



PROJECT PROFILE ON PVC CEILING MANUFACTURING



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ADDIS ABEBA CITY GOVERNMENT INVESTMENT COMMISSION

PROJECT PROFILE ON PVC CELING MANUFACTURING

TABLE OF CONTENT

I.	Executive summary	4
1.	Background Information	6
1.1.	Introduction	6
1.2.	Product Description	6
1.3.	Project location and justification	7
1.3.1.	Location of Addis Ababa	7
1.3.2.	Demography of Addis Ababa	8
1.3.3.	Economic activity of Addis Ababa	8
1.4.	Why is it beneficial to invest in Addis Ababa?	10
1.4.1.	The city benefit from the investment.....	12
2.	Marketing study	13
2.1	Market analysis summary	13
2.1.	The Supply of Polyethylene products.....	13
2.1.1.	Local Polyethylene Products Supply	13
2.1.2.	Import.....	14
2.2.	Polyethylene products (plastics) Demand Projection	16
2.3.	Demand-Supply Gap Analysis	18
3.	Engineering and technology	19
3.1.	Engineering	19
3.1.1.	Land, buildings and civil works	19
3.1.2.	Plant layout	19
3.2.	Technology	22
3.2.1.	PRODUCTION PROCESS	22
3.2.2.	RAW MATERIALS AND INPUTS	23
3.2.3.	Environmental and social impact assessment of the project	23
3.2.4.	PLANT CAPACITY	23
3.2.5.	SPECIFICATION PVC CEILINGS	24
3.3.	Machinery lists	24
4.	PVC Ceiling manufacturing factory Organizational structure.....	27

PROJECT PROFILE ON PVC CELING MANUFACTURING

4.1.	Manpower Requirement and Estimated Annual manpower costs.....	27
5.	Financial Analysis	28
5.1.	General.....	28
5.2.	Fixed capital investment costs	29
5.3.	Working capital	30
5.4.	Project Financing.....	30
5.5.	Operating and Maintenance Costs	31
5.6.	Production costs	31
5.7.	PROJECT COSTS	37
5.8.	Project benefits	38
5.9.	Break Even point and ROI	39
5.9.1.	Break Even point (BEP)	39
5.9.2.	Return on investment	40
5.10.	Project benefits	40

PROJECT PROFILE ON PVC CELING MANUFACTURING

LISTS OF TABLES

Table 1 Local supply of polyethylene products in tons	14
Table 2 Volume of imported polyethylene products (plastics) from 2012 to 2021 in kg.....	14
Table 3 Future forecast of import of polyethylene products (plastics) by trend adjusted exponential smoothing method	15
Table 4 Projected Demand for polyethylene products (plastics) in Ethiopia for the coming ten years.....	17
Table 5 Demand supply gap Analysis.....	18
Table 6 Estimated construction costs	20
Table 7 Land lease period in Addis Abeba	21
Table 8 Land lease floor price in Addis Abeba	21
Table 9 PVC ceiling panel extrusion line.....	25
Table 10 Annual manpower costs	27
Table 11 Fixed capital investment costs.....	29
Table 12 Material input '000'	32
Table 13 Utilities of the projects	33
Table 14 Overhead costs	35
Table 15 Depreciation costs	37
Table 16 Sales Revenue in quantity	38
Table 17 Sales Revenue in Birr "000"	38
Table 18 Total annual production costs '000'	43
Table 19 Calculation of working capital	44
Table 20 projected sales revenue.....	45
Table 21 Projected Net income statement "000"	46
Table 22 Debt services schedule and computation.....	47
Table 23 Projected Cash flow statement	48
Table 24 Total investment costs"000"	49
Table 25 Total Assets	49
Table 26 Sources of finance.....	50
Table 27 Summary of financial efficiency tests	50
Table 28 Calculation of payback period"000"	51
Table 29 Calculation of NPV at 17% D.F.....	52

PROJECT PROFILE ON PVC CELING MANUFACTURING

I. Executive summary

This project profile is prepared to assess the viability of running PVC ceiling 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 PVC ceiling 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 PVC ceiling factory. According to the latest data sourced from Ethiopian investment commission (EIC) there are more than 43 registered companies to invest on plastic manufacturing and other related products.

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. PVC resin, calcium carbonate, stabilizer, TiO_2 , Paraffin, whitener, CPE, and stearic acid. Most of the raw materials will be imported

The factory at full capacity operation can manufacture 312,000 M^2 non laminated PVC ceiling panel and 312,000 M^2 laminated PVC ceiling panel per year based on 260 working days and two shifts of 16 hours per day.

The total investment capital including establishing the factory is Birr 201.86 million. Out of the total investment capital, the owners will cover Birr 99.30 million (30 %) while the remaining

PROJECT PROFILE ON PVC CELING MANUFACTURING

balances amounting to Birr 231.70 million (70 %) will be secured from bank in the form of term loan.

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 34.50 Million in the first year to Birr 53.30 million at the end of the 10th year of operation. At the end of the 10th year of operation period the cumulative cash balance reaches Birr 521.42 million. 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 351 million Birr at 17%D.F. and the benefit-cost ratio of 1.55 at 17% D.F.

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

1. Background Information

1.1. Introduction

This document was undertaken to show PVC products sector investment profile in Addis Ababa. In compiling the report, information from Addis Ababa investment commission, Addis Ababa trade and industry development, Ethiopian custom commission and published sources have been augmented.

The production of plastic products in Ethiopia is minimal compared to its raw materials availability in the country. One of the main causes of this disparity is absence of potential investor involved in the area.

The provision of adequate plastic product is of fundamental importance to Ethiopian's present and future demand of construction, furniture and household products, etc. In Ethiopia, the demand for plastic product is expected to increase considerably in the next few decades as a result of increased population growth, urbanization and increasing income levels. This profile shows PVC ceiling manufacturing business.

