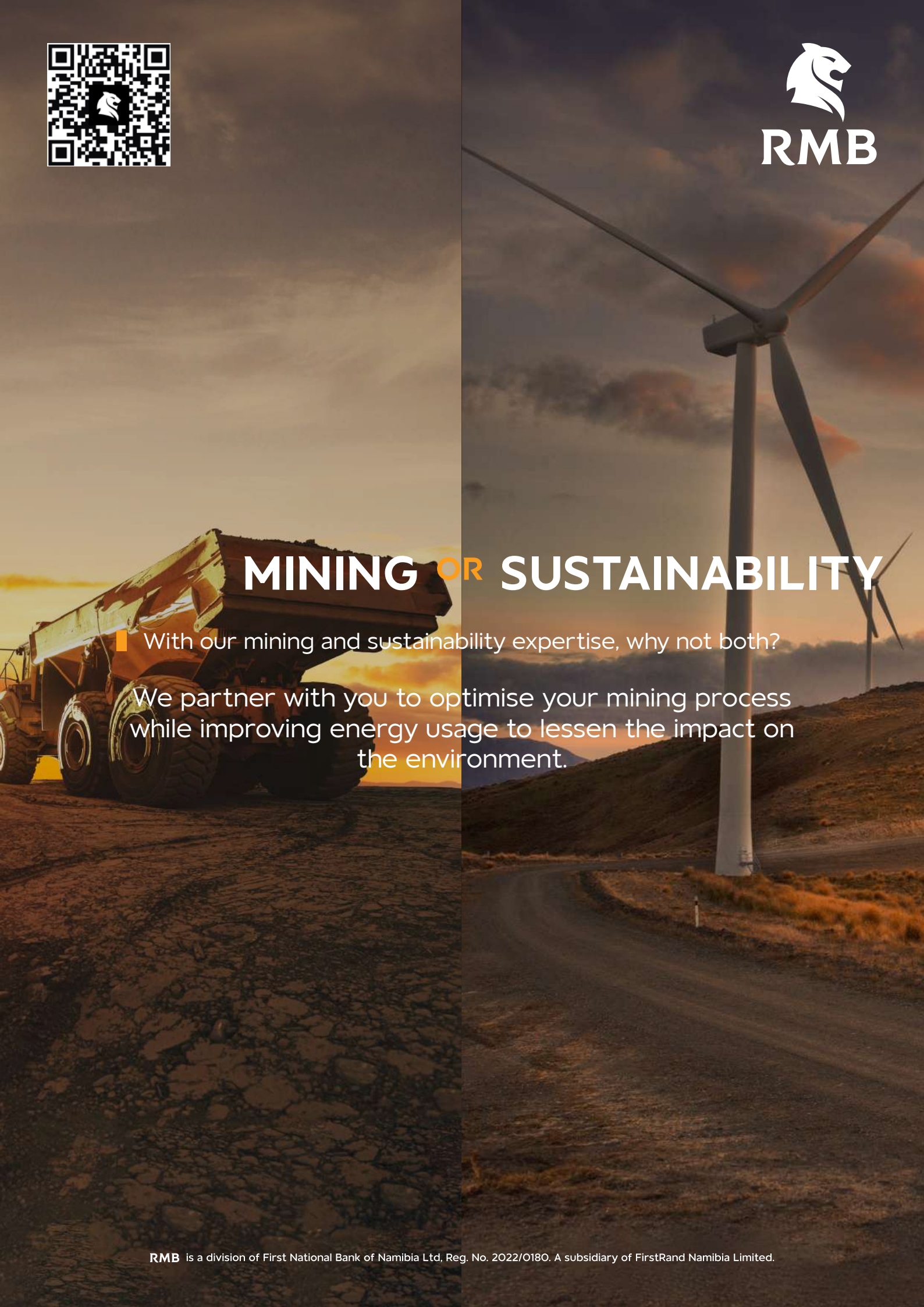
THE BR/EF
News Worth Knowing

# THE NAMIBIAN 2023 MINING & ENERGY HANDBOOK

Showcasing the key players and stakeholders in Namibia's mining and energy sectors.

In partnership with

NIPDB
Namibia Investment Promotion & Development Board
Office of the President



Foreword:

# Embracing Namibia's Mining and Energy Potential

It is with great pleasure that I extend my heartfelt greetings and appreciation to all readers of the Namibia Mining & Energy Handbook 2023, published by The Brief in partnership with the Namibia Investment Promotion Development Board (NIPDB). As the CEO of the Namibia Investment Promotion Development Board, I am honored to introduce this comprehensive resource that highlights the abundant opportunities within Namibia's mining and energy sectors.

Namibia, with its vast mineral wealth and renewable energy potential, stands poised as a premier investment destination. This handbook serves as a guide for investors, shedding light on the immense possibilities that await those who venture into our nation's mining and energy landscape. As a country committed to sustainable development, we strive to create an enabling environment that encourages responsible investment and mutually beneficial partnerships.

Mining has been a cornerstone of Namibia's economy for decades, and we continue to embrace the sector's potential for growth and prosperity. With substantial reserves of diamonds, uranium, gold, base metals, and other valuable minerals, Namibia offers a wealth of opportunities for exploration, extraction, and value addition. Our mining industry adheres to world-class standards, ensuring environmental stewardship, social responsibility, and the highest levels of occupational health and safety. Investors in the mining sector can tap into our well-regulated and transparent framework, benefitting from stability, security, and attractive incentives.

Furthermore, Namibia's commitment to sustainable development extends to the energy sector. Our nation is blessed with abundant renewable energy resources, including solar, wind, biomass, and hydroelectric power. With a strong focus on renewable energy, Namibia aims to harness its full potential, transitioning towards a greener and more resilient future. Investors in renewable energy projects can capitalize on our supportive policy environment, conducive regulatory framework, and favorable\ investment incentives. Together, we can drive the sustainable energy revolution and contribute to the global fight against climate change.

In this handbook, readers will find a wealth of information, including an overview of Namibia's mining and energy sectors, investment opportunities, regulatory frameworks, infrastructure development, and success stories of companies already operating in Namibia. Our objective is to provide you, esteemed investors, with valuable insights, enabling you to make informed decisions and embark on successful ventures within our country.

Namibia's commitment to attracting and retaining investment remains unwavering. We recognize the indispensable role that foreign direct investment plays in driving economic growth, creating employment opportunities, and fostering technological advancement. By investing in Namibia's mining and energy sectors, you not only gain access to our abundant resources but also become a partner in our journey towards sustainable development.

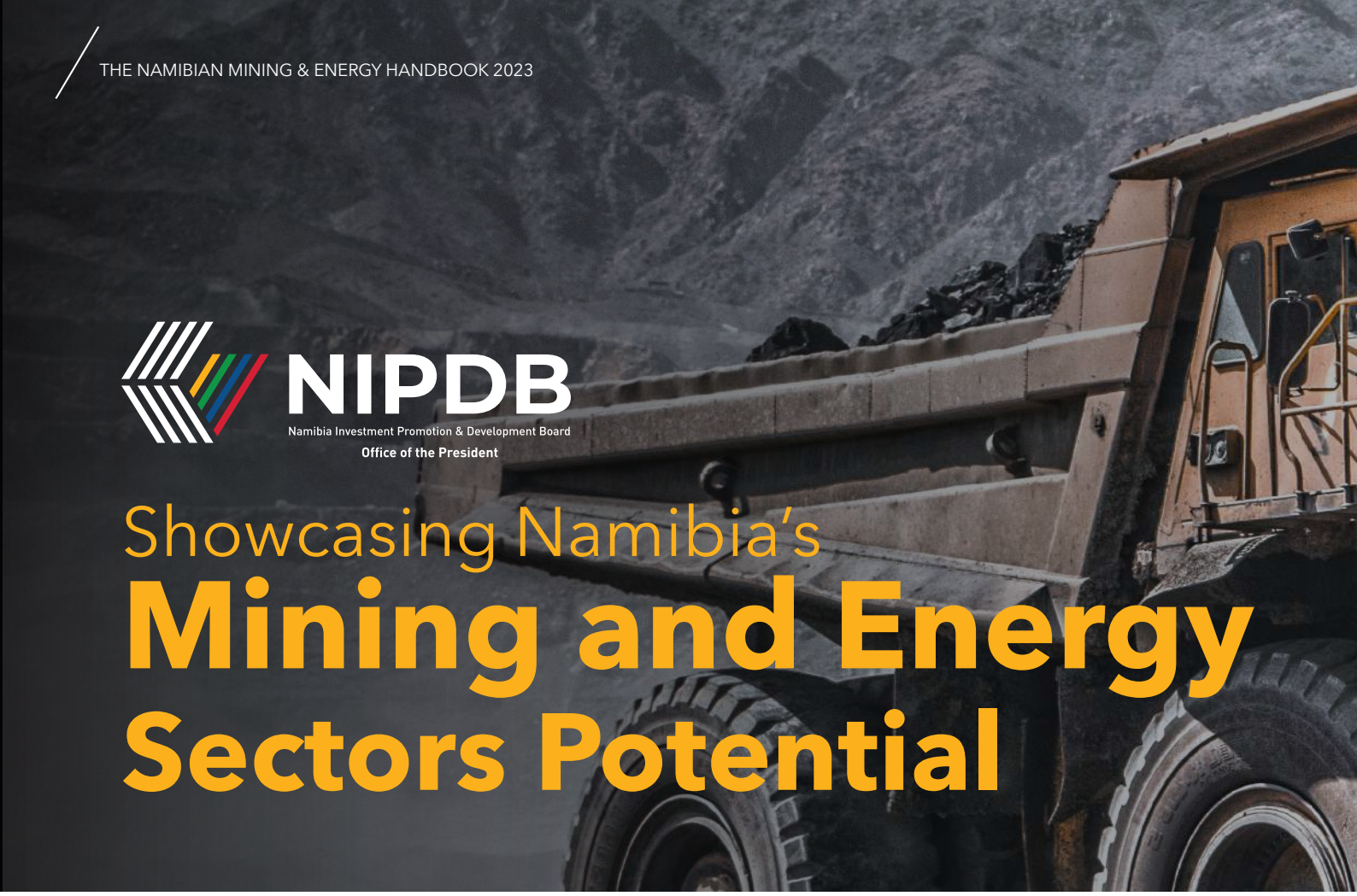
I would like to extend my gratitude to The Brief for their tireless efforts in compiling this handbook, ensuring that it serves as a valuable resource for investors seeking to explore Namibia's mining and energy opportunities. I would also like to express my appreciation to all contributors and stakeholders who have generously shared their knowledge and expertise, making this publication a comprehensive and insightful guide.

I invite you to delve into the pages of this handbook, where you will discover the immense potential that awaits you in Namibia's mining and energy sectors. Together, let us forge partnerships, unlock opportunities, and contribute to Namibia's economic growth while safeguarding our environment and improving the lives of our people.

Thank you for your interest in Namibia, and I wish you success in your endeavours.

Sincerely,

**Nangula Nelulu Uaandja**
Chief Executive Officer and Chairperson, Namibia Investment Promotion and Development Board



NIPDB
Namibia Investment Promotion & Development Board
Office of the President

# Showcasing Namibia's Mining and Energy Sectors Potential

Namibia is currently positioning herself to lead the global shift towards a sustainable economy.

This is according to the Executive Director of Investments and New Ventures at the Namibia Investment Promotion and Development Board (NIPDB) François van Schalkwyk, while reiterating that the mining and energy sectors have long been the driving forces behind Namibia's economic expansion.

The mining and energy sectors' potential can be seen through continued investments, with the mining sector having invested close to a billion Namibian dollars towards exploration work last year according to the Chamber of Mines of Namibia while the signing of the Feasibility and Implementation Agreement (FIA) between Hyphen Hydrogen Energy and the Government of Namibia is expected to unlock over US$10 billion in investment, as Namibia continues to capitalise on its abundant mineral resources and the potential of the green industry.

"Namibia's mining and energy sectors stand on the cusp of significant growth and transformation. By actively attracting responsible investments, nurturing partnerships, and advocating for eco-friendly practices, Namibia is carving out a distinctive role in the worldwide green revolution," van Schalkwyk said.

The NIPDB believes that this multifaceted approach not only propels economic prosperity but also ushers in a promising future for all.

Namibia has been recognised as a leading mining jurisdiction and the mining sector has shown considerable organic growth, ranked 59 out of 84 countries according to the latest Fraser Institute's annual survey of mining countries, which measures the investment attractiveness of various mining jurisdictions.

"When the NIPDB started, we had to do very little to market the mining sector. It was kind of evolving by itself," Van Schalkwyk stated.

However, he noted that the focus has shifted towards enhancing opportunities for exploration companies and junior miners, creating a more robust project development pipeline to attract global mining giants.

The Namibian government's ambition to diversify the economy has led to a strong emphasis on the domestic processing of mined resources.

"We also need to look at processing whatever we mine domestically," said van Schalkwyk.

He asserted that while processing facilities can be expensive, the Investment Board is actively working with miners and investors to make these opportunities more attractive.

The recent ban on raw lithium exports has further elevated processing on the agenda, he added.

The country has embarked on a journey towards green hydrogen, which has attracted significant attention from both international and domestic investors. The government signed a Feasibility and Implementation


***Francois van Schalkwyk***
Executive Director of Investments and New Ventures, NIPDB

Agreement with Hyphen Hydrogen Energy in May, paving the way to begin groundwork on a US$10 billion (N$187 billion) project.

According to Van Schalkwyk, the Government and various stakeholders have played a pivotal role in establishing the green hydrogen industry.

"We've been quite blessed. The promotional work we've done abroad has attracted a lot of attention. These efforts have led to the emergence of several projects, including smaller ones, contributing to the overall sustainable and responsible resource management strategy," remarked Van Schalkwyk.

He added that collaboration with local policymakers is essential to create an attractive investment environment.

"We are cognisant of the fact that in order for Namibia to successfully deliver on its promise of being a lucrative investment destination, the NIPDB cannot achieve this on its own. Therefore stakeholder collaboration is extremely crucial for us. As such, the NIPDB works closely with the Ministry of Finance, Namibia Revenue Authority (Namra), the Attorney General's Office, and other stakeholders to introduce incentives that stimulate investments while maintaining competitiveness," he said.

Van Schalkwyk added that incentives make the business case much easier and the ongoing partnership between the Investment Board and various ministries ensures a well-rounded approach to policy development.

"Collaborating closely with government counterparts, NIPDB has attracted international attention and investment, paving the way for projects in the green energy sector. Notably, partnerships with various countries including Japan, Europe, South Korea, and China have been forged, with a focus on funding, technology transfer, and renewable projects," he explained.

Namibia's reputation for responsible resource management is underscored by stringent regulations and policies, as some investors have expressed concerns about the complexity of entry. Van Schalkwyk clarified that these measures are in place to protect both investors and the country.

"The wheel turns slowly in terms of policy change, but we certainly don't ignore it. Striking a balance between investor sentiment and responsible management is a delicate task that the NIPDB continually navigates," he noted.

The NIPDB remains committed to contributing towards streamlining regulations and eliminating constraints by working collaboratively with policymakers to strike a balance between a favourable investment climate and responsible resource management.
As Namibia looks ahead, its strategic positioning in the global economy, especially in the green transition, is undeniable.

Editor's Note:

# The Namibian Mining & Energy Handbook 2023

We are thrilled to introduce the Namibian Mining and Energy Handbook 2023, a groundbreaking collaboration between The Brief and the Namibia Investment Promotion Development Board (NIPDB). Against the backdrop of remarkable advancements in Namibia's mining and energy sectors, this handbook emerges as a pivotal guide, providing crucial insights that investors eagerly seek.

The resurgence of global uranium prices, the trailblazing strides in green hydrogen technology, and the monumental offshore oil discoveries have propelled Namibia into the global spotlight. As the nation takes bold strides towards sustainable resource management and energy diversification, the handbook stands as a testament to the country's commitment to fostering informed investment decisions.

Our profound appreciation goes to NIPDB for their pivotal role in making this publication possible. The Namibia Mining & Energy Handbook stands not only as a testament to the dynamic developments within the nation but also as a response to the pressing demand for accurate and comprehensive information.

Amidst Namibia's rising prominence in the global mining and energy landscape, we firmly believe that this handbook will serve as an indispensable asset for investors, policymakers, researchers, and industry leaders. It is our hope that the handbook will empower stakeholders to navigate the complexities of these sectors, making decisions that not only drive economic growth but also contribute to the sustainable future of Namibia.

**The Brief Team**

Delighted recipients of new school uniforms, Kunene Region 2023

# BANNERMAN RAISES THE BAR

In 2011, Bannerman introduced its Early Learner Assistance Program, aimed at inspiring disadvantaged young learners to persevere in their education by providing uniforms, shoes and materials for them and their families. This annual program has had a significant impact, benefiting over 3500 Namibian students who were at risk of leaving the school system.

Due to the program's success, the Minister of Mines & Energy requested Bannerman to extend it beyond their host community in Erongo to areas lacking the social benefits of mining activity. Consequently, the program was expanded to Omaheke, Hardap, Kunene, Kavango West & Otjozondjupa.

Since its inception, Bannerman employees have travelled nearly 17,000 kilometres and shown unwavering dedication to the Early Learner Assistance Program. In July, they travelled to Opuwo in Kunene, personally delivering tailored parcels of school clothing, stationery, backpacks, socks and shoes to 278 students across 8 schools/units. This gesture reinforces to each learner that they are valued and deserving of support.

Bannerman employees serve as valuable role models, inspiring learners to remain in school and pursue their dreams. Their enthusiasm and commitment to the program continues to make a positive difference in the lives of young Namibians.

Bannerman Mining Resources Namibia is developing the Etango Uranium Project located in the Erongo Region of Namibia.

Since 2005, Bannerman has been focused on the extensive exploration and feasibility work at Etango. Etango will be a large scale uranium mine, producing around 3.5 million pounds of uranium each year and generating jobs, taxes, royalties and skills development for Namibia.


BANNERMAN energy

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BANNERMAN
MINING RESOURCES NAMIBIA

# Table of Contents

## The Mining Sector



# The Energy Sector



# Namibia is Open for Business

**Investing in Namibia**

The Namibia Investment Promotion and Development Board (NIPDB) serves as a one-stop shop for all companies aspiring to do business in Namibia.

As a public entity in the Office of the President, the NIPDB exists to facilitate investments into Namibia, and we pride ourselves in providing professional and personalised guidance tailored to each client's unique needs and interests. Once you have made the decision to do business in Namibia, the NIPDB is your first point of call.

As part of our service offering, the NIPDB assists potential investors to set up their businesses in Namibia. Our aim is to make Namibia the investment destination of choice by improving the ease of doing business, starting with eliminating red tape and driving policy reforms.

We promote investment in key sectors including, but not limited to: mining, agriculture, renewable energy and tourism.

**Are you ready to invest in Namibia?** Talk to us.

Email address: info@nipdb.com

Website: www.nipdb.com

Let's connect on social media: **@NIPDB**

NIPDB
Namibia Investment Promotion & Development Board
Office of the President

# **MTC** A BEACON OF HOPE FOR NAMIBIA


Namibia's leading Information Communications and Technology Company, MTC has undoubtedly been a catalyst for Namibia's growth. Started in 1995 by its forefathers, the Namibian government, the company has played a phenomenal role in shaping Namibia's Telecommunications industry. Namibia has always been on par with the rest of the world when it comes to world class technologies, thanks to the visionary leadership of the MTC team with the support of the stakeholders in the industry.

In 2006 with only 500,000 subscribers, MTC upgraded its network from 26 to 36 to give customers better speed at the most affordable rates with the introduction of its popular Netman. In 2010, MTC invested US$5 million (N$277 million Namibian Dollars) in the West African Sea Cable to ensure that the country has enough internet bandwidth for the next 30 years. In 2012, MTC became the first operator in Africa to introduce 4G and later 4.5G in 2016. MTC has throughout the years demonstrated its innovative attitude becoming the Most Admired Namibian brand for 3 consecutive years now.

Today the company has its own secure Cloud and Fibre network, and recently celebrated its 1000th network tower, a crystal-clear demonstration of its desire to continue investing in Namibia for the benefit of all Namibians. Customers can enjoy Voice over LTE, Taamba and the introduction of Mobile Financial Services are imminent.

MTC has led the way in being one of the most corporate socially responsible entities, believing in the power of giving back to make Namibia a better place for all. From building low-cost houses, to introducing internship opportunities for students, uplifting entrepreneurs, fighting poverty, and assisting those in the sports and arts fraternity to achieve their dreams, MTC has done it all with an investment of over N$357 million in sponsorships, and N$22 million in CSI to date.

MTC has done exceptionally well in terms of empowering Namibian companies to stimulate the country's economic growth. The company has invested over NS1.2 billion in 2022 alone that went directly to local Namibian suppliers in the Namibian economy with 95% of all its suppliers being Namibian. An amount of N$158 million has been spent on BEE accredited local suppliers which is a phenomenal achievement in support of Namibia's Growth at Home strategy.

MTC's Super Aweh offering has no competition on the continent, allowing Namibians to enjoy the most affordable data rates up to N$68 cheaper than most operators on the continent.

MTC has paid over N$7.5 billion in dividends to its shareholders since its inception. An investment that is used by government to build the country's infrastructure and address pressing social issues. An amount in excess of N$4.3 billion was paid in corporate taxes while the investment in our network stands at a staggering figure of N$2.5 billion. Today the company is listed and proudly owned by Namibians with its market shareholder equity standing at two times to it total liabilities and return on equity standing at 36% re-paying shareholders investments within three years based on a 2021 study.

The one thing that the MTC has been brilliant at doing is cost management while maximising revenues and still providing the most affordable solutions. With a staff compliment of 654 Ambassadors spread across the country, the company always aims to offer the best Employee Value Proposition to all its Ambassadors. Just recently, the company approved an N$18 million per annum budget that will increase to N$34 million in the next years to ensure that all its Ambassadors from grades A-D2 receive a decent housing subsidy.

This move demonstrates the extreme care and respect that the company has for its Ambassadors and their families, affording them the pride and joy of owning their own properties. MTC's Personnel cost vs Revenue ratio is extremely well managed standing at only 14.93% while its Personnel Cost vs Overall Cost ratio stands way below the industry benchmark at only 23.53%.

