

MATTIE GOLD MINING COMPANY

CARBON IN PULP (CIP) PROCESSING PLANT

BUSINESS PLAN



CIP Processing Plant Construction at Mwamakiliga Village, Geita Region Date:

[10/01/2025]

Executive Summary

MATTIE GOLD MINING COMPANY is a small-scale gold mining venture aiming to establish a CIP processing plant in Nyang’wale District, Geita Region. The project seeks to optimize gold recovery from ores with an average grade of 3 ppm, ensuring a 90% recovery rate. The company requires TZS 1,000,000,000 in loan funding to construct the processing plant, purchase equipment, and build supporting infrastructure.

Mission Statement

To responsibly mine and process gold using sustainable and efficient practices, ensuring high recovery rates while prioritizing safety, environmental stewardship, and community development in Nyang’wale District.

Vision Statement

To become a leading small-scale gold mining company in Tanzania, recognized for operational excellence, innovation in gold extraction, and a positive impact on local communities.

Challenges Addressed:

Eliminate reliance on rented CIP facilities (costing Tsh 10,000,000 per day) and avoid delays caused by long wait times and many others such as

- **High Costs:** Outsourcing gold processing has led to higher production costs, reducing profit margins.
- **Delays:** Dependency on external processing schedules disrupts production timelines.

Limited Recovery: Suboptimal recovery rates at third-party plants compromise profitability.

Project Budget: Tsh 1,000,000,000.

Funding Sources:

Obtaining a loan of Tsh 1,000,000,000 from CRDB Bank.

Proposed Solution:

By building an in-house CIP plant, the company will achieve:

- **Autonomy:** Complete control over processing schedules.
- **Efficiency:** Enhanced gold recovery rates and reduced overheads.
- **Sustainability:** Environmentally compliant operations adhering to national and international standards.

This initiative is strategically aligned with Tanzania’s policies to promote domestic value addition in mining.

Company Description & Organization Structure

MATTIE GOLD MINING COMPANY is owned by Matondo Kifungo Matondo and will operate a CIP processing plant at the company's Primary Mining License (PML) site in Mwamakiliga Village. The company is structured as follows:

- Project Manager: Mabondo Gideon Kwandu
- Mining Engineer: Abas Nkayamba
- Processing Plant Engineer: Erick Magesa
- Company Geologist: Makongoro

Project Overview

The project involves constructing a CIP gold processing plant with a capacity of 3 tonnes per hour. The plant will process ore with an average grade of 3 ppm and achieve a gold recovery rate of 90%. Daily processing tonnage will vary as follows:

- Best Case: 100 tonnes/day
- Moderate Case: 60 tonnes/day
- Worst Case: 40 tonnes/day

Gold Recovery Calculations

From the formula,

$$\text{Gold tonnage} = \text{tonnage of ore} * \text{recovery} * \text{grade}$$

Whereby;

$$\text{Recovery} = 90\%$$

$$\text{Grade} = 3\text{ppm}$$

- Best Case (100 t/d): 270.00 grams/day (0.27 kg/day, 23.15 tolas/day)
- Moderate Case (60 t/d): 162.00 grams/day (0.16 kg/day, 13.89 tolas/day)

- Worst Case (40 t/d): 108.00 grams/day (0.11 kg/day, 9.26 tolas/day)

Market Analysis & Sales Strategies

Gold will be sold based on market conditions with the following price scenarios per 1 tola (11.664g): - Best Case: TZS 3,200,000

- Moderate Case: TZS 2,800,000

- Worst Case: TZS 2,200,000

The company plans to start with local buyers before expanding to exporters and eventually international markets

. Revenue Projections per day (for 20hours)

Scenario	Daily Gold Recovered (Tola)	Gold Price (TZS per Tola)	Daily Revenue (TZS)
Best Tonnage, Best Price	23.15	3,200,000	74,075,040
Best Tonnage, Moderate Price	23.15	2,800,000	64,815,660
Best Tonnage, Worst Price	23.15	2,200,000	50,926,590
Moderate Tonnage, Best Price	13.89	3,200,000	44,445,024
Moderate Tonnage, Moderate Price	13.89	2,800,000	38,889,396
Moderate Tonnage, Worst Price	13.89	2,200,000	30,555,954
Worst Tonnage, Best Price	9.26	3,200,000	29,632,000
Worst Tonnage, Moderate Price	9.26	2,800,000	25,928,000
Worst Tonnage, Worst Price	9.26	2,200,000	20,372,000