1.2. Product Description

Polyvinyl-Chloride (PVC) is a plastic product which has matchless versatility. It effectively replaces wood, paper and metal in several applications. Polyvinyl-Chloride (PVC) can be made into ceiling panels. PVC waterproof ceiling panels are an ideal ceiling cladding solution when renovating or finishing ceilings. They can be used to cover wooden or artexed ceilings in living-room, bathroom or kitchen. The cladding panels are slotted together with a tongue and groove

PROJECT PROFILE ON PVC CELING MANUFACTURING

system, the tongue on one panel slides into the groove of the next panel and so on, covering the ceiling quickly and easily.

PVC ceiling panels are light in weight, easy to install, cost -effective and low on maintenance cost. PVC ceilings is continuously replacing conventional ceilings.

PVC ceiling panels are extensively used in the real estate / construction industry in Ethiopia. The demand for PVC ceiling panels in Ethiopia has been identified to continue to expand as the standard of living of the over 120 million population growing at the rate of 2.5% per annum continues to grow.

The proposed plant would produce 360 meters of PVC ceilings panels per hour. The Density of PVC ceiling panel to be produced would be is 1.6 g / cm³, Intersectional area of the PVC ceiling panel would be 466.6 mm² while the weight per meter is 0.75 kg / m. It is however expected that the plant would run at 70% capacity utilization and work three shifts of eight (8) hours each in 260 days per annum.

The basic raw materials required for PVC ceilings production are PVC Resin, Fillers (calcium carbonate), Stabilizers, Stearic acid (Lubricants), Paraffin, CPE and Titanium dioxide (for color) and they can be sourced locally.

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

PROJECT PROFILE ON PVC CELING MANUFACTURING

of 9°01'48''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 Mountain ranges bordering the Great Rift Valley. The total area of Addis Ababa is about 540 km² of which 18.2 km² are rural. Addis Ababa's built-up urban area spans 474 km². It is also the largest city in the world located in a landlocked country.

1.3.2. Demography of Addis Ababa

According to the CSA (2013) population projection, Ethiopia's total population reaches about 105 million people in 2022. Of the total population 22.9% (24 million people) live in urban areas. Ethiopia's urban population is expected to triple by 2037 (World Bank, 2015). Addis Ababa hosts an estimated 3,859,638 people. Currently, Addis Ababa is experiencing an annual growth rate of 3.8% and is estimated to reach 4,696,629 inhabitants by 2032 (CSA, 2015).

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

PROJECT PROFILE ON PVC CELING MANUFACTURING

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 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

PROJECT PROFILE ON PVC CELING MANUFACTURING

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 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. 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 braches of light manufacturing that Ethiopia prioritizes. As a result Addis Ababa completely

PROJECT PROFILE ON PVC CELING MANUFACTURING

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.
- 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.

PROJECT PROFILE ON PVC CELING MANUFACTURING

1.4.1. 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 PVC ceiling panel manufacturing 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 a local manufacturer of PVC 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.

2.1. The Supply of Polyethylene products

2.1.1. Local Polyethylene Products Supply

In 2005/06 there were 43 factories engaged in the production of plastic materials. Of this 3 are public owned and the remaining 40 are in private ownership (CSA report on Large and Medium Scale Manufacturing and Electricity Industries Survey, 2006). The major enterprises that produce plastic products are: Ethiopian Plastic Factory (EPF), Blue Nile P.P and Craft Paper Bags Manufacturing, MA-Thermoplastic and Melamine Industry, Dashen Plastic, Kurtu International, Oxford Industries Private Ltd, Inova Packaging and Unity Trading Plastic Factory. The annual domestic production of plastic materials has been presented in the table below.

Table 1 Local supply of polyethylene products in tons

	2005E.C	2006E.C	2007E.C	2008E.C	2009E.C	Average
Local polyethylene products	20,952	29,827	313,807	17,235	9,518	78,268

Sources: - CSA

2.1.2. Import

The supply of polyethylene products has been met both through import and domestic production. Although there is no apparent trend in the growth of import polyethylene products has continuously been appearing in the import statistics.

Table 2 Volume of imported polyethylene products (plastics) from 2012 to 2021 in kg

year	Gross Wt. (Kg)	Net Wt. (Kg)	CIF Value (ETB)	CIF Value (USD)	Total tax (ETB)	Total tax (USD)
2012	28,534,776	27,896,731	1,267,899,278	70,968,749	474,766,282	26,574,326
2013	31,097,413	30,381,771	1,414,602,839	75,244,432	482,489,348	25,664,191
2014	43,037,208	41,425,781	2,153,625,195	106,913,620	706,201,964	35,058,379
2015	58,215,418	55,512,363	2,885,739,010	138,857,618	884,341,653	42,553,251
2016	23,988,184	23,232,063	1,297,474,886	60,072,453	363,953,441	16,850,867
2017	52,275,514	50,823,348	4,134,964,515	170,747,062	802,310,943	33,130,208
2018	55,735,243	55,287,372	1,225,592,900	44,293,202	425,304,047	15,370,584
2019	6,406	6,018	1,351,526	46,269	439,742	15,054
2020	35,185,064	33,981,773	3,157,301,068	90,337,656	1,089,148,234	31,163,040
2021	48,759,970	47,975,570	5,208,066,396	117,510,523	1,391,503,384	31,396,737
Average	37,683,520	36,652,279	2,274,661,761	87,499,158	662,045,904	25,777,664

Source: Ethiopia customs Authority

As it has been shown in table 2 import of polyethylene products (plastics) which was 27,896,731 kg at the beginning of the period (2012) has decreased to 47,975,570 kg by the end of, 2021. A closer observation at the data set reveals that imported polyethylene products (plastics) over the study period has shown varying patterns. Based on the data obtained from Ethiopia customs Authority, the annual average volume of imported polyethylene products (plastics) is 36,652,279 kg from 2012 through 2021.