The company recently introduced the Dreamers Project, assisting 30 of its Ambassadors on an annual basis with a maximum of N$60,000 which they can invest in their dreams, whether that is in a sport or hobby that they enjoy, or starting a small business or giving back to society.

MTC owes its success to the loyal support of all its customers, and vows to continue Making the Connection for many years to come.

# ESG: From apathy to action

Our ESG services are fully integrated with our industry-specific expertise, delivering a wider perspective and deeper insight for every client.

Environmental, social and governance (ESG) expectations are evolving rapidly and becoming increasingly important to investors, shareholders, regulators and other stakeholders. For most organisations, sustainability is rising to the top of the agenda.

Embedding ESG into culture — thinking and ways of operating — is key to ensuring organisations can be successful and sustainable, now and in the future. Increasingly, competitiveness and reputation will depend on:

- understanding and responding to the various ESG drivers impacting an organisation,
- continuous adjustment of corporate strategies and operating models in terms of material ESG matters, combined with the agility to innovate,
- detection and management of new ESG-related risks and opportunities across the value chain and
- technology, talent and skills to manage data and change.

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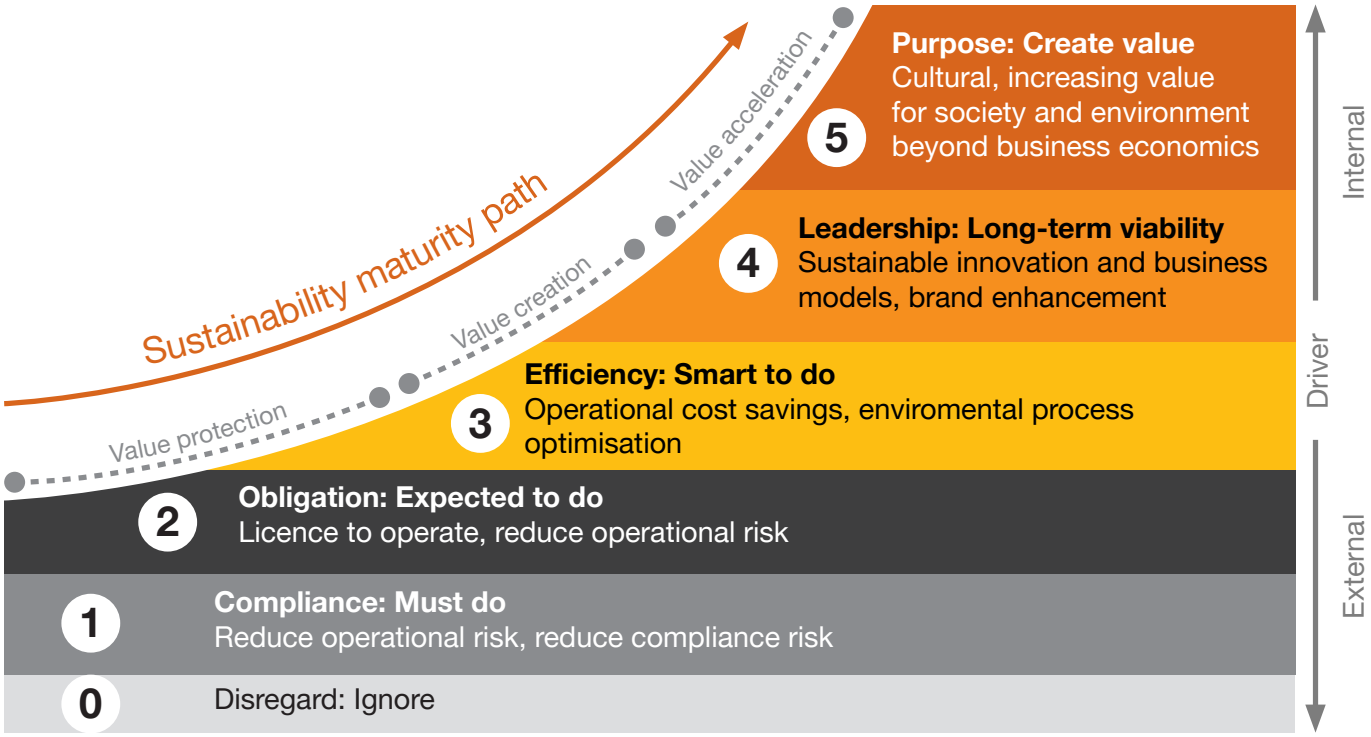
## Understanding the key elements of ESG risks and opportunities in Africa

Many organisations are facing urgent challenges such as cost pressures, geopolitical uncertainty, energy security concerns and inflation. Yet there is an opportunity to engage on ESG, sustainability and climate change as a pre-emptive strategy to strengthen organisational resilience over the same horizon. The challenge is to balance short-term challenges with longer-term strategies.

We guide our clients through ESG risks and opportunities with advice, strategy, transformation and reporting solutions.

**An effective corporate strategy includes applicable ESG considerations and builds trust that the organisation is responding effectively. ESG transformation delivers sustained outcomes.**




**Creating holistic value and delivering sustained outcomes**

# TALISMAN HIRE.

## A GOLDMINE OF EQUIPMENT AND TOOLS.

PROUD SUPPLIER OF TOP QUALITY TOOLS AND EQUIPMENT
FOR HIRE **SINCE 2013 IN NAMIBIA**

Talisman Hire, established in 1993. The company was started with the concept of providing a one-stop service with professional backup and quality equipment to the market.
With a well-established network of franchised stores throughout Southern Africa, Talisman is leading the market as the most successful brand in this industry. By joining forces with franchisees nationally, we provide quality equipment and service excellence to our client base.

Talisman Hire Windhoek is a re-seller of Sika Products Sika Solutions ***(www.sika.co.za)*** as well as The Peri Scaffold and Building Components. Talisman Hire Windhoek stocks a range of building components and consumables supplied by Peri.

Talisman Hire Windhoek is appointed as the Bobcat Compact Equipment dealer and Magni Equipment dealer for Nambia and is responsible for sales, service and parts support on.
We also have Case TLB's with Hydrauoic Breakers availabe for hire.

**Windhoek**
**(+264) 61 228 185**
16 Diehl Street, Southern Industrial
Windhoek, Namibia

TALISMAN® Hire

# The mining Sector

In partnership with

NIPDB
Namibia Investment Promotion & Development Board
Office of the President

# Ministry of Mines & Energy

## Licencing

## LICENCES, RIGHTS AND PERMITS APPLICATION GUIDELINES AND ASSESSMENT PROCEDURES

In Namibia any right in relation to the reconnaissance, prospecting, mining sale/disposal and exercise of control over, any mineral or group of minerals are vested in the state and are a provided for by the Minerals (Prospecting and Mining) Act, 1992 and administered by the Mining Commissioner. Any person interested in undertaking mining activities should apply to the Ministry of Mines and Energy in the prescribed forms.

### *1. TYPES OF MINERAL RIGHTS*

#### *1.1 Non-Exclusive Prospecting Licence (NEPL)*

This licence is a gateway to pegging mining claims. The holder of a NEPL is not entitled to exclusive rights for any specific mineral group or area. It issued for a year and the annual fee is N$250.

#### *1.2 Mining Claims (MC)*

Mining claims are granted to Namibian citizens or to companies owned by Namibian citizens. However, a mining claim holder may choose to contract a foreigner or a company owned by foreigners to prospect and mine. An individual or a company can only be awarded a maximum of ten (10) mining claims at a time. The registration of a mining claim is subject to an Environmental Clearance Certificate, issued by Ministry of Environment and Tourism. The application fee is N$250.00.

#### *1.3 Reconnaissance Licence (RL)*

A reconnaissance licence is used to conduct regional investigations such as airborne geophysical surveys and analysis of satellite images. Usually, it covers a large area e.g. 1 million Ha. A RL issued for six (6) months after which, the holder of a RL should ideally be in a position to apply for an Exclusive Prospecting Licence within the area previously covered by the RL. The application fee for a RL depends on the size of the area (N$2 500/quarter of a degree square).

#### *1.4 Exclusive Prospecting Licence (EPL)*

An EPL is meant for detailed investigations such as geological mapping, ground geophysics, geochemical sampling, trenching, drilling, bulk sampling, trial mining, etc. It is the most common type of mineral licence issued by the Ministry of Mines and Energy. In fact, more than 70% of the work load which the Mining Commissioner's office undertakes due to licensing related activities emanate from EPLs and EPL applications. The application and Licence fees are paid as per the following table:

| *AREA (Ha)* | *FEE (N$)* |
|---|---|
| < - 20 000 | 10 000 |
| 20001–30000 | 15 000 |
| 30001–40000 | 20 000 |
| 40001–50000 | 25 000 |
| 50001–60000 | 30 000 |
| 60001–70000 | 35 000 |
| 70001–80000 | 40 000 |
| 80001–90000 | 45 000 |
| 90 001 – 100 000 | 50 000 |

### *2. MINERAL DEPOSIT RETENTION Licence (MDRL)*

After conducting exploration under an EPL, the EPL holder may find a deposit but there could be certain circumstances that prevent such EPL holder from taking the project to mining. These circumstances include: the commodity price, lack of infrastructure or poor extraction technologies at the time. If the EPL holder has a reason to believe that these negative circumstances would improve, they may choose to preserve their rights over the deposit by applying for an MDRL. An MDRL is issued for five (5) years and is renewable; however the holder is not obliged to carry out any do work. The annual fee is N$25 000.

### *2.1 Mining Licence (ML)*

After a successful exploration program, an EPL holder may want to start mining activities. In this case, an EPL Holder may to apply for a mining licence. Depending on the deposit size and the scale of production, a mining licence may be issued for a period not longer than twenty five (25) years. The annual fee depends on the projected annual turnover. Where the turnover is projected to be below N$10 000 000, the fee is N$5 000. Where the turnover is projected to be above N$10 000 000, the fee is N$25 000. Mining licences are renewable for periods not exceeding 15 years at a time.

### *2.2 How to apply for Mineral Rights*

### *2.3. Application and Registration of a Mining Claim*

An application for the registration of a mining claim is made to the Mining Commissioner in the prescribed form. A mining claim must be made within 21 days from the date on which such claim is pegged as provided in section 28 and shall be accompanied by the application fee.

### *2.4 Application for a Mineral Licence*

A mineral licence under the Minerals (Prospecting and Mining) Act, 1992 includes a reconnaissance licence, and exclusive prospecting licence, a mining licence or a mineral deposit retention licence.

*An application for:*

- a mineral licence or a renewal thereof;
- The amendment of a mineral licence; or
- The approval of the Minister for the transfer of a mineral licence, or the grant cession or assignment of any interest in any mineral licence, or to be a joint holder of a mineral licence or such interest, shall be made to the Minister in the prescribed forms and shall be accompanied by the application fees, as the case may be of such licence.

### *2.5 EPL and Mining Licence Applications*

- Eligibility: i) in case of a company, it should be duly registered in Namibia for the purpose of mineral exploration and mining, ii) if it is an individual, he or she must be a Namibian citizen.
- Sound description of the exploration target (EPLs);
- Sound exploration model (EPLs);
- Sound exploration or mining program and budget;
- Capability to finance the exploration or mining project
- In case of overlap, compliance with sec 69 (EPLs);
- In case of communal area/land, notification to the Traditional Authority;
- Environmental clearance certificate from Ministry of Environment and Tourism;
- In case of a renewal application for an EPL, an exploration report detailing results of the preceding tenure.
- j. Sound report detailing resources and reserves (SAMREC, JORC, etc. compliant);
- Sound track record in exploration/ mining;
- l. Sound mine design and processing plant design (MLs);
- Availability of mining experts to carry out the envisaged exploration/ mining program (in case of an ML application, if applicant has no in-house capacity, a reputable mining contractor is required);
- Pre-feasibility study (MLs)

### *2.6. When should an applicant expect feedback on their application?*

| *TYPE OF APPLICATION* | *TIME IT TAKES TO GET FEEDBACK* |
|---|---|
| Non-EPL | One (1) day after an application is received |
| Mining Claim | Seven (7) working days after an Environmental Clearance is received; |
| Reconnaissance Licence | 3-4 months |
| Exclusive Prospecting Licence | 3-4 months |
| Mineral Deposit Retention Licence | 3-4 months |
| Mining Licence | 6-12 months |

### *2.7. What is expected from the licence holder once the licence is granted?*

- The carrying on of reconnaissance operations, prospecting operations and
- Mining operations, including the construction of any accessory works, where applicable;
- Compliance with Environmental Clearance Certificate or Environmental

Management Plan;

- Conservation of any natural resources;
- Prevention of the waste of such resources;
- Payment of licence fees and royalties; and
- Submission of reports, returns and other information to the office of the Mining Commissioner

**Source:** *MME*

### *2.8. Reporting*

Reports to be submitted to the Mining Commissioner:

| TYPE OF LICENCE | MONTHLY | QUARTERLY | ANNUALLY |
|---|---|---|---|
| NEPL | Upon request from the Commissioner (Section 24) | | |
| RL | N/A | N/A | YES |
| EPL | YES | N/A | YES |
| MDRL | N/A | N/A | YES |
| MC | N/A | YES | YES |
| ML | N/A | YES | YES |

### *2.9. ROYALTES - Part XVI of the Minerals Act, 33 of 1992*

The mineral rights holder is liable to pay to the Commissioner for the benefit of the State Revenue Fund a royalty.

- The holder of a mining claim or a mining licence who has won or mined in the course of any prospecting or mining operations carried on by him or her, and
- The holder of any non-exclusive prospecting licence, exclusive prospecting licence or mineral deposit retention licence who has found or incidentally won in the course of any prospecting operations carded on by him or her.

| COMMODITY GROUP | ROYALTY RATE |
|---|---|
| Precious Stones | 10% |
| Dimension Stones | 5% |
| Base and Rare metals | 3% |
| Precious Metals | 3% |
| Nuclear Fuel Minerals | 3% |
| Non-Nuclear Fuel Minerals | 2% |
| Industrial Minerals | 2% |
| Semi-Precious Stones | 2% |

## *3. DIAMOND LICENCES AND PERMITS*

Diamond licences and permits are issued under the Diamond Act, 1999 and Diamond

Regulations 2000 and administered by the Diamond Commissioner who is appointed under the Diamond Act, 1999.

### *3.1. Types of Licences*

#### 3.1.1. Dealer's Licence

This licence entitles the holder to carry on business as a buyer, seller and exporter of rough diamonds.

#### 3.1.2. Cutter's Licence

This licence entitles the holder to polish diamonds for purposes of business or trade.

#### 3.1.3. Tool making Licence

This licence entitles the holder to set unpolished diamonds in tools, implements or to alter or crush those diamonds for the purpose of trade; and

#### 3.1.4. Research Licence

This licence entitles the holder to conduct research and test in connection with diamonds but not to polish diamonds for purposes of business or trade.

### *3.2. Types of Permits*

Permits cater for non-recurring circumstances and may be easily withdrawn in contrast to licences

- Section 27 (a- j) of the Diamond Act, 1999 provides
- For different types of Diamond permits entitling holders to: possess, sell, purchase, import, export, possess any diamondiferous concentrate outside a restricted area, export diamondiferous concentrate, remove and export any sand, soil, clay, gravel, stone, rock or mineral that may contain diamonds.
- The most common permit is the Restricted Area Permit under Section 27 (k) of the Diamond Act, 1999. This permit entitles any person to enter, work, visit or reside in Restricted Areas (Please refer to Section 52 (2) of the Diamond Act, 1999).
- Any person applying for a Restricted Area Permit is required to have a "clean Police clearance" which can be obtained from the Namibian Police. ( Please see Section 52 (2) on a " Restricted Area")
- The procedure for application and issuance of permits is outlined under Sections 28 and 29 of the Diamond Act, 1999 and Regulations 5, and 6 of the Regulations.
- Applications for permits under section 27 (a – j) shall expect feedback within 5 working days; whereas
- Applicants for Section 27 (k) permits shall expect feedback within 30 days as per Section 29 of the Diamond Act.
- Applications for Restricted Area permits shall be lodged directly at the Ministry's Regional Offices at Oranjemund, Lüderitz and Swakopmund.

| LICENCE TYPE | PERIOD OF VALIDITY (YRS.) | APPLICATION FEE (N$) Non-refundable | ANNUAL FEE (N$) |
|---|---|---|---|
| Cutter's Licence | 10 | 500 | 1 500 |
| Dealer's Licence | 5 | 500 | 10 000 |
| Tool-making licence | 5 | 500 | 1 500 |
| Research Licence | Minister to determine | 500 | 1 500 |
| Permits | Minister to determine | 250 | N/A |

***Table 1:*** Table showing the types of licences, period of validity and applicable fees

## *4.PETROLEUM LICENCES*

### *4.1. Downstream Petroleum Licences*

The legislative framework for the downstream petroleum licences is found in the Petroleum Products and Energy Act, 1990 and Petroleum Products Regulation of 2000.

#### 4.1.1. Why should you apply for a downstream petroleum licence?

A downstream petroleum licence permits a person to conduct activities and business.
in the industry of petroleum products. Companies and individuals who are granted
these licences can import, distribute, store, sell or export petroleum products,
depending on the type of licence.

#### 4.1.2. Types of Downstream Licences

- Wholesale Licence
  A wholesale sale is the sale of petrol or diesel in bulk quantities and a bulk quantity is a single quantity of 200 litres or more. A wholesale Licence allows a person to import, distribute or export petrol or diesel in bulk quantities.

  Please note: An import permit is issued by the Ministry of Trade and Industry to wholesale Licence holders. However, before the import permit is issued, it must be approved by the Ministry of Mines and Energy. For more details, refer to Sections 11-15 of the Petroleum Products Regulations of 2000.

- Retail Licence
  A retail licence allows one to operate a retail outlet in terms of the Petroleum Products Regulations, 2000. A retail outlet is any place from where petrol or diesel is sold or is offered for sale to consumers/ the public for purposes of use or consumption. For more details, refer to Sections 4-10 of the Petroleum Products regulations of 2000.

- Consumer Installation Certificate
  A Consumer Installation Certificate authorizes its holder to possess diesel or petrol of more than the following quantities: 200 litres in urban areas and 600 litres in rural areas. A person is eligible to apply for the consumer installation certificate for any of the following activities: a commercial undertaking, farming or a mining. See Section 16-24 of the Petroleum Products Regulations, 2000 for further details.

## *5. ELECTRICITY LICENCES*

This section explains the licensing regime in Namibia in respect of the electricity supply industry. The function of administering and managing electricity licences is bestowed on the Electricity Control Board (ECB) as established by the Electricity Act, 2007. The submission, evaluation and management of all electricity licences reside with ECB. However, the power to grant or refuse licences resides with the Minister of Mines and Energy, upon recommendation and based on the evaluation made by
ECB.

### *5.1. Types of Electricity Licences*

Section 17 of the Electricity Act, 2007 (Duty to obtain a licence) states that no person may establish or carry on generation, trading, transmission, distribution, supply, import or export of electricity without a licence.

#### 5.1.1. Generation Licence

Required for any generation plant which has a capacity of more than 500
kVA

#### 5.1.2. Trading Licence

In the current market model only NamPower has a licence to trade electricity
through the electricity market.

5.1.3. Transmission Licence

In the current market model only NamPower has the electricity transmission
licence.

#### 5.1.4. Distribution Licence

Require for by any distributors of electricity where the estimated total
demand of the installation is more than 500 KVA.

#### 5.1.5. Export Licence

In the current market model only NamPower has the right to export
electricity.

#### 5.1.6. Import Licence

In the current market only NamPower has the right to export electricity.

**Source:** *MME*

# Energising communities and putting customers first

Compiled by Gys Reitz, Parrot Communications

*Puma Energy's purpose is 'energising communities' through driving growth, prosperity and sustainably serving its customers' energy needs – in Namibia, and countries around the world.*

Mrs. Adell Samuelson, General Manager of Puma Energy Namibia, says the company is supporting an equitable energy transition. "We want to lead and grow in Namibia in this dynamic, fast-moving sector and by putting our customers' needs first."

She emphasizes that as a downstream company Puma Energy is helping drive an equitable energy transition across developing markets by delivering accessible and diversified energy solutions to customers. Our ambition is to reduce our carbon footprint, while helping our customers achieve their decarbonization goals.

Puma Energy is committed to generating 30% of our EBITDA (Earnings before interest, taxes, depreciation, and amortization) in Africa with clean energy and transition fuels by the end of 2027, while reducing our GHG (Greenhouse Gas) emissions by 15% by the end of 2025 and 35% by the end of 2032.

Furthermore, we are diversifying into new energies and delivering solar, biodiesel, SAF (Sustainable Aviation Fuel), CNG (Compressed Natural Gas) and LPG (Liquid Petroleum Gas) solutions for customers.

## RENEWABLE ENERGY

Puma Energy Namibia is extending its solar energy solutions beyond the solar installations at most of its retail service stations. It currently operates 25 solar projects at retail stations, depots and terminals in Namibia with a combined capacity of 781 kWp able to generate an estimated 1,337 MWh annually. This volume of solar energy is estimated to reduce $CO^2$ emissions by 1 044 tons per annum. Globally the company wants to establish over 200 solar projects with a capacity of 8,600 kWp generating 12,500 MWh of electricity, with global greenhouse gas savings of around 9 800 tons. Harnessing the power of the country's natural resources is advantageous for the environment, is cost competitive and diversifies the energy mix.

## SHARING EXPERTISE

"We believe action and leading by example speak louder than words. Thus, as responsible corporate citizens, we are taking bold steps to reduce Namibia's carbon footprint."

Puma Energy provides a wide range of energy solutions to retail and business-to-business (B2B) customers.

It is committed to extending its value for money solar energy solutions to business-business-customers in the mining, fishing, manufacturing, and agricultural industries.

We are planning two events this year to meet with potential clients and explain our solutions. We know our customers want an all-inclusive service catering for all their energy needs. Partnerships should provide for renewable energy solutions in addition to the traditional fuels and lubricants.

## MINING SECTOR

Puma Energy Namibia is able to provide companies and businesses in the mining sector with bespoke energy solutions, ensuring they have the capacity to keep their operations running. Not having the correct fuels and lubricants can affect the efficient growth of their businesses and their customer-base, risking their operations and making them lose focus on their core business.

By providing the correct lubricants in the appropriate way for each customer, the company can help them to optimise their operations, increase efficiency and improve reliability, so they can save and make more money.

