82207    | 0                      | 8968000         |                         |                               |
|                               | 12th Month  | 8968000       | 82207    | 0                      | 8968000         | 986484                  | 0                             |
| 2                             | 1st Month   | 9954484       | 91249    | 207386                 | 9747098         |                         |                               |
|                               | 2nd Month   | 9747098       | 89348    | 207386                 | 9539712         |                         |                               |
|                               | 3rd Month   | 9539712       | 87447    | 207386                 | 9332326         |                         |                               |
|                               | 4th Month   | 9332326       | 85546    | 207386                 | 9124940         |                         |                               |
|                               | 5th Month   | 9124940       | 83645    | 207386                 | 8917554         |                         |                               |
|                               | 6th Month   | 8917554       | 81744    | 207386                 | 8710168         |                         |                               |
|                               | 7th Month   | 8710168       | 79843    | 207386                 | 8502782         |                         |                               |
|                               | 8th Month   | 8502782       | 77942    | 207386                 | 8295396         |                         |                               |
|                               | 9th Month   | 8295396       | 76041    | 207386                 | 8088010         |                         |                               |
|                               | 10th Month  | 8088010       | 74140    | 207386                 | 7880624         |                         |                               |
|                               | 11th Month  | 7880624       | 72239    | 207386                 | 7673238         |                         |                               |
|                               | 12th Month  | 7673238       | 70338    | 207386                 | 7465852         | 969522                  | 2488632                       |
| 3                             | 1st Month   | 7465852       | 68437    | 207386                 | 7258466         |                         |                               |
|                               | 2nd Month   | 7258466       | 66536    | 207386                 | 7051080         |                         |                               |
|                               | 3rd Month   | 7051080       | 64635    | 207386                 | 6843694         |                         |                               |
|                               | 4th Month   | 6843694       | 62734    | 207386                 | 6636308         |                         |                               |
|                               | 5th Month   | 6636308       | 60833    | 207386                 | 6428922         |                         |                               |
|                               | 6th Month   | 6428922       | 58932    | 207386                 | 6221536         |                         |                               |
|                               | 7th Month   | 6221536       | 57031    | 207386                 | 6014150         |                         |                               |
|                               | 8th Month   | 6014150       | 55130    | 207386                 | 5806764         |                         |                               |
|                               | 9th Month   | 5806764       | 53229    | 207386                 | 5599378         |                         |                               |
|                               | 10th Month  | 5599378       | 51328    | 207386                 | 5391992         |                         |                               |
|                               | 11th Month  | 5391992       | 49427    | 207386                 | 5184606         |                         |                               |
|                               | 12th Month  | 5184606       | 47526    | 207386                 | 4977220         | 695778                  | 2488632                       |

|   |            |         |       |        |         |        |         |
|---|------------|---------|-------|--------|---------|--------|---------|
| 4 | 1st Month  | 4977220 | 45625 | 207386 | 4769834 |        |         |
|   | 2nd Month  | 4769834 | 43723 | 207386 | 4562448 |        |         |
|   | 3rd Month  | 4562448 | 41822 | 207386 | 4355062 |        |         |
|   | 4th Month  | 4355062 | 39921 | 207386 | 4147676 |        |         |
|   | 5th Month  | 4147676 | 38020 | 207386 | 3940290 |        |         |
|   | 6th Month  | 3940290 | 36119 | 207386 | 3732904 |        |         |
|   | 7th Month  | 3732904 | 34218 | 207386 | 3525518 |        |         |
|   | 8th Month  | 3525518 | 32317 | 207386 | 3318132 |        |         |
|   | 9th Month  | 3318132 | 30416 | 207386 | 3110746 |        |         |
|   | 10th Month | 3110746 | 28515 | 207386 | 2903360 |        |         |
|   | 11th Month | 2903360 | 26614 | 207386 | 2695974 |        |         |
|   | 12th Month | 2695974 | 24713 | 207386 | 2488588 | 422023 | 2488632 |
| 5 | 1st Month  | 2488588 | 22812 | 207386 | 2281202 |        |         |
|   | 2nd Month  | 2281202 | 20911 | 207386 | 2073816 |        |         |
|   | 3rd Month  | 2073816 | 19010 | 207386 | 1866430 |        |         |
|   | 4th Month  | 1866430 | 17109 | 207386 | 1659044 |        |         |
|   | 5th Month  | 1659044 | 15208 | 207386 | 1451658 |        |         |
|   | 6th Month  | 1451658 | 13307 | 207386 | 1244272 |        |         |
|   | 7th Month  | 1244272 | 11406 | 207386 | 1036886 |        |         |
|   | 8th Month  | 1036886 | 9505  | 207386 | 829500  |        |         |
|   | 9th Month  | 829500  | 7604  | 207386 | 622114  |        |         |
|   | 10th Month | 622114  | 5703  | 207386 | 414728  |        |         |
|   | 11th Month | 414728  | 3802  | 207386 | 207342  |        |         |
|   | 12th Month | 207342  | 1901  | 207342 | 0       | 148278 | 2488588 |

