
Detailed Project Report
On
Ice Plant with Pre-Primary Processing
Unit (30 MT)

Under MKUY

Name of the Entrepreneur/Entity:
Address:

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1. Project Summary

1	Name of the Enterprise (as per the Illustrative List of Enterprises)	Ice Plant with pre-primary Fish Processing Unit
2	Sector (as per the Illustrative List of Enterprises)	Fisheries
3	Project Capacity ¹	30 MT/day
4	Key components of the project	
5	Project Address (Village/Ward, Gram Panchayat/Municipality, Block, District)	
6	Products/Output from the project	Block Ice
7	Total Project Cost	Rs. 79,45,400
8	Fixed Capital Cost	Rs. 74,95,400
9	Working/Recurring capital (for 15 days)	Rs. 4,50,000
10	Bank Finance/ Self Finance	Self-Finance
11	Bank Loan Amount	
12	Promoter Contribution (min 10% of the project cost in case of bank loan)	
13	Assumed Rate of Interest	
14	Subsidy Eligibility (40%, 50%)	
15	Repayment Terms (Tenure, Moratorium, Frequency, Mode of Repayment: equal principal/equal instalment)	
16	Key Financial Indicators:	
	1. Average Annual Net Profit	Rs. 43,68,795
	2. Debt Service Coverage Ratio (DSCR)	
	3. Internal Rate of Return	53.57%
	4. Break Even Year	1 Years and 11 Months
17	Estimated employment to be generated (nos.)	18

Note:

1. Customized DPR is to be prepared as per the information given by the beneficiary.
2. The CIS will be calculated as per the cost norm of MKUY guideline.
3. All the prices quoted here are indicative in nature.
4. The particulars under each component of the Capital Investment may be changed as per the requirement of the project.

¹ Capacity can be in terms of area or quantity

2. Project Profile

2.1 Entrepreneur/Entity Profile

1	Name of the Entrepreneur/Entity	
2	Legal status (Individual/ Group/ FPO/ FPC/ Proprietorship/ Partnership firm/ Company/ Cooperative/ Federation/ Society/ Trust)	
3	Name of Representative ² in Ease of entity	
4	Gender (Male/ Female/ Third Gender/ Not Applicable)	
5	Date of Birth of Individual/Representative of Entity	
6	Date of Incorporation/Registration of Entity	
7	Category opted for (Women/ ST/ SC/ Differently Abled/ Third gender/ Agri & Allied Graduate)	
8	Educational Qualification of Individual/Representative of Entity	
9	Passport size photograph of the Individual/ Representative of entity	
10	Local Address for Correspondence of the Individual/ Representative of entity	
11	Registered Address of Entity	
12	Main Office/Branch Address of Entity	
13	Phone no. of Individual/Representative of Entity	
14	Email Id of Individual/Representative of Entity	
15	AADHAR No. of Individual/Representative	
16	PAN of Individual/Representative of Entity, if available	
17	Farmer Id of Individual, if available	
18	Details of other Partner/Director/ President/Secretary	
19	Registration No./ CIN of the Entity ³	
20	PAN/TAN of Entity	
21	GSTIN of Entity, if available	
22	Details of experience and exposure relevant to the proposed enterprise/project (family business, work experience, e- learning/certificate courses, trainings undertaken etc.)	

² Representative should be authorized by the board/governing body of the entity.

³ Registration document:

Groups (SHG/PG/): FPO: Proprietorship firm: Registration Certificate under Shops & Establishment Act,
Partnership firm: Registration Certificate from IGR of state, Company (Pvt. Ltd., Public Ltd., LLP, OPC, FPC):
Certification of Incorporation, Cooperative/ Federation: Certificate of Registration from Registrar of
Cooperative Societies, Society/Trust: Darpan Unique Id

2.2. Project Consultant Details

DPR prepared by: APICOL, Baramunda

Please provide further details of the consultant:



2.3. Concept and Scope of the Project

The term ice plant is a unit that converts water into ice. Ice plants are usually classified by the type of ice they produce; hence there are block ice plants, flake ice plants, tube, slice or plate ice plants and so on. Ice plants may be further subdivided into those that make dry or wet ice. Dry ice here means ice at a temperature low enough to prevent the particles becoming moist; the term does not refer in this note to solid carbon dioxide. In general, dry subcooled ice is made in plants that mechanically remove the ice from the cooling surface; most flake ice plants are of this type. When the cooling surface of an icemaker is warmed by a defrost mechanism to release the ice, the surface of the ice is wet and, unless the ice is then subcooled below 0°C, remains wet in storage; tube ice and plate ice plants are of this type.