Puma Energy utilises the high-performance Group 11, 111 and synthetic lubricants bases, with low sulphur content and high viscosity index. These guarantee better performance and greater protection to engines, compared to conventional lubricants, and prolonging their use.

This exclusive additive package maintains viscosity stability at all operating temperature ranges, transmission gears and wet clutch discs, allowing for longer shift times than the competition, meaning longer engine life and protection, fast and smooth shifting in start and stop traffic.

Furthermore, Puma Energy Namibia can make a big difference, with these solutions amongst others:

- Decarbonised. We are decarbonizing the supply chain and delivering clean power generation
- Decentralised. Out distributed solutions deliver reliable electricity around the clock, using a variety of technologies, i.e., photovoltaic (PV) and battery energy storage.
- Digitised. We use data to match with the customer's demand tweaking operational models to improve their energy access and bills.

## E-PUMA

We are planning to roll out the e-Puma fuel access efficiency system, enabling customers to do all their fuel business with us online - placing orders, accessing statements and invoices.


Puma Energy's Fueling Solution will be targeted at companies in the transportation and logistics sector. This solution offers to their fleets of vehicles high-tech, real time digital data updates on refueling at our stations.

This safe option makes the carrying money or fuel cards redundant. It also offers a cross border fueling solution to our customers.

## ENERGY SECURITY

Puma Energy contributes to Namibia's energy security by:

- Supplying about 70% of fuel to the Namibian market and is one of the top role players with 61 retail fuel stations across the country.
- Supplying aviation fuel 24/7 to airlines flying in to and out of Hosea Kutako International, Ondangwa and Eros airports.
- Storing fuel in two terminals in Walvis Bay with a storage capacity of 116,375 $m^3$, dedicated to supplying our downstream operations.

## GOVERNMENT COOPERATION

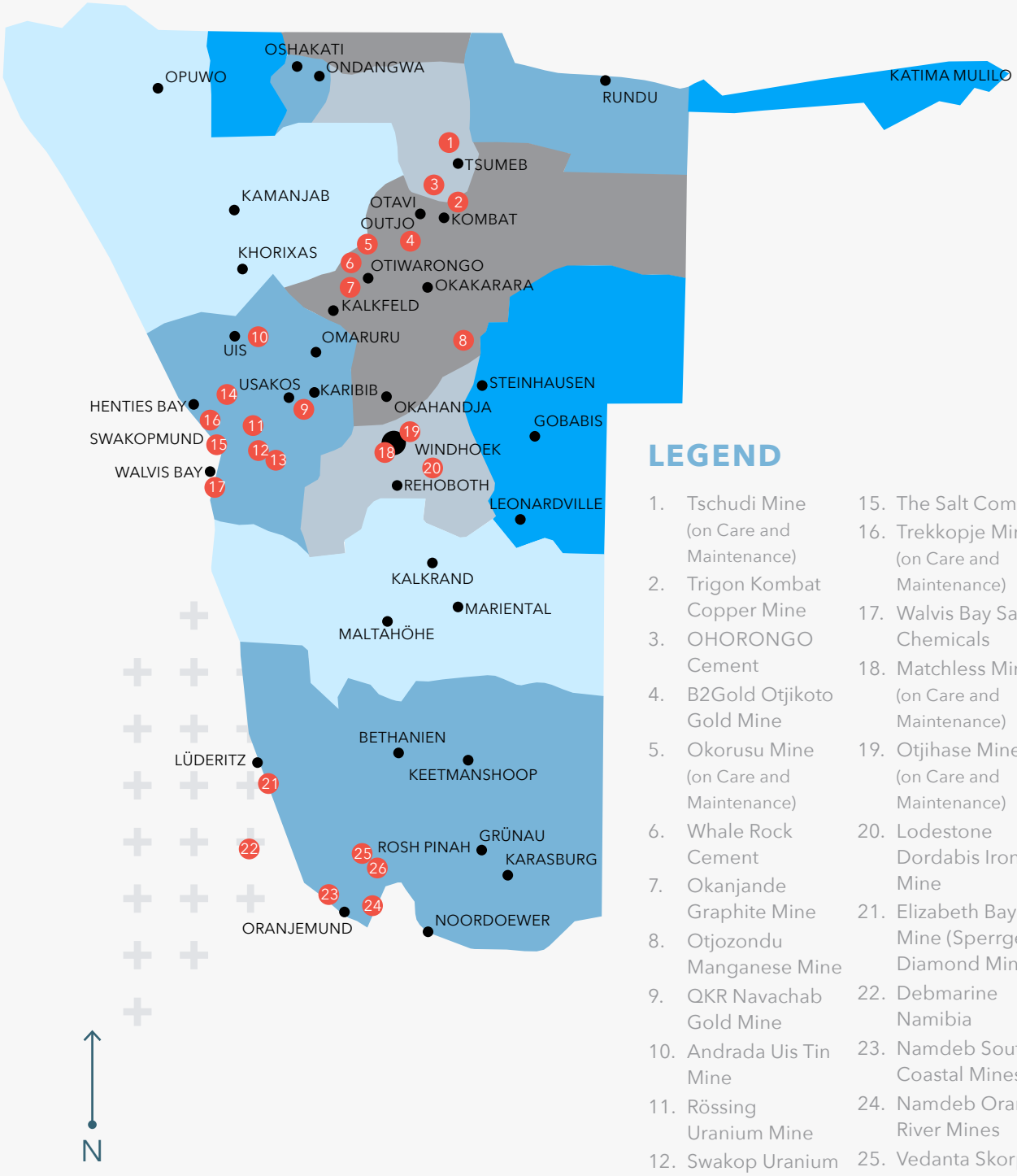
Puma Energy is a trusted and appreciated partner of Government (particularly the Ministry of Mines and Energy and the Ministry of Trade and Industry), collaborating on the challenges in this sector, including increasing demand, constrained supply and pricing.

Puma Energy is a member of the Namibia Oil Industry Association (NOIA) and all energy companies work closely and constructively with Ministry of Mines and Energy when changes are needed or anticipated. Puma Energy Namibia, as an ethical company and is viewed positively by its primary stakeholders.

**POWERING YOU FORWARD**

PUMA Commercial

# Map of Mines in Namibia




## LEGEND

1. Tschudi Mine (on Care and Maintenance)
2. Trigon Kombat Copper Mine
3. OHORONGO Cement
4. B2Gold Otjikoto Gold Mine
5. Okorusu Mine (on Care and Maintenance)
6. Whale Rock Cement
7. Okanjande Graphite Mine
8. Otjozondu Manganese Mine
9. QKR Navachab Gold Mine
10. Andrada Uis Tin Mine
11. Rössing Uranium Mine
12. Swakop Uranium Husab Mine
13. Langer Heinrich Uranium Mine (on Care and Maintenance)
14. Namib Lead and Zinc Mine (on Care and Maintenance)
15. The Salt Company
16. Trekkopje Mine (on Care and Maintenance)
17. Walvis Bay Salt & Chemicals
18. Matchless Mine (on Care and Maintenance)
19. Otjihase Mine (on Care and Maintenance)
20. Lodestone Dordabis Iron Ore Mine
21. Elizabeth Bay Mine (Sperrgebiet Diamond Mining)
22. Debmarine Namibia
23. Namdeb Southern Coastal Mines
24. Namdeb Orange River Mines
25. Vedanta Skorpion Zinc Mine (on Care and Maintenance)
26. Rosh Pinah Zinc Mine

**Source:** *Chamber of Mines*

CNNC
Rössing Uranium
Working for Namibia

# RÖSSING URANIUM ENHANCES ITS OPERATIONS IN MINING AND PROCESSING ORE WITH NEW TECHNOLOGY

Rössing Uranium's core values, Innovation, Safety, Responsibility and Coordination, are embedded in all activities at the mine, aimed at enhancing its operations and the production of Uranium Oxide.

The mine successfully embarked on 42 engineering projects in 2022, to the value of N$183m. These projects have resulted in tangible benefits: A selection of 4 projects was done and these are expanded on below:

## REPLACEMENT OF THE CAT 994 LOADER

Rössing Uranium employs two CAT994 Front-End Loaders (FE15 and FE16) which can load the 180-tonne Komatsu 730E trucks. These machines supplement our loading fleet of four Komatsu PC5500 face shovels with their primary purpose being to re-handle ore from the run-of-mine ("RoM") stockpiles feeding the right blend and sufficient material into the primary crushers.

*One of the CAT994 loaders (FE15.) which has been in operation at the mine for 16 years was replaced with a Komatsu WA1200-6 which will load, and re-handle ore from the stockpiles to feed the primary crusher.*


## HME TYRE PRESSER

Our operators at the Mobile equipment workshop use an EDMO press for stripping and assembling solid tyres for Heavy Mobile Equipment haul trucks. With safety being a key value in our operations, there were concerns that the operators were exposed to hazards during tyre assembling and stripping. This EDMO 250-tonne tyre press was recently replaced with a power press 3557E.

*The new 3557E power press is designed with safety, ease, and efficiency in mind and one major improvement is the incorporation of a remote control in assembling and stripping a tyre.*

This feature allows the operator to control the machine from a safe distance. Additionally, the machine is equipped with warning strobe lights and horns, which alert others in the vicinity when the machine is in operation, and a. 2.5-meter-high safety gate.

## SLOPE STABILITY RADAR

At Rössing slope stability forms part of our critical risk management. A slope stability radar ("SSR") is deployed in the open pit to detect and subsequently manage slope failure hazards. As such it is a key control in ensuring slope stability. SSRs are the only monitoring equipment that can provide near-real-time warning of imminent slope failures and therefore provide an added benefit of minimising delays when production activities are taking place near hazardous areas.

Rössing acquired two radar units: SSR114 in 2010 and SSR226 in 2014. However, the two radars have in 2022 operated beyond their seven-year lifespan. These radars are part of the series 1 generation technology of the supplier as compared to the series 3 the supplier has recently released. This meant the SSRs the company was using had aged and the relevant software has gone beyond the support of these radars. Some of the critical spare parts on the radar units have become obsolete and unavailable in the market, which made it economically challenging.

A replacement project was commissioned in 2022.This was important to ensure undisrupted monitoring of the south slope and ensure that there is redundancy monitoring to the critical areas on the south slope, should one radar become faulty. In addition, the replacement was necessary to ensure adequate management of slope stabilities around the pit.

SSR114 was fully replaced and commissioned in 2022 and this was just before the grace period of software support for this specific radar unit could expire. The SSR226's support was set to expire in August 2023, but was commissioned in June 2023.

*"With the new Series Radar commissioned in July 2022, we were able to detect an isolated rockfall experienced in August 2022."*

## ROASTER 2 REPLACEMENT

The Rössing processing plant makes use of roasters in the final processing of uranium. We have two multiple heart furnaces (MHF) that are used to roast the yellow cake uranium product – commonly referred to as Roaster 1 and Roaster 2. These units have been operational for more than 45 years and, because of wear and tear, had reached their end of life thus needing to be replaced.

The Engineering team conducted a structural integrity assessment on both roasters with the result guiding the short- and long-term asset management strategy on the roasters: The replacement of Roaster 2 was prioritised. The replacement included the installation of a new roaster, which included a roaster structure with refractory, burners, and a control system. Mitigation measures were put in place to ensure that the business is not at risk while the replacement strategy is being executed.

*The new Roaster has improved technology in terms of automation and allows for better control and interlocking for an optimised operation.*

# Contribution of Mining to **Namibia's Economy in 2022**

## INDUSTRY SNAPSHOT

**MINING INDUSTRY GREW BY**

**21.6%**

this was driven by a major increase in diamond output.

**INDUSTRY CONTRIBUTED**

**12.2 %**

to GDP (9.1% in 2021)

**TURNOVER**

**N$ 37.961B**

(N$32 billion in 2021)

**LOSS**

**N$ 391.2M**

(Profit in 2021 - N$928.4 million)

**WAGES AND SALARIES PAID**

**N$ 6.225B**

(N$5.945 billion in 2021)

**LOCAL PROCUREMENT**

**N$ 16.823B**

(N$15.297 billion in 2021)

**CORPORATE TAX PAID**

**N$ 1.90B**

(N$1.553 billion in 2021)

**ROYALTIES PAID**

**N$ 2.154B**

(N$1.611 billion in 2021)

**EXPORT LEVIES PAID**

**N$ 249.4M**

(N$231.7 million in 2021)

**TOTAL TAXES PAID**

**N$ 4.401B**

(N$3.395 billion in 2021)

**DIRECT EMPLOYMENT**

**16,147**

(15,246 in 2021)

***SKILLS EXPENDITURE**

## N$ 196M

by the entire mining industry (includes VET Levy)

***CSR EXPENDITURE**

## N$ 184M

by the entire mining industry (mining operations, development and exploration companies)

***GROSS FIXED CAPITAL FORMATION**

## N$ 5B

(N$5.592 billion in 2021)

***EXPLORATION**

## N$ 964.9M

(N$806.4 million in 2021)

*Totals for operating and exploration companies, all other figures are indicated for mines in operation only

# Highlights from **Operations in 2022**

18 MARCH 2022

Debmarine Namibia's N$7 billion new mining vessel was officially inaugurated. The additional diamond output from this vessel was the major contributor to the overall increase in Namibia's diamond production which grew by 45% in 2022.

19 JULY 2022

Paladin announced plans to restart its Langer Heinrich mine and commercial production is targeted for the first quarter of 2024.

9 AUGUST 2022

B2Gold Namibia invests N$647 million into Otjikoto mine for underground mining project and other capital expenditure. The underground mining project cost is N$315.6 million. The ore body is estimated to contain 210,000 ounces of gold in 1.2 million tonnes of ore over four years with the expectation to raise revenue of about N$5.9 billion.

6 SEPTEMBER 2022

Osino Resources released its pre-feasibility study demonstrating strong project economics to develop the Twin Hills project into Namibia's next potential gold mine.

6 DECEMBER 2022

Bannerman completes Definitive Feasibility study for its Etango-8 project. The company is progressing ahead with Front-End Engineering & Design, and working toward securing project financing and off-take agreements.

**Source:** *Chamber of Mines*

# The Chamber of Mines in Namibia: Leading the Way Towards Responsible Mining and Continued Industry Growth

The Chamber of Mines of Namibia, with its compelling vision and mission, plays a pivotal role in the country's mining industry. As a member-based advocacy organization, the Chamber is steadfast in its commitment to promote responsible exploration and mining practices for the betterment of Namibia and all its stakeholders.

At the heart of the Chamber's aspirations lies a clear and compelling vision for the Namibian mining industry. It strives to be widely respected as a safe, environmentally responsible, and globally competitive sector, one that meaningfully contributes to the long-term prosperity of Namibia. This vision serves as a guiding beacon, directing the Chamber's efforts towards sustainable growth and development.

The Chamber's mission echoes its dedication to the prosperity of Namibia. It seeks to effectively promote, encourage, protect, and foster responsible exploration and mining activities in the country. By aligning its objectives with the welfare of all stakeholders, the Chamber aims to create an environment where mining thrives, benefiting both the nation and its people.

The Chamber of Mines is guided by its core values, which are Integrity, Transparency, Accountability, and Compliance. Upholding these values forms the bedrock of its operations, ensuring ethical practices and responsible conduct throughout the mining sector. To this end, the Chamber and its members adhere to a robust Constitution, Code of Conduct & Ethics. This rule book governs the organization and its members, and empowers the Chamber to expel members who deviate from its guiding principles.

A paramount concern for the Chamber of Mines is the well-being of its members and the workforce in the mining industry. The Chamber takes health and safety matters seriously, leaving no stone unturned in its commitment to promoting a zero-harm culture. Its Safety Committee, comprising industry experts, works diligently to develop and implement safety measures that safeguard the lives of mining workers.

As a steward of mining, exploration, and associated activities, the Chamber of Mines plays a central role in advocating for policies that impact the sector. Its active leadership helps shape a conducive regulatory environment that attracts investment and propels the growth of the Namibian mining industry. Through its various committees, the Chamber also advocates for and promotes the adoption of sustainable and responsible mining practices by its members.

The Chamber of Mines of Namibia stands as a formidable advocate for the mining industry, ensuring that it aligns with the nation's long-term growth and development objectives. With a vision to be a globally competitive and environmentally responsible sector, the Chamber's mission aims to contribute significantly to Namibia's prosperity while upholding values of integrity, transparency, accountability, and compliance. Through its unwavering commitment to health and safety and active stewardship, the Chamber of Mines continues to be a catalyst for responsible exploration and mining practices in Namibia.

RMA
Renaissance Health
Medical Aid Fund

# SUPPORTING YOUR HEALTHCARE JOURNEY IN MINING

## OUR PARTNERS IN HEALTH

Almod Diamonds Limited
BREVS Mining Contractors
Dundee Precious Metals
Epiroc
Jindal Africa
Namib Lead & Zinc Mining
NAMDIA Namib Desert Diamonds (Pty) Ltd
NAMDEB A Namibia De Beers Partnership
OSINO Resources
Ohorongo cement
Rosh Pinah Zinc Corporation
CNNC Rössing Uranium Working for Namibia
Skorpion Zinc
THG Trans Hex Group
vedanta transforming for good
Tulela

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Namibia's Mining Sector:

# Unveiling Growing Opportunities and its Crucial Role in the Economy

Namibia's mining sector has shone as the driving force behind the nation's economic growth and prosperity. In recent years, the industry has seen remarkable expansion, contributing significantly to the country's Gross Domestic Product (GDP), generating substantial export earnings, and providing employment opportunities for thousands of Namibians. Additionally, the mining sector has positioned itself as a crucial player in the global market, attracting increasing interest from investors and strengthening its role in the development of green hydrogen.

In 2022, the mining sector demonstrated its significance by contributing 12.2% to the country's GDP and experienced a remarkable growth of 21.6%. To further demonstrate its economic significance, the mining industry generated over N$37 billion in export earnings, providing a significant boost to Namibia's foreign exchange reserves. Mining contributed to the welfare of the Namibian people by employing 16,147 individuals, creating essential job opportunities and supporting livelihoods. These employment opportunities have a multiplier effect, positively impacting local communities and fostering socio-economic growth.

The mining sector's contribution to the Namibian government was equally noteworthy. It paid N$1.90 billion in corporate taxes, N$2.154 billion in royalties, and N$249.4 million in export levies in 2022. These financial contributions played a vital role in funding essential government initiatives and public services, supporting the nation's social and economic development.

One of the driving forces behind the mining sector's growth is the diamond industry, led by Debmarine Namibia and Namdeb. With increasing investments being made into on-shore and off-shore operations, Namibia's diamond sector continues to flourish, becoming a symbol of the nation's increasing relevance in the global diamond market.

Namibia's mining sector continues to present exciting opportunities for exploration. In 2022, exploration grew by an impressive 12% in real terms, indicating a surge of interest in uncovering the nation's untapped mineral potential. Particularly noteworthy are significant gold discoveries made by Osino Resources and the exploration activities of Andrada Mining and Lepidico, focusing on tin and lithium. Additionally, the recently formed Namibia Rare Earths Alliance is exploring ways to feasibly extract and process rare earths in Namibia.

Developed countries are also becoming more interested in Namibia as a reliable source of critical minerals to support their ambitions in adopting more sustainable and cleaner sources of energy. The country's mineral potential to supply these essential resources have made it an attractive destination for investors and buyers seeking to diversify their supply chains and secure stable sources of critical minerals.

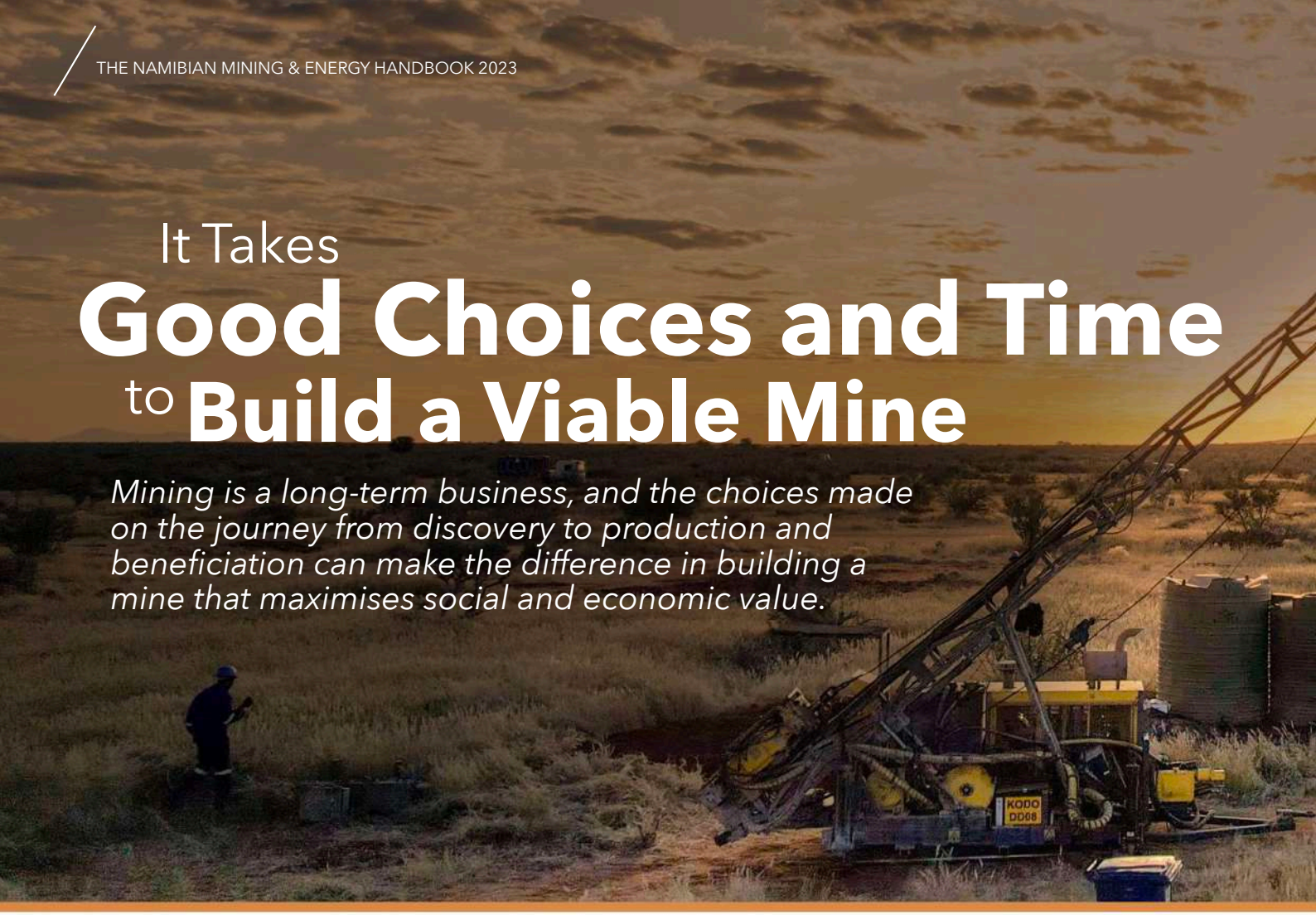
Namibia's uranium sector holds significant promise as a key player in the global uranium market. Currently, Namibia is the world's second-largest uranium producer with its two operational mines; namely Rossing and Husab. Paladin's Langer Heinrich Uranium mine is set to re-enter production in 2024, further contributing to the country's uranium production capacity.

