PROJECT PROPOSAL

FOR

WOOD RECYCLING, CHIP WOOD, BRIQUETTING AND WOOD IMPREGNATION FACTORY

TO BE ESTABLISHED

BY

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Location
MAKAMBAKO Town, NJOMBE REGION,
Republic of Tanzania

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SUMMARY of CHIPWOD

This profile envisages the establishment of a plant for the production of CHIPWOOD with a capacity of 55,000 m3 per annum. The present demand for the proposed product is estimated at 16.4 million m 3 per annum. The demand is expected to reach at 29.37 m3 by the year 2030. The factory will create employment opportunities for 209 persons.

The total investment requirement is estimated at USD 500,000 (five hundred thousand US Dollars), out of which USD 328,722.83 Thousand USD is for purchase of machinery. Chip wood or particleboard is produced by gluing wood particles. It is used in the construction industry as prefabricated houses or as ceiling materials in monolithic structure. Chip wood is also used in the furniture and wood industries where it is used as a substitute for wooden boards. The major end user of chip wood is the building construction sector. Thus the demand for chip wood is related to the expansion and growth of the building construction sector. The current demand for chipboard is met through local production and import. Chip wood is produced in standard sizes of 1.2 meters by 2 meters. The thickness range is 8mm, 12mm, 13mm, 15mm, 17mm, and 20mm.

CHIPWOOD MARKET STUDY

Past supply and present Demand Chip wood is mainly used in the housing construction industry as a prefabricated house or as a ceiling material and in the furniture industrial group as a substitute for wooden boards. The country`s requirement of chip wood is met both from import and domestic production. The external trade statistics of the Customs Authority reveals that Ethiopia imports chip wood categorized in to three types. These are coniferous wood sawn or chipped > 6mm thick, beech wood and oak wood (quercus spp) sawm /chipped length wise> 6 mm thick and wood n.e.s sawn or chipped > 6 mm thick.

The import of chip wood in the past ten years was very erratic showing a big jump in some years and sudden decline in other years. For instance, imported quantity during 2019 was 3,447 thousand mt.cu and sharply declined to 57 thousand mt.cu by the year 2020. Again the imported figure increased to 2,735 thousand mt.cu by the year 2020 and declined to 68 thousand mt.cu and 417 thousand mt cu by the year 2021 and 2022 respectively. During the period 2024-2025 the imported quantity ranged from 2,147 thousand mt.cu to 4,651 thousand mt.cu. and the average was found 3,280 thousand mt.cu.Data on the domestic production could not be found either from the statistical abstract or from the Report on Large and Medium Scale Manufacturing and Electricity Industries Survey. What has been obtained from the later source is the proportion of chip wood consumed from import and local source for reporting furniture industrial group establishments during 20004/13. Of the total chip wood consumed by the furniture industrial group about 80% is local and 20% import. Hence, by taking the average quantity imported in the past three years, which is 3,280 thousand mt,cu the quantity supplied from local source is estimated, Accordingly, if 3,280 thousand mt.cu constitutes 20% the remaining 80% is about 13,120 thousand mt.cu . Adding the average quantity imported in the past three years the total current effective demand is estimated at 16,400 thousand mt.cu.

CHIPWOOD Projected Demand

Demand for chip wood is influenced by the growth of the building construction industry and manufacturing sector mainly the furniture industrial group. The industry sector (which includes manufacturing and construction) has been growing by about 6% in the recent past years. Assuming this will continue for the coming 10 years' demand is projected at an annual growth rate of 6%.

CHIPWOOD Pricing and Distribution

The current factory gate price of chip wood in Tanzania which is Ths 280,025 per mt.cu is adopted for sales revenue projection. The product can be sold directly to the end users i.e. building construction enterprise and furniture industrial group.

CHIPWOOD Production Program

The unit is planned to operate one shift of 8 hours a day for a total working of 300 days BY taking Saturday and Sundays into consideration It is also anticipated to operate at 70% and 80% of installed capacity in the first and second year, respectively. Full capacity production is expected to be achieved in the successive years. The low production level at the initial stage is planned to develop substantial market outlets for the product and to build up production capacity of new equipment.

WOOD IMPREGNATION

Wood Impregnation (preservation) is the pressure or thermal impregnation of chemicals into wood to provide effective long-term resistance to attack by fungi, bacteria, insects, and marine borers. By extending the service life of timber products, wood preservation reduces the need for harvest of already stressed forestry resources, reduces operating costs in industries such as utilities and railroads, and ensures safe working conditions where timbers are used as support structures.

