

# **PREFEASIBILITY STUDY**

## **ON SETTING UP ACTIVATED CARBON FROM COCONUT SHELL PROCESSING PLANT IN NIGERIA**

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We also wish to extend our gratitude to all those who reviewed the content and provided valuable inputs for improving the quality, coherence, and content presentation of this prefeasibility study.

## ABOUT THIS REPORT

This prefeasibility study is designed to provide potential and startups entrepreneurs' valuable information on setting up activated carbon business in the food processing industry of Nigeria's market; aimed at encouraging and facilitating industrial activities across the country. It is our realization that industrialization is at the heart of economic development and that every effort has to be made to bring about industrial growth and encourage our people to be part of it.

The Activated carbon business shows over 80% local content in terms of availability of raw material, equipment and machinery, manpower and other requirements.

The key areas covered in this report include:

- i) Technical and economic analysis of the production, marketing and profitability of the project.
- ii) Recommendations in respect of procurement of equipments and associated problems.
- iii) Recommendation on suitable agronomic management practices to ensure efficient running of the projects.
- iv) Detailed financial analysis including project cash flows for the projects.

This prefeasibility report provides a comprehensive and detailed coverage of the above terms of reference and is designed to facilitate investment decisions.

The implementation of this project will also impact positively on the economy of the immediate community where the project is located. This is in terms of employment-direct and indirect, skilled and unskilled. Government also stands to benefit from internal revenue from taxation.

In view of the result of the analysis using some economic indicators as stated in the proposed project, it is hereby recommended that the project is viable.

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## PART I

### EXECUTIVE SUMMARY

This prefeasibility is for setting up Activated Carbon production unit utilizing coconut shells are the basic raw material.

Activated Carbon is referred to solid adsorbent material that is used to remove organic pollutants from liquid or gas streams. This is the most commonly used adsorption medium. It is found in block, granulated, or powdered form, activated carbon is produced by heating carbonaceous materials, such as coal, wood, or coconut shells, in the absence of air to create a char which is then activated with oxidizing gases to form pores.

The project is small scale enterprise project and can be sited in any semi rural or rural area in Nigeria with consideration to nearness of raw materials, basic infrastructures and market accessibility. The technology for the processing of this product is locally available.

This product has a good marketability with export potential as it's in high demand in different developed countries for commercial and industrial purposes especially with proper linkages of the manufacturers, and in the sewerage industry.

This projected production capacity is 120,120 tonnes of activated carbon per year, at 60% capacity utilization.

#### 1.1 SUMMARY OF TOTAL PROJECT COST

S/N	DESCRIPTION	COST INCURRED	COST TO BE INCURRED	TOTAL
1	Land and building	-	300,000	300,000
2	Machinery & equipment	-	7,900,000	9,516,000
3	Utility equipment	-	1,120,000	1,120,000
4	Office equipment	-	300,000	300,000
5	Vehicle	-	450,000	2,250,000
	<b>TOTAL CAPITAL COST</b>	-	<b>11,870,000</b>	<b>13,486,000</b>
6	Working capital	-	1,500,000	1,500,000
7	10% contingencies exp.	-	1,498,600	1,498,600
	<b>Total Cost of Project</b>	-	<b>14,868,600</b>	<b>16,484,600</b>

#### 1.2 FINANCIAL ACCOUNTING RATIOS ANALYSIS

##### PERFORMANCE RATIOS AVERAGES

- (a) Return on Sales = 18%
- (b) Return on Equity = 224%
- (c) Return on Investment = 61%
- (d) Positive NPV = ₦34,873,511
- (e) IRR = 47%
- (f) ARR = 60%
- (g) Payback Period = 2 years and 2 months

## **PART II**

### **MARKET ANALYSIS**

#### **2.1 INTRODUCTION**

Coconuts have long been a source of a cool and refreshing drink that can be enjoyed throughout the year. But now this humble fruit is finding use in a variety of industries in a very different form – as activated carbon. Activated carbon is manufactured from various organic substances with a high carbon content, the most popular being coconut husks. Activated carbon finds use across sectors - from air and water purification to gold mining and air masks. Compared coconut shells with other fuels such as coal, wood and coconut shells coco peat; it is a best raw material for the production of activated carbon because coconut shells hardness and high carbon storage. It is its unique adsorbing power that drives its demand and is produced from carbonaceous materials such as coconut husks, various types of pith, jute, wood, etc.

