

# Pre-Feasibility Study

## ICE PLANT (15 Tons)



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## 1 INTRODUCTION TO SMEDA

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

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

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

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

## 2 PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, finance and business management.

## 3 PROJECT PROFILE

### 3.1 Project Brief

This project is related to setting up an ice plant of 15-tons capacity per day to cater to the needs of the institutions such as hotels, restaurants, bakeries, dairy, fish seller's etc. The proposed project will manufacture ice blocks varying from 130 kg to 150 kg in weight.

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<sup>1</sup> For more information on services offered by SMEDA, please contact our website: [www.smeda.org.pk](http://www.smeda.org.pk)

### 3.2 Opportunity Rationale

Most of areas of Pakistan have long duration of summer due to which demand for ice is high for more than six months of the year. As Pakistan is a developing country and large portion of the population cannot afford refrigerators for domestic use. Another growing market for ice plants are industries linked to food products i.e. fish, dairy, bakeries, restaurants etc. With this growing demand a large number of ice plants are operating in the country.

There are approximately 1,300 ice plants operating in the Punjab, catering to the needs of different institutional and domestic buyers. The total installed capacity of ice plants in Punjab is approximately 432,669-tons of ice blocks per day<sup>2</sup>. The need of ice blocks is increasing due to economic growth, as major buyers are institutional buyers (dairy, bakery, hotel, etc.), who buy in bulk.

### 3.3 Market Entry Timing

The ice plant should be started up when the season begins in mid April and closed when it ends up in September. The peak season is of four months i.e. from mid April to mid August. The rest of the period i.e. two months is moderate season. The best time to enter into this business is in the month of April.

### 3.4 Proposed Business Legal Status

It is recommended that this project should be started as sole proprietorship or partnership as this does not involve heavy investment. Moreover, less complications and costs are involved in forming, administering and running the sole proprietorship or partnership business. The tax rate applicable for sole proprietorship is lower than private or public limited.

Most of the ice plants in the country are operating as sole proprietorship or partnership basis.

### 3.5 Project Capacity and Rationale

The proposed project has a capacity of producing 300 ice blocks on the basis of 2 shifts of 12 hours.

### 3.6 Project Investment

The total cost of the project is Rs. 10.680 million. This amount includes the land, machinery, building, water and electricity connection and salt required etc. The cost of land varies from area to area.

### 3.7 Proposed Product Mix

The facility will produce 250-300 ice blocks of weight 130-150 kg as solid ice blocks in peak season and 100-150 ice blocks in off-season.

### 3.8 Recommended Project Parameters

Capacity	Human Resource		Technology/Machinery
250 Ice Blocks/Day	17		Local
Project Cost	IRR	NPV	Payback Period
10.680 million	24%	2,199,076	4.84

<sup>2</sup> Source: Directory of Punjab Industrial Establishment, 2002-03.

### **3.9 Proposed Location**

It is recommended that the proposed project be installed in localities close to cities, so that the ice blocks are accessible to the dealers and institutional buyers.

### **3.10 Key Success Factors/Practical Tips for Success**

- The location plays an important role, as finished ice blocks should be easily accessible to dealers.
- It is important that solid ice blocks are produced through proper freezing time utilization as solid ice blocks are much heavier, more transparent and provides higher price in the market.
- Weather factor plays an important role, due to seasonal nature of the business i.e. In summers the demand for ice blocks increases, while after mid September the temperature starts changing & demand starts to fall, which means the entrepreneur should reduce the production according to the demand of ice.
- One of the most important aspects for success of any business is minimizing the cost of production, in case of ice plant this can be achieved by proper training of workers, which would ensure reduction in raw material wastage and better maintenance of machinery etc.
- It is advisable to run the plant on natural gas, rather than electricity, as the major expense in production of ice is electricity. The use of natural gas instead of electricity will reduce the electricity expense approximately by half.

