

# Model Project on Milk Processing 10000 LPD



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# **MODEL PROJECT REPORT**

## **1. INTRODUCTION**

1.1 India is endowed with a largest livestock population in the world having a total bovine population of 304 million compared to the world's total bovine population of 1400 million. It accounts for 57.3% of the world's buffalo population and 14.7% of the cattle population. As per 18<sup>th</sup> Livestock Census, 2007 the country has 33.06 million cross bred cattle, 199.07 million indigenous cattle and 105.34 million buffaloes. The cross bred cattle are predominant in Tamil Nadu, Maharashtra, West Bengal, Karnataka, Andhra Pradesh, Uttar Pradesh and Bihar, While buffaloes are very common in Uttar Pradesh, Rajasthan, Andhra Pradesh, Madhya Pradesh, Gujarat, Punjab, Haryana and Bihar.

1.3 There has been a major improvement in milk production, which increased from 17 million tonnes in 1951 to 127.9 million tonnes during 2011-12. Uttar Pradesh, Punjab, Madhya Pradesh, Rajasthan, Maharashtra, Gujarat, Andhra Pradesh, Haryana, Tamil Nadu and Bihar contributed to the extent of 80 percent of the total milk production in the country. The per capita availability of the milk has reached a level of 290 grams per day during the year 2011-12, which is more than the world average of 284 grams per day. Most of the milk in the country is produced by small, marginal farmers and landless laborers.

1.4 Recognizing the importance of the sector, several key initiatives were taken by the Govt. in the past ranging from Operation Flood (OF) programme, Intensive Dairy Development Programme (IDDP), Strengthening infrastructure for Clean Milk Production, Assistance to Cooperatives, Venture Capital Fund (VCF) for Dairy, Dairy Entrepreneurship Development Scheme etc.

1.5 In order to meet the rapidly growing demand for milk with a focus to improve milch animal productivity and increase milk production, the Government has approved National Dairy Plan Phase-I (NDP-I) in February, 2012 with a total investment of about Rs.2242 crore to be implemented from 2011-12 to 2016-17. NDP-I will help to meet the projected national demand of 150 million tons of milk by 2016-17 from domestic production through productivity enhancement, strengthening and expanding village level infrastructure for milk procurement and provide producers with greater access to markets. NDP-I would focus on

14 major milk producing States - Uttar Pradesh, Punjab, Haryana, Gujarat, Rajasthan, Madhya Pradesh, Bihar, West Bengal, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Orissa and Kerala which account for over 90% of the country's milk production. Coverage of NDP- I will however be across the country in terms of benefits accruing from the scheme.

1.6 Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, Government of India is also implementing "National Programme on Bovine Breeding & Dairy Development (NPBBDD) from 2013-14 to 2016-17 through the State Implementing Agencies / End Implementing Agencies / Participating Agencies (Source: <http://dahd.nic.in>).

## **2. MILK PROCUREMENT AND PROCESSING**

The organized dairy sector (both cooperatives and private) is presently handles about 15 per cent of total milk production in the country. Thus it indicates, there is a wide scope for processing of milk and manufacture of milk products for domestic consumption as well as export.

## **3. EXPORT PERFORMANCE**

Dairy products form one of the fastest growing segments in the livestock product export. India's Export of Dairy products was 159228.52 MT to the world for the worth of Rs.3318.53 crores during the year 2013-14. The major export destinations are Bangladesh, Egypt, UAE, Algeria, Yemen Republic, Pakistan, Saudi Arabia and Malaysia. The major products exported were Butter & other milk fat, cheese, Whole Milk Powder, Skimmed Milk Powder, fresh cream, ghee, butter milk etc.

## **4. OBJECTIVES OF THE PROJECT**

The financial assistance is extended for processing of milk with the following objectives.

- i) To enhance the keeping quality of milk
- ii) To avoid the economic losses to farmers by procuring the milk in time from them
- iii) To manufacture various milk products as per market demand
- iv) To provide quality products at affordable prices to the consumers.

## 5. TYPE OF PROJECTS

The types of milk processing projects that are normally considered for financial assistance are:

### i) **Bulk Milk Cooler (BMC) / Milk Chilling plants**

This involves collection of milk from villages, chilling the milk to 3-4 degree Celsius and transporting to the main dairy for further processing and manufacture of products. In majority of cases these are part of the milk processing facility

### ii). **Market Milk Plants / Milk Processing Plants**

It involves procurement of milk from the villages, chilling, standardization, homogenization, pasteurization, packing of market milks of various kinds (whole, standardised, toned and double toned milk) as well as manufacture of milk products.

## 6. POTENTIAL AREAS

India is leading in production of milk and dairy is one of the major subsidiary activities of most of the farmers. Despite of highest production in the world there is always a demand supply miss match for milk and milk products. The demand for milk and milk products is at its peak during festive occasions like Diwali, Id, Holi, etc. In order to meet the demand during its peak, the milk needs to be converted to various milk products due to its perishable nature. But there is lack of processing infrastructure in the country. Therefore, there is good scope for financing milk processing activities in entire country.