2.1.2.1. Forecasted future import of polyethylene products (plastics)

Table 3 Future forecast of import of polyethylene products (plastics) by trend adjusted exponential smoothing method

Year	Actual	Trend adjusted exponential smoothing
2012	27,896,731	
2013	30,381,771	
2014	41,425,781	
2015	55,512,363	
2016	23,232,063	
2017	50,823,348	
2018	55,287,372	
2019	6,018	
2020	33,981,773	
2021	47,975,570	
2022		47,975,570
2023		49,983,454
2024		51,991,338
2025		53,999,222
2026		56,007,106
2027		58,014,990
2028		60,022,873
2029		62,030,757
2030		64,038,641
2031		66,046,525
2032		68,054,409

Compiled: - by consultant

2.2. Polyethylene products (plastics) Demand Projection

The demand for polyethylene products (plastics) can be influenced by a number of factors. The growth of construction industry, size of population and its growth rate, disposable income, and preferences of Consumers 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 polyethylene products (plastics) on the basis of the following assumptions:

- i. Local supply of polyethylene products (plastics) assumed to be increased by 2.5% every year based on the average local supply of polyethylene products (plastics) which is, 78,268 tons per year.
- i. Per capital usage = $\frac{\text{Effective demand}}{\text{Urban population}}$
- ii. Effective demand = usage of domestic supply of polyethylene products (plastics) + Average imported polyethylene products (plastics) = 78,268 tons / year + 36,652/year = 114,920 tons /year.
- iii. Assume that Per capital usage of will be increased by 10% every year

Table 4 Projected Demand for polyethylene products (plastics) in Ethiopia for the coming ten years

Year	Forecasted demand for polyethylene products (plastics) based on 114,920 tons /year
2022	126,412
2023	139,053
2024	152,959
2025	168,254
2026	185,080
2027	203,588
2028	223,947
2029	246,341
2030	270,975
2031	298,073
2032	327,880

As it is indicated above the effective demand for polyethylene products (plastics) in 2022 is 126,412 Tons. This volume will increase to 327,880 tons in the year 2032.

2.3. Demand-Supply Gap Analysis

Table 5 Demand supply gap Analysis

Year	Domestic production in tons	Import in tons	Total supply in tons	Demand, in tons	Unsatisfied demand, if import is totally substitute by local production, in tons
2022	80,225	47,976	128,201	126,412	46,187
2023	82,230	49,983	132,213	139,053	56,823
2024	84,286	51,991	136,277	152,959	68,673
2025	86,393	53,999	140,392	168,254	81,861
2026	88,553	56,007	144,560	185,080	96,527
2027	90,767	58,015	148,782	203,588	112,821
2028	93,036	60,023	153,059	223,947	130,911
2029	95,362	62,031	157,393	246,341	150,979
2030	97,746	64,038	161,784	270,975	173,229
2031	100,190	66,046	166,236	298,073	197,883
2032	102,694	68,054	170,748	327,880	225,186

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

3. Engineering and technology

3.1. Engineering

3.1.1. Land, buildings and civil works

The required area (m²) and construction cost for the production facilities essential for the successful operation of the processing plant is shown in Table 5. A total area ready for the processing plant is 10,000 m² out of which 6,910 m² is to be covered by building while uncovered area of 3,090 m² is left 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 M² to 2,800.71 birr per M² respectively. Therefore, for the profile a land lease rate of birr 3,885 per M² 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 m² to 25,000.00 Birr per m². The total construction cost of buildings and civil works, at a rate of Birr 20,000 per m² is estimated at Birr 114.565 million. Therefore, the total cost of land lease and construction of buildings and civil works is estimated at Birr 153.41 million.

3.1.2. Plant layout

Plant layout is the plan of optimum arrangement of an industrial facility. It embraces the physical arrangement of various departments, machines, equipment and services for economical, efficient and effective functioning while planning the production of any goods.

PROJECT PROFILE ON PVC CELING MANUFACTURING

Table 6 Estimated construction costs

S/No	Descriptions	Total area in M ²	Estimated cost per square meter (in Birr)	Total estimated cost (in Birr)
1	Raw materials receiving and store	1,000	20,000.00	20,000,000.00
2	Raw materials preparation room	1,000	20,000.00	20,000,000.00
3	Laboratory building	50	20,000.00	1,000,000.00
4	Processing room	1,000	20,000.00	20,000,000.00
5	Finished product store	500	20,000.00	10,000,000.00
6	Packing materials store	10	20,000.00	200,000.00
7	Boiler room	50	20,000.00	1,000,000.00
8	Workshop room	300	20,000.00	6,000,000.00
9	Generator room	20	20,000.00	400,000.00
10	Power station room	20	20,000.00	400,000.00
11	Septic Tank	150	20,000.00	3,000,000.00
12	Administration office	100	20,000.00	2,000,000.00
13	Production and technical office	50	20,000.00	1,000,000.00
14	Toilet and shower for female	40	20,000.00	800,000.00
15	Room for cloth changing for female	40	20,000.00	800,000.00
16	Toilet and shower for male	40	20,000.00	800,000.00
17	Room for cloth changing for male	40	20,000.00	800,000.00
18	parking	1,000	5,000.00	5,000,000.00
19	For green area	1,500	2,500	3,750,000.00
20	For expansion	3,090	0.00	-
21	Fence	1,200 M*2	3,000.00	7,200,000.00
	Sub total			104,150,000.00
	Contingence 10%			10,415,000.00
	GRAND TOTAL			114,565,000.00

