

Sector	Agro and Food Processing
Sub - sector	Food Processing
Project No.	AF- 02
Project Title	Tomato Processing At Important Crop Pockets

Project Description

The project envisions setting up of a medium scale Tomato processing unit, at important crop pockets in Gujarat. Presently very little quantity of Tomatoes are processed into value added products of which the major processing is carried out in cottage /small scale industries; hence there is a scope for medium size integrated Tomato processing unit in the state. The proposed unit will be focusing on products falling under FMCG categories such as Tomato juice, pulp, puree, paste, powder and range of Tomato ketchups / Chutneys etc;.

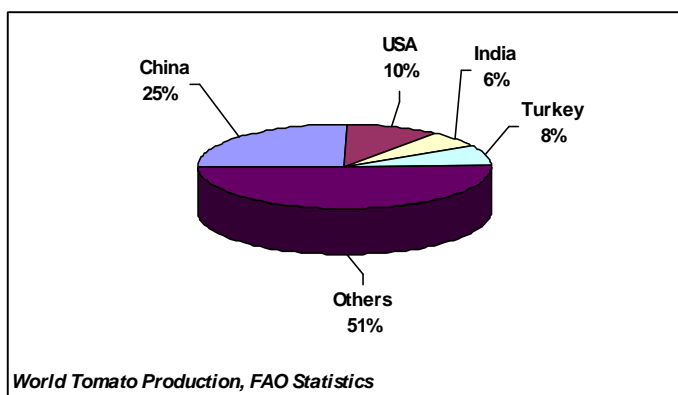
Product Application

Processed Tomato products have wide applications in house hold consumption, food processing industry, snacks foods, hotels, restaurants and fast food joints. Tomato products can be grouped into many end-use categories like peeled, concentrated, partially dehydrated, strained and diced tomatoes, Tomato juice, pulp, paste, powder and ketchup.

Market & Growth Drivers

Global tomato production for the year 2005 was around 125 million MT, of which China dominated the world by contributing around 25%, followed by USA, Turkey and India, with India's production of 7.6 million MT fresh tomatoes, contributing around 6% of the world production.

As per FAO statistics, in quantitative terms world trade of tomato and tomato products for the year 2004-2005 was around 9.5 Million tons valued at approx US \$ 8.9 billion.



The leading exporters of fresh tomato in the world are Mexico, Spain, Syria, Turkey, Netherlands, Jordan, USA and Belgium. USA dominated the world in import of fresh tomatoes, importing around 0.94 million tons, valued at US \$ 1.1 billion in the year 2004-2005. The other major importers of Fresh Tomatoes are U.K, Netherlands, Germany and France.

Traded quantum of tomato paste in the year 2004-2005, was 2.2 million tons valued at US \$ 1.7 billion, supplied mainly by Italy, China, Turkey, Spain, USA and Portugal. China dominates the world in tomato paste and puree exports, with the capacity of the former product presently estimated at 1

million tonnes which deemed to be doubled in the last three years, with actual production between 500, 000 – 750, 000 tonnes per year.

The following table shows precisely the export of processed tomato products from India in the last five years.

Trade Statistics

Sr. No	Years	Export					Import				
		02-03	03-04	04-05	05-06	06-07*	02-03	03-04	04-05	05-06	06-07*
1	Sauce & (Q)	168.73	438.86	562.57	736.41	423.98	45.55	30.13	131.92	1786.05	290.28
	Ketchup (V)	124.45	246.94	356.64	379.71	126.37	27.23	45.04	100.06	489.09	93.55
2	Juice (Q)	13.08	72.8	125.8	45.79	2.1	264.16	55.71	170.96	51.26	7.84
	(V)	4.22	24.54	51.64	18.04	2.01	135.84	21.43	48.12	26.87	3.64
3	Paste (Q)	135.87	118.43	92.64	140.22	5.94	878.1	3239.1	2133.16	3917.61	863.33
	(V)	70.62	56.03	46.99	72.88	3.7	317.77	900.04	563.44	1003.14	232.58
4	Canned (Q)	272.32	50.72	135.28	69.04	18.46	4.55	15.92	476.77	429.19	23.74
	Tomato (V)	82.14	22.66	34.92	25.05	6.42	2.31	6.49	119.81	115.82	4.49
5	Total (Q)	590	680.81	916.29	991.46	450.48	1192.36	3340.86	2912.81	6184.11	1185.19
	(V)	281.43	350.17	490.19	495.68	138.	483.15	973	831.43	1634.92	334.26

