

Pre-Feasibility Study

ICE PLANT “30 Ton”



Small and Medium Enterprises Development Authority

Ministry of Industries & Production

Government of Pakistan

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1 DISCLAIMER

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2 EXECUTIVE SUMMARY

This pre-feasibility study is for setting up of Ice blocks manufacturing facility exclusively for the 150 kg (30 ton) each ice block. The focus of the business would be to produce quality ice at affordable prices. The consumption of ice varies according to the weather, as its demand is on peak from mid April to mid September and then remains moderate for further two months before and after the winter seasons (i.e. November ~ February).

However, in major cities its demand does not completely ended because of its major consumption by the boutiques, event management complexes and restaurants. This seasonal cycle and level of demand also varies significantly on the basis of geographical locations. As in case of Pakistan, summer season is much longer in South, interior Sindh and some parts of upper Punjab; whereas, it remains moderate around the coastal belt. Accordingly, the ideal location for the proposed ice plant is the out skirts of major cities located in hot weather geographical regions.

Total installed capacity of the unit will be to produce 200 ice blocks of 30 ton (i.e. 150 kg per block) per day on 12 hours single shift basis. During first year of the operation, plant will at 75% capacity by producing 51,750 ice blocks in the year. The location of plant, uninterrupted supply of electricity and selection of appropriate machinery are the critical aspects for success of proposed ice plant business venture.

The estimated cost for setting up the proposed ice plant is Rs. 18.43 million out of which Rs. 17.88 million is the capital cost and Rs. 0.55 million is for working capital. The project is to be financed through 50% debt and 50% equity. The project NPV is around Rs. 12.28 million, with an IRR of 31% and Payback Period of 4.08 years. The project will provide employment opportunities to 7 people including owner manager. The legal business status of this project is proposed as 'Sole Proprietorship'.

3 INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the

number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need based capacity building programs of different types in addition to business guidance through help desk services.

4 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, marketing, finance and business management.

The purpose of this document is to facilitate potential investors in **Ice Plant** by providing them with a general understanding of the business with the intention of supporting potential investors in crucial investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business set-up and its successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form basis of any investment decision.

5 BRIEF DESCRIPTION OF PROJECT & PRODUCT

Majority of areas of Pakistan have long duration of summer due to which demand for ice is high for up to eight months of the year. This project is related to setting up an ice plant of producing 30-ton weight ice blocks to cater to the needs of

domestic consumers and institutional buyers such as hotels, restaurants, schools, bakeries, dairy, fish seller's and etc.

The consumption of ice varies according to the weather, as its demand is on peak from mid April to mid September and then remains moderate for further two months before and after the winter seasons. However, in major cities its demand does not completely ended because of its major consumption by institutional buyers (dairy, bakery, hotel, etc.), who buy in bulk.

An ice plant production facility mainly comprised of compressors, condenser, water tanks, brine agitator, accumulator for parallel supply of ammonia, crane, trolley, oil separators and electric motors. All the required machinery is manufactured local and easily acquired from local machinery suppliers. 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.