#### **2.2 INDUSTRY GROWTH ANALYSIS**

The world has a very high demand on the use of activated carbon produced from coconut shell charcoal. Due to the growth and market opportunities in the global charcoal, some charcoal producers have expanded production and sourcing raw materials from other countries. For exports of activated carbon produced from coconut shell charcoal, then in many other sources said coal exports in global activity in 2012 reached \$1,913.2 million and are expected to increase by \$4,180 , \$ 5 million in 2020; increase of 14.8% per year.

#### **2.3 GLOBAL MARKET AND SUPPLY GAP ANALYSIS**

Activated carbon from China has been impacted by several factors: the regular tariff of 4.8 percent on activated carbon imports (China does not have a Free Trade Agreement and is not a GSP country), the anti-dumping duty on Chinese activated carbon to the US, which is currently in the range of 4-228 percent (reviewed every year retroactively), Chinese currency has gained strength, Chinese VAT rebate to exporters was ended a few years ago and coal costs in China have increased as many coal mines have closed over the years due to safety and environmental concerns. Chinese labor costs have also risen in the past few years. China's own domestic requirements have grown rapidly with the ongoing industrialization of the country over the past couple of decades.

The most recent example of world events that put pressure on the activated carbon market is the earthquake and tsunami in Japan. Many Japanese municipal water plants are now installing activated carbon media as a measure of protection against radioactive fallout. Japan were buying much more activated carbon than usual (mostly coconut shell product) and that trend continue for many more months.

#### 2.4 DOMESTIC DEMAND ANALYSIS

There is some domestic demand but the volume required in the local market is quite small. So, 99% of the production is targeted for exports. The reason is that in Nigeria the concept of filtration systems is not very popular and a very few sectors are using it. The Nigeria companies that may use it manufacture the product outside Nigeria and export it to the country. In Nigeria, we do not do recycling. If the Nigerian government had given a push to recycling, there would have been a higher domestic demand.



## **PART III**

### **TECHINICAL ANALYSIS**

#### **3.1 PRODUCT DESCRIPTION**

This involves the activated carbon produced from coconut. Hardness of coconut shell charcoal making production process activated carbon from coconut shell charcoal is harder (resistant to abrasion higher) and contains less ash. High carbon coconut shell creates lots of foam for the activated carbon produced from coconut shell; therefore absorption of carbon increases.

One of the critical success factors to this project is based on the ability of the entrepreneur to secure regular supply of the raw materials (coconut shell).

#### **3.2 SUITABLE LOCATION**

Coconut is grown in 22 states of the country, with Lagos State being the largest producer. The country produces 250,000 tonnes annually and is No. 18 in the world. Its yield and rank make it a fringe and sub-optimal producer.

This project can be sited at any part of the country especially in the rural communities where there is availability of local coconut farmers and plantations for easy access to the raw materials.

#### **3.3 RAW MATERIAL**

In Nigeria, the leading coconut producing states out of the 22 are Niger, Kano, Jigawa, Zamfara, Kebbi, Sokoto, Katsina, Kaduna, Adamawa, Yobe, Borno, Taraba, Plateau, Nasarawa, Bauchi, Lagos and Ogun states with Lagos State taking the pace, sited on about one hundred and ten (110) hectares of farm land.

#### **3.4 PRODUCTION CAPACITY**

This project is projected based on production 120,120 tonnes of activated carbon from coconut shell per year. Consequently, the entrepreneur is expected to reach out to different rural coconut plantations, coconut oil and cream producers etc to ensure steady supply of raw material.

#### **3.5 PRODUCTION PROCESS**

The process consists of crushing the coconut shell in a hammer mill to a required size and then pulverizing in a ball mill. The shell powder is digested with zinc chloride. The mass is then activated at elevated temperature. The activated pellets are quenched and leached counter-currently by diluted hydrochloric acid and dried in a tray.

