



## Pre-feasibility Study

# BIODEGRADABLE PLASTIC BAGS MANUFACTURING UNIT

February 2021

“The figures and financial projections are approximate due to fluctuations in exchange rates, energy costs, and fuel prices etc. Users are advised to focus on understanding essential elements such as production processes and capacities, space, machinery, human resources, and raw material etc. requirements. Project investment, operating costs, and revenues can change daily. For accurate financial calculations, utilize financial calculators on SMEDA’s website and consult financial experts to stay current with market conditions.”

**Small and Medium Enterprises Development Authority**  
Ministry of Industries and Production  
Government of Pakistan

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## 1 DISCLAIMER

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### ***Document Control***

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## 2 EXECUTIVE SUMMARY

In Pakistan plastic bags are used due to a number of factors such as low weight, durability and many other usage factors such as convenience in packing food stuff and other multifarious items besides low cost to the customers. Due to these factors, there is tremendous rise in their use in day-to-day life and at the same time unethical disposal of the used shopping bags causes pollution and health hazards. Dumping of used plastic shoppers are notorious for choking sewer, open drainage system, spoiling sanitation and creating an overall unaesthetic view of environment. The practice of burning at dumpsites produces dioxins and furans, inhaled by human beings and due to their extreme toxicity; they are creating serious health hazards. Under universally accepted international requirement, there should be no dioxins and furans present in the air. Because of polyethylene the raw material being non-degradable in nature, the plastic bags continue to be present in the environment and contribute their undesirable impacts for prolonged period. As biodegradable bags are environment friendly, therefore it is proposed that use of biodegradable bags should be encouraged. **Bio-degradable Plastic Bags manufacturing unit** is proposed to be located at semi-urban areas.

Products include **Pure Bio-degradable Plastic Bags, Recycled Bio-degradable Plastic Bags.**

Installed capacity of **1,000 Kg** at initial capacity utilization of **45%** on single-shift basis.

Total Cost Estimates is **Rs.5,810,669** with fixed investment **Rs.3,198,575** and working capital **Rs.2,612,094**

Given the cost assumptions, IRR and payback are **36%** and **3.47 years** respectively

The most critical considerations or factors for success of the project are:

- Most significant consideration
  - Availability of continuous power supply
  - Securing a regular source of raw material at competitive prices
  - Machine operators with technical knowledge.
  - Credit Recovery
  
- Equally important factor
  - Background Experience
  - Marketing Skill
  - Product size and quality with respect to market demand

### 3 INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need based capacity building programs of different types in addition to business guidance through help desk services.

### 4 PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to facilitate potential investors in **Bio-degradable Plastic Bags manufacturing unit** by providing them with a general understanding of the business with the intention of supporting potential investors in crucial investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business set-up and its successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form basis of any Investment Decision.

## 5 BRIEF DESCRIPTION OF PROJECT & PRODUCT

The plastic packaging sector is growing industrial segment in Pakistan. The increased trade and commercial activity in consumer and industrial sectors, changing lifestyle, increased population and growth in retail business has created a great demand for supply of plastic bags as most of the consumer sector use plastic bags while delivering their products to the customer.

Pakistan-Environmental Protection Agency (PEPA) conducted a study that showed that in the early 1990s as many as 12 billion plastic bags a year were produced in Pakistan. According to Environment Protection Department (EPD), the average consumption of plastic bags in Pakistan is around 55 billion bags per year. Today 200,000 people directly and 600,000 indirectly involved in the production of plastic bags in more than 8,000 manufacturing units spread across the country, mostly Lahore, Karachi and Peshawar. The average daily production capability of these units ranges between 250kg and 500 kg.

Due to environmental pollution problems, Government of Pakistan has imposed a ban on non-biodegradable plastic bags like other countries to encourage Bio-degradable Plastic Bags<sup>1</sup>. The production of biodegradable plastic bags does not require a major change of machinery or process. It involves mixing a small quantity of a petroleum based compound or olefin with the polyethylene resins. The olefin introduces biodegradation characteristics to the plastic, which are activated when the plastic comes in contact with air. From there on, bacteria can decompose the weak molecular structure of the plastic.

