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# PROJECT PROFILE ON TOMATO PROCESSING

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NOVEMBER 14, 2022

ADDIS ABEBA CITY ADMINISTRATION INVESTMENT COMMISSION

# PROJECT PROFILE ON TOMATO PROCESSING

## TABLE OF CONTENT

<b>I. EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>1. BACKGROUND INFORMATION .....</b>	<b>6</b>
1.1. INTRODUCTION .....	6
1.2. PRODUCT DESCRIPTION.....	7
1.3. PROJECT LOCATION AND JUSTIFICATION .....	7
1.3.1. <i>Location of Addis Ababa</i> .....	7
1.3.2. <i>Demography of Addis Ababa</i> .....	8
1.3.3. <i>Economic activity of Addis Ababa</i> .....	8
1.4. THE CURRENT STATUS OF FRUIT AND VEGETABLE PROCESSING IN ETHIOPIA .....	10
<b>2. MARKETING STUDY .....</b>	<b>13</b>
2.1. MARKET ANALYSIS SUMMARY.....	13
2.2. THE SUPPLY OF TOMATO PASTE.....	13
2.2.1. <i>Local processed Tomatoes supply</i> .....	13
2.2.2. <i>Import</i> .....	14
2.3. PROCESSED TOMATOES PASTE DEMAND PROJECTION .....	17
2.4. DEMAND-SUPPLY GAP .....	19
<b>3. TECHNOLOGY AND ENGINEERING .....</b>	<b>20</b>
3.1. TECHNOLOGY .....	20
3.1.1. <i>Tomato production process flow</i> .....	20
3.1.2. <i>Environmental and social impact assessment of the project</i> .....	22
3.1.3. <i>Production program of tomato derivatives</i> .....	22
3.1.4. <i>Plant capacity</i> .....	23
3.1.5. <i>Material balance for tomato processing line</i> .....	23
3.2. ENGINEERING .....	24
3.2.1. <i>Land, buildings and civil works</i> .....	24
3.2.2. <i>Machinery and equipment</i> .....	27
3.2.3. <i>Lists of machinery suppliers</i> .....	28
<b>4. ORGANIZATIONAL STRUCTURE .....</b>	<b>29</b>
4.1. MANPOWER REQUIREMENT AND ESTIMATED ANNUAL MANPOWER COSTS .....	29
<b>5. FINANCIAL ANALYSIS.....</b>	<b>30</b>
<b>5.1. GENERAL .....</b>	<b>30</b>
5.2. INITIAL FIXED INVESTMENT COSTS.....	31
5.3. WORKING CAPITAL.....	32
5.4. PROJECT FINANCING .....	32
5.5. PRODUCTION COSTS .....	33
5.5.1. <i>Material inputs</i> .....	33
5.5.2. <i>Utilities</i> .....	33

# PROJECT PROFILE ON TOMATO PROCESSING

5.5.3.	Over heads.....	35
5.5.4.	Financial costs.....	36
5.5.5.	Depreciation.....	36
5.6.	BREAK EVEN POINT AND ROI.....	37
5.6.1.	<b>Break Even point (BEP)</b> .....	37
5.6.2.	<b>Return on investment</b> .....	38
5.7.	<b>PROJECT BENEFITS</b> .....	38

## LIST OF TABLES

Table 1	Tomato processing factories and their capacities in Ethiopia as today.....	14
Table 2	Volume of imported tomato concentrate from 2012 to 2021 in kg.....	15
Table 3	Future forecast of import of processed tomato by trend adjusted exponential smoothing method .	16
Table 4	Projected supply for processed tomatoes paste in Ethiopia.....	17
Table 5	Projected Demand for processed tomatoes in Ethiopia.....	18
Table 6	Projected Demand Supply Gap analysis of tomatoes paste.....	19
Table 7	production plan for tomato processing plant.....	22
Table 8	Building costs.....	25
Table 9	Land lease period in Addis Abeba.....	26
Table 10	Land lease floor price in Addis Abeba.....	26
Table 11	Lists of machineries required for tomato processing.....	27
Table 12	Initial Fixed investment costs.....	31
Table 13	Utilities of the factory'000"”Birr.....	34
Table 14	Overhead costs.....	35
Table 15	Depreciation in Birr"000".....	36
Table 16	Materials input for tomato paste production.....	41
Table 17	Annual total production costs”000”.....	43
Table 18	Calculation of working capital.....	44
Table 19	projected sales revenue’000’.....	45
Table 20	Projected Net income statement "000".....	46
Table 21	Debt services schedule and computation.....	47
Table 22	Projected Cash flow statement.....	48
Table 23	Total investment costs”000”.....	49
Table 24	Total Assets.....	49
Table 25	Sources of finance.....	50
Table 26	Summary of financial efficiency tests.....	50
Table 27	Calculation of payback period”000”.....	51
Table 28	Calculation of NPV at 17% D.F.....	52

## LIST OF FIGURES

Figure 1	tomato process flow diagram.....	21
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# PROJECT PROFILE ON TOMATO PROCESSING

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## I. Executive summary

This project profile is prepared to assess the viability of running Tomato processing factory, in Addis Abeba city administration. Hence Market, Technical, Organizational and Financial study was made to investigate the viability of the envisaged project.

This project profile on Tomato processing factory has been developed to support the decision – making process based on a cost benefit analysis of the actual project viability. This profile includes marketing study, production and financial analysis, which are utilized to assist the decision-makers when determining if the business concept is viable. Ethiopia has a private sector driven tomato processing industry. According to the latest data sourced from the ministry of Trade and industry here are more than 17 registered Fruits and vegetables processing factories in Ethiopia.

The location of the plant will be decided on the basis of access to raw materials, infrastructure namely power, water, transport and telecom to easy access to international market. The most locally available raw materials for the factory are Tomato.

The factory at full capacity operation can process 104,000 quintals to produce 42,168 quintals of Tomato paste, per year based on 260 working days and their shifts of 24 hours per day.

The total investment capital including establishing the factory is Birr 345.60 million. Out of the total investment capital, the owners will cover Birr 103.68million (30 %) while the remaining balances amounting to Birr 241.90 million (70 %) will be secured from bank in the form of term loan.

## PROJECT PROFILE ON TOMATO PROCESSING

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As indicated in the financial study, the cash flow projection of the project shows surplus from the first year on. The net cash flows of the project range from Birr 76.94 Million in the first year to Birr 106.96 million at the end of the 10<sup>th</sup> year of operation. At the end of the 10<sup>th</sup> year of operation period the cumulative cash balance reaches Birr 1.080 billion. The Benefit-cost ratio and Net present value (NPV) have been calculated at 17% discount factor (D.F) for 10 years of the project activity. Accordingly, the project has NPV of 628.96 million Birr at 17%D.F. and the benefit-cost ratio of 1.52 at 17% D.F.

Therefore, from the aforementioned overall market technical and financial analysis we can conclude that the tomatoes processing factory business is a viable and worthwhile.

# PROJECT PROFILE ON TOMATO PROCESSING

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## 1. Background information

### 1.1. Introduction

This document was undertaken to show Agro-processing sector investment profile in Addis Ababa. In compiling the report, information from Addis Ababa investment commission, Addis Ababa trade and industry development, Ethiopian custom and revenue commission, Ethiopian investment commission (EIC), Central statistics agency (CSA) and, other published sources have been augmented.

The contribution of the agro-processing sector to the national economy is minimal compared to its potential. One of the main causes of this mismatch between population size and production output from agro-processing in Ethiopia is the backwardness of our farming system (rain-feed) and weak market linkage between the raw fruit and vegetables producers' and the processors'.

The establishment of agro-processing sectors like Tomato processing factory is of fundamental importance to Ethiopian's present and future food security. In Ethiopia, the demand for processed vegetables products is expected to increase considerably in the next few decades as a result of increased population growth, urbanization and increasing income levels, and unless the supply of vegetables and fruit production can be improved through good farming system and value addition process, it is predicted to encounter severe food shortage throughout the country.

# PROJECT PROFILE ON TOMATO PROCESSING

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## 1.2. Product description

Tomato paste, sauce and ketchup are flavored products processed from sorted, washed and fresh wholesome tomatoes and hot fruits. Tomatoes are one of the most widely grown vegetable crops which are used in processing of different food products. Tomatoes are valuable sources of vitamins and minerals. Studies have shown that people who consume large amount of tomato products may be at or lower risk of especially cancer of prostate gland, lung and stomach. Primary products derived from fresh tomatoes are tomato juice, tomato paste, and Tomato ketchup and tomato sauce.

Concentrated tomato juice, without seeds and skins and containing not less than 25 percent of solids is known as tomatoes paste. If the juice (pulp) is further concentrated so as to contain 33% or more of tomatoes solids, it is called concentrated tomato paste. Tomato ketchup is mainly used as an appetizer during consumption of other food staffs whereas sauce is used for food coloring, seasoning, soup preparation and also for reducing the amount of ground hot pepper in “*Wot*” (traditional hot sauce) without affecting the attractive red color of same. Tomato sauce and ketchup are consumed mainly by households, restaurants, hotels and by public institutions like hospitals, training centers, boarding schools, orphanages, etc.

## 1.3. Project location and justification

### 1.3.1. Location of Addis Ababa

Addis Ababa is the seat of the Ethiopian federal government. It is located on the central highlands of Ethiopia in the middle of Oromia Region. The absolute location is around the intersection point of 9°1'48''N latitude and 38°44'24"E longitudes. This is very near to the geographical center of the country. It is, therefore, equidistant to the peripheral areas or is equally accessible to almost all parts of Ethiopia. Addis Ababa is located on a well-watered plateau surrounded by hills and mountains. The city is in the highlands on the edge of the Ethiopian rift valley or the eastern slopes of the Entoto

## PROJECT PROFILE ON TOMATO PROCESSING

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Mountain ranges bordering the Great Rift Valley. The total area of Addis Ababa is about 540 km<sup>2</sup> of which 18.2 km<sup>2</sup> are rural. Addis Ababa's built-up urban area spans 474 km<sup>2</sup>. It is also the largest city in the world located in a landlocked country.

