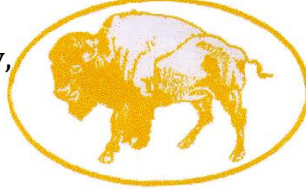


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# **Business Plan for the Expansion Project Financing**

**An Expansion Project of the Existing 5tph CIP Gold  
Processing Plant Capacity and the Construction of  
an additional New Complete CIL Gold Processing  
Plant at Butobela, Geita - Tanzania**

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**NYATI RESOURCES (T) LIMITED**

**OCTOBER, 2024**

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## **Executive Summary**

### **1. Project Overview:**

Nyati Resources (T) Limited, a reputable and registered gold mining company based in Geita, Tanzania, is embarking on a strategic expansion project to significantly boost its gold production capacity. This project involves expanding the existing 5tph CIP (Carbon in Pulp) gold processing plant to a 10tph capacity and constructing a new 20tph CIL (Carbon in Leach) gold processing plant at Butobela, Geita. The expansion aims to meet the growing global demand for gold, particularly from a major buyer in China, and to capitalize on the rich gold reserves in the region.

### **2. Current Operations:**

Nyati (T) Resources Limited currently operates a gold processing plant with a capacity of 5kg of gold per month, utilizing advanced CIP technology. The company holds several Primary Mining Licences (PMLs) in the Geita region, which have been explored and verified by renowned international firms, ensuring high-quality gold reserves.

### **3. Project Objectives:**

- Increase the capacity of the existing CIP plant from 5tph to 10tph.
- Construct a new CIL plant with a capacity of 20tph.
- Scale up gold production to 100kg per month to meet international market demand.
- Enhance operational efficiency and product quality through technological upgrades and process optimization.

### **4. Funding Requirement:**

Nyati Resources (T) Limited seeks financing of TZS 35,360,000,000 (approximately \$13,619,264) to achieve the project objectives. The funds will be allocated as follows:

- Expansion of Existing CIP Plant: \$3,519,264
- Construction of New CIL Plant: \$7,500,000
- Equipment Procurement: \$1,600,000
- Working Capital: \$1,000,000

### **5. Market Opportunity:**

The global gold market is experiencing sustained demand driven by various sectors, including jewelry, electronics, and investment. The Chinese market, in particular, presents significant opportunities due to its robust consumption of gold. By expanding production, Nyati Resources (T) Limited aims to secure a strong position in this lucrative market.

## Company Overview

### Introduction

Nyati Resources (T) Limited is a Premier gold explorer and producer in Tanzania. It is well established in Geita-Tanzania and growing very fast. Nyati Resources (T) Limited is committed to using state-of-the-art smelting and refining equipment that meets the highest environmental standards and uses energy-efficient technologies. It is a dynamic and forward-thinking gold mining and processing company headquartered in Geita, Tanzania. Established with a vision to become a leading player in the gold mining industry, Nyati Resources (T) Limited leverages advanced technology, sustainable practices, and a commitment to excellence. The company focuses on the exploration, development, and production of high-quality gold deposits within Tanzania's rich mineral landscape.

### Vision and Mission

#### Vision:

To be a premier gold mining company renowned for operational excellence, innovation, and sustainable development, contributing significantly to the economic growth of Tanzania and the prosperity of our stakeholders.

#### Mission:

- To explore, develop, and operate gold mining projects efficiently and responsibly.
- To maximize value for our shareholders through sustainable and profitable operations.
- To foster a culture of safety, environmental stewardship, and community engagement.

### Core Values

- **Integrity:** We conduct our business with the highest ethical standards, ensuring transparency and honesty in all our dealings.
- **Sustainability:** We are committed to minimizing our environmental footprint and promoting sustainable practices in all aspects of our operations.
- **Excellence:** We strive for excellence in everything we do, from exploration and production to stakeholder relations and community development.
- **Innovation:** We embrace innovation and continuously seek to improve our processes and technologies to enhance efficiency and productivity.
- **Safety:** The safety of our employees, contractors, and communities is our top priority, and we are dedicated to maintaining a safe and healthy work environment.

## **Operational Capabilities**

Nyati Resources (T) Limited operates a state-of-the-art gold processing plant in Geita, Tanzania, utilizing advanced CIP (Carbon in Pulp) technology. The current plant has a processing capacity of 5kg of gold per month. The company holds several Primary Mining Licences (PMLs) near the Bulyanhulu Gold Mine, a Barrick Gold Corporation company. This strategic location ensures access to high-quality gold reserves and established mining infrastructure. It currently owns its gold refinery plant at its site in Butobela where its mines and processing plant are located.