Following key parameters must be addressed as per pre-feasibility study under preparation:

- **Technology:** This proposed unit including hopper, extruder, cooling tower, sealing and cutting machines which will produce plastic bags of different sizes using pure and recycled raw material. To make biodegradable plastic bag, an additive will be used which contains a mixture of salts that is added to raw plastic during the process. This process turns ordinary plastic at the end of its useful life, in the presence of oxygen, into a material with a different molecular structure. At the end of the process, it is no longer a plastic, and has changed into a material which is biodegradable (by bacteria and fungi) in the open environment.
- **Location:** This unit can be located in or near markets, industrial areas in Pakistan, especially in semi-urban areas like Jafarabad, Haripur, Bahawalpur, Nawabshah,

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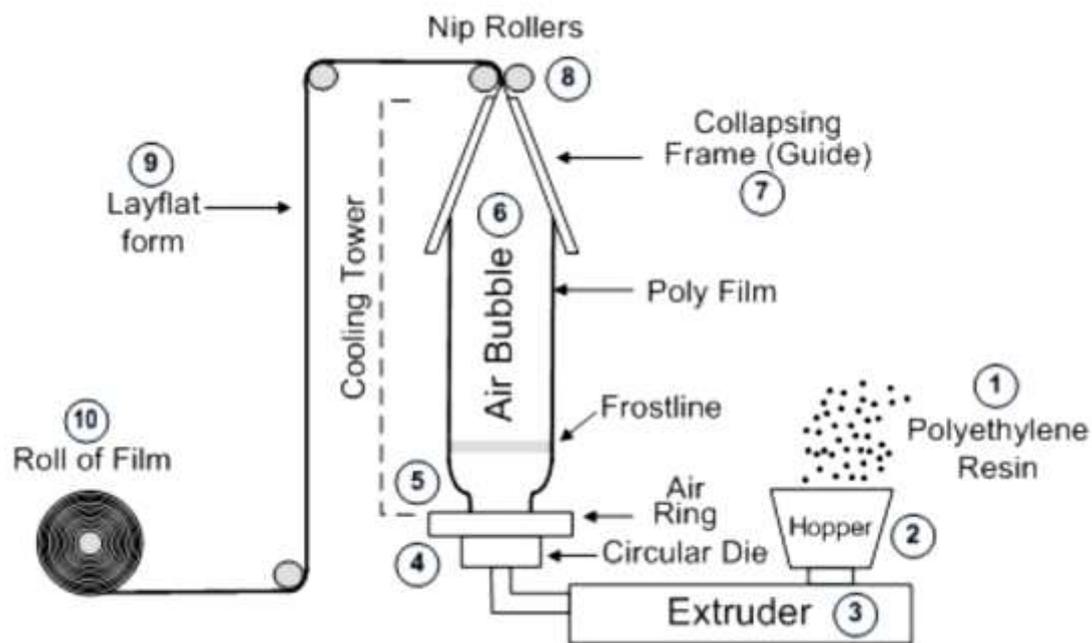
<sup>1</sup> <http://www.environment.gov.pk/>

Bhimber and Gilgit where competition is less as compared to the urban areas like Karachi, Lahore and Islamabad.

- **Product:** This unit would process Bio-degradable Plastic Bags of various sizes to facilitate different shopping purposes.
- **Target Market:** The target customers will be distributors and retailers of consumer goods, which includes grocery stores, bakeries, shopping malls, hardware shops, boutiques, garment shops, etc.
- **Employment Generation:** The proposed project will provide direct employment to **07 people**. Financial analysis shows the unit shall be profitable from the very first year of operation.

## 5.1 Production Process Flow

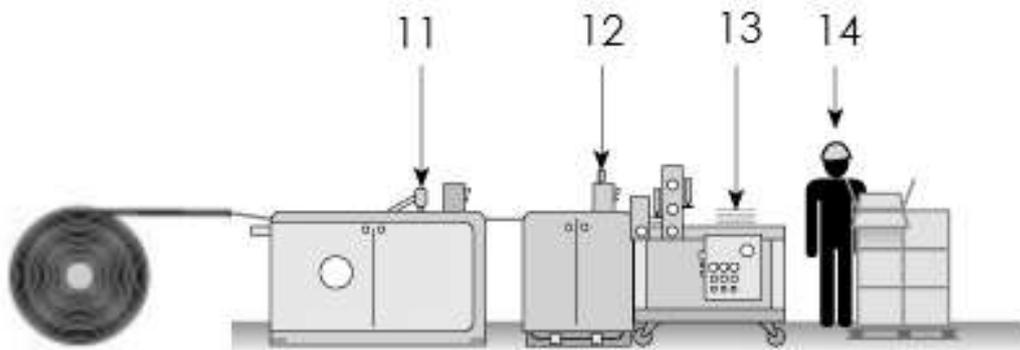
### Stage 1



1. The machine operator pours the polyethylene resin into the hopper along with the additives  $d_2w$  (for converting it into bio-degradable) and master batch (for color adding purposes)
2. The hopper feeds the resin into the extruder
3. Extruder melts the resin into molten form under  $200\text{ }^{\circ}\text{C}$  maintained temperature
4. The molten poly flows evenly up and over the circular die
5. The machine operator grabs the molten poly and pinches it together
6. Air ring blows air upward, to avoid sticking together and solidify the molten poly

