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# Pre-Feasibility Study

## (Apple Treatment Plant)



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**Ministry of Industries & Production**

**Government of Pakistan**

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## 1 DISCLAIMER

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### **Document Control**

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## **2 EXECUTIVE SUMMARY**

Apple Treatment Plant is proposed to be located at Districts Kalat. This plant will focus on treating and packing apples on internationally acceptable standards thus improving the quality of these apples. Such apples will be accepted in international markets and therefore will help boost exports.

The apple treatment plant will be used to work on the post harvesting activity as a link between the international markets and the growers. The plant would add value to the fruit by bringing it to the international standards.

Greater shelf-life of treated and packed apples means that there will be low levels of spoilage and wastage. The economic effects from this process will trickle down till the levels of the traders and the growers. The project consists of automatic grading, washing, waxing and Packing machines with an installed production capacity of 4,800 tons per year in a single shift. The projections are based on single-shift production, for local sales. Export orders in the future will be fulfilled through the same production schedule. Capacity utilization will be 70% in the first year; it will increase at a rate of 5% annually and will be capped at 95% maximum. The plant is assumed to work for six months per year.

Total Cost Estimates is 166,488,090 with fixed investment Rs. 156,752,988 and working capital Rs. 9,735,102. Given the cost assumptions IRR and payback are 20% and 5.26 years respectively.

The most critical considerations or factors for success of the project are: Apple is an important crop in Balochistan in terms of the people employed, the value of the output, and the revenue it generates. The only reason of failure to export and no demand in the international Apple Market is mainly that Pakistan cannot supply the well processed, preserved, sorted, graded, waxed and properly packed apples as per the demand of the world market. The freshness of our apples from the orchard is not retained due to the lapse period of transportation and proper treatment, which is the main requisite of the international market.

In order to earn substantial foreign exchange its quite important to establish Apple treatment plant. It is worth mentioning that Pakistan is a developing country so in order to earn foreign exchange with the help of neglected value added fruit potential Apple Treatment Plant is the right project to execution.

### 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 **Apple Treatment Plant** 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 project aims at setting up a Post-Harvest Apple Treatment Plant in order to promote and boost apple exports from Balochistan. Its operation will not only satisfy requirements of the international market but will also open avenues for investment in horticulture sub-sector in Balochistan. The volumes exported will significantly increase. Procurements will be made directly from the farms, which will act as a vehicle both for qualitative and quantitative improvements of apple. Consequently, this will have a positive effect on production methods and growing practices. Though the main objective of the facility is to address export market requirements, considerable volumes will be traded in the domestic markets and will also set quality standards in the domestic market.

Following key parameters must be addressed;

- **Technology:** The proposed project is about Apple Treatment Plant. Its processing includes Grading, sorting washing, drying, waxing and finally packaging. The entire process flow is suggested to be semi-automatic requiring both skilled and unskilled workers.
- **Location:** The plant is proposed to be located in the District Kalat while considering other mandatory inputs i.e. availability of human resource, electricity and water etc.
- **Product:** The plant would initially process & pack Apple fruit from farms & market into hygienically treated & properly packed Apple or related products.
- **Target Market:** In addition to local markets in Quetta, Karachi, Lahore, Peshawar and Islamabad an enormous export market for the Pakistani Apple in India, Canada, USA, Germany, UK, Denmark, Australia, Bangladesh, Nepal, Sri Lanka, South Africa, Dubai, Japan, China, South Korea, North Korea etc.
- **Employment Generation:** The proposed project will provide direct employment to 20 people.

## 5.1 Production Process Flow

### Picking of Apple

The best time of picking is determined when the fruit is matured and ripe. Decision regarding the desirable degree of maturity depends upon the timing of marketing the apple either fresh or processed. The maturity can be determined by using Refractometer.

- The workers are to be trained to pick apples deep in their palms using entire hand to avoid bruising the fruit with their fingertips.
- Stem should not be removed.
- Foot ladder should be used for picking apples instead of climbing tree.

### Processing

Waxing: Freshly harvested apples have their own wax coating that protects them from shriveling and weight loss. When apples are washed, half of the wax is removed. The wax is replaced with Carnauba. The new coat of wax prevents moisture loss and retains firmness.