There are two general classes of wood preservatives: oils, such as creosote and petroleum solutions of pentachlorophenol; and waterborne salts that are applied as water solutions. The effectiveness of the preservatives varies greatly and can depend not only upon its composition, but also upon the quantity injected into the wood, the depth of penetration, and the conditions to which the treated material is exposed in service.

Most wood-preserving methods may be classified as either pressure processes, in which the wood is placed in a treating cylinder or retort and impregnated with preservative under considerable force, and Non pressure processes, which do not involve the use of induced pressure. Non pressure processes can be classified as thermal processes.

What is Vacuum pressure impregnated wood?

Vacuum pressure impregnated wood is wood that, through the application of a preservative, is protected for many years against fungi and insects. To achieve this effect, wood is put in a closed horizontal cylinder Ð the autoclave Ð and then the air is drawn out of the cylinder and out of the wood cells. Then the preservative is admitted and the content of the treatment cylinder is put under pressure. By doing this, the preservative enters deep into the wood cells. After this, the vacuum is sucked again to make sure that any excess preservative is completely removed. The process is brought to an end by a fixation treatment to ensure that the applied preservative will remain in the wood by entering into
Chemical reaction with the wood.

use of wood Impregnation

Wood is a renewable and natural material, which is continuously available, thanks to sustainable forest management. But it is also susceptible to attacks by fungi, micro-organisms and insects. In particular, in contact with soil and water, wood is quickly affected and rots in most cases in a matter of years. Attacks by fungi also quickly occur in other places where wood is exposed to moisture. There are only a few wood species that, by nature, are very resistant against rot and attacks by insects. These species are mostly tropical hardwoods and very expensive. Other species must be protected before they can be used for a long time. By being impregnated the timber is given a service life many times longer than that of untreated timber, while the additional treatment costs are low, particularly when compared to the generally high costs of maintenance and replacement of untreated timber. Some preservation treatments allow for a use of several decades.

Durability of wood in a natural way

The natural durability of wood depends very much on the wood species, the relation between the components sapwood and heartwood, the age of the tree from which the wood is cut and the circumstances in which the wood is used. These factors are always variable while preserved wood provides the certainty of long use in a wide array of applications. Untreated sapwood is never durable.

Method of timber impregnation with the preservatives

The impregnation industry has highly technical plants in which the timber to be treated is impregnated by using vacuum pressure cycles to achieve the required absorption and depth of penetration.

Wood impregnation plants operation

Timber impregnation plants operate in a closed circuit. The plants are protected by bunds of appropriate capacity in relation to their size. The plant operators receive thorough training in operating the plants and in handling the wood preservatives as well as the newly impregnated timber. After completion of the impregnation process the timber remains at specially prepared sites within the plant until fixation of the preservatives has been achieved.

Difference between wood types and impregnation

Due to biological differences between wood species, there are differences in the degrees in which preservatives can be brought into the wood.
For example, preservative does not enter more than a few millimeters into spruce, while the sapwood of larch, pine, Douglas and European oak is penetrable up to the core. This does not constitute a problem as long as the wood is not damaged or cracked by drying or "working". In this case, the untreated sapwood becomes available as feeding ground for fungi. The working of wood is limited by thorough drying, construction and/or painting. Sometimes incising is used to ease the tension in the wood and to enable deeper penetration. (In using incising, small grafts are made in the wood with a knife roll). The fact that heartwood is generally difficult to impregnate does not necessarily constitute a problem
Due to longer natural durability.

Preserved wood and the environment

Yes. If used properly, timber impregnated according to definitive regulations with officially approved preservatives does not constitute a danger to man, animal or plant-life. Concerned questions from researchers, ENGOÕs and government authorities have always resulted in a continuous search for means, methods and preserved wood products. Research covers everything, including the waste phase. All these studies confirm time and again that preserved wood is safe for man and his environment.

Uses of preserved wood

Impregnated timer is used for:

- electricity and telephone poles
- railway sleepers, crossings and bridge timbers
- industrial cooling towers
- snow fences
- landing stages, jetties and lake and sea embankments
- palisades and fences
- stakes for fruit and wine-growing
- playground equipment, carports and pergolas
- noise barriers
- pavement blocks
- constructional timber and joinery
- and any purpose for which timber is exposed to the effects of the weather.