PROJECT PROFILE ON PVC CELING MANUFACTURING

Table 7 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

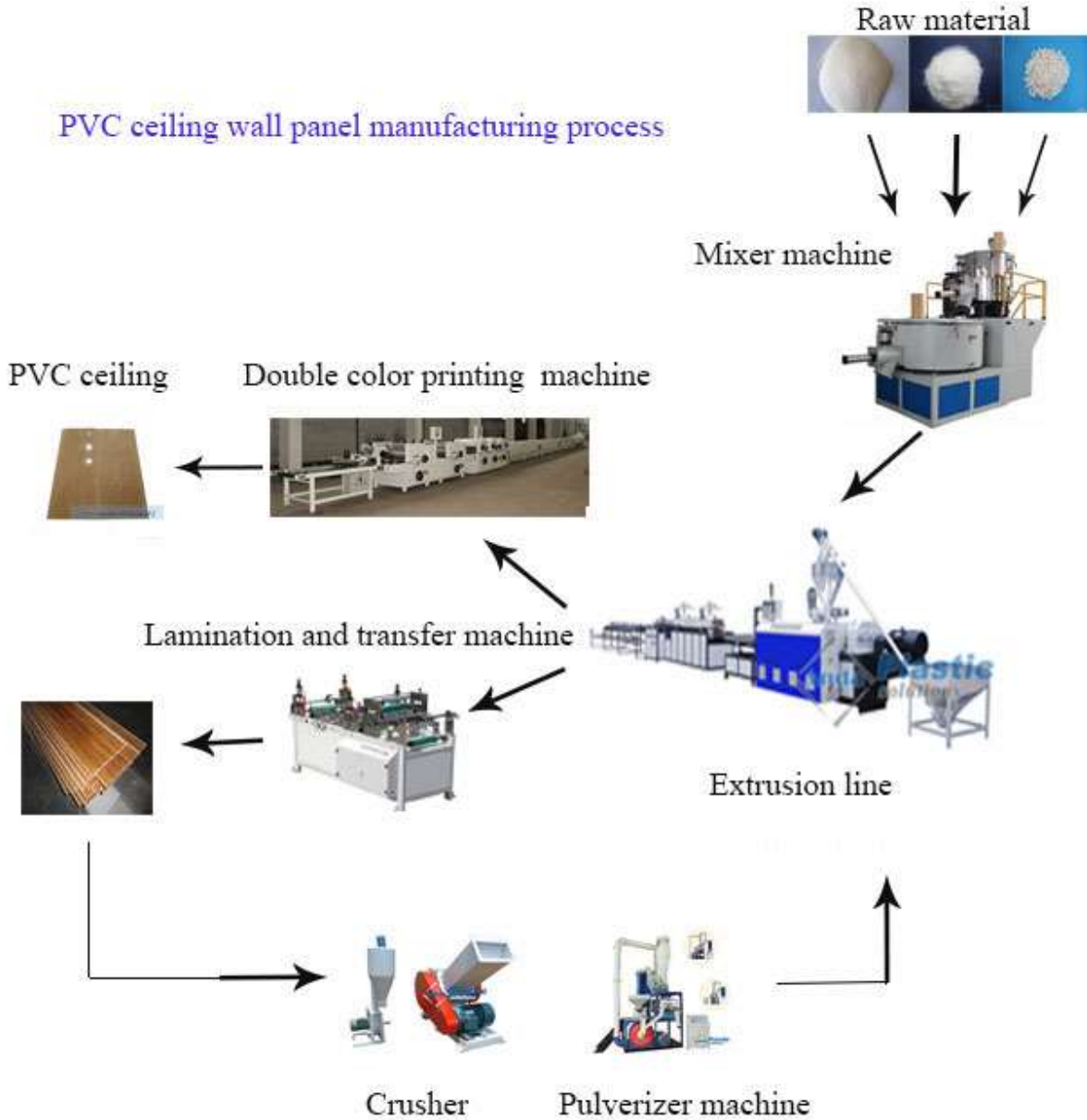
Table 8 Land lease floor price in Addis Abeba

S/No	Land level	Current land lease floor price per M ²	Current lease price per M ² (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

3.2. Technology

3.2.1. PRODUCTION PROCESS



3.2.2. RAW MATERIALS AND INPUTS

The principal raw material required for the production of Normal PVC ceiling panel and laminated PVC panel are PVC resin, calcium carbonate, stabilizer, Tio₂, Paraffin, whitener, CPE, and stearic acid. Most of the raw materials will be imported.

3.2.3. 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 plastic products. Potential environmental and social impacts due to the production of plastic 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.

3.2.4. PLANT CAPACITY

Raw materials to produces a number of products such as, Normal PVC ceiling panel and laminated PVC panel with a capacity of 2,400M² per day and we assume 260 working days per year The processing plant will start production at 70% of, which will grow to 80% in the second year and 90% capacity will be attained in the third year. Full capacity production will be attained in the fourth year and onwards.

3.2.5. SPECIFICATION | PVC CEILINGS

PVC interlocking ceiling panels and all other accessories are manufactured from PVC resins and auxiliary materials.

Applications:

Since it is a versatile & practical system, it can be installed in any indoor area, which requires a fixed, non-porous, non-fibrous and non-absorbent ceiling.

PVC Ceilings offer the following advantages:

- ✓ Quick and easy installation
- ✓ Lightweight
- ✓ Easy to clean
- ✓ Durable
- ✓ Anti-fungal
- ✓ Corrosion resistant
- ✓ No paint required
- ✓ Termite proof
- ✓ Water proof
- ✓ No maintenance
- ✓ Fire retardant (Classification of B/B1/B2 SANS 428)
- ✓ Cost efficient
- ✓ Efficient insulators in summer and winter due to the hollow core structure of the panels and can reduce energy consumption in the home due to its thermal resistance properties

3.3. Machinery lists

Different machinery is required for the processing plant based on the type of raw materials received and products proposed. The section-wise equipment required, their specifications and quantity for 2,400M² per day capacity processing plant are given below:

PROJECT PROFILE ON PVC CELING MANUFACTURING

Table 9 PVC ceiling panel extrusion line

S/No	Description	Quantity	Unit price (USD)	Total amount (USD)
1	Pvc ceiling extrusion line	2 set	50,000.00	100,000.00
2	Mould for pvc ceiling panel	2 set	15,000.00	30,000.00
3	Online lamination and hot stamping machine	2 set	35,000.00	70,000.00
4	300/600 PVC mixer with autoloader	1 set	25,000.00	25,000.00
5	PVC crusher	1 set	30,000.00	30,000.00
6	PVC pulverize	1 set	25,000.00	25,000.00
7	Vibration sieve with autoloader	1 set	11,800.00	11,800.00
8	Air compressor and air tank	1 set	11,500.00	11,500.00
9	Cooling tower with delivery pump	1 set	12,000.00	12,000.00
10	Freight			12,000.00
	TOTAL(IN USD)			<u>327,300.00 USD</u>
	Contingency (15%)			<u>49,095.00 USD</u>
	TOTAL			<u>376,395.00 USD</u>
	TOTAL IN ETHIOPIAN BIRR			<u>19,948,935.00ETB</u>

3.3.1. Lists of machinery suppliers

Company Name

PLAMAC ENGINEERING

Contact Person

MR.SADAF SAYED - C.E.O.