### Packing

Most modern apple packing plant is automated to organize the apple according to size and quality. Water chutes are used to move apples within the warehouse sorters, to remove imperfect apples called culls. Cardboard cartons and net or polyethylene bags are commonly used for packing.

### Scientific Storage

As apples are also perishable fruit so to keep its freshness. It must be stored in a proper storage. It is highly preferable point that it should have to place in a controlled atmosphere.

Controlled atmospheric storage is non-chemical process in which temperature, oxygen, carbon dioxide and humidity levels are carefully controlled. The temperature is kept at 32 and 36 degrees Fahrenheit, humidity is held at 95% and oxygen is replaced with nitrogen and carbon dioxide. By changing the atmosphere around the apples, the ripening process is slowed and apples can be stored up to a year with little loss or no loss of quality.

## Functional parameter of Apple Treatment Plant

Various functions of apple Treatment Plant are carried out by different component of the plant. Each part/component perform specific task. The scope and extent of processing depends upon the conditions of raw fruit and the required demand led objectives.

### Some of the general functions of the plant are as under:

#### Mechanical Screening, pre grading and rejection

This activity is required as protection against wastage of money for subsequent processing operation. The undersized fruits are outright rejected.

##### 1) *Washing and sterilization (Sanitation unit)*

Apples are washed and disinfected with the introduction of chlorine and other chemical disinfectant)

##### 2) *Sorting*

The sorting of apples is carried out as per predetermined parameter as per demand led strategy.

##### 3) *Defect Identification*

The defected apples including culls are identified and are to be removed from the processing line.

##### 4) *Waxing:*

The apples are waxed to protect the loss of liquid from the apple.

##### 5) *Additional Protective Coating:*

This is an extra precautionary protective and decorative value added measure for top quality of apple as per the demand of the consumer market.

##### 6) *Drying*

After waxing the apples are dried through drying tunnel in a very precise manner.

##### 7) *Grading*

The grading in following manner:

- Color Grading
- Size grading

- Weight grading
- Shape grading

### 8) Packing

The packing of apples is carried out as per requirement. Mostly apples are packed in 2Kg, 5Kg and 10Kg for each variety of the graded fruit.

- *Apple Treatment System*

Various equipment units put together to create an efficient and compatible system to suite the international standard for expert.

- *Creep Feed Hopper*

These units readily accept bin tippers and other bin handling equipment. This hopper is 2.4 meters long X 1.3 meters wide which has a slow moving conveyor belt in the base to feed the fruit in to the rest of the system. The fruit can be tipped into the hopper by hand from baskets or crates or if required a bin tipper be supplied to allow bulk bin to be tipped.

- *Elevator and Sorting Table*

The inspection table gently carries the fruit on rollers, which continuously turn the fruit for inspection. Only the fruit to be graded out is handled.

Combination elevator and sorting table unit features a roller conveyor unit with 60mm die PVC roller on 82.6mm centers 1000mm wide. The elevator section is fitted with a spray system to apply chlorine solution to the fruit. This sanitizes the fruit prior to treatment in the remainder of the line. Following the elevator, the conveyor levels out to provide an inspection area allowing operators to remove any damaged or sub-standard fruit.

- *Wax and wash Unit*

This unit quickly and gently removes dirt and spray residues from the fruit, polishing it and covering it with a coating that gives the fruit a beautiful long lasting gloss.

Technically 37 brush by 1000mm wide cleaning and wax application unit. The unit is divided into four sections to treat the fruit as follows:

- Wash & wax section
- Hot water rinse
- Moisture removal

- Wax applicator

- *Wash and Wax Section*

In this section a detergent solution is foamed onto the fruit which in conjunction remove dirt, pesticide residue etc. from the fruit.

- Hot water rinse

The fruit is then cleaned with the introduction of hot water in order to remove detergent residue etc. and warm the fruit prior to waxing.

- *Moisture Removal*

This section with five brushes removes free water from the surface in preparation to entry to the wax section.