### **3.11 Strategic Recommendations**

In order to sell the ice blocks, it is recommended to develop a chain of dealers who buy the ice blocks on regular basis. The dealer deposits a guarantee in the shape of cash security, keeping in view the number of blocks to be purchased on daily basis. In case the dealer is unable to pick the agreed number of blocks on a particular day, the amount is deducted from his security.

## **4 CURRENT INDUSTRY STRUCTURE**

### **4.1 Current Industry Structure**

Ice plants are installed with the capacity for daily production of 15, 25, 30 and 50 tons of ice blocks in Pakistan. Mostly ice plants are operating with the production capacity of 15 and 30 tons of ice blocks in the country, while selling price is decided once in a month by the owners of ice plants.

## **5 MARKET INFORMATION**

### **5.1 Target Customers**

The target customers for ice plant can be divided into two categories:

- Domestic users, such as people living in rural areas & suburbs of cities, where access to refrigerators is difficult due to lower purchasing power.
- Second category is institutional buyers, who buy in bulk, such as government organizations, factories, hotels, restaurants, bakeries, fish sellers, dairy plants etc.

## 5.2 Market Potential

Institutional buyers sell the bulk of the ice block production, in institutions related to food industry. Business sectors, which utilize ice in the country, include the following:

### 5.2.1 Fish Meat & Allied Products

During 2005-2006 about 604,900 Mt tons of over 50 different varieties of fish were produced. Of this production, share of marine sector was 406,000 Mt tons and inland contribution was 174,600 Mt tons. Out of the total 40% fish was locally consumed, 35% small sized non-edible fish was dried into fish meal to supplement the poultry feed, while 10% fish was salted and dried and another 15% was frozen.

### 5.2.2 Dairy Plants

The per capita availability of milk at present is 185 liters, which is the highest among the South Asian countries. Milk production in Pakistan has seen a constant increase during the last two decades. The production has increased from 8.918 million metric tons in 1981 to 3.246 million metric tons in 2005-06.

In Pakistan 97.5% milk is distributed through traditional milk seller (Gowala) system. About 58% milk is supplied to urban areas in raw form in most unhygienic conditions but with the growing awareness of hygiene in the public, there has been a gradual improvement in the system.

At present only 17 milk plants are in operation, which mean that approximately 3 per cent of total milk production is processed.

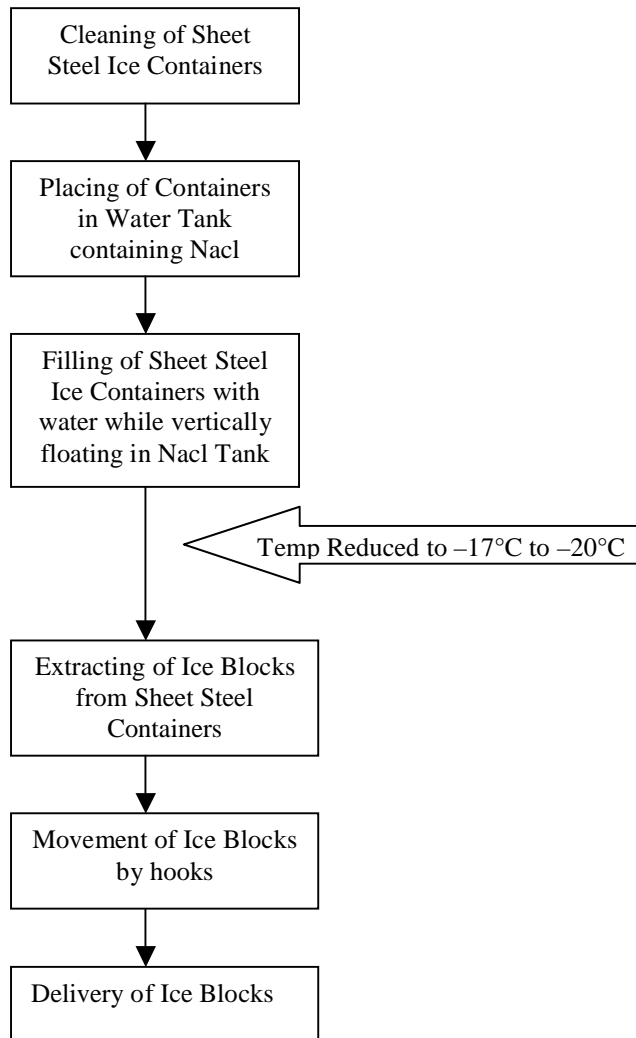
### 5.2.3 Other Institutional Buyers (Bakeries, Motels & Hotels etc.)