## 7. BENEFICIARIES

The beneficiaries may be individuals, partnership firms, companies, corporate bodies, cooperative societies/unions etc. New entrepreneurs may start their business as an individual, proprietary concern, partnership firm or a joint stock company. Individual & proprietary concern should have their PAN number and should preferably have a bank account. Partnership firms should execute a partnership deed as per Indian Partnership Act 1932 on a Non Judicial Stamp Paper as per the Stamp Act of the State Government and register the partnership firm with the Ministry of Corporate affairs. Details of procedure to be followed

are available at:[http://www.mca.gov.in/Ministry/actsbills/pdf/Partnership\\_Act\\_1932.pdf](http://www.mca.gov.in/Ministry/actsbills/pdf/Partnership_Act_1932.pdf). The joint stock company can be formed as private limited, public limited or Producers Company as per The Company Act 2013, the details of which are given on the website of Ministry as link <http://www.mca.gov.in/MinistryV2/companiesact.html>.

## **8. PROJECT DETAILS**

### **8.1 Land and Location**

i) Ample space is required for buildings, future expansion, parking of transport vehicles and for empty cans. About two acres of land is required for a milk processing plant handling about 10000 liters of milk per day (8 hours). However, the built-up area to total area should be normally around 1:3. The exact design and details of the built up area has to be decided in consultation with the plant and machinery supplier or with a professional dairy consultant.

ii) The location of a plant should be close to the milk producing area in case of products manufacturing unit and if liquid milk is the main product it should be close to the consumption centres.

iii) The location of site should have proximity to road/rail facilities, services, such as water, electricity and effluent mains, social infrastructure, etc.

iv) Subsoil of the site should be firm with proper drainage. It is always advisable to conduct soil investigation for load bearing before setting up dairy processing plant.

### **8.2 Site Development**

i) Preferably the entire site should be fenced with barbed wire or compound wall is constructed with gates at suitable places

ii) Internal roads should be of tar/bricks/WBM depending upon the soil conditions, rainfall and the number of vehicles moving every day.

iii) At the Raw Milk Reception area there should be provision for unloading cans from different types of vehicle.

iv) Proper drainage arrangements should be made to ensure cleanliness.

### 8.3 Layout and Buildings

The civil works comprise of main processing building, which includes Raw Milk Reception Dock, Main processing hall, provision for manufacture of other products, cold storage, CIP, Laboratory, quarters, office, garages, security post etc. The factory building for the milk reception, quality control, processing, packing and storage of milk products should be as per BIS specifications. The total covered area depends on the processes involved, products manufactured, the quantity of milk handled and the equipment chosen product manufacturing. About 4000 sq.ft. area of building is required for handling 10000 liters of milk. The essential sections of a milk processing plant are given in below.

**The milk processing plant shall have the following essential facilities.**

- i) **Raw Milk Reception Dock (RMRD)** - consisting of can conveyor, can washer, weighing balance, dump tank etc.
- ii) **Processing Hall** - cream separator, chiller, homogenizer, pasteuriser and other related machinery are installed.
- iii) **Storage area**- for milk storage tanks.
- iv) **Products manufacturing area**-depends upon the type of products, quantity of milk handled and the machinery to be installed.
- v) **Packing area**-for packing of liquid milk and other products.
- vi) **Cold storage**-for keeping the milk and milk products before sending to market.
- vii) **Quality Control Laboratory**-for testing the quality of milk and milk products.
- viii) **Utilities area**-for installing boiler, generator set, water treatment plant, maintenance and store area for spares.
- ix) **Waste water treatment plant area**-for treating the dairy effluents before releasing to the fields.
- x) **Quarters and office area**-for all the essential staff.
- xi) **Vehicle parking area**-both for the milk procurement and distribution vehicles.
- xii) **Input supply area**- for providing veterinary service, supply of feed, fodder seeds, etc.



## 8.4 Plant and Machinery

Different machinery are required for the processing plant based on the type of milk received and products proposed. The machinery should be as per the BIS specifications. The section-wise equipment required, their specifications and quantity for 10,000 litres capacity milk processing plant are given below:

