

CFID FORESTRY LIMITED

PROPOSED BUSINESS PLAN

FOR

THE ESTABLISHMENT OF TREE PLANTATION AND RESIN PROCESSING INDUSTRY IN MAFINGA, IRINGA REGION, TANZANIA.



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Table of content

List of Abbreviations	4
EXECUTIVE SUMMARY	5
1.0. BUSINESS OVERVIEW AND BACK GROUND INFORMATION.	7
1.1. Overview – tree plantation and resin processing factory in Tanzania	7
1.2. Resin yield productivity in Tanzania	7
1.3. Private sector investments.	9
1.4. The company overviews	9
1.5. Project concept in Mafinga district.....	10
2.0. PROJECT OVERVIEW	12
2.1. The industry overviews	12
2.2. Business Plan Objectives.....	13
2.3. Project Technical aspect – PINE PLANTATION AND RESIN PRODUCTION.....	14
A. PINE PLANTATION PROCESS:	14
2.3.1. Explanatory note.....	14
2.3.2. Writing Tree-Planting Contracts.....	14
2.3.3 Keys to Successful Tree Plantings	16
B. RESIN PRODUCTION PROCESS	17
2.4. Technical Characteristic of the project.	18
2.4.1. Project Location and site analysis.....	18
2.5.2. Buildings and related fixed cost	18
2.5.3. Machinery and Equipment.....	18
2.5.4 Motor Vehicles	19
2.5.5. Furniture & Fittings and computers.....	19
2.5.6. Pre-Operational Expense	19
2.5.7. Initial Working Capital	19
2.5.8. Project Financing.....	19
2.5.9. Project Implementation.....	19
2.5.10. Auxiliary Materials/ services	19
2.5.12. Warehousing and distribution.....	21
2.5.13. Waste management for industry	21
3.0. MANPOWER AND SALARY BUDGET	22
3.1. Employment	22
3.2. Recruitment	22
3.3. Training and the use of consultants	22
3.4. Organization and Management.....	22
4.0. PROJECT FINANCING AND CAPITAL INVESTMENT SUMMARY	26
4.1. Project Cost & Financing Pattern	26
5.0. RISK ANALYSIS	28
5.1. Risk Analysis.....	28
5.2. Macroeconomic risk analysis	28
5.3. Finance risk analysis.....	28
5.4. Other potential external risk	28
5.4. Mitigating potential risk	29
6.0. ECONOMIC AND SOCIAL ASPECTS	30
6.1. Impact Investment Index Framework	30
7.0. FINANCIAL MODELLING AND ANALYSIS	31
7.1. Project investment inputs and revenue projects.....	31
7.2. Production, Revenue and project viability.....	32
7.3. Objective and Scope of Financial Model.....	32
7.3.1. Objective.....	32
7.3.2. Scope	32
7.3.3. Project financial plan.....	33
ANNEX I – INCOME STATEMENT	34
ANNEX II – CASH FLOW	36

ANNEX III – BALANCE SHEET	38
ANNEX IV – IRR	39
ANNEX V PAY BACK PERIOD	39
8.0. CONCLUDING REMARKS AND WAY FORWARD	40
8.1. Evidence of project viability based on financial model and policy Framework support	40
8.2. Policy Framework Support.....	40
8.3. Conclusive Remarks and Way Forward	41

List of Abbreviations

4WD	Four Wheel Driver
CAPEX	Capital Expenditure
CIF	Central in Flight
EU	European Union
GDP	Growth Domestic Products
Ha	Hectares
IRR	Internal Rate of Return
KG	Kilogram
LTD	Limited
MIS	Management Information System
MT	Metric Ton
MW	Mega Watts
NBS	National Bureau of standard
NEMC	National Environment Management Council
OPEX	Operating Expenditure
SFM	Sustainable Forestry Management
SIDO	Small Industries Development Organization
SWOC	Strength Weakness Opportunity Challenge
TANESCO	Tanzania Electric Supply Company
TIC	Tanzania Investment Centre
TZS	Tanzania Shilling
UK	United Kingdom
USD\$	United State Dollar
USA	United States of America
VAT	Value Added Tax
VETA	Vocation Education Training Authority

EXECUTIVE SUMMARY

Tanzania is estimated to have 250,000 Ha of forest plantations. Out of these, the government owns about 85,000 Ha. Privately owned plantations are estimated to be 40,000 Ha, out-grower schemes and woodlots occupy between 80,000 Ha and 140,000 Ha in total. The most important industrial plantation species are pines (*Pinus patula*, *P. elliottii* and *P. caribaea*), cypress, eucalyptus and teaks. Pines are the dominant species in most of the government and private plantations with about 78% of the total area planted and the remaining 22% is shared among hardwoods and other softwood species.

The current growth in private investment in forestry and the extension of the global capital market into developing country economies offer potential opportunities. The challenge is to redirect and channel existing private sector resources and capital market investment vehicles and services to sustainable forestry management. The private sector is increasingly involved in forest extraction and management in Tanzania and other places. Given the declining trend in public financing, the private sector will be the probable source of funds to make up for the current and possibly future shortfall of official assistance and public finance in the forestry sector.

Recently, Tanzania has embarked on pilot commercial resin tapping from pine trees at Sao Hill Forest Plantation (SHFP). Introduction of resin tapping in commercial plantations is an innovative venture that has direct bearing with improvement of sector's capacity to provide goods and services through revenue collection and provision of employment. Since August 2017 to date about 1500 tons of resin worth 1.3 Billion Shillings have been collected and exported to China for processing.

CFID Forestry Limited as a private company, take the opportunity by establishing a resin processing factory in Mafinga district in Iringa region. The company is registered in Tanzania to carry on the business of forestry across eastern and central Africa. CFID Forestry Limited was incorporated on 15th July 2022 as a company limited by shares under the Companies Act (Cap. 212). The company deals with forestry licensees and exploiters, lumberjacks, timber growers, and merchants in all their branches, to grow, fall collect, deal in logs, wood, and all other similar produce of all kinds and description, and to apply for, take on, lease, buy or otherwise acquire, hold and work, forest rights and timber estates to clear, plant, work such rights and estates and to do all such acts and things as necessary or in connection therewith.

The company's clear statement of investment objective, sector and products is to invest up to 10,000 Hectares of pine tree, pine resin extraction and pine resin processing factory at Mafinga, Iringa region in Tanzania. The company has recently entered into a Resin Tapping Agreement where 390,000 trees have been rented for extraction of resin for 5 years and three months. Approximately 376Ha's with average of 1,000 trees per Ha have been rented for this project.

The second phase of this project proposal entails setting up a Tree plantation of about 10,000Ha with an average of 1,000 trees per hectare which is equivalent to 10,000,000 trees within 10 years of project economic life. The project may be equipped with all mentioned activities and modern equipment and machineries for project implementation. The whole process of production lines is looking at providing direct employment to at least 1,099 permanent jobs on full implementation and operation of the project. The industry is divided into 5 Departments; Administration (10) Marketing and Finance (35), Maintenance (16), Operation (1,017) and store and logistics (21).

The proposed integrated project is estimated to cost a total of US\$ 19,685,889.57. This includes, own equity of 100% as proceeds from capital contribution of the project. The Current assets of US\$ 3,070,523 during the first year of operation and it shall increase as the project will be in full operation (see income statement), fixed assets 18,142,891 US\$ and total liquidity of 4,807,082 US\$. The

project economic life will be implemented within 10 years. The company anticipates to sell in a wholesale price at 600US\$ per MT of resin and 239.13 per MT of plywood and fiber. The company's capacity is to produce 8000MT and 24,000MT of resin and (plywood and fibers) respectively. According to the projections, anticipated annual sales for both products will be US\$ 10,539,130 including resin, plywood and fiberboard facilities;

The development of a large and complex project such as CFID Forestry Limited is necessarily accompanied by multiple risks during all the phases of the project development, construction, operation and maintenance. The right approach to manage the project in a manner which fairly and adequately addresses the multiple risks in a comprehensive as well as systematic manner is very important. Based on the Impact Investment Index analysis, the company can develop projections that the project can deliver both value for money in the context of broad socioeconomic impact and return on investment while complying with governance requirements. In this regard therefore, CFID Forestry Limited will promote the industrialization process in the country, create employment, attract new technologies, expand foreign exchange earnings and ultimately contribute substantially to the country's economic growth.

On the basis of the analysis done on this Business Plan on all aspects of assessment on both SWOC Analysis, market analysis, risk analysis and the financial analysis, the proposed investment options in the drilling and exploration as prescribed on this business plan have shown that the project is commercially viable. Nonetheless, CFID Forestry Limited through professional consultative manner, will continue to find ways of implementing cost effective options given time and financial resources that will be made available. Financial analysis results show that when the construction of project facility is financed using a combination of equity debt ratio (100:0), it gives an IRR of about 15.7%. The computed IRR is well above Dollar market of the annual loan interest rate of (8.00%) which is technically interpreted that the project is financially viable. The payback period for the project is estimated at 5 to 6 years, which is within the range for this type of investment. Sensitivity analysis results also favor the project.