Other potential institutional buyers of ice are bakeries, confectioners, hotels which buy ice blocks in bulk. There are approximately 70 different leading chain bakeries in different cities of Pakistan, while approximately 145 fish retail outlets are operating in different major cities of Pakistan, while more than 520 motels and hotels are operating in different areas of Pakistan.



## 6 PRODUCTION PROCESS

### 6.1 Production Process Flow



## 6.2 Product Mix Offered

The proposed project will produce Ice blocks weighing from 130-150kg.

## 6.3 Raw Material Requirement

The basic raw material required for producing ice blocks is water, common salt. These raw materials are readily available in the local market. Replenishments needed during maintenance are ammonia gas and compressor oil.

## 7 MACHINERY REQUIREMENT

The main equipment required for running the ice plant is compressor, capacitor, condenser, and electric motors, WAPDA connection power transformer etc.

**Table 7-1 Machinery Requirement Details<sup>3</sup>**

Description	Qty	Cost/Unit	Total Amount
Ammonia Compressor (7x7) , Driven Wheel	1	200,000	200,000
Ammonia Condensor Atmosphere type with 2" pipe 1200 ft	6	37,500	225,000
Electric Motor 75 H.P.1450 RPM China or Pak Made	1	95,000	95,000
Brine Tank for 720 Ice cans, 4mm local made	1	75,000	375,000
Cooling Coil V-type 4" pipe & 1500 ft	1	180,000	180,000
Brine Agitator 18" Fan Metal	1	18,000	18,000
Accumulator for parallel supply of ammonia	1	18,000	18,000
Crane & Trolley with Railing Channel & Girder	1	65,000	65,000
Ammonia Valves for Complete Plant	1	35,000	35,000
Ammonia Pipes for Complete Plant	1	40,000	40,000
Oil Separator Buffer Type	1	18,000	18,000
4 gauge Suction, Discharge, Oil Pressure	1	6,000	6,000
Wood work for Ice Cans, Tank Cover	24	500	12,000
Ice Cans of 1.5 mm British Gauge	24	2,600	62,400
Nuts, Bolt etc.	1	36,000	36,000
Receiver Fittings with all Safety Measure Ammonia Inspection	1	45,000	45,000
Bends, Union, Nipples, Tee & flange etc.	11	45,000	495,000
Blower no.59 complete with fitting	1	60,000	60,000
Rubber pipes, Brass Valves	1	18,000	18,000
Water Fitting Complete	1	30,000	30,000
Electric Motor 7.5"	2	16,000	32,000

<sup>3</sup> Ashiq Engineering works Shar-E-Rahid Nazd New Timber Market Multan, Tel: 061-4232967. Contact person: Khalid Javi d 0300-9694167

Switch Gins Starters & Switch board with local Cable	1	95,000	95,000
Centrifugal Pump 2.5"x3"	1	25,000	25,000
Erection Charges of the Plant	1	30,000	30,000
<b>Grand Total</b>			<b>2,215,400</b>

**Table 7-2 Other Equipment Details**

Other Equipment Details	Qty	Cost/Unit	Total Cost
Generator 100 KVA	1	1,500,000	1,500,000
Transformer 100 KVA	1	700,000	700,000
Water Bore Diameter 3" – 4"	1	550,000	550,000
<b>Total Equipment Cost</b>			<b>2,750,000</b>

