

Pre-Feasibility Study

BICYCLE PARTS MANUFACTURING UNIT (Carrier)



Small and Medium Enterprises Development Authority

Ministry of Industries & Production

Government of Pakistan

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1 INTRODUCTION TO SMEDA

Small and Medium Enterprise Development Authority (SMEDA) was established with the objective to provide fresh impetus to the economy through the launch of an aggressive SME support program.

Since its inception in October 1998, SMEDA had adopted a sectoral SME development approach. A few priority sectors were selected on the criterion of SME presence. In depth research was conducted and comprehensive development plans were formulated after identification of impediments and retardants. The all-encompassing sectoral development strategy involved recommending changes in regulatory environment by taking into consideration other important aspects including finance, marketing, technology and human resource development.

SMEDA has so far successfully formulated strategies for sectors including fruits and vegetables, marble and granite, gems and jewelry, marine fisheries, leather and footwear, textiles, surgical instruments, transport and dairy. Whereas the task of SME development at a broader scale still requires more coverage and enhanced reach in terms of SMEDA's areas of operation.

2 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, production, marketing, finance and business management. The document also provides sectoral information, brief on Government policies and international scenario, which have some bearing on the project itself. This particular pre-feasibility is regarding setting up a "Bicycle Carrier Manufacturing Unit". In meeting the above tasks we have obtained information from industry sources and officials of major bicycle manufacturers in Pakistan.

Our report is based on the information obtained by us from industry sources as well as our discussions with businessmen. For Financial Model, since the forecasts/projections relate to the future, actual results are likely to be different because events and circumstances frequently do not occur as expected and the differences may be material.

Whilst due care and attention have been taken in performing the exercise, no liability can be inferred for any inaccuracies or omissions reported from the results thereof. It is essential that our report be read in its entirety with Financial Model in order to fully comprehend the impact of key assumptions on the range of values determined.

3 CRUCIAL FACTORS & STEPS IN DECISION MAKING FOR INVESTMENT

Before making any investment decision, it is advisable to evaluate the associated risk factors by taking into consideration certain key elements. These may include availability of resources, technical knowhow and technical skill set.

Steel and aluminum are the main raw materials and the entire product is finished with nickel and chromium plating. The information and technical knowhow about the quality of the metal plating plays a vital role in the good quality of the carrier. To enter into export market the carrier should be line with international Standard ISO 11243: Cycles – Luggage carriers for bicycles – Concepts, classification and testing etc.

The establishment of a bicycle carrier manufacturing unit at present time in the vicinity of Lahore gives an added advantage of easy availability of skilled labor. Strong competition exists in the international and domestic market due to low priced high quality Chinese bikes. Superior quality of the carrier and aggressive marketing is essential to get a permanent place in the market.

3.1 Key Success Factors

- The commercial viability of this venture depends upon the availability of skilled labor having an acquaintance with the engineering line.
- Another important aspect is the quality check at different stages of production. Cost cutting methods and correct raw material have to be employed. Ability to give 90 days credit to the market and replacing service claims freely till one year will be the major service issue.
- As designing variety of carriers will be an added advantage, Bicycle Carrier Manufacturing Unit should have flexibility for switching to different types of bicycle carriers, if demanded by the market.
- Getting a brand name for the product is necessary, along with volume orders from a local bicycle assembler. To establish a brand name, aggressive marketing efforts are required. High volume orders from a local bicycle assembler at initial stage and ability to enter the export market will be the key to survival.

3.2 Threats for the Business

- Entrepreneur with non-engineering background, because of which engineering standards not adhered to.
- High raw material prices compared to regional competitors.
- Lack of orders, once production has started.
- Untrained labor left unsupervised and not trained by the entrepreneur.

4 PROJECT PROFILE

4.1 Project Brief

This pre-feasibility study provides details about bicycle carrier to be manufactured for the standard 22-inch bicycles, mountain bicycles, fancy bicycles and children bicycles. The carrier would be manufactured at superior quality than that currently supplied in the retail trade or for the assembly of bicycles. Nickel plating on the carrier spring and paint on the carrier would be of excellent quality so that it does not peel off.

4.2 Opportunity Rationale

Bicycle carriers also commonly known as rack, is used to carry cargo/luggage. The bicycle carriers come in different sizes to accommodate different size frames. These rear mounted carriers are typically designed and tested for a maximum load of 25 Kg to 40 Kg. There is a high demand for heavy carriers in the local market that can be used for carrying both load and passengers.