- *Wax Applicator*

In this section wax is introduced by spraying over brushes. A fully adjustable wax metering system is provided to control the flow of wax. This unit is constructed using painted steel frame, which is fitted with galvanized steel side panel and drain trays etc.

- *Drying Tunnel*

The dryer is a flow through tunnel, which dries the coating of wax on the apples. It features high velocity airflow pattern. To facilitate wax drying a 7.6-mm long by 1200mm wide warm air tunnel is provided. This unit uses a roller conveyor (51mm diagalvanized steel) to transport the fruit. LP gas heating fan units delivers a high volume of air over the fruit to dry wax to high shine. Apple driers have variable speed roller conveyor that moves the apples through hot air tunnel.

The temperature and humidity are constantly controlled to keep the fruit cool an assuring the maximum drying efficiently. In drier the humidity level is either manually operated or automatically controlled.

### ***This unit consists of following systems***

- Variable speed main drive.
- High volume fan units.
- LP gas heaters.
- Flame failure system

- Over temperature protection.
  - *Transfer Conveyor*

Standard flat belt conveyor 1800mm long by 1200mm wide distributes fruit from the tunnel to the sizer.

- *Sizer*

The sizer is fast and accurate and gentle to the fruit.

To sort the fruit into size categories a 2 lane by 10 outlets optical Sizer is used in accordance with sealed ranges and distributes fruit into bins ready for packing. This advance sorting system provides today's packer with new means of sorting grading and sizing, giving unparalleled accuracy and flexibility to streamline production and cut costs. The unit is computer controlled and features:

- PC Programming System and pack out record display.
- Variable speed main drive
- Split belt Singulator
- Remote programming terminal
- UPS power lifer

(A) Precision

Multiple views are taken of each piece of fruit with either multiple monochrome or full color cameras to thoroughly examine and measure each piece of fruit allowing accurate sizing of even shaped fruit.

(B) Versatility

Versatility is added with weight option, which can sort, by volume, size, shape, color attribute, weight or density.

(C) Gentle

The mechanical portion of the sorter features a patented rollers conveyor system, which not only eliminates the need for a separate singulator and provide a very gentle handling of fruit featuring a gentle ejection system to roll the fruit off the conveyor onto padded unloading chutes. The system is not only gentle and fast but also quite, which is important in providing an efficient working environment.

- *Packing*

To facilitate packing 10 padded rotating lines 1.5 meters' diameter are provided along one side of the machine.

## 5.2 Installed and Operational Capacities

The yearly production capacity of the plant will be 4,800,000 Kgs of Apples, based on single-shift production. Projection Capacity utilization will be 70% in the first year and increased at a rate of 5% annually and will be capped at 95%.

## 6 CRITICAL FACTORS

An analysis of the Strengths, Weaknesses, Opportunities and Threats is detailed as follows:

### 2.1. Strengths:

- Availability of raw material at low prices,
- Little competition as no such facility is present in the apple producing areas
- Installation of the plant in the growing areas will decrease the transportation and raw material cost.

### 2.2. Weaknesses:

- Intensive care of hygiene is required to handle apple during processing, packing and storage both in raw & processed form to preserve its shape, taste & quality.

### 2.3. Opportunities:

- Hygienically treated, packed and high Quality apple will bring more revenues from exports and even from sale in the local market due to ever increasing demand of apple
- Hygienically packed apple will enhance the shelf life therefore, give good revenues.
- Proper Management with expert human resource will lead to higher results & Profits
- High demand local consumption and Export.

### 2.4. Threats:

- Poor hygiene or miss handling may lead to bacteria or fungus accumulation and destroy the entire stock.
- High import of Iranian apple

## 7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The plant is proposed to be located district Kalat, while considering other mandatory inputs i.e. availability of human resource, electricity and water etc.

## 8 POTENTIAL TARGET CUSTOMERS / MARKETS

In addition to local markets in Quetta, Karachi, Lahore, Peshawar and Islamabad an enormous export market for the Pakistani apple exists in India, Canada, USA, Germany, UK, Denmark, Australia, Bangladesh, Nepal, Sri Lanka, South Africa, Dubai, Japan, China, South Korea, North Korea etc.