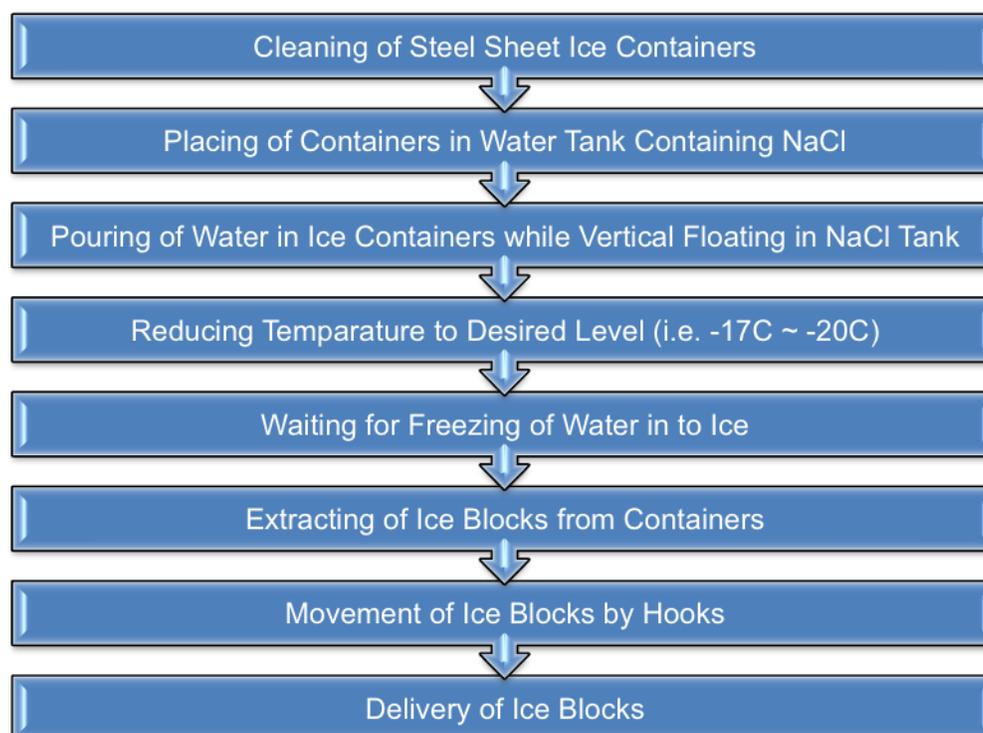
The proposed plant has an installed capacity of producing 200 ice blocks of 30-ton per block weight per day. The plant is proposed to operate 12 hours per day during peak summer season. Project will generate direct employment opportunity for 07 persons including owner manager.

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.

5.1 Production Process Flow

Metal cans filled with water are immersed in a tank. The dimensions of the can and the temperature are usually selected to give a 12-hour production time, and batches of cans are emptied and refilled in sequence during that period. Ice block weight can range from 12 to 150 kg depending on requirements; 150 kg is regarded as the largest size of block one man can conveniently handle. An ice block plant requires continuous attention and is labour intensive.

Process Flow Chart for Ice Blocks Manufacturing



5.2 Installed And Operational Capacities

The installed and operational capacities of an Ice Plant business venture mainly depend on the installed machinery. This pre-feasibility study is based on machinery related to 30 tons capacity Ice Plant.

The proposed unit will operate on 345 operational days. Total capacity of the unit will be to manufacture 200 ice blocks (having weight 150 Kgs / 30 ton) per day on 12 hours single shift basis. During first year the proposed plant will operate at 75% capacity and will produce 51,750 ice blocks. Capacity utilization growth rate of 5% is considered for subsequently years, while maximum capacity utilization (i.e. 90%) will be achieved during the 4th year of operation.

This production capacity is estimated to be economically viable and justifies the capital as well as operational costs of the project. The details of operational and installed capacity according to product mix are provided in the table below:

Table 1: Installed Capacity of Ice Plant

Description	Details
Total Capacity of Ice plant (Ice Blocks per day)	200
Capacity Utilization in 1 st Year	75%

No of Blocks Produced in Year 1	51,750
Maximum Capacity Utilization	90%
Years to Attain Maximum Capacity Utilization	4

6 CRITICAL FACTORS

Following are the factors critical for the success of this business venture;

- ⇒ 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.
- ⇒ 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.
- ⇒ Weather 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.
- ⇒ Strong linkages with wholesalers / retailers for selling of Ice Blocks
- ⇒ Induction of skilled labor for getting quality production.

7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The seasonal cycle of ice consumption and level of demand also varies significantly on the basis of geographical locations. In Pakistan, summer season is much longer in South, interior Sindh and some parts of upper Punjab; whereas, it remains moderate around the coastal belt. Accordingly, the ideal location for the proposed ice plant is the out skirts of major cities located in hot weather geographical regions.