Revenue Projections per month (for 20days)

Scenario	Daily Gold Recovered (Tola)	Gold Price (TZS per Tola)	Monthly Revenue (TZS)
Best Tonnage, Best Price	463	3,200,000	1,481,600,000
Best Tonnage, Moderate Price	463	2,800,000	1,296,400,000
Best Tonnage, Worst Price	463	2,200,000	1,018,600,000
Moderate Tonnage, Best Price	277.8	3,200,000	888,960,000
Moderate Tonnage, Moderate Price	277.8	2,800,000	777,840,000
Moderate Tonnage, Worst Price	277.8	2,200,000	611,160,000

Worst Tonnage, Best Price	185.2	3,200,000	592,640,000
Worst Tonnage, Moderate Price	185.2	2,800,000	518,560,000
Worst Tonnage, Worst Price	185.2	2,200,000	407,440,000

Revenue Projections per year (for 12months)

Scenario	Daily Gold Recovered (Tola)	Gold Price (TZS per Tola)	Yearly Revenue (TZS)
Best Tonnage, Best Price	5,556	3,200,000	17,779,200,000
Best Tonnage, Moderate Price	5,556	2,800,000	15,556,800,000
Best Tonnage, Worst Price	5,556	2,200,000	12,223,200,000
Moderate Tonnage, Best Price	3,333.6	3,200,000	10,667,520,000
Moderate Tonnage, Moderate Price	3,333.6	2,800,000	9,334,080,000
Moderate Tonnage, Worst Price	3,333.6	2,200,000	7,333,920,000
Worst Tonnage, Best Price	2,222.4	3,200,000	7,111,680,000
Worst Tonnage, Moderate Price	2,222.4	2,800,000	6,222,720,000
Worst Tonnage, Worst Price	2,222.4	2,200,000	4,889,280,000

Operational Plan & Technical Plan

Operational plans

The company has allocated TZS 1,000,000,000 for plant construction and infrastructure, while TZS 200,000,000 will serve as working capital. Equipment includes one backhoe and one dump truck.

Workflow before CIP construction:

Timeline: 6 months.

Design and Procurement: 2 months.

Construction: 2 months.

Commissioning and Testing: 2 months.

Safety Measures: Comply with Tanzanian mining regulations, provide staff training, and implement environmental safeguards.

Workflow after CIP construction:

- Ore Transportation: Transport raw ore from the Mwamakiliga site to the plant.
- Crushing and Grinding: Prepare ore for leaching by reducing it to fine particles.
- Leaching: Dissolve gold using cyanide solutions in leaching tanks.
- Gold Recovery: Adsorb gold onto activated carbon for extraction and refinement.
- Tailings Management: Dispose of waste in the TSF, following strict environmental protocols.

Efficiency Measures:

- Use of advanced equipment ensures minimal energy and material wastage.
- Preventative maintenance schedules reduce equipment downtime.

The proposed CIP plant integrates advanced technology for efficient, safe, and environmentally friendly gold extraction.

Technical plans

Processing Capacity:

- Ore Throughput: 60 tons of ore materials per day having an average 3 PPM of ore grade.
- Gold Recovery: 90%, yielding grams of gold monthly.

Key Equipment and Components:

- **Crushing Section:** Jaw crushers, Cone crusher and vibrating feeders break down ore into smaller, manageable pieces.

Equipment:

Jaw Crushers: Crush large chunks of ore into smaller, uniform pieces.

Cone Crusher: Crush large chunks of ore into smaller (fine particles), uniform pieces.

Vibrating Feeders: Ensure a steady and controlled feed of ore into the crushers.

Outcome: Ore particles of consistent size, improving downstream grinding efficiency.

- **Grinding Section:** Ball mills and hydro cyclones grind ore into a fine slurry, essential for efficient leaching.

Equipment:

Ball Mills: Grind ore particles to the required fineness.

Hydro-cyclones: Classify slurry to ensure uniform particle size distribution.

Outcome: A finely ground ore slurry ideal for the leaching process.

- Leaching Section: Cyanide solutions dissolve gold from the ore in specially designed leaching tanks.

Equipment:

Leaching Tanks: Large tanks equipped with agitators to ensure thorough mixing of ore and cyanide solution.

Cyanide System: Automated dosing system to regulate cyanide concentration for optimal leaching efficiency.

Outcome: Dissolution of gold into a liquid solution for further recovery.

