

1 BREWERY

1.1 Introduction

As mentioned in the malt profile the production of barley is confined to the northern states although most of it is grown for fodder purpose. In order to promote cultivation of barley it would be important to find market for barley and its value-added products.

1.2 Objective

The primary objective of the model report is to facilitate the entrepreneurs in understanding the importance of setting up unit of brewery. This model report will serve as guidance to the entrepreneurs on starting up such a new project and basic technical knowledge for setting up such a facility.

1.3 Raw Material Availability

The production of barley in the state is 1.09 lakh MT grown on the area of 94000 ha.

1.4 Suitable Location

Suitable location for the unit can be near to the neighboring states as the raw material can be sourced from there.

1.5 Market Opportunities

According to the experts in beer industry the industry is expected to maintain a growth rate of 15-20% per annum for the next ten years. The maximum value addition to barley is in Brewery, which is growing at more than 15% thereby leading in demand gap.

The Indian Beer Industry is characterized by a few corporates with an all India presence and by a large number of companies of regional character. Currently there are 45-50 breweries in India with a total installed capacity of about 9.50 million hecto-litres annually.

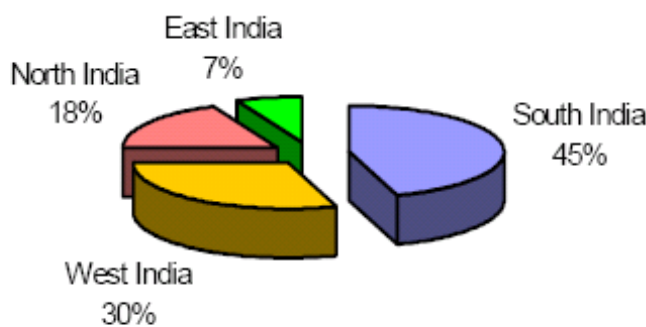
The Indian beer market is still very small by global standards. Per capita beer consumption is only 0.7 litres, which is fraction of consumption in other countries. After a period of slow growth in consumption of beer in 90's, a sudden growth has been witnessed during last three years. The trends in production of beer in country are given in the Table below.

Table 1 Trends in Beer Production ('000 litres)

Year	Beer Production
1995-96	361,680
1996-97	353,064
1997-98	402,660
1998-99	462,782
1999-2000	446,788
2000-01	564,800
20001-02	637,200

Source: CMIE & MFPI

Figure 1 Regional Share of Beer Consumption in India



1.6 Project description

1.6.1 Applications

Out of the total production of 14.5 lakh MT in the country hardly 10% is used for Malt production. About 5-10% is reportedly used for human consumption and about 4-5% is retained by the farmers as seed. The large quantity of remaining barley is used as feed for the animals. Considering the present utilization pattern of Barley it is clear that the availability for processing will not be a problem. The problem right now is of quality and not of quantities.

1.6.2 Capacity of the Project

The capacities of the Brewery have been planned as 10,000 Kilolitres.

1.6.3 Manufacturing process

Before Malt Extract Production begins, the barley is tested for extract content, extract colour, protein content, water content, diastatic powder and grain size. Barley is tipped and conveyed to Silos. Before entering the mills the grain passes through a cleaner and de-stoner. Grain is crushed in a roller mill to produce grist. Grist is mixed with water and heated. For the best extraction, the mash is held for fixed times, known as rests at a series of specified temperatures. The malt own enzymes help to convert insoluble starches and proteins to soluble sugars, which dissolve in water to form wort.

After extraction, the wort is separated from husks and residues known as “spent grains”. Separation is carried out in the lauter by a natural process using the husks as a filter. The wort, consisting of 5-20% solids, is evaporated under vacuum to form liquid malt extract, containing around 80% solids. Liquid malt extract is stored in silos before processing or for sale to industrial customers.