Source: Department of Commerce, India. (Q) Quantity in MT, (V) Value in INR Lacs, *2006-2007(Apr-Jun)

Studying the above table, it is clear that export of value added Tomato products increased from 590 tons in the year 2002-03 to 991.46 tons in the year 2005-06 which grew at a CAGR of around 18%. On the other hand the import of value added products increased from 1192.36 tons in the year 2002-03 to 6184.11 tons in the year 2005-06, which grew at a CAGR of whopping 72%.

India's export of value added tomato products is estimated at 450.48 tons, which includes 18.46 tons of canned tomato products valued at INR 0.642 million, 5.94 tons tomato paste valued at INR 0.37 million, 2.1 tons tomato juice valued at INR 0.201 million and 423.98 tons ketchup valued at approx INR 12.64 million in the year 2006-2007(Apr-Jun).

India's ketchup consumption is estimated at 13000 tons a year and its market is estimated at around INR 1800 million. "Kissan"-HLL, 'Maggi'-Nestle and "Heinz" are three well known brands engaged in manufacturing a range of Tomato products in India. Nestle's Maggi dominated the market with a share of 43% followed by Kisan at 29% and Heinz holding around 6.7% of the total market share. Apart from them, Godrej Foods and NAFED (National Agriculture Co-operative Marketing Federation) are also in manufacturing of Tomato purees and ready to use pastes.

Growth Drivers

- Increase in the number of teenagers and youngsters with higher spending power as well as increase in working population (especially women), is fuelling growth of Fast food industry in India and globally. Tomato products are one of the most important ingredients in ready to eat or fast food products thus increasing its usage as important taste maker / enhancer and flavoring ingredients.
- Change in food consumption pattern in the last one decade in India in general and Gujarat in particular, has increased per capita consumption of fast foods such as pizza, sandwiches, burgers, hotdogs, Indian snacks like cutlets, Samosa, Kachori, Pakoda etc; in all classes of people and is boosting the market for processed tomato products like Tomato paste, puree, ketch up and sauces etc;. Increasing use of convenient snacking and variety of cosmopolitan fast food items like noodle, pasta, macroni, spaghetti has also boosted use of tomato products both in domestic and export markets.
- Newer mode of packaging products such as Multi layer- Flexible plastic packaging, Tetra pack and Brick packing has made it possible to distribute tomato products to wide, distant and remote areas and store them at room temperature for a period of more than 4 months. It has also increased the shelf life of these products, which has contributed substantially in boosting the demand of tomato products in India and Globally.

Why Gujarat?

- Gujarat produced 650006 MT of Tomatoes from 29284 hectares cultivated in the year 2005-06. Gujarat has one of the highest yields in Tomato production at 22197 Kg / hectare, which gives it an edge in the main raw material price. Hence raw material of appropriate quality and in required quantities will be easily available.
- Most of the Tomato growers are small and marginal farmers and there is need for value added processing in the state, to give remunerative and stable returns to these growers to maintain consistent productivity of this important horticulture crop in the state. In the light of this fact proposed project has been envisioned for Gujarat.
- Gujarat has relatively prosperous, well educated and frequent foreign traveling class of population, which has higher per capita income and account for considerable consumption of variety of Tomato products.
- Gujarat is also having well developed packaging material industry (Flexible Plastic Packaging, Tetra pack, plastic containers, corrugated cartons etc) for meeting packaging requirements of the proposed Tomato processing unit.
- Well developed food processing industry with ready availability of skilled man power.
- Easy availability of industrial land with basic facilities (power, water, fuel, drainage, etc) will facilitate smooth implementation of the proposed project.