### **1.3.2. Demography of Addis Ababa**

According to the worldometer report , Ethiopia's total population reaches about 120 million people in 2022. Of the total population 21% (25.2 million people) live in urban areas. Ethiopia's urban population is expected to triple by 2037 (World Bank, 2015). Addis Ababa hosts an estimated 5,228,000 people. Currently, Addis Ababa is experiencing an annual growth rate of 4.42%.

### **1.3.3. Economic activity of Addis Ababa**

The transformation of Addis Ababa has especially been rapid since 1991. According to the data from the city's Bureau of Finance and Economic Development (2006), per capital income of Addis Ababa has grown from USD 788.48 in 2010 to USD 1,359 in 2015. The city also achieved a decline in the poverty index from a high of 29.6 in 2012 to 22.0 in 2014. Moreover, the current poverty headcount index for Addis Ababa is estimated at 18.9 while the poverty severity account for 5 and 1.8 index points respectively. Even though, the poverty status of Addis Ababa has an improvement over previous years, there is still much work to be done to curb both the incidence and severity of poverty.

The major contributor to the economic growth of the city is the implementation of publicly financed mega urban projects like condominium housing, the Light Rail Transit, the international airport and industrial zone development (The state of Addis Ababa, 2017). The existence of international large and medium-size enterprises in and around Addis Ababa have also significant role in creating huge opportunity for employment and technology transfer. Furthermore, there are strong demand for



## PROJECT PROFILE ON TOMATO PROCESSING

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goods and services following the existence of many embassies and inter-governmental organizations like the African Union, the United Nations Economic Commission for Africa.

The manufacturing sector's contribution to Addis Ababa's GDP is high. Despite the fact that 86% of the industries in the city are micro and small scale (cottage and handicrafts, and small-scale), the majority of the country's large and medium scale industries are found in the city. Noticeable increases are also registered currently in other aspects of industrial growth.

The service sector is both the largest contributor to the city's economy and the largest employer. It contributes to 76.4% of the city's GDP while industry's share makes up (almost all) the rest. This sector is dominated by three major sub-sectors: Transport and communication; Real estate, Renting and Business services; and Trade, Hotel and Restaurants. According to the state of Ethiopian Cities 2015 report, the service sector has also been responsible for more than 50% of the growth in the estimated annual growth of the city's GDP. Although 75% of employment in the city is also generated in the service sector, a large proportion of the employed work in low skill and low paying jobs as shop salespersons, petty and 'gullit' traders, sales workers in small shops, domestic helpers or doorkeepers and restaurant service workers.

Analysis of the economic structure of Addis Ababa reveals that the services sectors (63%) dominates with industry (36%) in second place indicating that these sectors account for almost all of the Addis Ababa's GDP (The State of Addis Ababa, 2017).

Addis Ababa has a great share in the economy of the country due to its attractiveness to businesses, companies, individuals and foreign direct investment. Overall primacy index of the city is 24.8 based on urban employment and unemployment survey (CSA 2015). According to the State of Addis Ababa 2017 report, the simultaneous high rates of economic growth and urbanization in Addis

## PROJECT PROFILE ON TOMATO PROCESSING

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Ababa indicates a likely further rising dominance of the city in Ethiopia's economy as well as growing agglomeration of economic activities in and around the city.

### 1.4. The Current Status of Fruit and Vegetable Processing in Ethiopia

Ethiopia's wide range of agro-climatic conditions and soil types make it suitable for the production of diverse varieties of fruits and vegetables, including temperate, tropical and sub-tropical crops. Most of the soil types in fruits and vegetables producing regions of the country range from light clay to loam and are well suited for horticultural production.

According to information obtained from the central statistical agency (CSA), the total area under fruits, vegetables and root crops is about 603,207 ha in 2019/20. Out of which 41 % is under root crops while vegetables and fruits occupy 40 % and 19 %, respectively. Some of the constraints of horticultural production are related to the perishable nature of their product. This is a major problem especially when marketing horticultural produce. During peak harvest seasons, fruit and vegetables are sold at throw away price because of lack of means to preserve and store the products. Therefore, in order to prolong the shelf life of the post harvested produce, processing is necessary. Processing contributes towards expansion of market of the processed products in availing it during off-seasons and also increasing its value. Producers of fruit and vegetables will increase production if there is a market for their products.

In Ethiopia, fruits and vegetables processing sector is underutilized. Currently, there are only 17 fruits and vegetables processing plants in the country. These plants presently process limited products: tomato paste, orange marmalade, guava nectar, vegetable soup, canned vegetables and wine.

## PROJECT PROFILE ON TOMATO PROCESSING

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### 1.5. Why is it beneficial to invest in Addis Ababa?

Addis Ababa is the largest and most economically significant city in the country. Ethiopia's urban population share is only 17 percent (as of 2012, World Bank 2015). The city is the only urban area in Ethiopia capable of delivering scale economies in terms of concentrated demand, specialization, diversity and depth of skills, innovation, and technology transfers. Thus, investors will be benefited in getting capable human power from the market.

The capital is the country's main industrial hub. The city dominates industrial capacity in almost all the branches of light manufacturing that Ethiopia prioritizes. As a result Addis Ababa completely dominates production in various subsectors. This can be taken as the political and social stability of the city.

Overall, the city has a beautiful environment, favorable location, and strong industrial base. Its advantage as an economic powerhouse of the country and human resource center are the most attractive features for local and overseas investors.

Moreover, investors will be getting a comprehensive set of incentives for priority sectors. These include:

- Customs duty free privilege on capital goods and construction materials, and on spare parts whose value is not greater than 15% of the imported capital goods' total value.
- Investors have the right to redeem a refund of customs duty paid on inputs (raw materials and components) when buying capital goods or construction materials from local manufacturing industries.

## PROJECT PROFILE ON TOMATO PROCESSING

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- Income tax exemption of up to 6 years for manufacturing and agro-processing, and up to 9 years for agricultural investment.
- Additional 2-4 years income tax exemption for exporting investors located within industrial parks and 10-15 years exemption for industrial park developers.
- Loss Carry forward for half of the tax holiday period. Several export incentives, including Duty Draw-Back, Voucher, Bonded Factory, and Manufacturing Warehouse, and Export Credit Guarantee schemes.

### 1.5.1. The city benefit from the investment

The city will be benefited from investment. These are discussed below.

- Employment opportunity

Investment is expected to provide direct and indirect employment. These range from unskilled casual workers, semi-skilled and skilled employees.

- Improving growth of the economy

Through the use of locally available materials and exporting products, the investment contributes towards growth of the economy by contributing to the growth of domestic product. These eventually attract taxes including VAT which will be payable to the government hence increasing government revenue while the cost of local materials will be payable directly to the producers. In addition, domestic products save foreign exchange and exports also bring money to the country.

## 2. Marketing study

### 2.1. Market analysis summary

The current drive and emphasis by the government on the diversification of the industrial base away from the other sector presents an opportunity for production industry to a valuable contribution towards achieving goal. Having undertaken a thorough and comprehensive research of the market we realized that there was a vast opportunity for domestic products. Aware of the fact operating in such a market is largely dependent on good networking, the promoter intends to establish networks and strategic relationships with various wholesalers and retailers to ensure a steady stream of orders. In so doing the owner intend to ensure that the products they produce are of extremely high quality and fully serve the customers purpose.

### 2.2. The Supply of Tomato Paste

#### **2.2.1. Local processed Tomatoes supply**

In Ethiopia there are large scales, medium and small scale tomatoes processing plant. The design capacity of the large and medium scale plants is estimated to be about 73,792 quintals per year of different types of processed tomatoes and assume local supply will increase by 2.5%. The design capacity of these plants is shown below.

## PROJECT PROFILE ON TOMATO PROCESSING

Table 1 Tomato processing factories and their capacities in Ethiopia as today

S/No	Factory	Major products (in quintal )	Production Capacity in quintals/year (Fresh tomatoes)	Final products in quintals
1.	Melge wendo food processing	<ul style="list-style-type: none"> <li>✓ Tomato paste 850gm</li> <li>✓ Tomato paste 410gm</li> <li>✓ Peeled tomato</li> </ul>	78,000	32,760
2.	Gonder food processing factory	<ul style="list-style-type: none"> <li>✓ Tomato paste 850gm</li> </ul>	9,600	4,032
3.	Merti agro processing factory	<ul style="list-style-type: none"> <li>✓ Tomato paste 850gm</li> <li>✓ Tomato paste 410gm</li> <li>✓ Orange marmalade</li> </ul>	50,000	21,000
4.	Yegenet tebta farming & agro-processing plc	<ul style="list-style-type: none"> <li>✓ Tomato processing</li> </ul>	50,000(Estimated )	2,000
5.	Romtom Agri PLc	<ul style="list-style-type: none"> <li>✓ Tomato processing</li> </ul>	50,000(Estimated )	2,000
6.	Alemu Nega	<ul style="list-style-type: none"> <li>✓ Tomato processing</li> </ul>	50,000(Estimated)	2,000
7.	Others small scale (Estimated )	<ul style="list-style-type: none"> <li>✓ Tomato processing</li> </ul>		10,000
	Total			73,792

Source: EIC and CSA

### 2.2.2. Import

The supplies of Tomato paste, Tomatoes ketchup and tomato Sauce have been met both through import and domestic production. Although there is no apparent trend in the growth of import Tomato paste, Tomatoes ketchup and tomato Sauce have continuously been appearing in the import statistics.

