PREFEASIBILITY STUDY ON

SETTING UP COTTON MOSQUITO NETS IN NIGERIA

DEVELOPED BY

STARTUP BUSINESS FOUNDATION

FREE DOWNLOAD

Register & Download

@

Website: www.startupbizfoundation.org
Email: info@startupbizfoundation.org
Tel: +234832686671,

STARTUP
BUSINESS FOUNDATION

DISCLAIMER

ACKNOWLEDGMENT

Startup Business Foundation is thankful to all organizations and individuals who have helped in several ways in preparation of this prefeasibility study.

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 Cotton Mosquito Net in the manufacturing 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.

Cotton Mosquito Net business has 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.

TABLE OF CONTENT

APPENIDIES

PART I
EXECUTIVE SUMMARY

This investment profile envisages the establishment of a plant that will manufacture Cotton mosquito nets in suitable location in Nigeria.

Mosquito nets are a natural alternative to toxic chemical sprays as a method of protection against mosquitoes, moths, sand flies and other insects.

As mosquitoes become more strongly resistant to public health insecticides, the overall value of the nets comes increasingly from their ability to prevent biting rather than their ability to kill mosquitoes. The Fabric of Life, intact nets, if available and are consistently used, offer substantial benefits whether or not they kill mosquitoes.

The location of the production plant should majorly be in consideration to the accessibility of the raw material sources at meets the production capacity of the plant as well as availability of basic infrastructure such as electricity and good road network.

The installed capacity of the plant is based on the production of 450 nets per day, at 60% capacity utilization.

1.2 SUMMARY OF TOTAL PROJECT COST

S/N	DESCRIPTION	COST INCURRED	COST TO BE INCURRED	TOTAL
1	Land & building	-	800,000	800,000
2	Machinery & equipment	-	411,500	1,304,500
3	Utility equipment	-	1,250,000	1,250,000
4	Office equipment	-	550,000	550,000
	Total Cost of capital	-	**3,011,500**	**3,904,500**
5	Working capital	-	2,400,000	2,400,000
6	10% Contingencies & preliminary expenses	-	630,450	630,450
	Total project cost	-	**6,041,950**	**6,934,950**

1.2 FINANCIAL ACCOUNTING RATIOS ANALYSIS

PERFORMANCE RATIOS AVERAGES

(a) Return on Sales =3%
(b) Return on Equity =280%
(c) Return on Investment =119%
(d) Positive NPV = ₦65,662,794
(e) IRR =46%
(f) ARR =119%
(g) Payback Period = 11 months.

PART II
MARKET ANALYSIS

2.1 INTRODUCTION

In addition to being the top malaria prevention tool today, the mosquito net is also one of the oldest. Its invention most likely preceded raised sleeping beds, and was primarily used for preventing bites of mosquitoes and other insects in periods not limited to sleeping hours. The ability of nets to prevent biting primarily depends on how long the nets remain intact, which in turn is dependent on the physical durability and integrity of the nets.

2.2 MARKET AREA ANALYSIS

Malaria is recognized as a major public health problem in sub-Saharan Africa (SSA). It causes an estimated one million deaths per year and is the leading cause of mortality in children under five (WHO). These facts, combined with the increasing resistance to anti-malarial drugs, have made it imperative to develop more effective prevention strategies.

Mosquito nets are an effective means of prevention. Until recently, nets were used without insecticide treatment, and the majority of commercially available nets are untreated. When nets are treated with insecticide, their ability to protect humans against mosquito bites is enhanced, and insecticide-treated nets (ITNs) have been shown to decrease childhood mortality by 15 to 63 percent1 and malaria episodes by 50 percent. Although untreated nets also provide protection against malaria, at best an untreated net provides only half the level of protection afforded by an ITN.

2.3 DEMAND ANALYSIS

According to the World Health Organization (WHO) report, ninety percent of the population of sub-Saharan Africa (SSA) lives in areas at risk for endemic or epidemic malaria. As treatment becomes more difficult because of the increase in drug resistance, it is necessary to focus on and to reinforce prevention.