1.0. BUSINESS OVERVIEW AND BACKGROUND INFORMATION.

1.1. Overview – Tree Plantation and Resin processing Factory in Tanzania.

The total gross area of forest plantations in Tanzania is estimated to be about 250,000 ha. Out of this, the government owns about 85,000 ha, privately owned plantations are estimated to be 40,000 ha, out-grower schemes and woodlots occupy between 80,000 and 140,000 ha in total. The most important industrial plantation species are pines (*Pinus patula*, *P. elliottii* and *P. caribaea*), cypress, eucalyptus and teaks. Pines are the dominant species in most of the government and private plantations with about 78% of the total area planted and the remaining 22% is shared among hardwoods and other softwood species. The age structure is considerably skewed towards young age (27.4%) and older (28.1%) classes¹.

Generally, the health of forest stands is good in most of the plantations. Most of the major diseases and insect attacks which affected plantations in early years of introduction in Tanzania have been addressed. However, fire seems to be a major problem in Tanzania's forest plantations. Currently, the forest sector in Tanzania is financed by both the government and Development Partners (DPs) through different mechanisms.

Also, the private sector is financing their forestry activities through own sources, loans and grants. The development of the forest sector in Tanzania has been dominated by dependence on donor financing, and sectoral self-financing mechanisms have remained undeveloped. Financial mechanisms in place do not effectively promote long-term investment by private actors. Potential financing mechanisms include provision of bank soft loans, private sector investments and carbon finance. Over 2000 staff are employed by the central and local governments in forest management. Currently the number of professional and technical staff is not adequate to carry out forestry activities at satisfactory level. Payments for Environmental Services (PES) are considered as one of the potential economic incentives for those that manage ecosystems to improve the flow of environmental services that they provide.

1.2. Resin yield productivity in Tanzania

The main use of pines, among others, is to provide raw material to wood industries for pulp and timber production. Forest plantations are also important sources of numerous useful products, including non-wood products used by the chemical, food, and pharmaceutical industries, as well as for bio refineries. Pine resin is one of the valuable plant extracts which is tapped from different pine tree species around the world. Resins are described as sticky, liquid, organic substances that harden upon exposure to air into brittle, amorphous solids.

Recently, Tanzania has embarked on pilot commercial resin tapping from pine trees at Sao Hill Forest Plantation (SHFP). Introduction of resin tapping in commercial plantations is an innovative venture that has direct bearing with improvement of sector's capacity to provide goods and services through revenue collection and provision of employment. Since August

¹ <https://landmatrix.org/media/uploads/sifisewp-contentuploads201202forest-plantations-and-woodlots-in-tanzaniapdf.pdf>

2017 to date about 1500 tons of resin worth 1.3 billion TZS have been collected and exported to China for processing.²

1.3. Supply and Demand of Forest Products

Government plantations (85 000 ha) is the major supply of wood raw material and Sao Hill Forest Plantation (SHFP) alone is currently supplying over 85% of raw material consumed by industries³. Given the age structure and current harvesting levels, it is predicted that after year 2017 there will be severe deficits for some ten years to come. Only after 20 years from today the harvesting can come back to current levels. Individual private plantations/woodlots, also known as non-industrial private forests (NIPF), are currently supplying an estimated 200 000 - 250 000 m³ of roundwood. Supply forecast of roundwood from plantations until year 2030 is estimated at 2.2 million m³. At the moment (2010), government plantations supply over 70% of raw material requirement, whereas by year 2020 the same plantations will be supplying only about 40% and private forests will provide the balance. Forecasts of demand for wood from plantations in the base scenario indicate that demand will surpass supply by about 400 000 m³ by year 2030. However, if the economy grows at the same pace as now, and also the population and urbanization continue to grow, the forecast is that demand for wood from plantations will exceed supply by about 2 200 000 m³ by year 2030. This represents a deficit in the rate of establishing new plantations of about 7 000 – 8 000 ha/year. However, if demand and supply from natural forests are taken into consideration, demand will surpass supply by about 39 million m³ by year 2030. There is no reliable information on the actual supply of timber from natural forests in Tanzania. However, the annual harvestable volume in the existing production forests is estimated at 87.7 million m³. It is estimated that average industrial (commercial) roundwood extraction from the natural forest in Tanzania would be some 150 000 m³ annually. Tanzania has been exporting traditional products such as logs, sawn timber, floor boards, planks, sandalwood and poles until in the last few years when non-traditional products have been introduced. The leading export of forest products is sawn timber (rough sawn) and in 2010 Kenya absorbed some 67% of all exports. Overall assessment of revenue collection by Forest and Beekeeping Division (FBD) show a trend that revenue collection has increased from TAS 4.55 billion in 2003/04 to TAS 46.60 billion in 2009/10, the highest recorded collection so far. Most of the revenue collected comes from royalties which contributed over 92% of the total revenue collection. The annual value of goods and services generated from forestry is estimated at USD 2.2 billion which is equivalent to 20% of Gross Domestic Product (GDP) based on 2006 prices. The forest sector provides about 3 million person-years of employment. The forest-based industry in Tanzania is largely dominated by sawmilling, woodworks/furniture marts and joinery. Other industries include paper, wood based and poles treatment plants. There are an estimated 512 sawmills, out of which 70% are micro-mills (“dingdongs”), 25% small and only 5% medium size mills. The capacity for production of treated transmission poles in Tanzania is about 350 000 poles annually. Mufindi Paper Mills (MPM) produces some 40 000 tons of kraft paper annually and is expected to expand its production to 100 000

² file:///C:/Users/usr/Downloads/203215-Article%20Text-509218-1-10-20210208%20(2).pdf

³ Akida, A., & Blomley, R. (2007). Trends in forest ownership, forest resources tenure and institutional arrangements: Are they contributing to better forest management and poverty reduction? Case study from the United Republic of Tanzania

tons/year. In conclusion, while the public forest plantation area has remained the same, private forest plantations are increasing fast. Efforts to promote private forest plantations should continue to meet the growing demand for wood materials. The current forest tenure which leaves most of the forest under public land contributes to the high rate of deforestation and degradation. To make the forest sector grow fast and improve its contribution to the national economy, interventions in the primary production, processing and marketing chain is necessary. This will increase the price of final products and profit to processor who can then invest in modern technology, lower production costs and produce value added products and profits will trickle down to primary producer.

1.4. Private Sector Investments

The current growth in private investment in forestry and the extension of the global capital market into developing country economies offer potential opportunities. The challenge is to redirect and channel existing private sector resources and capital market investment vehicles and services to SFM. The private sector is increasingly involved in forest extraction and management in Tanzania and other places. Given the declining trend in public financing, the private sector will be the probable source of funds to make up for the current and possibly future shortfall of official assistance and public finance in the forestry sector.

1.4. The company Overviews

CFID Forestry Limited is registered in Tanzania to carry on the business of forestry across eastern and central Africa. CFID Forestry Limited was incorporated on 15th July 2022 as a company limited by shares under the Companies Act (Cap. 212).

The company deals with forestry licensees and exploiters, lumberjacks, timber growers, and merchants in all their branches, to grow, fall collect, deal in logs, wood, and all other similar produce of all kinds and description, and to apply for, take on, lease, buy or otherwise acquire, hold and work, forest rights and timber estates to clear, plant, work such rights and estates and to do all such acts and things as necessary or in connection therewith,

CFID Forestry Limited has expanded rapidly in the sub regional pine plantations and resin extraction to resin processing at Mafinga District, Iringa region in Tanzania. The min office is located in Kinondoni District, Dar es salaam Region. The wings of investment spread out from the neighboring country of Uganda in Eastern Africa whereas the shareholders originated from China. The main goal of CFID Forestry Limited is focused on commitment, efficiency and customer satisfaction.

CFID Forestry Limited's clear statement of the investment objective, sector and products is to invest up to 10,000 Hectares of pine trees, pine Resin Extraction and Pine Resin Processing factory at Mafinga, Iringa region in Tanzania.

1.5. Project concept in Mafinga district

The company aimed to establish the project at Mafinga district, Iringa region. Currently the company will extract resin from Mapanda pine plantation estimated to 390,000 trees for extraction of resin. currently the company enter to an agreement to rent 390,000 trees for extraction of resin to Mapanda plantation in Mafinga district, Iringa region. The company contracted with the Mapanda plantation for 5 years and three months for tapping harvester for resin. Approximately 376Ha's with average of 1,000 trees per Ha will be rented.

Apart from tree plantation, the company will install Resin production plant which involves; It is composed of four major components: organic resin matrix, filler (inorganic) particles, a coupling agent (silane), and the initiator-accelerator system for polymerization. All these machines and equipment's will be imported from China and some from EUA

Resin-related machines lineup

- DSI, machine with special specifications for magnetic field forming, etc.
- Hoop inserts automation line
- Extrusion machine (granulation, profile)
- Non-dry, energy-saving extrusion machine
- Pipe/cable production system
- Horizontal-type power injection molding machine for general use (JSW)
- Pellet regeneration system, large PVC extrusion machine

However, the company is already involved in harvesting rented trees and export to Asian and European countries, the production of resin as stated, will result of the significant investment in Tanzanian operations, the company is looking to register at the Tanzania investment Center. For that purpose, this business plan is prepared to outline the required information about the company and the operations being conducted for the Tanzania Investment Centre only. It is to be considered private and confidential.