S.No	Description	Qty
<b>I</b>	<b>RECEPTION SECTION.</b>	
1	Can Roller Convevor. 3mtrs.	1No.
2	Can Tip Bar.	1No.
3	Electronic Weigh scale S.S.Weigh Bowl 500 L.	1-No.
4	S.S.Dump Tank - 1000 Ltrs.	1-No.
5	Disc Filter.	1-No.
6	Can Drip Saver suitable for 6 cans.	1-No.
7	S.S.Can Scrubber.(40 Ltrs.)	1-No.
8	S.S.Milk Pump.-1.5 H.P.	1-No.
9	Set of Lab Equipments. 1 Set. (including milkoscan / milkotester / Density meter / Cryoscope / Emulsion quality analyser / HPLC etc. and the associated glass ware	1 set
<b>II</b>	<b>PROCESS SECTION.</b>	
1	S.S.Balance tank with Float. 100 Ltrs	1-No.
2	S.S.Milk Pump 2 H.P.	1-No.
3	S.S.Milk Chiller, Cap. 3KLPH.Make GEA	1-No.
4	S.S. Flow Control Valve. Manual.	1-No.
5	Milk Pasteuriser - 2.5 KLPH.	1-No.
6	S.S.Simplex Filter.	1-No.
7	S.S. Holding Coil for 16 secs.	1-No.
8	Flow Diversion Valve . Manual.	1-No.
9	S.S. Remote Control Panel.	1-No.
10	Inter connecting S.S. Pipeline & valves.	1 set
11	Cream Separator. Cap 500 Ltrs/ Hr.	1-No.
12	Cream tank - 1 KL	1-No.
13	Ghee Boiler - 250 Ltrs	1-No.
14	Ghee Balance Tank & Pump	1 set
15	Ghee settling tank - 250 Ltrs	1-No.
16	CIP unit	1 set
<b>III</b>	<b>STORAGE &amp; PACKING SECTION.</b>	
1	H.M.S.T-M,S.Outter 5KL, Single Comp.	1-No.
2	H.M.S.T-M.S.Outter 10K1, Double Comp.	1-No.
3	S.S.Milk Pump,-1.0 H.P.	1-No.
4	Pouch Packing Machine,5000 PPH,	2-No.
5	S.S. Overhead Tank cap. 200ltrs.(Insu)	1-No.
6	Inter Connecting SS Pipes and valves	1-set

S.No	Description	Qty
7	Spare S.S. Pump For Tanker Filling	1-No.
8	G.I.Pipeline & controls,Driers for Air	1 set
9	Stabilizer for Packing Machine.	1-No.
IV	<b>REFRIGERATION SECTION.</b>	1 set
V	<b>UTILITIES</b>	
1	Hot water generator. Cap. 50,000Kcal Hr.wood Fired.	1-No.
2	Chimney 3 Mtrs high above.	1-No.
3	Makeup WaterTank & Valves. (FRP - 200ltr)	1-No.
4	Water Softener Suitable Duty	1-No.
5	G.I.Pipeline, valves & water Pump.	1-No.
VI	<b>ELECTRICALS.</b>	
1	MCCB Panel for above equipments.	1-No.
2	All Cables, armoured, flexible & others	1 set
3	Generator 63 KVA	
VII	<b>ERECTION &amp;'COMMISSIONING</b>	1Job.

There are many firms in the country who are involved in the fabrication and installation of Dairy processing plant. Before finalising the agency for installing the plant and machinery the company should enter in to contract with them either for turnkey basis or for providing after sales service.

### 8.5 Technical Collaboration

Normally the technical collaboration may be for supply of machinery, technical know-how for manufacture or marketing of products. If any collaboration arrangement is there, name of the firm, country and term of agreement is required to be mentioned in the project. While entering in to agreement with machinery supplier, provision should be made for getting the training to the technical staff employed in the unit.

### 8.6 Manufacturing Process

The operations involved in the manufacturing process should be given in the form of a flow diagram. The flow diagram for a 10,000 litres per day milk processing plant is furnished in *Annexure I*.

## 8.7 Infrastructural Facilities for Raw Material and Utilities

### 8.7.1 Raw Material

The principal raw material is milk. The extent of milk procurement area, milch animal population, average milk yield, percentage of animals in milk, marketed surplus etc. will determine the size of the plant. The method of procurement, transportation of milk and input supply to the farmers is required to be highlighted. The availability of other inputs such as packing materials, disinfectants and consumables should be ascertained.

### 8.7.2 Utilities

#### *i) Power*

Normally a three phase electricity supply is required for milk processing plants. The power requirement depends upon the load to be connected and the necessary approval from SEB should be obtained for connection. Depending upon the position of power supply, standby generators may be considered for connecting the essential sections.

#### *ii) Water*

A milk processing plant requires the water in the ratio of 2:1 (2 liters of water for 1 liter of milk processed) for cleaning of equipments, cold storage and drinking purposes (source of water supply, quantity available and suitability for the purpose has to be mentioned). Accordingly, the size of the well is required to be designed and depends on the quality of water, the water softening plant may be considered.

#### *iii) Steam*

The steam requirement (kg/hr) depends upon the processes involved and the source of steam may be met by coal/oil/gas fired / electric boiler.

#### *iv) Fuel*

The fuel is need for various processing operations. The type of fuel will depend upon the type of boiler used for steam generation. It is therefore necessary to assess the requirement of LDO/coal/gas and also ascertain the easy availability before purchase of boiler.

v) *Compressed Air*

It will be required for various pneumatic operations flow control operations as well as for cleaning purposes. The total requirement of compressed air and the capacity of the compressors are required to be furnished.

vi) *Vehicles*

The vehicles required for procurement and distribution of milk depends on the quantity of milk to be handled. The number of vehicles required, source of supply, rental charges etc. need to be furnished. Depending upon the need, the requirement of vehicles may be considered in the project cost. Generally, insulated vehicles will be required to transport chilled milk and reefer vans for transport of finished products like ice cream, cheese, etc.

vii) *Other Services*

A maintenance workshop is an integral part of milk processing for carrying out repairs and maintenance of equipment.