7. The guides gradually flatten the solidified poly
8. Nip rollers grab the solidified film at the top of cooling tower
9. The lay flat film travels over a series of rollers
10. The film is wound on a roll and then taken out of line for further processing at a converting facility

## Stage 2



10. The wound film on a roll taken in of line for further processing
11. Seals bottom of the tubes
12. Separator separates the tubes
13. Pile up stacks of plastic bags
14. Packer inspects product and places in carton

## 5.2 Installed and Operational Capacities

The operational capacity of this unit is 1,000 Kg per day. The assumed operational capacity during the first year of operations is 45% on single shift basis with annual increase of 5%.

## 6 CRITICAL FACTORS

The main critical success factors that affect the decision to invest in the proposed business setup are:

- Availability of continuous power supply
- Securing a regular source of raw material at competitive prices

- Machine operators with technical knowledge
- Credit Recovery
- Background Experience
- Marketing Skill
- Product size and quality with respect to market demand

## 7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

For the success of the project, it is important to find a location preferably in an industrial cluster where proper infrastructure is available. All industrial clusters in Karachi, Hub / Lasbela, Hyderabad, Lahore, Gujranwala, Multan, Rawalpindi, Quetta and Peshawar etc. are suitable to house the project. Establishing the unit in large cities would have an advantage of being close to large buyers, which may lead to consistent orders and referrals but the competition in big cities are also high, therefore it is advisable to start this type of unit in second tier cities where competition is relatively less.

## 8 POTENTIAL TARGET CUSTOMERS / MARKETS

The target customers will be any distributors and retailers of consumer goods, which includes grocery stores, bakeries, shopping malls, hardware shops, boutiques, garment shops, etc.

## 9 PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of this project. Various costs and revenue related assumptions along with results of the analysis are outlined in this section.

### 9.1 Project Economics

The capacity utilization during year one is worked out at 45% with 5% increase in subsequent years up to the maximum capacity utilization of 90%.

The following table shows internal rate of return, payback period and net present value of the proposed venture:

**Table 9.1: Project Economics**

Description	Details
Internal Rate of Return (IRR)	36%
Payback Period	3.47 years

Net Present Value	Rs.2,977,667
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## 9.2 Project Financing

Following table provides details of the equity required and variables related to bank loan:

**Table 9.2: Project Financing**

Description	Details
Total Equity (100%)	Rs.5,810,669
Debt (0%)	-

## 9.3 Project Cost

Following fixed and working capital requirements have been identified for operations of the proposed business:

**Table 9.3: Project Cost**

Description	Amount (Rs.)
<b>Capital Cost</b>	
Plant and Machinery	2,400,000
Furniture & Fixture	100,000
Office Equipment	168,000
Office Vehicles	150,000
Pre-operating Cost	330,575
Legal, Licensing and Training Costs	50,000
<b>Total Capital Cost</b>	<b>3,198,575</b>
<b>Working Capital</b>	
Equipment Spare Part Inventory	120,000
Raw Material Inventory	696,094
Up-front Building Rent	1,296,000
Cash	500,000
<b>Total Working Capital</b>	<b>2,612,094</b>

<b>Total Project Cost</b>	<b>5,810,669</b>
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#### 9.4 Space Requirement

The space requirement for the proposed Bio-degradable Plastic Bag unit is estimated as follows, considering various facilities which includes management building and factory. Details of space requirement and cost related to building rent is given below:

**Table 9.4: Space Requirement**

Description	Estimated Area (Sqft)	Total Rent (Monthly) (Rs.)	Total Rent (Yearly) (Rs.)
Rented Space	2,500	108,000	1,296,000
<b>Total</b>			<b>1,296,000</b>

#### 9.5 Machinery & Equipment Requirement

Plant, machinery and equipment for the proposed project are stated below:

**Table 9.5: Machinery & Equipment**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Plastic Bags Manufacturing Unit (Imported)	1	1,800,000	1,800,000
Generator (20 kVA)	1	600,000	600,000
<b>Total</b>			<b>2,400,000</b>

#### 9.6 Furniture & Fixtures Requirement

Details of the furniture and fixture required for the project are given below:

**Table 9.6: Furniture & Fixture**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
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Table, Visitor Chairs & Cabinets	1	100,000	100,000
<b>Total</b>			<b>100,000</b>

### 9.7 Office Equipment Requirement

Following office equipment will be required for Bio-degradable Plastic Bag unit:

**Table 9.7: Office Equipment**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Computer	02	60,000	120,000
Printer	01	20,000	20,000
Telephone Sets	02	4,000	8,000
Fax Machine	01	20,000	20,000
<b>Total</b>			<b>168,000</b>

### 9.8 Office Vehicles Requirement

Following office vehicles will be required for Bio-degradable Plastic Bag unit:

**Table 9.8: Office Vehicles**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Motor bike 70 cc	02	75,000	150,000
<b>Total</b>			<b>150,000</b>

### 9.9 Human Resource Requirement

In order to run operations of Bio-degradable Plastic Bag unit smoothly, details of human resources required along with number of employees and monthly salary are recommended as following:

**Table 9.9: Human Resource Requirement**

Description	No. of Employees	Monthly Salary per person (Rs.)	Monthly Salary (Rs.)
CEO	01	75,000	75,000
Plant Manager	01	40,000	40,000
Accountant	01	35,000	35,000
Plant Helper	02	20,000	40,000
Guard	02	20,000	40,000
<b>Total</b>			<b>230,000</b>

### 9.10 Utilities and other costs

The direct electricity and genset expenses are estimated to be around Rs.118,058 per month, whereas, average price of pure and recycled polyethylene resins are Rs.200 and Rs.150 per Kg respectively. Furthermore, cost of additives d<sub>2</sub>w is estimated as Rs.50 per Kg of polyethylene resin.

### 9.11 Revenue Generation

Based on the capacity utilization of 50% and 50% for Pure Bio-degradable Plastic Bags and Recycled Bio-degradable Plastic Bags respectively, sales revenue during the first year of operations is estimated as under:

**Table 9.11: Revenue Generation – Year 1**

Description	No. of Units Produced (Kg)	Finished Goods Inventory (Kg)	Units available for Sale (Kg)	Average Sale Price / Kg (Rs.)	Sales Revenue (Rs.)
Combine Average	148,500	3,094	149,406	290	42,167,813
<b>Total</b>					<b>42,167,813</b>

## 10 CONTACT DETAILS

In order to facilitate potential investors, details of private sector Service Providers relevant to the proposed project is given below:

### 10.1 Machinery Suppliers

The machinery suppliers easily available in the areas like Shershah in Karachi, Railway Road in Lahore and State two in Gujranwala.

For Imported Machinery following can be contacted:

<b>Name of Supplier</b>	Plastipack Machines (PVT.) LTD		
<b>Address</b>	G-2, State Life Building No. 3, Dr.Ziauddin Ahmed Road, Karachi – 75530, Pakistan.		
<b>Phone</b>	(+92-21) 35684449	<b>Fax</b>	(+92-21) 35682150
<b>E-mail</b>	<a href="mailto:info@plastipack.com">info@plastipack.com</a>		
<b>Website</b>	<a href="http://www.plastipack.com">www.plastipack.com</a>		

### 10.2 Raw Material Suppliers

The raw material suppliers easily available in the areas like Jodia Bazar in Karachi, Shahalmi Market in Lahore and Daal Bazar & Rail Bazar in Gujranwala.

### 10.3 Technical Experts / Consultants

#### Technical Experts / Consultants

<b>Name of Expert /Organization</b>	Fawad Aftab / Premier Plastic Industries (PVT) LTD		
<b>Address</b>	Plot # 229 Suparco Road, on Hub River Road, Opp. TCF School Mouch Goth, Karachi, Pakistan.		
<b>Phone</b>	(+92-21) 32819055-6	<b>Fax</b>	(+92-21) 32819057
<b>E-mail</b>	<a href="mailto:fawad@premierplastics.com.pk">fawad@premierplastics.com.pk</a>		
<b>Website</b>	<a href="http://www.premierplastics.com.pk">www.premierplastics.com.pk</a>		