Briquettes

As the price of fossil fuels is rising continuously, more and more people are opting for wood burning solutions. As a result, wood burning stoves, open fires along with wood briquettes are gaining more popularity.

Wood briquettes offer an easy and convenient fuel solution for multi-fuel burning or open fireplace burning. The briquettes could be used in any wood burning purposes without requiring any modification at all. They are packed in handy bags and are quite easy to carry around. Being dry and providing a clean burning, they burn and light like any conventional logs but more efficiently.

Wood briquettes are usually made of wood-chippings and compressed sawdust. When extreme heat is applied, wood releases a natural glue called lignin which combines wood-chippings and sawdust together. In the process, the briquettes are compressed to 10% of their original volume. The final product is a solid structure only a bit smaller than a house brick. The briquettes could be split into smaller parts for use in smaller stoves or fireplaces.

Wood briquettes could be of two types, namely hardwood briquettes and regular wood briquettes. The hardwood briquettes are rectangular shaped with a hole for better combustion. The hole is especially useful for burning the briquettes in stoves or fireplaces with low air ventilation or when the air input is restricted for some reason. On the other hand, regular wood briquettes are cylinder shaped and do not have any holes. These briquettes are perfect for normal, in-house burning purposes.

Burning up to three hours, wood briquettes last longer than any other firewood products. The wood briquettes are produced from the left over of timber from joinery shops and other wood related industries. Wood-chippings and sawdust are a by-product of these industries, and they have no other use other than producing wood briquettes. As these by-products would have ended up in landfills, these briquettes are both environment-friendly and cost-effective.

Compared to other firewood products, wood briquettes produce the minimal amount of ashes. They contain only 8% moisture, which means they produce less smoke and keeps the chimney clearer. A bag of wood briquettes produces the same amount of heat as of thirty kilograms of dry firewood.

The wood briquette has become a popular choice due to its light-weight, convenient lighting and consistent heat output facilities. Now-a-days, they are also burnt in biomass boilers providing heat for the whole house.

Targeting less greenhouse gas emissions, some European governments are planning to introduce carbon taxes. As a result, the prices of all carbon based fuels will be increased considerably. Wood briquettes could be an excellent alternative in this case, while the government will also be encouraging the use of eco-friendly alternative fuels. The Irish government has already started sanctioning energy grants for those families who are planning to switch to greener or renewable energy for their household purposes.

When wood briquettes are burned, they emit exactly the same amount of carbon-dioxide which would have been released by the plants themselves. Therefore, burning wood briquettes ensures that the natural cycle is not broken or damaged.

Export Targets

Detailed study has been conducted for the demand of Chip wood, Briquetted fire wood and charcoal and Impregnated Timber in neighboring countries.

Zambia: Due to the Scarcity of industrial technology in Zambia there is only one Chip wood factory in Zambia. There are a few wood Impregnation Factories in Zambia but ZESCO Limited (Zambia Electricity Supply Corporation Limited) imports impregnated poles from neighboring countries. Zambia mainly depends on imported Chip wood needs for its construction and furniture demands.

Malawi: Malawi does not have abundant wood; it faces severe deforestation and wood scarcity, primarily due to high demand for fuelwood (over 90% of energy), agricultural expansion, and charcoal production, leading to rapid forest loss despite ongoing restoration efforts. Chip wood and Impregnated Wooden poles and briquettes are on high demand. There are no industries at all to produce Chip wood and Impregnated Timber. The country is currently importing most Impregnated poles and posts mainly from Tanzania and at low scale from Zambia as well.

These countries are land locked with Tanzania with access roads from each other.

Company Values

- The management and staff are driven by a common desire to live up to the following Company values:
- Exceed customers' expectations
- Be second to none for quality and service
- Employ quality people at all levels
- Operate efficiently and safely
- Respond promptly
- Ensure financial viability
- Maintain high standards of professionalism, ethics and integrity

Objectives

To make available quality CHIPWOOD, Briquetted firewood and charcoal, Impregnated timber for Export to Neighboring countries and for local demanders at a reasonable price. To be engaged in future an advanced technology wooden products. To produce & supply wood products to the country at large which includes Chip wood, Impregnated wood and Briquettes

To assist immensely the development endeavor in the infrastructure of the country by supplying Impregnated wooden poles to Tanesco and REA.

Expand distribution of our product lines to neighboring countries and within Tanzania.