It is proposed that plant should be established in close proximity of cities, so that the ice blocks are accessible to the dealer and institutional buyers. Raw material and labor is also easily accessible in these cities.

8 POTENTIAL TARGET CUSTOMERS / MARKETS

Overall local production of ice blocks is currently in good demand. The target market / customers for ice blocks can be divided into two categories. Firstly, domestic users, such as people living in rural areas and 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.

9 PROJECT COST SUMMARY

9.1 Project Economics

All the figures in this financial model have been calculated for estimated sales of 51,750 ice blocks in the first year at 75% capacity utilization. An increase of 5% capacity utilization is assumed in subsequent years up to the maximum capacity utilization of 90%. The following table shows internal rate of return, payback period and net present value of the proposed venture:

Table 2: Project Economics

Description	Details
Internal Rate of Return (IRR)	31%
Payback Period (yrs.)	4.08
Net Present Value (Rs.)	12,280,967

9.2 Project Financing

Following table provides details of the equity required and variables related to bank loan:

Table 3: Project Financing

Description	Details
Total Equity (50%)	Rs. 9,213,299
Bank Loan (50%)	Rs. 9,213,299
Markup to the Borrower (%age / annum)	14%
Tenure of the Loan (Years)	5

9.3 Project Cost

Following fixed and working capital requirements have been identified for operations of the proposed business:

Table 4: Project Cost

Description	Amount Rs.
Capital Cost	
Machinery & Equipment	8,868,000
Building / Infrastructure	4,555,500
Land	2,000,000
Furniture and Fixture	117,000
Office Equipment	100,000
Pre-operating Cost	2,224,955
Training Cost	14,000
Total Capital Cost	17,879,455
Working Capital	
Equipment Spare parts Inventory	43,125
Raw Material Inventory	104,018
Cash	400,000
Total Working Capital	547,143
Total Project Cost	18,426,597

9.4 Space Requirement

The land requirement for the proposed ice plant for producing 30-ton ice blocks is around 4,500 sq. ft (1 Kanal). Land requirement is estimated while considering various infrastructure facilities including management office, production hall, opens space and etc.

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 and installation cost. The estimated cost of acquiring 1 Kanal of land in close proximity of a major city is assumed as Rs. 2 million.

Details of civil work requirement with estimated cost is provided in the table below:

Table 5: Space Requirement

Description	Estimated Area (Sq. ft.)	Unit Cost (Rs.)	Total Cost (Rs.)
Management Office	150	1,500	225,000
Production Hall	3,750	1,150	4,312,500
Open Space	600	30	18,000
Total			4,555,500

9.5 Machinery & Equipment Requirement

Plant, machinery and equipment for the proposed project are stated below:

Table 6: Machinery & Equipment Requirement

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Ammonia Compressor (7x7) Driven wheel	2	450,000	900,000
Ammonia Condenser Atmosphere with 2" Pipe 1200 ft	12	110,000	1320,000
Electric Motor 1450 RFM China	2	150,000	300,000
Brine Tank for 480 Ice Cans, 4mm	2	370,000	740,000
Brine Agitator 18" Fan Metal	2	30,000	60,000
Accumulator for regular supply of Ammonia	2	36,000	72,000
Crane & Trolley with railing channel & Girder	2	110,000	220,000
Cooling Coil V-Type 4"pipe & 3000 ft pipe 4"(Toyota Patta)	2	400,000	800,000
Oil Separator Buffer type	2	31,000	62,000
Wood work for ice cans, tank cover	480	1,800	864,000
Ice Cans of 1.5 mm British Gauge	480	3,500	1,680,000
Receiver fittings with all Safety measure Ammonia Inspection\	1	150,000	150,000
Blower no. 59 complete with fitting	2	70,000	140,000
Electric Motor 7.5"	4	15,000	60,000