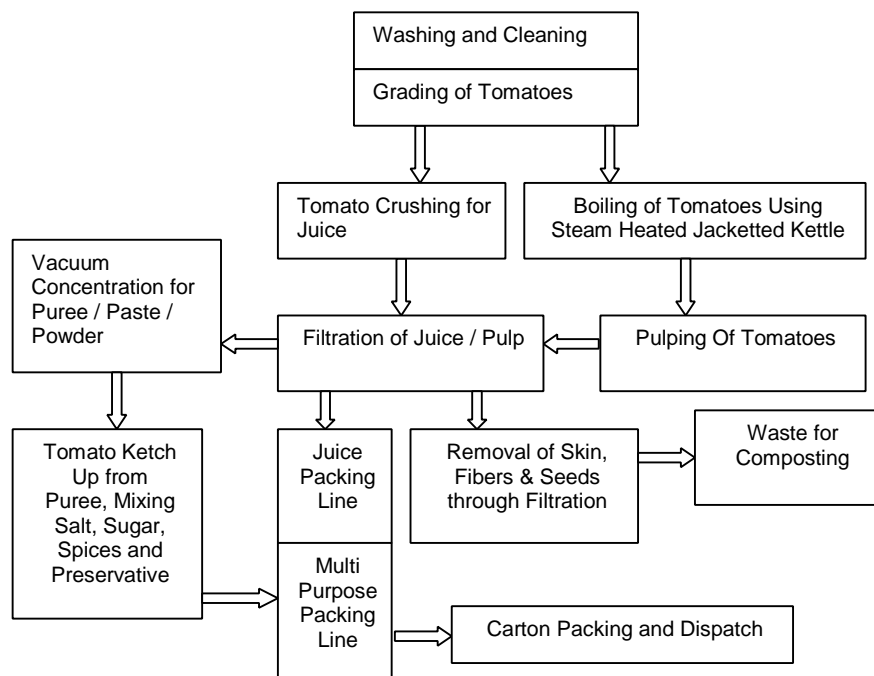
Technology / Process

Technology and manufacturing process to be adopted are briefly described below:

Tomatoes are first thoroughly washed in water and then boiled in steam jacked kettles, before pulping in continuous pulper, where skin and seeds are separated from the pulp. The extracted pulp is the basic material from which other products are made. The recovery of pulp varies from 40% to 50% depending upon the quality of tomatoes. To make Tomato juice Fresh tomatoes are crushed directly instead of boiling them prior to processing in stainless steel kettles.

For preparing sauce, the juice is concentrated under vacuum and controlled temperature while salt; sugar, vinegar, spices, onion etc are added as per requirement. This mixture is boiled under vacuum till it contains minimum 12% tomato solids and 28% total solids. Sauce is then passed through sieve to remove fibrous and other materials. Finally, material is cooled and preservative is added prior to sending it for packing. The process for preparing ketchup remains the same, but there are many spices like ginger, garlic, clove, pepper etc; which are added with salt, sugar, vinegar and class II preservatives.

To prepare tomato paste and puree, juice is further concentrated under vacuum with around 9% to 12% solids. Tomato powder can be prepared using different technologies depending upon the end use of the product. The technology for Tomato Processing can be sourced from CFTRI, Mysore or from any reputed machinery supplier. Tomato Processing is shown schematically in following Flow chart:



Raw Materials

The principle ingredients or raw materials required for preparation of Tomato value added products are Tomatoes, sugar, salt, spices, preservatives, vinegar and chemicals etc. As per the government

estimates Tomato is one of the major vegetables grown in the state, which is observed from the Area and production summarized for last 5 years period in following table.

Area, Production and Yield Tomato Production in Gujarat

Sr. No	Year	Area ('00 Hectares)	Production ('00 MT)	Yield, Kg. / Hectare
1	2001-02	20919	2708.54	12948
2	2002-03	18755	3213.57	17134
3	2003-04	22912	4206.89	18361
4	2004-05	22809	4218.88	18497
5	2005-06	29284	6500.06	22197

Source: Department of Horticulture Statistics, Gandhinagar, Government of Gujarat

As observed from the above table, Tomato production in Gujarat has seen an escalating trend, in terms of area and production in last five years. This production increase in the last five years can be owed to enhancement in average yield per hectare from 12948 to 22197 kg/hectare. The major Tomato producing districts considering area under cultivation and production are Mehsana, Banaskantha, Rajkot, Jamnagar, Surendranagar, Kheda, Anand, Vadodara and Ahmedabad.

Suggested Plant Capacity & Project Cost

The capacity of the proposed unit is 4500 TPA. 150 days working in a year.

Capital cost is estimated to be INR 45 million or US \$ 1 million.