Type of ice maker

Block ice

Tapered rectangular metal cans filled with water are immersed in a tank containing refrigerated sodium chloride brine. The dimensions of the can and the temperature of the brine are usually selected to give a 24 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. A block ice plant requires continuous attention and is labour intensive. The icemaker and the store require a good deal of floor space and impose heavy loads on the building structure. For these reasons block ice plants are going out of use, and more modern automatic plants are replacing them.

Rapid block ice

It is possible to reduce the freezing time for blocks considerably, and thus reduce the space required for the icemaker. This is done by reducing the thickness of ice to be frozen; in one type of rapid icemaker this is achieved by passing refrigerant through tubes around which the ice forms and fuses into a block. The blocks can be released by defrosting and harvested automatically, thus markedly reducing the labour requirement, but the storage space required is slightly larger than for the same weight of conventional block ice because the blocks have hollow centres after the tubes are removed.

Flake ice

A sheet of ice 2-3 mm thick is formed by spraying water on the surface of a refrigerated drum, and scraping it off to form dry subcooled flakes, usually 100-1000 mm² in area. In some models the drum rotates against a stationary scraper on its outer surface; in others the scraper rotates and removes ice from the inner wall of a double walled stationary drum. In some models the drum is horizontal, but more usually it is mounted vertically. No water is sprayed on that part of the drum immediately before the scraper, so that the ice becomes dry and subcooled prior to removal.

Refrigerant temperature, drum or scraper speed, and degree of subcooling are all variable within designed limits so that the capacity of the icemaker and the thickness of the ice can be

altered. Typical refrigerant temperature in a flake ice machine is - 20 to - 25°C, lower than in most other types of icemaker, to give rapid cooling and thus make the machine compact. The low operating temperature requires more power, but this is to some extent compensated for by the absence of a need to defrost.

The refrigeration system

Most modern icemakers are designed to work unattended 24 hours a day with only routine inspection and maintenance. The system is therefore designed for reliability, with safeguards against failure or malfunction. Most manufacturers recommend the refrigeration system best suited to their icemakers, but where local installation engineers propose a system, the purchaser should ensure that the contractor is aware of the need for continuous automatic running and for rapid repair after breakdown.

The refrigeration system for an icemaker should be independent of any other refrigeration requirement; it should not be shared for example with a freezer or a cold store. The only exception to this rule is when a complex system is installed and a competent engineer is in fulltime attendance. Manufacturers often recommend a separate system for each icemaking unit, so that in a multiple unit installation there is considerable flexibility, and a reasonable guarantee that at least some of the units are always in production. Choice of refrigeration machinery and of refrigerant is a job for the refrigeration expert, and the advice of the ice plant manufacturer or competent consultant should be sought before making any decision.

Storage of ice

Manufacture of ice can seldom be matched to meet immediate demand; therefore, storage is necessary to cater for peak demand and to allow the icemaker to be operated continuously. Storage also acts as a buffer against interruption of production due to breakdown or routine maintenance.

The size of store required will depend on the pattern of operation, but it is never advisable to store less than 2 days' production, and in most installations, it is useful to be able to store 4-5 times the daily production.

3. Techno-commercial Assumptions

Sl. No.	Parameter	Value	Unit
1	Increase in Rate of Product	5	%
2	Increase in Electricity consumption	5	%
3	Collection from Debtors (First Year)	10	Days
4	Collection from Debtors	15	Days
5	Payable to Creditors	20	Days
6	Drawing By Promoter	40	%
7	Increase in Staff Salary	5	%
8	Rate of Interest on TL	11	%
9	Rate of Interest on WC	9	%
10	Loan Repayment (in year)	7	Days
11	Raw Material in Stock (on sales)	5	Days
12	Finished Goods in stock (on sales)	15	Days
13	Promoter's Contribution (Term Loan)	100	%
14	Promoter's Contribution (Working Capital)	100	%
15	Working Capital Requirement	15	Days
17	Working Capital Utilisation	100	%
18	Ice Plant capacity	30000	Kg
19	Cans	240	Cans
20	1 Can	125	Kg

