



Environmental Impact Assessment Presentation

Strategic Cobalt and Associated Metals Exploration (Au, Co, Cu, Ni, Fe oxides) in Block RS-12V Red Sea State.

Key Highlights of the Cobalt Mineralization Project

Strategic Location and Concession: BN Energy Company Ltd holds a 264 km² concession in the Arbaat locality, Red Sea State, Sudan, a region within the geologically significant Arabian-Nubian Shield with high gold mineralization potential.

(Landsat 8 OLI, PCA, band ratioing, MNF) and GIS technologies, combined with extensive field investigations and geochemical sampling, to identify and evaluate gold occurrences.

Promising Geochemical Results: Initial geochemical surveys have yielded highly encouraging gold values, ranging from from quartz veins and alteration zones across multiple prospects, indicating significant exploration potential.

This document presents a comprehensive overview of the Gold Mineralization Potentialities in the RS-12V concession, located in the Arbaat locality of the Red Sea State, Sudan. It details the project's introduction, the company's legal framework, the project area, its justification, scope, activities, and expected impacts on the natural and social environments. Furthermore, it addresses considerations and benefits for the local community, safety procedures, and proposed mitigation measures.

Introduction to the Cobalt and associated Metals Initiative

The gold mineralization project in the RS-12V block is a significant undertaking by BN Energy Company Ltd, a duly registered entity with the Government of Sudan, operating under the Ministry of Minerals. The primary objective is the exploration and exploitation of gold and associated minerals within the designated concession area. The initial phase of exploration has been successfully completed, providing promising findings that warrant continued and more detailed investigation. This project is positioned within the broader context of the Red Sea Hills, a region known for its geological significance as part of the Arabian-Nubian Shield, which has historically been a target for mineral exploration due to its rich geological setting and known gold occurrences.

Company Profile and Legal Framework

BN Energy Company Ltd operates with a concession spanning 264 km² in Block RS-12V, located in the Arbaat locality of the Red Sea State. This concession grants the company rights for the exploration and exploitation of Gold and Associated Metals. The legal framework governing the project is established by the Government of Sudan, with oversight from the Ministry of Minerals. The company has engaged a dedicated team of national geologists and geo-consultancy experts to ensure the comprehensive and professional execution of all exploration and evaluation activities. All operations adhere to national mining regulations and environmental standards, ensuring responsible resource development. The Geological Research Authority of the Republic of Sudan (GRAS) confirms the license area is predominantly underlain by Upper Proterozoic volcano-sedimentary-ophiolitic-granitoid greenschist assemblages, intruded by Proterozoic orogenic



granitoid batholiths and syn-late tectonic granitoid and gabbroic bodies, with these structures largely covered by Quaternary desert sediments.

The Project's Operational Area and Geographic Context.

The concession area (RS-12V) is situated in the Red Sea State, east of Sudan, within the Arbaat red sea state. It is approximately 40 km northwest of Port Sudan and 20 km west of Atbaat market. Access to the site is facilitated via the Port Sudan road to Arbaat, an asphaltic road, followed by an unpaved road that traverses flat and rocky terrain. Sudan's geographical position, bordering the Red Sea and several African nations, places the project in a strategic location within the broader geological context of the Arabian-Nubian Shield. The climate is arid to semi-arid, with high temperatures from May to September, and cooler periods from December to February. Rainfall is infrequent, averaging around 30mm annually, with intermittent events from late July to October. The vegetation cover is sparse, typically continental semi-desert and acacia desert species, concentrated along seasonal watercourses and run-off areas.

Justification for the Cobalt Mineralization Project

The primary justification for this project stems from the promising geological environment and the initial findings of exploration activities. The presence of artisanal mining activities within the concession area further underscores the potential for gold mineralization. The project aims to systematically evaluate these potentialities, moving from reconnaissance to detailed exploration, to identify viable economic gold deposits. The use of advanced remote sensing and geochemical techniques provides a robust foundation for identifying target areas, thereby justifying the investment in further exploration and potential development. The project seeks to unlock the economic value of these resources for the benefit of stakeholders and the local community.

Scope and Objectives of the Exploration Endeavor

The scope of this study encompasses general investigations into various geological aspects, including geological mapping, understanding structural and tectonic settings, and mineral exploration. The main objective is to conduct a regional geological survey and exploration of the concession area, focusing on key geological elements such as lithology, structural features, and mineralization zones. This involves assessing the geological potential for gold and associated minerals, analyzing structural settings, and identifying related gold occurrences. Specifically, the study represents a site investigation and potentiality evaluation stage based on remote sensing studies and fieldwork. The aim is to shed light on the type of mineralization, potential zones, and sectors, which will inform recommendations for subsequent detailed exploration phases. Fieldwork, including general geological exploration and chip channel sampling, was conducted in December 2024 to gather data from exposed and available ore in the concession block.

Project Activities and Methodologies

The project employs a multi-stage approach for investigation, combining both pre-fieldwork and fieldwork activities. The methodology includes:

Pre-fieldwork Investigations: This stage involved data collection and literature review, alongside extensive remote sensing investigations. Remote sensing data from Landsat 8 OLI was utilized to create base layers and maps, including geological, structural, drainage, and topographic maps.