- Conveyor belt system: for transporting material from one point to another
- Hydraulic shovel (Excavator): for loading and earthwork movement within the mine and at CIP processing plant
- Dump truck: for dumping hauling materials from mine site to processing plant
- Tailings Storage Facility (TSF): An engineered, secure storage facility for waste materials, ensuring no environmental contamination.

Production Capacity: 60 tonnes/day (approximately 3 t/h).

Project Timeline: 6 months (design, procurement, installation).

Compliance:

The plant adheres to Tanzanian mining regulations and international standards like ISO 14001 for environmental management.

Financial Plan & Cash Flow Statement

Loan requested: TZS 1,000,000,000 with a 15% interest rate. But equipments to be bought from China will utilize only \$85,066 and supporting equipment such as dump truck will utilize only \$35000

EQUIPMENT TO BE BOUGHT FROM CHINA

No.	Item	Model	Power (KW)	Qty	Unit Price (USD)	Total Price (USD)
-----	------	-------	---------------	-----	---------------------	----------------------

1	Heavy Duty Jaw Crusher	PE250X400	15	1	4500	4500
2	Belt Conveyor	B500x8m	4	2	1805	3610
3	Electro-vibrating Feeder	GZ1	0.06	1	514	514
4	Ball Mill	Φ900x1800	18.5	1	8125	8125
5	Steel Balls (Chrome 8%)	-		1.5 tons	1741	1741
6	Hydro-cyclone	FX-125	7.5	2	1600	3200
7	Slurry Pump for Leaching Tank	4m3/h-10m	3	2	1671	3342
8	Roots Blower	10CBM/MIN,49KPA	15	2	1657	3314
9	Leaching Tank	SJ2.0x2.5	2.2	1	5757	5757
10	Adsorption Tank	SJ2.0X2.5	2.2	5	5757	28785
11	Carbon Screen	N300X800		5	663	3315
12	Air Lifter	N60		5	642	3210
13	Fine Carbon Collect Linear Screen	DZS0612	0.37	1	1450	1450
14	Gold-loaded Carbon Linear Screen	DZS0612	0.37	1	1450	1450
15	Slurry Pump for Tailing	4m3/h-10m	3	2	1671	3343
16	Electric Control System	XL	118.46	1	2410	2410
	Total EXW Factory Price					78066
	Transportation (China to DSM)	40HQ				7000
	Total CIF Price to DSM Port					85066

DUMP TRUCK TO BE BOUGHT

Item	Quantity (SET)	Unit Price (\$/SET)	Total Price (\$)
Shacman F3000 dump truck 6*4 375hp	1	35000	35000

TSF Construction – TZS 120,000,000

Borehole Drilling – TZS 45,000,000

Supporting Activities – TZS 15,000,000

Contractor Payments – TZS 20,000,000

Construction Operations

Description	Unit	Quantity	Unit Price (TZS)	Total Cost (TZS)
Welding and Structural Work	LS	1	28,000,000	28,000,000
Pipeline Connections	LS	1	22,000,000	22,000,000

Additional Items

Description	Unit	Quantity	Unit Price (TZS)	Total Cost (TZS)
PPE (helmets, boots, vests, gloves)	LS	1	5,000,000	5,000,000
Fire extinguishers and emergency signs	LS	1	3,000,000	3,000,000
Backup Generator (100kVA diesel)	Unit	1	25,000,000	25,000,000
Site office container with furniture	Unit	1	10,000,000	10,000,000
CCTV Surveillance System	Unit	1	8,000,000	8,000,000
Dust suppression sprinklers system	Unit	1	7,000,000	7,000,000
Directional & safety signage	LS	1	2,000,000	2,000,000

Enhanced Site Infrastructure & Safety

Description	Unit	Quantity	Unit Price (TZS)	Total Cost (TZS)
PPE (helmets, boots, vests, gloves)	LS	1	5,000,000	5,000,000
Fire extinguishers and emergency signs	LS	1	3,000,000	3,000,000
Backup Generator (100kVA diesel)	Unit	1	25,000,000	25,000,000
Site office container with furniture	Unit	1	10,000,000	10,000,000
CCTV Surveillance System	Unit	1	8,000,000	8,000,000
Dust suppression sprinklers system	Unit	1	7,000,000	7,000,000
Directional & safety signage	LS	1	2,000,000	2,000,000
Solar security lights for night work	Unit	5	1,000,000	5,000,000
Water supply tank	Unit	1	4,000,000	4,000,000

(5,000 L)				
Perimeter fencing for site security	M	200	45,000	9,000,000
Site sanitation (toilets & handwashing)	LS	1	6,000,000	6,000,000
First Aid Station setup	LS	1	4,000,000	4,000,000