Switch Gens starters and Switch Board with local cable	2	100,000	200,000
Centrifugal Pump 2.5"x3"	2	50,000	100,000
Erection Charges of Plant	1	300,000	300,000
General Fittings for complete plant	1	400,000	400,000
Generator 50 KVA	1	500,000	500,000
Total			8,868,000

9.6 Furniture & Fixtures Requirement

Details of the furniture and fixture required for the project are given below:

Table 7: Furniture & Fixture Requirement

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Executive Table and Chair	1	25,000	25,000
Sofa	1	18,000	18,000
Chairs	5	2,000	10,000
Fans, Lights & Electric Wiring	1	50,000	50,000
Fire Extinguisher	5	2,800	14,000
Total			117,000

9.7 Office Equipment Requirement

Following office equipment will be required for Ice Plant.

Table 8: Office Equipment Requirement

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Laptop	1	50,000	50,000
UPS	1	30,000	30,000
Printer (HP Laser Black 1102)	1	10,000	10,000
File cabinet	1	8,000	8,000
Calculator	1	1,000	1,000
Telephone set	1	1,000	1,000
Total			100,000

9.8 Human Resource Requirement

In order to run operations of Ice Plant smoothly, details of human resources required along with number of employees and monthly salary are recommended as under:

Table 9: Human Resource Requirement

Description	No. of Employees	Monthly Salary per person (Rs.)
Owner / Manager	1	40,000
Foreman	1	20,000
Machine Operator	1	15,000
Labor	3	12,000
Watchman	1	12,000

9.9 Utilities and other costs

An essential cost to be borne by the project is the cost of electricity and gas. The direct electricity expenses are estimated to be around Rs. 919,421 per month. Furthermore, promotional expense being essential for marketing of Ice Plant is estimated as 5% of revenue.

9.10 Revenue Generation

Based on the capacity utilization of 75% for ice blocks, sales revenue during the first year of operations is estimated as under:

Table 10: Revenue Generation – Year 1

Description / Product Range	% Of Production	Total No Ice Blocks	Sales Price (Rs. / Block)	First Year Production (75% Capacity)	Revenue
Ice Blocks (A-Grade)	80%	55,200	400	41,400	19,665,000
Ice Blocks (B-Grade)	20%	13,800	300	10,350	

10 CONTACT DETAILS

In order to facilitate potential investors, contact details of machinery suppliers relevant to the proposed project be given.

10.1 Machinery Suppliers

Name of Supplier	Address	Phone
M. A. Javed Engineering Works	South Gate O/s Sarai Sultan, Bazar Al-Hadeed, Shop no. 84-85, Brandreth Road, Lahore	
Unique Ammonia Compressor	Mr. Zeeshan Address: Hussain Dezelz Ferozpuri, 132 G T Road, Baghbanpura, Lahore.	042-36862852, 0300-4575257, 0333-4438904

11 USEFUL WEB LINKS

Small & Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries & Production	www.moip.gov.pk
Ministry of Education, Training & Standards in Higher Education	http://moptt.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.khyberpakhtunkhwa.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Government of Azad Jamu Kashmir	www.ajk.gov.pk
Trade Development Authority of Pakistan (TDAP)	www.tdap.gov.pk
Security Commission of Pakistan (SECP)	www.secp.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
State Bank of Pakistan (SBP)	www.sbp.org.pk
Punjab Small Industries Corporation	www.psic.gop.pk
Sindh Small Industries Corporation	www.ssic.gos.pk
Pakistan Horticulture Development and Export Company (PHDEC)	www.phdec.org.pk
Punjab Vocational Training Council (PVTC)	www.pvtc.gop.pk
Technical Education and Vocational Training Authority (TEVTA)	www.tevta.org
Pakistan Readymade Garment Technical Training Institute	www.prgmea.org/prgtti/
Livestock & Dairy Development Department, Government of Punjab.	www.livestockpunjab.gov.pk
Punjab Industrial Estates (PIE)	www.pie.com.pk
Faisalabad Industrial Estate Development and Management Company (FIEDMC)	www.fiedmc.com.pk