This positive outlook for Namibia's uranium sector and its growing importance in the global market is further amplified by the advanced-stage uranium projects led by Bannerman Energy and Reptile Uranium. It is anticipated that these projects will be developed once the incentive price for uranium is consistently breached.

In a move to reduce carbon footprints, a number of Namibian mining companies are making significant investments into renewable energy sources such as wind and solar to complement their existing baseload power supply.

The development of a green hydrogen sector present numerous linkages with Namibia's mining sector that are mutually beneficial. For example, green hydrogen can be used as a clean fuel in the production of green steel. Green hydrogen holds the potential to power haul trucks and help the industry to reduce its carbon footprint. Another example lies in the production of green hydrogen which will be converted into liquid ammonia for ease of transportation. The production of ammonium nitrate from green hydrogen presents an opportunity to support mining operations by providing a crucial ingredient for explosives and serving as a valuable fertilizer for the agriculture sector.

With a myriad of increasing avenues for growth, Namibia's mining remains an indispensable contributor to the nation's economic growth and development. Its substantial contributions to GDP, employment, export earnings, and government revenues underscore its pivotal role in the nation's prosperity. With strong growth and increasing investments in the diamond sector, promising opportunities in exploration, and a bright future for uranium production, Namibia's mining sector is indeed on a trajectory of prosperity and continued success. As the nation continues to harness the potential of its abundant mineral resources and identify productive linkages with the energy sector, it is poised to remain a vital player in the global mining and energy landscapes for years to come.




# It Takes Good Choices and Time to Build a Viable Mine

*Mining is a long-term business, and the choices made on the journey from discovery to production and beneficiation can make the difference in building a mine that maximises social and economic value.*

by Heye Daun

Since ancient times, the allure of gold has captivated explorers and sparked adventure, and as a mining engineer working today, I can attest that the thrill of discovery endures.

But what nobody tells you is that the journey between discovery and profitable production and beneficiation is a long and complex one that requires years of patience, collaboration and good decisions – especially if you want to build a gold mine that also benefits people and planet. This is why, since we discovered gold in the Erongo Region of Namibia – four years ago this August – we've taken care to ensure that the choices we've made around the Twin Hills Gold Project, from mine design and project development to financing, have considered multiple stakeholders to ensure we are building value for all.

The Twin Hills Gold Project is located within Namibia's prospective Damara sedimentary mineral belt, close to the producing open-pit Navachab and Otjikoto gold mines. It's planned to be a technically simple and economically robust open-pit gold operation with a 2.15 million ounces gold reserve, 13-year mine life, and average gold production of over 169,000 ounces per annum. There are also plans to develop a whole-ore carbon-in-leach (CIL) metallurgical processing plant on the site that will help to ensure that more of the value realised by the mine will stay in Namibia.

The Namibian Ministry of Environment, Forestry and Tourism granted the Twin Hills Gold Project an Environmental Clearance Certificate in November 2022 and Osino has received confirmation from Namibia's Ministry of Mines and Energy for the 'Preparedness to Grant' of a 20-year mining licence for the Project, subject to the fulfilment of some remaining conditions.

Following the publication of the Definitive Feasibility Study (DFS), the Twin Hills Gold Project is progressing rapidly to construction. The most recent important decision we've made has been to appoint Lycopodium Minerals (Canada) Limited as the lead consultant in the Front-End Engineering Design (FEED) package for the process plant and on-site infrastructure. We believe it is another good choice. Lycopodium are recognised for their gold processing plant design expertise and their world-class track record of on-time and on-budget project delivery in Africa and globally.

A team of highly skilled contractors and other consultants, including architects and engineers, will now continue work to define and specify the scope, objectives, technical requirements and costs of the Twin Hills Mine. Among other things this will include completing the earthworks design and advancing the technical and commercial documentation needed to buy long-lead mechanical items. Additional resource drilling will also be undertaken to improve the definition of the mining reserve and ensure that the planned


process plant site is not situated above any potentially economically recoverable mineralised material.

Critically, as part of this process, Lycopodium and Osino will be looking to instil good environmental stewardship and social impact into the Project. This will include enhancing the mining schedule to reduce or defer waste stripping where possible and exploring the use of local building materials and resources for infrastructure design and construction, as well as looking into the potential to supply some of the Mine's electrical power from renewable energy sources.

Right from the start, Osino has striven to be a sustainable operation and an engaged corporate citizen in the towns of Karibib and Omaruru. Our impact has already been felt through the procurement of goods and services and the payment of wages as well as in our various social development activities through the Twin Hills Trust. We expect to see these impacts expand as the Mine develops.

In this next phase of development, the team at Osino will also be working on a variety of pre-construction activities including the recruitment of an Owners' Project Team to oversee and coordinate the Project and the development of a formal Operational Readiness Plan. Additionally, Osino has progressed detailed technical, environmental and social due diligence with a credible mining project financier through their internal approvals process and is aiming to complete legal documentation and achieve financial close in the second half of 2023.

With financing secured, permitting completed, and a formal investment decision made by Osino's Board of Directors, the Project will be cleared to move into its construction phase. The DFS estimates that the Mine will go into production towards the end of 2025 or early 2026.

As each piece of the Project falls into place, the Twin Hills Mine is steadily transforming into a tangible reality that can bring jobs and prosperity to this special part of Namibia. This is a process that is as thrilling as the first discovery itself.

*Heye Daun is the founder and CEO of Osino, a Canadian gold exploration and development company and owner of the Twin Hills Gold Project in central Namibia.*

TSXV: OSI
FSE: R2R1
OTC: OSIIF

OSINO
RESOURCES

# BUILDING VALUE FOR ALL

Osino is a Canadian gold exploration and development company with a strong sustainability ethos. The company is making great strides in advancing the exciting Twin Hills Gold Project near Karibib. Its responsible mining efforts are focused on embedding sustainability in the Twin Hills Project, with an emphasis on employee health, safety and well-being, community relations and development, and environmental stewardship.

**www.osinoresources.com**

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The Trust manages the Project's socio-economic development activities and is also supported by key service providers, suppliers and investors that benefit from the Twin Hills Gold Project.

TWIN HILLS
TRUST | NAMIBIA

OSINO
RESOURCES

# Twin Hills Gold Project

## Sharing economic and social benefits

Osino recently announced the publication of the Definitive Feasibility Study (DFS) for its Twin Hills Gold Project near Karibib. This is a significant step for the Company towards commencing construction of this exciting new open-pit gold project, which is expected to bring new jobs and prosperity to the Erongo Region and Namibia.

> *"With the DFS publication, we have taken a significant step towards further de-risking this project, which paves the way to secure the financing required to start mine construction."*
>
> *- says Heye Daun, founder and CEO.*

The DFS describes the technical and economic aspects of the Project in detail and will be used as the basis upon which it will be financed and built. It is a summary of the extensive specialist technical work that has been completed on the various aspects of the project. The study is available at www.osinoresources.com

Responsible mining and beneficiation of mineral resources continue to be vital contributors to Namibia's economic development. Making sure this is done in an economically and socially sustainable way can be a complex and lengthy challenge requiring significant amounts of experience, skill and, especially, capital.

The total cost of building the Twin Hills Gold Project is estimated at about N$6.5 billion (US$365 million) and represents a significant capital investment in the Namibian economy.

Continues...

Alongside the numerous technical studies over many years that are required to approve a project of this scale, Osino has made excellent progress assessing its environmental and social impacts and how to mitigate these, whilst maximising the socio-economic benefits of the Project to the region and the country.

> *"Osino is a responsible mining company driven by a clear mission: to discover and develop Namibian gold projects that create sustainable value for all stakeholders. We are designing the Twin Hills Gold Project, from the outset, to create win-win benefits for the Company, its shareholders and for Namibia."*
>
> *- says Heye Daun, founder and CEO.*

Since the discovery of the Project in 2019, Osino has been an engaged corporate citizen in the towns of Karibib and Omaruru. Positive impact is felt especially through the procurement of goods and services, payment of salaries and wages and its various social development activities.

Once the Twin Hills Project moves into construction there is an opportunity to expand these benefits, particularly relating to:

***Creating jobs and boosting economic growth***
The range of positive social impacts of this project include direct employment opportunities, local procurement, community development projects and the multiplier effect on the local economy through spending by employees and contractors.

In 2022, Osino spent N$124 million (US$7.0 million), 79% of the Company's total procurement spend, with Namibian suppliers. Of this, N$32 million (US$1.8 million) was spent with suppliers within 75km of Twin Hills, creating a significant transfer of value to the Namibian economy and our host communities.

***Supporting community development***
In 2021, Osino set up the Twin Hills Trust, a non-profit organisation, to manage the socio-economic development activities for the Twin Hills Gold Project. The Trust is also supported by key associated service providers, suppliers and investors. To date, it has disbursed approximately N$3.4 million.

Supported projects include over 20 early-childhood development (ECD) centres benefitting more than 600 children in the Karibib and Omaruru informal settlements, contributing to the installation of sanitation infrastructure in Karibib to benefit approximately 700 households and subsidising the development of serviced plots in Karibib. Read more at www.twinhillstrust.org

***Caring for the environment***
Exploration and mining activities have an unavoidable impact on land and habitat. Osino is committed to complying with all regulations and meeting high standards of environmental stewardship. Key initiatives for the mine, which are all described in detail in the DFS report, include:

- A solar array that at peak can supply 37% of the mine's power requirements
- A dry-stack tailings facility that will reduce tailings water losses by about 60%, compared to a conventional tailings slurry disposal facility
- Supplying all water requirements sustainably from groundwater supplies on Osino property
- A land management plan focused on rehabilitating biodiversity
- Using advanced building designs and on-site materials to reduce the environmental footprint

## *From Discovery to Definitive Feasibility Study in Four Years*

Osino, an emerging leader in the Namibian mining sector, has been fast-tracking development of the Twin Hills Gold Project, where it has concluded over 225,000 metres of drilling and for which it recently published a DFS.

Twin Hills is a grassroots gold discovery made by Osino in August 2019. The Project will become a technically simple and economically robust open-pit gold operation with a 2.15 million ounces gold reserve, 13-year mine life and average annual gold production of over 169 thousand ounces.

Powering Progress:

Namibia's Renewable

# Energy and Mining

## Symbiosis Fuels a Sustainable Future

***Olavi Hangula***
Manager: Mining and Energy Relationship

Namibia, a land of stunning landscapes and abundant natural resources, is poised for a transformative journey towards sustainable development through renewable energy. As the global call for eco-friendly solutions intensifies, Namibia has the unique advantage of embracing its vast sunshine and wind resources to power a brighter future for its people and the planet.

In recent years, Namibia's commitment to renewable energy has gained momentum, with solar and wind projects dotting its picturesque horizons. These endeavors not only signify a shift towards cleaner energy sources but also hold the promise of fostering economic growth, job creation, and reducing the nation's carbon footprint.

Namibia's mining sector, a cornerstone of its economy, shares an intertwined destiny with renewable energy. The symbiotic relationship between these two sectors is evident in their interdependent dynamics. Mining operations require substantial energy resources, often met by conventional fossil fuels. By integrating renewable energy sources, such as solar and wind power, mining activities can significantly reduce their environmental impact and operational costs.

Moreover, the connection between renewable energy and mining extends to the minerals critical for manufacturing renewable energy infrastructure. Namibia, rich in mineral resources, plays a crucial role in this global shift. Minerals like lithium, cobalt, and rare earth elements, essential for batteries and solar panels, are mined right here in Namibia. This strategic advantage places Namibia at the heart of the sustainable energy revolution, contributing to the global supply chain of critical minerals.

However, the extraction of critical minerals presents complex challenges related to environmental impact and responsible sourcing. Herein lies an opportunity for Namibia to showcase its commitment to sustainable practices. By adopting environmentally conscious mining techniques and stringent ethical standards, Namibia can ensure that its mineral wealth contributes to both economic prosperity and ecological integrity.

Beyond Namibia's borders, this constructive interaction between mining and renewable energy is a global phenomenon. Progressive mining companies worldwide are embracing renewable energy to drive operational efficiency and reduce emissions. Solar arrays atop mine structures and wind turbines adjacent to extraction sites exemplify this harmonious integration.

The advantages are manifold. Renewable energy reduces the mining sector's carbon footprint, aligning with international sustainability goals. Additionally, the diversification of energy sources enhances operational stability, reducing vulnerability to energy supply disruptions. This, in turn, nurtures a positive investment climate and strengthens the industry's social licence to operate.

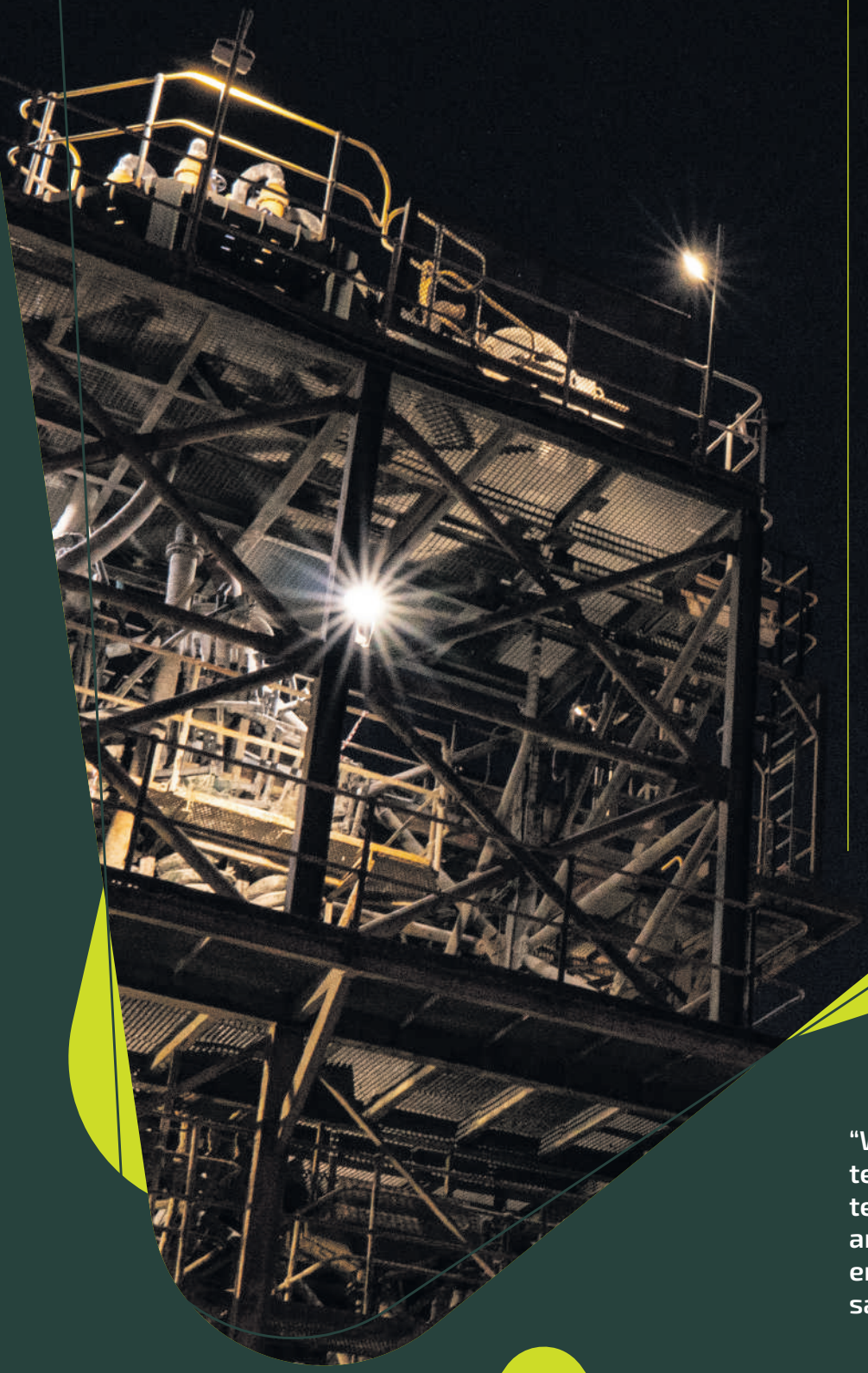
However, the path to a renewable future for mining is not without challenges. Initial capital investments, technological adaptation, and logistical considerations pose hurdles that must be overcome. Collaborative efforts between mining companies, renewable energy providers, and governments can pave the way for a seamless transition.

Namibia's embrace of renewable energy goes beyond economic benefits. It underscores a commitment to safeguarding the environment, improving energy security, and driving social progress. By nurturing a homegrown renewable energy ecosystem and responsibly harnessing critical minerals, Namibia can evidence its determination to carve a distinct path towards sustainable development while inspiring other nations to follow suit.

In conclusion, Namibia stands at the crossroads of an exciting transformation powered by sunshine, wind, and responsible mining practices. The nation's pursuit of renewable energy, coupled with its mining sector's commitment to sustainable practices, offers a beacon of hope. As the sun rises and the wind continues to whisper through Namibia's landscape, it carries with it the promise of a brighter, cleaner, and more prosperous future for all.

*As the Mining and Energy Relationship Manager at RMB Namibia, Olavi is responsible for building and maintaining relationships with key stakeholders in the mining and energy sector. Leveraging expertise in Corporate and Investment banking to help clients identify and pursue opportunities and navigate complex financial transactions.*

# Andrada Mining Limited, an emerging African technology metal champion.



Andrada Mining Limited is a London-listed technology metals mining company with a vision to create a portfolio of globally significant, conflict-free, production and exploration assets. The Company's flagship asset is the Uis Mine in Namibia, formerly the world's largest open cast hard rock tin mine.

Andrada has three mining licences namely, Uis, Lithium Ridge and Spodumene Hill. The main minerals in these mining licences are tin, lithium and tantalum. The mining and exploration licences cover the Damara Belt – Namibia's most prolific metallogenic zone.

Andrada's vision of becoming a multi-technology metals producer is enhanced by the underexplored potential of its mining licences and the future looks promising in terms of bringing these deposits into production and leveraging the knowledge gained from successfully building the Uis Mine. It is quite clear that Andrada has all the factors of becoming a mid-tier mining company capable of identifying and developing assets of significance to the global mining market.

"We want to be trailblazers in terms of identifying and developing technology metals across Africa, and we want to play our part in the energy transition,"
says Andrada CEO, Anthony Viljoen.

Andrada Mining

+27 (0) 11 268 6555 | connect@andradamining.com | andradamining.com

Andrada Mining Limited has a vision to create a portfolio of globally significant, conflict-free, production and exploration assets. The Company's flagship asset is the Uis Mine in Namibia, formerly the world's largest hard-rock open cast tin mine. Andrada is managed by a board of directors with extensive industry knowledge and a management team with deep commercial and technical skills. Furthermore, the Company is committed to the sustainable development of its operations and the growth of its business. This is demonstrated by how the leadership team places significant emphasis on creating value for the wider community, investors, and other key stakeholders. Andrada has established an environmental, social and governance system which has been implemented at all levels of the Company and aligns with international standards.

### *Mine location*

The Uis Mine (21°13'00"S 14°52'52"E) is located within the metallogenic jewel that is the Erongo region and importantly, is 230km from the recently upgraded deep-water port at Walvis Bay. Uis is connected to the main industrial centres by road. Gravel roads are regularly maintained and are suitable for heavy transport and are in the process of being upgraded to an asphalt/tarred road.

### *Life of Mine*

14-year life of mine.

### *Geology and Mineralization*

Andrada has three mining licences namely, ML134 on which the Uis Mine is located, ML133 (Nai Nais / Lithium Ridge), and ML129 (B1C1 / Spodumene Hill). The main minerals in these mining licences are tin, lithium and tantalum. Additionally, the Company has an exploration licence EL5445 (Brandberg West) on which the main minerals are tin, copper and tungsten. A maiden MRE of 71.54 Mt of ore over the V1/V2 pegmatite within the Uis mining licence was declared in 2019 at an average tin grade of 0.134%. An increased mineral resource classification was declared in 2023 comprising 81 Mt of ore with an average grade of 0.15% tin. Uis' lithium resource is poised to make Andrada a globally significant high-margin producer of technology metals with a resource size of 1.45 million tonnes of lithium carbonate equivalent at 0.73% (JORC 2012) The MRE declared on tantalum amounted to 86 Mt of ore (6 960 tonnes of contained Ta).

### *Ore Reserves*

The Company has 15.6Mt million tonnes proven and probable ore reserves and has set to expand its current JORC (2012) mineral resource inventory from 138Mt to a target of 200 Mt long-term. The substantial mineral resource potential allows the Company to consider economies of scale.

### *Mining Method*

Mining methodology is the conventional open pit method employing truck and excavator combinations. At peak operations, mining will take place over multiple pegmatite ore bodies from four to five pits concurrently. The estimated mine life for the existing ~1Mtpa Uis Mine Processing Facility, using the current ore reserves is ~14 years, however the large resource exceeding 130Mt supports the expansion of the processing facility. The mining plan for a long term expanded operation at Uis features a production rate of 10 Mtpa ROM ore at an average overburden stripping ratio of 2.6.

***Processing Capacity:*** The plant is currently operating at between 135 – 140 tonnes per hour (exceeding the design capacity of 120tph) following the modular expansion during the second half of CY 2022. Plant availability and utilisation are at approximately 90% and 80% respectively.