## Annexure 9: List of equipment Manufacturers

### Tinytech Plants

Tagore Road, Rajkot - 360 002, INDIA  
Mobile # 9227 60 62 64, 9227 70 72 74  
Tel. 0281-2480166  
Email: [tinytech@tinytechindia.com](mailto:tinytech@tinytechindia.com)  
Website: [www.tinytechindia.com](http://www.tinytechindia.com)

### RISING INDUSTRIES

Tanushree Apartment (Ground Floor), Jhowtala, Hatiara,  
Near Lokenath Mandir Ghosh Dutta Para,  
opposite of Honda Service Center,  
Kolkata, West Bengal 700157  
Phone: 080 4602 6247

### Punjab Engineering Works

Address: 28/Y, Ramakrishna Samadhi Rd,  
Kolkata,  
West Bengal 700054  
Phone: 098301 62998

### Spectec Techno Projects Pvt. Ltd.

Address : CB-254, Off. No. 1, 1st Floor,  
Ring Road, Naraina, New  
Delhi - 110 028, India  
Tel. : +91 11 25774125, 25777397  
Fax : +91-11-2577 7397  
Email : [info@spectecindia.com](mailto:info@spectecindia.com) , [officespectec@gmail.com](mailto:officespectec@gmail.com)  
Website: [www.spectecindia.com/](http://www.spectecindia.com/)

### Shreeji Expeller Industries

11460/1, Street No. 4,  
Partap Nagar Industrial Area B,  
Sahibjada Ajit singh Nagar,  
Ludhiana, Punjab 141003  
Website: [www.shreejiexpeller.com/](http://www.shreejiexpeller.com/)

## Annexure 10: Assumptions/Basis of the project

| Particulars   | Value    | Unit   |
|---|----------|--------|
| Machine capacity for rice bran per day in tonne                   | 300      | tonne  |
| Capacity Utilisation in the second year                           | 40%      |        |
| Increase in capacity utilisation per year                         | 5%       |        |
| Working hours   | 8        | Hours  |
| Working days per year   | 300      | Days   |
| Average working days per month                                    | 25       | days   |
| Final product as a percentage of raw material                     | 10.00%   |        |
| Raw material Stock in Days  | 30       | Days   |
| Finished goods stock in days                                      | 15       | Days   |
| Interest on working capital and term loan                         | 11%      |        |
| Power Consumption in units per day @ 100% capacity utilisation    | 15000    | Units  |
| Preoperative Expenses as part of project cost                     | 1%       |        |
| Deoiled Rice Bran as percentage of Rice Bran                      | 60%      |        |
| Increase in sale price/year                                       | 5%       |        |
| Rate per 1 litre pack of rice bran oil                            | 130      | Rupees |
| Increase in raw material & packaging cost                         | 5.00%    |        |
| Average price of rice bran per tonne                              | 7500     |        |
| price of De oiled Rice bran cake per tonne                        | 6500     |        |
| Land  | Own land |        |
| Hexane requirement per tonne of rice bran oil                     | 4        | litres |
| Packaging material cost per 1 kg of rice bran oil - Pouch packing | 2.5      | Rupees |
| Creditors in percentage of the stock Value                        | 25%      |        |
| Debtors in percentage of the stock value                          | 15%      |        |
| Power tariff per unit consumed in Rs.                             | 9.00     | Rupees |
| Depreciation of plant and Machinery and office equipments         | 15%      |        |
| Depreciation of building  | 10%      |        |
| Own contribution in Working Capital                               | 25%      |        |
| Own contribution in Fixed Cost                                    | 40%      |        |
| Maintenance cost as Percentage of fixed cost                      | 20%      |        |
| Increase in salary expenses every year                            | 10%      |        |
| Repayment of term loan in months                                  | 60       | months |
| Moratorium in months  | 12       | months |
| Income Tax  | 25%      |        |
| Variable cost under Repair and maintenance in percentage          | 25%      |        |
| Variable component in salary in percentage                        | 10%      |        |
| Variable component in sale & Admin expenses                       | 15%      |        |
| Variable component of electricity in percentage                   | 98%      |        |
| Sales and branding expenses per annum in Rs.                      | 2000000  | Rupees |
| Misc Admin Expenses per annum @ 40000/- per month in Rs.          | 480000   | Rupees |
| Transportation expenses per annum @ 40000/- per week in Rs.       | 1920000  | Rupees |
| Packaging Size  | 1        | kg     |

