

CAPUTI RESOURCES COMPANY LTD

P.O. BOX 33910 DAR ES SALAAM



FEASIBILITY STUDY REPORT ON MINERAL EXPLORATION, MINING AND MINERAL PROCESSING.

Project Sponsor : Caputi Resources Inc. of Australia

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Executive Summary

This is a feasibility study report tendered to Tanzania Investment Centre (TIC) to support application for Certificate of Incentive.

Caputi Resources Company Ltd is an ongoing concern envisaged on minerals exploration, mining and mineral processing with Prospecting Licence at Kasulu in Kigoma.

The purpose of the feasibility study is meant to portray business portfolio and investment analysis including sensitivity analysis of the proposed project.

According to the studies carried out reveal that the industry is one among the economic power house in Tanzania fetching more foreign currency and could even outsmart other players in the government.

The Financial projections of the proposed project reveal lucrative profits with strong cash base on cash flow, cash discounted flow reveal IRR with high gearing financial ratio, Financial indicators on sensitivity analysis also depicts payback period from Return On Equity (ROE) and Return On Investment (ROI) that could offset all liabilities before the project time line. Capital injected has been sourced by the directors themselves from Australia and Germany.

The project is technically sound, financially viable, though that the first four years of operations will be carried on without any revenues from operations due to the preparations as programed indicated in the financial analysis. Profitability analysis reveals contribution of positive cash balance at the end of the project that would be geared on sustainability and ploughed back for re-investment

1.0 Introduction

Caputi Resources Company Limited is a Tanzanian company registered entity with the major various objectives including mineral exploration, mining and minerals processing. The company is owned by Australians origin and indigenous Tanzanian and backed up by resources from Caputi Resources based in Australia and branch in Germany.

1.1 Legal Status

The company is a limited liability company which was registered under Certificate of Incorporation No.156189626 of 19th May,2022, TIN 156-189-626 the company is operating from Apartment No. L-4 Plot No. 1198 Msasani Peninsular Dar Es Salaam and Kasulu District, Kigoma Region.

1.2 Directors and Shareholders

The directors of the company are:

1. Saeed Mokhtari, holding 309 shares
2. Tihitina Tadesse Endale, allotted 210 shares and
3. Holiness Moses Mwandosya with 1 share- See attachment 2 – Memorandum and Articles of Association.

1.3 Authorized Share Capital

The authorized share capital of the company is Tanzania Shillings 50,000,000 fifty million divided into 1,000 (one thousand (1,000) ordinary shares each of Tanzania Shillings 50,000/= (fifty thousand), with the powers for the company to increase the capital to shs.5, 000,000,000/= (five billion) upon to the resolution that will be passed by the directors. ***See attachment 2 – Memorandum and Articles of Association.***

2.0 Project Description

The project envisages on exploration of different minerals such as lithium, tantalum, graphite, copper, potash, diamond and rare earth minerals.

In order to carry out the activities, the company has acquired Mineral Prospecting License at Kasulu Kigoma, presently the work on exploration is taking place and so far the results of samples collected from the trenches are showing positive an act that drives the company to move on for more inputs. The work involves; geo-mapping, sampling, trenching and lab-analysis whereas upon the final report the company will go on full swing planting machinery and equipment for drilling and excavation of minerals from earth underground.

2.1 Phase 1: Work Plan

Research, Exploration Program Plan and Implementation

Action	Time Line			
	Year 1	Year 2	Year 3	Year 4
Carry out geochemical sampling				
Undertake trenching, pitting and sample collection				
Compile geological mapping, data and laboratory analysis of the channel samples collected				
1Exploration report				
Personnel Resource Management-Job training				
Channeling samples collected from trenches and further planning				
Undertake geological mapping program				
Plan drilling program from trench and sampling program				
Training				
RC an DD drilling to carried out in the area in order to understand mineralized zones				
Undertake logging of the drilled RC chips and diamond drilled core materials				
Establishment of the project data base				
Interpretation of the drilling program date				
Modelling and evaluation of the resources from data accumulated from drilling program				
Compilation of the feasibility report				
Environment Impact Assessment which will provide the best practice during mining operations				
Submission of mining license to the Commissioner Dodoma				
Production				

2.2 Phase 2: Raw Materials

Among the mineral to be processed is Copper. Pure copper is rarely found in nature, but is usually combined with other chemicals in the form of copper ores. There are about 15 copper ores mined commercially in 40 countries around the world. The most common are known as sulfide ores in which the copper is chemically bonded with sulfur. Others are known as oxide ores, carbonate ores, or mixed ores depending on the chemicals present. Many copper ores also contain significant quantities of gold, silver, nickel, and other valuable metals, as well as large quantities of commercially useless material. Most of the copper ores mined in the United States contain only about 1.2-1.6% copper by weight.