## PROJECT PROFILE ON TOMATO PROCESSING

### 2.2.2.1. Imported processed Tomato paste

Table 2 Volume of imported tomato concentrate from 2012 to 2021 in kg

Year	Item Description	Gross Wt. (kg)	Net Wt. (Kg)	CIF Value IN (ETB)	CIF Value in (USD)	Total Tax in (ETB)	Total Amount( CIF Value + Total Tax	Imported per capital consumption based on urban population
2012	Tomato Concentrate	825,218	755,419	11,971,875	670,107	7,937,591	19,909,466	0.038
2013	Tomato Concentrate	582,991	552,867	9,647,743	513,174	6,244,881	15,892,624	0.027
2014	Tomato Concentrate	591,197	525,313	10,909,817	541,602	6,924,053	17,833,870	0.025
2015	Tomato Concentrate	327,239	312,487	5,490,412	264,190	3,081,459	8,571,871	0.015
2016	Tomato Concentrate	2,036,102	1,876,687	36,438,512	1,660,583	20,667,458	57,105,970	0.086
2017	Tomato Concentrate	2,009,664	1,894,620	39,863,703	1,646,111	21,410,471	61,274,174	0.085
2018	Tomato Concentrate	995,061	922,084	22,449,213	811,320	12,692,598	458,713	0.040
2019	Tomato Concentrate	0.00	0.00	0.00	-	0.00	-	-
2020	Tomato Concentrate	1,947,596	1,654,125	59,745,839	1,709,466	33,485,135	958,087	0.069
2021	Tomato Concentrate	1,941,594	1,737,925	71,824,856	1,620,597	49,015,559	1,105,947	0.071
	AVERAGE		1,136,836					0.051

Sources: Ethiopian Revenue and customs Authority, compiled by consultant

As it has been shown in table 2 import of tomato concentrate (tomato paste) which was 775,419 kg at the beginning of the period (2012) has grown to 1,737,925 kg by the end, 2021. A closer observation at the data set reveals that imported tomato concentrate (tomato paste) over the study period has shown varying patterns that is, fluctuation from 2012 to 2021 it has been shown increasing, in 2016. During the recent four years i.e. 2016 to 2021 the annual average import has reached to a level of about 1,152,189 kg.

## PROJECT PROFILE ON TOMATO PROCESSING

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### 2.2.2.2. Forecast of future import of Tomato concentrate

Table 3 Future forecast of import of processed tomato by trend adjusted exponential smoothing method

Year	Actual	Trend Adjusted exponential smoothing method
2012	755,419	
2013	552,867	
2014	525,313	
2015	312,487	
2016	1,876,687	
2017	1,894,620	
2018	922,084	
2019	1,654,125	
2020	1,654,125	
2021	1,737,925	
2022		1,737,925
2023		1,836,176
2024		1,934,426
2025		2,032,677
2026		2,130,927
2027		2,229,178
2028		2,327,429
2029		2,425,679
2030		2,523,930
2031		2,622,180
2032		2,720,431

Compiled by: - Consultant



## PROJECT PROFILE ON TOMATO PROCESSING

Table 4 Projected supply for processed tomatoes paste in Ethiopia

Year	Projected local supply of processed tomatoes (In kg) will increased by 2.5%	Projected Import of tomatoes paste in kg	Total Projected supply tomatoes paste in kg (local production + imported)
2022	7,379,200	1,737,925	9,117,125
2023	7,563,680	1,836,176	9,399,856
2024	7,752,772	1,934,426	9,687,198
2025	7,946,591	2,032,677	9,979,268
2026	8,145,256	2,130,927	10,276,183
2027	8,348,887	2,229,178	10,578,065
2028	8,557,610	2,327,429	10,885,039
2029	8,771,550	2,425,679	11,197,229
2030	8,990,839	2,523,930	11,514,769
2031	9,215,610	2,622,180	11,837,790
2032	9,446,000	2,720,431	12,166,431

### 2.3. Processed Tomatoes Paste Demand Projection

The demand for Processed Tomatoes can be influenced by a number of factors. The size of population and its growth rate, disposable income and prices are few among many variables. However, data on some of these parameters are not readily available in Ethiopia. Nevertheless, for the purpose of this study, attempts have been made to forecast the likely future demand for Processed Tomatoes on the basis of the following assumptions:

- i. Ethiopia population is estimated to be 120,202,679 As of today (2022)
- ii. Urban population 21% of the total population
- iii. Annual growth of population is taken to be 2.5%
- iv. Per capital consumption

## PROJECT PROFILE ON TOMATO PROCESSING

- v. Changed recipes for cooking by the housewives.
- vi. Expansion of fast food industry in the country
- vii. Increasing portion of office working women
- viii. The existing processors foresee no change in supply

ix. 
$$\text{Per capital consumption} = \frac{\text{Effective demand}}{\text{Urban population}}$$

x. 
$$\text{Effective demand} = \text{per capital consumption of domestic processed tomato} + \text{Average per capital consumption of imported processed tomato} = 0.0292\text{kg} + 0.051\text{kg} = 0.343\text{kg/person/year}$$

Table 5 Projected Demand for processed tomatoes in Ethiopia

Year	Ethiopian Population	Urban population 21%	Per capital consumption is estimated to be 0.343 and increased by 2.5% every year	Total estimated demand
2022	120,202,679	25,242,563	0.343	8,658,199
2023	123,207,746	25,873,627	0.352	9,096,520
2024	126,287,940	26,520,467	0.360	9,557,032
2025	129,445,138	27,183,479	0.369	10,040,856
2026	132,681,267	27,863,066	0.379	10,549,175
2027	135,998,298	28,559,643	0.388	11,083,227
2028	139,398,256	29,273,634	0.398	11,644,315
2029	142,883,212	30,005,475	0.408	12,233,808
2030	146,455,292	30,755,611	0.418	12,853,145
2031	150,116,675	31,524,502	0.428	13,503,836
2032	153,869,592	32,312,614	0.439	14,187,467

As it is indicated above the demand for processed tomatoes at 2022 is 8,658,199 kg. This volume will increase to 14,187,467 kg in the year 2032.

## PROJECT PROFILE ON TOMATO PROCESSING

### 2.4. Demand-Supply gap

When we see the historical supply volume of processed tomatoes in Ethiopia there is no apparent trend in the growth. Because both the import and production data are found to be erratic. Consequently, in projecting the likely future supply we have assumed to consider the supply figure of processed tomatoes paste in 2021 to be 7,379,200kg local productions as a base figure.

It is further assumed that domestic production will increase by 2.5% growth rate, equivalent to population growth of our country, for new as well as expansion projects for current manufacturers.

Table 6 Projected Demand Supply Gap analysis of tomatoes paste

Year	Projected demand (In kg)	Projected local supply (In kg)	Projected import in kg	unsatisfied demand (GAP) in kg, by assuming that import totally substituted by domestic production
2022	8,658,199	7,379,200	1,737,925	1,278,999
2023	9,096,520	7,563,680	1,836,176	1,532,840
2024	9,557,032	7,752,772	1,934,426	1,804,260
2025	10,040,856	7,946,591	2,032,677	2,094,265
2026	10,549,175	8,145,256	2,130,927	2,403,919
2027	11,083,227	8,348,887	2,229,178	2,734,340
2028	11,644,315	8,557,610	2,327,429	3,086,705
2029	12,233,808	8,771,550	2,425,679	3,462,258
2030	12,853,145	8,990,839	2,523,930	3,862,306
2031	13,503,836	9,215,610	2,622,180	4,288,226
2032	14,187,467	9,446,000	2,720,431	4,741,467

As shown in the above table, the project will have unsatisfied demand for the coming 10 years' period. The projected demand will continue to be positive until 2032. It can be clearly noted that

## PROJECT PROFILE ON TOMATO PROCESSING

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there is a huge gap between supply and demand figures, which can really be taken as the apparent demand-supply gap for tomatoes paste in Ethiopia. This is really the actual unsatisfied demand as imports have to be substituted that also helps in saving the foreign currency outflow from the country. The unsatisfied demand for processed tomatoes for the year 2032 estimated at 4,741,467 kg.

### 3. Technology and engineering

#### 3.1. Technology

##### **3.1.1. Tomato production process flow**

After harvesting, tomatoes are transported to the processing plant as soon as possible. Once at the plant, they should be processed immediately, or at least stored in the shade. Fruit quality deteriorates rapidly while waiting to be processed. To unload, either tomatoes are off-loaded onto an inclined belt, or the gondolas are filled with water from overhead nozzles. If water is used, gates along the sides or undersides of the gondolas are opened, allowing the tomatoes to flow out into water flumes. Mere rinsing of tomatoes in water is not enough, because of mold filaments and other micro-organisms found in their cracks, wrinkles, folds and stem cavities are not easily dislodged. For thorough cleaning they should be washed in running water. For large scale, rotary washers are used.

The production process involves the following main processes.