1.4. The company objectives include the followings;

- a) To carry on the business of forestry licensees and exploiters, lumberjacks, timber growers, and merchants in all their branches, to grow, fall collect, deal in logs, wood, and all other similar produce of all kinds and description, and to apply for, take on, lease, buy or otherwise acquire, hold and work, forest rights and timber estates to clear, plant, work such rights and estates and to do all such acts and things as necessary or in connection therewith
- b) To carry on business as manufacturers, importers, exporters, and dealers in goods, articles, and things of all kinds and description in the manufacture of which timber and wood is used, and the business of contractor's carpenters, cabinet and furniture makers in all their respective branches and to deal in such articles and things in their raw unfinished or manufactured state and either by wholesale or retail,
- c) To carry on business of manufacturers, importers and exporters of plywood, pulpwood, matchwood, hardwood, wood blocks for flooring and other purpose, boxes, windows, doors, wood wool, masts, spurs, sleepers, tool handles, paneling,

- wood work, furniture and articles of all description wholly or partly made from wood or forest produce, the waste products or by products of wood or forest produce,
- d) To carry on the business of manufacturing, exporting, importing pine wood and pine resin, plywood, veneer, timber forest products compositor and plastic, to buy and sell by wholesale or retail and generally to deal in all such materials and products thereof.
 - e) To plant, grow cultivate, produce and raise plantations of all kinds or varieties of forest plants, trees and crops and natural products of any kind and other agricultural or horticultural crops, medicinal or aromatic plants and to buy, sell, export, import, process, distribute and otherwise deal in all kinds of forest plants, forest produce, trees, crops, natural products and agricultural and silvicultural cash crops.

1.5. Project setup at Mafinga district – Iringa, Tanzania.

The second phase of this project proposal entails setting up Tree plantation to 10,000Ha with average trees per Ha. is 1,000 which is equivalent to 10,000,000 trees within 10 years project economic life. The project may be equipped of all mentioned activities to and modern equipment and machineries facilities from using modern technology. The project will be created in the said site above. The proposed project will therefore involve the following activities:

- ❖ Additional machineries and equipment for pine harvesting, these includes, Delibes, Feller bunchers, Stump grinders, Mulchers, yarder, forwarder, Log loaders, and Harvesters
- ❖ Additional Acquisition of machineries and equipment's to ensure maximum production of final resin products
- ❖ Development of processing camps and infrastructure
- ❖ Construction of laboratories building, storage warehouses, workshops and offices
- ❖ Importation and installation of chemicals storage processing plants facilities,
- ❖ Procurement and installation of environmental protection plant equipment
- ❖ Importation and installation of equipment, machinery and plants for resin processing
- ❖ Procurement of heavy-duty trucks fleet for transportation of timber and tailings. Other utility vehicles will also be procured for the project. This will include pickups, 4-WD station wagons to facilitate movement. Armored vehicles will also be procured for transportation.
- ❖ Purchase of furniture, equipment, fittings and administration motor vehicles, fencing of the factory compound and storage yard.

2.0. PROJECT OVERVIEW

2.1. The industry overviews

CFID Forestry Limited is a Tanzanian company registered in Tanzania with certificate of incorporation number 156829064 of 15th July, 2020 the Company with Taxpayer Identification Number 156-829-064. CFID Forestry Limited has expanded rapidly in the sub regional pine tree plantation and resin processing in eastern Africa and Asia. The headquarters of CFID Forestry Limited is in Dar es Salaam, the main port and commercial capital of Tanzania, and from there the wings of investment spread out to the neighboring countries of Uganda in eastern Africa. The main goal of CFID Forestry Limited is focused on commitment, efficiency and customer satisfaction.

The proposed plant will be located at Mafinga District Iringa region. The area covered by the project is in the excess of 10,000Ha with a capacity of producing 10Milion trees for forestry product and by products which includes wood and non-wood products. Non wood products include Resin for chemical, food, and pharmaceutical industries, as well as for bio refineries.

The main office of the company is located at plot No. 84 Accasia State, Mwenge, Kinondoni District Dar Es Salaam City in Tanzania. The anticipated project site will be located at the Mafinga district, Iringa Region, in Tanzania.

The initial Authorized Share Capital of the company is TZS 200,000,000/= divided into 1000 ordinary shares of TZS 2,000,000/= each and the company have the power to divide the original or any increased capital into several classes, and to attach thereto any preferential, deferred, qualified or other special rights privileges, restrictions or conditions. Unless the conditions of issues shall otherwise expressly declare, every issue of shares, whether preference or otherwise, or any such rights, privileges or conditions shall not be altered or modified except in accordance with the registered Articles or Association. The liability of the members is limited and the following names compromise the company ownership and principal shareholding as illustrated on Table 1 below.

Table 2.1. Company Ownership and Principal Shareholders

S/No.	Shareholder's Name	Address	Occupation of Subscriber	Number of Shares
1.	LONGHUA WANG, (CHINESE)	Africa Shandong Industrial Park, Second Ring Road, Luzira, Kampala, Uganda	Private Company By Share, Domicile In Tanzania- Incorporate Number 156829064	75
2.	YOU CHEN (CHINESE)	Africa Shandong Industrial Park, Second Ring Road, Luzira,	Private Company By Share, Domicile In Tanzania- Incorporate Number 156829064	15

		Kampala, Uganda		
3.	XIN LI (CHINESE)	Africa Shandong Industrial Park, Second Ring Road, Luzira, Kampala, Uganda	Private Company By Share, Domicile In Tanzania- Incorporate Number 156829064	2
4.	JUAN GONG, (CHINESE)	311 Tianjian Fashion New World, Futian District, Shenzhen, China	Private Company By Share, Domicile In Tanzania- Incorporate Number 156829064	2
5.	BIHUA LI, (CHINESE)	Room 1202, Building 9, Xinghui Wenhua Phase ii, No.110, Qiuzhen Street, University Town, Panyu District, Guangzhou city, Guangdong Province	Private Company By Share, Domicile In Tanzania- Incorporate Number 156829064	2
6.	YANG LI, (CHINESE)	Time dynasty bridge 9-1704, Zengcheng District, Guangzhou, China.	Private Company By Share, Domicile In Tanzania- Incorporate Number 156829064	2
7.	MENGJIAO SHI, (CHINESE)	No.7 Zhangsankou, Qilin District, Qujing City, Yunnan Province China	Private Company By Share, Domicile In Tanzania- Incorporate Number 156829064	2

2.2. Business Plan Objectives

The objectives of this study are two-fold. First is to determine the viability of the proposed project and serve as a business plan for the company's development program. Secondly, the business plan will act as a supporting document in the company's application for Tanzania Investment Centre (TIC) Certificate of Incentives so as to access exemptions on duties, VAT deferments and other benefits and protections as statutorily provided for under Tanzania Investment Act (1997).

The project promoters have commissioned a reputable engineering and project planning consulting firm to advice on detailed technical and economic evaluation of the project and in determining its viability. As the report will be used to raise debt financing for the project, it is tailored to meet standard requirements of financial institutions in the region.

2.3. Project Technical aspect – PINE PLANTATION AND RESIN PRODUCTION

A. PINE PLANTATION PROCESS:

2.3.1. Explanatory note

Successful pine plantings require a well-prepared site, quality seedlings, proper storage and field care of seedlings, and timely planting by a crew trained in proper planting techniques. Most landowners contract with a vendor for such tree-planting services. This note gives information on (1) key clauses to include in any tree-planting contract and (2) conditions which affect seedling survival and early growth. The landowner who writes an adequate contract and then monitors the planting operation to ensure compliance will most often be rewarded with a successful tree-planting operation.

2.3.2. Writing Tree-Planting Contracts

A written tree-planting contract protects both landowner and contractor from misunderstandings and possible lawsuits. A tree-planting agreement should include specific provisions covering these items:

1. acres, price per acre, species, seedling sources, spacing, and planting methods;
2. time of planting (preferably a starting and ending date);
3. insecticide, fungicide or root-dip requirements—for example, dipping pine seedlings in an insecticide for pales weevil control;
4. planting crew ingress and egress;
5. time and method of payment;
6. map which clearly shows the area to be planted;
7. who obtains, transports, stores, and handles seedlings (landowner or contractor);
8. provisions requiring the contractor to contact the landowner once planting begins;
9. percentage survival guarantees or guarantee of adequate stocking;
10. who performs the seedling survival count and when (date). Generally, the contractor should be liable to replant, at no cost, those areas which fall below an agreed percentage survival specified in the contract unless poor survival can be attributed to one or more of the following conditions:
 - seedlings furnished by the landowner;
 - species planted not recommended by the Tanzania Forestry service Agency for that planting site;
 - grazing by domestic livestock and/or wildlife;
 - natural hazards such as wildfire, drought, insects, diseases, freezing, and similar factors;
 - inadequate site preparation.
11. provisions for settlement of disputes; and
12. right of contractor to subcontract to a third party.