## Annexure 11: Interest on Bank Loan and Repayment Schedule

| Principal Repayment per month |             | 1554093       |          |                        |                 |                         |                               |
|-------------------------------|-------------|---------------|----------|------------------------|-----------------|-------------------------|-------------------------------|
| Year                          | Particulars | Amount in Rs. | Interest | Repayment of principal | Closing Balance | Annual Interest payment | Projected Principal Repayment |
| 1                             | 1st Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 2nd Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 3rd Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 4th Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 5th Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 6th Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 7th Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 8th Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 9th Month   | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 10th Month  | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 11th Month  | 67204000      | 616037   | 0                      | 67204000        |                         |                               |
|                               | 12th Month  | 67204000      | 616037   | 0                      | 67204000        | 7392444                 | 0                             |
| 2                             | 1st Month   | 74596444      | 683801   | 1554093                | 73042351        |                         |                               |
|                               | 2nd Month   | 73042351      | 669555   | 1554093                | 71488258        |                         |                               |
|                               | 3rd Month   | 71488258      | 655309   | 1554093                | 69934165        |                         |                               |
|                               | 4th Month   | 69934165      | 641063   | 1554093                | 68380072        |                         |                               |
|                               | 5th Month   | 68380072      | 626817   | 1554093                | 66825979        |                         |                               |
|                               | 6th Month   | 66825979      | 612571   | 1554093                | 65271886        |                         |                               |
|                               | 7th Month   | 65271886      | 598326   | 1554093                | 63717793        |                         |                               |
|                               | 8th Month   | 63717793      | 584080   | 1554093                | 62163700        |                         |                               |
|                               | 9th Month   | 62163700      | 569834   | 1554093                | 60609607        |                         |                               |
|                               | 10th Month  | 60609607      | 555588   | 1554093                | 59055514        |                         |                               |
|                               | 11th Month  | 59055514      | 541342   | 1554093                | 57501421        |                         |                               |
|                               | 12th Month  | 57501421      | 527096   | 1554093                | 55947328        | 7265382                 | 18649116                      |
| 3                             | 1st Month   | 55947328      | 512851   | 1554093                | 54393235        |                         |                               |
|                               | 2nd Month   | 54393235      | 498605   | 1554093                | 52839142        |                         |                               |
|                               | 3rd Month   | 52839142      | 484359   | 1554093                | 51285049        |                         |                               |
|                               | 4th Month   | 51285049      | 470113   | 1554093                | 49730956        |                         |                               |
|                               | 5th Month   | 49730956      | 455867   | 1554093                | 48176863        |                         |                               |
|                               | 6th Month   | 48176863      | 441621   | 1554093                | 46622770        |                         |                               |
|                               | 7th Month   | 46622770      | 427375   | 1554093                | 45068677        |                         |                               |
|                               | 8th Month   | 45068677      | 413130   | 1554093                | 43514584        |                         |                               |
|                               | 9th Month   | 43514584      | 398884   | 1554093                | 41960491        |                         |                               |
|                               | 10th Month  | 41960491      | 384638   | 1554093                | 40406398        |                         |                               |
|                               | 11th Month  | 40406398      | 370392   | 1554093                | 38852305        |                         |                               |
|                               | 12th Month  | 38852305      | 356146   | 1554093                | 37298212        | 5213981                 | 18649116                      |