Monthly Operating Costs:

- Salaries: TZS 30,000,000

- Electricity Bills: TZS 15,000,000

- Services & Maintenance: TZS 10,000,000

- Fuel: TZS 20,000,000

Operating Costs Breakdown

Cost Item	Monthly Cost (TZS)
Salaries	30,000,000
Electricity	15,000,000
Services & Maintenance	10,000,000
Fuel	20,000,000
Material transportation	30,000,000
Total	105,000,000

Net Price Value (NPV) = Revenue – Operating costs – Tax(Service rev + Royalty + Income tax) production of 60tons per day and also the moderate price which is Tsh2,800,000/= per 1tola Whereby;

Operating costs = Tsh 105,000,000/= per month

TAX will be =9.3% such as (7%+2%+0.3%)

Assume for one case of moderate

A CASHFLOW FOR FOUR YEARS

Month	Revenue (TZS)	Operating cost (TZS)	Tax of 9.3% (TZS)	Total loan payment (TZS)	Net price value generated (TZS)

35	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
36	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
37	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
38	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
39	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
40	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
41	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
42	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
43	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
44	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
45	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
46	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
47	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132
48	777,840,000	105,000,000	72,339,120	27,830,748	572,670,132

Loan Repayment Schedule

Month	Total Payment (TZS)	Principal (TZS)	Interest (TZS)	Remaining Balance (TZS)
1	27830748	15330748	12500000	984669252
2	27830748	15522383	12308366	969146869
3	27830748	15716412	12114336	953430457
4	27830748	15912868	11917881	937517589
5	27830748	16111778	11718970	921405811
6	27830748	16313176	11517573	905092635
7	27830748	16517090	11313658	888575545
8	27830748	16723554	11107194	871851991
9	27830748	16932598	10898150	854919392
10	27830748	17144256	10686492	837775137
11	27830748	17358559	10472189	820416578
12	27830748	17575541	10255207	802841036
13	27830748	17795235	10035513	785045801
14	27830748	18017676	9813073	767028125
15	27830748	18242897	9587852	748785229
16	27830748	18470933	9359815	730314296

17	27830748	18701820	9128929	711612476
18	27830748	18935592	8895156	692676884
19	27830748	19172287	8658461	673504597
20	27830748	19411941	8418807	654092656
21	27830748	19654590	8176158	634438066
22	27830748	19900272	7930476	614537793
23	27830748	20149026	7681722	594388768
24	27830748	20400889	7429860	573987879
25	27830748	20655900	7174848	553331979
26	27830748	20914099	6916650	532417881
27	27830748	21175525	6655224	511242356
28	27830748	21440219	6390529	489802137
29	27830748	21708222	6122527	468093915
30	27830748	21979574	5851174	446114341
31	27830748	22254319	5576429	423860022
32	27830748	22532498	5298250	401327524
33	27830748	22814154	5016594	378513370
34	27830748	23099331	4731417	355414039
35	27830748	23388073	4442675	332025966
36	27830748	23680424	4150325	308345542
37	27830748	23976429	3854319	284369113
38	27830748	24276134	3554614	260092979
39	27830748	24579586	3251162	235513393
40	27830748	24886831	2943917	210626562
41	27830748	25197916	2632832	185428646
42	27830748	25512890	2317858	159915756
43	27830748	25831801	1998947	134083954
44	27830748	26154699	1676049	107929255
45	27830748	26481633	1349116	81447623
46	27830748	26812653	1018095	54634970
47	27830748	27147811	682937	27487159
48	27830748	27487159	343589	0

Risk Analysis

Potential risks include fluctuating gold prices, equipment failure, and environmental regulations. The company plans to mitigate these risks through financial reserves, insurance, and efficient operational planning.

Operational Risks: Delays in procurement or construction.

Financial Risks: Inability to secure bank loan.

Mitigation Strategies:

Engage reliable suppliers and contractors.

Negotiate favorable loan terms.

Build contingency funds into the budget.

Conclusion

MATTIE GOLD MINING COMPANY is poised to become a successful gold producer with sustainable mining and processing practices. The requested loan will enable the company to establish a fully functional CIP plant and contribute positively to the local economy.

The CIP plant project is economically viable, with significant cost savings and enhanced production efficiency. MATTIE GOLD MINING COMPANY seeks a loan of Tsh 1,000,000,000 to bring the project to completion within one year and achieve sustainable profitability.