## 8.8 Manpower

While selecting the site, the availability of manpower should be looked into and the total requirement of manpower depends on the operations involved and the quantity of milk handled. For a plant handling 10000 litres of milk per day the manpower required is given below:

Sr. No.	Particulars	Number	Salary/Wages	Total
			(Rs./month)	(Rs.year)
1	Plant Manager	1	30000	360000
2	Plant Operator	1	25000	300000
3	Field / Marketing supervisors	2	15000	360000
4	Processing supervisors	1	15000	180000
5	Mechanics	2	15000	360000
6	Driver	1	7000	84000
7	Watchman	2	5000	120000
8	Administrative/ Accounts staff	2	7000	168000
9	Laboratory staff	2	7500	180000
10	Dairy labour	8	5000	480000
	<b>Total</b>	<b>22</b>		<b>2592000</b>

## **8.9 Environmental Aspects and Pollution Control**

The process involved is milk pasteurisation and processing of milk into toned milk and products such as cream and ghee. The effluent will be in the form of washed water and milk solids apart from the detergents and sanitizers used in the plant. There are no hazardous effluents generated from a milk processing plant. However, construction of effluent treatment plant is necessary for treating the effluents before discharging for proper disposal. The final effluent should meet the requirements of Pollution Control Board and is necessary to get clearance from them. The treated water can be utilised for irrigation or creating a biotic zone where plants can be grown in and around the dairy plant.

## **8.10 Schedule of Implementation**

Generally, it takes about 4 to 6 months period for getting the DPR, obtaining loan sanctions, approval of plans, finalizing the suppliers and construction of various civil structures and installation of plant and machinery. Hence, during first year of operations, only six months of milk procurement can be assumed. Proper planning needs to be done so as to take up various activities without any break. The activity wise schedule of implementation is to be given in the project.

## **8.11 Products**

The major products and by-products proposed to be manufactured along with quantities, composition in terms of fat and SNF and costing should be indicated.

## **8.12 Marketing and Selling Arrangements**

The market for the product (domestic and export), type of arrangements for distribution and sales, commission and additional incentive to be given, the proposed network and the advertisement plans should be furnished. Detailed market survey report is required to be submitted. In the present model, the product range proposed includes toned milk, cream and ghee. The proportion of these products (product mix) needs to be decided as per the market requirements and it can be varied depending upon market situation and lean and flush seasons.

### 8.13 Business Prospects

It involves the present demand-supply for various products, gap in supply and expected demand for various products. The major competitors and their present share are to be ascertained. The company projections for the next 3-5 years and the basis for projection may have to be furnished. The product wise quantities and countries where it is to be exported need to be mentioned.

## 9. CAPITAL COST OF PROJECT

Broadly the capital cost includes the cost of land, development of land, fencing, internal roads, civil works (Plant building, office, quarters etc.), plant and machinery, preliminary and preoperative expenses, margin money for working capital, etc. The project cost of 10000 LPD model milk processing plant is given below.

S.No	Component	Cost (Rs lakh)
1	Land	
2	Land and Site Development	15.56
3	Civil Works	43.65
4	Plant & Machinery	130.00
5	Misc. Fixed Assets	24.00
6	Vehicles	4.40
7	Preliminary & Pre-Operative Expenses	24.54*
8	Contingency @ 5%	10.10
9	Margin For working capital	5.99
	Total	<b>258.24</b>

\* includes interest during construction capitalized to the tune of Rs.13.56 lakh

The above costs and the plant and machinery details given at 8.4 are indicative and the actuals have to be arrived at based on the location specific designs, estimates and quotations.

## 10. ECONOMICS OF THE PROJECT

The project at a glance for the 10000 LPD milk processing unit is given in *Annexure II*. Based on the various techno-economic parameters, the economics of the project has to be worked out for the project period or till the repayment of bank loan. The items of income

includes sale of liquid milk and milk products. while the expenditure includes the cost of raw material, transportation and commission, power, fuel, packing distribution, wages and salary, repairs and maintenance, insurance, advertisement and other overheads. The income as well as expenditure for each year has to be worked out and then it should be subjected to cash flow analysis. For the model diary processing plant of 10000 litres per day, the relevant techno-economic parameters are furnished in *Annexure III*.The assumptions made might vary from place to place, hence need to be considered on case-by-case basis.

## 11. FINANCIAL ANALYSIS

Based on the assumptions on input and output parameters, an Income Expenditure statement(Cash Flow Statement) prepared is presented at *Annexure IV& V*. The financial indicators like Net Present Worth (NPW), Benefit Cost Ratio (BCR), Internal Rate of Return (IRR) etc.analysed by discounting cash flow @15% discounting rate are given in *Annexure VII* and summary is presented in the following table :

S. No	Financial Indicators	Estimated	Norms
1	Net Present Worth (Rs.lakh)	133.33	Should be +ve
2	Benefit Cost Ratio	1.03	>1.0
3	Internal Rate of Return	32.46%	>15%
4	Debt Service Coverage Ratio	1.63	>1.50

## 12. WORKING CAPITAL

Working capital is the most crucial input for viability of any milk processing unit. Nowadays, banks are free to finance working capital based on actual need of the borrower. A provision of adequate working capital needs to be considered by the financing banks. The banks provide Cash Credit Limit, commonly known as CC limit to the borrowers for meeting their day to day expenses. The different components of working capital are work-in-process, finished goods, sundry debtors and sundry creditors. The assessment of working capital is presented in *Annexure X*.