12 ANNEXURES

12.1 Income Statement

SMEDA										
Calculations										
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	19,665,000	23,073,600	26,967,270	31,408,938	34,549,832	38,004,815	41,805,296	45,985,826	50,584,409	55,642,850
<i>Cost of sales</i>										
Raw Material Cost	2,496,420	2,929,133	3,423,424	3,987,282	4,386,010	4,824,611	5,307,072	5,837,780	6,421,558	7,063,713
Operation costs 1 (direct labor)	852,000	937,200	1,030,920	1,134,012	1,247,413	1,372,155	1,509,370	1,660,307	1,826,338	2,008,971
Operating costs 2 (machinery maintenance)	517,500	607,200	709,665	826,551	909,206	1,000,127	1,100,139	1,210,153	1,331,169	1,464,286
Operating costs 3 (direct electricity)	11,033,057	11,775,782	12,520,662	13,267,915	13,296,615	13,328,184	13,362,911	13,401,110	13,443,130	13,489,351
Total cost of sales	14,898,977	16,249,314	17,684,671	19,215,760	19,839,244	20,525,077	21,279,493	22,109,350	23,022,193	24,026,321
Gross Profit	4,766,023	6,824,286	9,282,599	12,193,178	14,710,587	17,479,738	20,525,804	23,876,476	27,562,215	31,616,529
<i>General administration & selling expenses</i>										
Administration expense	624,000	686,400	755,040	830,544	913,598	1,004,958	1,105,454	1,215,999	1,337,599	1,471,359
Administration benefits expense	93,600	102,960	113,256	124,582	137,040	150,744	165,818	182,400	200,640	220,704
Electricity expense	103,500	113,850	125,235	137,759	151,534	166,688	183,357	201,692	221,861	244,048
Office refreshment expense	120,000	132,000	145,200	159,720	175,692	193,261	212,587	233,846	257,231	282,954
Communications expense (phone, fax, mail, internet, etc.)	120,000	132,000	145,200	159,720	175,692	193,261	212,587	233,846	257,231	282,954
Office expenses (stationary, entertainment, janitorial services, etc.)	93,600	102,960	113,256	124,582	137,040	150,744	165,818	182,400	200,640	220,704
Promotional expense	983,250	1,153,680	1,348,364	1,570,447	1,727,492	1,900,241	2,090,265	2,299,291	2,529,220	2,782,142
Professional fees (legal, audit, consultants, etc.)	196,650	230,736	269,673	314,089	345,498	380,048	418,053	459,858	505,844	556,428
Depreciation expense	31,700	31,700	31,700	31,700	31,700	43,910	43,910	43,910	43,910	43,910
Amortization of pre-operating costs	444,991	444,991	444,991	444,991	444,991	-	-	-	-	-
Amortization of legal, licensing, and training costs	2,800	2,800	2,800	2,800	2,800	-	-	-	-	-
Subtotal	2,814,091	3,134,077	3,494,714	3,900,933	4,243,077	4,183,855	4,597,849	5,053,243	5,554,177	6,105,203
Operating Income	1,951,932	3,690,209	5,787,885	8,292,245	10,467,510	13,295,883	15,927,954	18,823,232	22,008,039	25,511,325
Gain / (loss) on sale of office equipment	-	-	-	-	40,000	-	-	-	-	-
Gain / (loss) on sale of Furniture & Fixtures	-	-	-	-	-	-	9,360	-	-	-
Earnings Before Interest & Taxes	1,951,932	3,690,209	5,787,885	8,292,245	10,507,510	13,295,883	15,937,314	18,823,232	22,008,039	25,511,325
Interest expense on long term debt (Project Loan)	1,183,614	987,052	761,491	502,656	205,636	-	-	-	-	-
Interest expense on long term debt (Working Capital Loan)	36,221	30,206	23,303	15,382	6,293	-	-	-	-	-
Subtotal	1,219,835	1,017,257	784,794	518,038	211,929	-	-	-	-	-
Earnings Before Tax	732,097	2,672,952	5,003,090	7,774,207	10,295,581	13,295,883	15,937,314	18,823,232	22,008,039	25,511,325
Tax	33,210	390,738	1,023,427	1,943,472	2,825,953	3,876,058	4,800,559	5,810,631	6,925,313	8,151,463
NET PROFIT/(LOSS) AFTER TAX	698,887	2,282,214	3,979,663	5,830,735	7,469,629	9,419,825	11,136,755	13,012,602	15,082,726	17,359,862