1. Receiving
2. Washing of the fresh tomatoes and fruits
3. Sorting
4. Chopping/Crushing
5. Preheating
6. Pulping and Refining
7. Evaporation /concentration
8. Packaging

# PROJECT PROFILE ON TOMATO PROCESSING

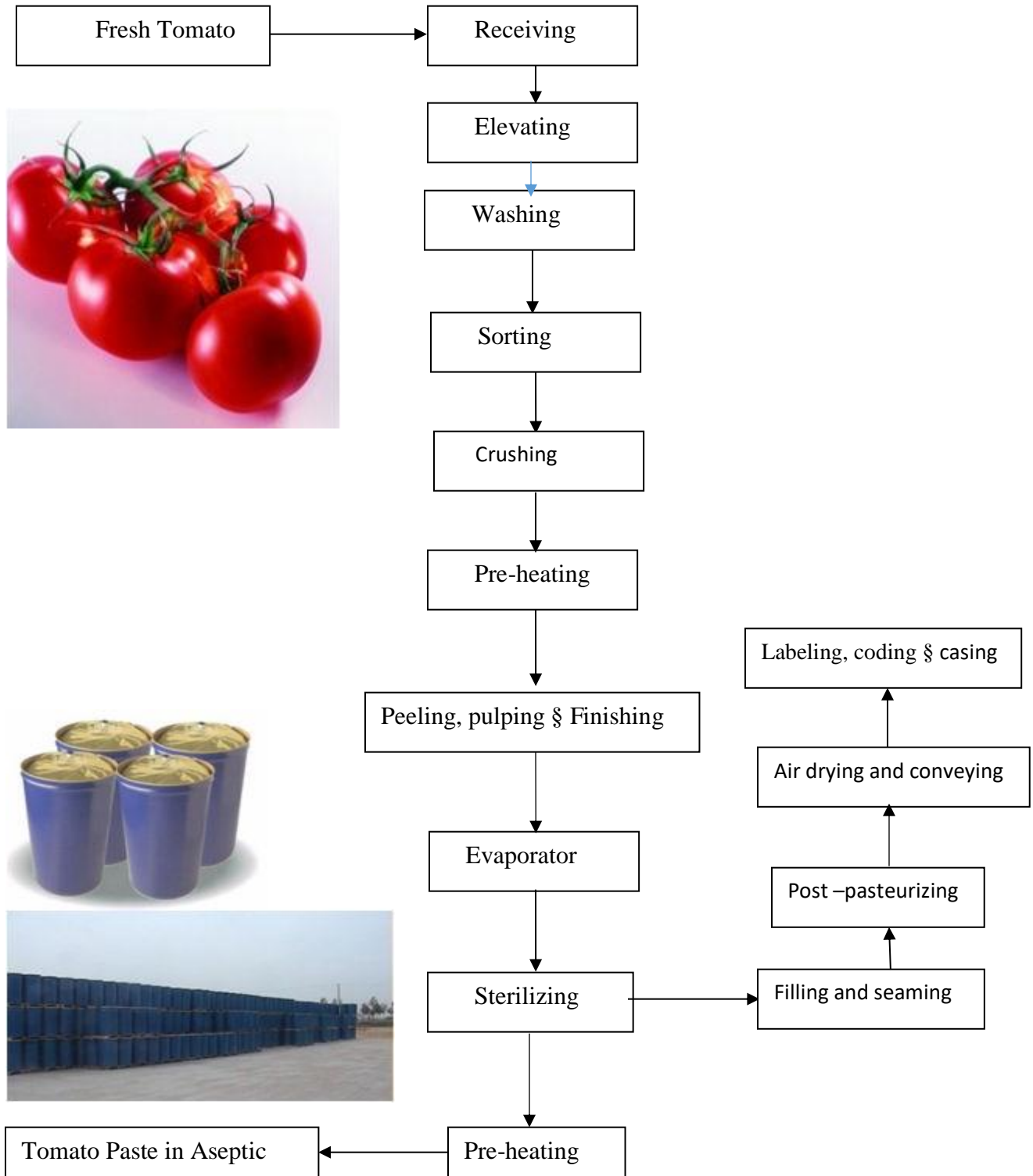


Figure 1 tomato process flow diagram

## PROJECT PROFILE ON TOMATO PROCESSING

### 3.1.2. Environmental and social impact assessment of the project

Typically, any developmental projects also trigger a set of environmental and social impacts. These environmental and social due to development projects occur in different forms. An Environmental and Social Impact Assessment (ESIA) has to be carried out to study the potential environmental and social impacts due to the production tomato paste. Potential environmental and social impacts due to the production of tomato based products on attributes like air quality, noise, water quality, soil, flora, socio-economic, etc. have to be assessed as part of the ESIA study. Appropriate mitigation measures to help minimize/avoid impacts from the development have to be recommended in the study. The measures include avoidance measures, mitigation measures and environmental enhancement measures. For the purpose of including environmental costs, the costs of wastewater treatment plant and solid waste incineration systems are included in the cost of machinery and equipment. Social responsibility cost estimated to be 1% of fixed investment costs.

### 3.1.3. Production program of tomato derivatives

The annual production program at full capacity will produce 42,168 quintals per year. The plant initially produces 70 % of its annual rated capacity bound to initial operating problems such as machine set up and marketing. The production program does not include Sundays and national and public holidays. It was also considered that the plant would conduct annual maintenance for 12 days when the supply of raw materials is low.

Table 7 production plan for tomato processing plant

	Period	Percentage of products	Unit of measure	Start-up			Full Capacity	
	Capacity utilization			70%	80%	90%	100%	100%
	Project year			1	2	3	4	5
	Product type							
1	Tomato paste	100%	Quintals	29,518	33,734	37,952	42,168	42,168

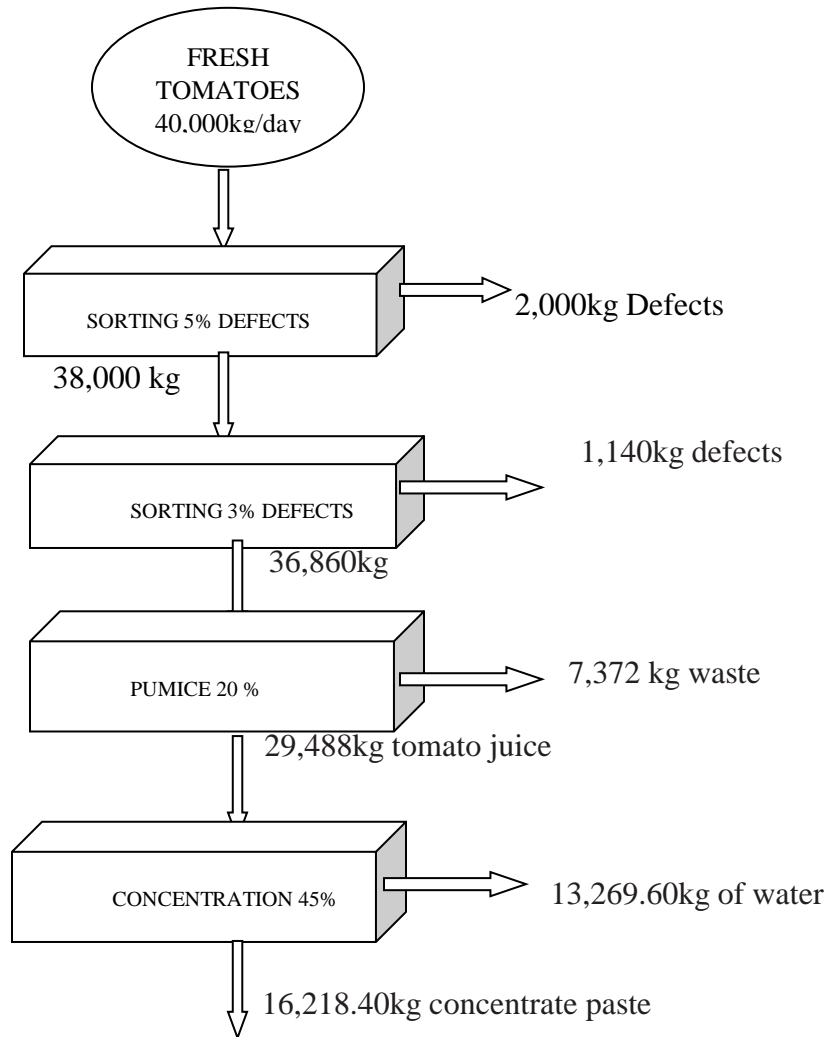
# PROJECT PROFILE ON TOMATO PROCESSING

## 3.1.4. Plant capacity

The annual production capacity of the plant in full capacity is 42,168 quintals per year. The production capacity is based on projected demand and realistic market share that could be captured. The production commences two shift and 260 working days a year. The production capacity will increase by 10 % and attain its full capacity by the four year of its commencement.

## 3.1.5. Material balance for tomato processing line

*Material balance of tomato processing factory*



# PROJECT PROFILE ON TOMATO PROCESSING

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## 3.2. Engineering

### 3.2.1. Land, buildings and civil works

The required area (m<sup>2</sup>) and construction cost for the production facilities essential for the successful operation of the processing plant is shown in Table 8. A total area ready for the processing plant is 10,000 m<sup>2</sup> out of which 6,020 m<sup>2</sup> is to be covered by building while uncovered area of 3,980m<sup>2</sup> is left for storage of waste materials and future expansions. In order to estimate the land lease cost of the project profiles it is assumed that all the project will be located in different land level from level 1/1 to level 4/3, their current market lease price is from 39,073.31 birr per M<sup>2</sup> to 2,800.71 birr per M<sup>2</sup> respectively. Therefore, for the profile a land lease rate of birr 3,885 per M<sup>2</sup> have been taken, which is between the ranges.

The cost of construction of building should be appropriate to the size and expected profitability of business, costs of building generally differs by the type of construction materials used, the type of foundation, wall height and location. The current building cost for simple storage and processing room is from 10,000.00 Birr per m<sup>2</sup> to 25,000.00 Birr per m<sup>2</sup>. The total construction cost of buildings and civil works, at a rate of Birr 20,000 per m<sup>2</sup> is estimated at Birr 115.30 million. Therefore, the total cost of land lease and construction of buildings and civil works is estimated at Birr 116.53 million.

The proposed plant layout comprises the following buildings and structures.