The most common sulfide ore is chalcopyrite, CuFeS_2 , also known as copper pyrite or yellow copper ore. Chalcocite, Cu_2S , is another sulfide ore. Cuprite, or red copper ore, Cu_2O , is an oxide ore. Malachite, or green copper ore, $\text{Cu}(\text{OH})_2 \cdot \text{CuCO}_3$, is an important carbonate ore, as is azurite, or blue copper carbonate, $\text{Cu}(\text{OH})_2 \cdot 2\text{CuCO}_3$. Other ores include tennantite, boronite, chrysocolla, and atacamite.

In addition to the ores themselves, several other chemicals are often used to process and refine copper. These include sulfuric acid, oxygen, iron, silica, and various organic compounds, depending on the process used.

3.0 Production Process

3.1 Overview

The process of extracting copper from copper ore varies according to the type of ore and the desired purity of the final product. Each process consists of several steps in which unwanted materials are physically or chemically removed, and the concentration of copper is progressively increased. Some of these steps are conducted at the mine site itself, while others may be conducted at separate facilities. But MMS Mining Company Ltd shall carry out all the processing steps at the factory site in Dodoma. Here are the steps used to process the sulfide ores whose deposits the company shall mine and process in Dodoma.

3.2 Mining

First, most sulfide ores are taken from huge open-pit mines by drilling and blasting with explosives. In this type of mining, the material located above the ore, called the overburden, is first removed to expose the buried ore deposit. This produces an open pit that may grow to be a mile or more across. A road to allow access for equipment down the interior shall be built to spiral down the interior slopes of the pit.

Two, the exposed ore shall be scooped up by large power shovels capable of loading 500-900 cubic feet (15-25 cubic meters) in a single bite. The ore is loaded into giant dump trucks, called haul trucks, and is transported up and out of the pit. Copper ore shall be excavated from the plot's grounds by machines and transported by lorries to the factory for processing.

3.2.1 Concentrating

The copper ore usually contains a large amount of dirt, clay, and a variety of non-copper bearing minerals. The first step is to remove some of these waste materials. This process is called 'concentrating' and is usually done by the flotation method which works as follows.

First, the ore is crushed in a series of cone crushers. A cone crusher consists of an interior grinding cone that rotates on an eccentric vertical axis inside a fixed outer cone. As the ore is fed into the top of the crusher, it is squeezed between the two cones and broken into smaller pieces.

The crushed ore is then ground even smaller by a series of mills. First, it is mixed with water and placed in a rod mill, which consists of a large cylindrical container filled with numerous short lengths of steel rod. As the cylinder rotates on its horizontal axis, the steel rods tumble and break up the ore into pieces about 0.13 in (3 mm) in diameter. The mixture of ore and water is further broken up in two ball mills, which are like a rod mill except steel balls are used instead of rods. The slurry of finely ground ore that emerges from the final ball mill contains particles about 0.01 in (0.25 mm) in diameter.

The slurry is then mixed with various chemical reagents, which coat the copper particles. A liquid, called a frothier, is also added. Pine oil or long-chain alcohol are often used as frothier. This mixture is pumped into rectangular tanks, called flotation cells, where air is injected into the slurry through the bottom of the tanks. The chemical reagents make the copper particles cling to the bubbles as they rise to the surface. The frothier forms a thick layer of bubbles, which overflows the tanks and is collected in troughs. The bubbles are allowed to condense and the water is drained off. The resulting mixture, called a copper concentrate, contains about 25-35% copper along with various sulphides of copper and iron, plus smaller concentrations of gold, silver, and other materials. The remaining materials in the tank are called the gangue or tailings. They are pumped into settling ponds and allowed to dry.

4.0 Personnel Resource Management

Among key staff of the proposed project shall be a General Manager, Chemical Engineer, Electrical Engineer, an Accountant, Plant technicians, Quality Controllers, a Store keeper, and Shift supervisors. Other staff shall be heavy duty machine operators, plant operators, drivers and security personnel.

The ultimate authority of the company shall be the board of directors to whom the general manager shall report. Daily tactical decisions shall be made by the General Manager while strategic corporate decisions shall be made by the board at their sittings which shall take place every month.

5.0 Training Program

Caputi Resources Company Limited has a program whereby Tanzanian will be trained in house by experts from Australia. Time frame for the program will start on the second year of the operations. The program will see unskilled personnel elevate to ranks of technicians and engineers.

6.0 Securing Drawing Site Plans

First, the subject of land shall be secured with barbed wire fence and security lights placed round. Detailed site plans shall then prepared showing areas for residential buildings, factory building, machines and vehicles workshop, stores and service roads. These shall be located in areas where there are no deposits of copper ores.

7.0 Mobilizing Machinery and Equipment

Machines, vehicles and equipment shall then be mobilized to the site as they shall be used to transport building materials and constructing service roads network.

7.1 Putting Up Buildings

Construction works shall then begin with residential houses first. This shall be followed by factory buildings, workshops, stores and service roads network. Workers shall stay far away from mining areas as explosive blast works can affect them.

