

***DETAILED PROJECT REPORT  
FOR  
SETTING UP AN INTEGRATED UNIT  
FOR  
COCONUT NEERA  
AND  
ITS VALUE ADDED PRODUCTS***

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This Project Report in MS Word and Excel template format is available in website page - Neera -> Project Reports  
<http://coconutboard.gov.in/neera-proj-rep.htm>

## **EXECUTIVE SUMMARY**

The project is proposed for an envisaged capacity of processing 10000 litres of raw coconut neera per day, out of which 6000 litres of raw neera would be processed into coconut neera drink, 2000 litres would be processed into coconut honey and balance 2000 litres would be processed into coconut sugar. The promoters of the project are farmer producer organizations who would be procuring the raw neera from coconut farmers under coconut producer federations registered with Coconut Development Board.

The technology for conversion of coconut neera into neera drink and other value added products is available with the Coconut Development Board Institute of Technology (CIT), Aluva, SCMS Institute of Technology, Kalamassery, Kerala Agricultural University, Thrissur, Defence Food Research Laboratory, Mysore and Central Plantation Crops Research Institute (CPCRI), Kasargod.

Coconut neera enjoys a wide market potential in countries like USA, Europe and African countries. The targeted consumers for coconut neera within the country are health and nutrition sector, supermarkets and huge shopping malls, luxury hotels, clubs, tourism industry, railways, airways etc.

The total project cost including working capital margin is estimated as Rs.450 lakhs. Projected working results of the project throws light on its viability. Sales Realization from third year onwards when the plant capacity attains 90% is Rs.39.89 crores. Gross Profit during the 5<sup>th</sup> year of operation is Rs.3.37 crores and Net Profit is Rs.1.95 crores.

Gross Profit on Sales is **8.45%** and Net Profit on Sales is **4.91%**. Pay Back Period for the project is 2 yrs 8 months. Internal Rate of Return for the project is **30%**

and Return on Capital employed during the 5<sup>th</sup> year of the project is **35.65%**. The Project breaks even at **61%**. Debt Service Coverage Ratio during the first five years averages to **1.90**.

## **I. AIM AND OBJECTIVE OF THE PROJECT**

### *Aim of the project*

To produce neera and its value added products utilizing modern technology and to make available processed coconut neera and its value added products in attractive consumer packs in all metropolitan cities in India, providing a decent income to the coconut farmers, creating rural employment opportunities and improving the GDP of the nation.

### *Objectives of the project*

- Setting up of an integrated unit for coconut neera and its value added products functioning through farmer producer organization.
- Maximum utilization of coconut crop for producing a diverse range of value added products from neera

## **II. PURPOSE OF THE PROJECT**

### *The purpose of the project is:*

- ❖ Overall development of coconut processing sector.
- ❖ Developing a consistent market for coconut neera and its value added products
- ❖ To provide stability to the coconut based economy

### III. ORGANISATION

#### *Neera Production through Farmer Producer organizations in coconut sector*

Formation of Coconut Producers Societies (CPS) was initiated by the Board with an objective to mobilize coconut farmers and establish grass root level farmer institutions for undertaking production, processing and marketing of coconut. 40-100 farmers having 4000-5000 coconut palms in their area of operation form a CPS. Such 20-25 CPS units of a particular area are aggregated to form Coconut Producers Federations (CPF) which is further integrated to Coconut Producers Company (CPC). (CPCs are Producer Companies registered with Registrar of Companies under Producer Company Act).

Neera production, processing and packaging can be undertaken under the auspices of Federations of CPS registered with CDB. Healthy palms are selected by Federations from among the palms in the member CPS. Neera is collected at CPF level and assembled at a primary processing centre under the auspices of Federation. Primary processing of Neera and transportation to processing centre can be done here under the guidance of the authorized research agency with strict monitoring of Federation. Producer Companies can initiate processing and value addition of Neera and develop value added products like syrup, honey and palm sugar. The palms to be tapped needs to be marked in advance by CPF.

Value of Neera tapped should be shared between the farmer and the Neera technician in a fixed proportion so that both the stakeholders are benefited and the sector emerges in a sustained manner. CPFs can start training of Neera Technicians and identify coconut palms suitable for Neera tapping.

# ***THE PROJECT***

## IV. THE PROJECT

### *Introduction*

India stands first in productivity (8936 nuts/ha) and production (16943 million nuts) and third in area under coconut. The crop contributes more than Rs 8000 crores annually to the GDP and earns valuable foreign exchange to the extent of Rs 2000 crores by way of export of coconut products. The contribution of the crop to the vegetable oil pool in the country is about 5 per cent and the crop sustains 10 million people of the country through cultivation, processing, marketing and trade related activities. Under these circumstances, the crop holds much value in the Indian economy. Kerala has the largest area under cultivation of coconut at 8.2 lakh Ha and occupies the number one position in production among the Indian states. The state produces 5941 million nuts per year (2011-12) and around 60% of this production occurs in the peak producing months from January to July. Coconut cultivation in the state is undertaken mainly in small and marginal scattered holdings. This hampers the prospects of processing and value addition in coconut. Further, the mindset of the traditional coconut grower is attuned to processing for copra and coconut oil that their thoughts do not go out of this oil circle. But coconut is not just an oilseed crop. Exploiting the potential of this crop to enable production of value added products will help in protecting the farmers from the annually recurring price fall during the peak production months.

It is in this context that products from the coconut inflorescence sap like Neera, coconut palm syrup, honey, jaggery, coconut sugar etc gains importance. Neera is the non-alcoholic and nutritious drink from the immature inflorescence of coconut which can be promoted due to its potential for value addition, employment generation and better returns to the coconut farmers. Products like coconut flower syrup, jaggery, honey and coconut palm sugar are produced from Neera.

## *Neera*

Neera, the sweet sap of the coconut palm, is fast becoming a popular drink on account of its highly nutritive value, delicious taste and agreeable flavor. It is obtained by tapping the unopened inflorescence of the coconut palm. It is non-alcoholic and nutritious drink. Neera is a rich source of sugars, minerals and vitamins. It is sweet and oyster white in colour and translucent. It is tapped from the coconut inflorescence and is filtered, pasteurized, and bio preservatives added to preserve the product. Treated Neera can be preserved in cans upto 2 months at room temperature. It can be packed in glass bottles.