## **13. FINANCIAL ASSISTANCE**

The project so formulated considering the above aspects should be submitted to the nearest branch of the bank for availing credit facility for establishment of milk processing unit. The bank will then examine the project for its technical feasibility, financial viability and bankability. After ensuring the technical feasibility and financial viability, the project is sanctioned by the financing bank. The loan is usually disbursed in stages for various components depending upon the progress of the project. The end-use of the loan is verified and constant monitoring / follow-up is done by the bank.

### **13.1 Means of Finance**

Financing to food processing falls under priority sector lending. The loans to units meeting the criteria of MSME are classified under MSME sector. Such units can be financed by any scheduled commercial banks, Regional Rural Banks and Cooperative Banks. Important terms and conditions of financing such units are discussed in this section.

### **13.2 Margin money**

The promoters of the units need to bring their margin as per the requirement of financing banks and also as per RBI guideline issued from time to time. The margin money varies from minimum 10 per cent to 25 per cent of project cost. We have assumed margin money of 25 per cent in this model project.

### **13.3 Bank loan**

The promoters of the units can approach any financing bank for finance. It is compulsory to take bank loan to avail various subsidy schemes of government. Therefore, the promoters who are desirous of availing subsidy should adhere to the means of finance i.e. the quantum of bank loan & margin prescribed under the scheme.

### **13.4 Grant & subsidy**

There are numbers of incentive from State Government for promotion of food industry. Some of the states have formulated their Agro Industry Policy. The new comers should go through these guidelines. Various incentives are available depending upon location of the unit from District Industry Centres (DIC). Therefore, to take maximum advantage of these incentives, entrepreneurs may contact the District Industry Centres in their state.

Ministry of Food Processing Industry, GoI is implementing a centrally sponsored scheme for known as National Mission on Food Processing (NMFP) jointly with State Governments. The



scheme will be operational during 12th Five Year Plan. Subsidy is available under this scheme for various purposes under food processing industries. GoI has appointed State Nodal Agencies for implementing this scheme in different states. The details of the schemes and the list of State Nodal Officers are given at [www.mofpi.nic.in](http://www.mofpi.nic.in)

The subsidy may also be available under the credit linked subsidy scheme "Integrated Scheme for Agriculture Marketing (erstwhile Development/Strengthening of Agricultural Marketing Infrastructure, Grading and Standardisation) of GOI as per the scheme guidelines. For detailed guidelines, the entrepreneurs may refer to [www.agmarknet.nic.in](http://www.agmarknet.nic.in)

### **13.5 Interest rate**

The banks are free to charge rate of interest above its base rate within overall RBI guideline issued from time to time. It generally varies from customer to customer based on credit appraisal of the borrower. Base rate of a bank is a minimum lending rate below which bank is not allowed to lend.

However, we have considered an interest rate of 14 per cent for working out the bankability of the model project.

### **13.6 Security**

As per RBI guidelines, the banks are required to take adequate security for the loans extended by them. The borrowers should plan projects in such a manner that they have enough fixed assets to offer as security against bank loan. Various types of securities generally considered by the Banks are given here:

#### **13.6.1 Primary Security**

The land and buildings acquired through the bank loan are mortgaged to financing banks. The mortgage can be registered or equitable in nature. The plant, machinery and other miscellaneous fixed assets acquired by bank loan shall have to be hypothecated to the bank. The value of all these assets is known as primary security for the bank.

#### **13.6.2 Collateral Security**

As the value of primary assets, especially buildings and plant and machinery is not enough to cover the bank loan, the banks insists for mortgage of any other property or asset of the company or promoters. This is known as collateral security.

### **13.6.3 Hypothecation of Stocks**

All stocks, inventories and debtors are hypothecated to financing banks as security against the bank loan extended by them.

## **14. REPAYMENT PERIOD AND DSCR**

The repayment period has been drawn by considering net surplus available for repayment. The bank loan with interest is repayable within 8 years with a grace period of one year. The details are presented in *Annexure VIII*. The debt service coverage ratio based on assumed techno economic parameters is estimated to be 1.63 (*Annexure IX*)