Tel No.

022 - 28488127 / 9819829014 / 8355889902

Fax No.

22 - 28488127

Address

Shop no. 3 near Corporation Bank beside Reliance Fresh Shakti Nagar, Dahisar (E), Mumbai - 400068, Maharashtra, INDIA.

Activities

Last 25 Yrs. Leading Mfgr. & Exporters Of Plastic Extrusion Machinery And PVC Pipe Dies. (Also Rigid PVC Pipe Unit, PVC Braided Hose Pipe Unit, Extrusion Dies, Tub Traction, PVC Compounding Unit Manufacturer, High Speed Mixer Manufacturer, Acrylic Extrude

4. PVC Ceiling manufacturing factory 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

Table 10 Annual manpower costs

S/No	Description	Number of persons	Salary in birr	
			monthly	annually
1	General manager	1	35,000.00	420,000.00
2	executive secretary	1	10,000.00	120,000.00
5	Manager- admin. and finance	1	25,000.00	300,000.00
7	accountant	1	20,000.00	240,000.00
10	cashier	1	7,500.00	90,000.00
13	guards	5	3,500.00	210,000.00
14	messenger and cleaner	1	3,500.00	42,000.00
15	driver ii	4	7,500.00	360,000.00
16	production and technical head	1	30,000.00	360,000.00
21	operator	3	7,500.00	270,000.00
22	assistant machine operator	6	5,000.00	360,000.00
23	senior mechanics	3	12,000.00	432,000.00
25	senior electrician	3	12,000.00	432,000.00
26	shift electrician	3	10,000.00	360,000.00
27	shift mechanic	3	10,000.00	360,000.00
28	store keeper	1	10,000.00	120,000.00
29	manager- commercial	1	20,000.00	240,000.00
30	purchaser	1	10,000.00	120,000.00
31	sales- manager	1	15,000.00	180,000.00
32	sales clerk	1	7,500.00	90,000.00
	Total	42	301,000.00	5,106,000

5. Financial Analysis

5.1. General

The financial analysis evaluation of PVC ceiling panel manufacturing project, under consideration has been carried out for PVC ceiling panel Manufacturing cost estimates of the envisaged 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), pre-operation capital expenditures and working capital, while operating and maintenance costs comprise current expenses related to material inputs, labour, utility, repair and maintenance costs, 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, 10 years or 20 semiannual equal installments.
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 most of the capital assets are assumed to be depreciated, debts recovered and pay-back period accomplished

PROJECT PROFILE ON PVC CELING MANUFACTURING

4. It is assumed that the project will be implemented within two years. In year 1 the project is expected to undertake construction works. Purchase machinery and vehicles to start up production activity. Production activity will be started with the capacity of 70% and years 2, 3 & 4 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.

5.2. Fixed capital investment costs

Table 11 Fixed capital 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 ²	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	6,910	lump sum	114,565,000.00	
	Sub total				153,415,000.00	
3	Machineries	set	2	Lump sum	19,948,935.00	
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	
	SUB TOTAL				32,448,935.00	
	Fixed capital investment costs				185,863,935.00	
8	pre-operational expenses				2,000,000.00	
	Working capital				13,999,000.00	
	TOTAL INVESTMENT COSTS				201,862,935.00	

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, and are free of interest payment.

5.4. Project Financing

Fixed capital investment costs, pre-operation capital expenditures and working capital requirements are assumed to be financed by equity capital of the project promoter and through loans of short and long-term credits.

As stated earlier even through the project might obtain loans under different terms are 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 project will be able to obtain about 70% of the total investment costs through bank loans that will have to be repaid back within 10 years, during which time interest will be paid on the loan. The remaining balance, 30% of the total investment costs are expected to be covered by equity contribution of the project promoter.

5.5. Operating and Maintenance Costs

It is deemed essential to make realistic forecasts of the plant costs, operating costs and the total production costs in order to establish the amount of working capital requirements and compute project benefits. The costs have been calculated as total costs and all cost elements required for computation have been estimated and scheduled in line with the envisaged capacity build-up program of the project. The total production costs are divided in to four major categories, namely direct costs, operating costs, financial costs and depreciation costs. The direct costs include material inputs, utility, manpower plant overheads as well as repair and maintenance expenses, while operating costs include factory costs, administrative over heads, and advertisement, Sales and distributions costs.

5.6. Production costs

As it is depicted in Table 18 major categories of the total production costs are assembled into the following cost elements.

5.6.1. Material inputs

In the project under study the basic material inputs are pvc resin, Calcium carbonate, Stabilizers, Tio₂, paraffin, whitener, CPE, Stearic acid 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 61.30 million per annum. Because of the specific nature of the given project which is based predominantly on imported raw material utilization almost 100 % of the material inputs is attributed to purchase of raw materials.

PROJECT PROFILE ON PVC CELING MANUFACTURING

Table 12 Material input '000'

	Capacity utilization		70 %	80 %	90 %	100 %
	Period (in years)		Year 1	Year 2	Year 3	Year 4
S/No	Item description	Unit price	In Birr	In Birr	In Birr	In Birr
1	Pvc resin	70	25,480	29,120	32,760	36,400.00
2	Calcium carbonate	8.40	4,586	5,242	5,897	6,552.00
3	Stabilizer	140	1,835	2,097	2,359	2,620.80
4	Tio ₂	136	693	792	891	990.08
5	Paraffin	104	288	329	370	411.00
6	Whitener	1,542	561	641	722	801.84
7	CPE	96	559	639	719	798.72
8	Stearic acid	90	328	374	421	468.00
	Sub total		34,330	39,234	44,138	49,042.44
	For Lamination		8,582	9,808	11,035	12,260.60
	Grand total		42,912	49,042	55,173	61,303.04

PROJECT PROFILE ON PVC CELING MANUFACTURING

5.6.2. 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 6.09 million.