## **Location and Geology**

Nyati Resources (T) Limited is situated in northwest Tanzania, in the Geita district of the Geita region at Butobela Village, approximately 59 kilometers south of Lake Victoria and 154 kilometers southwest of the city of Mwanza. The company's mining operations are located near the Bulyanhulu Gold Mine, benefiting from the region's rich mineralization.

Nyati Resources (T) Limited has a narrow-vein gold mine containing gold, silver, and copper mineralization in sulphides. The mineralization of Nyati Resources (T) Limited is associated with several steeply dipping veins. Commercial production at Nyati Resources (T) Limited commenced in 2015, and the mine has since established a reputation for producing high-quality gold.

## **Current Projects**

### **Gold Processing Plant:**

- **Location:** Butobela, Geita, Tanzania
- **Current Capacity:** 5kg of gold per month
- **Technology:** Carbon in Pulp (CIP)

**Primary Mining Licences (PMLs):** Nyati Resources (T) Limited holds several PMLs near the Bulyanhulu Gold Mine. These licences have been thoroughly explored, and the results confirm the presence of substantial gold, silver, and copper reserves, providing a strong foundation for the company's expansion plans.

## **Expansion Plans**

To meet the growing global demand for gold and capitalize on the rich gold reserves in the region, Nyati Resources (T) Limited is undertaking an ambitious expansion project. This project involves:

- **Expansion of the Existing CIP Plant:** Increasing capacity from 5tph to 20tph through upgrades and optimization.
- **Construction of a New CIL Plant:** Building a new 10tph Carbon in Leach (CIL) gold processing plant to enhance production efficiency and flexibility.
- **Increased Production Capacity:** Scaling up gold production to 100kg per month to meet international market demand, particularly from a major buyer in China.

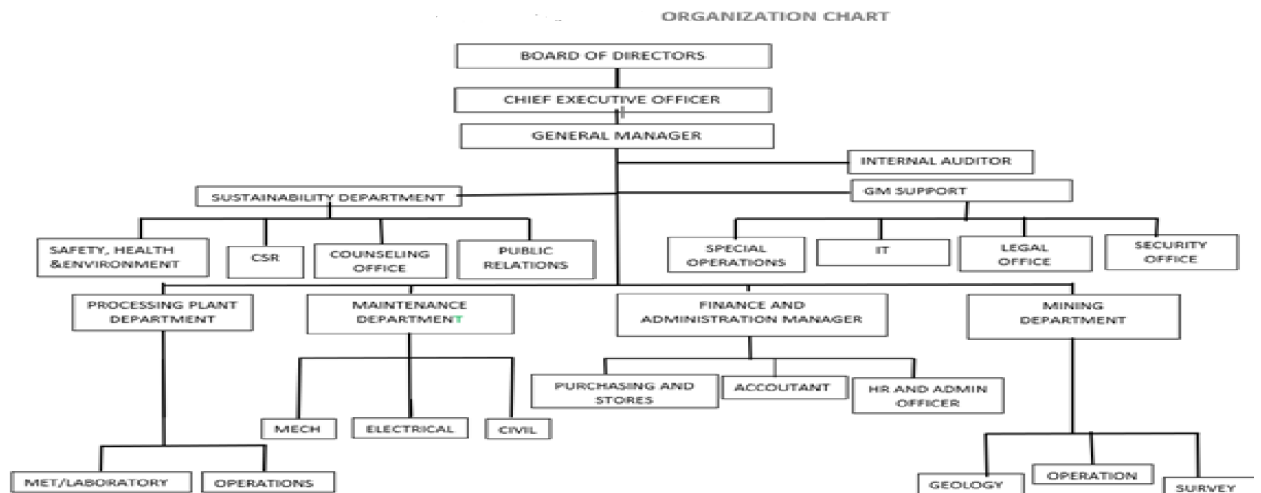
## Sustainability and Community Engagement

Nyati Resources (T) Limited is deeply committed to sustainable development and community engagement. The company adheres to stringent environmental regulations and implements best practices to minimize its environmental footprint. Additionally, Nyati Resources (T) Limited actively engages with local communities to promote social and economic development, creating jobs and supporting community initiatives.

## Leadership Team

Nyati Resources (T) Limited is led by a team of experienced professionals with extensive expertise in the mining industry. The leadership team is dedicated to driving the company's growth and success through strategic planning, operational excellence, and a commitment to ethical business practices.