4. Financial Details

4.1. Project Fixed Capital

Details of Fixed Assets					
Sl. No.	Particulars	Unit	Qty.	Cost per unit	Total
A	Land				
1	Land Development	Sq. ft	3000	0.60	1,800
2	Fencing (Barbed wire)	ft	220	70.00	15,400
	Sub Total				17,200
B	Civil Construction				
1	Shed Construction (GI & MS material heavy duty profile sheet)	Sq. ft	2300	600.00	1,380,000
2	Overhead Tank	LS			30,000
3	Office Room	Sq. ft	200	850.00	170,000
4	Store Room	Sq. ft	200	300.00	60,000
	Sub Total				1,640,000
C	Water Supply				
1	Water Supply with Borewell, pump and pipe line				2,50,000
D	Electrification				
1	Electrical Installation (with 100 KVA transformer/ DG Set)			650,000.00	650,000
2	Electric Panel Board with all appliances, cable connection from panel to motor points with earthing points			225,000.00	225,000
	Sub Total				875,000
E	Plant & Machinery				
Sl. No.	Particulars	Specification	Qty	Unit Price	total
1	Kirloskar kcx-2 or Super Colt 2 model High Speed HDI type with all standard accessories complete in all respect	no	1	421,000.00	421,000
2	50 HP standard motor Kirloskar or crompton or Havels make 1440 RPM 3 Phase	no	1	149,000.00	149,000
3	50 HP Star delta starter, BEE/ BEE Make(or starter to be pre- install in panel board)	no	1	20,000.00	20,000
4	Accumulators, Oil separator Surge Drum Rank with gasinlet and outlet connection tested at 300	no	3	60,000.00	60,000

Details of Fixed Assets					
Sl. No.	Particulars	Unit	Qty.	Cost per unit	Total
	PSIG for all the compressors				
5	Atmospheric type condensers made of Tata C class heavy pipe with both side heavy angle support complete set	no	6	490,000.00	490,000
6	Ammonia heavy receiver Tank 22" x 10' long welded with both side disc, tested at 300PSIG	no	1	155,000.00	155,000
7	Freezing Tank made up of 5 mm thickness TATA M.S plates and 3 mm thickness Tata make plates for partition plates for accomodation of 240 numbers of Ice cans	no	1	637,500.00	637,500
8	Ammonia Vaves for 6 Sets condensers with flenges nut bolt gasket etc.	no	1	66,000.00	66,000
9	Ice cans of size 11" x 22" x 48" made of Tata make sheet	no	240	648,000.00	648,000
10	Ice tank insulation work with thermocole and bitumen fixing for the entire ice tank	no	1	96,000.00	96,000
11	Ammonia refrigeration MS heavy pipe line	no	1	215,000.00	215,000
12	3 HP condenser pump kirloskar make 1440 rpm 3 phase	no	1	16,000.00	16,000
13	Ammonia super valve fittings for controlling gas pipelines with reqd. flanges, gaskets, nut bolts etc.	no	1	285,000.00	285,000
14	GI pipe fittings with foot valve, flanges, gaskets, nut bolts etc.	no	1	175,000.00	175,000
15	Refrigeration cooling coil for 240 cans ice tank	no	1	350,000.00	350,000
16	Heavy class agitator set with 5 HP motor, fan blades, pully, belts	no	1	49,700.00	49,700
17	Hand hoist set electrical with MS channels and joist	no	1	165,000.00	165,000
18	Ammonia refrigerant gas & compressor oil	no	1	220,000.00	220,000
19	Digital sensor thermometer, gravity meter, brine thermometers	no	1	10,000.00	10,000

Details of Fixed Assets					
Sl. No.	Particulars	Unit	Qty.	Cost per unit	Total
20	Ice Crusher	no	1	300,000.00	300,000
21	Crates		LS	10,000.00	10,000
22	Ice Box	no	5	3,000.00	15,000
23	Stainless Steel working table		LS	100,000.00	100,000
	Total Plant and Machinery Cost				4,653,200
F Miscellaneous Expenditure					
1	Insurance premium of assets				30,000
2	Cost of DPR Preparation				18,751
3	Miscellaneous Expenditure				11,249
	Total Miscellaneous Expenditure				60,000

4.2. Project Variable Expenses

Details of Recurring Expenditure						
A Details of raw material (per annum @ 100%)						
Sl. No.	Items	Unit	Rate/Unit (Rs)	Qty/day	Qty/annum (kg)	Total Cost (Rs)
1	Salt	Kg	10.00	2,000	580,000	5,800,000
2	Water	Lit	0.25	22,000	6,380,000	1,595,000
Total				24,000	6,960,000	7,395,000

Details of salary and other benefits				
Sl. No.	Type of Workers	No. of Worker	Salary Per Month/head (Rs)	Total Salary per Annum (Rs)
1	Unskilled	10	8,000	960000
2	Skilled	7	10,000	840000
3	Manager	1	20,000	240,000
	Grand Total	18		2,040,000

4.3. Details of Sales

Details of sales (Per annum @100% capacity)						
Sl. No.	Type of products	Unit	Rate/Unit (Rs)	Quantity Per day	Quantity Per annum	Total (Rs)
1	Ice Block	Kg	3.20	20,000	5,800,000	18,560,000
	Total			20,000	5,800,000	18,560,000