## PROJECT PROFILE ON TOMATO PROCESSING

Table 8 Building costs

S/No	Descriptions	Total area in M <sup>2</sup>	Estimated cost per square meter (in Birr)	Total estimated cost (in Birr)
1	Raw materials receiving and store	1,000	20,000.00	5,000,000.00
2	Raw materials preparation room	1,000	20,000.00	5,000,000.00
3	Crushing /chopping room	200	20,000.00	1,000,000.00
4	Concentration unit	150	20,000.00	750,000.00
5	Pasteurization unit	150	20,000.00	750,000.00
6	Ingredients store	500	20,000.00	2,500,000.00
7	Filling and packing room	500	20,000.00	2,500,000.00
8	Packing materials store	500	20,000.00	2,500,000.00
9	Final products store	500	20,000.00	2,500,000.00
10	Finished products delivery veranda	100	20,000.00	500,000.00
11	Boiler room	100	20,000.00	500,000.00
12	workshop	120	20,000.00	600,000.00
13	Generator room	20	20,000.00	100,000.00
14	Power station room	20	20,000.00	100,000.00
15	Administration office 5,360=13,400,000	300	20,000.00	1,500,000.00
16	Production and technical office	200	20,000.00	1,000,000.00
17	Toilet and shower for female	40	20,000.00	100,000.00
18	Room for cloth changing for female	40	20,000.00	100,000.00
19	Toilet and shower for male	40	20,000.00	100,000.00
20	Room for cloth changing for male	40	20,000.00	100,000.00
21	parking	500	5,000.00	500,000.00
22	Fence	1,200 M*2	2,000.00	2,400,000.00
	<b>TOTAL</b>	<b>6,020 M<sup>2</sup></b>		<b>115,300,000.00</b>

## PROJECT PROFILE ON TOMATO PROCESSING

Table 9 Land lease period in Addis Abeba

Sector of development activity	Period of lease	Down payment
Education, health, culture and sports	90	10%
Industry (manufacturing )	70	10%
commerce	60	10%
For urban agriculture	15	10%
For others	60	10%

Sources: - city government of Addis Abeba land development and management bureau

Table 10 Land lease floor price in Addis Abeba

S/No	Land level	Current land lease floor price per M <sup>2</sup>	Current lease price per M <sup>2</sup> (Market price )
1	1/1	2,213.25	39,073.31
2	1/2	2,165.47	36,825.73
3	1/3	1,900.19	34,578.15
4	¼	1,552.93	31,119.21
5	1/5	1,531.91	29,096.45
6	2/1	1327.39	27,073.71
7	2/2	1,221.18	25,050.96
8	2/3	1,191.17	23,028.21
9	2/4	1,074.39	21,005.46
10	2/5	1,027.84	18,982.71
11	3/1	994.71	16,959.96
12	3/2	960.21	14,937.21
13	3/3	927.84	12,914.46
14	¾	904.77	10,891.71
15	3/5	873.74	8,868.96
16	4/1	814.06	6,846.21
17	4/2	786.45	4,823.46
18	4/3	748.80	2,800.71

Sources: - city government of Addis Abeba land development and management bureau

## PROJECT PROFILE ON TOMATO PROCESSING

### 3.2.2. Machinery and equipment

The main plant and machinery consists Stainless steel scraper low position elevator, floating washing machine hopper, sorting machine, stainless steel scraper high position elevator, crusher, pre-heater, pulping machine, fruit jam tank, concentration machine, sterilizer, aseptic bag filling machine

Packing machine and etc. Major part of the machinery will be imported.

Table 11 Lists of machineries required for tomato processing

ITEM	Equipment Name	Quantity
A	Processing for Tomato Paste Production	1
A1	n.1 Receiving washer	1
A2	n.1 Slat elevator	1
A3	n.1 Water filtering system	1
A4	n.1 Roller sorting table	1
A5	n.1 Stainless steel hopper	1
A6	n.1 Chopping mono pump	1
A7	n.1 Cold/Hot break pre-heater	1
A8	n.1 Juice extractor single stage	1
A9	n.1 Buffer juice tank before evaporator	1
A10	n.1 Under vacuum twin pans evaporator	1
A11	n.1 Electro/pneumatic control panel	1
B	Tomato Paste Reprocessing Equipment	1
B1	n.1 Aseptic drums /bags emptying station	1
B2	n.1 Micro components dissolving systems	1
B3	n.1 Pre-mixing paste/water group	1
C	Tomato paste /Sauce/Ketchup	1
C1	n.1 Rotating disk feeder	1
C2	n.1 Cans dosing device	1
C3	n.1 Cans cleaning tunnel	1
C4	n.1 Set table top conveyors	1
C5	n.1 Filling – seaming group	1
C6	n.1 Tunnel pasteurizer cooler drier	1
C7	n.1 Belt accumulator conveyor	1
C8	n.1 Conveyor with ink-jet printer	1
C9	n.1 Automatic carton erector	1
C10	n.1 Semiautomatic carton packer	1
C11	n.1 Hot melt glue sealer	1
C12	n.1 Electro/pneumatic control panel	1

### 3.2.3. Lists of machinery suppliers



Huafood Machinery Technology Co.,Ltd Company

E-mail: [info@huafoodmachine.com](mailto:info@huafoodmachine.com)

Whatsapp: +8618703684501

Tel: +8618703684501

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### FENCO Food Machinery

Via Prampolini, 40 43044 Lemignano, Emilia-Romagna, Italy

TEL:- +39 0521 303429

EMAIL: [contact@fenco.it](mailto:contact@fenco.it)

## PROJECT PROFILE ON TOMATO PROCESSING

### 4. Organizational structure

The selection of structure of the envisaged project is made based on the existing structure of manufacturing plants operating in the country, the capacity, complexity and technology mix of the plant. Organizational structure principles such as specialization, coordination, and departmentalization are also considered for design of structure that best suits the envisaged project

#### 4.1. Manpower Requirement and Estimated Annual manpower costs

Description	Number	Monthly salary	Annual salary, Birr
plant manager	1	30,000.00	360,000.00
Administration and finance manager	1	15,000.00	180,000.00
Human resource manager	1	7,500.00	90,000.00
Secretary	1	5,000.00	60,000.00
Marketing and sales officer	1	10,000.00	120,000.00
Sales manager	1	15,000.00	180,000.00
Accountant	1	10,000.00	120,000.00
Production unit leader	1	15,000.00	180,000.00
Senior Mechanic	3	10,000.00	360,000.00
Senior Electrician	3	10,000.00	360,000.00
Purchaser	1	10,000.00	120,000.00
Operator	16	4,000.00	704,000.00
Ass. Operator	16	2,000.00	352,000.00
Store keeper	2	5,000.00	120,000.00
Quality manager	1	15,000.00	180,000.00
Microbiologist	1	10,000.00	120,000.00
Sugar dissolving team	1	6,000.00	72,000.00
Boiler technician	1	3,000.00	36,000.00
Guard	4	1,400.00	67,200.00
Driver	1	3,000.00	36,000.00
Cleaners	12	1,500.00	216,000.00
Sub total	70		4,033,200.00
Grand total			4,865,200.00

### 5. Financial Analysis

#### 5.1. General

The financial analysis evaluation of tomato project, are mainly consisted of capital investment as well as operating and maintenance costs. The capital investment costs include fixed investment costs (initial fixed investment and replacement costs) and working capital, while operating and maintenance costs comprise current expenses related to material inputs, manpower cost, utility, repair and maintenance costs, and spare parts, Overheads, Sales and distribution, interest and depreciation expenses.

The financial analysis and evaluation has been conducted taking assumptions:

1. It is assumed that about 70% of the total capital investment costs including the working capital requirement could be covered through development bank loans of short and long-term credits. The remaining balance 30% will be covered by equity capital contribution of the project owner.
2. Even though the project might secure loans under different term and conditions as well as from different financial sources, for the purpose of calculation of debt service scheduling, the current development bank of Ethiopia credit terms and conditions have been used. Consequently. It is assumed that the project will secure loan facility on the basis of 11.5 % annual interest rate.
3. Even though the estimated project production life is more 10 years, the financial analysis has been undertaken for a period interval covering the first 10 years only, during which time

## PROJECT PROFILE ON TOMATO PROCESSING

most of the capital assets are assumed to be depreciated, debts recovered and pay-back period accomplished.

4. It is assumed that the project will be start up production activity at 70 % capacity. During years 2 & year 3 the projects is anticipated to gradually increase capacity utilization to reach 100% in year 4. Therefore, starting from year 4 the project will be operational at full capacity.
5. For the project under reference promotional, sales and distribution expenses have been estimated at 3% of the sales revenue.
6. Maintenance and spare parts costs are 1.5% of the fixed investment costs.
7. Furniture and fixture costs assumed to be 500,000.00

### 5.2. Initial Fixed investment costs

Table 12 Initial Fixed investment costs

S/No	Fixed investment type	Unit of measurement	Quantity	Unit price	Total Amount	Remarks
1	Land	Square meter	10,000	3,885 Birr/M <sup>2</sup>	38,850,000.00	The period of land lease will be 70 years and 10% of the total lease amount will be paid in the first year
2	Buildings and civil works	Square meter	5,100	lump sum	115,300,000.00	
	<b>Sub total</b>				<b>154,150,000.00</b>	
3	Machineries	set	2	Lump sum	150,000,000.00	
4	Transformer	set	1	Lump sum	2,000,000.00	
5	Weighbridge	Set	1	Lump sum	4,000,000.00	
6	Truck and vehicles	Pcs	2	Lump sum	6,000,000.00	
7	Furniture and fixture	Pcs			500,000.00	
	<b>SUB TOTAL</b>				<b>162,500,000.00</b>	
	Fixed capital investment costs				<b>316,650,000.00</b>	
8	pre-operational expenses				2,000,000.00	
	Working capital				26,947,000.00	
	<b>TOTAL INVESTMENT COSTS</b>				<b>345,597,000.00</b>	

## PROJECT PROFILE ON TOMATO PROCESSING

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### 5.3. Working capital

Working capital is the financial means required for smooth operation and maintenance of a project mathematically, it is a difference between current assets and current liabilities. In the particular case of the project under consideration, the current assets comprise receivables, inventories (local and imported material inputs, spare parts, work in progress, and products ready for delivery) and cash in hand, while current liabilities comprise accounts payable to creditors. See Annex table 18 detail annual working capital calculation.