Luggage carriers are commonly constructed from aluminum, steel, or some combination of the two. The components may consist of tubing, extrusions or castings. They may be welded, riveted or bolted together. The paint on the carrier should be of good quality to retain new look for a long time period, which is a vital demand of the customer. Since the carriers of this quality are not currently being manufactured, so a unit capable of manufacturing quality carriers will be able to break into this market.

Although, there exists a large domestic market for bicycles but domestic industry is unable to gain full benefit due to high volume of smuggled bicycle, mainly from China. According to estimates, control on smuggling may result up to 40-50% increased production to cater to the demand of the local market.

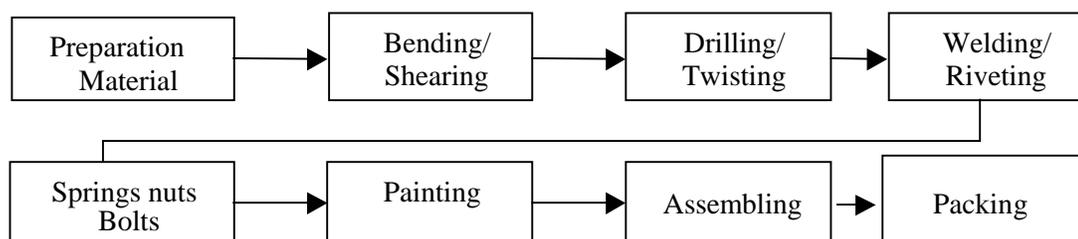
4.3 The Proposed Capacity

This bicycle carrier-manufacturing unit is capable of manufacturing and assembling 6,000 carriers per month on single 8 hour shift. However, due to the time required in installation and running of the unit, the starting capacity of plant is assumed to be 75% with 8% growth rate and 95% efficiency will be achieved in the sixth year of operations.

4.4 Total Project Cost

Total project cost of this bicycle carrier-manufacturing unit is Rs 4.92 million. The capital cost of the project is Rs 3.62 million, and the rest is the working capital requirement. Land and building is not included in the capital cost of the project. It has been assumed that the building will be acquired on rent.

4.5 Process Flow Chart



5 CURRENT INDUSTRY STRUCTURE

The Pakistani bicycle industry is capable of producing 1.45 million bicycles per annum. According to industry statistics, the local production has been cyclical with 629,695 numbers of bicycles produced in 2002-03, 681,448 bicycles during 2003-04 (increasing annually by approximately 8.22%) and then declining to 449,400 bicycles in 2005-06. The industry is currently indicating a capacity utilization of only 45%. Local bicycle industry is under serious threat from regional competition i.e. China and India, and has been surviving due to protection provided by import duties (~30%) on bicycles. During this year, 430,000 bicycles were smuggled into Pakistan.

The following table gives a brief overview of the Pakistani bicycle market and shows the total sales, market size, workforce employed, and number of vendors:

Table 2-1: Total Annual Sales of Bicycles and other Market Related Figures¹

Installed Capacity (units)	1.45 Million
Capacity Utilization	45%
Total Sales Market	Rs 14.84 Billion
Total Workforce Employed	23,000
No. of Vendors	300
Market for Bicycles	Rs 6.84 Billion
Replacement Parts Market	Rs 8 Billion

According to industry sources the 300 vendors are employing around 3,000 workers. These vendors buy raw material worth Rs. 49 million and after value addition sell it to bicycle manufacturers for Rs. 98 million. There are only 7 large Original Equipment Manufacturers (OEMs) and 20 small unorganized OEMs with 5,000 workforce. The OEMs supply a further of Rs. 1.32 billion worth of new bicycles and Rs. 100 million worth replacement parts (including tires and tubes) through approximately 175 component manufacturer, employing further 4,000 labor in a market worth Rs. 230 million as new parts and Rs. 1.62 billion as the replacement market bicycles. Around 3,000 retailers/assemblers are employing 9,000 people and cater to Rs. 1.71 billion new bicycles demand and Rs. 2.78 billion replacement bicycle market.

¹ Source: Industry Survey by GC University

Pakistan is a major manufacturer of bicycles but the usage per capita is low as compared to countries like India and China. In 1998-99, \$11,000 worth of bicycles was exported from Pakistan for the first time. By 2006-07 this figure has grown to worth of \$136,121 for bicycles and \$114,819 of bicycle parts².