### *Uses of Neera:*

Neera is popular as a **delicious health** drink. It is good for digestion, facilitates clear urination and prevents jaundice. The nutrient-rich "sap" has **low Glycemic Index** (GI of only 35) and hence **diabetic-friendly** since very low amount of the sugar is absorbed into the blood. It is an **abundant source of minerals, 17 amino acids, vitamin C, broad-spectrum B vitamins**, and has nearly neutral pH. Coconut crystals can be made out of this pure, low glycemic natural sap. While most brown sugar is boiled at temperatures up to 221 degrees F with the end product containing 93% sucrose, sap crystals contain only 0.5% glucose, 1.5% fructose, 16% sucrose and 82% inulin - a pre-biotic that promotes digestive health. It can be used as an ideal sweetener. Neera fetches much better returns compared to copra.

### ***Composition of Neera***

Total solids (g/100 ml)	15.2 to 19.7
pH	6 to 6.5
Specific gravity	1.058 to 1.077
Total sugars (g/100 ml)	14.40
Original reducing sugars (g/100 ml)	5.58
Total reducing sugars (g/100 ml)	9.85
Total ash (g/100 ml)	0.11 to 0.41
Citric acid (g/100 ml)	0.50
Alcohol (in %)	nil
Iron (g/100 ml)	0.15
Phosphorus (g/100 ml)	7.59
Ascorbic acid (mg/100 ml)	16 to 30
Total protein (g/100 ml)	0.23-0.32

### ***Products***

Products initially proposed in the project are Coconut Neera, Coconut Honey, Coconut Sugar.

### ***Technology***

The technology for processing and preservation of coconut neera is available with various institutes like, CDB Institute of Technology under Coconut Development Board, Govt. of India, SCMS Institute of Science and Technology, Defence Food Research Laboratory, Kerala Agricultural University and Central Plantation Crops Research Institute (CPCRI). The Process ensures hygienic collection of sap using anti ferment agents approved by FSSAI. The fresh coconut sap collected in such a manner could be transported in ambient conditions to the factory site. The coconut sap is processed into a non alcoholic nutritious drink through centrifugal filtration and pasteurization at the desired temperature and packed into consumer packs.



## *Land*

The land requirement for the project would be about 50 cents.

## *Building*

Section	Plinth Area	Cost (Rs in lakhs)
Process Area	3000 sq ft @ Rs 1500 per sq ft	45.00
Laboratory	150 sq ft @ Rs 1500 per sq ft	2.25
Office Area	150 sq ft @ Rs 1500 per sq ft	2.25
Storage Area	1500 sq ft @ Rs 1000 per sq ft	15.00
Utility Area	750 sq ft @ Rs 1000 per sq ft	7.50
Workers Amenity Area	200 sq ft @ Rs 1000 per sq ft	2.00
<b>Total</b>	<b>6500 sq ft</b>	<b>74.00</b>
<b>Civil works for ETP</b>		<b>6.00</b>
<b>Grand Total</b>		<b>80.00</b>

## *Installed Capacity*

Installed capacity of the plant is to process 10000 litres of coconut neera per day, out of which 6000 litres or raw neera would be converted into processed neera, 2000 litres would be converted into honey and balance 2000 litres would be converted into white coconut sugar.

## *Machinery requirement*

### **i) Neera collection/ Transportation (at CPF level)**

1	Tapping devices and other items	500 sets	7.50
2	5 litre tapping collection vessels (Plastic cans)	20000 nos	8.00
3	1000 litre Chillers to be provided at collection centres	10 nos	7.00
4	25 litre neera collection vessels	1000 nos	1.00
5	500 litre specially designed insulated boxes for transporting neera from farm site to processing centre	40 nos	8.00

## ii) Neera Processing (at CPC level)

6	5000 litre insulated storage tank	2 nos	8.00
7	Automatic high speed Industrial Centrifuge 10000 rpm – 1200 litre / hr capacity	1no	60.00
8	5000 litre Filtered Neera insulated storage tank	2 nos	8.00
9	1000 litre Mixing tank with stirrer	3 nos	6.00
10	Pasteurizer- 1000 litre per batch per hr	2 nos	16.00
11	SS storage tanks- 5000 litres	2 nos	6.00
12	2000 litre SS storage tank for neera (honey & sugar)	2 nos	5.00
13	Steam boiler- 100-150 kg/cm2 pressure		7.00
14	Vacuum evaporator unit - 500 kg per hr evaporation capacity		15.00
15	Transfer pumps	5 nos	0.50
16	Refrigerator - 420 litre	10 nos	3.00
17	Miscellaneous items		2.00
18	Piping, fitting & other accessories		3.00

## iii) Packaging/Batch coding (at CPC level)

19	Automatic filling machine for neera- Range 200 ml-1000 ml 5000 bottles per hr capacity	1 no	15.00
20	Cap sealing machine for PP bottle for neera -1 no - 100 fills per minute		3.00
21	Batch coding machine - 200 impressions per min	1 no	2.00
22	Bottle filling machine for coconut honey -250 bottles (500 g) per hr capacity		3.00
23	Pouch filling machine for coconut sugar -7000 pouches (5 g) per hr capacity		5.00
24	Electronic weighing machine - 0-10 kg	2 nos	0.50
25	Induction sealing and capping machine for honey 50 pc per min		0.50
	<b>Total Cost (in lakhs)</b>		<b>200</b>

### *Capacity Build up*

In the first year of operation the unit would be working at 70% of its capacity, 80% during second year and from third year onwards it would be attaining a capacity of 90%. The unit will be working for 300 days in a year.