### 5.4. Project Financing

Fixed capital investment costs and working capital requirements are assumed to be financed by equity capital of the owner and through loans of short and long-term credits.

The company obtains loans under different terms and condition as well as from different sources, for the purpose of calculation of debt service scheduling the current development bank of Ethiopia credit terms and conditions have been used. Accordingly, it is assumed that the company will be able to obtain loan 70% of the total investment costs for construction of different buildings for purchase of machineries. The remaining balance that of the total investment costs will be expected to be covered by equity contribution of the project promoter.



## PROJECT PROFILE ON TOMATO PROCESSING

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### 5.5. Production costs

As it is depicted in Annex Table 17 major categories of the total production costs are assembled into the following cost elements.

#### 5.5.1. Material inputs

In the project under study the basic material inputs (see in table 16) are Tomato, packing materials etc. Therefore, the current prevailing local and international market prices have been used for estimation of material inputs costs. At full capacity operation the material inputs costs are estimated at Birr 180.80 million per annum.

#### 5.5.2. Utilities

In estimating costs of utility expenses for operation and maintenance of the project, Costs of fuel, oil and lubricant, electricity and water consumptions have been taken in to consideration, the rates of which have been estimated on the basis of the proposed capacity utilization program of the project and at the current official charging rates. At full capacity operation the project will have the following utility expense per annum which amounts to Birr 6.089 million.

## PROJECT PROFILE ON TOMATO PROCESSING

Table 13 Utilities of the factory'000''Birr

<b>Utility''000''Birr</b>		Start-up			Full Capacity
		70 %	80 %	90 %	100 %
Project year		1	2	3	4
Item description	Unit of measurement				
<b>Fuel</b>					
Gasoline for service vehicle	100km*260days*32Birr/LIT*8km/Li	104	104	104	104
Gasoline for transport truck	(200km*300days*32Birr/LIT*5km/Li)*3	1,152	1,152	1,152	1,152
Sub-Total		<b>1,256</b>	<b>1,256</b>	<b>1,256</b>	<b>1,256</b>
Change of oil and lubricant	10% of the fuel consumption	<b>126</b>	<b>126</b>	<b>126</b>	<b>126</b>
Sub-Total		<b>1,382</b>	<b>1,382</b>	<b>1,382</b>	<b>1,382</b>
Electricity	260days*24 hrs*650kwh* 1.00Birr/kwh	2,839	3,245	3,650	4,056
Sub- Total		<b>2,839</b>	<b>3,245</b>	<b>3,650</b>	<b>4,056</b>
Water	365days*100m <sup>3</sup> /day*15 Birr/m <sup>3</sup>	384	438	493	548
Sub -Total		<b>384</b>	<b>438</b>	<b>493</b>	<b>548</b>
Telecommunication					
Telephone	5 lines* 1,500Birr/month/line+18Birr/line/month	31.08	31.08	31.08	31.08
Mobile	5 lines*1,500 Birr/month/line	30.00	30.00	30.00	30.00
Fax	2line*1,000Birr/month + 17 Birr/line/month	12.40	12.40	12.40	12.40
Internet	2,500 Birr/month	30.00	30.00	30.00	30.00
Sub-Total		<b>103.48</b>	<b>103.48</b>	<b>103.48</b>	<b>103.48</b>
<b>TOTAL</b>		<b><u>4,708.48</u></b>	<b><u>5,168.48</u></b>	<b><u>5,628.48</u></b>	<b><u>6,089.48</u></b>

## PROJECT PROFILE ON TOMATO PROCESSING

### 5.5.3. Over heads

In the expenses under this title have been included land and building taxes, buildings, vehicles as well as machinery and equipment insurance, vehicles annual inspection; postage, telephone and e. mail, stationery and office supplies; printing and copying; audit fee; cash indemnity etc. The overhead costs and divided in to direct overheads and administration overheads.

Table 14 Overhead costs

<b>Direct Overhead”000”Birr</b>		Year 1	Year 2	Year 3	Year 4
Annual land lease Payment		5,550	5,550	5,550	5,550
<b>Insurance</b>					
Building and Civil works	0.10%	115.30	115.30	115.30	115.30
Machinery and Equipment	0.20%	300	300	300	300
Motor vehicle and Truck	1%	60	60	60	60
Vehicles annual inspection and registration	25,000 Birr per annum per vehicle	50.00	50.00	50.00	50.00
Work cloth	Two times per annum per workers at 1,000 Birr	140	140	140	140
Cleaning and sanitation	An estimate of 300 Birr/day	78.00	78.00	78.00	78.00
Sub Total		<b>6,293</b>	<b>6,293</b>	<b>6,293</b>	<b>6,293</b>
<b>Administration Overhead “000’ Birr</b>					
Audit fee	40,000 Birr per annum	40.00	40.00	40.00	40.00
Office cleaning and sanitation	2,000 Birr per month	24.00	24.00	24.00	24.00
Stationery and office supplies	2,000 Birr per month	20.00	20.00	20.00	20.00
Printing and Copy	2,000 Birr per month	24.00	24.00	24.00	24.00
Sub Total		<b>108.00</b>	<b>108.00</b>	<b>108.00</b>	<b>108.00</b>
<b>GRAND TOTAL</b>		<b>6,401</b>	<b>6,401</b>	<b>6,401</b>	<b>6,401</b>

## PROJECT PROFILE ON TOMATO PROCESSING

### 5.5.4. Financial costs

As it has been outlined earlier under” project Financing” the current Development Bank of Ethiopia credit terms and conditions for newly establishing projects have been used to compute the financial costs, estimated to be incurred in connection with that of the total investment costs assumed to be covered through loan financing. The amount of the loan capital to be obtained and the financial costs to be incurred thereof have been determined depending on the amount of fixed investment cost and pre-production expenses.

### 5.5.5. Depreciation

Table 15 Depreciation in Birr"000"

Period			Start-up			
			70 %	80 %	90 %	100 %
Capacity utilization			70 %	80 %	90 %	100 %
Project year			1	2	3	4
Item description	Original Value					
Structure and civil works	115,300,000.00	5% of original value	5,765	5,765	5,765	5,765
Machinery and equipment	150,000,000.00	15 % of original value	22,500	22,500	22,500	22,500
Transformer	2,000,000.00	15 % of original value	300	300	300	300
Motor vehicles and trucks	6,000,000.00	15% of original value	900	900	900	900
Weighbridge	4,000,000.00	15 % of original value	600	600	600	600
Office equipment and furniture	500,000.00	20 % of original value	100	100	100	100
Pre-production expenses	2,000,000.00	25% of original value	500	500	500	500
<b>Total</b>			<b>30,665</b>	<b>30,665</b>	<b>30,665</b>	<b>30,665</b>

5.6. Break Even point and ROI

**5.6.1. Break Even point (BEP)**

Three kinds of break-even point

- A. BEP Sales Revenue(BR)
- B. BEP production (Volume)
- C. BEP Percentage (%)

A. Break-even point(BEP) Sales

To determine BEP Annual Sales, multiply annual sales found in income statement by the annual fixed cost, and divided by Annual sales less Annual variable cost.

$$\text{BEP (sales)} = \frac{\text{Annual sales} \times \text{Annual fixed costs}}{\text{Annual sales} - \text{Annual variables costs}}$$

Annual sales = 439,042,000 Birr

Unit selling price = 76 Birr/kg

$$\text{BEP (sales)} = \frac{\text{Annual sales} \times \text{Annual fixed costs}}{\text{Annual sales} - \text{Annual variables costs}} = \frac{439,042,000 \times 63,458,000}{439,042,000 - 144,663,000}$$

BEP (Sales) = 94,642,237 Birr

B. BEP production

To determine BEP production volume, divided BEP sales by the unit selling price (USP)

BEP production =  $94,642,237 / 76 = 1,245,293$

c. BEP percentage =  $\frac{\text{Annual fixed costs} \times 100\%}{\text{Annual sales} - \text{Annual variables costs}}$

$$= \frac{63,458,000 \times 100\%}{439,042,000 - 144,663,000}$$
$$= 21.60\%$$

### 5.6.2. Return on investment

Return on investment = Net profit /Total capital requirement

$$= 60,395,000/345,597,000$$

$$= 17.5\%$$

### The return on owners' investment (ROOI)

= Annual net profit /owners' investment

$$= 60,395,000/103,679,100$$

$$= 58.25\%$$

## 5.7. Project benefits

For financial analysis and evaluation of the given project, the current raw tomato price, and packing materials buying price and final packed processed tomato price at the project gate has been taken as a basis. Consequently, based on the recent market survey, at the nearby market pints is estimated at Birr 8 birr per kg and delivery price of processed tomato price has been indicated in table 19.

As it has been stated earlier the project is envisaged to reach full capacity operation four years after commencement of production activities which are assumed to begin with 70% of the estimated total capacity.

Thus, according to the computation in Annex Table 20 and Annex Table 22, the net income and cash flow statements analysis revealed that at full capacity operation the project will generate a total income (gross revenue) amounting to 439.04 million Birr per annum. The Net Income Statement shows a steady growth of gross profit starting from 92.92 million Birr in year 1 reaching the peak of 213.24 million Birr in year 10. In its 10 years of manufacturing activities, the project is expected to

## PROJECT PROFILE ON TOMATO PROCESSING

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generate a total net profit of 1.099 billion Birr and contribute 591.86 million Birr to the government treasury in form of 35% income tax.