### *Contractors involved:*

- Nexus: mining contractor.
- Metal Mill: maintenance contractor.
- BME : blasting contractor
- BMG: stores contractors
- Gorocon Security

### *Support infrastructure*

***Water:*** is sourced from surface runoff water that has been collected in the historical K5 pit, and from underground water via a borehole network, both sources which are non-potable (not fit for human, animal or agricultural consumption). For expanded operations, the Company is evaluating a desalinated water option sourced from the Erongo desalination plant located between Swakopmund and Henties Bay), where offtake is available for supply to Uis. This would require the construction of a new pump system and pipeline to Uis. The Directors consider the Erongo desalination plant to have sufficient capacity to supply water to the project in the future. The feasibility study for Phase 2 will investigate alternative water supply solutions, including a standalone desalination facility at the coast 110 km away.

***Electricity:*** Current power supply to the Uis operation is via an existing NamPower grid connection. The estimated future demand for Uis is 40 MVA, and for this the company is assessing the suitability of various options including but not limited to the national NamPower grid connection. The Phase 2 feasibility study will explore alternative power infrastructure solutions, including a standalone renewable energy option, and alternative funding and offtake models.

***Roads:*** The main access road to between Uis and Walvis Bay Port is being upgraded to asphalt/tar.

# Mining in Namibia: Contributions, Realities, and Policy Dynamics

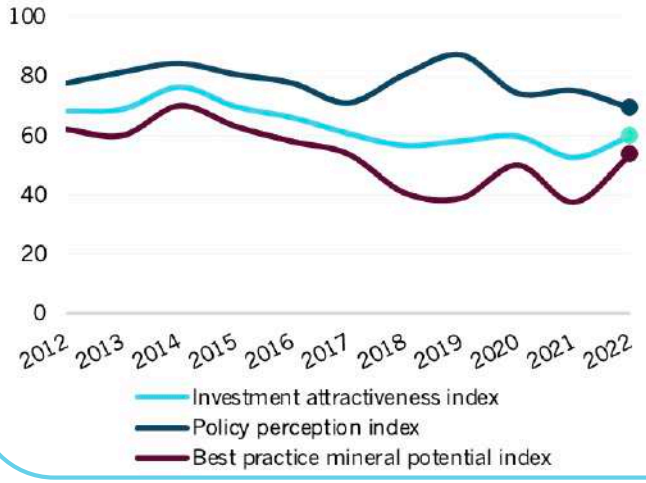
***Robert Mc Gregor***
Head of Research, Cirrus Capital

Namibia's mining sector has long been the backbone of the Namibian economy. Since independence, its contribution to real GDP has averaged 10.6% - making it one of the largest economic sectors. Not only has the sector been a cornerstone of economic growth, but it has also contributed to the fiscus through profit taxes, royalties and (export) levies, along with driving large sums of inward investment (i.e. foreign direct investment). While mining is more capital than labour intensive, it is not an insignificant employer in Namibia, while average wages in the mining sector are amongst the best in the country (although the official data is fairly outdated). All in all, the sector is vital for the Namibian economy.

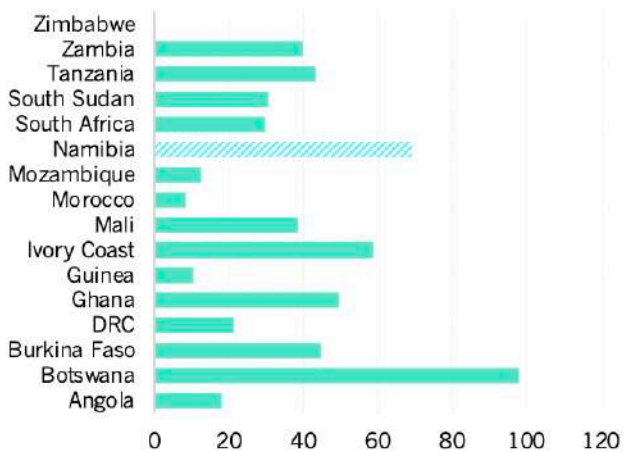
Despite the long history and large contribution of mining, Namibia's mineral wealth is not quite as extensive as many believe. Many of our mineral deposits are relatively low grade, whether by global or regional standards. What has made it attractive to mine in Namibia is that the unit costs tend to make projects viable, whether it be due to size of the deposit(s), low complexity of attraction, favourable fiscal regime, or comparatively straightforward policy environment.

Policy certainty is key to any functioning, growing economy. Namibia has typically done well on this compared to regional peers but has suffered over the past decade – an issue of our own making. This has been reflected in a dropping Policy Perception Index score in the annual Fraser Institute's Survey of Mining Companies. Namibia's performance here has been impacted by issues such as the uncertainty around two disconcerting pieces of legislation (namely NIPA and NEEEB), along with the (since repealed) additional conditions for exploration licences, which mandated free-carry local ownership in exploration projects.

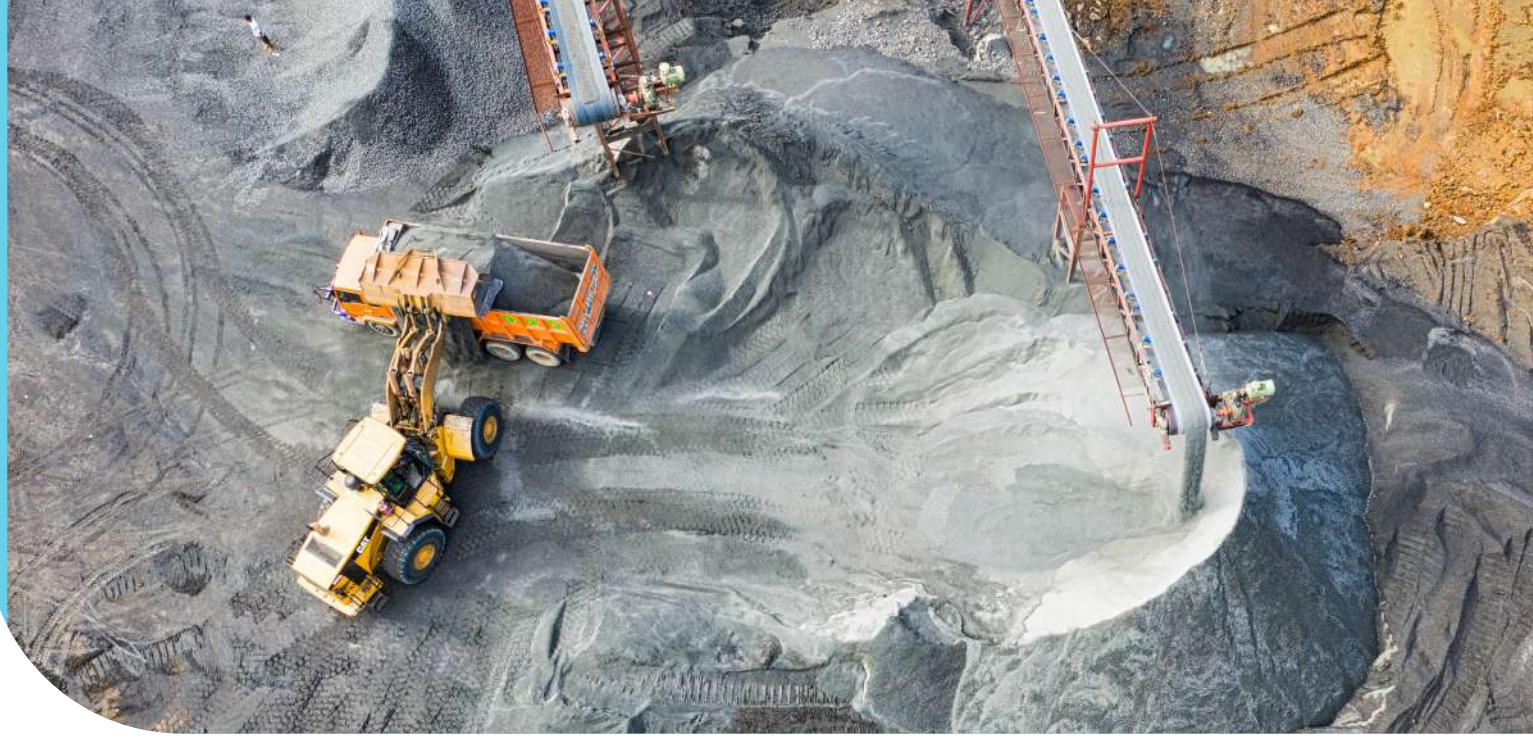
**Fraser Survey of Mining Companies Scores**
After a few years of decline, Namibia's scores are improving.




**Investment Attractiveness Index Ranks (Africa – 2022)**
Namibia ranks as the second most attractive jurisdiction.




**Source:** *Fraser Institute*



Of late, the policy situation has not necessarily improved. Uncertainty around NIPA and NEEEB remain, while the Government has increasingly taken on an air of economic nationalism. More recent examples of this include the unilateral ban on the export of unprocessed lithium and talk of additional state free-carry on mining licences. History is replete with examples of how economic nationalism, quite simply, disadvantages countries.

While it is not to say that Namibia's regulatory and fiscal regime for the mining industry is perfect or cannot be optimized, the manner in which this is approached should be done cautiously, particularly given the principles involved.

While policy uncertainty is negative, certainty of bad policy is deadly. Too many times it appears that policy is being made by decree: an announcement is made by a Minister indicating a change has been made or will be made, leaving us to wonder if there had been any engagement outside of Government on such decisions. This has seen bad policy announced, receiving pushback from the private sector, and then withdrawal of the policy. However, this damages perception and credibility, damage which cannot be undone so easily: once bitten, twice shy.

Furthermore, changing the rules of the game during play is a dangerous precedent. Some may favour it as an effort to 'encourage' domestic value addition or ensure sufficient benefit is derived from our natural resources. These are noble and correct goals. The issue lies not with the ends, but the means. Changing the rules after licences are granted show others that this, too, may happen to them. In the end, it discourages investment, as one's investment is no longer deemed safe – the rules could change for you, too.

Can we and should we look to optimize the fiscal and regulatory regime for our mineral wealth? Absolutely. The State, as custodian of Namibia's mineral wealth on behalf of her people, should ensure a fair deal. And optimization is required – frankly, far too few mines appear to be profitable and contribute substantially to profit tax. However, not all should be painted with the same brush, and this should be approached cautiously, with sufficient understanding and research. We cannot judge policy by its (stated) objectives, but rather by its consequences – whether intended or unintended.

Namibia sits with a wealth of potential, and not just in her mineral resources. The secret to unlocking this potential is a prudent balance between public and private interests, whether in natural resources or elsewhere. There has been an unfortunate thread of economic nationalism woven through government policy, strategy and rhetoric over the past years. This is not the way forward to high, sustained and inclusive economic growth.

## **Biography:** Robert Mc Gregor

Robert Mc Gregor attended Rhodes University in Grahamstown, South Africa, where he completed a B.Com (Honours) in Economics. He began his career at the Economic Association of Namibia, where he was involved in socio-economic research and policy analysis. In July 2017 he joined financial services company Cirrus Capital, where he is employed as an economist and was appointed Head of Research in June 2021.

Risk – Based Solutions (RBS) CC

Risk-Based Solutions (RBS) CC is a technical permitting and de-risking advisory Namibian owned company focused on natural resources technical specialist support services covering minerals exploration and mining, petroleum exploration and production, energy, water and environmental assessments and management. Since 2004, the company has supported small, medium and large-scale investments in minerals, energy and petroleum exploration and utilisations in Namibia, and for the great benefits of the current and future generations. From supporting and originating 100% theoretical models, to formal minerals and petroleum applications, RBS has been at the forefront of providing technical projects permitting and de-risking supports services to local, regional and international operators, contractors and third-party services providers within the framework of our Artificial Intelligence (AI) powered Knowledge-Based System Model Methodology (KBSMM) logic. The KBSMM is a de-risking Knowledge Based (KB) logic framework centred on the optimum coexistence of the environment, minerals and energy sectors. To date, more 300 projects in various sectors have been successfully and proudly supported by RBS through the AI powered KBSMM de-risking KB system logic, developed by Dr Sindila Mwiya in 2003. As the leader in KB de-risking approaches, the company has been breaking new grounds in environment, minerals, oil and gas and energy coexistence sectoral focused spaces and has successfully and proudly supported the following large-scale national key ground-breaking resources related projects in Namibia:

1. *The first (1st) offshore oil and gas well drilling operations after independences (the Kunene -1 Well) which was drilling in 2007-2008 and RBS continued to support the last twelve (12) offshore oil and gas wells that have been drilled offshore Namibia by various major global operators such as Chariot, Repsol, Petrobras, HRT Africa, Tullow, and Shell.*
2. *The first (1st) and successive wells that have discovered oil and gas in the Orange Basin offshore Namibia.*
3. *The first (1st) offshore Multiclient and Proprietary (Exclusive) 2D and 3D seismic surveys operations in the Namibe, Walvis, Lüderitz and Orange Basins in the post-independent Namibia and to date RBS continue to support all the major global marine seismic operators such as PGS, TGS, CGG, Searcher, EMGS, and Eastern Echo.*
4. *The first (1st) onshore 2D proprietary seismic survey operations in the Etosha, Nama and Kavango Basins in Namibia and RBS continue to support global operators globally such as MEL and ReconAfrica.*
5. *The first (1st) post-independence onshore oil and gas wells drilling operations covering the Kawe, Mbambi and Makandina wells drilled in the Kavango Basin and RBS continue to support ongoing de-risking operations of the onshore basins of Namibia covering the Kavango, Etosha and Nama Basins being undertaken by multiple global operators.*
6. *The first (1st) four (4) national grid connected 5MW Solar PV Parks in Namibia and RBS continue to support large-scale Solar PV projects in different parts of Namibia.*
7. *The first (1st) national grid connected Wind Farm in Namibia, the 9MW Lüderitz Windfarm Facility, and RBS continue to support the proposed large-scale Windfarms projects in different parts of Namibia.*
8. *Supported multiple first (1st) projects covering Exclusive Prospecting Licenses, Mining Licenses (MLs), Petroleum Exploration Licenses (PEL), minerals and petroleum exploration, mining, Green Hydrogen, and other large-scale industrial development projects countrywide.*
9. *RBS will be there when one day the first offshore and onshore oil and gas production will ignite the national shared economic emancipation and greatly and positively transform the economic landscape of Namibia for the benefits of all its current and future generations.*

The great successes of Risk-Based Solutions (RBS) CC projects de-risking processes has been driven by AI powered KBSMM logic framework centred on the optimum coexistence of the environment, minerals, oil and gas and energy sectors. The key boundary conditions of the KBSMM logic are built on the interlinked knowledge bases with direct input variables user interface (UI) for the climatic, environmental and ground components. The KBSMM logic inputs variables comprise characterised climatic, environmental, and ground model Knowledge-Based Source-Pathway-Receptor risk assessment UI determinants or validators of the influences (Environmental Impact Assessments), and ultimate likely harm that may be linked to the various phased activities of a lifecycle environment, minerals, oil and gas and energy or industrial development project implementation process. It is important to note that in the absence of any of the interlinked three (3) KB components (Sources, Pathways, or Targets/ Receptor) there is no harm or risk to the receiving physical, biological and socioeconomic environments to mitigate, monitor or manage. The risk source/s refers to KB identified potential hazards that may be present and can cause harm to the exposed target/s / receptors. The risk pathway refers to the KB route direct or indirect though which the risk source/s may be transferred and exposed to a target/s of concern. The risk target/s or receptor/s refers to the KB destination (area point of exposure) at which the source/s may cause harm such as the receiving environment. National legislations and regulations provide Optimum Sectoral Coexistence (OSC) key boundary conditions linked to the UI within the KBSMM KB network logic of the environment, minerals, oil and gas and energy sectors, centred on the following three (3), key continuous or constant learning knowledge-bases pillars:

1. *Strategic levels knowledge bases based on Organs of State resources and using prioritised and State interest-based Policies, Plans and Programmes (PPPs) and using instruments such as Environment, Social Governances (ESG), and Strategic Environmental Assessment (SEA) NOT Moratoriums which completely denies the State from benefiting from its natural resources as the result of a spike in minerals, oil and gas and energy sectors capital market trends.*

2. *Project levels knowledge bases driven by specialists such as RBS KBSMM systems and investors originating projects and using tools such as ESIAs, ESMPs, EIAs, EMPs and EMSs in driving sectoral coexistence logic framework.*

3. *Strengthened legislative and regulatory boundary conditions of the knowledge bases of the environment, minerals, oil and gas and energy sectors in order to provide optimum sectoral coexistence both at strategic and project levels logic spaces.*

The optimum utilisation of the successful minerals, oil and gas and energy sectors-based projects within the core space of the environment for sectoral coexistence, is a great catalyst for greater socioeconomic development for Namibia. Laws, standards and operational guidelines boundary conditions need to be continuously developed in line with the provisions of the Constitution. As provided for in the Constitution, all resources rights holders are legitimate users of the offshore and onshore environments. Namibia shall intensify the population of national knowledge bases both at strategic, project and legislative boundary conditions levels. Projects positive and negative environmental impacts de-risking processes shall be based on KB sources-pathways-targets chains linkages. The nation shall take ownership of all what is good, the State and the youth shall be at the forefront of driving

environmental, minerals, oil and gas and energy coexistence spaces including the application of AI in order to continuously unlocking the national socioeconomic opportunities centred on facts (populated knowledge bases) not emotions or alternative facts or catchy headlines. The State shall be mindful of the foreign funded donation-based opportunistic environmental influencers that are also businesses spaces because environmental advocacy interests are also economic and business interests, and the conservation of resources, the survival of the ecosystems and the health of population, are all essential to the maintenance of not only the individual, communities and national interests and economies, but also the global economy which is very much centred on geopolitics of the environment and Climate Change. Environment and Climate Change can be weaponised to undermine the national peace and security, and if the State allows that to happen, current and future generations will all be the losers. A new socioeconomic dawn is here and in front of Namibia and its people, and the national socioeconomic landscape is about to be significantly transformed for the greater benefits of its people, current and future generations. RBS, will always be there and at the forefront of promoting optimum environment, minerals, oil and gas and energy sectoral coexistence, centred on KBSMM and future KB AI logics. In term of Climate Change, the planet earth will continue to be a home to all and a dynamic piece of rock within the universe. The earth has seen cold and hot climates throughout its multi-billion years of geological life. Climatic cycles of cooling and heating will continue to occur on earth for many more billion of years to come. Humanity on earth shall only learn to adapt and adapt we shall, through Namibia sustainably utilising its environment, minerals, oil and gas and energy resources within the spaces of coexistence for continued Statehood self-determination to be driven by the new socioeconomic dawn at the national door step.



# Namibia Lithium Industry Overview

by Theo Klein

What was once considered a niche mineral is now a critical component for technologies and equipment used to combat climate change. Namibia is under-explored in the lithium space, but since 2022 the country has seen a major increase in exploration activity as the scramble for base and precious metals related to renewable energy gained traction. However, lithium deposits are not a new discovery for local mining companies in Namibia. Local operators knew about lithium deposits present in their mines, but it was never mined due to a lack of demand in earlier years – until now. With international mining companies now scrambling for lithium amongst other base and precious metals in response to higher demand for renewable energy equipment and batteries, there is renewed interest in lithium in Namibia. Large scale lithium mining and production has been largely absent in Namibia since independence. Therefore, if current exploration realises in production, Namibia will be adding a whole new commodity market to its local mining industry.

### *Lithium market overview*

The global lithium market was valued at USD 6.8 billion in 2021 and is projected to grow at a compound annual growth rate (CAGR) of 12% from 2022 to 2030. McKinsey Battery Insights projects 30% annual growth in the entire lithium market (from mining through to recycling) between 2022 and 2030, reaching a market size of USD 400 billion. This implies that the industry could surge in size over the next seven years. Prior to 2023, global supply of lithium satisfied demand for the production of electric vehicles (EVs), consumer goods (e.g. toys, wireless headphones, small and large appliances, mobile phones, handheld power tools, etc.) and batteries.

Indeed, there are numerous other alternatives to lithium that are cheaper, more effective and less environmentally harmful than lithium. These include aqueous magnesium batteries, solid state batteries, sodium-based batteries, sodium sulphur batteries, seawater batteries and manganese hydrogen batteries. However, all these battery alternatives are still in the development stage and have not been commercialised on a large scale yet. Although "they indicate that modern industry is accelerating to end its affair with lithium-ion batteries" according to industrial and manufacturing marketing firm Thomasnet. For further advancements to be made, engineers and designers must show that proof of concepts (i.e. evidence from experiments) are not only better than lithium-ion technology, but also scalable to commercial applications like EV batteries, home power storage systems, utility grids, etc. this could give lithium some time to be a dominant market in the battery industry, but this remains a medium-term risk for the lithium sector. Local lithium operations in Namibia will therefore need to hasten large scale production to take advantage of current market dynamics.

### *Namibian market outlook*

Pegmatite (i.e. plutonic rocks containing lithium) occurrences are present in the Damara Orogen in north-central area of Namibia and the Namaqua Metamorphic Complex in southern Namibia (Figure 6). In the Damara Orogen, there are four linear pegmatite belts that carry significant amounts of various rare metals or semi-precious stones according to a report by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Namibian lithium mining data dates back as early as 1939 and lasted until 1998 (Figure 7). Lithium production never exceeded 12,000 tonnes per annum

(peak reached in 1971) and these mining activities in Namibia ceased due to product quality issues and low global demand according to GIZ's report. Between 1939 and 1950, lepidolite was the main lithium mineral mined in Namibia until petalite production commenced in 1947 and dominated overall lithium production until 1998. Except for 500 tonnes of lithium exported in 2018, Namibia has no production or export data on lithium since independence.

Exploration in lithium in Namibia has expanded significantly in the last two years. Two lithium mines that were operational prior to independence are now taken over by new investors who are looking at restarting these operations. If current explorations realise in actual production operations, Namibia will essentially be adding a whole new commodity market to its local mining industry by restarting lithium mining since 1998. Two of the biggest and most progressed lithium operations in Namibia include Lepidico and Andrada's operations which we discuss next.