Evidently, the demand for the product is enormous as the population growth gives insight on the level of domestic demand. As one of the main preventive measure to malaria, ITNs market will continue to grow.

2.4 TARGET MARKET

Though INTs has good marketability potential but the production cost are in most cases higher than the market prices. Therefore, the entrepreneur needs to seek avenue to subsidies the production because of high competition from major market player like China. Apart from the general market, the manufacturers should target institutions, like government and non government organization for bulk purchases and sales.

PART III
TECHNICAL ANALYSIS

3.1 PRODUCT DESCRIPTION

Insecticide-treated nets (ITNs) have been a major component of malaria prevention and control campaigns for the past two decades. With a history nearly as old as modern civilization, bed nets are the most ubiquitous malaria prevention technique and one of the most effective. When available and correctly used, their benefits are primarily derived from bite prevention and from killing or repelling mosquitoes.

Resistance to common public health pesticides is widespread in major malaria vectors across Africa and other regions. Of the 80 WHO member countries that provided resistance data for the period between 2010 and 2017, 68 reported resistances to at least one insecticide in major malaria vectors, and 57 had resistance to two or more insecticides.

3.2 LOCATION ANALYSIS

The industrial location should be done in consideration to proximity of the factory to the source of raw materials and basic infrastructure availability.

3.3 RAW MATERIALS

Insecticide treated nets (ITNs) are made of one of several types of synthetic fiber, such as polyester, polyethylene, or polypropylene. The insecticide is integrated either directly into the fiber itself at the moment of extrusion or fixed to the fiber during the production process to give the final net its long lasting properties.

3.4 PRODUCTION PROCESS

In general, net production can be broken down into four steps:

(1) Derivatives from the oil industry are used to make material for extrusion into fiber;

(2) This raw material is extruded into yarn;

(3) Yarn is warped, knitted, and heat-stretched (stented), if needed, to make netting material; and

(4) Netting material is cut and sewn into nets.

3.5 PRODUCTION CAPACITY

The installed production capacity is 450 nets per day which translates to 140,400 annually working 312 day, at 60% capacity utilization.

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 60% installed capacity has estimated capacity 450 packs daily, which translates to 140,400 packs of cotton mosquito net per annum.
4. The proposed capacity utilization are 60% in the first year of commercial production, 70%, 80% in the 2nd and 3rd year respectively and 90% in the 4th and 5th 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 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 29,301,490**

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 **46.2%.** 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 118.9%.

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.

APPENDIX I
TOTAL PROJECT COST

S/N	DESCRIPTION	QTY	UNIT PRICE	AMOUNT
	LAND & BUILDING			
1	Renting of office space	1	800,000	800,000
	Sub total	**1**	**800,000**	**800,000**
	MACHINERY & EQUIPMENT			
2	Sewing machine	4	187,500	750,000
3	Embroidery machine	2	64,500	129,000
4	Zig zag machine	2	86,000	172,000
5	Other accessories	1	253,500	253,500
	Sub total		**411,500**	**1,304,500**
	UTILITY EQUIPMENT			
8	Generating set	1	1,250,000	1,250,000
	Sub total		**1,250,000**	**1,250,000**
	OFFICE EQUIPMENT			
11	Furniture & fittings	set	350,000	350,000
	Computer system		200,000	200,000
	Sub total		**550,000**	**550,000**
	Total Cost of capital		**3,011,500**	**3,904,500**
13	Working capital		2,400,000	2,400,000
14	10% Contingencies & preliminary expenses		630,450	630,450
	Total project cost		**6,041,950**	**6,934,950**

APPENDIX II
ESTIMATION OF WORKING CAPITAL REQUIREMENT

N'

Year of Commercial Operation	**2 weeks**
% Capacity Utilization (Inventory)	**60%**
1 week stock of raw material	1,450,000
1 Day stock of finished products	800,000
Work in Progress	150,000
Bank/ Cash (5% sales of the products)	-
Working capital	**2,400,000**