According to the current investment Law, machinery and equipment are anticipated to be imported duty- free. The liquidity position of the project is very strong. The corresponding Annex Table 22 of “Cash Flow Statement” shows the positive cumulative cash balance of Birr 1.08 billion and the project will not face any cash shortage throughout its production life.

The computation of the pay-back period as depicted in Annex table 27 indicates that the project will be able to reimburse itself from its net cash-income within four years after commencement of production activities, the period which is considered to be very good for the project of this nature.

In Annex Table 28 of the Benefit-cost ratio and Net present value (NPV) have been calculated at 17% discount factor (D.F) for 10 years of the project activity. Accordingly, the project has NPV of 628.96 million Birr at 17%D.F. and the benefit-cost ratio of 1.52 at 17% D.F. These results are most appreciable, especially, when related to the external capital borrowing interest rate which ranges from 8.50% to 18.5 % for newly establishing projects.

Break-even point (BEP) have been undertaken the project under study when implemented will have BEP at about 21.60% operation of the estimated full capacity

In addition to this, finally, summary of financial efficiency tests have been conducted in Annex table 26, Accordingly, all efficiency ratios indicated positive trends and consequently, it can be inferred that the project can operate in the frame work of free market mechanism on commercially and financially viable basis and is remunerative.

# ANNEXES



Table 16 Materials input for tomato paste production

S/No.	Cost Centers	Unit	Quantity Consumed Daily for 16 Working Hour	Unit Cost (Birr)	Total Cost per day (Birr)	Total costs per year at 70%	Total costs per year at 80%	Total costs per year at 90%	Total costs per year at 100%
<b>Direct Material</b>									
1	Tomato	Kg	40,000	8.00	320,000.00	58,240,000	66,560,000	74,880,000	83,200,000
2	Aseptic bag	Pcs	75	129	9,675	1,760,850	2,012,400	2,263,950	2,515,500
3	Drums	Pcs	75	629	47,175	8,585,850	9,812,400	11,038,950	12,265,500
4	Polyethylene Liner	Pcs	75	18	1,350	245,700	280,800	315,900	351,000
5	Sample Bag	Pcs	14	29	406	73,892	84,448	95,004	105,560
<b>Sub Total 1</b>						<b>68,906,292</b>	<b>78,750,048</b>	<b>88,593,804</b>	<b>98,437,560</b>
<b>Indirect Material</b>									
6	Confidence 10	Liter	2.5	500	1,250	227,500	260,000	292,500	325,000
7	Salt (Na Cl)	Kg	2	10	20	3,640	4,160	4,680	5,200
8	Calcium-hypochlorite (Cl)	Kg	0.50	60	30	5,460	6,240	7,020	7,800
9	Largo (Liquid Soap) and detergents	Liter	1	60	60	10,920	12,480	14,040	15,600
10	Oil	Liter	0.5	70	35	6,370	7,280	8,190	9,100
11	Grease	Kg	0.5	250	125	22,750	26,000	29,250	32,500
12	Superdilac	Liter	5.00	200	1,000	182,000	208,000	234,000	260,000
13	Caustic soda	Kg	30	50	1,500	273,000	312,000	351,000	390,000
14	Diesel Fuel for the Boiler	Liter	1,280	21	26,880	4,892,160	5,591,040	6,289,920	6,988,800
15	Diesel Fuel for the Generator	Liter	180	21	3,780	687,960	786,240	884,520	982,800
16	Cleaning Materials (Broom, Mop and Wiper)	Lump sum	40	100	4,000	728,000	832,000	936,000	1,040,000
<b>Sub Total 2</b>						<b>7,039,760</b>	<b>8,045,440</b>	<b>9,051,120</b>	<b>10,056,800</b>
						<b>75,946,052</b>	<b>86,795,488</b>	<b>97,644,924</b>	<b>108,494,360</b>

## PROJECT PROFILE ON TOMATO PROCESSING

Capacity utilization				70%	80%	90%	100%
period in (years)				1	2	3	4
Item description		U/m	Unit price in ETB	Quantity	Quantity	Quantity	Quantity
<b>PACKING MATERIALS FOR PASTE</b>	2,108,392kg paste /year			0	0	0	0
Cans	20% of concentrated paste will be packed in 850gm and at full capacity 496,092 pcs of cans will be required and the price is 18 Birr / pcs	pcs	18	6,250,759	7,143,725	8,036,690	8,929,656
	40% of concentrated paste will be packed in 400gm and at full capacity 2,108,392 pcs of cans will be required and the price is 12 Birr / pcs	pcs	12	17,710,493	20,240,563	22,770,634	25,300,704
	40% of concentrated paste will be packed in 200gm and at full capacity 4,216,784 pcs of cans will be required and the price is 8 Birr / pcs	pcs	8	23,613,990	26,987,418	30,360,845	33,734,272
Carton	One carton contain 12pcs of 850gm cans and 15 Birr/pcs, at full capacity 41,341 cartons will be required	pcs	15	434,081	496,092	558,104	620,115
	One carton contain 24 pcs of 400gm cans and 15 Birr/pcs, at full capacity 87,850 cartons will be required	pcs	15	922,425	1,054,200	1,185,975	1,317,750
	One carton contain 24 pcs of 200gm cans and 12 Birr/pcs, at full capacity 175,699 cartons will be required	pcs	12	1,475,872	1,686,710	1,897,549	2,108,388
Plaster	One roll plaster seal 40 pcs of carton and cost is 40 Birr/roll, at full capacity 304,890 cartons/40 = 7,623 roll will be required	pcs	40	213,444	243,936	274,428	304,920
<b>SUB TOTAL</b>				<b>50,621,064</b>	<b>57,852,644</b>	<b>65,084,225</b>	<b>72,315,805</b>

## PROJECT PROFILE ON TOMATO PROCESSING

### NNEX II

#### CALCULATION OF ANNUAL PRODUCTION COSTS

Table 17 Annual total production costs''000''

Period	Start-up			Full capacity						
	70 %	80 %	90 %	100 %	100 %					
Project Year	1	2	3	4	5	6	7	8	9	10
Cost category										
I. Material inputs including packing materials	126,567	144,648	162,729	180,810	180,810	180,810	180,810	180,810	180,810	180,810
II. Labor	4,865	4,865	4,865	4,865	4,865	4,865	4,865	4,865	4,865	4,865
III. Utility	4,709	5,169	5,629	6,090	6,090	6,090	6,090	6,090	6,090	6,090
IV. Repair and Maintenance (1 % of fixed costs) and spare parts (0.5 % of fixed costs)	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167
VI Direct overheads	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293
<b>A. Direct Production costs</b>	<b>146,601</b>	<b>165,142</b>	<b>183,683</b>	<b>202,225</b>	<b>202,225</b>	<b>202,225</b>	<b>202,225</b>	<b>202,225</b>	<b>202,225</b>	<b>202,225</b>
VII. Administration over head	108	108	108	108	108	108	108	108	108	108
VIII. Marketing and Promotional expense 3 % of sales revenue	9,220	10,537	11,854	13,171	13,171	13,171	13,171	13,171	13,171	13,171
<b>B. Operating costs</b>	<b>155,929</b>	<b>175,787</b>	<b>195,645</b>	<b>215,504</b>	<b>215,504</b>	<b>215,504</b>	<b>215,504</b>	<b>215,504</b>	<b>215,504</b>	<b>215,504</b>
Interest	27,820	26,196	24,386	22,367	20,115	17,605	14,806	11,685	8,205	4,326
Depreciation	30,665	30,665	30,665	30,665	30,165	30,065	21,973	5,765	5,965	5,965
<b>C. Total production costs</b>	<b>214,414</b>	<b>232,648</b>	<b>250,696</b>	<b>268,536</b>	<b>265,784</b>	<b>263,174</b>	<b>252,283</b>	<b>232,954</b>	<b>229,674</b>	<b>225,795</b>

# PROJECT PROFILE ON TOMATO PROCESSING

## ANNEX IV CALCULATION OF WORKING CAPITAL REQUIREMENTS

- I. Minimum requirement of current assets and liabilities
- A. Accounts receivable: 26 days at total production costs minus depreciation and interest
- B. Inventory
1. Material inputs: 26 days
  2. Spare parts : 90 days
  3. Work under process: two days at direct costs
  4. Product ready for delivery: 8 days at direct costs plus administration overheads
- C. Cash on hand : 360 days
- D. Accounts payable 26 days for material inputs and utilities

ii. Working capital requirement

Table 18 Calculation of working capital

Cost category	Minimum Days of coverage	Coeff-icent of turnover	Project year									
			Start up			Full capacity						
			1	2	3	4	5	6	7	8	9	10
I. Current asset												
A. A/R	26	10	15,593	17,579	19,565	21,550	21,550	21,550	21,550	21,550	21,550	21,550
B. Inventory												
1. Material inputs	26	10	12,657	14,465	16,273	18,081	18,081	18,081	18,081	18,081	18,081	18,081
2. Spare parts	90	4	1,042	1,042	1,042	1,042	1,042	1,042	1,042	1,042	1,042	1,042
3. Work under process	2	130	1,128	1,270	1,413	1,556	1,556	1,556	1,556	1,556	1,556	1,556
4. Product ready for delivery	8	32.5	4,619	5,189	5,760	6,330	6,330	6,330	6,330	6,330	6,330	6,330
C. Cash on hand	90	4	5,036	5,151	5,266	5,381	5,381	5,381	5,381	5,381	5,381	5,381
D. Current assets			40,075	44,696	49,319	53,940	53,940	53,940	53,940	53,940	53,940	53,940
II. Current liabilities												
A. A/p	26	10	13,128	14,982	16,836	18,690	18,690	18,690	18,690	18,690	18,690	18,690
III. Working capital												
A. Net working capital			26,947	29,714	32,483	35,250	35,250	35,250	35,250	35,250	35,250	35,250
B. Increasing in working capital			26,947	2,767	2,769	2,767	0.0	0.0	0.0	0.0	0.0	0.0