## 11 USEFUL WEB LINKS

<b>Small &amp; Medium Enterprises Development Authority (SMEDA)</b>	<a href="http://www.smeda.org.pk">www.smeda.org.pk</a>
<b>Government of Pakistan</b>	<a href="http://www.pakistan.gov.pk">www.pakistan.gov.pk</a>
<b>Ministry of Industries &amp; Production</b>	<a href="http://www.moip.gov.pk">www.moip.gov.pk</a>
<b>Ministry of Education, Training &amp; Standards in Higher Education</b>	<a href="http://moptt.gov.pk">http://moptt.gov.pk</a>
<b>Government of Punjab</b>	<a href="http://www.punjab.gov.pk">www.punjab.gov.pk</a>
<b>Government of Sindh</b>	<a href="http://www.sindh.gov.pk">www.sindh.gov.pk</a>
<b>Government of Khyber Pakhtunkhwa</b>	<a href="http://www.khyberpakhtunkhwa.gov.pk">www.khyberpakhtunkhwa.gov.pk</a>
<b>Government of Balochistan</b>	<a href="http://www.balochistan.gov.pk">www.balochistan.gov.pk</a>
<b>Government of Gilgit Baltistan</b>	<a href="http://www.gilgitbaltistan.gov.pk">www.gilgitbaltistan.gov.pk</a>
<b>Government of Azad Jamu Kashmir</b>	<a href="http://www.ajk.gov.pk">www.ajk.gov.pk</a>
<b>Trade Development Authority of Pakistan (TDAP)</b>	<a href="http://www.tdap.gov.pk">www.tdap.gov.pk</a>
<b>Security Commission of Pakistan (SECP)</b>	<a href="http://www.secp.gov.pk">www.secp.gov.pk</a>
<b>Federation of Pakistan Chambers of Commerce and Industry (FPCCI)</b>	<a href="http://www.fpcci.com.pk">www.fpcci.com.pk</a>
<b>State Bank of Pakistan (SBP)</b>	<a href="http://www.sbp.org.pk">www.sbp.org.pk</a>
<b>Punjab Small Industries Corporation</b>	<a href="http://www.psic.gop.pk">www.psic.gop.pk</a>
<b>Sindh Small Industries Corporation</b>	<a href="http://www.ssic.gos.pk">www.ssic.gos.pk</a>
<b>Pakistan Horticulture Development and Export Company (PHDEC)</b>	<a href="http://www.phdec.org.pk">www.phdec.org.pk</a>
<b>Punjab Vocational Training Council (PVTTC)</b>	<a href="http://www.pvtc.gop.pk">www.pvtc.gop.pk</a>
<b>Technical Education and Vocational Training Authority (TEVTA)</b>	<a href="http://www.tevta.org">www.tevta.org</a>
<b>Pakistan Readymade Garment Technical Training Institute</b>	<a href="http://www.prgmea.org/prgtti/">www.prgmea.org/prgtti/</a>
<b>Livestock &amp; Dairy Development Department, Government of Punjab.</b>	<a href="http://www.livestockpunjab.gov.pk">www.livestockpunjab.gov.pk</a>
<b>Punjab Industrial Estates (PIE)</b>	<a href="http://www.pie.com.pk">www.pie.com.pk</a>
<b>Faisalabad Industrial Estate Development and Management Company (FIEDMC)</b>	<a href="http://www.fiedmc.com.pk">www.fiedmc.com.pk</a>
<b>Pakistan Plastic Manufacturing Association</b>	<a href="http://www.pakplas.com.pk">www.pakplas.com.pk</a>
<b>Plastic Technology Centre (PTC)</b>	<a href="http://www.ptc.org.pk">www.ptc.org.pk</a>