|   |            |          |        |         |          |         |          |
|---|------------|----------|--------|---------|----------|---------|----------|
| 4 | 1st Month  | 37298212 | 341900 | 1554093 | 35744119 |         |          |
|   | 2nd Month  | 35744119 | 327654 | 1554093 | 34190026 |         |          |
|   | 3rd Month  | 34190026 | 313409 | 1554093 | 32635933 |         |          |
|   | 4th Month  | 32635933 | 299163 | 1554093 | 31081840 |         |          |
|   | 5th Month  | 31081840 | 284917 | 1554093 | 29527747 |         |          |
|   | 6th Month  | 29527747 | 270671 | 1554093 | 27973654 |         |          |
|   | 7th Month  | 27973654 | 256425 | 1554093 | 26419561 |         |          |
|   | 8th Month  | 26419561 | 242179 | 1554093 | 24865468 |         |          |
|   | 9th Month  | 24865468 | 227933 | 1554093 | 23311375 |         |          |
|   | 10th Month | 23311375 | 213688 | 1554093 | 21757282 |         |          |
|   | 11th Month | 21757282 | 199442 | 1554093 | 20203189 |         |          |
|   | 12th Month | 20203189 | 185196 | 1554093 | 18649096 | 3162577 | 18649116 |
| 5 | 1st Month  | 18649096 | 170950 | 1554093 | 17095003 |         |          |
|   | 2nd Month  | 17095003 | 156704 | 1554093 | 15540910 |         |          |
|   | 3rd Month  | 15540910 | 142458 | 1554093 | 13986817 |         |          |
|   | 4th Month  | 13986817 | 128212 | 1554093 | 12432724 |         |          |
|   | 5th Month  | 12432724 | 113967 | 1554093 | 10878631 |         |          |
|   | 6th Month  | 10878631 | 99721  | 1554093 | 9324538  |         |          |
|   | 7th Month  | 9324538  | 85475  | 1554093 | 7770445  |         |          |
|   | 8th Month  | 7770445  | 71229  | 1554093 | 6216352  |         |          |
|   | 9th Month  | 6216352  | 56983  | 1554093 | 4662259  |         |          |
|   | 10th Month | 4662259  | 42737  | 1554093 | 3108166  |         |          |
|   | 11th Month | 3108166  | 28492  | 1554093 | 1554073  |         |          |
|   | 12th Month | 1554073  | 14246  | 1554073 | 0        | 1111174 | 18649096 |