## Management



The company runs its activities under the board of directors consisting of three board members as follows.

- i. Paul Magege – Co-founder, Chairman of the Board, and CEO
- ii. Major Timothy Magege – Co-founder and Director
- iii. Levina Henry Muro- Company Secretary

The management of the company consists of the CEO and Board Chairman who is also the co-founder of the company. Under the CEO, there is the General Manager, with his management team consisting of three departmental managers (Processing Plant, Mining, and Finance and Administration).

## Qualification Of Each Member in The Management Team.

- The Chief Executive Officer and Board Chairman of the company Paul Magege has vast experience in running various businesses including real estate, manufacturing of high-tech electronic components, and cybersecurity. He is a founder of Nyati Resources (T) Limited.
- The Director Timothy Magege offers a broad range of expertise in finance, business strategy, and capital markets, he oversees finance and operations. He has lived in the USA where he learned about investment including developing his interest in Mining and entire gold business.

- The General Manager, a mining engineer by profession has vast experience in managing various businesses including mining of gemstones, gold and graphite as well as experience in the construction industry including civil and building works. He has been with Nyati Resources (T) Limited since 2023.
- The Mining Manager has vast experience in mining works, with specialty in drilling, blasting, equipment operation and supervision of labour. He has been with Nyati Resources (T) Limited since 2023.
- The Plant Manager is an experienced processing engineer having worked with large-scale gold mining companies in Tanzania including Barrick and Stamigold. He has been with Nyati Resources (T) Limited since 2023.
- The Finance and Administration Manager is an experienced Finance practitioner having practiced in public accounting at PWC and in the Finance and Administration Manager capacity at Stamigold Company Limited, African Barrick Gold, and Geita Gold Mine among others. He holds a BSc Hons in Applied Physics from the University of Dar es Salaam and a Post Graduate Diploma in Management Practice from the University of Cape town. He is also a member of the National Board of Accountants and Auditors (NBAA).

## **Company Products**

### **Present Products and Services**

The company produces one product of gold which is sold to gold dealers in Geita. Currently, the company processes an average of 66 tonnes of ore per day to produce an average of 5000 grams of gold per month. The processing plant CIP methods to recover the gold.

The CIP method entails receiving the ore from the mine, crushing it using a jaw crushers and hammer mill. The milled material is mixed with water and sent to Knelson Concentrator whereby heavy minerals including gold are recovered as concentrate. The concentrate is sent to a shaking table and followed by hand-panning before being smelted using borax. No Environmental harmful chemicals are involved in the process.

The total recovery is around 85%.

### **Planned Products & Services: -**

In 2021, Nyati Resources (T) Limited embarked on a project envisaging investing in construction of a new and big gold ore processing plant. The project increased the capacity of the plant from 1tph to 5tph and gold recovery will increase from 40% to over 85%.

The amount of investment already made since the expansion program began in January 2021 is US\$ 6,126,957.50. The CIP circuit consists of the following equipment and machines; screens, leach tanks, elution, and electrowinning circuits, smelting furnace. Metallurgical studies frequently taken at a Mine tech Laboratory in Geita showed that combined recovery of gold has increased the

total recovery of gold to 85% for the ore samples from the area taken for analysis.

The expansion program will increase the capacity to 720 tons per day and combined gold recovery of gravity and chemical processes will increase from the current 85% to 95%. Most equipment and machines for the expansion program will be sourced outside the country as they are not available locally.

### **Future Outlook**

The outlook is optimistic and promising as we increase in gold production, our company plans to export more of the gold produced to foreign gold refineries and this will expand our market base and increase income per gram of gold by 73% that we currently leave as a profit margin for gold dealers. The cost of exporting gold is insignificant compared to the 73% additional income.

We will also be able to get revenue on the silver as a by-product from gold production, which we get nothing from gold dealers in Chunya.

### **Marketing Plan and Distribution Channels**

Nyati Resources (T) Limited's marketing strategy is to keep the current good relationship with gold dealers in Geita and Mwanza while fostering a strong relationship with gold refineries in China. Plans for Shipments to the refinery in Switzerland started in 2023 and are yet to be completed.

### **Company Suppliers**

Most of the machines and equipment for the expansion project will be sourced in China and other foreign countries including Australia and Canada. The Crushing, Grinding, and CIL machines will be ordered from China. The Knelson Concentrator will come from Canada via South Africa, while the ILR will be ordered from Australia.