Table 2-2: Major Players (Bicycle assemblies - standard, fancy, and smuggled bicycles)

Name	Location
Chinese Phoenix (Smuggled)	China
PCICS (Sohrab)	Lahore
Capital Industries (Eagle)	Lahore
PECO (PECO)	Lahore
Falcon	Lahore
Sony	Lahore
Hero Super Sports	Lahore
Orient	Sialkot
Prince	Karachi
Olympic	Karachi
Eagle(Karachi)	Karachi
Sindh Cycle	Karachi
Hero Cycle	Karachi
Unorganized Sector & ABJ	Karachi

6 MARKETING

Bicycle market can be broadly categorized into two segments: Standard bicycle and Fancy bicycle. Standard bicycle is the smaller segment worldwide and is on the decline with more and more companies turning towards fancy bicycle. But in Pakistan standard bicycle is the bigger segment. The fancy bicycle segment has been further divided into many sub-segments, which includes: Mountain Bike/All Terrain Bike, Tricycle, BMX, Electric bicycles and recumbent bicycles.

6.1 Export Market

The following tables show the major exporters and importers of bicycles in 2007 respectively:

Table 3-1: Major Exporters of Bicycles in year 2007³

Country	\$ million
China	1,895
Other Asia,	905
Netherlands	321

² Source: UN Statistics, Comtrade

³ Source: UN Statistics, Comtrade

Italy	174
Germany	168

In addition to the above, Taiwan is also one of the largest exporters of bicycles in the world.

Table 3-2: Major Importers of Bicycles in year 2007⁴

Country	\$ million
USA	1,073
Japan	565
Germany	449
United Kingdom	343
France	297

Pakistani bicycle market is struggling to establish itself due to increasing raw material prices and competition from smuggled Chinese bicycles. For a new manufacturer to establish itself in this sector, he would need to concentrate on the fancy bicycle segment and can easily flourish up on entering into a joint venture agreement with international brands.

7 RAW MATERIAL & OTHER RELATED COSTS

Following raw material is required to manufacture a bicycle carrier:

Table 4-1: Raw Material Required

Description	Cost/ carrier (Rs)
Raw Material ⁵ (3.0Kg @Rs. 55 per Kg)	165
Painting (Rs. 6500 per Drum + 10 Liter Kerosene Oil @ Rs. 52 per Liter for 700 carriers)	10
Screw & Nuts	5
Stickers	3
Wood (2.5 mond wood @ Rs. 350 per mond for 500 carriers)	1.75
Raw Material Cost	184.75
Packing Cost	1.6

8 MANPOWER REQUIREMENTS

8.1 Number of People Required

Manpower listed below is required when the unit is operating at 100% capacity utilization:

⁴ UN Statistics, Comtrade

⁵ $\frac{3}{4}$ " Angle iron Std., $\frac{3}{4}$ " Strip, $\frac{1}{4}$ " Diameter Bar

Table 5-1: Manpower Requirement

Manpower Required	Number	Salary/month(Rs)	Annual Salary (Rs)
Marketing Manager	1	25,000	300,000
Accountant	1	10,000	120,000
Purchase Assistant	1	10,000	120,000
Foreman	1	12,000	144,000
Skilled Workers	10	8,000	960,000
Helpers	3	6,500	234,000
Total Salary	17		1,878,000

9 MACHINERY DETAILS

Tale 6-1 shows the list of machinery and tools required for bicycle handles manufacturing unit:

Table 6-1: List of Machinery, Tools, & Accessories (Local Make)

Sr. No	Type	Size or brand & model no.	No. of Unit	Unit Cost	Total Cost (Rs)
1	Drill Machine	1/2 inch bore	1	30,000	30,000
2	Power Press	60 tons	1	350,000	350,000
3	Power Press	40 tons	1	300,000	300,000
4	Power Press	25 tons	3	150,000	450,000
5	Power Press	15 tons	1	100,000	100,000
6	Pedestal Grinder		1	7,000	7,000
7	Welding plant	50-450 amp with voltage control	1	50,000	50,000
8	Tools	various	1	100,000	100,000
9	Dies		1	280,000	280,000
10	Metal Work Tables		3	10,000	30,000
11	Tool Racks		1	5,000	5,000
12	Shaper		1	300,000	300,000
13	Disc Grinder	4 inch	1	6,000	6,000
14	Paint Dip Tank		1	10,000	10,000
15	Drying Oven		1	50,000	50,000
16	Khairat Machine	7-8 inch	1	250,000	250,000
	Total Machinery & Equipment Cost				2,318,000
	Machinery Installation Charges				77,189
	Total Cost				2,395,189

9.1 Other Options Available

Second hand machinery can also be purchased to reduce the initial capital cost of the project. In this regard, both the options of local and imported machines are available.