Alternatively, activated carbon made from coconut shell charcoal iodine number is higher than other types of activated carbon and activated carbon made from coal. Iodine number is

a measure of the level of activity of activated carbon; ie 01g activated charcoal can absorb many grams milliliter of iodine. Activated carbon made from coconut shell charcoal from 1100-1200 of iodine, more than the iodine number of activated carbon made from coal only from 900-1000 of iodine.

### **3.6 SOURCES OF FUNDS**

The project can be funded through a number of sources which include but not limited to the following; Agric-Business, Small & Medium Scale Investment Scheme (AGSMEIS), Bank of Industry, Bank of Agriculture (BOA), Nigeria Export-Import (NEXIM) Bank, International Finance Corporation (IFC), grants etc., though the conditions and criteria for accessing the loans and grants varies.

## PART IV FINANCIAL ANALYSIS

Basically, the financial section of this prefeasibility study consists of three financial statements: Income statement, Balance sheet, Cash flow projection. This section determines whether or not the project is viable using some economic indicators such as Net Present Value (NPV), Internal Rate of Return (IRR), and payback period as are detailed in the appendices below.

### 4.1 ASSUMPTIONS

1. Assuming that the project will last for the period of five years and the salvage value at the end of the project life ignored.
2. The Machineries, Equipments and Utility Equipment have uniform depreciation of 20%
3. The installed capacity has estimated capacity of least 465kg of activated carbon to be produced per day leading to 120,120 kg per year assumed to be 60% capacity.
4. The proposed capacity utilization are 60% in the first year of commercial production, 70%, 80% in the 2<sup>nd</sup> and 3<sup>rd</sup> year respectively and 90% in the 4<sup>th</sup> and 5<sup>th</sup> years.
5. Raw materials will be sourced locally and Market for the product is readily available.
6. Staff and labour cost will increase by 10% yearly.
7. Prices and unit costs are assumed unchanged in the five years of projection.
8. The valuation currency used is Naira.

### 4.2 ACCOUNTING /FINANCIAL ANALYSIS

#### 4.2.1 NET PROFIT

The projected Annual Trading Profit and Loss Account is proposed to make the following Net Profit after tax during the corresponding projected periods – all things being equal.

#### 4.2.2 NET PRESENT VALUE (NPV)

NPV is one of the four methods of discounted cash flows techniques which state that money that is immediately available for use, has a greater value than same amount receivables in future date.

Using this method however, all net cash inflows will be discounted to present value using the estimated interest rate of 60% discount factor. At 12% discount factor the project produced a positive **NPV NGN 34,873,511**

#### 4.2.3 INTERNAL RATE OF RETURN (IRR)

This is the discount rate which gives zero NPV or the rate which equates the present value of cash inflows with present value of cash outflows of the project.

The cash flow of this project was discounted systematically until the NPV of the project finally become zero. The project produces the **IRR** of **47%**. Thus, the project accepted as being viable. This is because **IRR** is more than the cost of capital.

#### **4.2.4 ACCOUNTING RATE OF RETURN (ARR)**

ARR uses accounting information as revealed by financial statements (Income Statement) to measure profitability of the project under consideration. The forecast **ARR** of the project is **60%**.

#### **4.2.5 PROFITABILITY INDEX (PI)**

This is the present value of future cash flows over the present value of cash outlays. The project PI further confirm the viability of the project , because as the rules of the accepting and rejecting hold, a project should be accepted if the PI is equal or greater than one (1). Consequently, the PI of this project is **1.72** and thus recommended as being viable to be accepted for financing.

#### **4.2.6 PAYBACK PERIOD**

The payback period of any project is the length of time it would take the business investors to recover the capital invested in a project in spite of asset replacement. For this particular project the capital investment is expected to be fully recovered in about 2 years and 2 months.