<b>Item Name</b>	<b>Supplier</b>	<b>Country</b>
CIL and crushing circuits	Hebei Aojin	China
ILR	Gekko	Australia
Knelson Concentrator	Gravity Concentrators	South Africa
Laboratory Equipment	Moonstone	Tanzania
Overhead Crane	Hebei Aojin	China
Chain Link Fence	Gokona Limited	Tanzania
Gold Room	Internal & Mak Solution	Tanzania

### **Market Analysis**

#### **Global Gold Market Overview**

The global gold market has historically been one of the most dynamic and robust sectors within the commodities market. Gold's intrinsic value, coupled with its wide range of applications in jewelry, technology, and investment, continues to drive strong demand worldwide. As a safe-haven asset, gold attracts investors looking to hedge against economic uncertainties and inflation. The market's growth is influenced by various factors, including geopolitical tensions, currency fluctuations, and economic policies.

## **Demand Drivers**

### **1. Jewelry Industry:**

- The jewelry sector remains the largest consumer of gold, accounting for approximately 50% of annual global gold demand. Key markets such as India and China dominate this sector due to cultural and economic factors that drive substantial gold consumption during weddings, festivals, and other significant events.

### **2. Investment Demand:**

- Gold is a preferred investment asset for diversifying portfolios and mitigating risks. Central banks, institutional investors, and retail investors contribute to significant demand. Exchange-traded funds (ETFs) backed by physical gold have also grown in popularity, making gold investment more accessible.

### **3. Technology Sector:**

- Gold's unique properties, such as high conductivity and resistance to corrosion, make it invaluable in the technology sector. It is used in electronics, medical devices, and other high-tech applications. The rise of 5G technology, electric vehicles, and renewable energy solutions are expected to drive further demand in this sector.

### **4. Central Bank Reserves:**

- Central banks around the world hold gold as part of their foreign exchange reserves. Recent years have seen central banks, particularly in emerging markets, increase their gold reserves to diversify their assets and reduce reliance on the US dollar.

## **Supply Dynamics**

### **1. Gold Production:**

- Global gold production is geographically diverse, with significant contributions from countries such as China, Australia, Russia, and the United States. Africa, particularly South Africa and Ghana, remains a crucial region for gold mining. Tanzania is also emerging as a significant player due to its rich mineral resources.

### **2. Recycling:**

- Recycled gold accounts for a considerable portion of the total gold supply. Economic conditions, gold prices, and market sentiment influence recycling rates. High gold prices often lead to increased recycling as consumers sell back old jewelry and other items.

### **3. Mining Challenges:**

- The gold mining industry faces several challenges, including declining ore grades, environmental regulations, and geopolitical

risks. However, technological advancements and improved mining practices are helping to mitigate some of these issues.

## **Market Opportunities**

### **1. Chinese Market:**

- China's robust demand for gold presents significant opportunities. As the world's largest consumer and producer of gold, China's market dynamics are pivotal. The country's growing middle class, increasing disposable income, and cultural affinity for gold make it a crucial market for Nyati Resources (T) Limited.

### **2. Technological Advancements:**

- Innovations in mining technology, such as automation, AI, and data analytics, are enhancing operational efficiency and reducing costs. Nyati Resources (T) Limited can leverage these advancements to improve productivity and sustainability.

### **3. Sustainable and Ethical Mining:**

- There is a growing emphasis on sustainable and ethical mining practices. Investors and consumers are increasingly prioritizing environmentally friendly and socially responsible companies. Nyati Resources (T) Limited's commitment to sustainability and community engagement positions it favorably in this evolving market.

## **Competitive Landscape**

### **1. Global Competitors:**

- Major global gold mining companies, such as Barrick Gold, Newmont Corporation, and AngloGold Ashanti, dominate the market. These companies have extensive resources, advanced technology, and significant production capacities. Nyati Resources (T) Limited can differentiate itself through its strategic location, efficient operations, and commitment to sustainability.

### **2. Regional Competitors:**

- In Tanzania, Nyati Resources (T) Limited competes with established players like Geita Gold Mine (AngloGold Ashanti) and North Mara Gold Mine (Barrick Gold). The company's proximity to the Bulyanhulu Gold Mine provides strategic advantages, including access to experienced labor and shared infrastructure.

## **SWOT Analysis**

### **Strengths:**

- Proven gold reserves and strategic location near Bulyanhulu Gold Mine.
- Advanced processing technology (CIP and CIL).
- Strong commitment to sustainability and community engagement.

**Weaknesses:**

- Dependence on external financing for expansion.
- Exposure to fluctuating gold prices and market volatility.