Estimated Project cost & Means of finance

Sr. No.	Cost of project	INR In Million
1	Land and Land development	4.00
2	Building	10.00
3	Plant & Machinery	15.00
4	Miscellaneous Fixed Assets	5.00
5	Preliminary & Pre-operative	2.50
6	Provision for contingencies	2.80
	Total Fixed Assets	39.30
7	Margin Money for working capital	5.70
	Total	45.00
	Means of Finance	
8	Promoters contribution	15.00
9	Term loan	30.00
	Total	45.00

As indicated above, the proposed project will require an approx 5000 sq. mt of land with an proposed built up area of 2000 sq. mt. Considering 150 working days in a year the unit is proposed to have an installed capacity of 4500 TPA. The total fixed cost of the project is estimated at INR 39.3 million and INR 5.7 million is the working capital margin which sums the block capital cost to INR 45 million. The unit being proposed to cater domestic as well as International demand is suggested to have a Debt equity ratio of 2:1. Thus, the estimated term loan amounts to INR 30 million and Equity at INR 15 million.

Suggested Location

The suggested locations for proposed tomato processing unit are Ahmedabad, Surat, Mehsana, Banaskantha, Kheda, Anand, Vadodara, Rajkot, Surendranagar and Jamnagar districts, based on raw material and market availability.

Plant and Machinery Required

The proposed project would require the following as basic and necessary plant and machinery:

List of Plant and Machinery

Sr. No	Particulars	Quantity	Suppliers/Technology Provider
1	Baby Boiler	3	Geetha Food Engineering, Mumbai
2	Steam Jacketed Kettles	4	Shriram Temp Xchangers, Vadodara Geetha Food Engineering, Mumbai Sifter International-Faridabad
3	Washing Tanks	2	Shriram Temp Xchangers, Vadodara
4	Pulper	2	Shriram Temp Xchangers, Vadodara Kaps Engineer, Vadodara Sifter International-Faridabad
5	Stirrers	2	Shriram Temp Xchangers, Vadodara
6	Bottle Filling Machines	4	Shriram Temp Xchangers, Vadodara
7	Bottle Washing Machines	2	Geetha Food Engineering, Mumbai
8	Semi Automatic Crown Corking Machines	2	Labh Group of Companies, Ahmedabad
9	Vaccum concentrator for Pulp/Jam/Puree	2	Shriram Temp Xchangers, Vadodara Sifter International-Faridabad
10	Laboratory Equipments	Lot	Sakova Scientific Co, Mumbai
11	Precision Weighing Scale	4	Avery India Ltd

Utilities

The unit would necessitate utilities like water, electric power and fuel for roasting. 50000 liters water, 150 HP power and 6 MTPD Coal/FO as fuel, would be a mandatory requirement on per day basis for the proposed unit.

Estimated Man power required

The proposed unit would require 30 personnel's that will include 2 managerial level people, 2 maintenance supervisor, an accountant, 2 office assistant, 5 skilled and 15 unskilled workers and 2 watchman

Project Time Line

The proposed project will have cumulative implementation period of 8 - 10 months of which 3 to 4 months would entail obtaining the obligatory clearances from various authorities.

Financial Indicators

Based on the profitability projections worked out for the proposed project, key financial indicators are as summarized below:

Key Financial Indicators

Sr. No	Financial Ratios	1 st Year	2 nd Year	3 rd Year
A	Break-Even Point in % capacity	36.69	33.89	31.18
B	Debt-service Coverage Ratio	1.58	1.95	2.63
C	Average DSCR	2.05		
D	Return on Investment (ROI)	20.34	24.37	31.52
E	IRR	42%		

As perceived from the Project cost and Means of finance table, the suggested Debt Equity Ratio for the proposed project is 2:1. The IRR (Internal Rate of Return) for the proposed project is approx. 42% projected for a period of 10 years.

Clearances required

The proposed unit will need to register manufacturing capacity with Industrial Entrepreneur's Memorandum (IEM), Secretariat of Industrial Approvals (SIA), Ministry of Industries, Government of India-New Delhi, as the plant and machinery investment will exceed INR 10 million.

The unit will also have to obtain FPO registration with FPO authorities under Ministry of Food processing (MOFPI) Government of India. Registration with MOFPI will also be done to avail subsidy under their incentive schemes for Food processing industries coming up in India.

Agencies to be contacted

Industrial Extension Bureau

Gujarat Agro Industries Corporation Ltd.

Mott MacDonald India