**APPENDIX  
TOTAL PROJECT COST**

S/N	DESCRIPTION	QTY	COST	TOTAL
	<b>LAND AND BUILDING</b>			
1	Factory rent	1	300,000	300,000
	<b>Sub total</b>		<b>300,000</b>	<b>300,000</b>
	<b>MACHINERY &amp; EQUIPMENT</b>			
2	Hammer mill	1	1,740,000	1,740,000
3	Pulverriser	1	480,000	480,000
4	Rotary Digester	1	1,068,000	1,068,000
5	Pelletzer	1	480,000	480,000
6	Tunnel dryer	1	840,000	840,000
7	Vibrating screens	1	316,000	316,000
8	Platform type weighing machine	1	240,000	240,000
9	High pressure steam boilers	2	1,520,000	3,040,000
10	Rotary Activation kiln	1	166,000	166,000
11	Activated carbon storage silo	2	96,000	192,000
12	Non corrosive materials	1	254,000	254,000
13	Tank filters press & accessories	1	700,000	700,000
	<b>Sub total</b>		<b>7,900,000</b>	<b>9,516,000</b>
	<b>UTILITY EQUIPMENT</b>			
14	Generating set	1	1,120,000	1,120,000
	<b>Sub total</b>	<b>1</b>	<b>1,120,000</b>	<b>1,120,000</b>
	<b>OFFICE EQUIPMENT</b>			
12	Computer system and printer	1	150,000	150,000
13	Furniture & fittings	1	150,000	150,000
	<b>Sub total</b>		<b>300,000</b>	<b>300,000</b>
	<b>VEHICLE</b>			
11	Sales/ Delivery van	1	2,250,000	2,250,000
	<b>Sub total</b>	<b>1</b>	<b>450,000</b>	<b>2,250,000</b>
	<b>TOTAL CAPITAL COST</b>		<b>11,870,000</b>	<b>13,486,000</b>
14	Working capital		1,500,000	1,500,000
15	10% contingencies		1,498,600	1,498,600
	<b>Total Cost of Project</b>		<b>14,868,600</b>	<b>16,484,600</b>

**APPENDIX II**  
**ESTIMATION OF WORKING CAPITAL REQUIREMENT**

**N'**

<b>Year of Commercial Operation</b>	<b>2 weeks</b>
<b>% Capacity Utilization (Inventory)</b>	<b>60%</b>
1 week stock of raw material	850,000
1 Day stock of finished products	300,000
Work in Progress	50,000
Bank/ Cash (5% sales of the products)	-
<b>Working capital</b>	<b>1,500,000</b>

**APPENDIX III**  
**FINANCING PLAN**

**₦**

<b>DESCRIPTION</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>TOTAL</b>
Equity	4,484,600		4,484,600
Term loan from	-	12,000,000	12,000,000
<b>Total project cost</b>	<b>4,484,600</b>	<b>12,000,000</b>	<b>16,484,600</b>
<b>% Contribution</b>	<b>20.5%</b>	<b>79.5%</b>	<b>100%</b>

**APPENDIX IV**  
**TERM LOAN REPAYMENT SCHEDULE**

LOAN AMOUNT: N12,000,000 (Twelve Million Naira Only)  
 TYPE : ANY LOCAL AVAILABLE SME FUND  
 INTEREST RATE USED: 12%  
 REPAYMENT: 5 YEARS EQUAL INSTALLMENT (Annually)

<b>YEAR</b>	<b>OPENING BALANCE</b>	<b>REPAYMENT</b>	<b>INTEREST DUE</b>	<b>TOTAL YEAR INTEREST</b>
1	12,000,000	2,400,000	1,440,000	3,840,000
2	9,600,000	2,400,000	1,152,000	3,552,000
3	7,200,000	2,400,000	864,000	3,264,000
4	4,800,000	2,400,000	576,000	2,976,000
5	2,400,000	2,400,000	288,000	2,688,000
<b>Total</b>		<b>12,000,000</b>	<b>4,320,000</b>	<b>16,320,000</b>

**APPENDIX V**  
**FORECAST STAFFING SCHEDULE (1<sup>ST</sup> OPERATIONAL YEAR)**  
**N'ooo**

POSITION	No	Unit Scale	Scale/ Month	Scale / Year
<b>DIRECT LABOUR</b>				
Factory Manager	1	60	60	720
Unskilled labour	2	30	60	720
<b>Sub total</b>	<b>3</b>	<b>90</b>	<b>120</b>	<b>1,440</b>
<b>INDIRECT LABOUR</b>				
Accounts/ Admin	1	40	40	480
Marketing Officer	2	30	60	720
<b>Sub total</b>	<b>3</b>	<b>100</b>	<b>100</b>	<b>1,200</b>
<b>Total on staff (1<sup>st</sup> year)</b>	<b>6</b>	<b>190</b>	<b>220</b>	<b>2,640</b>