## Annexure 12: List of Equipment Suppliers

### **Saratech Consultants & Engineers**

Plot No.99, Sector-3, HSIDC Industrial Estate

Karnal – 132001

Haryana

Phone: +91-184-2220899

Mobile:+91-9812028899

E-mail: saratechkarnal@gmail.com

Website: www.saratechkarnal.com

### **Spectec Techno Projects Pvt. Ltd.**

Address : CB-254, Off. No. 1, 1st Floor,

Ring Road, Naraina, New

Delhi - 110 028, India

Tel. : +91 11 25774125, 25777397

Fax : +91-11-2577 7397

Email : info@spectecindia.com , officespectec@gmail.com

Website: www.spectecindia.com/

### **International Engineers (India)**

643, Partap Chowk, Industrial Area-B, Punjab

near Mago enterprises

Punjab India – 141003

Website: <https://internationalengineersindia.websites.co.in/>

## Annexure 13: Assumptions/Basis of the project

| Particulars  | Value    | Unit   |
|--|----------|--------|
| Machine capacity for spices per day in tonne                       | 0.8      | tonne  |
| Capacity Utilisation in the second year                            | 50%      |        |
| Increase in capacity utilisation per year                          | 5%       |        |
| Working hours  | 8        | Hours  |
| Working days per year  | 300      | Days   |
| Average working days per month                                     | 25       | days   |
| Final product as a percentage of raw material                      | 90%      |        |
| Raw material Stock in Days   | 30       | Days   |
| Finished goods stock in days                                       | 15       | Days   |
| Interest on working capital and term loan                          | 11%      |        |
| Power Consumption in units per day @ 100% capacity utilisation     | 300      | Units  |
| Preoperative Expenses as percentage of Project Cost                | 1%       |        |
| Increase in sale price/year  | 5%       |        |
| Rate per 100 gram pack of processed spices (jeera, Dhania, Chilli) | 28.75    | Rupees |
| Increase in raw material & packaging cost                          | 7.50%    |        |
| Average price of spices per kg                                     | 120      |        |
| Land   | Own land |        |
| Raw material cost per tonne  | 146250   | Rupees |
| Packaging material cost per 200 grams including printing cost      | 2        | Rupees |
| Creditors in percentage of the stock Value                         | 25%      |        |
| Debtors in percentage of the stock value                           | 15%      |        |
| Power tariff per unit consumed in Rs.                              | 9.00     | Rupees |
| Depreciation of plant and Machinery and office equipments          | 15%      |        |
| Depreciation of building   | 10%      |        |
| Own contribution in Working Capital                                | 25%      |        |
| Own contribution in Fixed Cost                                     | 40%      |        |
| Maintenance cost as Percentage of fixed cost                       | 20%      |        |
| Increase in salary expenses every year                             | 10%      |        |
| Repayment of term loan in months                                   | 60       | months |
| Moratorium in months   | 12       | months |
| Income Tax   | 25%      |        |
| Variable cost under Repair and maintenance in percentage           | 25%      |        |
| Variable component in salary in percentage                         | 10%      |        |
| Variable component in sale & Admin expenses                        | 15%      |        |
| Variable component of electricity in percentage                    | 98%      |        |
| Sales and branding expenses per annum in Rs.                       | 1000000  | Rupees |
| Misc Admin Expenses per annum @ 40000/- per month in Rs.           | 480000   | Rupees |
| Transportation expenses per annum @ 10000/- per week in Rs.        | 480000   | Rupees |
| Packaging Size   | 100      | grams  |

## Annexure 14: Interest on Bank Loan and Repayment Schedule

| Principal Repayment per month |             | 127766        |          |                        |                 |                         |                               |
|-------------------------------|-------------|---------------|----------|------------------------|-----------------|-------------------------|-------------------------------|
| Year                          | Particulars | Amount in Rs. | Interest | Repayment of principal | Closing Balance | Annual Interest payment | Projected Principal Repayment |
| 1                             | 1st Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 2nd Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 3rd Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 4th Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 5th Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 6th Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 7th Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 8th Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 9th Month   | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 10th Month  | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 11th Month  | 5525000       | 50646    | 0                      | 5525000         |                         |                               |
|                               | 12th Month  | 5525000       | 50646    | 0                      | 5525000         | 607752                  | 0                             |
| 2                             | 1st Month   | 6132752       | 56217    | 127766                 | 6004986         |                         |                               |
|                               | 2nd Month   | 6004986       | 55046    | 127766                 | 5877220         |                         |                               |
|                               | 3rd Month   | 5877220       | 53875    | 127766                 | 5749454         |                         |                               |
|                               | 4th Month   | 5749454       | 52703    | 127766                 | 5621688         |                         |                               |
|                               | 5th Month   | 5621688       | 51532    | 127766                 | 5493922         |                         |                               |
|                               | 6th Month   | 5493922       | 50361    | 127766                 | 5366156         |                         |                               |
|                               | 7th Month   | 5366156       | 49190    | 127766                 | 5238390         |                         |                               |
|                               | 8th Month   | 5238390       | 48019    | 127766                 | 5110624         |                         |                               |
|                               | 9th Month   | 5110624       | 46847    | 127766                 | 4982858         |                         |                               |
|                               | 10th Month  | 4982858       | 45676    | 127766                 | 4855092         |                         |                               |
|                               | 11th Month  | 4855092       | 44505    | 127766                 | 4727326         |                         |                               |
|                               | 12th Month  | 4727326       | 43334    | 127766                 | 4599560         | 597305                  | 1533192                       |
| 3                             | 1st Month   | 4599560       | 42163    | 127766                 | 4471794         |                         |                               |
|                               | 2nd Month   | 4471794       | 40991    | 127766                 | 4344028         |                         |                               |
|                               | 3rd Month   | 4344028       | 39820    | 127766                 | 4216262         |                         |                               |
|                               | 4th Month   | 4216262       | 38649    | 127766                 | 4088496         |                         |                               |
|                               | 5th Month   | 4088496       | 37478    | 127766                 | 3960730         |                         |                               |
|                               | 6th Month   | 3960730       | 36307    | 127766                 | 3832964         |                         |                               |
|                               | 7th Month   | 3832964       | 35136    | 127766                 | 3705198         |                         |                               |
|                               | 8th Month   | 3705198       | 33964    | 127766                 | 3577432         |                         |                               |
|                               | 9th Month   | 3577432       | 32793    | 127766                 | 3449666         |                         |                               |
|                               | 10th Month  | 3449666       | 31622    | 127766                 | 3321900         |                         |                               |
|                               | 11th Month  | 3321900       | 30451    | 127766                 | 3194134         |                         |                               |
|                               | 12th Month  | 3194134       | 29280    | 127766                 | 3066368         | 428654                  | 1533192                       |