Table 13 Utilities of the projects

Utility*000*Birr		Start-up			Full Capacity
		70 %	80 %	90 %	100 %
Capacity utilization		70 %	80 %	90 %	100 %
Project year		1	2	3	4
Item description	Unit of measurement				
Fuel					
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		1,256	1,256	1,256	1,256
Change of oil and lubricant	10% of the fuel consumption	126	126	126	126
Sub-Total		1,382	1,382	1,382	1,382
Electricity	260days*24 hrs*650kwh* 1.00Birr/kwh	2,839	3,245	3,650	4,056
Sub- Total		2,839	3,245	3,650	4,056
Water	365days*100m ³ /day*15 Birr/m ³	384	438	493	548
Sub -Total		384	438	493	548
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		103.48	103.48	103.48	103.48
TOTAL		4,708.48	5,168.48	5,628.48	6,089.48

5.6.3. Repair and maintenance

In the expenses under this title have been considered cost estimates required for annual repair and maintenance works including spare parts expenses. These costs include the annual repair expenses of structures and civil works as well as repair and maintenance expenses of machinery and equipment including accessory and general service facilities. The repair and maintenance costs have been assumed to rise in the range of (0.5-2) % and (0.5-2) % respectively, depending on the service life of the fixed assets

5.6.4. Salaries and wages

The costs of salaries have been calculated in accordance with the manning list proposed under the “organization and Management” section of this study. In the estimation of salaries and wages, the official minimum wage has been taken in to account. At full capacity operation the costs of salaries and wages will amount to Birr 5.106 Million. To motivate employees with financial incentives, other costs related to salaries and wages such as fringe benefits (life insurance, medication, travel and per-diem and sundry expenses) have been added to the costs salaries and wages at the following rates:

5.6.5. 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.

PROJECT PROFILE ON PVC CELING MANUFACTURING

Table 14 Overhead costs

Direct Overhead”000”Birr		Year 1	Year 2	Year 3	Year 4
Annual land lease Payment		5,550	5,550	5,550	5,550
Insurance					
Building and Civil works	0.10%	113.10	113.10	113.10	113.10
Machinery and Equipment	0.20%	94.50	94.50	94.50	94.50
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		6,085.60	6,085.60	6,085.60	6,085.60
Administration Overhead “000’ Birr					
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		108.00	108.00	108.00	108.00
GRAND TOTAL		6,193.60	6,193.60	6,193.60	6,193.60

5.6.6. 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 portion 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 fixed capital and the working capital requirements and the project implementation schedule.

5.6.7. Depreciation

Depreciation charges should be taken in to account as part of the total production costs in order to calculate the total production costs, the net working capital and the gross or net-profit. For the given project under reference, the fixed assets and the pre-production capital expenditures have been depreciated and amortized respectively on “a straight line” depreciation method basis using the following rates of the original acquisition costs of the assets:

The rationale uses for the estimation of the depreciation and the amortization rates is based on the expected service life of the assets and repayment capacity of the project under consideration. Based on the above charging rates and consideration of the above facts, the total annual depreciation cost at full capacity operation have been estimated at Birr 11.12 million.

PROJECT PROFILE ON PVC CELING MANUFACTURING

Table 15 Depreciation costs

Period			Start-up			
Capacity utilization			70 %	80 %	90 %	100 %
Project year			1	2	3	4
Item description	Original Value					
Structure and civil works	114,565,000.00	5% of original value	5,728	5,728	5,728	5,728
Machinery and equipment	19,948,935.00	15 % of original value	2,992	2,992	2,992	2,992
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
Total			11,120	11,120	11,120	11,120

5.7. PROJECT COSTS

Project capital investment costs are the sum of fixed capital investment (fixed investment plus pre-production capital expenses) and net working capital at full capacity, with fixed capital constituting the resources required for land acquisition, construction of structures and civil works, purchase, import and installation of production machinery and equipment and general service facilities, whereas the working capital corresponding to the resources needed for operation of the project totally or partially.

In the assumptions used to compute the working capital, basically care has been taken to cover of consumable materials inventory (material inputs, spare parts stock, work-in progress and products ready for delivery) delivered products.

5.8. Project benefits

For financial analysis and evaluation of the given project the current raw materials buying price and PVC ceiling panel selling price at the project gate has been taken as a basis. Consequently, based on the recent market survey, raw materials buying price per kg at the nearby market points is shown in Table 14 and delivery price of the PVC ceiling panel per square meter at the project gate is also shown 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.

Table 16 Sales Revenue in quantity

	Capacity utilization		70 %	80 %	90 %	100 %
	Period (in years)		Year 1	Year 2	Year 3	Year 4
S/No	Item description	Unit /M				
1	PVC ceiling panel normal	M ²	218,400	249,600	280,800	312,000
2	PVC ceiling panel laminated	M ²	218,400	249,600	280,800	312,000

Table 17 Sales Revenue in Birr "000"

	Capacity utilization			70 %	80 %	90 %	100 %
	Period (in years)			Year 1	Year 2	Year 3	Year 4
S/No	Item description	Unit /M	Unit Price				
1	PVC ceiling panel normal	M ²	250	54,600	62,400	70,200	78,000
2	PVC ceiling panel laminated	M ²	400	87,360	99,840	112,320	124,800
	TOTAL			141,960	162,240	182,520	202,800

5.9. Break Even point and ROI

5.9.1. 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 = 141,960,000 Birr

Average Unit selling price = 325 Birr/m²

$$\text{BEP (sales)} = \frac{\text{Annual sales} \times \text{Annual fixed costs}}{\text{Annual sales} - \text{Annual variables costs}} = \frac{141,960,000 \times 38,670,000}{141,960,000 - 54,688,000}$$