2.3.3 Keys to Successful Tree Plantings

Long-Term Storage

Seedlings should be planted upon receipt, but poor weather conditions or unavailability of planting crews often prevent prompt planting. Dormant seedlings can be stored up to 10 weeks in cold storage (32 to 40°F) at a humidity above 80 percent. If cold storage is not available, seedlings can be stored up to 4 weeks in a cool (35 to 40°F) shaded warehouse. Slurry-type root dips or weekly watering of the root systems may extend warehouse storage up to 8 weeks if the seedlings remain dormant.

Protect seedlings from heat and freezing temperatures during cold or warehouse storage. Baled or bagged seedlings will generate heat. Allow adequate air circulation between and around seedlings to avoid overheating.

"Heeling-in" is an outdoor storage method. To heel-in seedlings, remove them from the package and place the root system in a dug furrow. Cover the root system with dirt and mulch and water weekly. Heeling-in is a good method for long-term (over 8 to 10 weeks) storage. The seedlings must be planted before budbreak, as dormant seedlings survive better and produce better early growth.

2.3.4. Field Care of Seedlings

The major cause of plantation failure is improper on-site storage and handling of seedlings. Follow these guidelines:

1. Store bags or bales in the shade. Improvise a shelter if necessary.
2. Place spacers between bags/bundles to allow air circulation and prevent heat buildup.
3. Tightly close bags by folding the flap; secure it with a band or cord. Keep opened bundles moist with wet burlap, moss or other water-holding material.
4. Keep seedling roots moist by dipping in water or commercial root dip. Be careful not to puddle water in bags, as this will promote mold or drown root tips.
5. Heel-in seedlings if they are to be stored on the site over two days.

2.3.5. Quality Seedlings

Research and experience show that planting poor-quality seedlings leads to excessive mortality and poor early growth. Discard seedlings for any of these reasons:

1. Broken, skinned or weak stems.
2. Fermented odor or mold on needles.
3. Slippery bark on root or stem.
4. Root collar diameter smaller than $\frac{1}{4}$ inch or larger than $\frac{3}{4}$ inch except longleaf pine, which must be at least $\frac{1}{4}$ inch in diameter.
5. Root system less than 4 to 5 inches long.
6. Root system longer than 12 inches if more than 50 percent of the fine roots must be pruned in order to plant.
7. Longleaf pine seedlings with tap roots shorter than 7 inches.
8. Containerized seedlings with a dry, hard root plug.
9. Any seedling with a dry root system resulting from improper storage, exposure to sun and air for over 10 minutes on a cool, humid day or 5 minutes or less on a warm, windy or dry day. Bitter cold, dry winds can be equally destructive.

10. Presence of stem galls or swelling which indicate the presence of *Cronartium fusiforme*, a fungus disease.

2.3.6. Root Pruning

Root pruning is done to remove excess fibrous roots. Seedlings should be root pruned to avoid bent root systems in the planting hole. Only trained individuals should perform root pruning using these guidelines:

1. Do not expose roots to wind or sun more than five minutes. Keep roots moist at all times. To keep roots moist, dip in water or commercial root dips. If possible, root pruned seedlings at the same time as grading.
2. Prune roots to a uniform length by aligning root collars in bunches before pruning.
3. Use a sharp knife, machete, ax or hatchet. Never break or twist roots off by hand.
4. Do not remove more than 50 percent of the lateral fibrous root system. Root systems on loblolly, shortleaf, Virginia, and white pine seedlings with 5- to 8-inch tops should not be less than 5 inches long. Seedlings with 8- to 12-inch tops should not be root pruned to a root system less than 7 inches long.
5. Avoid pruning lateral or tap roots of longleaf pine. Prune only excessively long roots and clip longleaf needles back to 4 to 5 inches at the time of root pruning.

2.3.6. Tree Planting

Seedlings may be planted by hand tools or by machine. To be successful, plant quality seedlings at the correct depth with roots extending straight into the planting hole. An 8- to 10-inch straight hole is usually sufficient. "Dibbles" are the most popular hand-planting tools.

Dormant season planting (October through March) is recommended for bare root seedlings, although seedlings in containers may be planted throughout the year. Consult a forester to determine the best planting date for each region of North Carolina.

The following are several key factors to improve early growth and survival:

1. Carry seedlings in a canvas bag or bucket containing commercial root dip, mulch or wet sawdust to cover the root system when hand planting. Do not carry seedlings in hand with roots exposed. When machine planting, carry seedlings in a planting box on the planter. Roots may be dipped, covered with wet burlap or mulched in the planting box.
2. Carefully separate seedlings to prevent damaging or breaking fibrous roots. Remove only one seedling at a time from the planting bag or box. Well-drained sites (sand and sandy loams). Plant root collar 2 to 3 inches below groundline except for longleaf pine which should be planted at or very slightly below the root collar. Poorly Drained Sites (clay and silt soils). Plant root collars one inch below ground line.

Containerized Seedlings. Plant deep enough to cover the top of the container with soil to prevent wicking from drying the plug.

3. Close hole properly to insure soil/root contact. Check by pulling tops of seedlings to evaluate how tightly they are held in the hole. Make sure the hole is firmly closed at

the bottom. Avoid areas of loose soil or organic matter which often accumulate close to rotting stumps.

4. Maintain quality control by frequently checking seedling condition, planting depth, and proper packing of soil.

B. RESIN PRODUCTION PROCESS

2.3.7. Explanatory Note



Resins are a group of sticky, liquid, organic substances that usually harden upon exposure to air into brittle, amorphous solids. Natural resins are secreted by a number of plants, especially pines and other conifers. In one instance, an insect is the source of a resin. Resins sometimes appear on the external surfaces of plants. They form protective coatings over plant wounds and can prevent entry of fungi and other disease-causing microorganisms. If trees are vigorous, a flow of resin caused by attacking insects, such as bark beetles, will repel the attack.

Resins are among the most important non-wood products harvested from trees. They are also one of the oldest tree products used by humans. Today resins are used in the manufacture of a wide range of products including paints and lacquers, rubber, soaps, linoleum, essential oils, furniture polishes and pesticides. Most resins are harvested from trees by a process known as tapping.

2.3.8. Tapping resin process

Resin are obtained by a tapping living pine trees. 2. Sulphate Naval Stores – Obtained during the conversion of pine wood chips to pulp via the sulphate or Kraft pulping process. Sulphate turpentine is condensed from the cooking vapors. A product known as tall oil is obtained from alkaline liquors and fractionated into products such as tall oil resin and tall oil fatty acids. 3. Wood Naval Stores – Obtained from resin saturated pine stumps after a tree has been felled.

Products Distillation of pine resin yields two products: turpentine and rosin. Turpentine is a clear liquid with a pungent odor and bitter taste and is composed of a number of organic compounds, primarily a series of volatile fractions known as terpenes.

The chemical composition of turpentine can vary significantly depending on the species of pine from which it is harvested. In many pines, the terpene composition is simple and consists of two common terpenes: **alpha** and **beta pinenes**. Other pine species contain different volatile oils, which may significantly affect the composition and use of the turpentine.

Resin is usually collected by causing minor damage to the tree by making a hole far enough into the trunk to puncture the vacuoles, to let sap exit the tree, known as tapping, and then letting the tree repair its damage by filling the wound with resin. This usually takes a few days. Then, excess resin is collected.

2.4. Technical Characteristic of the project.

2.4.1. Project Location and site analysis.

Based on physical inspection of the proposed plantation at Mafinga district, Iringa region, the availability of basic and essential industrial infrastructure such transport, water supply, effluent disposal, electric power supply, telecommunication system and security were all checked out and are ok for pine tree plantations and resin factory establishment. The realization of the project development requires successful completion of a number of necessary activities and facilities to enable a successful development of the project. The project location is already installed necessary utilities such as reliable supplies of energy, water, transportation, telecommunications services, waste disposal and other services are not in place. But will be installed upon establishment of the plant.

2.5.2. Buildings and related fixed cost

The floor plan and elevation of buildings and other related structures will be rehabilitating to CFID Forestry Limited as rented at Mafinga pine plantation site by the shareholders. However, the total major rehabilitation of the yard and buildings, Storage of raw materials and finished processing a structure, will be installed the cost includes construction of resin factory which includes; steel structure, machineries installation, shed and fitting equipment's, steel rebars & concrete civil works, and Operation & Management office The industry also set budget as working capital which involves purchase of raw materials and factory overhead cost. The minor rehabilitations costs are inclusive of contingency and reflect prevailing cost of building materials and other cost.

2.5.3. Machinery and Equipment.

Proper machinery selection is one of the key problems in the development of an industry. The machinery must suit the two-fold requirements of the developing countries, i.e. it should be up-to-date to allow for competitive production. In view of the foregoing, an effort has been made to choose from modern technological alternatives, a level that strikes a balance between fixed costs based on depreciation and variable costs based essentially on wages.

The requirements of various items of equipment have been worked out taking into consideration the production programs, average equipment utilization and normal productivity level of an average worker etc. While working out details of equipment required, it has been assumed that the plant will be working in a double shift of 16 hours a day, 25 days a month or a total of 300 days a year.