Techniques such as color compositing, decorrelation stretching, Principal Component Analysis (PCA), and band ratioing were applied to enhance image interpretability and identify alteration zones and lithological units. MNF transformation was also used to enhance surface composition and alteration detection.

Fieldwork Investigations: Field trips were conducted to verify remote sensing interpretations, collect samples, and conduct geological mapping. Geochemical surveys involved collecting quartz and alteration chip composite samples from identified target areas. These samples were analyzed for gold content to identify geochemical anomalies.

Sample Preparation and Laboratory Investigations: Collected samples undergo rigorous preparation and laboratory analysis to determine gold content. Analyses were performed by Chance Advanced Business Co. Ltd, utilizing methods ensuring accuracy and reliability.

Office and Laboratorial Work: Data processing, interpretation of laboratory results, and integration with GIS technology form the final stage, leading to comprehensive geological interpretations and potentiality assessments.

Expected Impacts: Natural and Social Environments

Impacts on the Natural Environment

Mining activities, particularly artisanal mining, have already caused some damage to the geological environment. The project aims to mitigate further adverse impacts by implementing structured exploration and exploitation methods. Potential impacts include land disturbance from trenching and drilling, dust generation, and altered drainage patterns. However, systematic exploration will replace uncontrolled artisanal activities, allowing for better environmental management. Mitigation measures will focus on minimizing the project's footprint, rehabilitation of disturbed areas, and stringent waste management protocols. The arid environment necessitates careful water resource management and dust suppression techniques.

Impacts on the Social Environment and Local Community

The region is primarily inhabited by Bija and Arab tribes, who are engaged in rearing domestic animals and seasonal agricultural activities. The project's presence will bring both opportunities and challenges. Expected positive impacts include job creation for the local population, improved infrastructure, and economic development through local procurement. The project also commits to addressing concerns of the local community. Considerations for the local community include respecting traditional land use, engaging in transparent communication, and ensuring equitable benefit sharing. The project acknowledges the importance of maintaining social cohesion and cultural heritage.

Considerations and Benefits for the Local Community

The project will actively engage with the local community to ensure their participation and address any concerns. Benefits are anticipated in the form of employment opportunities, training programs, and local economic stimulation. The inhabitants, who currently rely on traditional livelihoods like animal husbandry and seasonal farming, will have new avenues for income



generation. The project will prioritize local hiring and skill development. It is crucial to manage expectations and ensure that benefits are distributed fairly among community members.

Safety Procedures for Personnel and Workers

The safety of all personnel and workers is paramount. Comprehensive safety procedures will be implemented, adhering to international best practices and national regulations. This includes:

Training Programs: Regular safety training for all employees, covering hazard identification, emergency response, and safe operating procedures.

Personal Protective Equipment (PPE): Mandatory use of appropriate PPE, including hard hats, safety glasses, high-visibility clothing, and steel-toed boots.

Emergency Preparedness: Establishment of clear emergency response plans, including medical facilities, first aid, and evacuation procedures.

Risk Assessments: Continuous risk assessments for all operational areas and tasks, with measures implemented to mitigate identified risks.

Health and Safety Audits: Regular internal and external audits to ensure compliance with health and safety standards.

Mitigation Measures and Management Strategies

To address potential negative impacts and enhance the project's sustainability, several mitigation measures and management strategies will be implemented:

Environmental Management Plan (EMP): Development and implementation of a comprehensive EMP to minimize land degradation, control dust and noise, manage waste, and protect biodiversity.

Water Resource Management: Efficient water usage strategies and monitoring to conserve scarce water resources in the arid environment.

Stakeholder Engagement: Continuous dialogue with local communities, government agencies, and other stakeholders to ensure transparency and address concerns.

Rehabilitation and Closure Planning: Progressive rehabilitation of disturbed areas during operations and a detailed mine closure plan to restore the land to a stable and safe condition.

QA-QC Protocols: Adherence to high Quality Assurance and Quality Control (QA-QC) protocols for all exploration and analytical activities to ensure data reliability.

The project is committed to responsible mining practices, aiming to contribute positively to the economic development of Sudan while minimizing its environmental and social footprint.



Conclusion: A Path Forward for Gold and associated Mineral Exploration

The gold mineralization project in the RS-12V concession by BN Energy Company Ltd represents a significant opportunity for resource development in Sudan. The integration of advanced remote sensing, GIS, and meticulous fieldwork has successfully identified multiple prospects with encouraging gold mineralization, supported by impressive geochemical assay results.

The project is strategically located within a geologically favorable region, part of the Arabian-Nubian Shield, which holds a rich history of mineral deposits. The commitment to systematic exploration, robust safety protocols, and comprehensive environmental and social management plans underscores a responsible approach to mining. The initial findings strongly advocate for further detailed exploration to fully delineate the resource potential, ultimately aiming to transition towards a large-scale gold mining operation that benefits all stakeholders and contributes to regional economic growth.