**APPENDIX VI**  
**ESTIMATE OF ANNUAL DEPRECIATION ALLOWANCE**  
**N'**

ITEMS	INITIAL VALUE	DEPRECIATION (20%)
Machinery and Equipments	9,516,000	1,903,200
Utility Equipments	1,120,000	224,000
Office equipment	300,000	60,000
Vehicle	2,250,000	450,000
<b>TOTAL</b>	<b>13,186,000</b>	<b>2,637,200</b>

**APPENDIX VII**  
**ESTIMATION OF ADMINISTRATIVE / OVERHEAD EXPENSES**

N'ooo

COST ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Selling and Distribution	1,480	1,504	1,528	1,554	1,554
Utilities (water & electricity)	312	327.6	343.2	360	360
Packaging materials	440	444	448.4	453.2	453.2
Diesel	1,780	1,869	1,958	2,056	2,056
<b>TOTAL</b>	<b>2,596</b>	<b>2,725.8</b>	<b>2,855.6</b>	<b>2,998.38</b>	<b>2,998.38</b>

**APPENDIX VIII**  
**ESTIMATION OF PRODUCTION AND OPERATION COSTS**

Cost Item	Units	@ ₦	Qty/ day	Pdn cost/ day	Pdn cost/ month	Pdn cost/ year
Direct costs						
Coconut shells	Kgs	90	385	34,800	900,900	10,810,800
Zinc chloride	Litrs	381	50	19,200	495,300	5,943,600
Hydrochloric acid	Liters	1,050	30	31,500	819,000	9,828,000
<b>Sub-total</b>		<b>1,521</b>	<b>465</b>	<b>85,500</b>	<b>2,215,200</b>	<b>26,582,400</b>

**APPENDIX IX**  
**ESTIMATION OF RAW MATERIAL/PRODUCTION COST AND SALES**

Year of Commercial Production	Year 1	Year 2	Year 3	Year 4	Year 5
<b>% Capacity Utilization</b>	<b>60%</b>	<b>70%</b>	<b>80%</b>	<b>90%</b>	<b>90%</b>
<b>1. Output</b>					
Coconut shell (kgs)	120,120	132,132	144,144	158,558	158,558
<b>Total output</b>	<b>120,120</b>	<b>132,132</b>	<b>144,144</b>	<b>158,558</b>	<b>158,558</b>
<b>2. Cost of Production</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>
Activated carbon @ N221.3 (kgs)	26,582,556	29,240,812	31,899,067	35,088,885	35,088,885
<b>Total cost of production</b>	<b>26,582,556</b>	<b>29,240,812</b>	<b>31,899,067</b>	<b>35,088,885</b>	<b>35,088,885</b>
<b>3. SALES</b>					
Activated carbon @ N415 (kgs)	49,849,800	54,834,780	59,819,760	65,801,570	65,801,570
<b>TOTAL SALES/ TURNOVER</b>	<b>49,849,800</b>	<b>54,834,780</b>	<b>59,819,760</b>	<b>65,801,570</b>	<b>65,801,570</b>