**Opportunities:**

- Growing demand in the Chinese and global market.
- Adoption of new mining technologies to enhance efficiency.
- Increasing emphasis on ethical and sustainable mining practices.

**Threats:**

- Geopolitical risks and regulatory changes.
- Environmental challenges and compliance costs.
- Competition from larger, well-established mining companies.

**Financial Analysis****Estimated Project Cost**

The total project cost is USD 13,600,000 for both two projects. Advance payments and commitments of USD 4,311,644.88 are required first as part of expanding the current processing plant while planning for the construction of a 20tph processing plant. The list of vendors is available for consultation of the key equipment.

**The Cost Items for Expansion Project Include:**

<b>Item</b>	<b>Total Cost (USD)</b>	<b>Items Required</b>
Inline Leach Reactor (ILR) & Electrowinning Cell	422,744	2
Knelson Concentrator KC-XD20	142,966	2
Crushing, Milling, and CIL circuits	1,634,922	3
Laboratory Equipment	97,692	2
Chain Link Fence	281,944	2
Gold Room and Safe	35,342	1
Overhead Crane	39,000	2
Freight Charges	119,800	3
Import Duty, VAT, Port Charges, Clearing Costs Misc.	1,119,816	2
Working Capital Requirements	255,319	4
CIL Guided Installation Costs	121,720	4
Civil works for CIL Installation	381,714.00	4
<b>Total Project Cost</b>	<b>4,452,979</b>	<b>3</b>

**Table 1:** Additional Project Budget**Financing Plan**

The whole expansion program cost will be financed through trade surplus/profit from the current business, and term loan from local financial institutions.

The Capital outlay is summarized below:

SN	Source	Amount (US)
1	Trade Surplus/Equity	1,619,264
2	Financial Support /Investment	12,000,000
	TOTAL	13,619.264

**Table 2:** Project financing plan

## Term Loan Analysis

### Purpose of the Funds

The funds will be required to finance the purchase of crushing, grinding, CIL machinery. Additionally, the funds will finance the purchase of Knelson Concentrator, ILR, Laboratory equipment, Security equipment and tools as well as civil works, installation, commissioning and working capital. The total fund amount projected is US\$ 13,619,264.

### Return on Investment (ROI) Analysis

The expansion of Nyati Resources (T) Limited's gold processing capabilities involves significant capital investment. It is essential to analyze the return on investment (ROI) to understand the financial viability and potential benefits of this project. Below is a comprehensive ROI analysis, considering the increased production capacity, projected revenues, and associated costs.

### Project Costs

**Total Capital Investment:** \$13,600,000 (TZS 35,360,000,000)

- Expansion of existing CIP plant: \$6,600,000
- Construction of new CIL plant: \$7,000,000

### Current Production and Revenue

**Current Production Capacity:**

- 5 kg of gold per month

**Current Annual Production:**

- 5 kg/month \* 12 months = 60 kg/year

**Current Revenue:**

- Average gold price (as of 2024): \$60,000 per kg
- Annual revenue = 60 kg \* \$60,000 = \$3,600,000

### Expanded Production and Revenue

**Expanded Production Capacity:**

- 100 kg of gold per month

**Projected Annual Production:**

- 100 kg/month \* 12 months = 1,200 kg/year

**Projected Revenue:**

- Annual revenue = 1,200 kg \* \$60,000 = \$72,000,000

## **Operational Costs**

### **Current Operational Costs:**

- Approximately \$1,200,000 per year

### **Projected Operational Costs After Expansion:**

- Estimated increase in operational costs = \$8,000,000 per year
- Total projected annual operational costs = \$1,200,000 (current) + \$8,000,000 (additional) = \$9,200,000 per year

## **Net Profit Analysis**

### **Current Net Profit:**

- Current annual revenue = \$3,600,000
- Current operational costs = \$1,200,000
- Current net profit = \$3,600,000 - \$1,200,000 = \$2,400,000

### **Projected Net Profit After Expansion:**

- Projected annual revenue = \$72,000,000
- Projected operational costs = \$9,200,000
- Projected net profit = \$72,000,000 - \$9,200,000 = \$62,800,000

## **ROI Calculation**

**Total Investment:** \$13,600,000

**Annual Net Profit After Expansion:** \$62,800,000

The expansion project for Nyati Resources (T) Limited presents a highly attractive investment opportunity with a substantial return on investment. The projected ROI of approximately 461.76% and a payback period of around 2.6 months underscore the financial viability and profitability of increasing the gold production capacity.