10 LAND & BUILDING

Total area required to set-up this project is estimated to be 1 Kanal. The land would be bought at approximately Rs 10,000,000, but it is being assumed that the building for bicycle carrier manufacturing unit would be rented at Rs. 30,000 per month.

Table 7-1: - Total Area Requirement

Description	Sq ft
Production Hall	2,700
Management Office	256
Stores	550
Parking Space (Open Air)	81
Total Area Required	3,587

10.1 Recommended mode for acquiring Land

It is recommended that the unit of this size should be installed on purchased land.

10.2 Suitable Locations

The land should ideally be located outside municipal and cantonment limits, preferably in a small industrial estate. Other options could be a small town off major highway, or a low-income residential area.

10.3 Infrastructure Requirements

- Road Access
- Electricity
- Telephone, Fax

11 PROJECT ECONOMICS

Table 8-1 Total Project Cost

Capital Investment	Cost in Rs.
Machinery & Equipment	2,395,189
Furniture & Fixtures	9,800
Office Vehicles	855,000
Office Equipment	1,500
Project set-up cost	60,000
Promotional Expenses	150,000
Pre-operating cost	147,885
Total Capital Investment	3,619,374
Working Capital	
Equipment Spare Part Inventory ⁶	675
Raw Material Inventory	838,575
Upfront Building Rent	360,000
Cash	100,000
Total Working Capital	1,299,250
Total Investment	4,918,624

Table 8-2 Project Returns

	Project
IRR	35%
NPV (Rs)	5,491,504
Payback Period (Years)	5.81

Table 8-3 Financing Plan

Financing	Ratio	Rs
Equity	50%	2,459,312
Debt	50%	2,459,312

⁶ 1% of machinery maintenance cost per month

12 FINANCIAL ANALYSIS

12.1 Projected Income Statement

	Rs. in actuals									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	12,960,000	15,586,560	18,608,832	22,079,693	24,540,659	26,994,724	29,694,197	32,663,617	35,929,978	39,522,976
Cost of goods sold	11,807,520	13,459,024	15,249,700	17,189,684	18,310,501	19,333,730	20,418,649	21,569,372	22,790,317	24,086,237
Gross Profit	1,152,480	2,127,536	3,359,132	4,890,009	6,230,158	7,660,994	9,275,547	11,094,245	13,139,661	15,436,739
<i>General administration & selling expenses</i>										
Administration expense	540,000	592,575	650,269	713,580	783,055	859,295	942,957	1,034,765	1,135,511	1,246,066
Rental expense	360,000	396,000	435,600	479,160	527,076	579,784	637,762	701,538	771,692	848,861
Utilities expense	24,000	26,400	29,040	31,944	35,138	38,652	42,517	46,769	51,446	56,591
Communications expense (phone, fax, etc.)	36,000	39,600	43,560	47,916	52,708	57,978	63,776	70,154	77,169	84,886
Office vehicles running expense	64,800	77,933	93,044	110,398	122,703	134,974	148,471	163,318	179,650	197,615
Office expenses (stationary, etc.)	5,400	5,926	6,503	7,136	7,831	8,593	9,430	10,348	11,355	12,461
Promotional expense	27,000	29,629	32,513	35,679	39,153	42,965	47,148	51,738	56,776	62,303
Professional fees (legal, audit, etc.)	64,800	77,933	93,044	110,398	122,703	134,974	148,471	163,318	179,650	197,615
Depreciation expense	326,149	326,149	326,149	326,149	326,149	326,149	326,149	326,149	326,149	326,149
Amortization expense	35,789	35,789	35,789	35,789	35,789	35,789	35,789	35,789	35,789	35,789
Subtotal	1,483,937	1,607,933	1,745,511	1,898,149	2,052,305	2,219,151	2,402,469	2,603,885	2,825,186	3,068,335
Operating Income	(331,457)	519,604	1,613,621	2,991,859	4,177,853	5,441,843	6,873,078	8,490,360	10,314,475	12,368,404
Other income	831,500	929,880	1,059,723	1,200,226	1,273,364	1,337,033	1,403,884	1,474,078	1,547,782	1,625,171
Earnings Before Interest & Taxes	500,043	1,449,484	2,673,344	4,192,085	5,451,218	6,778,875	8,276,962	9,964,438	11,862,257	13,993,575
Interest expense	615,786	990,947	1,150,114	1,009,957	656,730	183,917	-	-	-	-
Earnings Before Tax	(115,743)	458,537	1,523,230	3,182,128	4,794,488	6,594,958	8,276,962	9,964,438	11,862,257	13,993,575
Taxable earnings for the year	(175,743)	216,794	1,450,630	3,102,268	4,706,642	6,498,328	8,170,669	9,847,515	11,733,642	13,852,099
Tax	129,600	155,866	362,658	775,567	1,176,661	1,624,582	2,042,667	2,461,879	2,933,411	3,463,025
NET PROFIT/(LOSS) AFTER TAX	(245,343)	302,672	1,160,573	2,406,561	3,617,828	4,970,376	6,234,295	7,502,559	8,928,847	10,530,551