## **15. DEPRECIATION SCHEDULE**

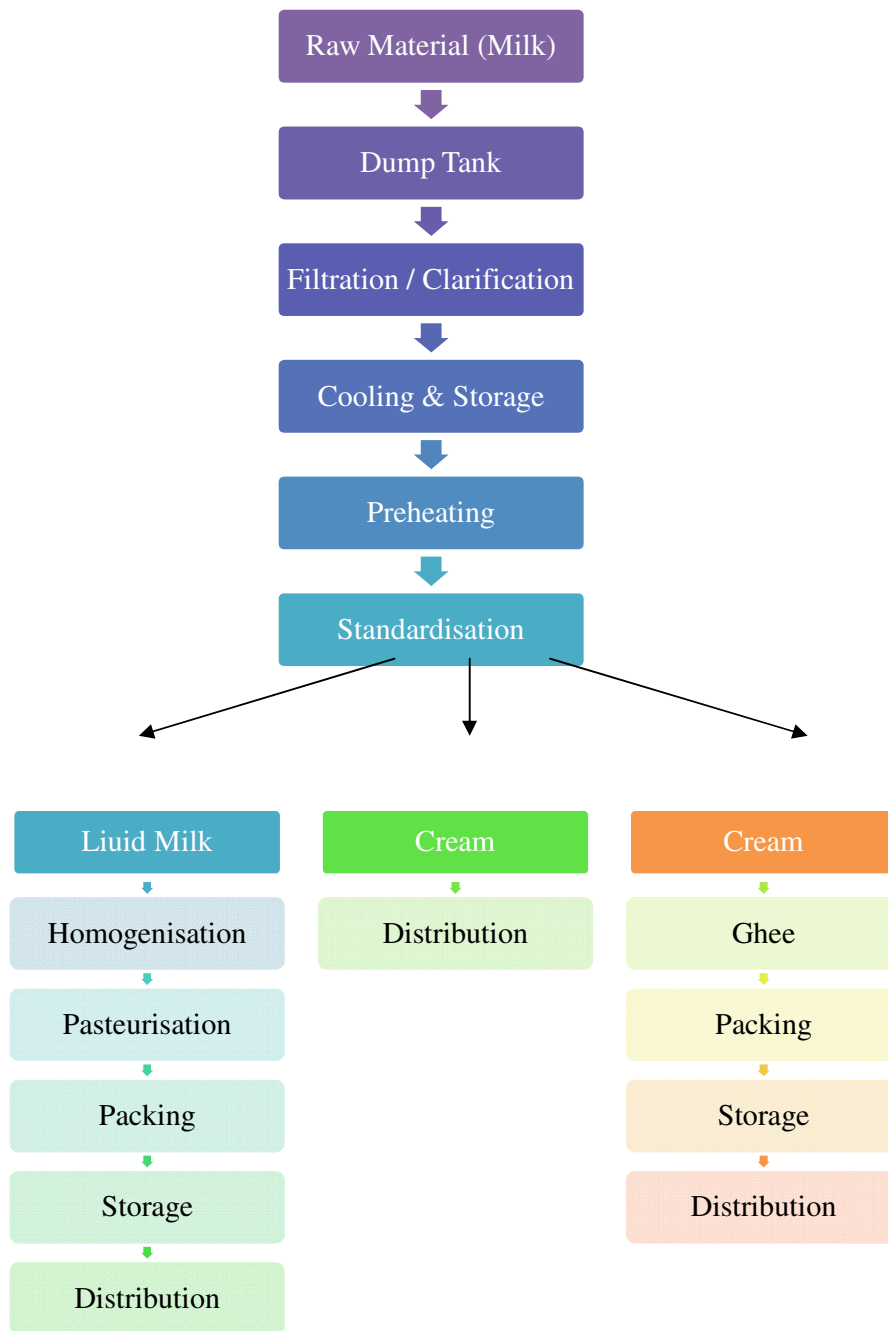
There are two different methods for assessment of depreciation on fixed assets namely Written Down Value Method (WDV) and Straight Line Method (SLM). These methods are used invariably to submit the returns to Registrar of Companies & Income Tax Authorities. We have followed WDV method for computation of depreciation in the present model and the schedule of depreciation is presented in *Annexure VI*

## **16. APPROVALS AND PERMISSIONS**

The unit based on its location has to obtain various approvals and permissions from statutory agencies. An indicative list of approvals and permissions required are as under:

- MMPO registration with Commissioner, Dairy Development, concerned state or relevant authority under Food Safety and Standards Act.
- NOC from fire services Department.
- Approval of plan by gram panchayat/municipality
- Clearance from Pollution Control Board.
- Registration with District Industries Centre or small industries department.
- License from Factory inspector for installation of boiler

## Annexure 1 - Flow Diagram for a milk processing unit of 10000 LPD



## Annexure II - Project at a glance for 10000 LPD milk processing plant

1	Land requirement	2 acres
2	Milk handling capacity	10000 liters/day
3	Products to be manufactured	Toned milk, Cream, Gee
4	Market	Domestic
5	Cost of the project	Rs. 258.24 lakhs
6	Bank loan	Rs. 193.68lakhs
7	Margin money (Down payment)	Rs. 64.56 lakhs
8	Financial viability ( at 15% D F )	
	BC R	1.03 : 1
	N P W	Rs.133.36 lakhs
	I R R	32.46%
9	Repayment	8 years with one year grace period