### *Raw material requirement and Cost of raw material*

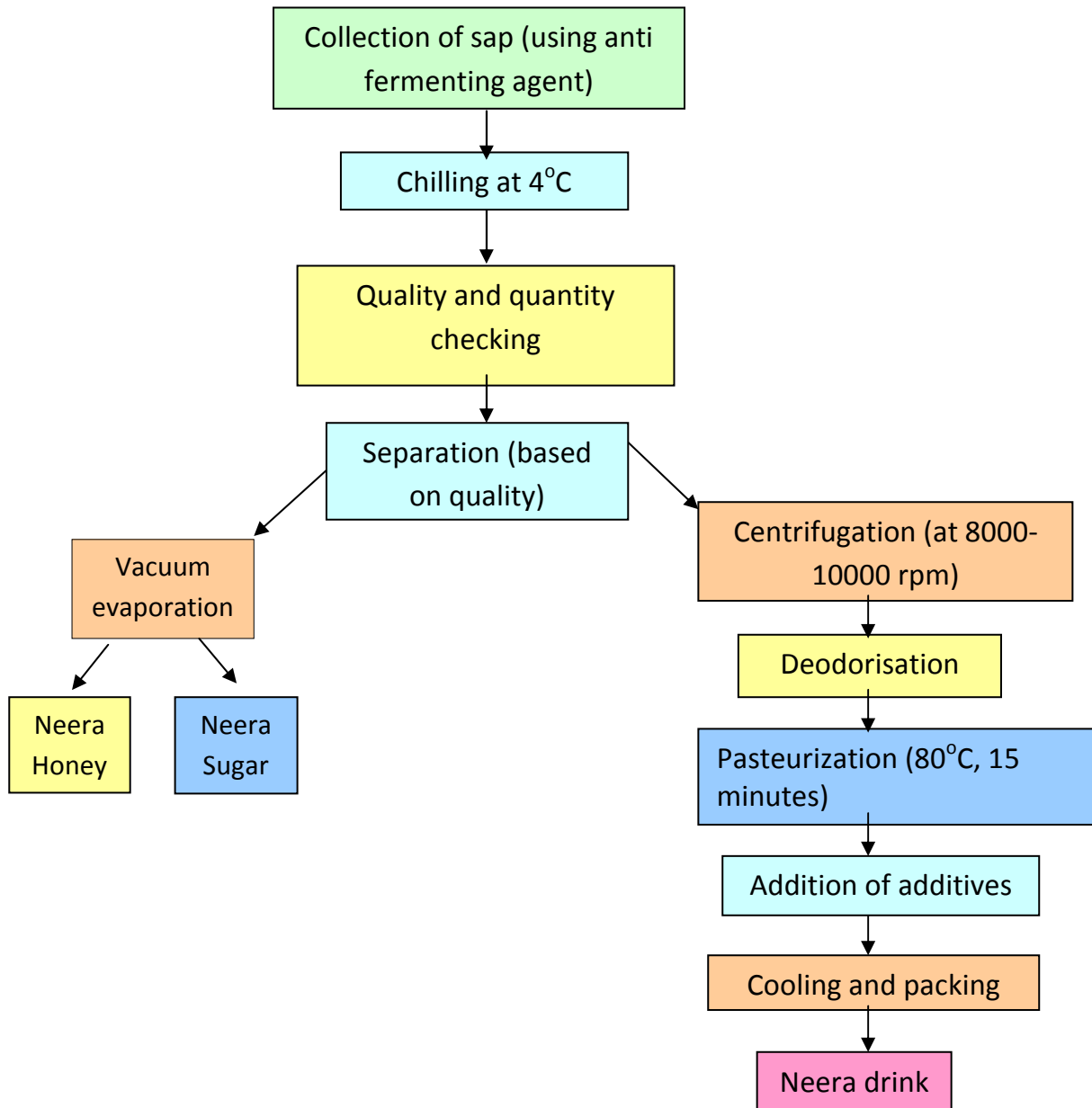
At the rate of 10000 litres per day, the annual requirement of raw material would be 30 lakh litres of freshly tapped coconut neera. The cost of raw material along with incidentals such as transportation, loading and unloading at the plant site @ Rs.78 per litre would work out to Rs.21.48 crores at 90% capacity utilization stage.

### ***Procurement of raw material***

Raw material will be procured from Coconut Producer Federations by making advance arrangements.

### **Process flowchart**

#### **Flow diagram showing processing of fresh Neera**



## *Preservation and packing of Coconut Neera*



*Neera collection in HDPE cans*



*Transportation of neera in insulated ice boxes*



*Centrifugation filtration of Coconut Neera*



*Storing of raw Neera in chillers*



*Pasteurization of Coconut Neera*



*Preservative treatment of Neera*



**Storage of packed Neera**



**Packing of neera in Automatic filling machine**

### ***Manpower requirement***

	Designation	No. of Staff	Salary per month in Rs.
1	Project Manager	1	Rs 25000
2	Plant Supervisor	1	Rs 15000
3	Chemist	1	Rs 10000
4	Machine Operator	10	Rs 10000 x 10
5	Office Assistant	1	Rs 10000

### ***Power and fuel***

Total connected load will be 85 H.P. On this basis daily requirement of electrical energy will be 64 units per hour at 100% capacity. At the rate of Rs.7 per unit, cost of fuel is Rs.10.75 lakh per year. Annual expenditure on fuel (firewood for boiler) would be Rs.15.5 lakhs at 100% capacity utilization.

### ***Water***

Requirement of water for the unit would be around 14 kilo litres per day. At the rate of Rs.25 per kilo litre the expenditure on this item is estimated as Rs.1.05 lakh per year at 100% capacity utilization.

### ***Factory overheads***

Factory overheads include expenses on repairs and maintenance, stores and spares and plant sanitation. This item would be Rs.14.4 lakhs at 100% capacity utilization.

### ***Production Labour***

Skilled workers - 6 nos @ Rs.400 per day.

Unskilled workers - 8 nos @ Rs.300 per day.

Total expenditure to be incurred on this account is Rs.14.4 lakhs at 100% capacity.

### ***Consumables***

The main consumables are preservatives/anti fermenting agent/deodorizing agent and expenditure to be incurred on this account is Rs.60 lakhs at 100% capacity utilization.

### ***Depreciation***

Rate of depreciation adopted is 10% for Plant & Machinery and 5% for other type of assets such as building, compound wall, roads and furniture and office equipments. Depreciation for the first year works out to Rs.27.55 lakhs.

### **Output, Pricing of the End Product and Sales Realisation**

Coconut Neera: Recovery rate of neera is taken as 1.0 litre per inflorescence per palm per day. Packed Coconut Neera is priced at Rs.175 per litre, Coconut honey is priced at Rs.600 per litre and Coconut sugar is priced at Rs.1200 per kg. The pricing of neera has been arrived on the following basis-

60% of the processed neera would be distributed at a price of Rs.125 per litre for the common class of people. Another 20% of the finished product would be distributed in very attractive consumer packs for the upper strata @ Rs 200 per litre and balance 20% would be aimed for the elite class in exotic packing @ Rs 300 per litre. The weighted average works out to Rs.175 per litre.  $(0.6 \times 125 + 0.2 \times 200 + 0.2 \times 300)$

On the above basis the output and sales realization has been worked out and are presented below:

#### **Output of products and Sales Realization (3rd year of operation)**

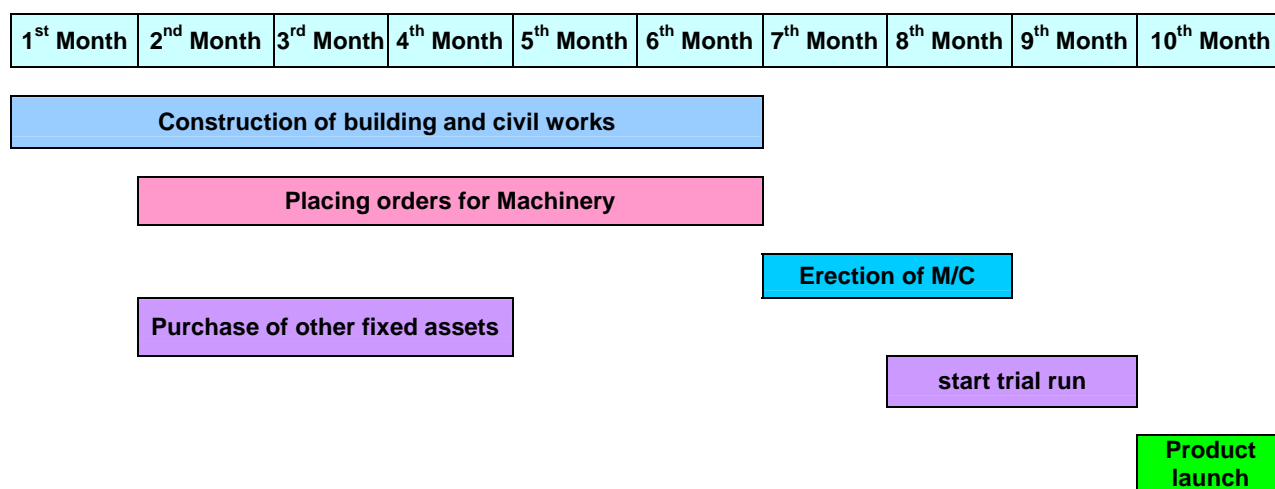
Product	Quantity	Value (Rs. crores)
Coconut Neera (lakh litres) @Rs175 per litre	15.39	26.93
Coconut honey (lakh litres) @Rs 600 per litre	1.08	6.48
Coconut sugar (kgs) @Rs 1200 per kg	54000	6.48
<b>Total</b>		<b>39.89</b>

Sales Realization during the third year when the plant works at 90% of its capacity is Rs.39.89 crores.

### ***MARKET PROMOTION EXPENSES:***

Market promotion expenses is a major item involving expenditure on advertisement through the electronic and print media, promotional efforts to boost export of the product and to promote their brand of products in different markets within India and outside. Another item of expenditure relating to export sales is the expenses incurred towards container cost, freight and insurance. Sales promotion, sales expenses and export sales would work to Rs.598 lakhs during the 5<sup>th</sup> year of the project when the project works at 90% of its capacity. It works out to around 14% of the Sales realization.

### **SCHEDULE OF IMPLEMENTATION:**



## **V. MODUS OPERANDI**

### ***Neera training as part of technical know-how***

CIT and SCMS College of Technology are offering Residential Training Programs including theory and practical sessions for freshers as well as for traditional toddy tapper to equip them as Neera Technicians. The trainees will be nominated by the CPFs registered with CDB. The training will be for a period of 14 days.



Theoretical session includes the introduction on coconut palms, about Neera and Neera production and need for quality and hygienic in tapping, collecting and storage. Practical session includes field level demonstration and training on preliminary and preparatory steps involved prior to Neera tapping, field level demonstration and training on steps involved in Neera tapping and collection and field level demonstration and training on storage and handling of collected neera at the tapping site.

As a result a team of mentally and physically fit Neera technicians will be available for Neera tapping.

### ***Neera collection***

Neera collection is a step by step process in hygienic conditions.

- a) Select the mature inflorescence and remove unwanted leaf from surroundings of inflorescence
- b) Remove the tip of inflorescence using knife
- c) Apply the disinfectant on the inflorescence and neighboring area using sprayer
- d) Wipe it using cotton
- e) Beat the spadix to ensure smooth flow of neera
- f) Application of gloves and opening of sterilized clay
- g) Application of sterilized clay
- h) Put anti-ferment solution into the collecting vessel
- i) Keep the vessel on the top of the inflorescence for collecting neera
- j) Pour the collected neera into transportation vessels for further processing
- k) Remove the excess of collected neera by washing with distilled water (3 times)
- l) Again put anti-ferment solution into the collecting vessel.

m) Fit the collecting vessel on top of the inflorescence.

## **VI. MARKETING STRATEGIES**

### ***Market demand***

Coconut Neera already enjoys an excellent market potential in countries like Sri Lanka, Myanmar, Thailand, Philippines and other pacific countries. Coconut neera, if introduced in India is bound to create a huge market potential as a health drink and as a base for manufacture for value added coconut products like concentrated syrup, sugar, honey etc which has wide export potential in USA, Europe and African countries.

### ***Market development***

Coconut neera and its value added products can be positioned in the market for the targeted section like health conscious people, diabetic patients, kids and youngsters as a natural nutritive product to replace soft drinks, also sugar and honey after value addition.

There is bound to be a growing market trend for coconut neera and its value added products in beverages, food, bakery and confectionary industries.

### ***Competitive advantage***

Competitive advantages are essential for survival of any product in a competitive market. The term competitive advantage is the ability gained through attributes and resources to perform at a higher level than others in the same industry or market. In the case of Glycemic Index, coconut neera and its value added products have a higher competitive advantage over existing soft drinks/beverages. Not all carbohydrate foods are ranked equal, in fact they behave quite differently in our

bodies due to individual metabolism. The glycemic index or GI describes this difference by ranking carbohydrates according to their effect on our blood glucose level. Low glycemic index foods produce only small fluctuations in our blood glucose and insulin level. So neera and its value added products can be safely used by diabetic patients.

The use of concentrate syrup gives same sweet blend without causing spikes in the blood sugar while benefiting from it being nutritionally superior as compared with other natural syrups.

Coconut sap sugar can be the most suited alternative sweetener for use by diabetic patients.

### ***Market promotion***

- Availability of local markets like supermarkets, hyper markets, etc.
- Reach out to kids and youngsters through canteens, malls etc
- Use of existing market among tourists
- Introduction as exotic products in luxury hotels, clubs and resorts

## **VII. DELIVERABLES OF THE PROJECT**

### ***Product line***

Product line includes the Packed Neera drink and its value added products like coconut sap sugar and honey.

### ***Main Products***

***Packed Neera Drink:*** Packed and preserved Neera can be kept in pet / PP bottles up to 2 months at room temperature and six months under refrigerated condition.

**Coconut Sap sugar:** The coconut sap sugar is obtained by concentration of neera syrup in to white sugar crystals by vacuum evaporation.

**Honey:** The honey is obtained by concentration of coconut neera through vacuum evaporation. This coconut honey will have a shelf life of 6 months.