BEP (Sales) = 62,902,113 Birr

B. BEP production

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

$$\text{BEP production} = 62,902,113 / 325 = 193,545 \text{ m}^2$$

$$\begin{aligned} \text{c. BEP percentage} &= \frac{\text{Annual fixed costs} \times 100\%}{\text{Annual sales} - \text{Annual variables costs}} \\ &= \frac{38,670,000 \times 100\%}{141,960,000 - 54,688,000} \\ &= 44.30\% \end{aligned}$$

5.9.2. Return on investment

Return on investment = Net profit /Total capital requirement

$$= 59,183,000/201,862,935$$

$$= 29.32\%$$

The return on owners' investment (ROOI)

= Annual net profit /owners' investment

$$= 59,183,000/60,558,881$$

$$= 97.72\%$$

5.10. Project benefits

For financial analysis and evaluation of the given project, the current raw price, and packing materials buying price and final product price at the project gate has been taken as a basis. Consequently, based on the recent market survey, price has been indicated in table 12 and 20.

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 21 and Annex Table 23, 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 202 million Birr per annum. The Net Income Statement shows a steady growth of gross profit starting from 48.6 million Birr in year 1 reaching the peak of 106.98 million Birr in year 10. In its 10 years of manufacturing activities, the project is expected to generate

a total net profit of 570.99 Birr and contribute 307.46 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 23 of “Cash Flow Statement” shows the positive cumulative cash balance of Birr 521.41million 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 28 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 29 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 301 million Birr at 17%D.F. and the benefit-cost ratio of 1.55 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 44.30% operation of the estimated full capacity

In addition to this, finally, summary of financial efficiency tests have been conducted in Annex table 27, 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

PROJECT PROFILE ON PVC CELING MANUFACTURING

Table 18 Total annual production costs '000'

PERIOD	START			FULL CAPACITY						
	60 %	75 %	90 %	100%						
Project Year	1	2	3	4	5	6	7	8	9	10
Cost category										
I. Material inputs	42,912	49,042	55,173	61,303	61,303	61,303	61,303	61,303	61,303	61,303
II. Labor	5,106	5,106	5,106	5,106	5,106	5,106	5,106	5,106	5,106	5,106
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 costs	2,788	2,788	2,788	2,788	2,788	2,788	2,788	2,788	2,788	2,788
VI Direct overheads	6,086	6,086	6,086	6,086	6,086	6,086	6,086	6,086	6,086	6,086
A. Direct Production costs	61,601	68,191	74,782	81,373	81,373	81,373	81,373	81,373	81,373	81,373
VII. Administration over head	108	108	108	108	108	108	108	108	108	108
IX. Sales expense and promotion expenses 3 % of sales revenue	4,259	4,867	5,476	6,084	6,084	6,084	6,084	6,084	6,084	6,084
B. Operating costs	65,967	73,166	80,365	87,565	87,565	87,565	87,565	87,565	87,565	87,565
Interest	16,250	15,301	14,244	13,065	11,749	10,283	8,648	6,825	4,793	2,527
Depreciation	11,120	11,120	11,120	11,120	10,620	10,520	8,924	5,728	5,728	5,728
C. Total production costs	93,337	99,587	105,729	111,750	109,934	108,368	105,137	100,118	98,086	95,820

PROJECT PROFILE ON PVC CELING MANUFACTURING

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 19 Calculation of working capital

Cost category	Minimum Days of coverage	Coeff-icient 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	6,597	7,317	8,037	8,757	8,757	8,757	8,757	8,757	8,757	8,757
B. Inventory												
1. Material inputs	26	10	4,291	4,904	5,517	6,130	6,130	6,130	6,130	6,130	6,130	6,130
2. Spare parts	90	4	697	697	697	697	697	697	697	697	697	697
3. Work under process	2	130	474	525	575	626	626	626	626	626	626	626
4. Product ready for delivery	8	32.5	2,003	2,206	2,409	2,612	2,612	2,612	2,612	2,612	2,612	2,612
C. Cash on hand	90	4	4,699	4,814	4,929	5,045	5,045	5,045	5,045	5,045	5,045	5,045
D. Current assets			18,761	20,463	22,164	23,866	23,866	23,866	23,866	23,866	23,866	23,866
Current liabilities												
A. A/p	26	10	4,762	5,421	6,080	6,739	6,739	6,739	6,739	6,739	6,739	6,739
Working capital												
A. Net working capital			13,999	15,042	16,084	17,127	17,127	17,127	17,127	17,127	17,127	17,127
B. Increasing in working capital			13,999	1,042	1,042	1,043	0	0	0	0	0	0

PROJECT PROFILE ON PVC CELING MANUFACTURING

ANNEX V

PROJECTED SALES REVENUE

Table 20 projected sales revenue

Period		U/m	Quantity at full capacity	Unit price	Start up			Full capacity						
					70 %	80 %	90 %	100 %						
Item description	Product mix													
Project year					1	2	3	4	5	6	7	8	9	10
	PVC ceiling panel normal	M ²	312,000	250	54,600	62,400	70,200	78,000	78,000	78,000	78,000	78,000	78,000	78,000
	PVC ceiling panel laminated	M ²	312,000	400	87,360	99,840	112,320	124,800	124,800	124,800	124,800	124,800	124,800	124,800
GRAND TOTAL					141,960	162,240	182,520	202,800	202,800	202,800	202,800	202,800	202,800	202,800

PROJECT PROFILE ON PVC CELING MANUFACTURING

ANNEX VI

PROJECTED NET INCOME STATMENT

Table 21 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	141,960	162,240	182,520	202,800	202,800	202,800	202,800	202,800	202,800	202,800
Less total production costs	93,337	99,587	105,729	111,750	109,934	108,368	105,137	100,118	98,086	95,820
Gross profit	48,623	62,653	76,791	91,050	92,866	94,432	97,663	102,682	104,714	106,980
Tax	17,018	21,929	26,877	31,868	32,503	33,051	34,182	35,939	36,650	37,443
Net profit	31,605	40,724	49,914	59,183	60,363	61,381	63,481	66,743	68,064	69,537
Accumulated undistributed profit	31,605	72,329	122,244	181,426	241,789	303,170	366,651	433,394	501,458	570,995