## 12 ANNEXURES

### 12.1 Income Statement

Calculations										SMEDA
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	42,167,813	50,137,828	57,920,182	66,355,427	75,489,396	85,370,873	96,051,774	107,587,338	120,036,329	133,461,251
<i>Cost of sales</i>										
Cost of goods sold 1	33,412,500	38,981,250	45,023,344	51,572,194	58,663,370	66,334,734	74,626,576	83,581,765	93,245,907	103,667,508
Operation costs 1 (direct labor)	940,000	1,051,272	1,153,845	1,266,385	1,389,868	1,525,362	1,674,040	1,837,186	2,142,225	2,350,955
Operating costs 2 (machinery maintenance)	120,000	132,000	145,200	159,720	175,692	193,261	212,587	233,846	257,231	282,954
Operating costs 3 (direct electricity)	748,440	914,760	1,106,860	1,328,232	1,582,809	1,875,020	2,209,845	2,592,885	3,030,434	3,529,565
Operating costs 4 (diesel for Genset)	668,250	816,750	988,268	1,185,921	1,413,223	1,674,125	1,973,076	2,315,076	2,705,745	3,151,397
Total cost of sales	35,889,190	41,896,032	48,417,515	55,512,451	63,224,962	71,602,503	80,696,124	90,560,758	101,381,542	112,982,379
Gross Profit	6,278,623	8,241,796	9,502,667	10,842,976	12,264,434	13,768,370	15,355,650	17,026,580	18,654,787	20,478,872
	15%	16%	16%	16%	16%	16%	16%	16%	16%	15%
<i>General administration &amp; selling expenses</i>										
Administration expense	1,800,000	1,975,251	2,167,564	2,378,601	2,610,185	2,864,316	3,143,190	3,449,215	3,406,532	3,738,197
Administration benefits expense	126,000	138,268	151,729	166,502	182,713	200,502	220,023	241,445	238,457	261,674
Building rental expense	1,296,000	1,425,600	1,568,160	1,724,976	1,897,474	2,087,221	2,295,943	2,525,537	2,778,091	3,055,900
Distribution Expense	63,979	72,449	79,709	86,969	94,229	101,489	108,749	116,009	123,269	130,529
Electricity expense	58,800	63,504	68,584	74,071	79,997	86,396	93,308	100,773	108,835	117,541
Communications expense (phone, fax, mail, internet, etc.)	90,000	98,763	108,378	118,930	130,509	143,216	157,159	172,461	170,327	186,910
Office vehicles running expense	52,500	57,750	63,525	69,878	76,865	84,552	93,007	102,308	112,538	123,792
Office expenses (stationary, entertainment, janitorial services, etc.)	72,000	79,010	86,703	95,144	104,407	114,573	125,728	137,969	136,261	149,528
Marketing & selling	421,678	501,378	579,202	663,554	754,894	853,709	960,518	1,075,873	1,200,363	1,334,613
Professional fees (legal, audit, consultants, etc.)	84,336	100,276	115,840	132,711	150,979	170,742	192,104	215,175	240,073	266,923
Depreciation expense	536,800	536,800	536,800	536,800	536,800	687,730	687,730	687,730	687,730	687,730
Amortization of pre-operating costs	66,115	66,115	66,115	66,115	66,115	-	-	-	-	-
Amortization of legal, licensing, and training costs	10,000	10,000	10,000	10,000	10,000	-	-	-	-	-
Bad debt expense	843,356	1,002,757	1,158,404	1,327,109	1,509,788	1,707,417	1,921,035	2,151,747	2,400,727	2,669,225
Miscellaneous expense 1	500,000	525,000	551,250	578,813	607,753	638,141	670,048	703,550	738,728	775,664
Subtotal	6,021,564	6,652,919	7,311,963	8,030,171	8,812,707	9,740,004	10,668,542	11,679,792	12,341,931	13,498,226
Operating Income	257,059	1,588,877	2,190,704	2,812,804	3,451,726	4,028,366	4,687,107	5,346,788	6,312,856	6,980,646
Gain / (loss) on sale of machinery & equipment	-	-	-	-	960,000	-	-	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	60,000	-	-	-	-	-
Earnings Before Interest & Taxes	257,059	1,588,877	2,190,704	2,812,804	4,471,726	4,028,366	4,687,107	5,346,788	6,312,856	6,980,646
Interest on short term debt	19,180	-	-	-	-	-	-	-	-	-
Subtotal	19,180	-	-	-	-	-	-	-	-	-
Earnings Before Tax	237,879	1,588,877	2,190,704	2,812,804	4,471,726	4,028,366	4,687,107	5,346,788	6,312,856	6,980,646
Tax	47,576	317,775	438,141	562,561	894,345	805,673	937,421	1,069,358	1,262,571	1,396,129
<b>NET PROFIT/(LOSS) AFTER TAX</b>	<b>190,303</b>	<b>1,271,102</b>	<b>1,752,563</b>	<b>2,250,244</b>	<b>3,577,381</b>	<b>3,222,693</b>	<b>3,749,686</b>	<b>4,277,430</b>	<b>5,050,285</b>	<b>5,584,517</b>