The sensitivity analysis further demonstrates that even in the event of decreased gold prices or increased operational costs, the project remains highly profitable. This expansion will not only boost the company's production capacity but also significantly enhance its revenue and market position in the global gold market. Nyati Resources (T) Limited invites you as potential investors and partners to join this exciting venture, which promises substantial returns and contributes to the economic growth of the Geita region.

## **Repayment Capacity**

After the expansion program, the company cash flow projections show that we will continue to produce a surplus income that will allow us to meet our financial obligations including Return on investment performance. The Return on Investment (ROI) profile of these capex investments is so very favorable that our projections show our ability to pay back the entire balance of the investment in a matter of just a few years.

## Other Banking Arrangements

The company has bank accounts with NMB PLC comprising current accounts and facility as well current accounts held with CRDB Bank PLC.

## Technical Details

### Project Scope

Nyati Resources (T) Limited is expanding its gold production capabilities by upgrading its existing 5tph CIP (Carbon in Pulp) gold processing plant to a 10tph capacity and constructing a new 20tph CIL (Carbon in Leach) gold processing plant at Kakola, Geita, Tanzania. These enhancements will allow the company to meet the growing demand for gold raising its production capacity from 5kg of gold bars per month to 100kg per month, particularly from a major buyer in China.

### Current Plant Overview

#### Existing CIP Plant:

In 2022, the company embarked on a significant expansion project aimed at increasing the entire scale of the operation from less than 1 ton per hour to 5 tons per hour including introducing a Carbon In Leach (CIL) circuit to increase recovery from 40% to 90%.

Between January 2022 and December 2023, the company spent USD 6,126,957.50 on purchasing new equipment and improving current infrastructure to increase production capacity. Below pictures shows view of the project as it stands now



- **Location:** Kakola Village, Kahama District, Geita Region, Tanzania
- **Capacity:** 5kg of gold per month
- **Technology:** Carbon in Pulp (CIP)
- **Processing Rate:** 5tph
- **Production Start:** Commercial production commenced in 2015

### Expansion Plan

#### Expansion of Existing CIP Plant:

- **New Capacity:** 10tph

- **Technology:** Upgrading the existing CIP technology to handle increased throughput
- **Upgrades:**
  - Installation of additional leach tanks
  - Enhanced carbon handling and regeneration circuits
  - Improved tailings management system
  - Increased capacity for milling and classification circuits

#### **Construction of New CIL Plant:**

- **Capacity:** 10tph
- **Technology:** Carbon in Leach (CIL)
- **Components:**
  - Crushing and Milling: Primary and secondary crushers, ball mill
  - Leaching: Addition of cyanide and oxygen to the slurry, followed by adsorption of gold onto activated carbon
  - Adsorption: Series of adsorption tanks with activated carbon
  - Elution: High-pressure elution columns to strip gold from carbon
  - Electrowinning: Recovery of gold from eluate using electrowinning cells
  - Smelting: Furnace to smelt the recovered gold into doré bars
  - Tailings Management: Tailings thickener and storage facilities

#### **Process Flow**

##### **CIP Process:**

1. **Crushing and Milling:**
  - Ore is crushed and ground to a fine particle size to liberate gold from the host rock.
2. **Leaching:**
  - Crushed ore is mixed with water, cyanide, and oxygen in leach tanks. Gold is dissolved in the solution.
3. **Adsorption:**
  - Activated carbon is added to the leach tanks, where it adsorbs the dissolved gold from the solution.
4. **Desorption:**
  - Gold-loaded carbon is removed and subjected to a desorption process to strip gold from the carbon.

## 5. Electrowinning and Smelting:

- The gold solution is passed through electrowinning cells where gold is plated onto stainless steel cathodes. The gold is then collected and smelted into doré bars.

## 6. Tailings Management:

- The remaining slurry (tailings) is treated and safely stored.

### CIL Process:

#### 1. Crushing and Milling:

- Similar to the CIP process, the ore is crushed and milled to achieve a fine particle size.

#### 2. Leaching and Adsorption:

- Cyanide and oxygen are added to the slurry in leach tanks. Activated carbon is introduced simultaneously to adsorb gold as it dissolves.

#### 3. Carbon Handling:

- The gold-loaded carbon is separated from the slurry and processed to strip the gold.

#### 4. Elution and Electrowinning:

- High-pressure elution is used to strip gold from the carbon, followed by electrowinning to recover the gold from the eluate.

#### 5. Smelting:

- Recovered gold is smelted into doré bars.