APPENDIX III
FINANCING PLAN

DESCRIPTION	EXISTING	PROPOSED	TOTAL
Equity	2,934,950		2,934,950
Term loan from	-	4,000,000	4,000,000
Total project cost	2,934,950	**4,00,000**	**6,934,950**
% Contribution	**0%**	**100%**	**100%**

APPENDIX IV
TERM LOAN REPAYMENT SCHEDULE

LOAN AMOUNT: 4,000,000 (Four Million Naira)
TYPE : ANY LOCAL AVAILABLE SME FUND
INTEREST RATE USED: 12%
REPAYMENT: 5 YEARS EQUAL INSTALLMENT (Annually)

YEAR	OPENING BALANCE	REPAYMENT	INTEREST DUE	TOTAL YEAR INTEREST
1	4,000,000	800,000	480,000	1,280,000
2	3,200,000	800,000	384,000	1,184,000
3	2,400,000	800,000	288,000	1,088,000
4	1,6000,000	800,000	192,000	992,000
5	800,000	800,000	96,000	896,000
Total		**4,000,000**	**1,440,000**	**5,440,000**

APPENDIX V
FORECAST STAFFING SCHEDULE (1ST OPERATIONAL YEAR)
N'000

POSITION	No	Unit Scale	Scale/ Month	Scale / Year
DIRECT LABOUR				
Factory Manager	1	80	80	960
Skilled labour	4	60	240	2,880
Unskilled labour	2	30	60	720
Sub total	**7**	**170**	**380**	**4,560**
INDIRECT LABOUR				
Accounts/ Admin	1	50	50	600
Marketing Officer	2	40	80	960
Sub total	**3**	**130**	**130**	**1,560**
Total on staff (1st year)	**10**	**300**	**510**	**6,120**

APPENDIX VI
ESTIMATE OF ANNUAL DEPRECIATION ALLOWANCE
N'

ITEMS	INITIAL VALUE	DEPRECIATION (20%)
Machinery & equipment	1,304,500	260,900
Utility Equipments	1,250,000	250,000
Office equipment	550,000	110,000
TOTAL	**3,104,500**	**620,900**

APPENDIX VII
ESTIMATE OF ADMINISTRATIVE / OVERHEAD EXPENSES
N'

COST ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Selling and Distribution	1,800	2,180	2,560	3,016	3,016
Fuel / Diesel	2,800	3,680	4,560	5,616	5,616
Repairs & Servicing	1,800	1,980	2,160	2,376	2,376
TOTAL	6,400	7,840	9,280	10,008	10,008

APPENDIX VIII
ESTIMATION OF PRODUCTION AND OPERATION COST

Cost item	Units	@/ day	Qty/ day	Cost/ day	Cost/ month	Cost/ year
Direct Costs						
Cloth	Mtrs	480	270,000	432,000	11,232,000	134,784,000
Thread	Pcs	150	900,000	450,000	1,1700,000	140,400,000
Other Materials	Pcs		-	-	512,400	6,148,800
Subtotal		**630**	**1170,000**	**882,000**	**23,444,400**	**281,332,800**

APPENDIX IX
ESTIMATION OF RAW MATERIAL/PRODUCTION COST AND SALES

Year of Commercial Production	Year 1	Year 2	Year 3	Year 4	Year 5
% Capacity Utilization	**60%**	**70%**	**80%**	**90%**	**90%**
1. Output					
Cotton Mosquito net	140,400	154,440	168,480	185,328	185,328
Total output	**140,400**	**154,440**	**168,480**	**185,328**	**185,328**
2. Cost of Production	**N'000**	**N'000**	**N'000**	**N'000**	**N'000**
Cotton Mosquito net @ N2,003.8/ pack	281,332,800	309,466,080	337,599,360	371,359,296	371,359,296
Total cost of production	**281,332,800**	**309,466,080**	**337,599,360**	**371,359,296**	**371,359,296**
3. SALES					
Cotton Mosquito net @ N2,280/ pack	320,112,000	352,123,200	384,134,400	422,547,840	422,547,840
TOTAL SALES/ TURNOVER	**320,112,000**	**352,123,200**	**384,134,400**	**422,547,840**	**422,547,840**