## VIII. PROJECT EVALUATION

(Rs. in lakhs)

Sl. No.	Item	1st year	2nd year	3rd year	4th year	5th year
1	Sales Realization	3102.75	3546.00	3989.25	3989.25	3989.25
2	Gross Profit	249.01	291.27	333.29	330.38	327.19
3	Net Profit after tax	112.47	147.55	182.47	185.95	189.22
4	Long Term Debt	251.72	188.79	125.86	62.93	0.00
5	Gross Profit on Sales (%)	8.03	8.21	8.35	8.28	8.20
6	Net Profit after tax on Sales (%)	3.62	4.16	4.57	4.66	4.74
7	Net Worth	242.52	391.27	574.95	762.09	952.51
8	Return on Capital Employed	50.38	50.21	47.56	40.05	34.35
9	Current Ratio(Current Assets/ Current Liabilities)	1.54	1.83	2.22	2.62	3.02
10	Debt Equity Ratio	1.02	0.48	0.22	0.08	0.00
11	Pay Back Period	2 years	8 mths			
12	Internal Rate of Return (IRR)	32%				
13	Debt Service Coverage Ratio(DSCR)	1.52	1.80	2.10	2.20	2.31
14	Break Even Point	61%				

## IX. COST BENEFIT ANALYSIS

### *SWOT Analysis*

<i>Strength</i>	<i>Weakness</i>
<ul style="list-style-type: none"><li>➤ Project implementation through Farmer Producer Organizations</li><li>➤ Financial support from Central and state Government</li><li>➤ Choices of technology<ol style="list-style-type: none"><li>1. <b>CDB Institute of Technology</b></li><li>2. <b>Defence Research And Development Organisation</b></li><li>3. <b>National Chemical Laboratory , Pune</b></li><li>4. <b>SCMS Institute Of Bioscience And Biotechnology Research And Development</b></li><li>5. <b>Kerala Agriculture University.</b></li></ol></li></ul>	<ul style="list-style-type: none"><li>➤ Availability of trained neera technicians in a regular basis.</li></ul>
<i>Opportunity</i>	<i>Threat</i>
<ul style="list-style-type: none"><li>➤ Low glycemic index or (35 GI)- Competitive advantage of Neera</li><li>➤ Market penetration</li><li>➤ Health conscious society</li><li>➤ Economic growth of farmers &amp; direct improvement in lifestyle.</li></ul>	<ul style="list-style-type: none"><li>➤ Quality standards should be at par with International standards</li><li>➤ Malpractices at field level</li></ul>

### *Economic cost benefit analysis*

Economic impact analysis (EIA) is done in two aspects of economy; micro economy and macro economy. International demand of Neera and its value added products gives a wider opportunity for export, which will bring huge hike in macro economy of the country. At micro level, neera and its value added products could

contribute to the Gross Domestic Product (GDP) immensely in the coming financial years.

This project creates much *direct effects* on the economy. As this is an initiative of farmer collectives, it brings direct benefit to the farmers both in case of business and personal income. The project employs coconut producer societies, federations and companies, thus improving the employment rate and creating a new set of 'green collar employees' in the country.

*Indirect effect* of the project is the simultaneous growth or expansion of beverage, food and confectionary industries to a newer range.

The prospect for the economy of Kerala was also analyzed. Tapping of Neera at a recovery rate of 2 litres per palm was calculated. The proportion of final pricing of Neera was taken in such a way that the coconut farmer gets 50% of the income, Neera technician gets 25% of the income and 25% goes in for processing, packaging and marketing costs.

In a situation where 1% of the palms in the state are subject to tapping, the returns from Neera to the state amounts to Rs. 54000 crores (Market price of Neera is taken as Rs. 100/-). The generation of rural employment through Neera technicians is around 9 lakhs. The total income of the work force of Neera technicians through tapping of Neera is around Rs. 13500 crores while the income of the coconut farmers is to the tune of Rs. 27000 crores, ie., around Rs. 40,500 crores additional income is generated in Kerala by initiating Neera processing.

This factor has much significance in the context that this amount is more than the inflow of funds from the Middle East to Kerala which is roughly around Rs. 27000 crores. The total NRI inflow of funds to Kerala is around 65000 crores. The NRI funds mostly go in as deposits, while the additional income generated in the state

through Neera processing is ploughed back to the economy since it increases the purchasing power of the farmers and the Neera technicians.

***Generation of Revenue through Sales of Neera and other Value Added Products***

Palms tapped		Neera production in 300 days (in MT)	Returns from sale of Neera in crores	Income to the coconut farmer in crores	Income to the Neera technician in crores	Revenue generation to state by virtue of increased purchasing power of farmer and neera technician
%	Number in lakhs					
1	18	540000	5400	2700	1350	405
5	90	2700000	27000	13500	6750	2025
10	180	5400000	54000	27000	13500	4050

The increase in GDP that can be attained through Neera tapping is estimated to be about 17%. The above estimations are mainly based on the sale of Neera as such as a drink. If Neera is processed to form palm syrup, palm honey or palm sugar, the contribution to the state economy is still increased manifold.

***Social cost benefit analysis***

The social cost-benefit analysis (SCBA) facilitates the weighing up of all current and future social benefits of the project. The society shall witness a remarkable improvement in the lifestyle and health habits of the people. The coconut producers and tappers could expect a consistent income flow in a year which could ensure poverty eradication.

***Environmental cost benefit analysis***

The integrated unit of neera and its value added products ensures economic returns without creating any ecological impact in the short or long term process. It ensures

proper utilization of resources and the project shall be considered a Greenfield project as there is an effluent treatment system to treat the waste water which is the only waste created out of this unit and also there is no threat of greenhouse gas emission. Also there is a scope for using solar energy as the energy consumption of the unit is quite significant.

### ***CONCLUSION***

In this project value addition obtained by fresh coconut sap to neera is quite significant. Coconut neera and its value added products are bound to have an excellent market potential in the coming years.

Sales Realization from third year onwards when the plant capacity attains **90%** is **Rs.39.89 crores**. Gross Profit during the 5<sup>th</sup> year of operation is Rs.3.37 **crores** and Net Profit is **Rs.1.95 crores**. Gross Profit on Sales is **8.45%** and Net Profit on Sales is **4.91 %**. Pay Back Period for the Project is **2 years 8 months**. Internal Rate of Return for the Project is **30%**. The Project breaks even at **61%**. Debt Service Coverage Ratio during the first five years averages to **1.90**

All the above indicators support the viability of the Project.