## AnnexureIII – Techno Economic Parameters

<b>Parameter</b>	<b>Particulars</b>
Capacity of the unit	10,000 Litres per day
Capacity utilization	70% in first year, 80% during second year, 90% from third year onwards
No of days working	180 days in first year and 365 days from second year onwards
Average procurement price of milk (6% fat)	Rs. 30.00 per litre
Average Sale price of products	
Toned Milk (3% fat)	Rs.34.00 per litre
Cream (40% Fat)	Rs.120 per kg
Ghee	290 per kg
Commission and Transportation charges	Rs.1.5/litre
Power and fuel	Rs.0.60/litre
Packing material	Rs.0.80/litre
Chemicals & detergents	Rs.0.25/litre
Repairs and maintenance	5% of cost of plant and machinery
Insurance	1.6 % of cost of plant and machinery & Civil structures
Milk distribution cost	Rs.1.25 per litre
Commission to Agents on milk marketed	Rs.1.25 per litre
Advertisement and sales promotion	Rs.0.20 per litre of milk
Procurement and Processing losses	0.5% of milk procured
<b>Product mix</b>	
Toned milk	100% of milk processed
Cream	Obtained from excess fat in the milk processed
Ghee	From the cream obtained
Depreciation	10% for civil structures and 15% for plant and machinery
Rate of interest	13.5% p.a for working capital and 14% p.a for term loan

## AnnexureIV – Income Projections

Particulars	Unit	I Year	II Year	III Year onwards
1. Installed Capacity	litres/day	10,000	10,000	10,000
2. Milk Procured	litres/day	7,000	8,000	9,000
3. Milk Processed	Litres/day	6,997	7,996	8,996
4. Sales Per day				
Toned Milk (3% fat)	litres/day	6,437	7,356	8,276
Cream (40% fat)	litres/day	559.72	639.68	719.64
Saleable cream (40% fat, 25% of cream )	litres/day	139.93	159.92	179.91
Ghee	kg/day	149.93	171.34	192.76
5. Income Per day	(Rs/litre or kg)			
Toned Milk (3% fat)	34	218850.52	250114.88	281379.24
Cream (40% fat)	120	16791.60	19190.40	21589.20
Ghee	290	43478.25	49689.43	55900.61
6. Total income per day	Rs.	279120.37	318994.71	358869.05
<b>7. Income per year (I year 180 days only)</b>	<b>Rs.</b>	<b>50241666.60</b>	<b>116433068.63</b>	<b>130987202.21</b>
<b>Income per year</b>	<b>Rs. Lakh</b>	<b>502.42</b>	<b>1164.33</b>	<b>1309.87</b>

## Annexure V-Expenditure Projections

(Rs.lakh)

Particulars/Years	Years							
	I	II	III	IV	V	VI	VII	VIII
Procurement cost of milk	378.00	876.00	985.50	985.50	985.50	985.50	985.50	985.50
Commission and Transportation charges	18.90	43.80	49.28	49.28	49.28	49.28	49.28	49.28
Power and fuel	7.56	17.52	19.71	19.71	19.71	19.71	19.71	19.71
Packing material	10.08	23.36	26.28	26.28	26.28	26.28	26.28	26.28
Chemicals & detergents	3.15	7.30	8.21	8.21	8.21	8.21	8.21	8.21
Salaries and wages	23.52	25.92	27.22	28.58	30.01	31.51	33.08	34.74
Repairs and maintenance	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Insurance	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
Milk distribution cost	15.75	36.50	41.06	41.06	41.06	41.06	41.06	41.06
Commission to Agents on milk marketed	14.48	33.56	37.76	37.76	37.76	37.76	37.76	37.76
Advertisement and sales promotion	2.52	5.84	6.57	6.57	6.57	6.57	6.57	6.57
Interest on Working Capital	2.43	5.10	5.73	5.73	5.73	5.73	5.73	5.73
<b>Total Operational Cost for Milk Plant (180 days in first year)</b>	<b>485.67</b>	<b>1084.18</b>	<b>1216.59</b>	<b>1217.95</b>	<b>1219.38</b>	<b>1220.88</b>	<b>1222.46</b>	<b>1224.11</b>

## Annexure VI – Depreciation Schedule

(Rs.Lakh)

Year	Written down value method					
	Civil Structures	Depreciation @ 10 % p.a	Plant machinery &	Depreciation @ 15 % p.a	Misc.fixed assets vehicles &	Depreciation @ 15 % p.a
1	43.65	4.37	130.00	19.50	28.40	4.26
2	39.29	3.93	110.50	16.58	24.14	3.62
3	35.36	3.54	93.93	14.09	20.52	3.08
4	31.82	3.18	79.84	11.98	17.44	2.62
5	28.64	2.86	67.86	10.18	14.82	2.22
6	25.77	2.58	57.68	8.65	12.60	1.89
7	23.20	2.32	49.03	7.35	10.71	1.61
8	20.88	2.09	41.68	6.25	9.10	1.37
9	18.79	1.88	35.42	5.31	7.74	1.16
10	16.91	1.69	30.11	4.52	6.58	0.99



## Annexure VII - Calculation of NPW, BCR & IRR

(Rs. in lakh)