***Lepidico***

Karibib is fully permitted for the re-development of two open pit mines at Rubicon and Helikon 1 (South of Karibib) which will feed lithium mica ore to a central mineral concentrator adjacent to Rubicon. During 2022, Phase 1 of the project estimated ore reserves at Rubicon, Helicon 1 and Helicon 4 – using a higher lithium price of USD 17.02 per tonne – at 9.4 million tonne and a life of mine of 19 years according to company documents. Drilling at Helikon 2 and 3 commenced in February 2023 with the objective of extending the life of mine to over 20 years. Lepidico is targeting programmes at various metals in the area such as lithium, caesium, rubidium, tantalum, tungsten, gold and copper. These programmes involve exploration, extending the life of mine of the Phase 1 project beyond 20 years and evaluating the Karibib licences for gold potential. Lepidico is currently undertaking studies for a Phase 2 development in Karibib with the objective of completing this scoping level work in mid-2023 and allowing a pre-feasibility study to begin. Two throughput scenarios are envisaged, (1) a sister plant to Phase 1 with an output of 5,000tpa lithium hydroxide or (2) a larger 20,000tpa facility. The former is being evaluated based on concentrate feed solely from Karibib, while the larger facility will rely on lithium mica concentrate feed from third party concentrators according to a note released by the company in January 2023.

***Andrada (previously known as AfriTin)***

Drilling results at Uis from Andrada's tin mine surpassed expectations in terms of lithium grades and reinforced their belief that Uis hosts one of the largest lithium resource deposits globally. Andrada's estimates indicate a grade of 0.73% compared to Lepidico's 0.40%. In the past, Uis was extensively drilled with a focus solely on tin and no regard for lithium and tantalum according to a note released by the company in June 2022.

By July 2022, 32 out of 50 holes have been drilled and analysis has shown significant deposits of tantalum, lithium and tin. In February 2023, the company announced a 30% increase in estimated reserves to 81 million tonnes. An advantage for the Uis mine is that Andrada can progress to commercial production must faster than new greenfield lithium resources being pursued elsewhere in Namibia. The company is in the process of constructing a pilot facility to process large amounts of lithium and secure an off-taker. As it is, the plant in Uis has been expanded and will increase overall production. Costs have been reduced and so the plant is cash flow positive and the aim is to have tantalum and lithium production joining the current circuit in the next 6- to 12-months. We estimate the potential size of the local lithium market and revenues to government using the following assumptions: 1. We expect lithium mining production to be in full swing from 2025 and focus our estimations for that year only. 2. We exclude other lithium operations in our calculations as they are still in the exploration phase and given that no credible information around Xinfeng can be found. We therefore only use publicly available productions estimates from one local mine and apply this figure to other mines and further assume that no other lithium mine becomes operational in 2025. 3. For pricing, we take an average of forecasted global lithium prices for 2025 (USD 55,000 per tonne) and use the current price of about USD 26,000 per tonne and a median price of about USD 40,000 per tonne in our market size calculation. 4. Lithium miners will pay 37.5% corporate tax and 2% royalties on annual profits to government per annum. 5. Globally, the average operating cost of producing lithium is USD 1,500 to 2,000 per tonne for 3% content ore. For grades closer to 1% (which is the case in Namibia), the operating cost doubles. Development costs average USD 2,000 per annual tonne. This implies that hard rock production is likely to average USD 3,500 to 5,500 per tonne across the globe. These costs are forecasted at USD 4,165 per tonne by 2025 according to Statista. We take the upper limit of the operating cost range given that Namibia's ore grades are below 1% and add an additional USD 2,000 billion per tonne in costs to get a total of USD 9,000 per tonne. Using the above assumptions, we estimate a value of the local lithium industry as high as USD 770 million (6.7% of GDP) to USD 364 million (3.2% of GDP), with total taxes paid to government at USD 240.1 million and royalties of USD 34.3 million in the extreme case (Table 1). Using an average Rand/USD exchange rate of 18, these figures are as high as N$13.9 billion in terms of the sector's value, N$4.6 billion in revenue to government (taxes and royalties combined) in the extreme case and N$1.7 billion in the conservative case. In FY2022/23, mid-year estimate figures show that diamond mining companies could pay N$1.6 billion in taxes and N$1.5 billion in royalties. For non-diamond mining companies, taxes paid are estimated at N$576 million and royalties at N$618 million. Given our estimates, the local lithium sector's revenue to government would be the largest compared to all other commodity mining operations in Namibia.

It is important to note that Namibia's estimated lithium reserves have grade concentrates far below the global standard of 6%. So, Namibia's lithium exports will fetch a lower global price per tonne and so the estimates above could be overstated, unless better grade concentrates can be discovered.

# The Global Significance of Namibia's Uranium Industry

***Danie van Wyk***
Head: Research, IJG Securities

Namibia is one of the world's leading producers of uranium, given its vast reserves of this metal. The country's uranium mines produced an output of around 6,600 tonnes of uranium oxide in 2022, accounting for around 11% of global production, making Namibia a noteworthy global player in the space.

Nuclear power has long been controversial, with advocates highlighting its capacity for global decarbonisation, while critics express apprehensions regarding safety and waste management. Nuclear power offers several compelling advantages that makes it a valuable component of a diverse and sustainable energy mix. It is firstly associated with exceptionally low greenhouse gas emissions, as nuclear plants do not release carbon dioxide or other air pollutants during their operation. It therefore plays an important role in the decarbonisation of the global economy and the production of clean energy. Unlike certain other renewable sources that are weather-dependent, nuclear plants operate consistently, contributing to grid stability and energy security. Nuclear fuel furthermore has a high energy density, meaning that a relatively small amount of it can generate a substantial amount of electricity, making nuclear power plants highly efficient.

Political opposition, however, remains a significant barrier to the broader adoption of nuclear power, and in many countries public sentiment remains strongly against it. The 2011 Fukushima nuclear disaster in Japan, caused by an earthquake that triggered a tsunami, certainly did not alleviate the perceived safety fears, and dampened the demand momentum for nuclear energy that was building up prior to the incident, leading to a slowdown in new nuclear plant construction globally and reduced political support.

Many nations have however been warming up to nuclear power in recent years, and according to the World Nuclear Association, approximately 60 nuclear power reactors are presently under construction across 15 countries, with notable focus in China, France, India, and Russia. The Russia-Ukraine conflict resulted in widespread panic across Western Europe regarding the security of their energy supply. Europe's heavy dependence on gas imports from Russia forced the nations to urgently seek out alternative energy sources. The capacity limitations of renewables, coupled with the mounting pressure to reduce carbon emissions originating from fossil fuels, has resulted in nuclear energy resurging as a contender in the pursuit of clean and sustainable energy. French officials earlier this year emphasised that "nuclear power is an absolute red line for France, and France will not relinquish any of the competitive advantages linked to nuclear energy".

The renewed global interest, coupled with forecasted supply deficits, has resulted in uranium prices ticking up over the last three years. The above all holds positive for Namibia, which has a longstanding history of uranium mining. The open-cast Rössing Uranium mine began operating in 1976 and continues to operate to this day. The mine was given a ten-year life of mine extension earlier this year to 2036. The country's other operational uranium mine, Husab, came into production in 2016 and is set to become the second largest uranium in the world once it reaches full capacity. The Langer Heinrich mine was placed under care and maintenance in 2018 due to low uranium prices. Plans are however in place to restart the mine and commercial production is targeted for the first quarter of 2024.

The benefits for Namibia's uranium mining activities are certainly not just global. Uranium mining provides an important stream of revenue for the State in the form of royalties and taxes for government programs and services. In addition, uranium mining creates procurement opportunities, thereby generating income for local businesses. This, not to mention the jobs and economic benefits it brings, greatly contributes to the development of local communities.
The Namibian uranium sector therefore holds a large significance, both domestically and globally, and it is for this reason that it is imperative that the mining companies operating in the country are given support from the government, in terms of both policy and water infrastructure. Namibia has a substantial opportunity to reap significant rewards from the increasing demand for uranium, and policymakers should therefore be clear and explicit in their quest to promote the country as a preferred producer of uranium.

Through conscientious mining and production practices, uranium is poised to maintain its significant contribution to fulfilling the world's demand for clean energy. The uranium sector in Namibia holds a crucial position in the endeavour of decarbonisation and the worldwide shift toward cleaner energy generation. Namibia's part in global progress towards more sustainable clean energy production and decarbonisation will be disproportionately large.

NAMDEB

A NAMIBIA DE BEERS PARTNERSHIP

# Mining For Good to Make Life Brilliant

## OVERVIEW

Namdeb's history dates back to 1920 when diamond-mining companies along the Orange River were amalgamated to form Consolidated Diamond Mines (CDM). In 1994 CDM entered into a new partnership with the Namibian Government and Namdeb was formed. Today, NamdebDiamond Corporation is a wholly own subsidiary of Namdeb Holdings (PTY) Ltd, which is a 50:50 joint venture between the Government of the Republic Namibia and De Beers. Namdeb Holdings has long-term mining concessions in the south west of Namibia both on land and offshore, adjacent to the Orange River and offshore in the shallow waters. Diamond exploration and mining takes place along the south-west coast and inland areas of Namibia's //Karas Region. The main land-based operations are found in the town of Oranjemund and satellite mines along the Orange River.

## EMPLOYEES

Namdeb has a workforce of approximately 1700. The company is committed to accelerating equal opportunities, which includes increasing the number of female employees within roles that have historically been male-dominated. Namdeb also makes use of contractor companies which employ approximately 1200 employees

## A PROSPEROUS NAMIBIA

Since its inception in 1994, Namdeb has lived up to the notion of "On Diamonds We Build" and continues to be one of the most significant role players contributing positively to Namibia's fiscus status. The business Long Term Plan has the potential creation of approximately 600 jobs for the required production activities. In addition, the long-term plan expects capital investment of approximately N$1.2bn in 2 years with N$3.037bn in 10 years. To date, some of the direct benefits gained from the mine extension include the employment of approximately 480 jobs for both Namdeb employees and contractors translating into tax benefits for the country. Namdeb has also contributed to local procurement of approximately N$3.1bn in 2022 as a direct result of the life of mine extension, and a total of N$17,1bn since 2014.

## PROTECTING THE NATURAL WORLD

Namdeb's operations are located within the Tsau //Kaeb (Sperrgebiet National Park), adjacent to the Orange River and Namibian Islands Marine Protected Areas. Namdeb is passionate about ensuring that we take care of our environment for future generations, as such, the Company prides itself with a rehabilitation plan aligned with the park's Land Use Plan. This plan provides for rehabilitation of areas that are mining, nature as well as conservation based. Namdeb therefore caters for concurrent rehabilitation and continues the focus on various conservation and monitoring as well as historical ecological programmes which help minimize the potential negative impact on the environment in which it operates. Namdeb's Environmental management plans are aligned to the global call for action centered on reducing environmental impacts that support decarbonization with the sustainability focus at the core. These plans strengthen further include mitigation of against climate change through advocating responsible water management practices across the operations which contribute to the efforts of becoming carbon neutral by 2030. In driving the carbon neutrality journey, Namdeb has invested in identifying alternative green fuel solutions such as wind and solar power as part of reducing the carbon emissions within its operation. In line with this, a site approximately 45 km north of Oranjemund within its Southern Coastal Mine (Mining License 43) has been earmarked for a 34 MW wind energy facility (WEF) with the capacity of replacing up to 50% of the current high-carbon electricity footprint with renewable wind energy. This project will significantly benefit local businesses through employment creation of more than 200 people at peak during construction and then operational andmaintenance work opportunities during the 20 years of operation of the facility. The WEF also enable local renewable energy skills development

## ACCELERATING EQUAL OPPORTUNITIES

Through a dedicated focus of accelerating equal opportunities, Namdeb is committed to fostering skills fit forthe future nationally and globally. Interventions such as Workplace. Learner development programs support the growth of professionals through the exposure that Namdeb provides in relation to industry-related experience. The recently awarded bursaries to Namibian females studying in the post graduate Renewable Energy space supports the company's efforts of protecting the natural world as well as creating an inclusive work environment. Furthermore, these types of developmental funded opportunities are not only aligned to the business need but sit at the core of driving human capital development. Namdeb continues to promote ED&I (Equity Diversity & Inclusion) internally and externally. This contributes to addressing aspects related to driving affirmative action objectives and promoting a psychologically safe environment both in the work environment and communities. Programmes that create awareness on bullying and harassment, sexual harassment, unconscious bias, victimisation as well as domestic violence form part of the key interventions. It is in this regard that the business dedicates a proportion of its sponsorships towards charities and organisations centered on Youth empowerment as well as disabled persons. Another key development related to ED &I and ensuring a psychological safe environment pertains to the development of framework in 2023 that supports Namdeb's GBV multi-disciplinary approach. The approach is centered on creating awareness and collaborating with various stakeholders in relation to responding, protectingand preventing GBV, particularly in the Oranjemund community.

## PARTNERING FOR THRIVING COMMUNITIES

The livelihoods work undertaken by Namdeb is incorporated in the own transformation strategy of Oranjemund. The Town Transformation strategy of Oranjemund was formulated as a result of collaboration with the Oranjemund Town Council and the wider community of the town. The strategy and Plan aims to normalise Oranjemund from a Namdeb owned and managed town which is dependent on mining, to a normal, self-sustaining town with a diversified economy. The Town Transformation strategy has three focus areas: Transfer (the transfer of the municipal services and infrastructure to the Oranjemund Town Council (OTC) and normalizing private property ownership), Transition (normalizing healthcare and education in town), and Transform (enabling economic diversification of the economy of the town to become sustainable beyond mining). The strategy has to date resulted in the OTC taking over the ownership, management and responsibilities of all municipal infrastructure and services in the town; enabled the sale of residential properties to private individuals and the establishment of a public primary and a public secondary school through collaboration between Namdeb and the Ministry of Education, Arts and Culture as part of finding a sustainable long-term solution to schooling in Oranjemund. In addition, Namdeb will continue to partner with key stakeholders to improve health and education outcomes. This subsequently increases livelihood opportunities; supports communty resilience; enhances opportunities for economic diversification that contribute to the stability and growth of the local economy and Namibia at large.

The Town Transformation strategy has also provided for the establishment of the OMDis Town Transfer Agency (OMDis) and the OMD 2030 community organisation. Both companies are registered as Section 21 companies (not-for-profit) and operate independently from each other and were established to drive the strategy in collaboration with the OTC and Namdeb. In addition, OMDis and OMD 2030 are governed by their own independent boards but are currently still financially reliant on Namdeb.

## A BRIGHTER FUTURE AWAITS

Namdeb's life of Mine extension to 2042 contributes to enhancing socio- economic development opportunities particularly for Oranjemund and surrounding communities in the Karas region. Aligned to its new strategy and the new added value of Sustainability, Namdeb will continues to explore and implement ways to ensure a better tomorrow for future generations to come.

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Trace Element Analysis Laboratories Holdings (Pty) Ltd (i.e., TEA Labs), is a pioneering laboratory service provider operating in the Namibian mining industry. Founded in 2008, part of its focus is radiation biomonitoring, where uranium mine workers are monitored for radiation exposure, through testing for trace elements in urine and water. TEA Labs currently plays a crucial role in supporting the Uranium mines and regulators, in safeguarding the health of their workers in the industry. TEA Labs has now expanded the scope of their services by opening a state-of-the-art geochemical, research and environmental laboratory, thus offering a full scope of analyses for various exploration, mining, and environmental samples. With a proven track record of precision and reliability in trace element analysis, TEA Metallurgical Laboratory (ie., TEA-Met) is poised to become a prominent player in the Namibian mining industry. TEA Labs has always been committed to providing reliable analyses and results and the establishment of TEA-Met outlines its commitment to advancing scientific knowledge locally through innovation, while pivoting itself a market leader in the laboratory service industry.

### *The Genesis of TEA Labs*

Founded in 2008 by the late Johann van Heerden, TEA Labs obtained its ISO 17025:2005 (now revised to ISO 17025:2017) accreditation in 2013 from SADCAS, a SADC regional accreditation body. TEA Labs garnered the support of the industry and regulators like the Namibian Uranium Association (NUA), and this led to TEA Labs pivoting itself as a prominent authority in the niche field of specialized analysis. In 2019, there was a significant transition when the business was acquired by Wensia Ruiters and Kevin Mwashuma, both mentees of the late van Heerden. The industry and NUA continue to provide substantive support to the new management. TEA Labs continues to be the only local accredited laboratory to operate within this niche market of radiation biomonitoring.

### *A new horizon*

Wensia Ruiters, the Managing Director states there will not be a need to export samples for analyses anymore. “The beneficiation process for mining, particularly upstream where laboratory analysis is concerned, are predominantly serviced regionally by our South African counterparts or internationally, especially where exploration is concerned. This is because the local market lacks the infrastructure and/or technical skills to offer this service wholly; not to mention that it is a very expensive undertaking.

We have made significant strides through smart partnerships with local financial institutions like Business Financial Solutions and FNB, and we have collaborated with the Namibia Investment Promotion and Development Board (NIPDB) and Shimadzu, a leading Japanese brand that manufactures laboratory equipment. These interactions helped to bridge the market gap by creating a local laboratory facility that can provide end-to-end laboratory services, meaning a full service offering now exists within the mining industry. Although we are officially launching TEA-Met on the 9th September 2023, we have already begun operations. We believe that Namibians can serve the local industry competently and wholly. We are aspired to redact the notion that services need to be outsourced regionally or internationally, especially now, when we exist to competently cater to industry demands.”

Kevin, the Technical and Operational Director, states that the operational goal is to increase local capacity through research and innovation on various techniques on how to optimize analytical processes and creating intellectual assets that can contribute to increasing local competency. He states, “We aspire to expand our scope of accreditation in different levels of the mining and energy industry, inclusive of oil and gas and green energy frontiers in Namibia. There is a lot of potential within the local communities, and we aspire to contribute towards upskilling Namibians that can compete internationally.”

***Wensia Ruiters***
Managing Director,
TEA Labs

***Kevin Mwashuma***
Technical and Operational Director,
TEA Labs

### *Community Impact*

Driven by its vision to contribute to the advancement of the STEM industry in Namibia and Africa, TEA Labs works with its local communities as part of its TEA Cares program. The focus is to empower through upskilling and capacity development, as the organization believes that "Competence is not only certification based, but it’s also people based”. The Discovery Gap Program is an initiative that was launched to help bridge the skills gap through collaborating with the local school network and higher learning institutions, through taking in students during their studious years and providing them with on-the-job skills training at their laboratory facilities. One of the program’s aims is to have students accumulate skills that will make them market ready once they enter the job market for employment. The program has collaborated with other local businesses in the area, where these students are rotated to work at these businesses on either a full-time or part-time basis.

With a vision set firmly on the horizon, TEA Labs embarks on a journey where possibilities are limitless, and their impact on the field of analytical laboratories in the mining industry is bound to be profound and impactful.

**Source:** *TEA Lab*

NDTC
A NAMIBIA DE BEERS PARTNERSHIP

# NDTC facilitates N$75 Billion Rough Diamonds for Value Addition

The Namibia Diamond Trading Company (NDTC) says since its establishment 16 years ago, it has facilitated the availability of over N$75 billion worth of rough diamonds to its sight holders for value-addition purposes.

The company's Chief Executive Officer (CEO), Brent Eiseb, emphasised the industry's commitment to transparency and sustainability throughout the diamond pipeline.

Eiseb said the commitment is evident from responsible diamond recovery practices to the collaborative efforts that have made Namibia a leader in downstream diamond beneficiation.

"NDTC's provision of rough diamonds valued at over N$75 billion was made available to NDTC Sightholders for value addition purposes. This substantial investment has contributed to the growth of the downstream industry in Namibia," Eiseb said while reflecting on the industry's achievements.

He also underscored the impressive statistics regarding the processing of rough diamonds in Namibia.

"Approximately 85% of the rough diamond carats sold by NDTC to its Sight holders are now being fully processed within the country. This achievement is a result of collaborative efforts and difficult conversations among stakeholders, proving the industry's commitment to Namibia's mineral beneficiation strategy," he said.

The CEO boasts that the downstream diamond industry has not only created more job opportunities for Namibians but has also focused on sustainable employment and skills transfer.

"Over the past 12 months, there has been a 53% increase in Namibian jobs within the industry. Furthermore, the industry's resilience during the Covid-19 crisis, expanding permanent jobs instead of witnessing widespread retrenchments, demonstrates its sustainability," he noted.

Eiseb further noted that investments in cutting and polishing technology have been another crucial aspect of the industry's growth.

"Millions of dollars have been invested in state-of-the-art technology, improving the competitiveness and sustainability of Namibia's cutting and polishing sector. This demonstrates the confidence that investors have in the country's diamond industry," he said.

He highlighted the increase in the number of cutting and polishing factories in Namibia, stating that in the past 24 months, seven factories have commenced operations, with five of them receiving supply from NDTC.

Additionally, NDTC onboarded two majority Namibian-owned businesses through its Enterprise Development Program (EDP), contributing to the development of local entrepreneurs, he revealed.

Despite these achievements, Eiseb acknowledged that more needs to be done to unlock further opportunities in the beneficiation space.

"This requires a holistic approach, including favorable legislation and policies, access to financing, and support services that enhance Namibia's competitiveness as a diamond beneficiation centre."

Eiseb concluded by emphasising the industry's commitment to sustainable practices and giving back to the communities in which they operate.

Speaking at an event held by Andre Messika Diamonds, Eiseb praised the company's efforts to provide equal opportunities for differently-abled individuals, stating that their success would contribute to the overall success of the downstream industry in Namibia.

Andre Messika has taken on the initiative to promote local ownership and participation in the industry, by donating 25% of its shares to its local staff.