The projects machinery and equipment will be sourced from Asia are this includes, a complete set of resin processing. Machineries total cost is estimated to 2,450,000US\$

2.5.4 Motor Vehicles

10 heavy Trucks, supporting trucks and 50 light truck and 5 light vehicles will be purchased for smooth operation of the project. Others includes; Delimbers, Feller bunchers, Stump grinders, Mulchers, yarder, forwarder, Log loaders, and Harvesters all these worth 3,832,391.30US\$ (see investment breakdown)

2.5.5. Furniture & Fittings and computers

This cost item includes the purchase of various office furniture: tables, chairs cabinets, safes, telecommunication gadgets, firefighting equipment, air conditioners etc. A budget of 242,000US\$ will be allocated from general administration budget for furniture fittings and computer accessories. The total budget for furniture and fittings is small due to nature of industry as few or minor requirement of furniture and fittings.

2.5.6. Pre-Operational Expense

Under pre-operational expenses are considered costs like company formation, preliminary project studies, business plan preparation costs, licenses, permits and authorization, including processing of TIC Certificate of Incentives, and legal fees, travelling expenses, initial recruitment and training expenses, and interest accrued during project construction period. Budget allocated for this is 43,478.26US\$

2.5.7. Initial Working Capital

This item will mainly cover initial imports of raw materials estimated to last for the first three months of operations. Otherwise, raw materials will generally be maintained at one month's stock and debtors at one month's sales volume constitute the biggest portion of current assets. Trade credits will be 15 days for the items listed. The initial working capital allocated budget is 1,500,000US\$

2.5.8. Project Financing

The project costs, including fixed costs (machinery, equipment, building renovations, motor vehicles, office furniture and equipment and pre-operation expenses will be financed by a combination of bank term loan and shareholders own resources. Working capital requirements will be financed by short term bank financing in form of overdraft facility. The project promoters are planning to finance project cost in the following pattern:

2.5.9. Project Implementation

Full implementation of the project is planned to take place by end of October 2022. Machineries and motor vehicles will be imported immediately while construction/renovation works are in process.

2.5.10. Auxiliary Materials/ services

Falling under this category is packing bags, paper for bags for bran, lubricants, grease and other miscellaneous items.

Utilities and service facilities that will need to be provided in this plant are as follows:

- (i) Workshop
- (ii) Electric power
- (iii) Water supply
- (iv) Miscellaneous facilities { Canteen; First Aid Kit, Storage and transport and Office Facilities }

(i) Workshop

It is necessary to make provision for a small workshop in the plant premises so that certain maintenance operations could be carried out following sudden breakdowns and major routine matters. The facility will comprise of necessary machines like small centre lathe, drilling machine, welding set, soldering and gas-cutting equipment including complete electrical kit to take care of necessary electrical maintenance as well as to replace worn-out parts and periodic oil and greases needs for the plant. Equipment provision has been restricted to the minimum.

(ii) Electric Power and Generator

The proposed site will be supplied with industrial production 3-phase standard power supply from Tanzania Electric Supply Company (TANESCO), the electricity is available through the National Grid Line from Kidatu the main power station distributor and electric transformer 1000KVA substation nearby the project site, Lighting system well head Lamps, flamed enclosed with 10W led light will be installed. As part of an alternative power supply, the company will install UPS system in case of abruptly power cut off with a capacity of 10KVA minimum with a battery bank.

(iii) Water Supply

Apart from the needs of electric power, water is also required for the actual process and other social needs. The proposed site has close to IRUWASA – Iringa Urban water supply Authority water network, the agency is major supplier of water to urban and peri urban area in the region. The main line from this source will be tapped and let to the land site and water collected in an overhead reservoir provided at the top of the building of the plant. Adequate provision has been made in the project cost for the overhead tank and supply and laying of pipelines etc.

(iv) Miscellaneous Facilities e.g. First Aid Kit, Storage and Transport, Office Facilities etc

- Provision has been made in the project costs for necessary facilities for external telephones and fire alarm system;
- Sickness and ill-health are recognized to be among the cause of absenteeism and low morale leading to decreased production, increased waste and bad employee-management relations. Therefore, necessary provision has been made for the canteen and first aid facilities in case of accidents, sudden sickness etc.

- Necessary provision for furniture and office equipment has been made in the Capital Cost estimates.
- Provision has also been made for the various types of weighing equipment in various sections for material-handling equipment etc.

2.5.12. Warehousing and distribution

The CFID Forestry Limited's warehousing service is ready to meet 24/7/365 in provision of resin and chemicals and necessary material and chemicals imported. The efficiency of on-site combined with focal lift is already accommodated all needs and reduce supply chain costs. The industry uses electronics inventory management system means will ready for the efficiently movements of goods to next level.

The industry will use quick dispatch for fast distribution of final products and packed by manual means or by semi-automatic machines. The industry will take Extra care is therefore taken to make it hygienic so that the products do not get spoiled during storage.

2.5.13. Waste management for industry

In order to create a sustainable society, it is necessary to develop effective utilization of all sorts of wastes. One of the major wastes from our living is fiber wastes. Fiber wastes are generally divided to nonindustrial (organic chemicals) and industrial wastes (inorganic Chemicals)

In his strategic management for CFID Forestry Limited's; the industry has to move from an understanding of improvement at all costs to an understanding of continuous and balanced improvement once established. In modern times, environmental protection is being implemented not because it is enforced law, but as an administrative philosophy.

Rapid degradation in environmental conditions has changed at attitude of industrial managers toward ecological environment and had them consider ecology a significant factor while taking decisions related to industrial management. Parameters responsible for environmental pollution include chemicals discharged into air, water and soil as well as energy pollution all these will be taken into consideration of the proposed project.

Noise pollution caused by poorly planned settlement programs is also included in this plan. Furthermore, safety and health of those working in production will be also taken into account by installing modern machines free from noise pollution.

3.0. MANPOWER AND SALARY BUDGET

3.1. Manpower

The whole process of production lines is looking at providing direct employment to at least 1099 permanent jobs on full implementation and operation of the project. The industry is divided into 5 Departments; Administration (10) Marketing and finance (35), Maintenance (16), Operation (1017) and store and logistic (21)

3.2. Recruitment

Recruitment of the operation department personnel's will be carried out by giving first preference to ex-technician from our local technical institutes such as Vocation Education Training Authority "VETA" and employees of CFID Forestry Limited in Tanzania, based on demonstration of skills and aptitude basis and their willingness to work for CFID Forestry Limited. Careful methodology is being worked out by a competent management consultant who will set the job descriptions. To ensure that the right calibre is recruited. Recruitment of expatriate personnel will be carried out in consultation with the relevant authorities in Government and the collaborating agencies.

3.3. Training and the use of consultants

The Company plans to initially carry out on the job training for most of the technical staff to be dispatched to the project site by the suppliers of the plant which will be specified under sales agreement. In general, the company will ensure that employees acquire new skills and procedures to increase their productivity fourfold. Educational materials will be subsidized or paid for to motivate the workers to develop themselves.

Whereas the company will endeavor to obtain the best talents to fill the permanent posts in the organization, it is intended where necessary, to continue with the policy of hiring out some specialized skills by way of consultants. Alternatively, those skills not required throughout the year will be left to consultants. These include legal counsels, systems and management consultants. To ensure efficient and scientific management, operational manuals will be prepared for the core functions of the company.

3.4. Organization and Management

The project will be managed by qualified professionals given the vast experience that the promoters have acquired over years in running and managing similar businesses. The Board of Directors formulates policy and offer strategic business guidance to management and regularly monitor and evaluate performance of the company.

All the production line will be under the administrator under which the day-to-day leader/management of production line will be vested in the management team headed by a Administrator. The Administrator is to be assisted by qualified and experienced personnel.