Beer Processing

Beer is a fermented beverage. The sugar needed for the fermentation process comes from the transformation of the starch contained into the grain through the effect of specific enzymes contained into malt.

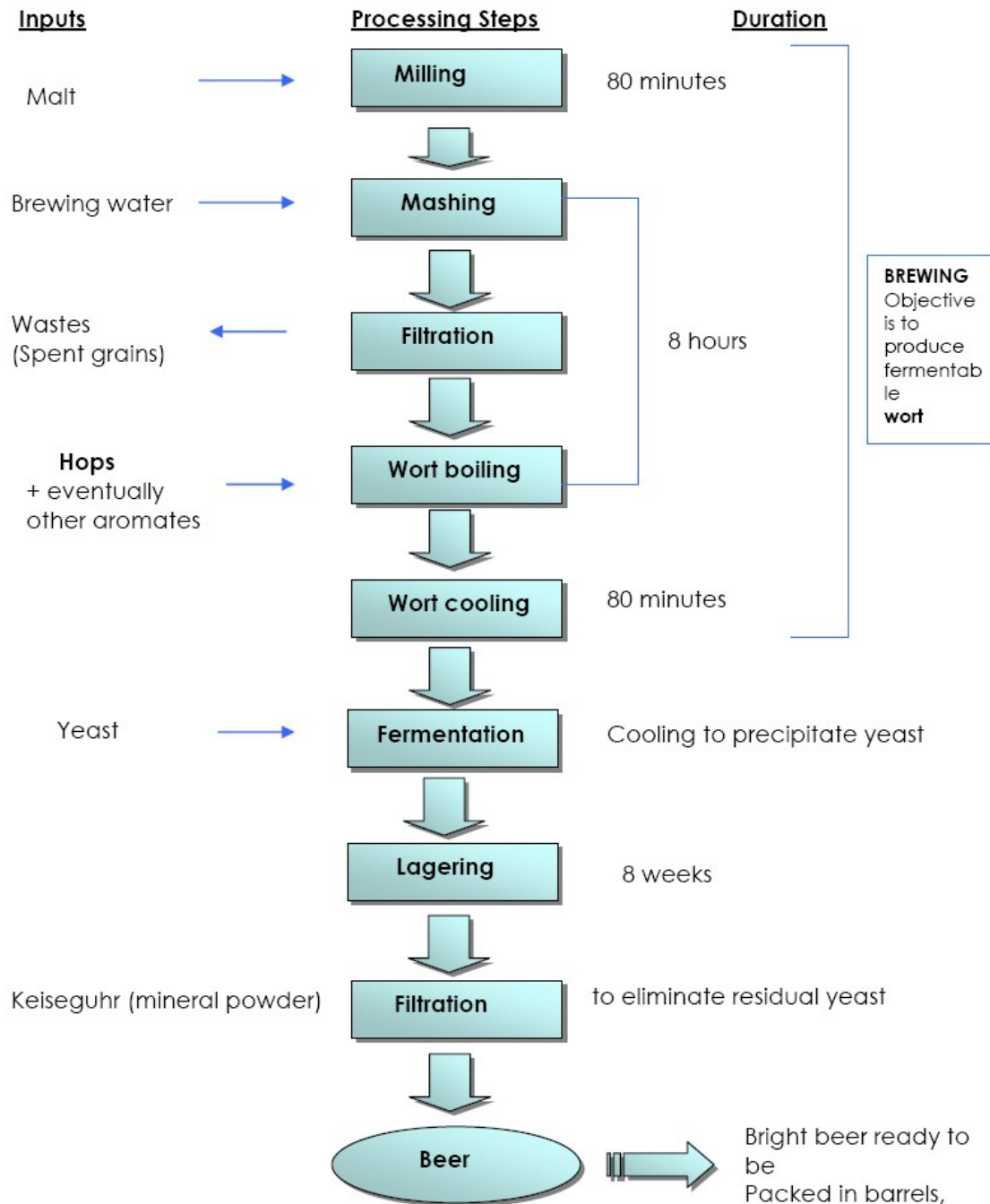


Figure 2 Process of Beer production

1.7 Project component and cost

Major components of the projects and their costs are described in the table hereunder:

(Rs in lacs)

PARTICULARS	
LAND & SITE DEVELOPMENT	81.50
BUILDING	593.50
PLANT & MACHINERY	1917.27
MISC. FIXED ASSETS	130.50
CONTINGENCIES	182.36
PREOPERATIVE EXPENSES	249.50
MARGIN MONEY FOR WORKING CAPITAL	35.09
TOTAL	3189.72

1.8 Plant and Machinery

The total cost of the plant and machinery is Rs. 1917.27 Lakhs.

B. INDEGENOUS	ALFA LAVAL	1	757.28
MALT STORAGE ,CLEANING AND MILLING SECTION			
BREW HOUSE & WORT TREATMENT			
YEAST PROPOGATION & STORAGE SECTION			
FERMENTATION & MATURATION SECTION			
FILTRATION SECTION			
BRIGHT BEER SECTION			
CIP SECTION FOR BEER PROCESSING AREA			
BOTTLING EQUIPMENT	LOCAL SUPPLY	1	350.00
UTILITY SECTION	LOCAL SUPPLY		
REFRIGRATION		1	325.00
STEAM GENERATION			
WATER TREATMENT			
COMPRESSED AIR			
CARBONDIOXIDE			
FFFLUENT TREATMENT			
STRUCTURALS/UTILITY PIPING		1	80.00
PACKING & FORWARDING		2%	30.25
EXCISE DUTY		16%	229.16
SALES TAX/VAT		4%	40.58
FREIGHT & INSURANCE		1	25.00
INSTALLATION & COMMISSIONING	ALFA LAVAL	1	70.00
ENGINEERING PACKAGE	ALFA LAVAL	1	10.00
			1917.27

1.9 Building

The main production block will cost around Rs. 593.50 lakhs.

1.10 Miscellaneous Assets

A provision of Rs. 130.50 would take care of all the requirements.

1.11 Preliminary & Pre-operative Expenses

A provision of Rs. 249.50 lakhs would take care of pre-production expenses like establishment, professional charges, security deposits etc.

1.12 Working capital assessment

ITEMS	HOLDING	YEAR ENDING MARCH		
	PERIOD	YEAR I	YEAR II	YEAR III
	IN DAYS			
RAW MATERIAL CONSUMED	30	14.72	18.41	22.09
PACKING MATERIAL	30	33.50	41.87	50.25
WORK IN PROGRESS	65	58.75	72.71	86.69
FINISHED GOODS	15	33.43	42.56	50.43
TOTAL		140.40	175.55	209.46
MARGIN (%)	25.00	35.10	43.89	52.36
MPBF (%)		105.30	131.66	157.09

1.13 Means of finance

EQUITY		
-PRIVATE PARTIES	100%	1594.86
SUBSIDY		0.00
TERM LOAN		1594.86
TOTAL		3189.72

1.14 Cash flow statement

(RS IN LACS)

PARTICULARS	Year 1	Year 3	Year 5	Year 7
SOURCES OF FUNDS				
NET PROFIT	170.97	364.30	254.46	197.22
(INTEREST ADDED BACK)				
DEPRECIATION	240.28	240.28	240.28	240.28
PRELIMINARY EXP.W/O	26.20	26.20	26.20	26.20
INCREASE IN WC	105.30	25.43		

1.15 Projected balance sheet

(RS IN LACS)

PARTICULARS	Year 1	Year 3	Year 5	Year 7
LIABILITIES				
SHARE CAPITAL	1,594.86	1,594.86	1,594.86	1,594.86
RESERVES & SURPLUSES	(26.53)	283.90	713.54	1,069.11
TERM LOAN	1,594.86	1,054.86	514.86	
WC LOAN	105.30	157.09	157.09	157.09