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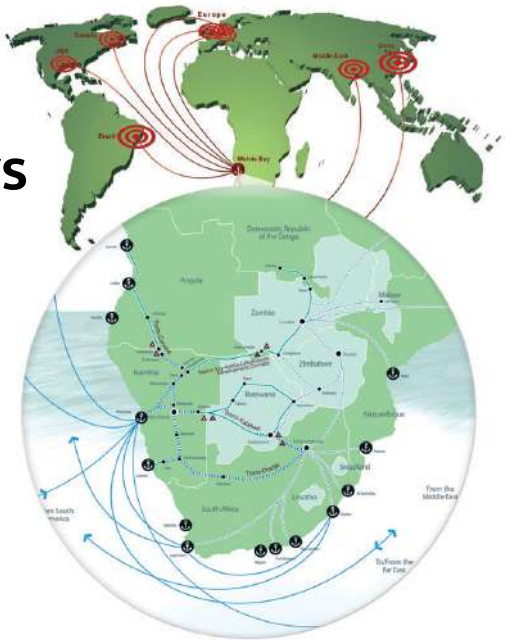

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NAMIBIA LOGISTICS HUB

# Empowering **Namibian Women** in the **Mining Sector**

## Unleashing their Full Potential

***Zenzi Natasha Awases***
Managing Principal Consultant:
Southern Africa and Anglophone Africa,
African MiningPro Solutions Consultancy

Namibia's mining sector plays a pivotal role in the nation's economy, driving growth, employment, and export revenue. While this industry has traditionally been male-dominated, the winds of change are blowing, paving the way for women to take up space in the sector. However, numerous challenges persist, hindering their full potential. In this article, I will share my insights on the role of women in the mining sector of Namibia and how they can be supported and empowered throughout the mining value chain.

### *The Current Landscape for Women in Namibia's Mining Sector*

Historically, the mining sector has been perceived as rugged, demanding, and unsuitable for women. Until the mid-1990's the legislation did not allow women to work in technical fields in the mining industry. This situation is not unique to Namibia, as similar practices were observed in other countries in the region, such as Botswana and South Africa, and other parts of the world.

In 1999, Inge Zaamwani-Kamwi was appointed as the managing director of Namdeb Diamond Corporation Pty Ltd – an appointment that paved the way for many women to enter Namibia's mining sector. Since that time, notable progress has been achieved in the employment of women within Namibian mining companies. Nevertheless, gender imbalance remains pervasive in this sector, acting as a deterrent for women to enter or progress in their careers within it. This observed gender imbalance stems from deeply ingrained societal norms and unconscious biases, which not only hinder the capabilities of women but also perpetuate their limited presence in leadership roles. It is imperative to confront and challenge these preconceptions to unleash the untapped potential of women in the mining industry.

To illustrate the situation of women in the mining sector of Namibia, I will use some data from a survey conducted by Women in Mining Association of Namibia (WiMAN) in 2018 among its members. The survey covered 570 respondents (90% female and 10% male) from different segments of the mining industry: Large-Scale mining (LSM), Small-Scale mining (SSM) and Mining Entrepreneurs (ME). The survey revealed some interesting findings on the role of women in each segment:

- In LSM, women represented 60% of the respondents. Most of them worked as engineers, geologists, metallurgists or technicians. The main challenges they faced were lack of mentorship, lack of career progression, lack of recognition and gender stereotyping. Only 2% of them held senior management positions.

- In SSM, women represented 18% of the respondents. The main challenges they faced were lack of access to finance, lack of access to markets and, lack of access to equipment

- In ME, women represented 22% of the respondents. Most of them worked as suppliers, vendors, EPL holders, or consultants. The main challenges they faced were lack of access to finance, lack of access to markets, lack of access to information and lack of access to networks. Only 6% of them had formal contracts or agreements with mining companies.

### *The Opportunities Women in the Mining Sector: The Untapped Potential*

Apart from employment opportunities in large-scale mining, the mining sector of Namibia offers many opportunities for women to advance their careers, businesses, and livelihoods. Some of these opportunities are found in:

# **Biography:** Zenzi Natasha Awases

Zenzi Natasha Awases is a geologist by profession and holds a B.Tech (Geology) degree from the Tshwane University of Technology, B.Sci (Honors) in Geology degree from the University of Stellenbosch as well as a Post Graduate Diploma in Business Administration and Management from the University of Stellenbosch Business School. Zenzi's journey exemplifies a steadfast commitment to breaking barriers, advocating for gender equality, and driving positive change within the mining industry and beyond. She is a trailblazer in the mining industry, where she has excelled for nearly 2 decades despite the male dominance. She is also a captivating public speaker who shares her insights and stories from her career, leadership and business with energy and enthusiasm. She founded the Women in Mining Association of Namibia (WiMAN) and serves as the vice-president of the Association of Women in Mining Africa (AWIMA). The accolades bestowed upon Zenzi are a testament to her influential standing within the mining industry. The Mining Global Magazine honored her by ranking her as the third most inspirational woman in mining in their esteemed "Top 10 Global Women in Mining" list for 2020. In 2021, she received the Most Excellent Order of the Eagle Award, First Class, from the Namibian President for her outstanding contribution to the country's development and transformation. Zenzi is currently the Managing Principal Consultant: Southern Africa and Anglophone Africa at the African MiningPro Solutions Consultancy.

- ***Procurement:*** Procurement presents a readily available opportunity for the mining sector, which can effectively accelerate the involvement of women in the mining industry. This includes services, such as: engineering material supplies, transportation services, cleaning services, catering services, processing plant chemical supplies, equipment supplies, and exploration supplies (core trays, sample bags, mobile toilets, etc.,). According to the CoM, the sector spent about N$16.8 billion on goods and services from Namibian suppliers.

- ***Artisanal and Small-Scale Mining (ASSM):*** Due to the emphasis on large-scale mining, the ASSM has had a limited impact on Namibia's economic development. Namibian semi-precious gemstones are well sought after and opportunity exists in value addition, such as jewelry design and making of these gemstones. Acquiring a claim for Artisanal and Small-Scale Mining (ASSM) offers the chance for Namibians to own mines, which is not feasible in the Large-Scale Mining (LSM) sector due to its capital-intensive nature.

- ***Independent Consulting:*** In the upcoming years, the global demand for minerals and metals is expected to increase due to factors like population growth, urbanization, industrialization, and digitalization. However, the industry is presently encountering a shortage of skilled personnel to satisfy the growing informational requirements and handle the worldwide interest in Namibia's mineral resources. Consequently, the prevailing approach is to outsource projects to independent consultants.

### *Fostering a Supportive Environment: Key to Empowering Women in Mining*

Throughout the world, women have showcased their exceptional skills in mining-related sectors, presenting an opportunity for Namibia to harness this potential and foster a more inclusive and thriving industry. To achieve this, the Government of Namibia should implement a combination of local procurement policies and well-designed, gender-sensitive, and inclusive SME policies that align with the nation's specific circumstances and the characteristics of the mining sector. These policies should primarily focus on enhancing the capabilities of SMEs to innovate, adopt new technologies, and develop new products and services for the mining industry. By doing so, they can effectively address social, economic, and environmental goals. Therefore, taking concrete actions is essential for the government, in collaboration with the Chamber of Mines of Namibia and workers, to foster an enabling environment for more women-led SMEs in both Large-Scale Mining (LSM) and Artisanal and Small-Scale Mining (ASM).

### *Final Thoughts*

Undoubtedly, the mining industry plays a vital role in driving Namibia's economic prosperity. However, it must acknowledge the significance of attaining gender equality to unleash its full potential. Empowering women across the entire mining value chain extends beyond promoting fairness and social justice; it stands as a strategic necessity for sustainable economic growth and improved corporate performance. By challenging unconscious bias and cultivating inclusivity, the sector can progress toward greater gender equality, fostering advancements not only within the industry but also throughout society.

While the journey toward gender equality in the mining sector may present challenges, it is a path that the nation must undertake to achieve lasting prosperity and social advancement. Embracing diversity and empowering women within the mining industry will not only enhance its performance but also set a precedent for other sectors, contributing to a more equitable and just society.

As individuals, companies, and policymakers, we share the collective responsibility of breaking down barriers and promoting gender equality in the mining sector. Only through these efforts can we truly harness the wealth of talent and potential that Namibian women bring to the table, creating a brighter and more prosperous future for everyone. Together, let's unite to make the mining sector a shining example of gender equality and diversity in Namibia.

NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY

# Department of Civil, Mining and Process Engineering

**The Department of Civil, Mining, and Processing Engineering (DCMPE), situated within the Faculty of Engineering and the Built Environment (FEBE) at the Namibia University of Science and Technology (NUST), is dedicated to providing top-notch tertiary education that equips graduates to seamlessly integrate into industry and active participation in economic advancement.**

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- Master of Engineering in Environmental Engineering
- Master of Science in Integrated Water Resource Management

## The Centre of Excellence for Mining and Mineral Beneficiation

Our pursuit of excellence in education is complemented by the Centre of Excellence for Mining and Mineral Beneficiation (CEMMS), a recent addition to our institution. CEMMB aspires to be a renowned and innovative leader in mining, mineral beneficiation, and value addition. This vision is pursued through exceptional multidisciplinary research development, provision of world-class consultancy services, and the cultivation of knowledge, skills, processes, and technology necessary to help the industry overcome emerging challenges. CEMMB is actively engaged in research projects of national, regional, and international significance and contributes significantly to policy development, technological advancements, and other solutions in the fields of mining, mineral beneficiation, and value addition. This strategic approach facilitates the transformation of the nation's raw minerals and semi-finished products into higher-value finished goods, reducing dependence on low-price exports.

## Laboratory Facilities and Services

### Rock Testing:

- Uniaxial compressive strength testing
- Poisson's Ratio
- Elastic Modulus
- Triaxial testing
- Shear strength (Shear box)
- Tensile strength test (Brazilian Test)
- Point load testing
- Rock mineralogy and petrography (Thin Sections)

### Metallurgical Testing:

- Composition, morphological, and top surface analysis of solid samples (SEM)
- Elemental analysis of liquid samples (AAS)
- Particle size distribution (Mastersizer)
- Full elemental composition (XRF)
- Analysis of molecular compounds (UV spectrometer)
- Hardness testing (Micro and Macro hardness tester)
- Structural properties of mineral samples (Microscope)
- Pulp chemical properties (Eh, pH, dissolved oxygen, oxygen demand, and EDTA extractable iron) – (Magotteaux Mill)


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SCAN FOR WEBSITE

carbon capital

# Unlocking the full potential of the emerging bioeconomy sector in Namibia.

## Who We Are

Carbon Capital is a project development and capital raising company founded in Namibia. We identify and develop opportunities within the emerging bioeconomy sector across the region. This includes biomass, bioenergy, agriculture, carbon offset and mitigation projects and related manufacturing.

We are actively developing carbon offset projects for Namibia, focusing on implementing sound methodologies and industry best practices to a rapidly evolving and dynamic market.

Carbon Capital's core expertise encompasses biotechnology, project development, commerce and project finance.

Colin Lindeque
Managing Director

Rowland Brown
Director

Romé Mostert
Director

## Our Objectives

**Preferred Partner**
To become the choice project partner within the regional bio-economy sector.

**Raise Capital**
To leverage impact capital and tailor it towards high potential commercial opportunities

**Develop Projects**
To identify, develop and operationalize greenfield commercial opportunities

**Strong Portfolio**
To develop and maintain a diverse portfolio of successful projects.

**Creative Thinking**
To explore innovative business models and technologies through leveraging innovation and development funding.

## Our Projects

**Retort Charcoal Producers**
A large scale and technologically advanced charcoal production project, producing upwards of 7 000 tonnes of high-quality, sustainable charcoal per annum for the international market.

**Biochar Carbon Credits**
Piloting a biochar based carbon offset credit in order to stimulate the use of biochar in Namibia for agricultural benefaction and rangeland restoration.

**SteamBioAfrica**
A grant-funded bioenergy project, commercializing a novel super-heated steam torrefaction technology to convert invasive biomass into drop in renewable coal alternatives

**Okaputa Pellets**
Developing a white pellet manufacturing project using encroacher bush biomass to produce renewable and sustainability certified industrial white pellets for export energy markets.


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carbon capital

## Harnessing Biochar's Potential:

# Advancing **Sustainability** in the **Mining Sector**

The mining industry has long been a critical driver of global economic growth, supplying essential resources for various industries. However, it is no secret that mining operations have significant environmental impacts, including soil degradation, water pollution, and greenhouse gas emissions. As society pushes towards a more sustainable future, it is essential for the mining sector to adopt more environmentally friendly practices. One promising solution gaining traction is the use of biochar. Derived from biomass, biochar presents a multitude of applications within the mining sector, offering opportunities to improve mine site rehabilitation, mitigate environmental impacts, and enhance resource recovery. This article explores the potential uses of biochar in the mining industry, highlighting the benefits and challenges associated with its integration.

### *Remediation of Mine Tailings*

Mine tailings are the waste materials left behind after the extraction of valuable minerals from ore. These tailings often contain high concentrations of heavy metals, sulphides, and other contaminants, as well as commonly becoming acidified, making them a serious environmental concern. Biochar can be applied in numerous ways to mitigate the negative impacts of mine tailings:

- Stabilization: Incorporating biochar into mine tailings can stabilize and immobilize heavy metals and other pollutants. The porous structure of biochar provides it with substantial adsorptive properties, enabling biochar to reduce mobility and potential of contaminants from leaching into surrounding soil and water sources.

- Soil Amendment: Mixing biochar with mine tailings can improve soil structure and fertility. By enhancing water retention and nutrient holding capacity, biochar fosters the growth of vegetation, aiding in the revegetation and rehabilitation of disturbed areas.

- Reducing Acid Mine Drainage (AMD): Acidic mine drainage is a common problem associated with mine tailings. Biochar can neutralize acidic conditions and promote the growth of acid-tolerant vegetation, reducing the generation of AMD and the release of harmful contaminants.

### *Treatment of Wastewater and Effluent Streams*

Mining operations often produce large volumes of wastewater and effluent streams contaminated with various pollutants. Biochar can be utilized in multiple ways to treat and manage these waste streams:

- ***Filtration:*** Biochar's porous structure and high surface area enable it to act as a highly effective filtration medium. When used as a filter bed or in constructed wetlands, biochar can remove suspended solids, organic matter, and some contaminants from wastewater and effluent streams.

- ***Adsorption of Heavy Metals:*** The unique chemical properties of biochar enable it to adsorb heavy metals and other toxic substances present in wastewater. As the wastewater passes through a biochar filter, the pollutants adhere to its surface, effectively removing them from the water.

- ***Nutrient Retention:*** Biochar can retain nutrients, such as nitrogen and phosphorus, from wastewater. This characteristic is particularly beneficial in managing nutrient-rich effluents, preventing eutrophication of nearby water bodies when discharged.

- ***Biological Treatment:*** Biochar can serve as a substrate for beneficial microorganisms that aid in the degradation of organic contaminants. The porous structure of biochar provides a habitat for these microorganisms to thrive and break down organic pollutants, contributing to the overall treatment efficiency.

- ***Reduction of Odours:*** The use of biochar in wastewater treatment can also help reduce odours caused by organic decomposition, creating a more environmentally friendly and socially acceptable solution.

### *Biochar's potential for generating additional revenues*

In recent years, there has been a growing interest in utilizing biochar as a means to generate carbon credits in the context of carbon markets and offsetting greenhouse gas emissions. The application of biochar in the mining sector presents a unique opportunity for mining companies to participate in carbon credit programs while simultaneously addressing environmental challenges.

- ***Carbon Sequestration and Certification***
  Biochar's ability to sequester carbon for prolonged periods provides an attractive avenue for mining companies to earn carbon credits from its use. When biochar is incorporated into mine site rehabilitation or land restoration projects, it locks carbon away in the soil, preventing it from re-entering

the atmosphere as CO2. If the original biomass used to produce the biochar is managed sustainably, this is considered carbon negative, sequestering carbon from the atmosphere. The amount of carbon sequestered by biochar application can be quantified and subsequently converted into tradable carbon credits. Current market prices for biochar-based carbon removal credits are between EUR 100-150 per credit.

- ***Additional Revenue Stream***
  The income generated from the sale of biochar-based carbon removal credits can help offset the costs associated with implementing biochar-based projects and environmental initiatives. As demand for carbon credits continues to grow, mining companies stand to benefit economically from the carbon market while simultaneously making strides towards sustainability and environmental stewardship.

- ***Enhancing Corporate Social Responsibility***
  Mining companies are increasingly aware of the importance of demonstrating strong corporate social responsibility. By incorporating biochar applications and participating in carbon credit programs, these companies can highlight their commitment to environmental sustainability and contribute to global efforts to combat climate change. Such initiatives can bolster a company's reputation, attract environmentally conscious investors, and improve stakeholder relations.

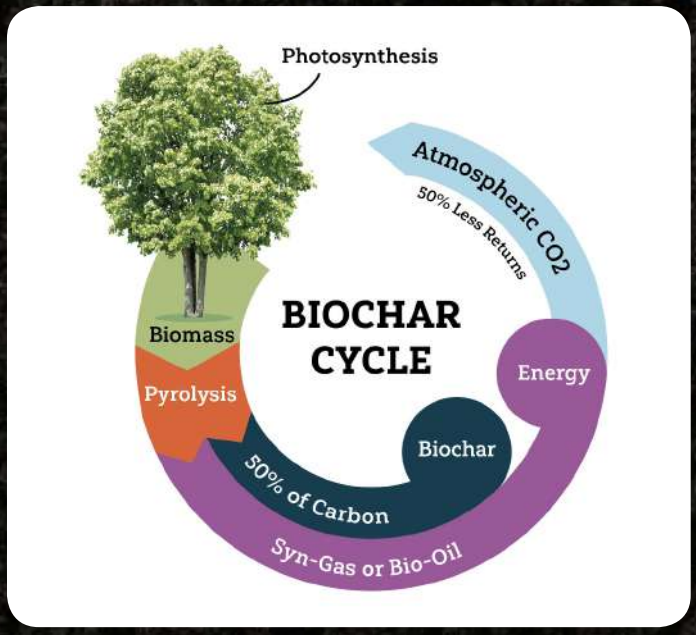
Biochar can also be locally sourced, and its use supports local biomass value chains, while also benefitting local rangeland restoration, biodiversity, and preservation of ground water resources.

***Carbon Capital – Your biochar partner***

The potential to participate within carbon markets, either offsetting one's own carbon emissions, or earning additional revenues from credit sales through the application and use of biochar in environmentally beneficial remedial activities, while also enhancing corporate social responsibility presents a truly win-win opportunity.

Carbon Capital can help unlock this opportunity. Carbon Capital develops tailormade end-to-end biochar projects, both in its capacity as a project developer, a supplier of biochar, and a technical expert. Carbon Capital, through its affiliates, can also manage the accreditation, monitoring, and sale of carbon credits.

For more information, contact us at ***info@carboncapital.com.na*** or give us a call on ***+264 (0) 61 256 666***.




***Above:*** Production of biochar from sustainable biomass is carbon negative, sequestering carbon from the atmosphere, and in doing so, attracting carbon offset credits in addition to the benefits that the biochar brings to the soil and other productive uses.

by Junior Baino

# The Environmental Requirements for Renewable Energy, Oil and Gas Mining in Namibia

The supreme law pertaining to the Environmental in Namibia is enshrined in the Constitution of the Republic of Namibia, Article 95 (l) that dictates for the environmental protection by maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and the utilization of living natural resources on a sustainable basis for the benefit of al Namibians, both present and future, in particular, the GRN shall provide measures against the dumping or recycling of foreign nuclear and toxic waste on Namibian territory.

Article 95 (l) is read together with Article 100 that dictates for sovereign ownership of Natural resources. The land, water and natural resources below and above the surface of the land and in the continental shelf and within the territorial waters and the exclusive economic zone of Namibia shall belong to the state if they are not otherwise lawfully owned.

Environmental requirements for renewable energy, oil and gas mining, or any other industrial activity is regulated by the Environmental Management Act (7 of 2007, and its processes for environmental protection and enforcement is further regulated by the Environmental Impact Assessment regulations of 2012.

Furthermore, GRN notice 29 under the Environmental Management Act of 2007 produced a list of activities that cannot be undertaken without obtaining the Environmental Clearance Certificate.

***Renewable Energy:*** Namibia has been making efforts to promote renewable energy sources to reduce its reliance on fossil fuels and mitigate environmental impacts. The Environmental Management Act (2007) and its associated regulations provide the legal framework for environmental impact assessments (EIAs) and the management of environmental issues related to various projects, including renewable energy projects.

***ENERGY GENERATION, TRANSMISSION AND STORAGE ACTIVITIES***

1. The construction of facilities for –
(a) The generation of electricity;
(b) The transmission and supply of electricity;
(c) Refining of gas, oil and petroleum products;

And (d) nuclear reaction, including production, enrichments, processing, reprocessing, storage or disposal of nuclear fuels, radioactive products and waste

Key environmental requirements for renewable energy projects in Namibia might include:

***1. Environmental Impact Assessment (EIA):*** Depending on the scale and nature of the renewable energy project, an EIA might be required to assess potential environmental impacts and propose mitigation measures.
***2. Permitting and Approvals:*** Developers may need to obtain various permits and approvals from the Ministry of Environment, Forestry, and Tourism (MEFT) or other relevant government authorities.
***3. Mitigation Measures:*** Developers are often required to implement mitigation measures to minimize environmental impacts, such as habitat preservation, noise reduction, and proper waste disposal.
***4. Monitoring and Reporting:*** Ongoing monitoring and reporting of environmental impacts and compliance with approved mitigation measures may be necessary.
***5. Compliance with Renewable Energy Policies:*** Namibia has set targets for the contribution of renewable energy to its energy mix. Developers may need to comply with policies and regulations related to renewable energy deployment.

***Oil and Gas Mining:*** Namibia has shown interest in exploring its offshore oil and gas reserves. Similar to renewable energy projects, oil and gas mining activities are subject to environmental regulations to ensure responsible and sustainable extraction. The Petroleum (Exploration and Production) Act (1991) and other related regulations govern the oil and gas sector in Namibia.

Environmental requirements for oil and gas mining in Namibia might include:

***1. Environmental Impact Assessment (EIA):*** EIAs are typically required for oil and gas exploration and production activities. These assessments evaluate potential environmental impacts and recommend mitigation measures.
***2. Permitting and Licensing:*** Oil and gas operators need to obtain exploration and production licences from the Ministry of Mines and Energy. Environmental permits might also be required from the MEFT.
***3. Spill Prevention and Response Plans:*** Oil spill prevention and response plans are crucial to address potential oil spills and minimize their impacts on the environment.
***4. Marine Conservation:*** Offshore oil and gas activities must consider the protection of marine ecosystems and species, as Namibia has a rich marine biodiversity.
***5. Decommissioning and Site Restoration:*** Proper procedures for decommissioning wells and facilities and restoring the site to its original state after operations are critical.