4.4. Project Balance Sheet

Liabilities	I	II	III	IV	V	VI	VII
Opening Capital	-	97,74,752	77,81,476	69,62,210	68,66,230	69,63,716	74,81,007
Add: Introduced	79,45,400						
Add: Profit	30,50,352	31,94,724	38,22,734	44,83,021	47,41,486	55,05,291	57,83,956
Less: Drawing	12,21,000	51,88,000	46,42,000	45,79,000	46,44,000	49,88,000	53,06,000
Closing Capital	97,74,752	77,81,476	69,62,210	68,66,230	69,63,716	74,81,007	79,58,962
Term Loan from Bank	-	-	-	-	-	-	-
Current Liabilities							
Cash Credit from Bank	-	-	-	-	-	-	-
Sundry Creditors	3,45,100	3,88,267	4,34,867	4,85,200	5,09,467	5,66,467	5,94,800
Expenses Payable	2,87,000	3,09,500	3,33,500	3,59,100	3,77,100	4,05,800	4,26,600
Current Provisions	10,39,436	11,01,310	13,70,457	16,53,437	17,64,208	20,91,553	22,10,981
Total Current Liabilities	16,71,536	17,99,077	21,38,824	24,97,737	26,50,775	30,63,820	32,32,381
Total Liabilities	1,14,46,288	95,80,553	91,01,034	93,63,968	96,14,491	1,05,44,826	1,11,91,344
Assets							
Fixed Assets	74,35,400	74,35,400	74,35,400	74,35,400	74,35,400	74,35,400	74,35,400
Less Depreciation	10,18,230	18,93,176	26,45,384	32,92,416	38,49,282	43,28,819	47,42,005
Net Fixed Assets	64,17,170	55,42,225	47,90,016	41,42,984	35,86,118	31,06,581	26,93,395
Current Assets							
Sundry Debtors	4,33,100	7,30,800	8,18,500	9,13,200	9,58,900	10,66,100	11,19,400
Inventories	7,35,900	7,46,700	8,39,600	9,39,800	10,40,550	11,00,550	12,14,750
Cash and Bank Balance	86,700	1,46,200	1,63,700	1,82,700	1,91,800	2,13,300	2,23,900
Other Current Assets	37,73,418	24,14,628	24,89,218	31,85,284	38,37,123	50,58,295	59,39,898
Total Current Assets	50,29,118	40,38,328	43,11,018	52,20,984	60,28,373	74,38,245	84,97,948
Total Assets	1,14,46,288	95,80,553	91,01,034	93,63,968	96,14,491	1,05,44,826	1,11,91,344

4.5. Calculation of Depreciation

Rates of Depreciation		10%	15%	10%	Total depreciation for the year
Year	1	189,000.00	829,230	-	1,018,230
	2	170,100.00	704,846	-	874,946
	3	153,090.00	599,119	-	752,209
	4	137,781.00	509,251	-	647,032
	5	124,002.90	432,863	-	556,866
	6	111,602.61	367,934	-	479,536
	7	100,442.35	312,744	-	413,186

4.6. Projected P&L

Description	Year ending March 31st						
	I	II	III	IV	V	VI	VII
No of Working months	12	12	12	12	12	12	12
Capacity Utilisation	70	75	80	85	85	90	90
Revenue							
Sales	1,29,92,000	1,46,16,000	1,63,70,000	1,82,63,000	1,91,77,000	2,13,21,000	2,23,88,000
Opening Stock of Finished Goods	-	(6,49,600)	(7,30,800)	(8,18,500)	(9,13,150)	(9,58,850)	(10,66,050)
Closing Stock of Finished Goods	6,49,600	7,30,800	8,18,500	9,13,150	9,58,850	10,66,050	11,19,400
Total Income (A)	1,36,41,600	1,46,97,200	1,64,57,700	1,83,57,650	1,92,22,700	2,14,28,200	2,24,41,350
Expenditure							
Opening stock of Raw Material	-	86,300	97,100	1,08,800	1,21,300	1,27,400	1,41,700
Purchase (Net) of Material	51,76,500	58,24,000	65,23,000	72,78,000	76,42,000	84,97,000	89,22,000
Closing Stock of Raw material	86,300	97,100	1,08,800	1,21,300	1,27,400	1,41,700	1,48,700
Raw Material Consumption	50,90,200	58,13,200	65,11,300	72,65,500	76,35,900	84,82,700	89,15,000
Repair & Maintenance- Machinery (@1% of Cost)	74,182	77,900	81,800	85,900	90,200	94,800	99,600
Electricity expense	10,39,360	11,69,300	13,09,600	14,61,100	15,34,200	17,05,700	17,95,400
Insurance cost	30,000	31,500	33,100	34,800	36,600	38,500	40,500