12.2 Balance Sheet

Calculations											SMEDA
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	400,000	8,350	1,132,420	3,687,436	7,825,623	13,122,314	22,465,731	33,503,670	46,390,628	61,315,562	79,644,180
Accounts receivable		215,507	234,184	274,197	319,870	361,418	397,560	437,316	481,047	529,152	582,067
Equipment spare part inventory	43,125	55,660	71,558	91,678	110,931	134,226	162,414	196,521	237,790	287,726	-
Raw material inventory	104,018	134,252	172,598	221,128	267,565	323,754	391,742	474,008	573,549	693,994	-
Total Current Assets	547,143	413,769	1,610,760	4,274,439	8,523,988	13,941,711	23,417,446	34,611,514	47,683,014	62,826,434	80,226,247
<i>Fixed assets</i>											
Machinery & equipment	8,868,000	8,868,000	8,868,000	8,868,000	8,868,000	8,868,000	8,868,000	8,868,000	8,868,000	8,868,000	8,868,000
Furniture & fixtures	117,000	105,300	93,600	81,900	70,200	58,500	46,800	35,100	23,400	11,700	-
Office equipment	100,000	80,000	60,000	40,000	20,000	161,051	128,841	96,631	64,420	32,210	-
Total Fixed Assets	15,640,500	15,608,800	15,577,100	15,545,400	15,513,700	15,643,051	15,599,141	15,555,230	15,511,320	15,467,410	15,423,500
<i>Intangible assets</i>											
Pre-operation costs	2,224,955	1,779,964	1,334,973	889,982	444,991	-	-	-	-	-	-
Legal, licensing, & training costs	14,000	11,200	8,400	5,600	2,800	-	-	-	-	-	-
Total Intangible Assets	2,238,955	1,791,164	1,343,373	895,582	447,791	-	-	-	-	-	-
TOTAL ASSETS	18,426,597	17,813,732	18,531,232	20,715,421	24,485,479	29,584,762	39,016,587	50,166,744	63,194,334	78,293,844	95,649,747
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable		61,443	72,503	85,264	99,579	110,335	122,335	135,737	150,726	167,510	163,551
Total Current Liabilities	-	61,443	72,503	85,264	99,579	110,335	122,335	135,737	150,726	167,510	163,551
<i>Other liabilities</i>											
Long term debt (Project Loan)	8,939,727	7,607,306	6,078,323	4,323,779	2,310,399	-	-	-	-	-	-
Long term debt (Working Capital Loan)	273,571	232,797	186,007	132,315	70,702	-	-	-	-	-	-
Total Long Term Liabilities	9,213,299	7,840,103	6,264,330	4,456,094	2,381,102	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	9,213,299	9,213,299	9,213,299	9,213,299	9,213,299	9,213,299	9,213,299	9,213,299	9,213,299	9,213,299	9,213,299
Retained earnings		698,887	2,981,101	6,960,765	12,791,500	20,261,128	29,680,953	40,817,708	53,830,310	68,913,036	86,272,898
Total Equity	9,213,299	9,912,186	12,194,400	16,174,063	22,004,798	29,474,427	38,894,252	50,031,007	63,043,608	78,126,334	95,486,196
TOTAL CAPITAL AND LIABILITIES	18,426,597	17,813,732	18,531,232	20,715,421	24,485,479	29,584,762	39,016,587	50,166,744	63,194,334	78,293,844	95,649,747