**Table 7-3 Furniture & Fixture Details**

Description	Qty	Cost/Unit	Total Cost
Tables	4	3,000	12,000
Chairs	8	1,500	12,000
Fans	4	1,800	7,200
Lights	12	350	4,200
Fax Machine	1	8,000	8,000
Computer	1	30,000	30,000
Telephone	3	2,000	6,000
<b>Total Furniture &amp; Fixtures</b>			<b>79,400</b>

**Table 7-4 Office Vehicle Details**

Description	Qty	Cost/Unit	Total Cost
Suzuki Pick-up	1	750,000	750,000
Motorcycle (Pak Hero)	1	38,500	38,500
Bicycle (Chinese)	1	3,800	3,800
<b>Total Vehicle Cost</b>			<b>792,300</b>

## 7.1 Technology and Processes

### 7.1.1 Technology/Process Options

The machinery used for the ice plant is local. It includes compressor, condenser, water tank suitable for 250-300 ice cans, brine agitator, accumulator for parallel supply of ammonia, crane and trolley, oil separator, ice cans of size 11" x 22" x 48", electric motor 75 HP etc.

### 7.1.2 Merits & demerits of a particular technology

The local machinery is readily available in the market at a very reasonable price. One of the benefits of using locally manufactured machinery is availability of spare parts and it's easier to find operators to operate these machines.

## 7.2 Machine Maintenance

The maintenance process starts after mid of October. Normally, it takes one month for the overhauling of plant, during which the plant is closed for one month.

## 8 HUMAN RESOURCE REQUIREMENT

The manpower required for operating the ice plant during the peak season is as follows:

**Table 8-1 Direct Labor Requirement Details**

Description	Qty	Salary	Total Monthly Salary
Foreman	4	10,000	40,000
Machine Operator	1	13,000	13,000
Labor	6	5,000	30,000
<b>Total Direct Labor Cost</b>			<b>83,000</b>

**Table 8-2 Administrative Staff Details**

Description	Qty	Salary	Total Monthly Salary
Owner/CEO	1	30,000	30,000
Accounts Officer	1	12,000	12,000
Security Guard	2	6,000	12,000
Driver	1	5,500	5,500
Office Boy	1	3,000	3,000
<b>Administrative Staff</b>			<b>62,500</b>

## 9 LAND & BUILDING REQUIREMENT

### 9.1 Land Requirement

The land requirement for the proposed ice plant having 15-ton capacity is 4,500 sq. ft (1 Kanal).

**Table 9-1 Land Cost**

Land Price Per Kanal	2,400,000
Total Land Requirement (Sq . ft)	4,500
Total Land Required in Kanals	1
<b>Total Land Cost</b>	<b>2,400,000</b>

### 9.2 Covered Area Requirement

The covered area detail for the proposed project and construction cost detail is given in table below:

**Table 9-2 Covered Area Requirement Details**

Description	No.	Sq .ft	Rs/Sq. ft	Total Cost
Office Area	1	144	750	108,000

Machine Room	1	320	750	240,000
Main Hall	1	3,240	550	1,782,000
Free Area		796		
<b>Total Building Cost</b>		<b>4,500</b>		<b>2,209,600</b>

### 9.3 Recommended Mode

It is recommended that land should be acquired for the project, as it would be difficult to setup such a project at a rented place due to high machinery & installation cost.

### 9.4 Suitable Location

It is recommended that the proposed project be installed in localities close to cities or in industrial areas, so that the ice blocks are easily accessible to the dealers and institutional buyers. Such a project can also be a viable project in the smaller cities.