## 9 PROJECT COST SUMMARY

### 9.1 Project Economics

All the figures in this financial model have been calculated for estimated sales of Rs. 84,000,000 in the year one. The capacity utilization during year one is worked out at 70% with 5% increase in subsequent years up to the maximum capacity utilization of 95%.

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

**Table 1: Project Economics**

Description	Details
Internal Rate of Return (IRR)	20%
Payback Period (yrs.)	5.26
Net Present Value (Rs.)	60,997,414

### 9.2 Project Financing

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

**Table 2: Project Financing**

Description	Details
Total Equity (50%)	Rs. 83,244,045
Bank Loan (50%)	Rs. 83,244,045

Markup to the Borrower (%age / annum)	20
Tenure of the Loan (Years)	10

### 9.3 Project Cost

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

**Table 3: Project Cost**

<b>Capital Investment</b>	<b>Amount (Rs.)</b>
Land	5,257,666
Building/Infrastructure	43,430,000
Machinery & equipment	96,105,000
Furniture & fixtures	998,500
Office vehicles	6,006,445
Office equipment	950,000
Pre-operating costs	4,005,377
<b>Total Capital Costs</b>	<b>156,752,988</b>
<b>Working Capital</b>	<b>Amount (Rs.)</b>
Equipment spare part inventory	420,000
Raw material inventory	560,000
Upfront insurance payment	5,105,572
Cash	3,649,530
<b>Total Working Capital</b>	<b>9,735,102</b>
<b>Total Investment</b>	<b>166,488,090</b>

#### 9.4 Space Requirement

The space requirement for the proposed Apple Treatment Plant is estimated **15941 Sqft**, considering various facilities including management office, production hall, storage, open space, etc. Details of space requirement and cost related to land & building is given below;

**Table 4: Space Requirement**

Description	Estimated Area (Sq.Ft)	Unit Cost (Rs.)	Total Cost (Rs.)
Management Building	672	4500	3,024,000
Fumigation Chamber	1,600	4,500	7,200,000
Foundation for Machinery & building - processing hall	4,500	4,500	20,250,000
Warehouse	2,000	4,500	9,000,000
Boundary wall	1	2,500,000	2,500,000
Restrooms	7,000	100	700,000
Ground & open Space	168	4,500	756,000
<b>Total</b>	<b>15,941</b>		<b>43,430,000</b>

#### 9.5 Machinery & Equipment Requirement

Machinery and equipment for the proposed project are stated below.

**Table 5: Machinery & Equipment**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Sorting Machine & Tables	1	7,500,000	7,500,000
Washing chamber with conveyor & Waxing Machine	1	9,700,000	9,700,000
Grading Machine	1	14,200,000	14,200,000
Puree Machine	1	7,700,000	7,700,000

Packing Machine	1	6,800,000	6,800,000
PVC Molding Machine	1	6,600,000	6,600,000
Jam, Jelly & Juice Maker	1	21,000,000	21,000,000
Tube Well with Accessories	1	1,000,000	1,000,000
Generator	1	4,500,000	4,500,000
Installation & Misc.	1	4,000,000	4,000,000
<b>Total machinery cost</b>			<b>81,500,000</b>
GST 18%	18%		13,855,000
<b>Total</b>			<b>95,355,000</b>
Transportation charges	1	750,000	750,000
<b>Grand Total</b>			<b>96,105,000</b>

## 9.6 Furniture & Fixtures Requirement

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

**Table 6: Furniture & Fixture**

Description	Quantity	Cost per Unit	Total Cost (Rs.)
Tables	3	27,000	81,000
Executive Chairs	3	20,000	60,000
Visitor Chairs	10	7,500	75,000
Cabinets	1	110,000	110,000
Air conditioners (1.5 ton split)	2	110,000	220,000
<b>Total</b>			<b>546,000</b>

## 9.7 Office Equipment Requirement

Following office equipment will be required for Apple Treatment Plant; (Please customize as per requirement of project)

**Table 7: Office Equipment**

Description	Quantity	Cost per Unit	Total Cost (Rs.)
Laptops	3	150,000	450,000
Printer	1	45,000	45,000
Telephone exchange	1	150,000	150,000
Telephones	5	5,000	25,000
Fax machines	1	30,000	30,000
Photo Copier & Projector	1	250,000	250,000
<b>Total</b>			<b>950,000</b>