Source of Raw Material for the factory

Chip wood is mainly produced from Eucalyptus Tree Logs, which are suitable for chip wood, and glue are the main materials used to produce chip wood. As mentioned above the factory will be erected in Makambako which is located within Tanzania's Southern Highlands, a region known for its cool climate, rolling hills, and significant forested areas, including eucalyptus plantations, especially around nearby Njombe, which is known for tea and forests. The raw material for the Briquetting Factory will be from leafs, barks, chat wood.etc.

Competitive advantages

The company's unique strengths and key to success will focus in applying effective market segmentation and implementation strategies. The competitive advantages the company has over business in the market are drawn from:

The company "hands on" owner managers, so it is completely committed to make sure it delivers its promises to costumers. Simply it looks for ways to earn and build trust with its Customers.

The company will not compromise on quality of materials used or workmanship standards

Overall the company will be looking for ways to earn and build customers trust in us so that they have peace of mind to work with the company time and time again

Ownership of the factory

The WOOD RECYCLING, CHIP WOOD, BRIQUETTING AND WOOD IMPREGNATION factory is to be owned and established by S6 Group Company as founder and CEO Mr Samuel Berhane. Mr Samuel Berhane is an Ethiopian national who lives in Ethiopia. He has lived in United Kingdom mainly in London for twenty (20) years.

Back ground information and experience of investor (CEO)

Mr Samuel has been working in a wood factory in London for 15 years where he has acquired vast experience and established very good contacts in the wood industry. He has decided to invest in his home country after taking into consideration the peace full investment environment and the investment intensives the Government of Ethiopia is giving to the Diaspora at large. Since 2015 he established the pioneer wood impregnation factory SAFE TRADING PLC which is the main Impregnated wooden supplier to the Ethiopia Telecom and Ethiopian Electric Utility.

On top of the above Mr Samuel was surprised at the vastly growing demand of wood products for Chip wood, plywood, briquetted products and impregnation plant needs etc. in Tanzania and was interested when he learnt how much foreign currency the country can earn by producing wood products locally and mainly export to neighboring countries and selling locally here.

JOB OPORTUNITIES

In the first phase of the project (CHIPWOOD, BRIQUETING, IMPREGNATION) At full capacity level the project will create job opportunities for 141 people.

The factory will open waste wood collection sites in all over the country and will organize the unemployed young to collect waste wood products and sell the waste wood to our factory at reasonable prices. By doing so the factory will be creating job opportunities to hundreds of unemployed young people

Production targets

The factory will produce CHIPWOOD for the Construction and furniture industry, BRIQUETED fire wood and charcoal to households and IMPREGNATED timber to the construction sector, industries, to Telecom and Electricity companies locally and abroad.

Total Investment Capital

The startup total investment capital, which is the combination of the fixed assets, working capital requirements, pre-operational expenses, is expected to reach USD 500,000 (THS 1,217,500,00.00) The overall investment capital is assumed to be covered by the investor and bank loan

Market Targets

60% of the products are for the export market to neighboring countries to generate foreign currency for its raw material purchases from abroad while 40% of products are intended for the local market.