### 9.5 Utilities and Infrastructure Requirement

Basic utilities like electricity, gas and water are required for operating the ice plant. The plant must be closed to a metal led road

## 10 PROJECT ECONOMICS

### 10.1 Project Cost

Description	Amount in (Rs.)
Land Cost	2,400,000
Building/Infrastructure	2,209,600
Machinery & Equipment	4,965,400
Office Equipment & Furniture	79,400
Vehicle	792,300
Pre-operating Costs	65,000
<b>Total Capital Expenditure</b>	<b>10,511,700</b>
<b>Working Capital</b>	
Raw Material Inventory	9,987
Equipment Spare parts Inventory	8,893
Cash	150,000
<b>Total Working Capital</b>	<b>168,880</b>
<b>Total Project Cost</b>	<b>10,680,580</b>

### 10.2 Project Returns

Description	Details
NPV	2,199,076
IRR	24%
Pay Back Period	4.84

**10.3 Project Financing**

<b>Description</b>	<b>Percentage</b>	<b>Amount in Rs</b>
Equity Financing	50%	5,340,290
Debt Financing	50%	5,340,290
<b>Total</b>		<b>10,680,580</b>

## 11 FINANCIAL ANALYSIS

### 11.1 Projected Income Statement

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Revenue</b>	<b>9,782,438</b>	<b>10,177,648</b>	<b>10,800,601</b>	<b>11,690,918</b>	<b>12,457,441</b>	<b>12,706,590</b>	<b>12,960,722</b>	<b>13,219,936</b>	<b>13,484,335</b>	<b>13,754,022</b>
<b>Net Revenue</b>	<b>9,782,438</b>	<b>10,177,648</b>	<b>10,800,601</b>	<b>11,690,918</b>	<b>12,457,441</b>	<b>12,706,590</b>	<b>12,960,722</b>	<b>13,219,936</b>	<b>13,484,335</b>	<b>13,754,022</b>
<b>COST OF GOOD SOLD</b>										
Raw Material Cost	219,713	235,056	256,909	286,878	316,618	336,948	361,157	391,358	431,380	488,391
Direct Labor (Production Staff)	786,000	864,600	951,060	1,046,166	1,150,783	1,265,861	1,392,447	1,531,692	1,684,861	1,853,347
Direct Electricity	2,328,351	2,444,769	2,567,008	2,695,358	2,830,126	2,971,632	3,120,214	3,276,224	3,440,036	3,612,037
<b>Total</b>	<b>3,334,064</b>	<b>3,544,425</b>	<b>3,774,976</b>	<b>4,028,402</b>	<b>4,297,527</b>	<b>4,574,441</b>	<b>4,873,818</b>	<b>5,199,274</b>	<b>5,556,277</b>	<b>5,953,775</b>