|   |            |         |       |        |         |        |         |
|---|------------|---------|-------|--------|---------|--------|---------|
| 4 | 1st Month  | 3066368 | 28108 | 127766 | 2938602 |        |         |
|   | 2nd Month  | 2938602 | 26937 | 127766 | 2810836 |        |         |
|   | 3rd Month  | 2810836 | 25766 | 127766 | 2683070 |        |         |
|   | 4th Month  | 2683070 | 24595 | 127766 | 2555304 |        |         |
|   | 5th Month  | 2555304 | 23424 | 127766 | 2427538 |        |         |
|   | 6th Month  | 2427538 | 22252 | 127766 | 2299772 |        |         |
|   | 7th Month  | 2299772 | 21081 | 127766 | 2172006 |        |         |
|   | 8th Month  | 2172006 | 19910 | 127766 | 2044240 |        |         |
|   | 9th Month  | 2044240 | 18739 | 127766 | 1916474 |        |         |
|   | 10th Month | 1916474 | 17568 | 127766 | 1788708 |        |         |
|   | 11th Month | 1788708 | 16396 | 127766 | 1660942 |        |         |
|   | 12th Month | 1660942 | 15225 | 127766 | 1533176 | 260001 | 1533192 |
| 5 | 1st Month  | 1533176 | 14054 | 127766 | 1405410 |        |         |
|   | 2nd Month  | 1405410 | 12883 | 127766 | 1277644 |        |         |
|   | 3rd Month  | 1277644 | 11712 | 127766 | 1149878 |        |         |
|   | 4th Month  | 1149878 | 10541 | 127766 | 1022112 |        |         |
|   | 5th Month  | 1022112 | 9369  | 127766 | 894346  |        |         |
|   | 6th Month  | 894346  | 8198  | 127766 | 766580  |        |         |
|   | 7th Month  | 766580  | 7027  | 127766 | 638814  |        |         |
|   | 8th Month  | 638814  | 5856  | 127766 | 511048  |        |         |
|   | 9th Month  | 511048  | 4685  | 127766 | 383282  |        |         |
|   | 10th Month | 383282  | 3513  | 127766 | 255516  |        |         |
|   | 11th Month | 255516  | 2342  | 127766 | 127750  |        |         |
|   | 12th Month | 127750  | 1171  | 127750 | 0       | 91351  | 1533176 |

## Annexure 15: Illustrative List of Equipment Manufacturers

### **Shankar Engineering Corporation**

18, Rabindra Sarani, Gate No. 2,  
3rd Floor, Room No. 335,  
Poddar Court Building  
Tea Board Of India,  
Lalbazar Police Headquarters,  
Kolkata - 700001, West Bengal, India  
Phone: 08046072523  
Website: <https://www.shankarengineeringcorp.com/>

### **The Scientific Apparatus Company**

No. 40-A, Chaulpathy Road,  
Belegkata, Kolkata - 700010, West Bengal, India  
Phone: 08048601849  
Website: [www.pharmachemfood.com](http://www.pharmachemfood.com)

### **Wellmaker Engineering Company**

Plot No. 53, Kanta Pukur,  
3rd Bye Lane,  
Kadamtala, Kolkata - 711101, West Bengal, India  
Phone: 08042967607  
Website: [www.wellmaker.in](http://www.wellmaker.in)

### **Lithotech Food & Spice Machinery**

17, Sutirth, Sagar Signature Complex,  
Waliv Phata, Vasai Road East,  
Thane District, Vasai East,  
Mumbai - 401208, Maharashtra, India  
Phone: 08048762952  
Website: <https://www.lithotechfoodspicemachinery.com/>