## 9.8 Human Resource Requirement

In order to run operations of Apple Treatment Plant smoothly, details of human resources required along with number of employees and monthly salary are recommended as under;

**Table 8: Human Resource Requirement**

Description	No. of Employees	Monthly Salary per person (Rs.)
Project Manager	1	150,000
Quality Assurance Officer/Asst. Manager Operations	1	90,000
Accounts and Admin Officer	1	70,000
Plant Operator	2	35,000
Skilled workers	5	30,000
Semi-Skilled Workers	5	25,000
Guards	2	25,000
Office Boy	1	25,000
Sweepers/Cleaners	2	25,000
<b>Total</b>	<b>20</b>	

Note: (Minimum Wage Rs. 25,000/month)

## 9.9 Utilities and other Costs

An essential cost to be borne by the project is the cost of electricity, PoL for generator and water. The electricity expenses are estimated to be around Rs. 350,000 per month, whereas, PoL expenses are estimated to be Rs. 1,500,000/year (Generator PoL). Furthermore, promotional expense being essential for marketing of Apple Treatment Plant is estimated as 1% of administrative / Cost of Sales expenses.

## 9.10 Revenue Generation

Based on the capacity utilization of 70%, sales revenue during the first year of operations is estimated Rs. 84,000,000 /- (10-year Revenue is shown in Income statement of the project)

## 10 USEFUL WEB LINKS

Links of Federal & Provincial Government, Semi Government and other (sector & Cluster based) Development organizations are to be given under this heading so to enable potential investors to get benefit from the services offered. Web links of various organizations are given as example however; links of only relevant organizations should be given;

<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 (PVTC)</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>

## 11 ANNEXURES

## 11.1 Income Statement

Statement Summaries										SMEDA
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	Rs. in actuals									
Revenue	84,000,000	99,000,000	116,160,000	135,762,000	158,122,800	183,598,140	201,957,954	222,153,749	244,369,124	#####
Cost of goods sold	27,588,000	32,384,311	36,847,661	42,989,915	48,768,267	56,609,156	62,228,504	68,405,739	75,196,258	82,660,954
Gross Profit	56,412,000	66,615,689	79,312,339	92,772,085	109,354,533	126,988,984	139,729,450	153,748,010	169,172,867	#####
<i>General administration &amp; selling expenses</i>										
Administration expense	23,166,000	28,246,083	30,996,161	37,415,391	41,058,206	49,151,663	53,937,138	59,188,534	64,951,213	71,274,955
Rental expense	-	-	-	-	-	-	-	-	-	-
Utilities expense	-	-	-	-	-	-	-	-	-	-
Travelling & Comm. expense (phone, fax, etc.)	210,600	256,783	281,783	340,140	373,256	446,833	490,338	538,078	590,466	647,954
Office vehicles running expense	180,193	198,213	218,034	239,837	263,821	290,203	319,224	351,146	386,260	424,886
Office expenses (stationary, etc.)	210,600	256,783	281,783	340,140	373,256	446,833	490,338	538,078	590,466	647,954
Promotional expense	840,000	990,000	1,161,600	1,357,620	1,581,228	1,835,981	2,019,580	2,221,537	2,443,691	2,688,060
Insurance expense	5,105,572	4,595,015	4,084,458	3,573,901	3,063,343	2,552,786	2,042,229	1,531,672	1,021,114	510,557
Professional fees (legal, audit, etc.)	420,000	495,000	580,800	678,810	790,614	917,991	1,009,790	1,110,769	1,221,846	1,344,030
Depreciation expense	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495
Amortization expense	801,075	801,075	801,075	801,075	801,075	-	-	-	-	-
Property tax expense	-	-	-	-	-	-	-	-	-	-
Miscellaneous expense	-	-	-	-	-	-	-	-	-	-
Subtotal	43,511,535	48,416,445	50,983,189	57,324,408	60,882,295	68,219,785	72,886,129	78,057,307	83,782,551	90,115,892
Operating Income	12,900,465	18,199,244	28,329,150	35,447,677	48,472,238	58,769,199	66,843,321	75,690,703	85,390,316	96,029,190
Other income	-	-	-	-	-	-	-	-	-	-
Gain / (loss) on sale of assets	-	-	-	-	-	-	-	-	-	-
Earnings Before Interest & Taxes	12,900,465	18,199,244	28,329,150	35,447,677	48,472,238	58,769,199	66,843,321	75,690,703	85,390,316	96,029,190
Interest expense	15,809,808	14,831,004	14,097,132	13,202,255	12,111,051	10,780,446	9,157,918	7,179,421	4,766,861	1,825,006
Earnings Before Tax	(2,909,343)	3,368,240	14,232,018	22,245,422	36,361,187	47,988,754	57,685,403	68,511,281	80,623,455	94,204,185
Tax	-	564,560	4,203,705	7,008,397	11,948,915	16,018,563	19,412,390	23,201,448	27,440,709	32,193,964
<b>NET PROFIT/(LOSS) AFTER TAX</b>	<b>(2,909,343)</b>	<b>2,803,680</b>	<b>10,028,312</b>	<b>15,237,025</b>	<b>24,412,272</b>	<b>31,970,191</b>	<b>38,273,013</b>	<b>45,309,834</b>	<b>53,182,747</b>	<b>62,010,221</b>
Balance brought forward		(2,909,343)	(105,663)	4,961,325	10,099,175	17,255,724	24,612,957	31,442,985	38,376,409	45,779,578
Total profit available for appropriation	(2,909,343)	(105,663)	9,922,650	20,198,350	34,511,447	49,225,914	62,885,970	76,752,818	91,559,156	#####
Dividend	-	-	4,961,325	10,099,175	17,255,724	24,612,957	31,442,985	38,376,409	45,779,578	53,894,899
Balance carried forward	(2,909,343)	(105,663)	4,961,325	10,099,175	17,255,724	24,612,957	31,442,985	38,376,409	45,779,578	53,894,899