1.16 Projected profit and loss account

	Year 1	Year 3	Year 5	Year 7
SALES REALISATION	1,316.12	1,974.18	1,974.18	1,974.18
TOTAL COSTS	878.67	1,325.19	1,335.41	1,347.78

GROSS PROFIT	437.45	648.99	638.78	626.40
DEPRECIATION	240.28	240.28	240.28	240.28
INTEREST	197.50	139.69	74.89	21.21
PRELIMINARY EXP.W/O	26.20	26.20	26.20	26.20
PROFIT BEFORE TAX	(26.53)	242.82	297.41	338.72
TAXES	-	18.21	117.84	162.70
PROFIT AFTER TAX	(26.53)	224.61	179.56	176.01
RETAINED PROFIT	(26.53)	224.61	179.56	176.01

1.17 Key indicators

NET PROFIT AFTER TAX (Rs.in lakhs)	224.61
INTERNAL RATE OF RETURN %	16.92
DEBT SERVICE COVERAGE RATIO	1.82
BREAK EVEN POINT %	62.70
PAY BACK PERIOD (YEARS)	7.54

1.18 Man Power Requirement

PARTICULARS		NO.
SUPERVISORY STAFF	GENERAL MANAGER -PRODUCTION	1
	MANAGER -QUALITY CONTROL	1
	SUPERVISORS	3
	ELECTRICAN	1
	MAINTINENCE ENGG.	1
	SECURITY	7
ADMINISTRATIVE STAFF	MANAGING DIRECTOR	1
	GENERAL MANAGER (FINANCE)	1
	GENERAL MANAGER (COMMERCIAL & MARKETING))	1
	MANAGER - ADMIISTRATION & PERSONNEL	1
	OFFICERS	3
	SECRETARY	2
	DRIVERS	3
	TOTAL	46

1.19 Assumption

Project & Financing	
Term Loan	50%
Rate of Interest on Term Loan	12%
CAPACITY	

Capacity Per Annum	Hecto liter Per annum	100000
Number of Operational Days	DAYS	300
Working Hours Per day	Hrs	16
CAPACITY UTILIZATION		
Year I		60%
Year II		75%
Year III		90%
SALES PRICE		
LIGHT LAGER	Cases	156
STRONG LAGER	Cases	180
DROUGHT BEER	Keg	600
POWER		
Connected Load	KW	700
DEPRICIATION AS PER COMPANY'S ACT		
BUILDING		3.34%
PLANT & MACHINERY		10.34%
MISC. FIXED ASSETS		6.33%
LAND & SITE DEVELOPMENT		1.63%
VEHICLES		9.5%
MAINTENANCE		
BUILDING		2.00%
PLANT & MACHINERY		2.00%
MISC. FIXED ASSETS		2.00%
LAND & SITE DEVELOPMENT		2.00%
VEHICLES		5.00%

1.19.1 Sources of technology

The Technology for processing of Malt as well as Beer is available in India, however, the critical equipments would need to be imported. For the processing of Beer, the following companies in India are making available the plant and technology:-

- Alfa Laval
- Praj Industries
- Larsen and Toubro
- Briggs of Burton
- Skoda

In the recent years most of the projects in the country have been done by Alfa Laval and Praj Industries, whereas Skoda from Czech Republic is a new entrant to Indian market. For the manufacture of Malt and Malt Extract, Seegers of Germany and Buhler of Switzerland are the only well known companies; however the small plants have been setup in India by some local companies and the performance of the plants is not satisfactory.

❖ **Briggs of Burton (INDIA) PVT Ltd**

2nd Floor, No.7, 17th Main, 5th Block Koramangala, Bangalore 560034 India

❖ **Larsen & Toubro**

Food & Pharma Business Unit
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Contact Person
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The actual cost of projects may deviate on change of any of the assumptions.