# PROJECT PROFILE ON TOMATO PROCESSING

## ANNEX V

### PROJECTED SALES REVENUE

Table 19 projected sales revenue '000'

Period		U/m	Quantity at full capacity	Unit price	Start up			Full capacity						
					70 %	80 %	90 %	100 %						
Capacity utilization	Product mix													
Item description														
Project year					1	2	3	4	5	6	7	8	9	10
TOMATO PASTE	20% will be Packed in 850 gm.	Pcs	496,092	120	41,705	47,625	53,578	59,531	59,531	59,531	59,531	59,531	59,531	59,531
	40 % will be Packed in 400gm	Pcs	2,108,392	80	118,070	134,937	151,804	168,671	168,671	168,671	168,671	168,671	168,671	168,671
	40% will be Packed in 200gm	Pcs	4,216,784	50	147,587	168,671	189,755	210,839	210,839	210,839	210,839	210,839	210,839	210,839
GRAND TOTAL					307,329	351,233	395,137	439,042	439,042	439,042	439,042	439,042	439,042	439,042

## PROJECT PROFILE ON TOMATO PROCESSING

### ANNEX VI

#### PROJECTED NET INCOME STATEMENT

Table 20 Projected Net income statement "000"

Period	Start up			Full capacity						
	70 %	80 %	90 %	100 %						
Project year	1	2	3	4	5	6	7	8	9	10
Item description										
Product sales revenue	307,329	351,233	395,137	439,042	439,042	439,042	439,042	439,042	439,042	439,042
Less total production costs	214,414	232,648	250,696	268,536	265,784	263,174	252,283	232,954	229,674	225,795
Gross profit	92,915	118,585	144,441	170,506	173,258	175,868	186,759	206,088	209,368	213,247
Tax	32,520	41,505	50,554	59,677	60,640	61,554	65,366	72,131	73,279	74,636
Net profit	60,395	77,080	93,887	110,829	112,618	114,314	121,393	133,957	136,089	138,611
Accumulated undistributed profit	60,395	137,475	231,361.65	342,191	454,808	569,122	690,516	824,473	960,562	1,099,173

# PROJECT PROFILE ON TOMATO PROCESSING

## ANNEX VII DEBT SERVICE SCHEDULE AND COMPUTATION PAYMENT OF EQUAL ANNUAL INSTALLMENTS

Table 21 Debt services schedule and computation

Item description	Project year									
	1	2	3	4	5	6	7	8	9	10
A. Investment and working capital										
1. Investment										
2. Increment working capital										
Total										
B. Loan receipts and balances										
1. Loan receipts	241,918	227,795	212,049	194,492	174,915	153,087	128,749	101,612	71,354	87,354
2. Outstanding balance at end of year	241,918	227,795	212,049	194,492	174,915	153,087	128,749	101,612	71,354	87,354
a. First year loan										
Total										
A. Debt service										
1. First year Loan										
a. Interest	27,820	26,196	24,386	22,367	20,115	17,605	14,806	11,685	8,205	4,326
b. Repayment of principal	14,122	15,747	17,557	19,577	21,828	24,338	27,137	30,258	33,737	37,617

## PROJECT PROFILE ON TOMATO PROCESSING

### ANNEX VIII CASH-FLOW STATEMENT FOR FINANCIAL PLANING

Table 22 Projected Cash flow statement

Period	Start up				Full capacity						
	70%	80%	90%	100%							
Capacity utilization	70%	80%	90%	100%							
Project year	1	2	3	4	5	6	7	8	9	10	
Item description											
A. Cash - inflow	666,054	355,854	399,760	443,663	439,042	439,042	439,042	439,042	439,042	439,042	
1. Financial resource (total)	358,725	4,621	4,623	4,621							
2. Sales revenue	307,329	351,233	395,137	439,042	439,042	439,042	439,042	439,042	439,042	439,042	
B. Cash – outflow	589,116	263,856	292,765	321,746	318,087	319,001	322,813	329,578	330,725	332,083	
1. Total assets schedule including replacement	358,725	4,621	4,623	4,621							
2. Operating costs	155,929	175,787	195,645	215,504	215,504	215,504	215,504	215,504	215,504	215,504	
3. Debt service (total)											
a. Interest	27,820	26,196	24,386	22,367	20,115	17,605	14,806	11,685	8,205	4,326	
b. Repayment	14,122	15,747	17,557	19,577	21,828	24,338	27,137	30,258	33,737	37,617	
4. Tax											
	32,520	41,505	50,554	59,677	60,640	61,554	65,366	72,131	73,279	74,636	
C. Surplus (Deficit)	76,938	91,998	106,995	121,917	120,955	120,041	116,229	109,464	108,317	106,959	
D. Cumulative cash balance	76,938	168,936	275,931	397,848	518,803	638,844	755,073	864,537	972,854	1,079,813	



## PROJECT PROFILE ON TOMATO PROCESSING

### ANNEX XII TOTAL INVESTMENT COSTS

Table 23 Total investment costs”000”

Period	Start up			Full capacity								
	1	2	3	4	5	6	7	8	9	10		11
Project year												
Investment Category												
1. Fixed investment costs												
a. Initial fixed investment costs	316,650											
b. Replacement												
2. Pre-operational capital expenditure	2,000											
3. Working capital increase	26,947	2,767	2,769	2,767								
Total investment costs	<b>345,597</b>	<b>2,767</b>	<b>2,769</b>	<b>2,767</b>								

### ANNEX XIII TOTAL ASSETS

Table 24 Total Assets

Period	Start up			Full capacity									
	1	2	3	4	5	6	7	8	9	10	11		12
Project year													
Investment Category													
1. Fixed investment costs													
c. Initial fixed investment costs	316,650												
❖ Cost of land													
d. Replacement													
2. Pre-operational capital expenditure	2,000												
3. Current assets increase	40,075	4,621	4,623	4,621									
Total assets	<b>358,725</b>	<b>4,621</b>	<b>4,623</b>	<b>4,621</b>									

## PROJECT PROFILE ON TOMATO PROCESSING

### ANNEX XIV SOURCES OF FINANCE

Table 25 Sources of finance

Period	Start up			Full capacity							
	1	2	3	4	5	6	7	8	9	10	Total
Sources of finance											
1. Equity capital	103,679	2,767	2,769	2,767							
2. Loan capital	241,918										
3. Current liabilities	13,128	1,854	1,854	1,854							
Total finance	358,725	4,621	4,623	4,621							

### ANNEX XI SUMMARY OF FINANCIAL EFFECIENCY TESTS

Table 26 Summary of financial efficiency tests

Project year	Project year									
	1	2	3	4	5	6	7	8	9	10
Capacity utilization	70%	80%	90%	100%						
Financial ratio in %										
1. Gross profit : Revenue	30%	34%	37%	39%	39%	40%	43%	47%	48%	49%
2. Net profit : Revenue	20%	22%	24%	25%	26%	26%	28%	31%	31%	32%
3. Net profit : initial investment	17%	22%	27%	31%	32%	32%	34%	38%	38%	39%
4. Net profit : Equity	58%	72%	86%	99%	101%	102%	108%	120%	122%	124%
5. Gross profit : Initial investment	27%	34%	41%	48%	49%	50%	53%	58%	59%	60%
6. Operating costs : Revenue	51%	50%	50%	49%	49%	49%	49%	49%	49%	49%

## PROJECT PROFILE ON TOMATO PROCESSING

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### ANNEX XV CALCULATIONS OF PAYBACK PERIOD

Table 27 Calculation of payback period”000”

Year	Amount Paid Back			Total investment	End of year
	Net Profit	Depreciation	Total		
1	60,395	30,665	91,060	345,597	-254,537
2	77,080	30,665	107,745	2,767	-145,559
3	93,887	30,665	124,552	2,769	-27,776
4	110,829	30,665	141,494	2,767	+110,951

## PROJECT PROFILE ON TOMATO PROCESSING

### ANNEX XVI CALCULATIONS OF NET PRESENT VALUE AT 17% D.F.

Table 28 Calculation of NPV at 17% D.F.

Project year	Gross Revenue	1/(1+i) <sup>n</sup> At 17%	Present value at 17%	Project costs			
				Total investment	Operating costs	Total	Present value at 17%
1	307,329	0.854701	262,674	345,597	155,929	501,526	428,655
2	351,233	0.730514	256,581	2,767	175,787	178,554	130,436
3	395,137	0.624371	246,712	2,769	195,645	198,414	123,884
4	439,042	0.53365	234,295	2,767	215,504	218,271	116,480
5	439,042	0.456111	200,252		215,504	215,504	98,294
6	439,042	0.389839	171,156		215,504	215,504	84,012
7	439,042	0.333195	146,287		215,504	215,504	71,805
8	439,042	0.284782	125,031		215,504	215,504	61,372
9	439,042	0.243404	106,865		215,504	215,504	52,455
10	439,042	0.208037	91,337		215,504	215,504	44,833
<b>Total</b>			<b>1,841,189</b>				<b>1,212,225</b>

A. Benefit- cost ratio at 17% D.F. = 1.52

B. NPV at 17% D.F. = 628,964,000 Birr

## PROJECT PROFILE ON TOMATO PROCESSING

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