## 11.2 Balance Sheet

Statement Summaries											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
	Rs. in actuals										
<b>Assets</b>											
<i>Current assets</i>											
Cash & Bank	3,649,530	3,945,702	16,773,301	30,714,843	43,658,414	57,322,666	68,998,406	78,445,977	86,007,871	91,403,946	#####
Accounts receivable	-	3,452,055	3,760,274	4,421,096	5,176,479	6,038,729	7,021,663	7,922,385	8,714,624	9,586,086	10,544,695
Finished goods inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment spare part inventory	420,000	519,750	640,332	785,807	960,996	1,171,615	1,353,215	1,562,963	1,805,222	2,085,032	-
Raw material inventory	560,000	726,000	937,024	1,204,661	1,543,384	1,971,244	2,385,206	2,886,099	3,492,179	4,225,537	-
Pre-paid annual land lease	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Pre-paid insurance	5,105,572	4,595,015	4,084,458	3,573,901	3,063,343	2,552,786	2,042,229	1,531,672	1,021,114	510,557	-
<b>Total Current Assets</b>	<b>9,735,102</b>	<b>13,238,522</b>	<b>26,195,389</b>	<b>40,700,308</b>	<b>54,402,617</b>	<b>69,057,040</b>	<b>81,800,718</b>	<b>92,349,096</b>	<b>101,041,011</b>	<b>107,811,159</b>	<b>#####</b>
<i>Fixed assets</i>											
Land	5,257,666	5,257,666	5,257,666	5,257,666	5,257,666	5,257,666	5,257,666	5,257,666	5,257,666	5,257,666	5,257,666
Building/Infrastructure	43,430,000	41,258,500	39,087,000	36,915,500	34,744,000	32,572,500	30,401,000	28,229,500	26,058,000	23,886,500	21,715,000
Machinery & equipment	96,105,000	86,494,500	76,884,000	67,273,500	57,663,000	48,052,500	38,442,000	28,831,500	19,221,000	9,610,500	-
Furniture & fixtures	998,500	898,650	798,800	698,950	599,100	499,250	399,400	299,550	199,700	99,850	-
Office vehicles	6,006,445	5,405,801	4,805,156	4,204,512	3,603,867	3,003,223	2,402,578	1,801,934	1,201,289	600,645	-
Office equipment	950,000	855,000	760,000	665,000	570,000	475,000	380,000	285,000	190,000	95,000	-
<b>Total Fixed Assets</b>	<b>#####</b>	<b>140,170,117</b>	<b>127,592,622</b>	<b>115,015,128</b>	<b>102,437,633</b>	<b>89,860,139</b>	<b>77,282,644</b>	<b>64,705,150</b>	<b>52,127,655</b>	<b>39,550,161</b>	<b>26,972,666</b>
<i>Intangible assets</i>											
Pre-operation costs	4,005,376	3,204,301	2,403,226	1,602,151	801,075	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