Particulars/Year	I	II	III	IV	V	VI	VII	VIII	IX
A. Costs									
1. Capital costs	258.24		0	0	0	0	0	0	0
2. Recurring costs	485.67	1084.18	1216.59	1217.95	1219.38	1220.88	1222.46	1224.11	1225.85
Total Cost	743.91	1084.18	1216.59	1217.95	1219.38	1220.88	1222.46	1224.11	1225.85
B. Benefits									
a. Milk Plant	502.42	1164.33	1309.87	1309.87	1309.87	1309.87	1309.87	1309.87	1309.87
b. Depreciated value of assets	0	0	0	0	0	0	0	0	0.00
Total Benefits	502.42	1164.33	1309.87	1309.87	1309.87	1309.87	1309.87	1309.87	1309.87
Net Benefits	-241.49	80.16	93.28	91.92	90.49	88.99	87.41	85.76	84.02
Discount Factor @ 15%	0.87	0.76	0.66	0.57	0.50	0.43	0.38	0.33	0.28
Discounted costs @ 15%	647.20	823.97	802.95	694.23	609.69	524.98	464.53	403.96	343.24
Discounted Benefits @ 15%	437.10	884.89	864.52	746.63	654.94	563.24	497.75	432.26	366.76
Discount Rate	15%								
<b>Net Present Worth</b>	<b>133.33</b>								
<b>Benefit Cost Ratio</b>	<b>1.03</b>								
<b>Internal Rate of Return</b>	<b>32.46%</b>								

## Annexure VIII - Repayment Schedule

(Rs. in lakh)

Project Year	Bank Loan outstanding at the beginning of the year	Loan disbursed during the year	Total Bank loan	Surplus	Repayment of Principal	Payment of Interest	Total Outgo	Net Surplus
						On Term Loan		
1	0.00	193.68	193.68	30.31	0.00	27.12	27.12	3.19
2	193.68		193.68	71.39	20.00	27.12	47.12	24.28
3	173.68		173.68	78.66	27.00	24.32	51.32	27.34
4	146.68		146.68	75.67	28.00	20.54	48.54	27.14
5	118.68		118.68	72.73	30.00	16.62	46.62	26.12
6	88.68		88.68	69.76	32.00	12.42	44.42	25.35
7	56.68		56.68	66.75	32.00	7.94	39.94	26.81
8	24.68		24.68	64.24	21.86	3.46	25.32	38.92

*\* For the first year, the surplus includes the interest capitalised in the project cost*

## Annexure IX – Calculation of Financials and DSCR

(Rs. in lakh)

Year	I	II	III	IV	V	VI	VII	VIII
Gross Surplus	16.75	80.16	93.28	91.92	90.49	88.99	87.41	85.76
Interest on TL	27.12	27.12	24.32	20.54	16.62	12.42	7.94	3.46
Depreciation	28.13	24.12	20.70	17.77	15.27	13.12	11.28	11.28
Profit before tax	-38.49	28.92	48.26	53.61	58.61	63.45	68.20	71.02
Income tax	0.00	8.76	14.62	16.24	17.76	19.23	20.66	21.52
Profit after tax	-38.49	20.15	33.64	37.37	40.85	44.23	47.53	49.50
Cash accruals*	30.31	71.39	78.66	75.67	72.73	69.76	66.75	64.24
<b>Term loan Repayment</b>								
TL O/S at the beginning	193.68	193.68	173.68	146.68	118.68	88.68	56.68	24.68
Term loan Instalment	0.00	20.00	27.00	28.00	30.00	32.00	32.00	21.86
Interest on TL	27.12	27.12	24.32	20.54	16.62	12.42	7.94	3.46
Total Repayment	27.12	47.12	51.32	48.54	46.62	44.42	39.94	25.32
TL O/S at the end	193.68	173.68	146.68	118.68	88.68	56.68	24.68	2.82
<b>DSCR</b>	1.12	1.52	1.53	1.56	1.56	1.57	1.67	2.54
<b>Average DSCR</b>	<b>1.63</b>							

\* For the first year, the accruals includes the interest capitalised in the project cost

## Annexure X – Working Capital Calculation

(Rs. in lakh)

Sr.No.	Particulars	Unit cost (Rs)	Period days	Years		
				I	II	III onwards
				70%	80%	90%
1	Stock in progress	30	1	2.10	2.40	2.70
2	Packing material	0.8	30	0.06	0.06	0.07
3	Chemicals & detergents	0.25	30	0.02	0.02	0.02
4	Stores, spares and fuel	--	30	0.04	0.05	0.05
5	Finished goods					
	Toned Milk	33	1	2.19	2.50	2.81
	Saleable Cream	120	10	1.68	1.92	2.16
	Saleable Ghee	303	30	13.04	14.91	16.77
6	Receivables		7	19.54	45.28	50.94
	Total ( 1 to 6)			38.67	67.14	75.53
	Less sundry creditors (days)		7	14.70	16.80	18.90
	Total working capital required			23.97	50.34	56.63
	Margin money @ 25% of working capital		25%	5.99	12.58	14.16
	Bank Cash credit		75%	17.97	37.75	42.47

## **DISCLAIMER**

*The views expressed in this model project are advisory in nature. NABARD assume no financial liability for anyone using this project report for any purpose. The actual costs and returns will have to be taken on a case by case basis considering the specific requirements of projects.*