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%
1. SALES	N'	N'	N'	N'	N'
Gross Sales	320,112,000	352,123,200	384,134,400	422,547,840	422,547,840
VAT @ 5%	16,005,600	17,606,160	19,206,720	21,127,392	21,127,392
Net Revenue	**304,106,400**	**334,517,040**	**364,927,680**	**401,420,448**	**401,420,448**
2. OPERATION COST					
Cost of Raw materials consumed	281,332,800	309,466,080	337,599,360	371,359,296	371,359,296
Staff and labour	6,120,000	6,732000	7,344000	8,078,000	8,078,000
Admin. & Overhead Expenses	6,400,000	7,840,000	9,280,000	10,008,000	10,008,000
Depreciation	620,900	620,900	620,900	620,900	620,900
Total Operating Cost	**294,473,700**	**324,658,980**	**354,844,260**	**390,066,196**	**390,066,196**
3. OTHER COSTS					
Interest on Term Loan (12%)	480,000	384,000	288,000	192,000	96,000
Loan Repayment	800,000	800,000	800,000	800,000	800,000
Total (Other Costs)	**295,753,700**	**325,842,980**	**355,932,260**	**391,058,196**	**390,962,196**
Profit Before Tax	**8,352,700**	**8,674,060**	**8,995,420**	**10,362,252**	**10,458,252**
Corporate Tax (12%)	1,002,324	1,040,887	1,079,450	1,243,470	1,254,990
Profit after tax (NET PROFIT)	**7,350,376**	**7,633,173**	**7,915,970**	**9,118,782**	**9,203,262**
% Return on Sales	0.024170409	0.02281849	0.021691886	0.022716286	0.02292674
% Return on Equity	2.504429718	2.60078461	2.697139508	3.10696324	3.13574738
% Return on Investment	1.059903244	1.10068174	1.141460227	1.314902308	1.32708408

APPENDIX XI

FORECAST HIGH RATE AND LOW RATE COMPUTATION

Year	C/F	DF 12%	NPV
	N'		N'
0	(6,934,950)	1	(6,934,950)
1	7,350,376	0.893	6,563,885
2	7,633,173	0.797	6,083,638
3	7,915,970	0.712	5,636,170
4	9,118,782	0.636	5,799,545
5	9,203,262	0.567	5,218,249
Total Profit	**41,221,563**		**29,301,490**
Average Profit	**8244312.6**		

Year	C/F	DF 60%	NPV
	N'		N'
0	(6,934,950)	1	(6,934,950)
1	7,350,376	0.625	4,593,985
2	7,633,173	0.3906	2,981,517
3	7,915,970	0.2441	1,932,288
4	9,118,782	0.1526	1,391,526
5	9,203,262	0.0954	877,991
Total Profit	**41,221,563**		**11,777,308**
Average Profit	**8,244,312.6**		