#### 6. Tailings Management:

- Tailings are treated and safely stored, with any remaining cyanide detoxified.

### Environmental and Safety Considerations

#### 1. Environmental Management:

- **Tailings Management:** Tailings are carefully managed to prevent environmental contamination. Tailings storage facilities are designed to minimize seepage and ensure safe containment.
- **Water Usage:** Efficient water recycling and treatment systems are implemented to reduce water consumption and minimize discharge.
- **Waste Management:** All waste materials are handled in compliance with environmental regulations to minimize impact.

## 2. Safety Protocols:

- **Worker Safety:** Comprehensive safety training programs are conducted for all employees. Personal protective equipment (PPE) is mandatory, and regular safety drills are held.
- **Emergency Preparedness:** Emergency response plans are in place to address potential incidents, including chemical spills and fire hazards.
- **Health Monitoring:** Regular health checks and monitoring programs ensure the well-being of all employees, particularly those working with hazardous materials.

## Technological Advancements

### 1. Automation and Control Systems:

- Implementation of advanced automation and control systems to monitor and optimize processing parameters in real-time. This reduces human error, increases efficiency, and ensures consistent product quality.

### 2. Data Analytics:

- Use of data analytics to predict maintenance needs, optimize resource usage, and improve overall plant performance. Data-driven decision-making enhances operational efficiency and cost-effectiveness.

### 3. Energy Efficiency:

- Adoption of energy-efficient technologies and practices to reduce power consumption and operational costs. This includes the use of energy-efficient motors, variable speed drives, and optimized process control.

## Risk Assessment

### Potential Risks and Mitigation Strategies

Nyati Resources (T) Limited faces several potential risks that could impact the success of its expansion project.

1. **Regulatory changes** pose a significant risk, as shifts in Tanzanian mining laws and regulations could affect operations, costs, and timelines. To mitigate this, the company will maintain close communication with regulatory bodies to stay informed about potential changes, engage legal advisors to monitor regulatory developments, and implement flexible operational strategies to adapt quickly.
2. **Environmental impact** is another concern, particularly regarding pollution, deforestation, and disruption to local ecosystems. Nyati Resources (T) Limited will conduct thorough Environmental Impact Assessments (EIAs) and implement recommended measures, invest in advanced waste

management systems and sustainable practices, and regularly monitor environmental performance.

3. **Labor issues**, such as disputes, shortages, or strikes, could disrupt operations. The company will develop robust labor policies, ensure fair treatment and compensation for employees, foster good relationships with labor unions, and provide ongoing training and development programs.
4. **Market fluctuations** in gold prices could affect profitability. Nyati Resources (T) Limited plans to implement hedging strategies to mitigate price volatility, diversify product offerings and customer base to spread risk, and maintain a reserve fund to buffer against market downturns.
5. **operational risks** like equipment failure, supply chain disruptions, or safety incidents could impact production. To address these risks, the company will invest in high-quality equipment and maintain a rigorous maintenance schedule, develop strong relationships with multiple suppliers to ensure supply chain resilience, and implement comprehensive safety protocols and regular training.

## **Environmental Impact Assessment**

### **Environmental Concerns and Mitigation Strategies**

Nyati Resources (T) Limited is committed to addressing environmental concerns related to its expansion and new construction.

**Waste management** is a priority, with proper disposal of mining waste, tailings, and hazardous materials. The company will use tailings storage facilities designed to minimize environmental impact, implement recycling and waste reduction programs, and regularly audit waste management practices.

**Water usage** is another critical concern, particularly overuse or contamination of local water sources. Nyati Resources (T) Limited will implement water recycling and conservation measures, treat process water to remove contaminants before discharge, and monitor water usage and quality regularly to ensure minimal impact on local resources.

**Land rehabilitation** efforts will focus on mitigating degradation of land and ecosystems due to mining activities. The company will develop and implement a land rehabilitation plan, including reforestation and soil stabilization, collaborate with local communities and environmental experts to restore biodiversity, and monitor and report on rehabilitation efforts to ensure long-term sustainability.

## **Marketing and Sales Strategy**

### **Marketing Processed Gold**

Nyati Resources (T) Limited's marketing and sales strategy for processed gold will focus on several key areas.

**Market positioning** will highlight the purity and quality of Nyati's gold and emphasize environmentally responsible mining practices.

**Distribution channels** will include establishing direct sales agreements with major gold buyers, utilizing brokers and dealers to reach a broader market, and exploring partnerships with refineries. The company will target various **customer segments**, including large-scale buyers such as international markets and central banks, jewelry manufacturers, and industrial users. Additionally, Nyati Resources (T) Limited will aim to expand its reach to investment markets, including individual and institutional investors.