Factory Location and land needed

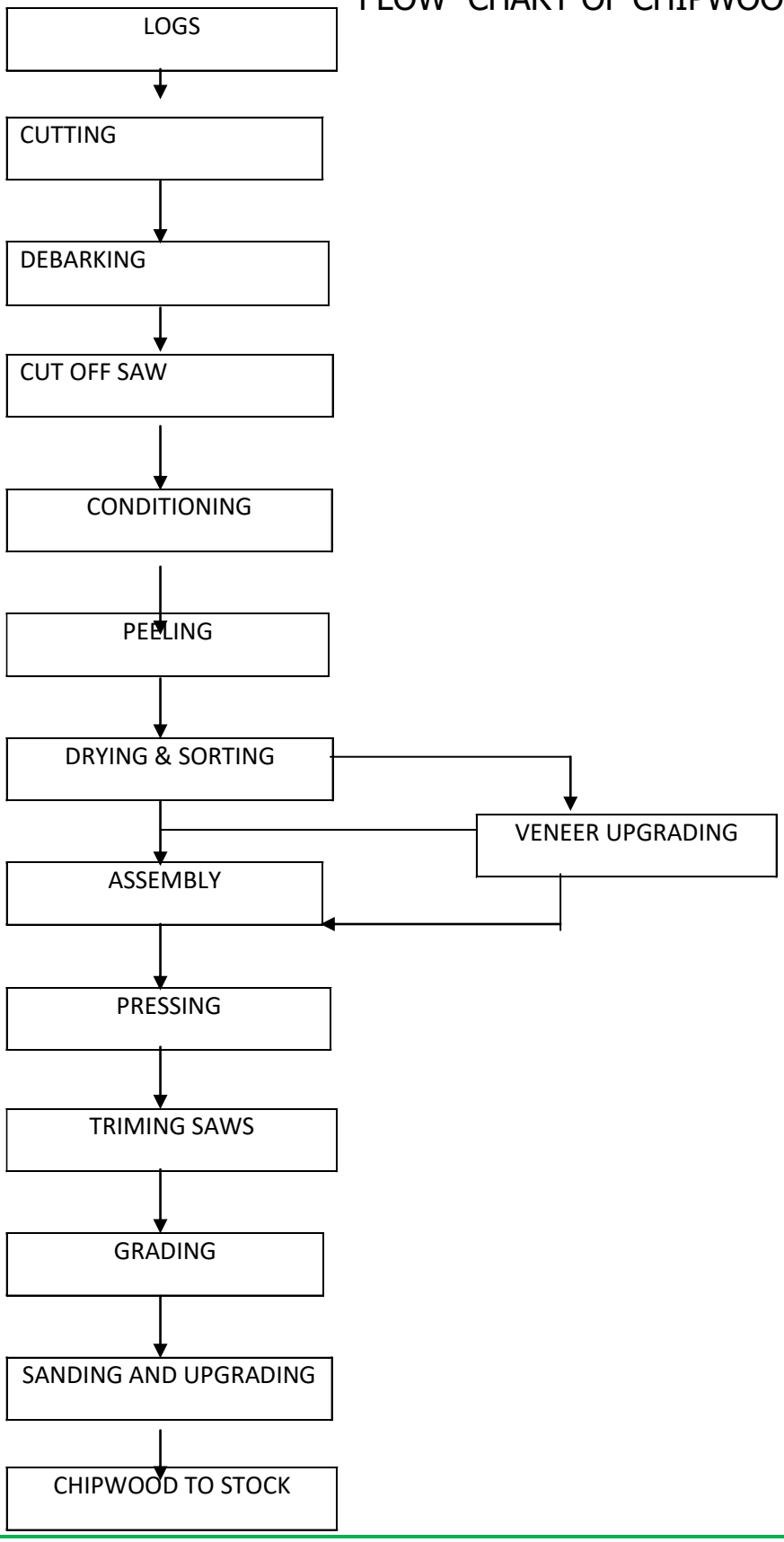
The factory will be established in Makambako Town, Njombe Region, Republic Of Tanzania**.** The reason for selecting this area is that most wood is to be found in Tanzania's Southern Highlands, a region known for its cool climate, rolling hills, and significant forested areas, including eucalyptus plantations, especially around nearby Njombe, which is known for tea and forests. 15,000 sqm land is required which will be bought by the Investor.

MACHINERIES REQUIRED

S/N	DESCRIPTION OF MACHINERY	QTY	UNIT PURCHAS-ING PRICE IN USD	TOTAL PUR-CHASING PRICE IN USD
1	Complete CHIPWOOD Making plant including	1 UNIT	119,569.83	119,569.83
2	BRIQUETTING MACHINE	1 UNIT	52,067.00	52,067.00
3	WOOD IMPREGNATION MACHINE	2 UNITS	66,000.00	132,000.00
4	LOG LOADER WITH LOG GRAPPLE AND BUCKET ATTACHMENTS	1 UNIT	7,066.67	7,066.67
5	GENERATOR 250 KVA	1 UNIT	6,400.00	6,400.00
6	TRUCK WITH CRANE	1 UNIT	11,619.33	11,619.33
		Total	**262,722.83**	**328,722.73**

The CHIPWOOD, BRIQUETING and IMPREGNATION machines are to be imported from abroad