Table 3.1. Proposed organization and manpower requirement for the plant is as follows:

S/No.	DEPARTMENT	STRENGTH /NUMBERS	MONTHLY SALARY US\$	ANNUAL BUDGET US\$
A	ADMINISTRATION			
	HR Coordinator	2	782.61	18,782.64
	Project manager - overall	1	1,273.00	15,276.00
	Ass. Project Manager	3	1,087.00	39,132.00
	Office Administrator	2	782.61	18,782.64
	Drivers	2	140.00	3,360.00
	SUB TOTAL	10	4,065.22	95,333.28
B	FINANCE AND MARKETING			
	Chief Financial Officer	1	987.00	11,844.00
	Accountant	4	352.17	16,904.16
	asst. Accountant	6	236.00	16,992.00
	Finance system expert	1	453.00	5,436.00
	Marketing officer	2	237.00	5,688.00
	Drivers	3	140.00	5,040.00
	SUB TOTAL	35	9,753.00	233,788.08
C	MAINTAINANCE			
	Mechanics	2	347.83	8,347.83
	Electrician	1	347.83	4,173.91
	Civil engineer	1	521.74	6,260.87
	Plumbing	2	565.22	13,565.22
	Machineries maintain ace expert	3	260.87	9,391.30

	Maintenance Planners	2	239.00	5,736.00
	Drivers	4	120.00	5,760.00
	Senior ICT	1	330.43	3,965.22
	SUB TOTAL	16	2,732.91	57,200.35
	OPERATION			
	Supervisors (3 projects)	3	1,043.00	37,548.00
	Production Engineers	3	1,043.48	37,565.28
	Laboratory Technician	3	434.78	15,652.17
	Harvestors (resin) - Tapping	300	130.43	469,565.22
	Tree Growing and monitoring	500	108.70	652,173.91
	Resin processing Factory workers	20	152.17	36,521.74
	Delimber Operator	3	173.91	6,260.87
D	Stump Grinders - Operator	3	173.91	6,260.87
	Multchers - Operator	3	173.91	6,260.87
	Yarder operator	3	173.91	6,260.87
	Forwader Operator	2	195.65	4,695.65
	Log loaders	5	195.65	11,739.13
	Drivers Heavy trucks	20	287.00	68,880.00
	Training Coordinator	3	643.00	23,148.00
	Quality controller	6	874.00	62,928.00
	Supporting staffs (Labour)	120	86.96	125,217.39
	Driver Light trucks	20	108.70	26,086.96

	SUB TOTAL	1017	5,999.18	1,596,764.93
	STORE AND LOGISTIC			
E	Logistic Liaison	2	326.09	7,826.09
	Purchasing Coordinator	2	347.83	8,347.83
	Store supervisor	4	321.00	15,408.00
	Store person	8	231.00	22,176.00
	Drivers	5	157.00	9,420.00
		SUB TOTAL	21	1,382.91
	GRAND TOTAL	1099	23,933.22	2,046,264.55

4.0. PROJECT FINANCING AND CAPITAL INVESTMENT SUMMARY

4.1. Project Cost & Financing Pattern

The proposed integrated project is estimated to cost a total of US\$ 19,685,889.57. This including, own equity of 100% as proceeds from capital contribution of the project. The Current asset of US\$ 3,070,523 during the first year of operation and it increase as the project will be in full operation (see income statement), fixed assets 18,142,891 US\$ and total liquidity of 4,807,082 US\$. The project economic life will be implemented within 10 years.

4.2. Project Capital Investment Summary

Investment Summary - CFID Forestry Limited	
Land and Buildings	US\$
Land Acquainting	2,000,000.00
Leasing Land	1,000,000.00
Buildings	
Factory for Resin productivity	1,900,000.00
Pine resin extraction	2,000,000.00
Wood processing factory	1,000,000.00
Tree growing cost	3,000,000.00
Operation & Management office	60,000.00
Mother Garden & Seedlings	500,000.00
Sub-total Fixed Assets	11,460,000.00
Machineries and Equipment's	
Equipment for resin harvesting	600,000.00
Equipment's for wood processing factory	500,000.00
Tapping resin equipment's	350,000.00
Tree Growing equipment for planting and maintenance	1,000,000.00
Sub-total Fixed Assets	2,450,000.00
Motor vehicles	
	869,565.22
Delimbers, Feller bunches, Stump grinders, Mulchers, yarder, forwarder, Log loaders, and Harvesters	
Folk lift 3	115,000.00
10 Heavy truck for log loading	782,608.70
Management & Operational Vehicles 5	108,695.65
Light Trucks 50	1,956,521.74

Sub-total Fixed Assets	3,832,391.30
Other Facilities	
Camps setting & offices	230,000.00
Office Equipment's	12,000.00
Other cost	158,000.00
Sub-total Fixed Assets	400,000.00
Sub-total Fixed Assets	18,142,391.30
Current Asset	
Pre operational expenses	43,478.26
Working capital (planting and project maintenance)	1,500,000.00
Sub total current Assets	1,543,478.26
Total Investment	19,685,869.57
Equity + Loan	
Loan (0%)	-
Equity (100%)	19,685,869.57
Total Equity	19,685,869.57

5.0. RISK ANALYSIS

5.1. Risk Analysis

Risk is the probability that an event or action will adversely affect the organization. Risk assessment is the identification and analysis of risks associated with the achievement of operations, financial reporting and compliance goals and objectives. Risk management is a central part of the CFID FORESTRY LIMITED. The industry's management will determine the level of operations, financial and compliance risk they are willing to assume. Risk assessment is one of the Company's management responsibilities.

5.2. Macroeconomic Risk Analysis

Since early 1986, the government of Tanzania has launched a comprehensive economic policy and stabilization plan with the aim to enhance the amount of infrastructure construction and improve the lives of the poor. During this time the main economic indicators significantly improved. However, uneven development of various region in the country, lack of relevant infrastructure in transportation, telecommunications, networking, health facilities, electricity and water supplies have proven to be investment barriers. Overall, Tanzania has a weak economic foundation but the project can achieve a greater impact in attaining social and economic goals for the country.

5.3. Finance Risk Analysis

a) **Supply Risk:** The risk in Primary production relates to supply of raw material, transportation and price fluctuations. There is no assurance of enough supply of raw materials in the local market instead mostly of raw materials are imported.

b) **Processing Risks:** The technology, machines and equipment used in Resin processing are in rudimentary stages all of which contribute to reducing production efficiency, also quality/products safety and standards consideration in the production environment is limited. In gold processing facilities operation know-how is very low as there are notarized labourers.

c) **Sales/Market Risk:** Placing value added products on the consumer markets bears risk of demand fluctuations and rejections through retailers. Furthermore, distributors are not aware of the selling price mostly are controlled by world market.

5.4. Other Potential External Risk

a) **Lack of Governance:** the governance mechanism in the value chain is underdeveloped, actors operate in an uncoordinated and unorganized fashion, and if rules exist, they are often ignored;

b) **Lack of market coordination:** No lead organization has a coordinating role in relation to markets, technology and information such that producers and processors have no incentives for improving neither their product nor the chain process to promote sustainable income earning opportunities;

- c) **Unclear and conflicting roles regulatory authorities:** Regulatory Agencies are responsible for quality control as well as enforcing TBS, NEMC etc, are regulatory role in issuing licensing in Tanzania
- d) **Industry associations:** Associations are weak at all levels of the chain;
- e) **Operating procedures:** Standard procedures are inadequately enforced, or not enforced at all, because of relaxed production and trade regulations; and
- f) **Integration:** there is little vertical integration of importers, mid chain actors and processors.

5.4. Mitigating Potential Risk

The development of a large and complex project such as CFID Forestry Limited is necessarily accompanied by multiple risks during all the phases of the project development, construction, operation and maintenance. The right approach to manage the project in a manner which is fairly and adequately address the multiple risks in a comprehensive as well as systematic manner is to use the risk analysis and management methodology which identifies the risk issues and their instrumental cause. In this regard, the risk is eliminated or effectively managed by the party best suited with capacity to handle or deal with the risk factors.

6.0. ECONOMIC AND SOCIAL ASPECTS

The project is also likely to have a positive impact on the economy of Lake Zone regions and Tanzania as a whole by creating employment, and contributing to Government revenues through various taxes, which will be paid. It also has potential for substantial exporting to foreign markets specially to neighboring countries in the Great Lakes Region. In summary the following table will show impact investment index framework

6.1. Impact Investment Index Framework

Impact Investment Index		
Frame Work for CFID FORESTRY LIMITED		
Performance Area	Quantitative Indicator	Remarks
Investment Capital	Total investment capital, CAPEX and OPEX US\$ 19,685,889.57 US\$	Substantial amount of capital invested into the domestic economy.
Export Earnings	Indicative Annual sales of earnings of 10.539,130US\$ out of annual average collection. 100% of total sale will be generated by export all products	Increased foreign earnings.
Job requirements	Job creation after plant in operation 2022-2027. DIRECT TANZANIAN JOBS 1069 local employed workers and 30 foreign employed	<ul style="list-style-type: none"> • Reasonable number of direct jobs created to local Tanzanians with direct impact on poverty reduction through enhanced income generation; and • Improving skills development for Industrial production
Technology applied	High Tech Environmentally friendly machinery	<ul style="list-style-type: none"> • Enhancing technological transfer; and • Applied technology which is free from environmental pollution,
Other Implied Project Benefits		
<ul style="list-style-type: none"> ▪ Increased sales to the Utility Companies providing services of electricity, water and sewerage, telecommunications; ▪ Increased business transacted by local banks and institutions providing financial services; ▪ Business opportunities for local entrepreneurs in market distribution channels, ▪ Business opportunities to contractors and sub-contractors during the minor construction phase; ▪ Increased regional intra-trade and international trade due to better infrastructure facility and links to markets; ▪ Increase of technology transfer & expertise to local employed staff, ▪ Capital spends in local economy over 19.7Million US\$ Millions and 		

- Contribution to GDP growth through increased economic activities

Based on the Impact Investment Index analysis, the company can develop projections that the project can deliver both value for money in the context of broad socioeconomic impact and return on investment while complying with governance requirements. In this regard therefore, CFID Forestry Limited will promote the industrialization process in the country, create employment, attract new technologies, expand foreign exchange earnings and ultimately contribute substantially to the country's economic growth.