<b>Gross Profit</b>	<b>6,448,374</b>	<b>6,633,223</b>	<b>7,025,625</b>	<b>7,662,516</b>	<b>8,159,915</b>	<b>8,132,149</b>	<b>8,086,904</b>	<b>8,020,662</b>	<b>7,928,058</b>	<b>7,800,246</b>
<b>GENERAL ADMINISTRATION &amp; SELLING EXPENSE</b>										
Administration Staff	750,000	825,000	907,500	998,250	1,098,075	1,207,883	1,328,671	1,461,538	1,607,692	1,768,461
Machine Maintenance Cost	97,824	101,776	108,006	116,909	124,574	127,066	129,607	132,199	134,843	137,540
Fixed Electricity Expense	98,941	103,888	109,083	114,537	120,264	126,277	132,591	139,220	146,181	153,490
Communication Expense (Telephone, Fax, Internet etc.)	30,000	33,000	36,300	39,930	43,923	48,315	53,147	58,462	64,308	70,738
Depreciation expense	694,190	694,190	694,190	694,190	694,190	694,190	694,190	694,190	694,190	694,190
Amortization of pre-operating costs	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500
<b>Total Operating Expenses</b>	<b>1,677,456</b>	<b>1,764,355</b>	<b>1,861,579</b>	<b>1,970,316</b>	<b>2,087,526</b>	<b>2,210,231</b>	<b>2,344,706</b>	<b>2,492,109</b>	<b>2,653,714</b>	<b>2,830,920</b>
<b>Operating Income (Earning Before Interest &amp; Taxes)</b>	<b>4,770,918</b>	<b>4,868,868</b>	<b>5,164,046</b>	<b>5,692,200</b>	<b>6,072,388</b>	<b>5,921,918</b>	<b>5,742,199</b>	<b>5,528,553</b>	<b>5,274,344</b>	<b>4,969,326</b>
Interest expense on long term debt	747,641	634,535	505,594	358,602	191,031	-	-	-	-	-
<b>Earning Before Taxes</b>	<b>4,023,277</b>	<b>4,234,334</b>	<b>4,658,452</b>	<b>5,333,598</b>	<b>5,881,357</b>	<b>5,921,918</b>	<b>5,742,199</b>	<b>5,528,553</b>	<b>5,274,344</b>	<b>4,969,326</b>
Taxes	1,282,147	1,356,017	1,504,458	1,740,759	1,932,475	1,946,671	1,883,770	1,808,993	1,720,021	1,613,264
<b>Net Profit After Taxes</b>	<b>2,741,130</b>	<b>2,878,317</b>	<b>3,153,994</b>	<b>3,592,839</b>	<b>3,948,882</b>	<b>3,975,247</b>	<b>3,858,429</b>	<b>3,719,559</b>	<b>3,554,324</b>	<b>3,356,062</b>
Balance brought forward		5,619,447	8,773,441	12,366,280	16,315,162	20,290,409	24,148,838	27,868,397	31,422,721	34,778,783
Total profit available for appropriation	2,741,130	5,619,447	8,773,441	12,366,280	16,315,162	20,290,409	24,148,838	27,868,397	31,422,721	34,778,783