Description	Year ending March 31st						
	I	II	III	IV	V	VI	VII
No of Working months	12	12	12	12	12	12	12
Administrative salaries and wages	20,40,000	21,42,000	22,49,100	23,61,600	24,79,700	26,03,700	27,33,900
Other Misc Expenses [@1% of sales]	2,59,840	2,92,320	3,27,400	3,65,260	3,83,540	4,26,420	4,48,827
Total Cost	85,33,582	95,26,220	1,05,12,300	1,15,74,160	1,21,60,140	1,33,51,820	1,40,33,227
Profit Before Depreciation, Interest and Tax	51,08,018	51,70,980	59,45,400	67,83,490	70,62,560	80,76,380	84,08,123
Depreciation	10,18,230	8,74,946	7,52,209	6,47,032	5,56,866	4,79,536	4,13,186
Profit Before Interest and Tax	40,89,788	42,96,035	51,93,191	61,36,458	65,05,694	75,96,844	79,94,937
Interest on Term Loan	-	-	-	-	-	-	-
Interest on Working Capital Loan	-	-	-	-	-	-	-
Total Interest Paid	-	-	-	-	-	-	-
Profit Before Tax	40,89,788	42,96,035	51,93,191	61,36,458	65,05,694	75,96,844	79,94,937
Income Tax	10,39,436	11,01,310	13,70,457	16,53,437	17,64,208	20,91,553	22,10,981
Profit after Tax	30,50,352	31,94,724	38,22,734	44,83,021	47,41,486	55,05,291	57,83,956

4.7. Projected Cash Flow

Period Ending:	I	II	III	IV	V	VI	VII
Cash & Bank Balance at Beginning	-	86,700	146,200	163,700	182,700	191,800	213,300
Cash Inflow during the Period	11,432,707	3,756,887	4,537,893	5,183,046	5,224,548	6,259,260	6,376,277
Cash Outflow during the Period	11,346,007	3,697,387	4,520,393	5,164,046	5,215,448	6,237,760	6,365,677
Closing Cash & Bank Balance	86,700	146,200	163,700	182,700	191,800	213,300	223,900

4.8. Calculation of BEP & IRR

Calculation of Break-Even Point (BEP)							
Sales	1,36,41,600	1,46,97,200	1,64,57,700	1,83,57,650	1,92,22,700	2,14,28,200	2,24,41,350
Variable Cost	53,50,040	61,05,520	68,38,700	76,30,760	80,19,440	89,09,120	93,63,827
Contribution	82,91,560	85,91,680	96,19,000	1,07,26,890	1,12,03,260	1,25,19,080	1,30,77,523
Fixed Cost	42,01,772	42,95,646	44,25,809	45,90,432	46,97,566	49,22,236	50,82,586
BEP Sales	69,12,920	73,48,267	75,72,370	78,55,916	80,60,145	84,25,113	87,21,842
Average BEP sales	78,42,368						
Payback Period	1 Year 11 Months						

Calculation of Internal Rate of Return (IRR)				
SI. No.	Year	PAT	Depreciation	Cash Accrual
		Cash outflow at beginning		
1	31-03-2023	30,50,352	10,18,230	40,68,582
2	31-03-2024	31,94,724	8,74,946	40,69,670
3	31-03-2025	38,22,734	7,52,209	45,74,943
4	31-03-2026	44,83,021	6,47,032	51,30,053
5	31-03-2027	47,41,486	5,56,866	52,98,352
6	31-03-2028	55,05,291	4,79,536	59,84,827
7	31-03-2029	57,83,956	4,13,186	61,97,142
IRR		53.57%		

4.9. Summary of Project Cost

Sl. No.	Name of Assets	Amount (Rs)
1	Land Development	17,200
2	Civil Construction	1,640,000
3	Irrigation/Water Supply	250,000
4	Electrification	875,000
6	Plant & Machinery	4,653,200
8	Insurance	30,000
9	DPR Cost	18,751
10	Miscellaneous Expenditure	11,249
	Total Fixed Cost	74,95,400
	Recurring	450,000
	Cost of Project	79,45,400

2 Working Capital Requirement

	Heads of Expenses	Amount/year
A	Raw Material	73,95,000
B	Salary	20,40,000
C	Utilities	10,39,360
D	Other Expenses	2,59,840
	Sub total per year	1,07,34,200

Working capital requirement
(for 15 days)

4,50,000