7.0. FINANCIAL MODELLING AND ANALYSIS

The Financial Modelling and analysis, is the main source of information for assessing the potential financial viability of the CFID Forestry Limited. The analysis is based on the assumptions that have been taken for the implementation of the site development, demand and the associated potential investment requirements for a 10-year time period. The purpose of establishing this project is to speed up the country's economic development by being a catalyst for restructuring the existing local industrial set up and attracting new, both foreign and domestic entrepreneurs to a liberalized legal business framework.

7.1. Project investment inputs and revenue projects

Expected Quantities for Production	
All cost and revenue in US\$	
Resin and Plywood, fiber production	
Working days per month	20.00
Annual working days	240.00
Average production of Resin products (Gum and Turpentine) in KG	33.33
Average production of Plywood and Fiber boards in KG	100.00
Annual production of Resin products (Gum and Turpentine) in MT	8,000.00
Annually production of Plywood and Fiber board in MT	24,000.00
Price in US\$ (Gum and Turpentine) per MT	600.00
Price in US\$ Plywood and Fiber board per MT	239.13
Annual sale Resin products in US\$	4,799,999.95
Annual sale of plywood and Fiber board in US\$	5,739,130.43
Total sales Revenue	10,539,130.39

7.2. Production, Revenue and project viability

- ✚ The estimated revenue gain in provision of gas annually 10,537,130US\$ in the first year of production per 8,000MT of resin and 24,000MT of plywood and fibers produced in the first year and increases positively.
- ✚ Net profit before tax is 4,807,082US\$, second year earning is increases positively. which show the profit is increasing, (see Income statement)
- ✚ Net profit after tax for the first years in production is 3.070,082US\$ and second year is increasing to 3,297,277US\$ for remaining year increasing positively, (see Income statement).
- ✚ Gross sales contribution in the first year of service is quietly promising (see Income statement)
- ✚ The expected sales increase in a second year over 5%, this is due to the company will utilize all necessary machine and equipment during the operation of the project after imposed 19,685,889.57US\$ whereas the own equity is 100% and loan-able amount 0 US\$ (see investment summary)
- ✚ The end balance of project in cash flow statement is positive and increases tremendous. (See cash flow statement)
- ✚ Testing the project viability is positive whereas IRR is positive 15.7% which is above bank assumed loan interest of 8%, and payback period of project is 6 years. Which is project economic life
- ✚ Return on investment is posit positive and increases tremendously (see balance sheet)
- ✚ Breakeven point is positive from the 10 years of operation.

7.3. Objective and Scope of Financial Model

7.3.1. Objective

The main objective of the financial modelling and analysis is to setup a financial model framework for potential generated revenues and operational & maintenance costs for the full operation of CFID Forestry Limited based on the assumptions taken for the Market Analysis, the plan for the facility development, unit production costs and other overhead and operational charges.

7.3.2. Scope

The scope consists of a financial model that will be used to analyse the potential financial viability of the project based on the assumptions taken for the concept and scope of the project on the Market Analysis. The financial model has been developed in excel spread sheet and include information on costs, expenses and the subsequent sales revenue based on the average market prices and linked to the financial cash flow.

7.3.3. Project Financial Plan.

The project financial plan primarily consists of income statement, cash flow projection and balance sheet. From these 3 financial statements the project will derive Break even points, internal rate of returns, loan payment schedules, payback period and other financial ratios. These reports constitute reasonable estimate of company financial future. More importantly, the process of thinking through the financial plan improves insight into inner financial working of company.

ANNEX I – INCOME STATEMENT

(all numbers in US\$)

Revenue													
	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>TOTAL</u>		
<u>Year 0</u>													
Annual sale Resin products in US\$	4,800,000	5,040,000	5,292,000	5,556,600	5,834,430	6,126,151	6,432,459	6,754,082	7,091,786	7,446,375	60,373,884		
Annual sale of plywood and fiber board in US\$	5,739,130	6,026,087	6,327,391	6,643,761	6,975,949	7,324,746	7,690,984	8,075,533	8,479,310	8,903,275	72,186,166		
Total Operating Revenue	-	10,539,130	11,066,087	11,619,391	12,200,361	12,810,379	13,450,898	14,123,443	14,829,615	15,571,096	16,349,650	-	132,560,049

Expected Expenses											
	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Total</u>
<u>Year 0</u>											
Salaries	2,046,265	2,107,652	2,170,882	2,236,009	2,236,009	2,303,089	2,303,089	2,372,181	2,372,181	2,443,347	22,590,704
Social Charges & Pension Payments	409,253	421,530	434,176	447,202	447,202	460,618	460,618	474,436	474,436	488,669	4,518,141
Consumable goods - raw materials	1,739,130	1,791,304	1,845,043	1,900,395	1,900,395	1,957,407	1,957,407	2,016,129	2,016,129	2,076,613	19,199,951
Administrative expects	384,000	395,520	407,386	419,607	419,607	432,195	432,195	445,161	445,161	458,516	4,239,349
Fuel and lubricants for machineries and generators	432,000	444,960	467,208	490,568	490,568	515,097	515,097	540,852	540,852	567,894	5,005,096
Security services	86,400	88,992	91,662	94,412	94,412	97,244	97,244	100,161	100,161	103,166	953,854
Work wear and other related facilities	45,000	46,350	47,741	49,173	49,173	50,648	50,648	52,167	52,167	53,732	496,799
Insurance/licensing/healthy premium/other charges	36,000	37,080	38,192	39,338	39,338	40,518	40,518	41,734	41,734	42,986	397,439

Utilities - Electricity and water services		144,000	148,320	152,770	157,353	157,353	162,073	162,073	166,935	166,935	171,944	1,589,756
Other Costs		410,000	422,300	434,969	448,018	448,018	461,459	461,459	475,302	475,302	489,561	4,526,389
Total Operating Costs		5,732,048	5,904,009	6,090,029	6,282,074	6,282,074	6,480,347	6,480,347	6,685,060	6,685,060	6,896,429	63,517,477
Operational Net Earnings before Depreciation, Interest & Tax		4,807,082	5,162,078	5,529,362	5,918,287	6,528,305	6,970,550	7,643,095	8,144,555	8,886,036	9,453,222	69,042,573
<i>%age Gross Contribution</i>		46	47	48	49	51	52	54	55	57	58	1
Depreciation at 12.5% (Machines, Equipt.)		420,620	451,682	483,819	517,850	571,227	609,923	668,771	712,649	777,528	827,157	6,213,832
Net Earnings before Tax & Interest		4,386,463	4,710,396	5,045,543	5,400,437	5,957,078	6,360,627	6,974,324	7,431,906	8,108,508	8,626,065	62,828,741
Interest Paid (Bank Loan)		-	-	-	-	-	-	-	-	-	-	-
Tax (30%)		1,315,939	1,413,119	1,513,663	1,620,131	1,787,123	1,908,188	2,092,297	2,229,572	2,432,552	2,587,819	18,900,404
Net Earnings		3,070,524	3,297,277	3,531,880	3,780,306	4,169,955	4,452,439	4,882,027	5,202,335	5,675,955	6,038,245	44,100,943

ANNEX II – CASH FLOW

Cash Flow statement from Investing										
Activities for ten years										
(all numbers in US\$)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<u>CASH FLOW FROM OPERATING ACTIVITIES</u>										
Cash receipts from Sales	10,539,130	11,066,087	11,619,391	12,200,361	12,810,379	13,450,898	14,123,443	14,829,615	15,571,096	16,349,650
Cash paid to suppliers and employees	(5,732,048)	(5,904,009)	(6,090,029)	(6,282,074)	(6,282,074)	(6,480,347)	(6,480,347)	(6,685,060)	(6,685,060)	(6,896,429)
Cash generated from operations	4,807,082	5,162,078	5,529,362	5,918,287	6,528,305	6,970,550	7,643,095	8,144,555	8,886,036	9,453,222
Dividends received*	0	0	0	0	0	0	0	0	0	0
Interest received	0	0	0	0	0	0	0	0	0	0
Interest paid	0	0	0	0	0	0	0	0	0	0
Tax paid	(1,315,939)	(1,413,119)	(1,513,663)	(1,620,131)	(1,787,123)	(1,908,188)	(2,092,297)	(2,229,572)	(2,432,552)	(2,587,819)
Net cash flow from operating activities	3,491,144	3,748,959	4,015,699	4,298,156	4,741,182	5,062,362	5,550,798	5,914,983	6,453,483	6,865,402
<u>CASH FLOW FROM INVESTING ACTIVITIES</u>										
Replacement of equipment	0	0	0	0	0	0	0	0	0	0
Proceeds** from sale of equipment	0	0	0	0	0	0	0	0	0	0
Net cash flow from investing activities	0	0	0	0	0	0	0	0	0	0