12.2 Projected 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
										Rs. in	actuals
<i>Operating activities</i>											
Net profit	-	(305,343)	236,672	1,087,973	2,326,701	3,529,982	4,873,746	6,128,001	7,385,636	8,800,232	10,389,074
Add: depreciation expense	-	326,149	326,149	326,149	326,149	326,149	326,149	326,149	326,149	326,149	326,149
amortization expense	-	35,789	35,789	35,789	35,789	35,789	35,789	35,789	35,789	35,789	35,789
Deferred income tax	-	-	-	21,375	21,375	21,375	(21,375)	(21,375)	(21,375)	(21,375)	(21,375)
Accounts receivable	-	(1,944,000)	(2,337,984)	(847,325)	(973,970)	(889,774)	(737,255)	(773,031)	(850,334)	(935,367)	(1,028,904)
Finished good inventory	-	(590,376)	(82,575)	(89,534)	(96,999)	(56,041)	(51,161)	(54,246)	(57,536)	(61,047)	(64,796)
Equipment inventory	(675)	(139)	(160)	(184)	(132)	(132)	(146)	(161)	(177)	(195)	2,101
Raw material inventory	(838,575)	(172,243)	(198,743)	(228,865)	(163,958)	(164,244)	(181,079)	(199,640)	(220,103)	(242,664)	2,610,116
Pre-paid building rent	(30,000)	(3,000)	(3,300)	(3,630)	(3,993)	(4,392)	(4,832)	(5,315)	(5,846)	(6,431)	70,738
Cash provided by operations	(869,250)	(2,653,164)	(2,024,153)	301,747	1,470,961	2,798,710	4,239,835	5,436,172	6,592,202	7,895,090	12,318,892
<i>Financing activities</i>											
Change in long term debt	2,459,312	(357,607)	(414,824)	(481,196)	(558,187)	(647,497)	-	-	-	-	-
Change in short term debt	-	2,580,771	2,438,977	179,449	(912,774)	(2,151,213)	(2,135,211)	-	-	-	-
Issuance of shares	2,459,312	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing	4,918,624	2,223,164	2,024,153	(301,747)	(1,470,961)	(2,798,710)	(2,135,211)	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(3,619,374)	-	-	-	-	-	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by investing	(3,619,374)	-	-	-	-	-	-	-	-	-	-
NET CASH	430,000	(430,000)	-	-	-	-	2,104,624	5,436,172	6,592,202	7,895,090	12,318,892