## 11.2 Projected Balance Sheet

	Const. Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>CURRENT ASSETS</b>											
Cash in Bank	150,000	2,342,870	4,981,675	7,756,390	10,811,101	14,060,804	18,724,515	23,270,988	27,678,036	31,919,044	35,999,450
Raw Material Inventory	9,987	10,684	11,678	13,040	14,392	15,316	16,416	17,789	19,608	22,200	-
Machine Spareparts Inventory	8,893	9,252	9,819	10,628	11,325	11,551	11,782	12,018	12,258	12,504	-
Accounts Receivable	-	444,656	462,620	490,936	531,405	566,247	577,572	589,124	600,906	612,924	625,183
<b>Total Current Asset</b>	<b>168,880</b>	<b>2,807,463</b>	<b>5,465,791</b>	<b>8,270,995</b>	<b>11,368,223</b>	<b>14,653,918</b>	<b>19,330,286</b>	<b>23,889,919</b>	<b>28,310,809</b>	<b>32,566,672</b>	<b>36,624,633</b>
<b>FIXED ASSETS</b>											
Land Cost	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
Building & Infrastructure	2,209,600	2,099,120	1,988,640	1,878,160	1,767,680	1,657,200	1,546,720	1,436,240	1,325,760	1,215,280	1,104,800
Machinery & Equipment	4,965,400	4,468,860	3,972,320	3,475,780	2,979,240	2,482,700	1,986,160	1,489,620	993,080	496,540	-
Office Equipment & Furniture	79,400	71,460	63,520	55,580	47,640	39,700	31,760	23,820	15,880	7,940	-
Vehicle	792,300	713,070	633,840	554,610	475,380	396,150	316,920	237,690	158,460	79,230	-
<b>Total Fixed Assets</b>	<b>10,446,700</b>	<b>9,752,510</b>	<b>9,058,320</b>	<b>8,364,130</b>	<b>7,669,940</b>	<b>6,975,750</b>	<b>6,281,560</b>	<b>5,587,370</b>	<b>4,893,180</b>	<b>4,198,990</b>	<b>3,504,800</b>
<b>INTANGIBLE ASSETS</b>											
Pre-Operational Costs	65,000	58,500	52,000	45,500	39,000	32,500	26,000	19,500	13,000	6,500	-
<b>Total Intangible Assets</b>	<b>65,000</b>	<b>58,500</b>	<b>52,000</b>	<b>45,500</b>	<b>39,000</b>	<b>32,500</b>	<b>26,000</b>	<b>19,500</b>	<b>13,000</b>	<b>6,500</b>	<b>-</b>
<b>TOTAL ASSETS</b>	<b>10,680,580</b>	<b>12,618,473</b>	<b>14,576,111</b>	<b>16,680,624</b>	<b>19,077,162</b>	<b>21,662,168</b>	<b>25,637,846</b>	<b>29,496,789</b>	<b>33,216,989</b>	<b>36,772,162</b>	<b>40,129,433</b>
<b>CURRENT LIABILITIES</b>											
Accounts Payable	-	4,661	4,986	5,450	6,085	6,716	7,147	7,661	8,302	9,150	10,360
<b>Total Current Liabilities</b>	<b>-</b>	<b>4,661</b>	<b>4,986</b>	<b>5,450</b>	<b>6,085</b>	<b>6,716</b>	<b>7,147</b>	<b>7,661</b>	<b>8,302</b>	<b>9,150</b>	<b>10,360</b>
<b>OTHER LIABILITIES</b>											
Long Term Debt	5,340,290	4,532,392	3,611,388	2,561,444	1,364,508	0	0	0	0	0	0
<b>Total Long Term Liabilities</b>	<b>5,340,290</b>	<b>4,532,392</b>	<b>3,611,388</b>	<b>2,561,444</b>	<b>1,364,508</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>SHAREHOLDER'S EQUITY</b>											
Paid-up Capital	5,340,290	5,340,290	5,340,290	5,340,290	5,340,290	5,340,290	5,340,290	5,340,290	5,340,290	5,340,290	5,340,290
Retained Earnings		2,741,130	5,619,447	8,773,441	12,366,280	16,315,162	20,290,409	24,148,838	27,868,397	31,422,721	34,778,783
<b>Total Equity</b>	<b>5,340,290</b>	<b>8,081,420</b>	<b>10,959,737</b>	<b>14,113,731</b>	<b>17,706,570</b>	<b>21,655,452</b>	<b>25,630,699</b>	<b>29,489,128</b>	<b>33,208,687</b>	<b>36,763,011</b>	<b>40,119,073</b>
<b>TOTAL CAPITAL &amp; LIABILITIES</b>	<b>10,680,580</b>	<b>12,618,473</b>	<b>14,576,111</b>	<b>16,680,624</b>	<b>19,077,162</b>	<b>21,662,168</b>	<b>25,637,846</b>	<b>29,496,789</b>	<b>33,216,989</b>	<b>36,772,162</b>	<b>40,129,433</b>