<u>CASH FLOW FROM FINANCING</u>											
<u>ACTIVITIES</u>											
Proceeds from capital contributed		0	0	0	0	0					0
Proceeds from loan		0	0	0	0	0					0
Payment of loan		0	0	0	0	0	0	0	0	0	0
Net cash flow from financing activities		0	0	0	0	0	0	0	0	0	0
<u>NET INCREASE/DECREASE IN CASH</u>		3,491,144	3,748,959	4,015,699	4,298,156	4,741,182	5,062,362	5,550,798	5,914,983	6,453,483	6,865,402
Cash at the beginning of the period		3,070,524	3,297,277	3,531,880	3,780,306	4,169,955	4,452,439	4,882,027	5,202,335	5,675,955	6,038,245
Cash at the end of the period		6,561,668	7,046,236	7,547,580	8,078,462	8,911,136	9,514,801	10,432,825	11,117,318	12,129,439	12,903,648

ANNEX III – BALANCE SHEET

Pro forma balance sheet										
(all numbers in US\$	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
ASSET										
Current asset	3,070,524	3,297,277	3,531,880	3,780,306	4,169,955	4,452,439	4,882,027	5,202,335	5,675,955	6,038,245
Fixed asset	18,142,391	17,721,772	17,270,090	16,786,271	16,268,420	15,697,194	15,087,271	14,418,500	13,705,851	12,928,323
Liquidity	4,807,082	5,162,078	5,529,362	5,918,287	6,528,305	6,970,550	7,643,095	8,144,555	8,886,036	9,453,222
TOTAL ASSET	26,019,998	26,181,126	26,331,332	26,484,863	26,966,680	27,120,183	27,612,393	27,765,389	28,267,842	28,419,790
NET ASSET MINUS DEPRECIATION	25,599,378	25,729,444	25,847,513	25,967,013	26,395,454	26,510,260	26,943,622	27,052,741	27,490,314	27,592,633
EQUITY & LIABILITIES										
Equity	19,685,870	18,701,576	17,766,497	16,878,172	16,034,264	15,232,551	14,470,923	13,747,377	13,060,008	12,407,008
Reserves	0	0	0	0	0	0	0	0	0	0
Total Own Equity	19,685,870	18,701,576	17,766,497	16,878,172	16,034,264	15,232,551	14,470,923	13,747,377	13,060,008	12,407,008
Provisions	4,176,950	5,163,068	6,083,534	6,950,860	8,002,840	8,759,598	9,711,631	10,363,143	11,220,226	11,770,649
Long term loan	0	0	0	0	0	0	0	0	0	0
Short term Liabilities	1,736,559	1,864,801	1,997,482	2,137,981	2,358,350	2,518,111	2,761,068	2,942,221	3,210,080	3,414,976
Total Equity & Liabilities	25,599,378	25,729,444	25,847,513	25,967,013	26,395,454	26,510,260	26,943,622	27,052,741	27,490,314	27,592,633
NET FA/CL	0.71	0.69	0.67	0.65	0.62	0.59	0.56	0.53	0.50	0.47
CL/CA	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
DEBIT/CAPITAL RATIOS	0.23	0.27	0.31	0.35	0.39	0.43	0.46	0.49	0.52	0.55
ROI	15.6	17.6	19.9	22.4	26.0	29.2	33.7	37.8	43.5	48.7
BREAK EVEN POINT	3.77	3.43	3.12	2.84	2.49	2.25	1.97	1.77	1.54	1.37
BREAK EVEN RATIO	1.55	1.50	1.46	1.42	1.32	1.29	1.21	1.18	1.11	1.09
EQUITY/TOTAL LIABILITIES	77	73	69	65	61	57	54	51	48	45

ANNEX IV – IRR

IRR for the Project

(all numbers in US\$)

	Initial Investment	-19,685,870
Year 1	Additional Annual Net Profit	3,070,524
Year 2	Additional Annual Net Profit	3,297,277
Year 3	Additional Annual Net Profit	3,531,880
Year 4	Additional Annual Net Profit	3,780,306
Year 5	Additional Annual Net Profit	4,169,955
Year 6	Additional Annual Net Profit	4,452,439
Year 7	Additional Annual Net Profit	4,882,027
Year 8	Additional Annual Net Profit	5,202,335
Year 9	Additional Annual Net Profit	5,675,955
Year 10	Additional Annual Net Profit	6,038,245
	IRR (in 10 years)	15.70%

The IRR above indicates that the expected return on the 19,685,870USD initial investment after 10 years is 15.70%.

ANNEX V PAY BACK PERIOD

Payback Period Analysis

	Year	Beginning Balance	Net Cash Flows	Ending Balance
Cost of investment	0.00	19,685,869.57	0.00	19,685,869.57
	1.00	19,685,869.57	3,070,523.94	16,615,345.63
	2.00	16,615,345.63	3,297,277.05	13,318,068.58
	3.00	13,318,068.58	3,531,880.26	9,786,188.32
	4.00	9,786,188.32	3,780,305.80	6,005,882.52
	5.00	6,005,882.52	4,169,954.83	1,835,927.69
	6.00	1,835,927.69	4,452,439.05	2,616,511.36
	7.00	2,616,511.36	4,882,027.10	7,498,538.46
	8.00	7,498,538.46	5,202,334.53	12,700,872.99
	9.00	12,700,872.99	5,675,955.35	18,376,828.35
	10.00	18,376,828.35	6,038,245.38	24,415,073.73

Payback Period =	6.00	Years
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8.0. CONCLUDING REMARKS AND WAY FORWARD

8.1. Evidence of project viability based on financial model and policy Framework support

On the basis of all the analysis done on this Business Plan on all aspects of assessment on both SWOC Analysis, market analysis, risk analysis and the financial analysis, the proposed investment options in the project as prescribed on this business plan have shown that the project is commercially viable. Nonetheless, CFID FORESTRY LIMITED through professional consultative manner, will continue to find ways of implementing cost effective options given time and financial resources that will be made available. Financial analysis results show that when the construction of plant facility is financed using a combination of equity debt ratio (100:0), it gives an IRR of about 15.7%. The computed IRR is well above Dollar market of the annual loan interest rate of (8.00%) which is technically interpreted that the project is financially viable. The payback period for the project is estimated at 6 years, which is within the range for this type of investment. Sensitivity analysis results also favor the project. Financial analysis for the project has shown feasible returns. Based on the investment scope and the assumptions taken in this Business Plan, the project will not face any difficulties during establishment, according to the projected cash flow be in a position to accomplish repayment of the loan and start generating profit.

8.2. Policy Framework Support

The development of the CFID Forestry limited is designed to tape advantages of the current Tanzanian market-oriented reforms. The Project will be developed and established to accelerate the industrialization process. The vision 2025 emphasizes the importance of the allocation of public funds for strategic investments and private sector financing for development investments.

The 15 years Perspective Plan (2020-2025); Prioritize private investment in the context of Public Private Partnership. The First Five Years Development Plan (2020-2025) recognizes the fundamental role of the private sector in enabling the government to allocate its fund to strategic projects to facilitate a higher level of development. MKUKUTA III (2020-2025) identifies Public Private Partnership as a means of increasing the level of stakeholder participation and of easing the financial burden on the government. It should be noted that existing public resources are clearly insufficient to meet Tanzanian's huge development needs. The increased use of private enterprises participation in development projects can help alleviate the financing gap. This approach is now applied by CFID Forestry Limited to ensure development of one among the ultra-modern plant in Dar es Salaam Region. Private sector and investment have been recognized as the most significant potential source of additional funding required to facilitate development projects.

8.3. Conclusive Remarks and Way Forward

The development of this project will be funded by private finances. The company acting through its various shareholders and structures will provide the initial risk capital amounting to 19,685,889,57US\$. The company will fund the development of the project minor rehabilitations of factory building, business offices, bulk storage facilities and purchasing machines as stated on this business plan. Before the Company engages into the development of this project as a private enterprise, it needs to accomplish the pre development activities to make way for the development of the designated project. The company has to accomplish the following;

a) Apply for TIC Certificate

The company by using this Business Plan and other required supporting documents should apply for the TIC Certificate at Tanzania investment Centre Office. With this certificate, the company will be able to access tax reliefs which to a large extent will help to in reducing project costs, particularly in the purchasing of machineries and minor building of area of proposed industrial area.

b) Conduct Environmental Impact Assessment.

The company has to engage a consultant to conduct EIA in order to ensure that environmental and possibly other sustainability aspects are considered effectively in policy, plan and project development. The EIA Directive aims at introducing systematic assessment of the environmental effects of strategic land use related plans and programs. It typically applies to regional and local, development, waste and transport plans, within the country. EIA ensures that plans and programs take into consideration the environmental effects they cause.

c) Minor rehabilitation to suit project Industrial requirement

The company should engage a firm to make minor rehabilitation of existing structure that will suit project manufacturing requirements. The structure should include all vital service facilities described in this business plan. When possible, the process of design of the facility should be consultative insomuch that it should allow and incorporate ideas from experienced professionals from the industry.

d) Mobilizing Funds

As previously discussed on the Financial Analysis of this business plan, financing mechanism for plant should be scrutinized well before commencing the project implementation. There may be several options of financing the project development but the company will find the best option. The investment team should do consultation with relevant financial institutions (Banks and non-bank Financial Institutions), both within and outside the country. This exercise should be more effective if the team works closely with central government agencies, particularly TIC and the Ministry of Industry & Trade and Ministry of Investment.