## COCONUT NEERA PROJECT

### Assumptions

Installed capacity (in litre per day)	10000
Recovery of neera	95%
Converted to neera	60%
Converted to honey	20%
Converted to sugar	20%
Recovery of honey	20%
Recovery of sugar	10%
Cost of raw neera (Rs.per litre)	78
Price of neera (Rs.per litre)	175
Price of honey (Rs.per litre)	600
Price of sugar (Rs.per Kg)	1200
No. of working days	300
<b>Packing material cost</b>	
Neera (per litre)	35
Honey (per litre)	30
Sugar	200
<b>Market Promotion Expenses</b>	
Percentage of sales realization	15%
Working capital Loan	14.50%
Long Term Loan interest	12.50%
Loan repayment period (years)	5

First year capacity utilization	70%
Second year capacity utilization	80%
Third year capacity utilization	90%
Fourth year capacity utilization	90%
Fifth year capacity utilization	90%

To Farmer (Rs.per litre)	50
To Tapper (Rs.per litre)	25
Transportation charges (Rs.per litre)	3

## COCONUT NEERA PROJECT

### APPENDIX II

#### OUTPUT OF PRODUCTS AND SALES REALISATION

(Rs. In lakhs)

Sl. No.	Item	1st year		2nd yer		3rd year		4th year		5th year	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
<b>A</b>	<b>Capacity achieved</b>	70%		80%		90%		90%		90%	
<b>B</b>	<b>Products/ By Products</b>										
1	Coconut Neera (Lakh Ltrs)	11.97	2094.75	13.68	2394.00	15.39	2693.25	15.39	2693.25	15.39	2693.25
2	Coconut Honey (lakh Ltrs)	0.84	504.00	0.96	576.00	1.08	648.00	1.08	648.00	1.08	648.00
3	Coconut Sugar ( <sup>00</sup> MT)	0.42	504.00	0.48	576.00	0.54	648.00	0.54	648.00	0.54	648.00
	<b>Total</b>		<b>3102.75</b>		<b>3546.00</b>		<b>3989.25</b>		<b>3989.25</b>		<b>3989.25</b>

**COCONUT NEERA PROJECT**

**APPENDIX III**

**COST OF PACKING MATERIAL**

(Rs. in lakhs)

Sl. No.	Item	1st year	2ndyear	3rd year	4th year	5th year
1	Coconut Neera (Rs. per litre) Rs. 35	418.95	478.80	538.65	538.65	538.65
2	Coconut Honey (Rs. per litre) Rs. 30	25.20	28.80	32.40	32.40	32.40
3	Sugar (Rs. per satchet of 1Kg) Rs. 200	84.00	96.00	108.00	108.00	108.00
	<b>Total</b>	<b>528.15</b>	<b>603.60</b>	<b>679.05</b>	<b>679.05</b>	<b>679.05</b>
	<b>Add: 10% towards second stage packing</b>	52.82	60.36	67.91	67.91	67.91
	<b>Grand total</b>	<b>580.97</b>	<b>663.96</b>	<b>746.96</b>	<b>746.96</b>	<b>746.96</b>

**STATEMENT I**

**CAPITAL INVESTMENT COST OF THE PROJECT**

<b>Sl.No.</b>	<b>Item</b>	<b>Amount (Rs. in lakhs)</b>
<b>APPLICATION OF FUNDS</b>		
1	Land and Land development - 50 cents (on lease )	-
2	Building & other civil works 6500 sq.ft(including ETP)	80.00
3	Plant and Machinery	200.00
4	DG Set-62.5 KVA	7.50
5	Refrigerated vans	10.00
6	Electrification and Installation	15.00
7	Laboratory Equipments	1.00
8	Furniture & Office equipments	2.00
9	Technical know how & consultancy	1.00
10	Preliminary & Pre-operative expenses	6.00
11	Working Capital Margin	127.50
<b>TOTAL</b>		<b>450.00</b>
<b>MEANS OF FINANCE</b>		
1	Equity by Promoters	112.50
2	Term Loan from Banks/Fis	337.50
<b>TOTAL</b>		<b>450.00</b>

## OPERATING COSTS

(Rs. in lakhs)

Sl.No.	Item	1st year	2nd year	3rd year	4th year	5th year
1	Raw Material	1670.76	1909.44	2148.12	2148.12	2148.12
2	Packing Material	580.97	663.96	746.96	746.96	746.96
3	Utilities:					
	a) Power and Fuel	18.35	20.97	23.59	23.59	23.59
	b) Water	0.74	0.84	0.95	0.95	0.95
	c) Consumbales	42.00	48.00	54.00	54.00	54.00
4	Production Labour	10.08	11.52	12.96	12.96	12.96
5	Factory Overheads	4.00	4.00	4.00	4.00	4.00
6	Insurance & Taxes	1.08	1.08	1.08	1.08	1.08
7	Depreciation	27.55	24.80	22.32	20.08	18.08
		<b>2355.52</b>	<b>2684.60</b>	<b>3013.96</b>	<b>3011.73</b>	<b>3009.72</b>
8	Admin & Mgmt Expenses					
	a)Salary	19.00	20.90	22.99	25.29	27.82
	b)Other Admn. Expenses	5.00	5.50	6.05	6.66	7.32
9	Market Promotion Expenses	465.41	531.90	598.39	598.39	598.39
	<b>TOTAL</b>	<b>2844.93</b>	<b>3242.90</b>	<b>3641.39</b>	<b>3642.06</b>	<b>3643.25</b>

## LOAN REPAYMENT SHEDULE FOR LONG TERM LOAN

Total Long Term Loan Availed in lakh Rs. 337.50

Rate of Interest: 12.50%

		1st year	2nd year	3rd year	4th year	5th year
1	Loan availed	337.50	0.00	0.00	0.00	0.00
2	Loan at the beginning of the year	337.50	270.00	202.50	135.00	67.50
3	Loan repaid during the year	67.50	67.50	67.50	67.50	67.50
4	Interest accrued	42.19	33.75	25.31	16.88	8.44
5	Interest paid	46.88	33.75	25.31	16.88	8.44
6	Interest outstanding	0.00	0.00	0.00	0.00	0.00
7	Loan outstanding	270.00	202.50	135.00	67.50	0.00

## EVALUATION OF THE PROJECT

(Rs. in lakhs)