## 12.2 Balance Sheet

Calculations											SMEDA
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Assets</b>											
<i>Current assets</i>											
Cash & Bank	-	208,249	1,919,858	2,969,238	4,113,982	2,576,952	3,663,834	4,823,315	6,016,907	7,384,387	12,741,645
Accounts receivable		1,732,924	1,896,691	2,220,370	2,553,608	2,914,620	3,305,348	3,727,863	4,184,365	4,677,199	5,208,854
Finished goods inventory		763,600	874,656	1,010,612	1,158,521	1,319,301	1,493,942	1,683,507	1,889,142	2,114,707	2,356,527
Equipment spare part inventory	120,000	138,600	160,083	184,896	213,555	246,656	284,887	329,045	380,047	438,954	-
Raw material inventory	696,094	812,109	937,986	1,074,421	1,222,154	1,381,974	1,554,720	1,741,287	1,942,623	2,159,740	2,159,740
Pre-paid building rent	1,296,000	1,425,600	1,568,160	1,724,976	1,897,474	2,087,221	2,295,943	2,525,537	2,778,091	3,055,900	-
<b>Total Current Assets</b>	<b>2,112,094</b>	<b>5,081,082</b>	<b>7,357,435</b>	<b>9,184,513</b>	<b>11,159,293</b>	<b>10,526,723</b>	<b>12,598,675</b>	<b>14,830,554</b>	<b>17,191,175</b>	<b>19,830,887</b>	<b>22,466,766</b>
<i>Fixed assets</i>											
Machinery & equipment	2,400,000	1,920,000	1,440,000	960,000	480,000	3,063,076	2,450,461	1,837,845	1,225,230	612,615	-
Furniture & fixtures	100,000	90,000	80,000	70,000	60,000	50,000	40,000	30,000	20,000	10,000	-
Office vehicles	150,000	120,000	90,000	60,000	30,000	241,577	193,261	144,946	96,631	48,315	-
Office equipment	168,000	151,200	134,400	117,600	100,800	84,000	67,200	50,400	33,600	16,800	-
<b>Total Fixed Assets</b>	<b>2,818,000</b>	<b>2,281,200</b>	<b>1,744,400</b>	<b>1,207,600</b>	<b>670,800</b>	<b>3,438,652</b>	<b>2,750,922</b>	<b>2,063,191</b>	<b>1,375,461</b>	<b>687,730</b>	<b>-</b>
<i>Intangible assets</i>											
Pre-operation costs	330,575	264,460	198,345	132,230	66,115	-	-	-	-	-	-
Legal, licensing, & training costs	50,000	40,000	30,000	20,000	10,000	-	-	-	-	-	-
<b>Total Intangible Assets</b>	<b>380,575</b>	<b>304,460</b>	<b>228,345</b>	<b>152,230</b>	<b>76,115</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>TOTAL ASSETS</b>	<b>5,310,669</b>	<b>7,666,742</b>	<b>9,330,180</b>	<b>10,544,343</b>	<b>11,906,208</b>	<b>13,965,375</b>	<b>15,349,597</b>	<b>16,893,745</b>	<b>18,566,636</b>	<b>20,518,617</b>	<b>22,466,766</b>
<b>Liabilities &amp; Shareholders' Equity</b>											
<i>Current liabilities</i>											
Accounts payable		2,361,864	2,754,200	3,179,990	3,641,618	4,141,623	4,682,713	5,267,774	5,899,882	6,582,317	7,267,822
<b>Total Current Liabilities</b>	<b>196,094</b>	<b>2,361,864</b>	<b>2,754,200</b>	<b>3,179,990</b>	<b>3,641,618</b>	<b>4,141,623</b>	<b>4,682,713</b>	<b>5,267,774</b>	<b>5,899,882</b>	<b>6,582,317</b>	<b>7,267,822</b>
<b>Total Long Term Liabilities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Shareholders' equity</i>											
Paid-up capital	5,114,575	5,114,575	5,114,575	5,114,575	5,114,575	5,114,575	5,114,575	5,114,575	5,114,575	5,114,575	5,114,575
Retained earnings		190,303	1,461,405	2,249,778	3,150,015	4,709,177	5,552,309	6,511,396	7,552,179	8,821,725	10,084,369
<b>Total Equity</b>	<b>5,114,575</b>	<b>5,304,878</b>	<b>6,575,980</b>	<b>7,364,353</b>	<b>8,264,590</b>	<b>9,823,752</b>	<b>10,666,884</b>	<b>11,625,971</b>	<b>12,666,754</b>	<b>13,936,300</b>	<b>15,198,944</b>
<b>TOTAL CAPITAL AND LIABILITIES</b>	<b>5,310,669</b>	<b>7,666,742</b>	<b>9,330,180</b>	<b>10,544,343</b>	<b>11,906,208</b>	<b>13,965,375</b>	<b>15,349,597</b>	<b>16,893,745</b>	<b>18,566,636</b>	<b>20,518,617</b>	<b>22,466,766</b>