FLOW CHART OF CHIPWOOD PRODUCTION



EMPLOYMENT REQUIREMENTS

S/N	JOB DESCRIPTION	QUANTITY	MONTHLY SALARY IN USD	ANNUAL SALARY IN USD
1	GENERAL MANAGER	1	3,000.00	36,000.00
2	DEPUTY G MANAGER	3	1,900.00	68,400.00
3	SHIFT MANAGERS	9	1,500.00	72,000.00
4	SECRETARY	2	164.00	3,936.00
5	ACCOUNTANT	1	1050.00	12,600.00
6	CASHIER	1	410.00	4,920.00
7	PURCHASER	1	410.00	4,920.00
8	STORE KEEPER	3	330.00	11,800.00
9	SUPERVISOR	3	330.00	11,800.00
10	QUALITY CONTROL	1	290.00	3,480.00
11	LAB TECHNICIAN	1	290.00	3,480.00
12	EXPORT SECTION	1	290.00	3,480.00
13	MACHINE OPERATOR	9	250.00	21,000.00
14	ASSISTANT MACHINE OPERATORS	9	246.00	23,616.00
15	MAINTAINANCE	2	205.00	4,920.00
16	DRIVERS	4	205.00	9,840.00
17	CASUAL WORKERS	90	125.00	75,000.00
18	DAILY LABOURERS	60	110.00	52,800.00
19	GUARDS	8	100.00	9,600.00
	TOTAL	**141**	**11,205.00**	**433,752.00**

Running Costs

No	Description	Total cost in USD
1	Wages & Salary	433,752.00
2	Utilities	16,673.46
3	Fuel & Lubricants	20,419.66
4	Other Expenses	10,210.88
	Total	**481,056.00**

Factory Expenses

The headquarters of the project will be based in MAKAMBAKO Town, Njombe Region, Republic Of Tanzania in a constructed building with a compound 15,000 sq.m. The total building cost of the factory is expected to reach USD 30,000.00

Investment Cost Breakdown

No	Category	Foreign Costs (A)	Local Costs (B)	Total Costs (A+ B)
1	Fixed Investment		119,569.83	119,569.83
	Purchase of Machinery Pre operational Costs Office Equipment	328,722.83	11,619.33	340,342.17
	Sub Total	328,722.83	131,189.17	459,912.00
2	Working Capital			
	Salary Wages (1 month) Utilities (1 month) Fuel & Lubricants (1 month) Other Expenses (1 month)		36,140.00 1,389.46 1,701.64 850.91	36,140.00 1,389.46 1,701.64 850.91
	Sub Total		40,088.00	40,088.00
	Total Investment	**328,722.83**	**171,277.17**	**500.000.00**

Source of finance

The overall project cost will be financed from the promoter's equity and bank loan.

No	Category	Amount in USD	Percent
1	Equity	250,000.00	50 %
2	Bank Loan	250,000.00	50%
	Total	**500,000.00**	**100%**

Five years Projected Profit and Loss Statement Currency USD

Description	Years				
	1st	2nd	3rd	4th	5th
Sales Revenue (1)					
CHIPWOOD	568.708.12	654,014.34	752,116.49	864,933.97	994,674.06
IMPREGNATED TIMBER	678,917.85	780,755.53	897,868.86	1,032,549.19	1,187,431.57
BRIQUETS	123,076.92	141,538.46	162,769.23	187,184.62	215,262.31
Totals Sales	1,370,702.90	1,576,308.34	1812,754.59	2,084,667.77	2,397,367.94
Less:					
Direct Costs (a)					
Direct raw material purchase	646,666.67	743,666.67	855,216.67	983,499.17	1,131,024.04
Administrative Costs					
Salary and wage	433,752.00	477,127.20	524,839.92	577,323.91	635,056.30
Utilities	16,673.46	18,340.81	20,174.89	22,192.38	24,411.62
Fuel and lubricants	20,419.66	22,461.63	24,707.79	27,178.57	29,896.42
Other expense	10,210.88	11.231.97	12,355.16	13,590.68	14,949.75
Bank interest					
Total Admin Cost (b)	481,056.00	529,161.60	582,077.76	640,285.54	704,314.09
Total cost (a+b)….2	1,127,722.67	1,272,828.27	1,437,294.43	1,623,784.70	1,835,338.13
Gross Profit (1-2))	242,980.23	303,480.04	375,406.16	460,883.07	562,029.81
Less: Tax (30%)	72,894.07	91,044.02	112,638.05	138,264.92	168,608.94
Net profit	170,086.16	212,436.05	262,822.11	322,618.15	393,420.87

Note: 1. Sales is assumed to increase by 15%

2. Raw material cost also estimated to increase by 15%

3. Admin cost also increase for the first year from 5 to 10%

Bank Loan Repayment	1,743,249	1,743,249	1,743,249	1,743,249	1,743,249
Bank Interest	1,001,054.17	1,001,054.17	1,0001054.17	1,001,054.17	1,001,054.17