12.3 Cash Flow Statement

Calculations											SMEDA
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
<i>Operating activities</i>											
Net profit		698,887	2,282,214	3,979,663	5,830,735	7,469,629	9,419,825	11,136,755	13,012,602	15,082,726	17,359,862
Add: depreciation expense		31,700	31,700	31,700	31,700	31,700	31,700	43,910	43,910	43,910	43,910
amortization of pre-operating costs		444,991	444,991	444,991	444,991	444,991	-	-	-	-	-
amortization of training costs		2,800	2,800	2,800	2,800	2,800	-	-	-	-	-
Deferred income tax		-	-	-	-	-	-	-	-	-	-
Accounts receivable		(215,507)	(18,677)	(40,012)	(45,673)	(41,548)	(36,142)	(39,756)	(43,732)	(48,105)	(52,915)
Finished goods inventory		-	-	-	-	-	-	-	-	-	-
Equipment inventory	(43,125)	(12,535)	(15,898)	(20,120)	(19,252)	(23,295)	(28,187)	(34,107)	(41,269)	(49,936)	287,726
Raw material inventory	(104,018)	(30,234)	(38,346)	(48,530)	(46,437)	(56,189)	(67,988)	(82,266)	(99,542)	(120,445)	693,994
Accounts payable		61,443	11,059	12,761	14,315	10,756	12,000	13,403	14,988	16,784	(3,959)
Cash provided by operations	(147,143)	981,545	2,699,843	4,363,252	6,213,179	7,838,844	9,343,417	11,037,939	12,886,958	14,924,934	18,328,618
<i>Financing activities</i>											
Project Loan - principal repayment		(1,332,421)	(1,528,984)	(1,754,544)	(2,013,380)	(2,310,399)	-	-	-	-	-
Working Capital Loan - principal repayment		(40,774)	(46,790)	(53,692)	(61,613)	(70,702)	-	-	-	-	-
Additions to Project Loan	8,939,727	-	-	-	-	-	-	-	-	-	-
Additions to Working Capital Loan	273,571	-	-	-	-	-	-	-	-	-	-
Issuance of shares	9,213,299	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares		-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	18,426,597	(1,373,195)	(1,575,773)	(1,808,236)	(2,074,992)	(2,381,102)	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(17,879,455)	-	-	-	-	(161,051)	-	-	-	-	-
Acquisitions		-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by investing activities	(17,879,455)	-	-	-	-	(161,051)	-	-	-	-	-
NET CASH	400,000	(391,650)	1,124,070	2,555,016	4,138,186	5,296,691	9,343,417	11,037,939	12,886,958	14,924,934	18,328,618

13 KEY ASSUMPTIONS

13.1 Operating Cost Assumptions

Description	Details
Communication Expenses	10,000 Per Month
Office Expenses	15% of Administration Expenses
Electricity Price Growth Rate	10%
Wage Growth Rate	10%

13.2 Production Cost Assumptions

Description	Details
Ammonia NH3 Consumption (Pound)/block	Rs. 11.00
NACL Usage kg/ice block	Rs. 45.00
NACL Replenishment charges	Rs. 0.30
Compressor Oil (Drum)/Ice block	Rs. 4.00
Raw Material Cost Per Block	Rs. 60.30
Raw Material Cost Growth Rate	10%

13.3 Revenue Assumptions

Description	Details
Sales Price Growth Rate	10%
Percentage of A Grade	80%
Percentage of B Grade	20%
Days Operational / Year	345

13.4 Financial Assumptions

Description	Details
Project Life (Years)	10
Debt	9,213,299
Equity	9,213,299
Interest Rate on debt	14%