12.3 Projected 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										
Assets											
<i>Current assets</i>											
Cash & Bank	430,000	-	-	-	-	-	1,052,312	3,244,242	4,918,222	6,406,656	9,362,774
Accounts receivable	-	1,944,000	4,281,984	5,129,309	6,103,279	6,993,053	7,730,307	8,503,338	9,353,672	10,289,039	11,317,943
Finished goods inventory	-	590,376	672,951	762,485	859,484	915,525	966,687	1,020,932	1,078,469	1,139,516	1,204,312
Equipment spare part inventory	675	814	974	1,158	1,290	1,422	1,568	1,728	1,906	2,101	-
Raw material inventory	838,575	1,010,818	1,209,561	1,438,426	1,602,385	1,766,629	1,947,709	2,147,349	2,367,452	2,610,116	-
Pre-paid annual land lease	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	30,000	33,000	36,300	39,930	43,923	48,315	53,147	58,462	64,308	70,738	-
Total Current Assets	1,299,250	3,579,008	6,201,770	7,371,308	8,610,360	9,724,944	11,751,729	14,976,051	17,784,028	20,518,166	21,885,029
<i>Fixed assets</i>											
Machinery & equipment	2,395,189	2,155,670	1,916,152	1,676,633	1,437,114	1,197,595	958,076	718,557	479,038	239,519	0
Furniture & fixtures	9,800	8,820	7,840	6,860	5,880	4,900	3,920	2,940	1,960	980	-
Office vehicles	855,000	769,500	684,000	598,500	513,000	427,500	342,000	256,500	171,000	85,500	-
Office equipment	1,500	1,350	1,200	1,050	900	750	600	450	300	150	-
Total Fixed Assets	3,261,489	2,935,340	2,609,192	2,283,043	1,956,894	1,630,745	1,304,596	978,447	652,298	326,149	0
<i>Intangible assets</i>											
Pre-operation costs	147,885	133,097	118,308	103,520	88,731	73,943	59,154	44,366	29,577	14,789	(0)
Project Set-up & Marketing cost	210,000	189,000	168,000	147,000	126,000	105,000	84,000	63,000	42,000	21,000	-
Total Intangible Assets	357,885	322,097	286,308	250,520	214,731	178,943	143,154	107,366	71,577	35,789	(0)
TOTAL ASSETS	4,918,624	6,836,445	9,097,270	9,904,870	10,781,985	11,534,631	13,199,479	16,061,864	18,507,903	20,880,104	21,885,029
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Short term debt	-	2,580,771	5,019,748	5,199,197	4,286,423	2,135,211	-	-	-	-	-
Total Current Liabilities	-	2,580,771	5,019,748	5,199,197	4,286,423	2,135,211	-	-	-	-	-
<i>Other liabilities</i>											
Deferred tax	-	-	-	21,375	42,750	64,125	42,750	21,375	-	(21,375)	(42,750)
Long term debt	2,459,312	2,101,705	1,686,881	1,205,685	647,497	-	-	-	-	-	-
Total Long Term Liabilities	2,459,312	2,101,705	1,686,881	1,227,060	690,247	64,125	42,750	21,375	-	(21,375)	(42,750)
<i>Shareholders' equity</i>											
Paid-up capital	2,459,312	2,459,312	2,459,312	2,459,312	2,459,312	2,459,312	2,459,312	2,459,312	2,459,312	2,459,312	2,459,312
Retained earnings	-	(305,343)	(68,672)	1,019,301	3,346,002	6,875,983	10,697,417	13,581,176	16,048,591	18,442,166	19,468,467
Total Equity	2,459,312	2,153,969	2,390,641	3,478,613	5,805,314	9,335,296	13,156,729	16,040,489	18,507,903	20,901,479	21,927,779
TOTAL CAPITAL AND LIABILITIES	4,918,624	6,836,445	9,097,270	9,904,870	10,781,985	11,534,631	13,199,479	16,061,864	18,507,903	20,880,104	21,885,029

13 KEY ASSUMPTIONS

Table 13-1 Machinery Assumptions

Maximum Capacity Utilization	97%
Maximum Capacity Utilization (Year 1)	75%
Total Production of the unit per day (Carrier)	240
Total Production of the unit per month (Carrier)	6,000
Total Production of the unit (Year 1)	54,000

Table 13-2 Operating Assumptions

Annual Production capacity (Carrier)	72,000
Hours operational per day	8
Days operational per month	25
Days operational per year	300

Table 13-3 Economy-Related Assumptions

Electricity growth rate	10%
Wage growth rate	10%

Table 13-4 Cash Flow Assumptions

Accounts Receivable cycle (in days)	90
Accounts payable cycle (in days)	90
Raw material inventory (in day)	30
Equipment and spare part inventory (in days)	30

Table 13-5 Revenue Assumptions

Production capacity of the unit in Year 1 (Carrier)	54,000
Sale price per unit in Year 1 (in Rs.) ⁷	240
Sale price growth rate	10%

Table 13-6 Financial Assumptions

Project life (Years)	10
Debt	50%
Equity	50%
Interest rate on long-term debt	16%
Debt tenure (Years)	5
Debt payments per year	12
Discount rate (weighted Avg. cost of capital for NPV)	20%

⁷ This is an ex-factory price