7.2 Mining and Processing

Mining and processing works shall then start. Mining shall be done during the day only in order not disturb tranquility required during the night. Processing, however, shall be done day and night. The company shall therefore operate a three-shift day for the processing department.

8.0 Future Prospects

8.1 Market

Demand for copper is expected to remain high, especially in the electrical and electronics industries. The current trends in copper processing are towards methods and equipment that use less energy and produce less air pollution and solid waste. In the United States, this is a difficult assignment because of the stringent environmental controls and the very low-concentration copper ores that are available. In some cases, the production costs may increase significantly. One encouraging trend is the increased use of recycled copper. Currently over half the copper being produced in the United States comes from recycled copper. Fifty-five percent of the recycled copper comes from copper machining operations, such as screw forming, and 45% comes from the recovery of used copper products, such as electrical wire and automobile radiators. The percentage of recycled copper use is expected to grow as the costs of new copper processing increase but this is a pointer that the future of copper market is assured. This, however, shall apply to ore deposits in Kigoma and the recourse to expensive processes such as these shall not apply to the project.

8.2 Performance Expectations

8.2.1 Production

The copper ore in Kigoma is considered to be significantly rich in copper content. One tonne of copper ore is expected to yield 30% pure copper. This translates to 1,000 kg yielding 300 kg. The directors propose to produce 65 tonnes of pure

copper every month. With this 30% yield, this translates to 216.7 tonnes of copper ore to be mined every month and 8.33 tonnes a day. It is expected that since the Kigoma copper ore may contain lesser impurities, refining process shall take 9 days. In the first month therefore, although 216.7 tonnes of copper ore shall be mined, it shall be after 9 days onwards that pure copper shall be ready continuously. Pure copper that shall therefore be ready at the end of month 1 shall just be two-thirds of a month's projected production. But thereafter, starting month 2 onwards, it shall be the full 65 tones every month. No adverse conditions are expected to occur which shall affect production.

9.0 Investment & Re-Investment

Funds Deployment		Cost USD
Land		00
Building		195,000
Plant & Heavy Duty Machinery		329,146
Tools & Components		32,000
Office Equipment's		43,450
Stand by Generator		25,000
Motor Vehicle		290,000
Pre-operational Cost		26,250
Working Capital		125,000
Total Investment Cost		1,065,846

9.1 Proposed Sources of funds and financing arrangements US \$

The directors/shareholders shall be able to contribute USD 1,065,846 as their equity contribution from their own sources, they do not propose to borrow from any local financial institutions.

Description	Sponsor	Lending House	Total	%
Equity /Assets	940,846	-00-	940,846	88.27
Working Capital	125,000	-00-	125,000	11.13
Long Term Loan	-00-	-00-	-00-	-00-
TOTAL	1,065,846	-00-	1,065,846	100

10.0 Liquidity

The project shall enjoy very sound liquidity. The first four years the project will be at the mobilization process. From Appendices 1 and 1B, Projected Cash flow statement shows that from year 5 up to year10-year projected period, the project shall make USD 311,199 cash excess by the end of year 10 and have an accumulated cash reserve of USD 1,655,596 million. This is despite investing in new heavy machinery, vehicles, and furniture and reserve generator in all five years of operations.

11.0 Profitability

Although there shall be no production for the first four years, all expenses shall be paid and so there shall be a no any profit. Thereafter, the project shall take to uninterrupted profitability throughout from the fifth up year 10 projected period. From Appendices 2 and 2A, Projected Processing and Profit and Loss account, for the year 5 and the whole another 5 years projected period, the company shall make a steady annual profit of USD 174,148 per annum starting year 5. And this shall be for the rest of the five years so that by the end of year 10, the project shall have accumulated net profits of USD 696,236 after paying taxes totaling USD 298,387.

12.0 Return on Investment

The total investment cost of the project shall be USD 1.065,846 million. By the end of the year 10, the project shall have accumulated cash of USD 1.655,596 million, i.e. USD 99,750 more than the original investment cost. The project shall therefore recoup its investment cost in year 9.

13.0 Project Justification

13.1 Employment Creation

The project shall create direct employment to over a hundred people and indirect employment to several hundreds of others with additional multiplier effect in this time when unemployment posing a serious social challenge the project is welcome as it is in the right direction.

13.2 Economic Development

The multiplier effect of incomes flowing to many households will raise living standards generally and spur economic development in Kasulu in Kigoma Region and through trade with other regions will cause transfer of economic benefits both to the county councils, central government and to the individuals and severally.

13.3 Environmental Friendly

Bye-product wastes are capable of being recycled to produce other useful substances like sulphuric acid which minimizes toxics exhaustion during processing. The final waste shall be buried deep back in areas where mining is over to keep the environment clean. The project shall therefore be environmentally friendly.

According to other measures on climate change, every council is having a campaign on afforestation program, the company shall create budget (CSR Cooperate Social Responsibility) on health, education, tree planting and other social activities in the area where business is taking place.