## **Legal and Regulatory Compliance**

### **Ensuring Compliance with Tanzanian Mining Laws**

To ensure compliance with Tanzanian mining laws, Nyati Resources (T) Limited will take several steps. The company will identify and obtain all necessary permits and licenses from Tanzanian authorities and ensure compliance with local, regional, and national regulations. Regular review and updating of compliance policies will be conducted to reflect current laws, and thorough documentation and reporting for all regulatory requirements will be maintained. Nyati Resources (T) Limited will also engage legal advisors to navigate complex regulatory landscapes and foster positive relationships with local communities and stakeholders. This will include conducting community consultations and incorporating feedback into project planning, as well as implementing social responsibility initiatives to support local development.

### **Project Timeline**

The expansion project for Nyati Resources (T) Limited is structured into four key phases, each with specific milestones and critical path activities to ensure timely completion and operational readiness.

**Project Timeline Table**

<b>Phase</b>	<b>Activities</b>	<b>Time Frame</b>	<b>Milestones</b>
<b>Phase 1: Planning and Permitting</b>		Months 1-6	
	Finalize detailed project planning and feasibility studies.	Months 1-2	Completion of feasibility studies.
	Develop comprehensive project schedules and budgets.		
	Initiate the permitting process with local and national regulatory authorities.	Months 3-4	Obtaining key permits and licenses.
	Secure necessary environmental and operational permits.		
	Finalize financing arrangements and secure funding.	Months 5-6	Securing project financing.
	Engage contractors and suppliers for the		

	upcoming construction phases.		
<b>Phase 2: Site Preparation and Initial Construction</b>		Months 7-12	
	Begin site preparation, including clearing and grading the land.	Months 7-8	Completion of site preparation.
	Construct access roads and essential infrastructure (e.g., utilities, water supply).		
	Start construction of the new CIL plant foundation and structural framework.	Months 9-10	Initial construction of the new CIL plant and CIP plant expansion.
	Begin expansion of the existing CIP plant.		
	Continue construction work, focusing on building enclosures and key structural components.	Months 11-12	Infrastructure development.
	Initiate procurement of equipment and materials for the next phase.		
<b>Phase 3: Equipment Installation and Construction Completion</b>		Months 13-18	
	Install processing equipment for both the new CIL plant and the expanded CIP plant.	Months 13-14	Installation of all processing equipment.
	Ensure proper alignment and integration of new machinery with existing systems.		
	Continue with detailed construction work, including electrical, plumbing, and finishing tasks.	Months 15-16	Completion of construction for both plants.
	Conduct initial system tests and calibrations.		Initial system tests and calibrations.
	Finalize all construction activities and ensure site readiness.	Months 17-18	
	Perform comprehensive system testing and commissioning.		
<b>Phase 4:</b>		Months	

<b>Commissioning and Ramp-Up</b>		19-24	
	Conduct thorough testing and commissioning of all systems to ensure they meet operational standards.	Months 19-20	Successful commissioning of new and expanded facilities.
	Address any issues identified during testing.		
	Gradually ramp up production to ensure smooth operations and identify potential bottlenecks.	Months 21-22	Gradual ramp-up to full production capacity.
	Train staff on new systems and processes.		
	Achieve full production capacity of 100 kg of gold per month.	Months 23-24	Full operational readiness and optimized performance.
	Monitor and optimize operations for efficiency and performance.		

### **Critical Path Activities**

- Securing all necessary permits and licenses during the planning phase.
- Completing site preparation and infrastructure development on schedule.
- Timely installation and commissioning of key processing equipment.
- Ensuring a smooth ramp-up to full production capacity with minimal disruptions.

This table outlines the comprehensive timeline for Nyati Resources (T) Limited's expansion project, ensuring all critical milestones are met and the project progresses efficiently.

### **Economic Aspects**

#### **Employment**

Currently, the company employs 40 people as plant operators and supervisors mostly non-technical staff. After the completion of the expansion program, the number of employees directly involved in running the plant, will not change much, however, more technical staff will be added increasing to 600 employees for both the Mining and processing departments. Thus, creating employment for mining, administration, and mineral processing graduates of various levels who are now finding it hard to get employment.

#### **Foreign exchange earnings**

The company will receive all the payment for gold sales in foreign currency, thus boosting the foreign currency earnings for our country.

# PROCESSING FLOW SHEET OF CIL PLANT