**APPENDIX X**  
**FORECAST INCOME STATEMENT (PROFIT & LOSS ACCOUNT)**

Year of commercial operation	Year 1	Year 2	Year 3	Year 4	Year 5
% Capacity Utilization	60%	70%	80%	90%	90%
<b>1. SALES</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>
Gross Sales	49,849,800	54,834,780	59,819,760	65,801,570	65,801,570
VAT @ 5%	2,492,490	2,741,739	2,990,988	3290078.5	3290078.5
<b>Net Revenue</b>	<b>47,357,310</b>	<b>52,093,041</b>	<b>56,828,772</b>	<b>62,511,491</b>	<b>62,511,491</b>
<b>2. OPERATION COST</b>					
Cost of Raw materials consumed	26,582,556	29,240,812	31,899,067	35,088,885	35,088,885
Staff and labour	2,640,000	2,904,000	3,168,000	3,485,000	3,485,000
Admin. & Overhead Expenses	4,012,000	4,145,000	4,27,000	4,423,000	4,423,000
Depreciation	2,637,200	2,637,200	2,637,200	2,637,200	2,637,200
<b>Total Operating Cost</b>	<b>35,871,756</b>	<b>38,927,012</b>	<b>41,974,267</b>	<b>45,634,085</b>	<b>45,634,085</b>
<b>3. OTHER COSTS</b>					
Interest on Term Loan (12%)	1,440,000	1,152,000	864,000	576,000	288,000
Loan Repayment	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
<b>Total (Other Costs)</b>	<b>39,711,756</b>	<b>42,479,012</b>	<b>45,238,267</b>	<b>48,610,085</b>	<b>48,322,085</b>
Profit Before Tax	7,645,554	9,614,029	11,590,505	13,901,407	14,189,407
Tax @ 12%	917,466	1,153,683	1,390,860	1,668,168	1,702,728
<b>Profit after tax (NET PROFIT)</b>	<b>6,728,088</b>	<b>8,460,346</b>	<b>10,199,644</b>	<b>12,233,238</b>	<b>12,486,678</b>
% Return on Sales	0.14	0.16	0.18	0.20	0.20
% Return on Equity	1.50	1.89	2.27	2.73	2.78
% Return on Investment	0.41	0.51	0.62	0.74	0.76

## APPENDIX XI

### FORECAST HIGH RATE AND LOW RATE COMPUTATION

Year	C/F	DF 12%	NPV
	N'		N'
0	(16,484,600)	1	(16,484,600)
1	6,728,088	0.893	6,008,182.58
2	8,460,346	0.797	6,742,895.76
3	10,199,644	0.712	7,262,146.53
4	12,233,238	0.636	7,780,339.37
5	12,486,678	0.567	7,079,946.43
<b>Total Profit</b>	<b>50,107,994</b>		<b>34,873,511</b>
<b>Average Profit</b>	<b>10,021,599</b>		

Year	C/F	DF 60%	NPV
	N'		N'
0	(16,484,600)	1	(16,484,600)
1	6,728,088	0.625	4,205,055
2	8,460,346	0.3906	3,304,611.15
3	10,199,644	0.2441	2,489,733.1
4	12,233,238	0.1526	1,866,792.12
5	12,486,678	0.0954	1,191,229.08
<b>Total Profit</b>	<b>50,107,994</b>		<b>13,057,420</b>
<b>Average Profit</b>	<b>10,021,599</b>		

## APPENDIX XII FORECAST IRR AND ARR COMPUTATION

$$IRR = a + \left( \frac{A}{A+B} \right) * (b-a)$$

Where

$$a = 12\%$$

$$b = 60\%$$

$$A = 34,873,511$$

$$B = 13,057,420$$

$$12\% + \frac{34,873,511}{34,873,511 + 13,057,420} (60-12)$$

$$12\% + 34.9$$

$$47\%$$

$$ARR = \frac{\text{Estimated Average Profit} \times 100}{\text{Estimated initial investment}}$$