Sl.No.	Item	1st year	2nd year	3rd year	4th year	5th year
1	Sales Realisation	3102.75	3546.00	3989.25	3989.25	3989.25
2	Gross Profit	251.74	295.58	338.90	338.23	337.04
3	Net Profit after tax	112.38	148.97	185.20	190.64	195.71
4	Long Term Debt	270.00	202.50	135.00	67.50	0.00
5	Gross Profit on Sales(%)	8.11	8.34	8.50	8.48	8.45
6	Net Profit after tax on Sales (%)	3.62	4.20	4.64	4.78	4.91
7	Net Worth	220.08	370.25	556.65	748.49	945.40
8	Return on Capital Employed	51.37	51.61	49.00	41.45	35.65
9	Current Ratio(Current Assets/ Current Liabilities)	1.53	1.81	2.18	2.55	2.94
10	Debt Equity Ratio	1.20	0.54	0.24	0.09	0.00
11	Pay Back Period	2	8			
12	Internal Rate of Return (IRR)	30%				
13	Debt Service Coverage Ratio(DSCR)	1.47	1.72	2.00	2.09	2.19
14	Break Even Point	61%				

**STATEMENT VII  
BREAK EVEN ANALYSIS**

Sl.No	Item	(Rs. in lakhs) 3rd year of operation (At 90% capacity utilisation stage)
<b>A</b>	<b>Sales</b>	<b>3989.25</b>
<b>B</b>	<b>Variable Costs</b>	
1	Raw Material	2148.12
3	Packing Material	746.96
2	Utilities	78.53
3	Production labour	12.96
4	Factory Overheads	12.96
5	Insurance & Taxes	1.08
5	Adm. & Management Expenses(50%)	14.52
6	Market Promotion Expenses(50%)	299
	<b>TOTAL B</b>	<b>3314</b>
<b>C</b>	<b>CONTRIBUTION(A-B)</b>	<b>675</b>
<b>D</b>	<b>Fixed Costs</b>	
1	Depreciation	22.32
2	Adm. & Management Expenses(50%)	16.48
3	Sales Expenses(50%)	299.19
4	Interest:	
	Long Term Loan	25.31
	Short Term Loan	47.81
	<b>TOTAL D</b>	<b>411.11</b>
<b>E</b>	BREAK EVEN SALES(Rs lakhs) BREAK EVEN POINT	<b>2430</b> <b>60.91 %</b>



## CASH FLOW STATEMENT

(Rs. in lakhs)

Sl.No.	Item	Pre-op.yr	1st year	2nd year	3rd year	4th year	5th year
<b>A</b>	<b>SOURCE OF FUNDS</b>						
1	a) EBIT+D	-	278.09	319.17	360.01	357.11	353.92
	b) Add Pre. & Preop. Exp. W/off	-	1.20	1.20	1.20	1.20	1.20
	Total Fund Generation(a+b)	-	279.29	320.37	361.21	358.31	355.12
2	Equity	-15.00	127.50	-	-	-	-
3	Long Term Loan	337.50	-	-	-	-	-
4	Working Capital Limit	-	382.50	-	-	-	-
5	Subsidy from CDB/Min.Food Pro.	0.00					
	<b>Total A</b>	<b>322.50</b>	<b>789.29</b>	<b>320.37</b>	<b>361.21</b>	<b>358.31</b>	<b>355.12</b>
<b>B</b>	<b>APPLICATION OF FUNDS</b>						
1	Investment in Fixed Capital	316.50	-	-	-	-	-
2	Pre. & Pre.operative expenses	6.00	-	-	-	-	-
2	Working Capital	-	510.00	73.00	73.00	0.00	0.00
3	Interest on Term Loan	-	42.19	33.75	25.31	16.88	8.44
3	Repayment of Term Loan with Int	-	67.50	67.50	67.50	67.50	67.50
4	Intesest on Working Capital Limit	-	47.81	47.81	47.81	47.81	47.81
5	Corporate Tax	-	48.16	63.84	79.37	81.70	83.88
	<b>Total B</b>	<b>322.50</b>	<b>715.66</b>	<b>285.91</b>	<b>293.00</b>	<b>213.89</b>	<b>207.63</b>
<b>C</b>	Opening Balance	0.00	0.00	73.63	108.09	176.31	320.73
	Surplus Cash(A-B)	0.00	73.63	34.47	68.22	144.42	147.49
	Closing Balance	<b>0.00</b>	<b>73.63</b>	<b>108.09</b>	<b>176.31</b>	<b>320.73</b>	<b>468.22</b>

**Internal Rate of Return(IRR)**

**30%**

**STATEMENT IV  
PAY BACK PERIOD**

Total Capital Investment: Rs. **450.00 lakhs**  
(Rs. in lakhs)

Year	Net Operating Surplus	Cumulating Operating Surplus
1st year	141.13	141.13
2nd year	174.97	316.09
3rd year	208.72	524.81
4th year	211.92	736.73
5th year	214.99	951.72

	Years	Months
<b>Pay Back Period</b>	<b>2</b>	<b>8</b>

**STATEMENT V  
DEBT SERVICE COVERAGE RATIO**

(Rs. in lakhs)

Item	1st year	2nd year	3rd year	4th year	5th year
<b>A.</b> 1. Net Profit after Tax	112.38	148.97	185.20	190.64	195.71
2. Depreciation	27.55	24.80	22.32	20.08	18.08
3. Pre. & Pre-op. Exp. W/off	1.20	1.20	1.20	1.20	1.20
4. Interest - Term Loan	42.19	33.75	25.31	16.88	8.44
5. Interest - Working Capital Limit	47.81	47.81	47.81	47.81	47.81
<b>TOTAL A</b>	<b>231.13</b>	<b>256.53</b>	<b>281.84</b>	<b>276.61</b>	<b>271.24</b>
<b>B.</b> 1. Repayment of TermLoan inclusive of interest servicing	67.50	67.50	67.50	67.50	67.50
2. Interest on Term Loan	42.19	33.75	25.31	16.88	8.44
2. Interest - Working Capital Limit	47.81	47.81	47.81	47.81	47.81
<b>TOTAL B</b>	<b>157.50</b>	<b>149.06</b>	<b>140.63</b>	<b>132.19</b>	<b>123.75</b>
<b>Debt Service Coverage Ratio</b>	<b>1.47</b>	<b>1.72</b>	<b>2.00</b>	<b>2.09</b>	<b>2.19</b>
<b>Average DSCR</b>	<b>1.90</b>				

**APPENDIX IV**

**WORKING CAPITAL REQUIREMENT**

(Rs. in lakhs)

Sl. No.	Item	No. of Days	1st year	2nd year	3rd year	4th year	5th year
1	Raw Material	30	167.08	190.94	214.81	214.81	214.81
2	Consumables	30	62.30	71.20	80.10	80.10	80.10
3	Work in Progress	1	7.78	8.89	10.00	10.00	10.00
4	Finished Goods	15	117.90	134.69	151.48	151.63	151.79
5	Bills Receivable	15	155.14	177.30	199.46	199.46	199.46
	<b>TOTAL</b>		<b>510.19</b>	<b>583.02</b>	<b>655.85</b>	<b>656.00</b>	<b>656.16</b>
	Or say		510.00	583.00	656.00	656.00	656.00
	Increase in Working Capital		510.00	73.00	73.00	0.00	0.00
	Working Capital Margin (25%)		127.50				
	Short Term Borrowings (75%)		382.50				