PROJECT PROFILE ON PVC CELING MANUFACTURING

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

Table 22 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	141,304	133,055	123,858	113,602	102,168	89,418	75,202	59,351	41,678	21,972
2. Outstanding balance at end of year										
a. First year loan	141,304	133,055	123,858	113,602	102,168	89,418	75,202	59,351	41,678	21,972
Total										
A. Debt service										
1. First year Loan										
a. Interest	16,250	15,301	14,244	13,065	11,749	10,283	8,648	6,825	4,793	2,527
b. Repayment of principal	8,249	9,198	10,255	11,435	12,750	14,216	15,851	17,673	19,706	21,972

PROJECT PROFILE ON PVC CELING MANUFACTURING

ANNEX VIII
CASH-FLOW STATEMENT
FOR
FINANCIAL PLANING

Table 23 Projected Cash flow statement

Period	Start up				Full capacity					
	70%	80%	90%	100%						
Project year	1	2	3	4	5	6	7	8	9	10
Item description										
A. Cash - inflow	348,585	163,942	184,222	204,502	202,800	202,800	202,800	202,800	202,800	202,800
1. Financial resource (total)	206,625	1,702	1,702	1,702						
2. Sales revenue	141,960	162,240	182,520	202,800	202,800	202,800	202,800	202,800	202,800	202,800
B. Cash – outflow	314,109	121,296	133,443	145,635	144,567	145,115	146,246	148,002	148,714	149,507
1. Total assets schedule including replacement	206,625	1,702	1,702	1,702						
2. Operating costs	65,967	73,166	80,365	87,565	87,565	87,565	87,565	87,565	87,565	87,565
3. Debt service (total)										
a. Interest	16,250	15,301	14,244	13,065	11,749	10,283	8,648	6,825	4,793	2,527
b. Repayment	8,249	9,198	10,255	11,435	12,750	14,216	15,851	17,673	19,706	21,972
4. Tax	17,018	21,929	26,877	31,868	32,503	33,051	34,182	35,939	36,650	37,443
C. Surplus (Deficit)	34,476	42,646	50,779	58,867	58,233	57,685	56,554	54,798	54,086	53,293
D. Cumulative cash balance	34,476	77,122	127,901	186,768	245,001	302,686	359,240	414,038	468,124	521,417

PROJECT PROFILE ON PVC CELING MANUFACTURING

ANNEX XII
TOTAL INVESTMENT COSTS

Table 24 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	185,864											
b. Replacement												
2. Pre-operational capital expenditure	2,000											
3. Working capital increase	13,999	1,042	1,042	1,043								
Total investment costs	201,863											

ANNEX XIII
TOTAL ASSETS

Table 25 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	185,864											
❖ Cost of land												
d. Replacement												
2. Pre-operational capital expenditure	2,000											
3. Current assets increase	18,761	1,702	1,702	1,702								
Total assets	206,625	1,702	1,702	1,702								

PROJECT PROFILE ON PVC CELING MANUFACTURING

ANNEX XIV SOURCES OF FINANCE

Table 26 Sources of finance

Period	Start up			Full capacity							
	1	2	3	4	5	6	7	8	9	10	Total
Project year											
Sources of finance											
1. Equity capital	60,559	1,042	1,042	1,043							
2. Loan capital	141,304										
3. Current liabilities	4,762	659	659	659							
Total finance	206,625	1,701	1,701	1,702							

ANNEX XI SUMMARY OF FINANCIAL EFFECIENCY TESTS

Table 27 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	34%	39%	42%	45%	46%	47%	48%	51%	52%	53%
2. Net profit : Revenue	22%	25%	27%	29%	30%	30%	31%	33%	34%	34%
3. Net profit : initial investment	22%	29%	35%	41%	42%	42%	44%	46%	47%	48%
4. Net profit : Equity	52%	66%	80%	93%	95%	96%	100%	105%	107%	109%
5. Gross profit : Initial investment	34%	44%	54%	63%	64%	65%	68%	71%	73%	74%
6. Operating costs : Revenue	46%	45%	44%	43%	43%	43%	43%	43%	43%	43%

PROJECT PROFILE ON PVC CELING MANUFACTURING

ANNEX XV
CALCULATIONS OF PAYBACK PERIOD

Table 28 Calculation of payback period”000”

Year	Amount Paid Back			Total investment	End of year
	Net Profit	Depreciation	Total		
1	31,605	11,120	42,725	201,863	-159,138
2	40,724	11,120	51,844	1,042	-108,336
3	49,914	11,120	61,034	1,042	-48,344
4	59,183	11,120	70,303	1,043	+20,916

PROJECT PROFILE ON PVC CELING MANUFACTURING

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

Table 29 Calculation of NPV at 17% D.F.

Project year	Gross Revenue	1/(1+i) ⁿ At 17%	Present value at 17%	Project costs			
				Total investment	Operating costs	Total	Present value at 17%
1	141,960	0.854701	121,333	201,863	65,967	267,830	228,915
2	162,240	0.730514	118,519	1,042	73,166	74,208	54,210
3	182,520	0.624371	113,960	1,042	80,365	81,407	50,828
4	202,800	0.53365	108,224	1,043	87,565	88,608	47,286
5	202,800	0.456111	92,499		87,565	87,565	39,939
6	202,800	0.389839	79,059		87,565	87,565	34,136
7	202,800	0.333195	67,572		87,565	87,565	29,176
8	202,800	0.284782	57,754		87,565	87,565	24,937
9	202,800	0.243404	49,362		87,565	87,565	21,314
10	202,800	0.208037	42,190		87,565	87,565	18,217
Total			850,473				548,958

A. Benefit- cost ratio At 17% D.F. = 1.55

B. NPV At 17% D.F. = 301,515,000 Birr