$$ARR = \frac{10,021,599 \times 100}{16,484,600}$$

$$60\%$$

**APPENDIX XIII  
CASH FLOW PROJECTION**

Year of Comm. Production	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
% Capacity Utilization		60%	70%	80%	90%	90%
<b>A) CASH RECEIPTS</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>	<b>N'</b>
Equity Capital	4,484,600	-	-	-	-	-
Term Loan	12,000,000	-	-	-	-	-
Gross Revenue		47,357,310	52,093,041	56,828,772	62,511,491	62,511,491
<b>Total Receipts</b>	<b>16,484,600</b>	<b>47,357,310</b>	<b>52,093,041</b>	<b>56,828,772</b>	<b>62,511,491</b>	<b>62,511,491</b>
<b>B) CASH PAYMENTS</b>						
<b>Capital Payment</b>						
Machinery & Equipments	9,516,000	-	-	-	-	-
Utility Equipments	1,120,000	-	-	-	-	-
Office Equipments	300,000	-	-	-	-	-
Vehicle	2,250,000	-	-	-	-	-
<b>TOTAL</b>	<b>13,186,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>(ii) Operating Expenses</b>						
Depreciation	-	2,637,200	2,637,200	2,637,200	2,637,200	2,637,200
Change in working capital	3,298,600	33,234,556	36,289,812	39,337,067	42,996,885	42,996,885
<b>Sub total</b>	<b>3,298,600</b>	<b>35,871,756</b>	<b>38,927,012</b>	<b>41,974,267</b>	<b>45,634,085</b>	<b>45,634,085</b>
<b>(iii) Financial Expenses</b>						
Repayment of Term Loan	-	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
Interest on Term Loan	-	1,440,000	1,152,000	864,000	576,000	288,000
Value Added Tax	-	2,492,490	2,741,739	2,990,988	3290078.5	3290078.5
Corporate Tax	-	917,466	1,153,683	1,390,860	1,668,168	1,702,728
<b>Sub total</b>	<b>-</b>	<b>7,249,956</b>	<b>7,447,422</b>	<b>7,645,848</b>	<b>7,934,247</b>	<b>7,680,807</b>
<b>Total cash payment (ii)-(iii)</b>	<b>3,298,600</b>	<b>28,621,800</b>	<b>31,479,590</b>	<b>34,328,419</b>	<b>37,699,838</b>	<b>37,953,278</b>
<b>Net cash flow c/f</b>	<b>3,298,600</b>	<b>28,621,800</b>	<b>31,479,590</b>	<b>34,328,419</b>	<b>37,699,838</b>	<b>37,953,278</b>

**APPENDIX XIV  
BALANCE SHEET PROJECTION**

Year of comm. Operation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
<b>ASSETS</b>	<b>N'000</b>	<b>N'000</b>	<b>N'000</b>	<b>N'000</b>	<b>N'000</b>	<b>N'000</b>
<b>(i) Fixed assets</b>						
Machinery and Equipments	9,516,000	-	-	-	-	-
Utility Equipments	1,120,000					
Office Equipments	300,000	-	-	-	-	-
Vehicle	2,250,000	-	-	-	-	-
Value at Acquisition	-	13,186,000	13,186,000	13,186,000	13,186,000	13,186,000
Less Cumulated Depreciation	-	2,637,200	5,274,400	7,911,600	10,548,800	13,186,000
<b>Net fixed assets</b>	<b>13,186,000</b>	<b>10,548,800</b>	<b>7,911,600</b>	<b>5,274,400</b>	<b>2,637,200</b>	<b>0</b>
<b>(ii)Current Assets/ liability</b>						
Stock of Raw Materials	1,500,000	16,052,330	28,696,086	36,729,511	43,641,776	50,858,503
Debtors /prepayment	-	6,453,000	7,098,000	8,308,000	9,139,000	10,653,000
Bank and Cash Balances	1,798,600	150,024	160,031	170,539	180,674	180,741
Creditor / accruals	-	(9,074,000)	(11,039,000)	(13,947,000)	(15,013,000)	(18,785,000)
Company Tax	-	(917,466)	(1,153,683)	(1,390,860)	(1,668,168)	(1,702,728)
<b>Net current assets</b>	<b>3,298,600</b>	<b>12,663,888</b>	<b>23,761,434</b>	<b>29,870,190</b>	<b>36,280,282</b>	<b>41,204,516</b>
<b>TOTAL NET ASSETS</b>	<b>16,484,600</b>	<b>23,212,688</b>	<b>31,673,034</b>	<b>35,144,590</b>	<b>38,917,482</b>	<b>41,204,516</b>
<b>(ii) FINANCED BY</b>						
Equity Capital	4,484,600	4,484,600	4,484,600	4,484,600	4,484,600	4,484,600
P&L	-	6,728,088	8,460,346	10,199,644	12,233,238	12,486,678
Retained Profit	-	-	6,728,088	8,460,346	10,199,644	12,233,238
<b>SHAREHOLDERS FUND</b>	<b>4,484,600</b>	<b>11,212,688</b>	<b>19,673,034</b>	<b>23,144,590</b>	<b>26,917,482</b>	<b>29,204,516</b>
Long Term Loan	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000
<b>TOTAL EQUITY &amp; LIABILITY</b>	<b>16,484,600</b>	<b>23,212,688</b>	<b>31,673,034</b>	<b>35,144,590</b>	<b>38,917,482</b>	<b>41,204,516</b>