**COCONUT NEERA PROJECT**

**APPENDIX I**

**ANNUAL REQUIREMENT OF RAW MATERIAL AND COST OF RAW MATERIAL**

(Rs. in lakhs)

Sl. No.	Item	1st year		2nd year		3rd year		4th Year		5th Year	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
A	Capacity achieved	70%		80%		90%		90%		90%	
B	Requirement and Cost of Raw Material (Neera in lakh litres)										
1	Coconut Neera (10000 litres/day)	21	1638.00	24	1872.00	27	2106.00	27	2106.00	27	2106.00
	Total	21	1638.00	24	1872.00	27	2106.00	27	2106.00	27	2106.00
2	Add 2% towards incidentals		32.76		37.44		42.12		42.12		42.12
	<b>Grand Total (1+2)</b>		<b>1670.76</b>		<b>1909.44</b>		<b>2148.12</b>		<b>2148.12</b>		<b>2148.12</b>

<b>Cost of raw neera (per litre)</b>	<b>78</b>
<b>To Farmer (Rs.per litre)</b>	<b>50</b>
<b>To Tapper (Rs.per litre)</b>	<b>25</b>
<b>Transportation charges (Rs.per litre)</b>	<b>3</b>

**STATEMENT VI****BALANCE SHEET**

(Rs. in lakhs)

Sl.No.	Item	1st year	2nd year	3rd year	4th year	5th year
<b>A</b>	<b>LIABILITIES</b>					
	Equity	112.50	112.50	112.50	112.50	112.50
	Reserves and Surplus	112.38	261.35	446.55	637.19	832.90
	Long Term Loan	270.00	202.50	135.00	67.50	0.00
	Current Liabilities	382.50	382.50	382.50	382.50	382.50
	<b>TOTAL A</b>	<b>877.38</b>	<b>958.85</b>	<b>1076.55</b>	<b>1199.69</b>	<b>1327.90</b>
<b>B</b>	<b>ASSETS</b>					
	Fixed Assets	316.50	288.95	264.16	241.84	221.76
	Depreciation	27.55	24.80	22.32	20.08	18.08
	Net Assets	288.95	264.16	241.84	221.76	203.68
	*Current Assets	510.00	583.00	656.00	656.00	656.00
	Cash and Bank Balance	73.63	108.09	176.31	320.73	468.22
	Preliminary & Pre-operative exp.	4.80	3.60	2.40	1.20	0.00
	<b>TOTAL B</b>	<b>877.38</b>	<b>958.85</b>	<b>1076.55</b>	<b>1199.69</b>	<b>1327.90</b>
	<b>Net Worth</b>	<b>220.08</b>	<b>370.25</b>	<b>556.65</b>	<b>748.49</b>	<b>945.40</b>

**PROFITABILITY STATEMENT**

(Rs. in lakhs)

Sl.No.	Item	1st year	2nd year	3rd year	4th year	5th year
<b>A</b>	CAPACITY ACHIEVED	<b>70%</b>	<b>80%</b>	<b>90%</b>	<b>90%</b>	<b>90%</b>
<b>B</b>	SALES REALISATION	3102.75	3546.00	3989.25	3989.25	3989.25
<b>C</b>	Operating Costs					
1	Raw Material	1670.76	1909.44	2148.12	2148.12	2148.12
2	Packing Material	580.97	663.96	746.96	746.96	746.96
3	Utilities:					
	Power and Fuel	18.35	20.97	23.59	23.59	23.59
	Water	0.74	0.84	0.95	0.95	0.95
	Consumables	42.00	48.00	54.00	54.00	54.00
4	Production Labour	10.08	11.52	12.96	12.96	12.96
5	Factory Overheads	10.08	11.52	12.96	12.96	12.96
6	Insurance & Taxes	1.08	1.08	1.08	1.08	1.08
7	Depreciation	27.55	24.80	22.32	20.08	18.08
		<b>2361.60</b>	<b>2692.12</b>	<b>3022.92</b>	<b>3020.69</b>	<b>3018.68</b>
<b>D</b>	Administrative & Management Expenses					
	a) Salary	19.00	20.90	22.99	25.29	27.82
	b) Other Admn. Expenses	5.00	5.50	6.05	6.66	7.32
<b>E</b>	Market Promotion Expenses	465.41	531.90	598.39	598.39	598.39
	<b>Total Expenses(C+D+E)</b>	<b>2851.01</b>	<b>3250.42</b>	<b>3650.35</b>	<b>3651.02</b>	<b>3652.21</b>
<b>F</b>	a)Interest on Term Loan	42.19	33.75	25.31	16.88	8.44
	b)Interest on Working Capital Limit	47.81	47.81	47.81	47.81	47.81
	<b>Total (C to F)</b>	<b>2941.01</b>	<b>3331.99</b>	<b>3723.48</b>	<b>3715.71</b>	<b>3708.46</b>
<b>G</b>	<b>Profit</b>	<b>161.74</b>	<b>214.01</b>	<b>265.77</b>	<b>273.54</b>	<b>280.79</b>
<b>H</b>	Prelim. & Pre-op ex. Writt.off	1.20	1.20	1.20	1.20	1.20
<b>I</b>	<b>Profit before Tax</b>	<b>160.54</b>	<b>212.81</b>	<b>264.57</b>	<b>272.34</b>	<b>279.59</b>
<b>J</b>	Corporate Tax	48.16	63.84	79.37	81.70	83.88
<b>K</b>	<b>Net Profit</b>	<b>112.38</b>	<b>148.97</b>	<b>185.20</b>	<b>190.64</b>	<b>195.71</b>
<b>L</b>	<b>Cumulative Net Profit</b>	<b>112.38</b>	<b>261.35</b>	<b>446.55</b>	<b>637.19</b>	<b>832.90</b>

**STATEMENT X  
SENSITIVITY ANALYSIS**

Sl.No.	Situation	G.P	N.P	GP %	NP %	IRR(%)	DSCR (Average for first 5 years)	Pay Back period
1	Present Project	337.04	195.71	8.45	4.91	30%	1.90	2 Year 8 Months
2	Decrease in Selling Price by 3%	207.51	105.72	5.363	2.73	13%	1.40	4 Year 1 Months