APPENDIX XII
FORECAST IRR AND ARR COMPUTATION

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

Where

a = 12%

b= 60%

A = 29,301,490

B= 11,777,308

$$12\% + \frac{29,301,490}{29,301,490 + 11,777,308} (60-12)$$

12% + 34.2

46.2%

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

$$ARR = \frac{8,244,312.6}{6,934,950} * 100$$

118.9%

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%
A) CASH RECEIPTS	**N'**	**N'**	**N'**	**N'**	**N'**	**N'**
Equity Capital	2,934,950	-	-	-	-	-
Term Loan	4,000,000	-	-	-	-	-
Gross Revenue	-	304,106,400	334,517,040	364,927,680	401,420,448	401,420,448
Total Receipts	**6,934,950**	**304,106,400**	**334,517,040**	**364,927,680**	**401,420,448**	**401,420,448**
B) CASH PAYMENTS						
Capital Payment						
Machinery & Equipments	1,304,500	-	-	-	-	-
Utility Equipment	1,250,000	-	-	-	-	-
Office equipments	550,000	-	-	-	-	-
TOTAL	**3,104,500**	-	-	-	-	-
(ii) Operating Expenses						
Depreciation	-	620,900	620,900	620,900	620,900	620,900
Change in working capital	3,830,450	293,852,800	324,038,080	354,223,360	389,445,296	389,445,296
Sub total	**3,830,450**	**294,473,700**	**324,658,980**	**354,844,260**	**390,066,196**	**390,066,196**
(iii) Financial Expenses						
Repayment of Term Loan	-	800,000	800,000	800,000	800,000	800,000
Interest on Term Loan	-	480,000	384,000	288,000	192,000	96,000
Value Added Tax	-	16,005,600	17,606,160	19,206,720	21,127,392	21,127,392
Corporate Tax	-	1,002,324	1,040,887	1,079,450	1,243,470	1,254,990
Sub total	-	**18,287,924**	**19,831,047**	**21,374,170**	**23,362,862**	**23,278,382**
Total cash payment (ii)-(iii)	**3,830,450**	**276,185,776**	**304,827,933**	**333,470,090**	**366,703,334**	**366,787,814**
Net cash flow c/f	3,830,450	276,185,776	304,827,933	333,470,090	366,703,334	366,787,814

APPENDIX XIV
BALANCE SHEET PROJECTION

Year of comm. Operation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS	**N'000**	**N'000**	**N'000**	**N'000**	**N'000**	**N'000**
(i) Fixed assets						
Machinery and Equipments	1,304,500	-	-	-	-	-
Utility equipment	1,250,000	-	-	-	-	-
Office Equipment	550,000	-	-	-	-	-
Value at Acquisition	-	3,104,500	3,104,500	3,104,500	3,104,500	3,104,500
Less Cumulated Depreciation	-	620,900	1,241,800	1,862,700	2,483,600	3,104,500
Net fixed assets	**3,104,500**	**2,483,600**	**1,862,700**	**1,241,800**	**620,900**	**0**
(ii)Current Assets/ liability						
Stock of Raw Materials	2,400,000	11,275,026	19,077,655	20,190,204	21,885,598	24,263,243
Debtors /prepayment	-	1,453,000	2,098,000	3,308,000	4,139,000	5,653,000
Bank and Cash Balances	1,430,450	4,150,024	5,160,031	6,170,539	7,180,674	7,180,741
Creditor / accruals	-	(4,074,000)	(6,039,000)	(8,947,000)	(11,013,000)	(13,785,000)
Company Tax	-	(1,002,324)	(1,040,887)	(1,079,450)	(1,243,470)	(1,254,990)
Net current assets	**3,830,450**	**11,801,726**	**19,255,799**	**19,642,293**	**20,948,802**	**22,056,994**
TOTAL NET ASSETS	**6,934,950**	**14,285,326**	**21,118,499**	**20,884,093**	**21,569,702**	**22,056,994**
(ii) FINANCED BY						
Equity Capital	2,934,950	2,934,950	2,934,950	2,934,950	2,934,950	2,934,950
P&L	-	7,350,376	7,633,173	7,915,970	9,118,782	9,203,262
Retained Profit	-	-	7,350,376	7,633,173	7,915,970	9,118,782
SHAREHOLDERS FUND	**2,934,950**	**10,285,326**	**17,918,499**	**18,484,093**	**19,969,702**	**21,256,994**
Long Term Loan	4,000,000	4,000,000	3,200,000	2,400,000	1,600,000	800,000
TOTAL EQUITY & LIABILITY	**6,934,950**	**14,285,326**	**21,118,499**	**20,884,093**	**21,569,702**	**22,056,994**