<b>Total Intangible Assets</b>	<b>4,005,376</b>	<b>3,204,301</b>	<b>2,403,226</b>	<b>1,602,151</b>	<b>801,075</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>TOTAL ASSETS</b>	<b>#####</b>	<b>156,612,940</b>	<b>156,191,237</b>	<b>157,317,586</b>	<b>157,641,325</b>	<b>158,917,178</b>	<b>159,083,362</b>	<b>157,054,246</b>	<b>153,168,666</b>	<b>147,361,320</b>	<b>#####</b>
<b>Liabilities &amp; Shareholders' Equity</b>											
<i>Current liabilities</i>											
Accounts payable	-	644,949	764,604	902,876	1,062,553	1,246,849	1,451,396	1,610,377	1,787,994	1,986,660	1,900,054
Export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Short term debt	-	-	-	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
<b>Total Current Liabilities</b>	<b>-</b>	<b>644,949</b>	<b>764,604</b>	<b>902,876</b>	<b>1,062,553</b>	<b>1,246,849</b>	<b>1,451,396</b>	<b>1,610,377</b>	<b>1,787,994</b>	<b>1,986,660</b>	<b>1,900,054</b>
<i>Other liabilities</i>											
Lease payable	-	-	-	-	-	-	-	-	-	-	-
Deferred tax	-	-	-	-	-	-	-	-	-	-	-
Long term debt	83,244,045	75,633,290	72,288,251	68,209,340	63,235,553	57,170,561	49,774,964	40,756,839	29,760,218	16,351,037	-
<b>Total Long Term Liabilities</b>	<b>83,244,045</b>	<b>75,633,290</b>	<b>72,288,251</b>	<b>68,209,340</b>	<b>63,235,553</b>	<b>57,170,561</b>	<b>49,774,964</b>	<b>40,756,839</b>	<b>29,760,218</b>	<b>16,351,037</b>	<b>-</b>
<i>Shareholders' equity</i>											
Paid-up capital	83,244,045	83,244,045	83,244,045	83,244,045	83,244,045	83,244,045	83,244,045	83,244,045	83,244,045	83,244,045	83,244,045
Retained earnings	-	(2,909,343)	(105,663)	4,961,325	10,099,175	17,255,724	24,612,957	31,442,985	38,376,409	45,779,578	53,894,899
<b>Total Equity</b>	<b>83,244,045</b>	<b>80,334,702</b>	<b>83,138,382</b>	<b>88,205,370</b>	<b>93,343,220</b>	<b>100,499,769</b>	<b>107,857,002</b>	<b>114,687,030</b>	<b>121,620,454</b>	<b>129,023,623</b>	<b>#####</b>
<b>TOTAL CAPITAL AND LIABILITY</b>	<b>#####</b>	<b>156,612,940</b>	<b>156,191,237</b>	<b>157,317,586</b>	<b>157,641,325</b>	<b>158,917,178</b>	<b>159,083,362</b>	<b>157,054,246</b>	<b>153,168,666</b>	<b>147,361,320</b>	<b>#####</b>
<i>Note: Total assets value will differ from project cost due to first installment of leases paid at the start of year 0</i>											