## 12.3 Cash Flow Statement

Calculations											SMEDA
Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		190,303	1,271,102	1,752,563	2,250,244	3,577,381	3,222,693	3,749,686	4,277,430	5,050,285	5,584,517
Add: depreciation expense		536,800	536,800	536,800	536,800	536,800	687,730	687,730	687,730	687,730	687,730
amortization of pre-operating costs		66,115	66,115	66,115	66,115	66,115	-	-	-	-	-
amortization of training costs		10,000	10,000	10,000	10,000	10,000	-	-	-	-	-
Deferred income tax		-	-	-	-	-	-	-	-	-	-
Accounts receivable		(1,732,924)	(163,767)	(323,679)	(333,238)	(361,011)	(390,728)	(422,515)	(456,503)	(492,833)	(531,656)
Finished goods inventory		(763,600)	(111,056)	(135,956)	(147,908)	(160,780)	(174,641)	(189,566)	(205,635)	(225,565)	(241,820)
Equipment inventory	(120,000)	(18,600)	(21,483)	(24,813)	(28,659)	(33,101)	(38,232)	(44,158)	(51,002)	(58,907)	438,954
Raw material inventory	(696,094)	(116,016)	(125,877)	(136,434)	(147,733)	(159,820)	(172,747)	(186,566)	(201,336)	(217,117)	-
Pre-paid building rent	(1,296,000)	(129,600)	(142,560)	(156,816)	(172,498)	(189,747)	(208,722)	(229,594)	(252,554)	(277,809)	3,055,900
Accounts payable		2,361,864	392,336	425,790	461,628	500,005	541,090	585,061	632,109	682,435	685,505
Cash provided by operations	(2,112,094)	404,343	1,711,609	2,013,570	2,494,750	3,785,841	3,466,443	3,950,079	4,430,240	5,148,219	9,679,131
<i>Financing activities</i>											
Issuance of shares	5,114,575	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	5,114,575	(196,094)	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(3,198,575)	-	-	-	-	(3,304,652)	-	-	-	-	-
Cash (used for) / provided by investing activities	(3,198,575)	-	-	-	-	(3,304,652)	-	-	-	-	-
<b>NET CASH</b>	<b>(196,094)</b>	<b>208,249</b>	<b>1,711,609</b>	<b>2,013,570</b>	<b>2,494,750</b>	<b>481,189</b>	<b>3,466,443</b>	<b>3,950,079</b>	<b>4,430,240</b>	<b>5,148,219</b>	<b>9,679,131</b>
Cash balance brought forward		-	208,249	1,919,858	2,969,238	4,113,982	2,576,952	3,663,834	4,823,315	6,016,907	7,384,387
Cash available for appropriation	(196,094)	208,249	1,919,858	3,933,428	5,463,988	4,595,170	6,043,395	7,613,913	9,253,555	11,165,126	17,063,518
Dividend		-	-	964,190	1,350,006	2,018,219	2,379,561	2,790,598	3,236,648	3,780,739	4,321,873
Cash balance	(196,094)	208,249	1,919,858	2,969,238	4,113,982	2,576,952	3,663,834	4,823,315	6,016,907	7,384,387	12,741,645
Cash carried forward	-	208,249	1,919,858	2,969,238	4,113,982	2,576,952	3,663,834	4,823,315	6,016,907	7,384,387	12,741,645

## 13 KEY ASSUMPTIONS

### 13.1 Operating Cost Assumptions

Description	Details
Shift Length	12 hours
Number of shifts	01
Days operational per year	330 days

### 13.2 Production Cost Assumptions

Description	Details
Raw Material Cost per unit of product (Combine Average Price)	Rs.225
Increase in Cost Price	5%
Production Capacity	330,000 Kg
Production Capacity Utilization	45%

### 13.3 Revenue Assumptions

Description	Details
Price per Kg (Combine Average Price)	Rs.290
Price per Kg growth rate	5%

### 13.4 Financial Assumptions

Description	Details
Project Life	10 years
Debt Equity Ratio	0 : 100

# Small and Medium Enterprises Development Authority

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