### 11.3 Projected Cash Flow Statement

	Year-0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Operating activities</b>											
Net profit	-	2,741,130	2,878,317	3,153,994	3,592,839	3,948,882	3,975,247	3,858,429	3,719,559	3,554,324	3,356,062
Add: depreciation expense		694,190	694,190	694,190	694,190	694,190	694,190	694,190	694,190	694,190	694,190
amortization of pre-operating costs	-	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500
Raw material inventory	(9,987)	(697)	(993)	(1,362)	(1,352)	(924)	(1,100)	(1,373)	(1,819)	(2,591)	22,200
Machine Spareparts Inventory	(8,893)	(359)	(566)	(809)	(697)	(226)	(231)	(236)	(240)	(245)	12,504
Accounts Receivables	-	(444,656)	(17,964)	(28,316)	(40,469)	(34,842)	(11,325)	(11,551)	(11,782)	(12,018)	(12,258)
Accounts payable	-	4,661	325	464	636	631	431	514	641	849	1,209
Cash provided by operations	(18,880)	3,000,768	3,559,808	3,824,660	4,251,647	4,614,211	4,663,712	4,546,473	4,407,048	4,241,008	4,080,406
<b>Financing activities</b>											
Long Term Debt Repayment		(807,898)	(921,004)	(1,049,944)	(1,196,936)	(1,364,508)	-	-	-	-	-
Additions of New Long Term Debt	5,340,290										
Issuance of shares	5,340,290										
Cash provided by / (used for) financing act	10,680,580	(807,898)	(921,004)	(1,049,944)	(1,196,936)	(1,364,508)	-	-	-	-	-
<b>Investing activities</b>											
Capital expenditure	(10,511,700)										
Cash (used for) / provided by investing act	(10,511,700)	-	-	-	-	-	-	-	-	-	-
<b>NET CASH</b>	<b>150,000</b>	<b>2,192,870</b>	<b>2,638,805</b>	<b>2,774,715</b>	<b>3,054,711</b>	<b>3,249,703</b>	<b>4,663,712</b>	<b>4,546,473</b>	<b>4,407,048</b>	<b>4,241,008</b>	<b>4,080,406</b>
Cash balance brought forward	-	150,000	2,342,870	4,981,675	7,756,390	10,811,101	14,060,804	18,724,515	23,270,988	27,678,036	31,919,044
Cash available for appropriation	150,000	2,342,870	4,981,675	7,756,390	10,811,101	14,060,804	18,724,515	23,270,988	27,678,036	31,919,044	35,999,450

## 12 KEY ASSUMPTIONS

### 12.1 Production Assumptions

No. of Days Operational	330
No. of Days (Peak Season)	200
No. of Days (Off-season)	130
No. of Hours Per Shift	12
No. of Shift Per Day	2
No. of Shift Per Day (Peak Season)	2
No. of Shift Per Day (Off-season)	1
Weight/Ice Block (In Kgs)	150
Maximum Capacity Per Shift (Ice Blocks)	150
Maximum Capacity Per Shift (Ice Blocks) Peak Season	150
Maximum Capacity Per Shift (Ice Blocks) Off-season	75
Maximum Attainable Capacity in Percentage	100%
Capacity Utilization (1st Year)	85%
Maximum Attainable Capacity in Units	69,750
Growth in Capacity	2%

### 12.2 Raw Material Usage Assumptions

Ammonia (NH <sub>3</sub> ) Consumption (Pound)/ Ice Block	0.08
NACL usage in Kg/ Ice Block (kgs)	50
NACL replenishment charges	10%
Ice Blocks per Compressor Oil Drum	15,000
Price Growth Rate of Raw Material	5%
Wastage Rate	5%

### 12.3 Raw Material Price

Price Per NH <sub>3</sub> Pound (Rs)	25
Price Per Kg NACL (Salt) (Rs)	2
Compressor Oil Per Drum (Rs)	20,000

### 12.4 Cash flow Assumptions

Raw Material Inventory Cycle (In Days)	15
Machine Spare parts Inventory Cycle (In Days)	30
Accounts Receivables Cycle (In Days)	15
Accounts Payable Cycle (In Days)	15
Initial Cash in Bank	150,000

**12.5 Expense Assumptions**

Communication Expense (% of Admin. Exp.)	4%
Machine Maintenance (% of Sale)	1%
Pre-Operational Expense	65,000
Pre-Ops (Discount Period)	10
Wages Growth Rate	10%
Electricity Rate per kW	6.6
Electricity Tariff Growth Rate	5%

**12.6 Depreciation Expense**

Building Depreciation Rate	5%
Plant & Machinery Depreciation Rate	10%
Furniture & Fixtures Depreciation Rate	10%
Vehicle Depreciation Rate	10%

**12.7 Financing Assumption**

Debt	50%
Equity	50%
Interest Rate on Long Term Debt	14.0%
Debt Tenure	5
Payment Per Year	1
Return on Equity	27%
Tax Rate	Sole Proprietorship