## 11.3. Cash Flow Statement

SMEDA											
Rs. in actuals											
Statement Summaries											
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	-	(2,909,343)	2,803,680	10,028,312	15,237,025	24,412,272	31,970,191	38,273,013	45,309,834	53,182,747	62,010,221
Add: depreciation expense	-	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495	12,577,495
amortization expense	-	801,075	801,075	801,075	801,075	801,075	801,075	-	-	-	-
Deferred income tax	-	-	-	-	-	-	-	-	-	-	-
Accounts receivable	-	(3,452,055)	(308,219)	(660,822)	(755,384)	(862,249)	(982,934)	(900,722)	(792,239)	(871,462)	(958,609)
Finished good inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment inventory	(420,000)	(99,750)	(120,582)	(145,475)	(175,189)	(210,618)	(181,600)	(209,748)	(242,259)	(279,809)	2,085,032
Raw material inventory	(560,000)	(166,000)	(211,024)	(267,637)	(338,722)	(427,860)	(413,961)	(500,893)	(606,081)	(733,358)	4,225,537
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Advance insurance premium	(5,105,572)	510,557	510,557	510,557	510,557	510,557	510,557	510,557	510,557	510,557	510,557
Accounts payable	-	644,949	119,655	138,273	159,676	184,296	204,547	158,981	177,617	198,666	(86,606)
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(6,085,572)	7,906,928	16,172,637	22,981,777	28,016,533	36,984,967	43,684,294	49,908,681	56,934,924	64,584,835	80,363,627
<i>Financing activities</i>											
Change in long term debt	83,244,045	(7,610,755)	(3,345,039)	(4,078,911)	(4,973,787)	(6,064,992)	(7,395,597)	(9,018,125)	(10,996,621)	(13,409,182)	(16,351,037)
Change in short term debt	-	-	-	-	-	-	-	-	-	-	-
Change in export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Add: land lease expense	-	-	-	-	-	-	-	-	-	-	-
Land lease payment	-	-	-	-	-	-	-	-	-	-	-
Change in lease financing	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	83,244,045	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financ	#####	(7,610,755)	(3,345,039)	(4,078,911)	(4,973,787)	(6,064,992)	(7,395,597)	(9,018,125)	(10,996,621)	(13,409,182)	(16,351,037)
<i>Investing activities</i>											
Capital expenditure	#####	-	-	-	-	-	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by invest	#####	-	-	-	-	-	-	-	-	-	-
<b>NET CASH</b>	<b>3,649,530</b>	<b>296,172</b>	<b>12,827,598</b>	<b>18,902,866</b>	<b>23,042,746</b>	<b>30,919,976</b>	<b>36,288,697</b>	<b>40,890,557</b>	<b>45,938,303</b>	<b>51,175,653</b>	<b>64,012,590</b>
Cash balance brought forward	-	3,649,530	3,945,702	16,773,301	30,714,843	43,658,414	57,322,666	68,998,406	78,445,977	86,007,871	91,403,946
Cash available for appropriation	3,649,530	3,945,702	16,773,301	35,676,167	53,757,589	74,578,389	93,611,363	109,888,962	124,384,280	137,183,524	#####
Dividend	-	-	-	4,961,325	10,099,175	17,255,724	24,612,957	31,442,985	38,376,409	45,779,578	53,894,899
Cash carried forward	3,649,530	3,945,702	16,773,301	30,714,843	43,658,414	57,322,666	68,998,406	78,445,977	86,007,871	91,403,946	#####

## 12 KEY ASSUMPTIONS

### 12.1 Operating Cost Assumptions

Description	Details
Sales Price Growth Rate	10 % per year
Production Capacity Utilization Growth Rate	5 % per year
COGS growth rate	10 % per year
Wage growth rate	10 % per year
Operational cost growth rate	5 % per year

### 12.2 Production Cost Assumptions

Description	Details
Installed Capacity (kgs)	4,800,000
Production Capacity utilization in Y1	70%
Production Capacity (kgs)	3,360,000
Maximum Capacity	95%

### 12.3 Revenue Assumptions

Description	Details
Sales price per unit Y1	25
Sales price growth rate	10%
Total unit sales (kgs) Y1	3,360,000
Total revenue Y1	84,000,000

### 12.4 Financial Assumptions

Description	Details
Interest rate on long term debt	20%
Project Debt	50%
Project Equity Component	50%