***MINING AND QUARRYING ACTIVITIES***

3.1 The construction of facilities for any process or activities which requires a licence, right or other form of authorization, and the renewal of a licence, right or other form of authorization, in terms of the Minerals (Prospecting and Mining Act), 1992.
3.2 Other forms of mining or extraction of any natural resources whether regulated by law or not.
3.3 Resource extraction, manipulation, conservation and related activities.
3.4 The extraction or processing of gas from natural and non-natural resources, including gas from landfill sites
3.5 The extraction of peat

*Where Commitment Matters and Quality Prevails.*

Namibia Institute of Pathology Limited

# Revitalizing Pathology

## as a Crucial Element of Mining Sector Safety

In the mining sector, pathology testing plays a vital role in ensuring the safety of workers, particularly in Namibia. The mining industry is a significant contributor to the country's economy, but the extraction of minerals can pose numerous hazards. Therefore, regular pathology testing is essential to safeguard the well-being of the workforce.

For years, the Namibia Institute of Pathology Limited (NIP) has been at the forefront of pathology testing across all industries in Namibia. Since its establishment in 2000, NIP has emerged as the largest pathology laboratory in the country, delivering indispensable diagnostic and monitoring pathology services.

At NIP, we provide specialized pathology services encompassing clinical pathology, haematology, molecular diagnostics, microbiology, and anatomical pathology. Our dedicated team of pathologists, medical technologists, technicians, scientists, and nurses deliver these services through our extensive network of 38 laboratories, catering to both state and private health facilities.

### NIP PATHOLOGY SERVICES

- CLINICAL
- HAEMATOLOGY
- MOLECULAR DIAGNOSTICS
- MICROBIOLOGY
- ANATOMICAL

### Ensuring Health and Safety in the Mining Sector

The mining industry holds undeniable importance in Namibia, contributing significantly to the country's Gross Domestic Product (GDP). However, it is crucial to address the associated health risks faced by mining workers. For instance, uranium mining can expose employees to ionizing radiation, leading to potential health complications like cancer.

Pathology testing not only aids in early detection of health issues but also serves as a means to monitor the effectiveness of implemented safety measures within the mining sector.

### Mandatory Pathology Testing for Mining Workers

To prioritize the safety of workers in Namibia's mining sector, the Namibian Mining Regulations Act of 2018 mandates regular medical examinations, including pathology testing, for all employees. Pre-employment tests, as well as periodic examinations during employment, are required to ensure ongoing monitoring and assessment of workers' health and well-being.

**Pathology testing not only aids in early detection of health issues but also serves as a means to monitor the effectiveness of implemented safety measures within the mining sector.**

### Tailored Pathology Solutions for the Mining Sector

NIP takes pride in its ability to offer specialized biological monitoring testing, such as tuberculosis testing (TB GeneXpert, Line Probe Assay, TB culture, and Drug Sensitivity), providing clinicians with timely results. Moreover, our toxicology testing services are highly relevant to the mining sector as they can measure the extent of exposure to harmful chemicals like lead, lithium, zinc, copper, arsenic, mercury, cadmium, chromium, among others. Additionally, we provide drug and alcohol testing services.

### CHOOSE NIP for Comprehensive Pathology Support

With our wealth of experience and expertise, NIP is fully equipped to meet the unique needs of the mining sector. Our commitment to providing top-notch pathology services ensures the safety and well-being of mining workers. Join forces with NIP and make pathology a cornerstone of safety in the mining industry.

**For more information and further consultation:**

Indileni.Kawedi@nip.com.na +264 61 295 4209


# AFRI-TRACK GROUP HOLDINGS (PTY)LTD

## OUR PURPOSE

We are a family of professionals that work together towards a common goal, to build and construct the infrastructure of the communities that we operate in for a sustainable future.

Along with our suppliers, clients, and other key stakeholders, we aim to continuously improve our processes to build communities and connect markets.

## OUR VISION

Our vision is to shape the future of infrastructure with unwavering commitment, innovative solutions, and exceptional craftsmanship. We aspire to be a leading construction company across Southern Africa, enriching communities and landscapes through sustainable development and transformative projects.

## OUR MISSION

Committed to quality, safety, and environmental responsibility, we pledge to transform our clients' visions into reality while fostering innovation and fostering the growth of communities. As we build the foundations of progress, we remain steadfast in our pursuit of excellence, integrity, and a lasting legacy.

## ISO CERTIFICATION

- ISO/IEC 27001:2013- INFORMATION SECURITY
- ISO 14001:2015 - ENVIRONMENTAL MANAGEMENT
- ISO 45001:2018 - OCCUPATIONAL HEALTH & SAFETY
- ISO 9001:2015- QUALITY MANAGEMENT

# ABOUT US

Afri-Track Group Holdings is a diverse, multi-disciplinary firm invested in the growth and sustainability of the communities and economies in which we operate.

Our drive to establish specialized entities that form part of our network enables us to offer a wide range of solutions in the infrastructure, mining, and renewable energy sectors. The increasing emphasis on reducing carbon footprint and going “green” is something that no one is exempt from, and in line with this, we are committed to playing our part to expand and adapt our businesses to align with this.

- Infrustructure
- Mining
- Renewable Energy

## INDUSTRY VALUE ADDITION
## PIT TO PORT

**Mine**
Extracting raw material

**Processing**
Mine processing structures

**Logistic infrastructure**
Road and rail infrastructure

**Port**
Port & material handling infrastructure

# CAPABILITIES

## ATR
### AFRI-TRACK RAILWAY CONSTRUCTION

First founded in 1994, has evolved into the foremost railway construction and maintenance enterprise in Namibia. Our accomplishments encompass more than twelve expansive projects focused on railway construction and revitalization.

**Services:**

- Maintenance
- Rehabilitation
- New Construction
- Pit to Port Solutions
- Condition assessments
- Material Handling

## ATG
### AFRI-TRACK CIVIL AND STRUCTURAL

ATG Construction is an expansion of Afri-Track into the civil, structural and building construction that goes hand in hand with infrastructure development.

**Services:**

- Bulk earthworks
- Services
- Building
- Structural steel
- Civil works
- Hydraulic structures
- Material Handling

## ZCN
### ZERO CARBON NAMIBIA

Renewable energy firm focusing on latest innovation and development of affordable, efficient and sustainable solutions.
Our solutions place emphasis on fit for purpose designs where energy sources can be stored in effective ways for consistent energy provision.

**Services:**

- Scoping studies
- Helioscope simulations
- Structures
- Installation

# OUR CLIENTS

Republic of Namibia Ministry of Works and Transport
transnamib
NAMPORT
Dundee PRECIOUS METALS
Rennies Consolidated
ACTOM
CNNC Rössing Uranium Working for Namibia
NAMDOCK
NAMCOR
ENGEN
PUMA ENERGY
NAMDEB A Namibia De Beers Partnership
OHORONGO cement
Transworld Cargo

# CONTACT US

ATG has a wide footprint across southern Africa.

We have established offices and are incorporated in Namibia, Zambia, Botswana and South Africa..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54 Bahnhof street
Central Business District

Swakopmund:

Einstein Street, Extension 10, Erf 5857
Swakopmund Industrial Area

Walvis Bay:

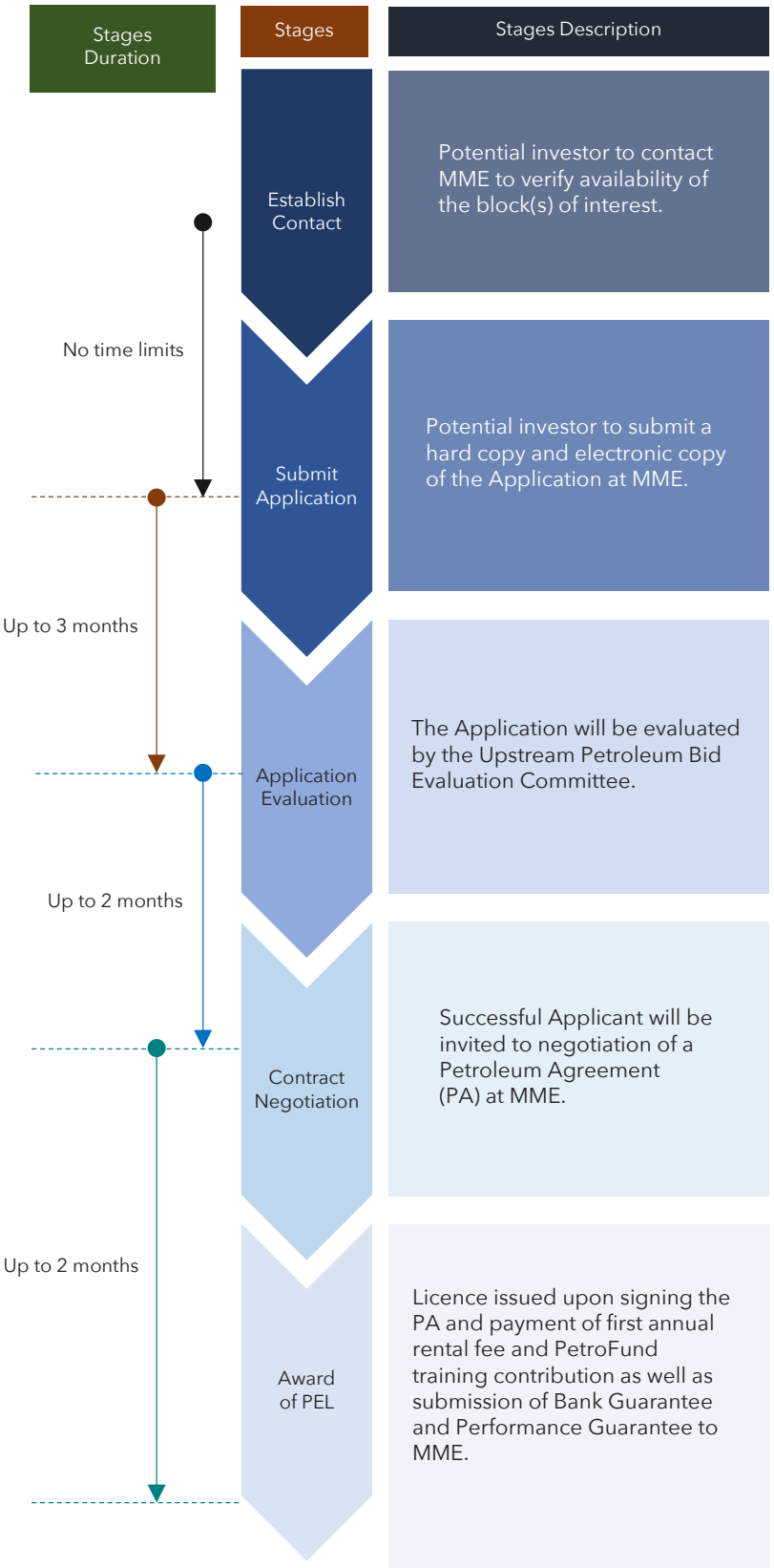
5th street East
Industrial area


# The energy Sector

In partnership with

NIPDB
Namibia Investment Promotion & Development Board
Office of the President

# Petroleum Exploration Licence Awarding Process




**Source:** *Ministry of Mines and Energy*

CapMarine

Capricorn Marine Environmental

# MARINE FAUNA OBSERVERS

## ENVIRONMENTAL MONITORING AND MITIGATION

CapMarine offers environmental monitoring support services to the offshore Oil and Gas sector. We supply personnel and equipment to fulfil the conditions of project specific environmental and social management plans. With over 20 years of experience in Namibia, contact us for marine fauna observers (MFOs/MMOs), passive acoustic monitoring (PAM) and fisheries liaison officers (FLO) for baseline monitoring, seismic surveys, drilling operations and geophysical surveys.

**Geophysical Surveys, Seismic & Drilling Operations**

**Consulting Services: Fisheries & Marine Mammals**

**Training & Deployment of Sea-going Observers**

**Passive Acoustic Monitors**

**Namibian Nationals**

### CONTACT US:

NA: (+264) 81 687 7437
RSA: (+27) 82 728 9673

www.capmarine.co.za

capmarineenquiries@gmail.com

# NAMPOA

NAMIBIA PETROLEUM OPERATORS ASSOCIATION

## Functions

The Namibia Petroleum Operators Association (NAMPOA) plays a role in facilitating communication and collaboration between the oil and gas industry, the government, and society as a whole. As an interface between these various stakeholders, NAMPOA works to ensure that all stakeholders are heard, while also promoting responsible and sustainable development in the oil and gas sector. Through its advocacy efforts and partnerships with key players in the industry, government, and civil society, NAMPOA helps to foster a more transparent and inclusive dialogue on the important issues facing Namibia's energy sector.

**NAMPOA functions as an interface between the Oil and Gas industry, Government and society at large**

BW ENERGY | Shell | galp | TotalEnergies | the human energy company

ReconNAMIBIA | RHINO RESOURCES | NAMCOR | MAUREL & PROM | ExxonMobil

ECO ATLANTIC | GLOBAL PETROLEUM LIMITED | Impact Oil & Gas | CUSTOS ENERGY | tr tower resources oil and gas

# Namibia Exploration History

## Exploration Costs

### A Historic Overview

**16 Dry Wells drilled after Independence**

**Post-Independence 16 wells drilled with no commercial discovery until 2022**

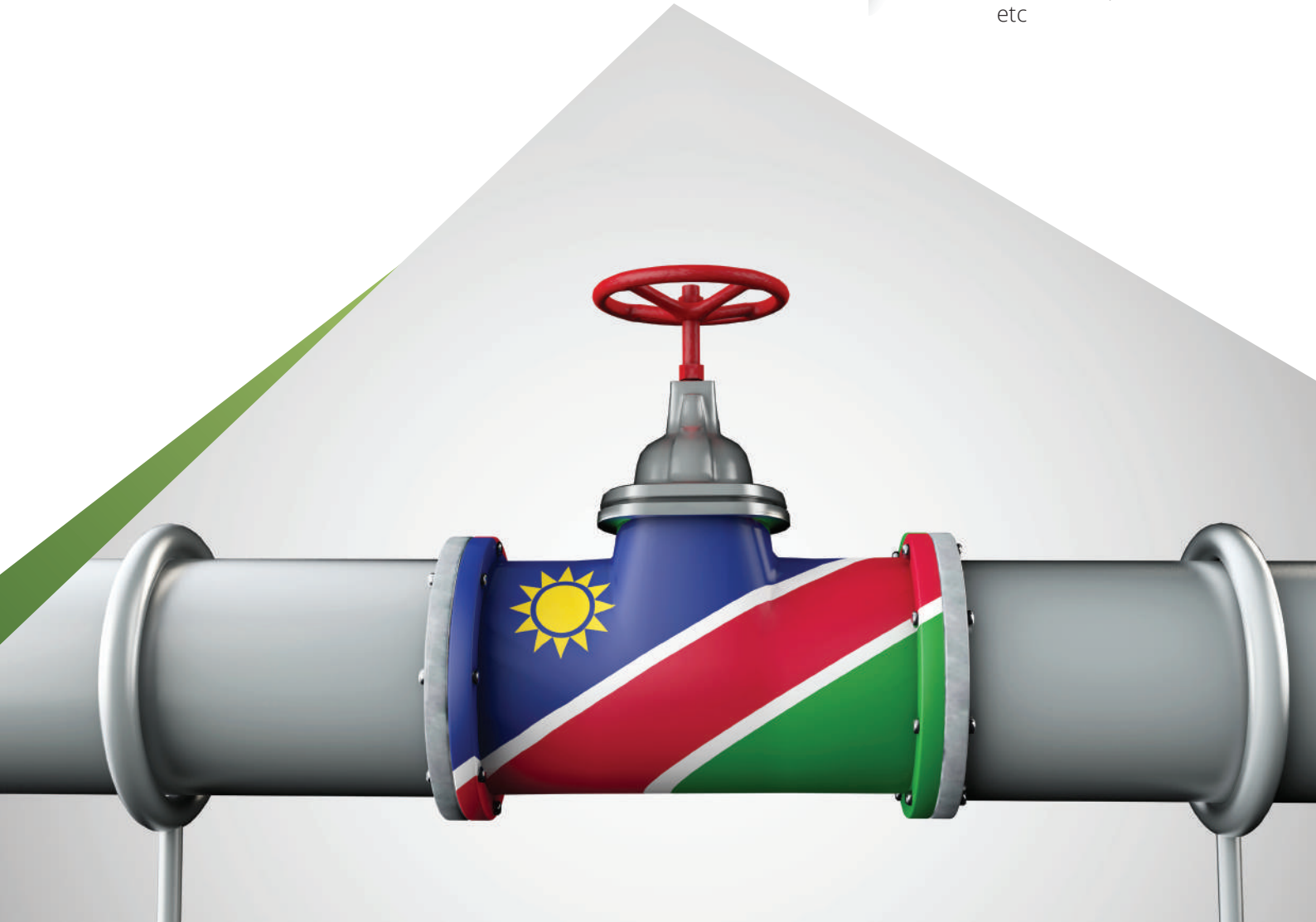
1. 1993 NorskHydro
2. 1995 Norsk Hydro
3. 1995 Ranger Oil
4. 1995 Sasol
5. 1996 Chevron
6. 1998 Norsk Hydro
7. 1998 Shell (Shark)
8. 2008 Energulf (Kunene)
9. 2012 Chariot (Tapir)
10. 2012 Petrobras (Kabeljou)
11. 2013 HRT (Wingat)
12. 2013 HRT (Murombe)
13. 2013 HRT (Moosehead)
14. 2014 Repsol (Welwitschia)
15. 2018 Tullow (Cormorant)
16. 2018 Chariot (Prospect S)

**Post-independence exploration expenses approaching NAD100B (2023 prices)**

- No commercial discovery since Independence

**Invested ~ USD+340M (NAD+6.1B) 2022 - 2023**

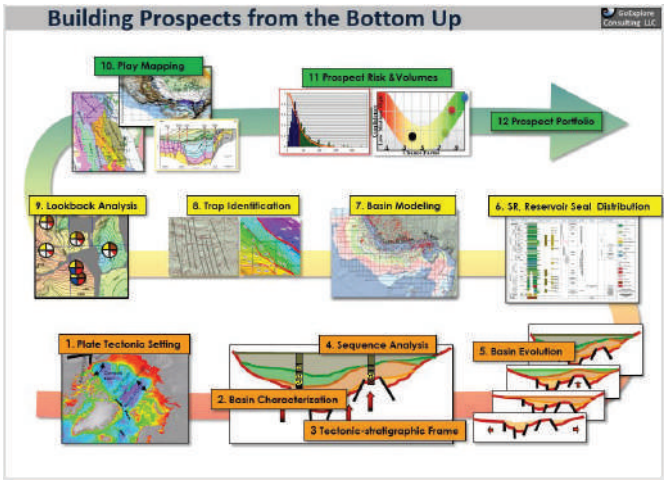
- 4 wells drilled within 2 years (success case)
- 4 oil discoveries after Kudu in 1974 to be appraised
- Costs exclude other exploration costs i.e. seismic acquisition etc



# 1st step: Play Definition

## Geological play concepts

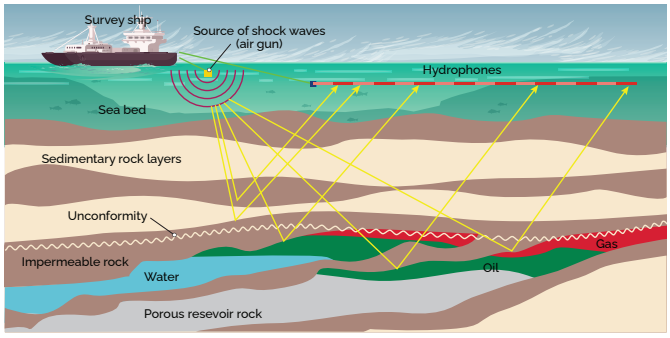
- Define exploration play concepts (clastics or carbonates, etc)
- Generate geological models to better understand petroleum systems (Source, Trap, Reservoir, migration & timing)
- Define prospective leads based on play concepts
- Apply for block to obtain licence from government
- **US $2M -$10M per project**



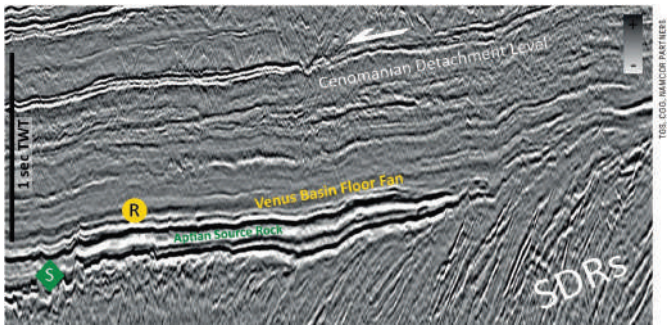

# 2nd step: Seismic acquisition

## Offshore Data Collection

- Environmental Social Impact Assessment (ESIA)
- De-risking the play concept based on our geological models if seismic data is not available
- Collect seismic data (2D/3D) to image the subsurface in space
- Single survey can take ~2-5 months and processing can take ~ 6-12months to complete & interpretation follows
- Interpretation results are then used to help evaluate any prospective locations to drill a well
- **US $20M -$60M per survey**




## Processed seismic line showing Venus




# 3rd step: Exploration Drilling

## Deepwater Drill Ship

- Environmental Social Impact Assessment (ESIA)

**Provided positive seismic data:**

- Safely drill to prove hydrocarbon accumulation
- Extensive safety measures and contingency planning used to ensure operational integrity
- A single well typically ~2-5 months to drill
- Drilling is the only way to confirm the presence and type of petroleum;
- The first is well seldom sufficient to confirm if viable the project is commercially viable
- **+/-US $40M -$100M per well**
  - » Potentially much more subject to complexity and mid-ocean conditions

# 4th step: Appraisal Drilling

- After a discovery has been made, appraisal drilling is required to understand and quantify the field size of the resource and the possible production rates
- Drilling is the only way to confirm reservoir quality and fluid type and to reduce geological uncertainties related to reservoir quality (porosity & permeability etc)
- A single appraisal well usually takes 2-4 months to drill
- Sanction the project –economics stage gates are passed
- **+/-US $300M -$500M - for an appraisal phase**

# TYPES OF WELLS

**Exploration wells**

Establish the presence of oil and/or gas in a structure

**Appraisal wells**

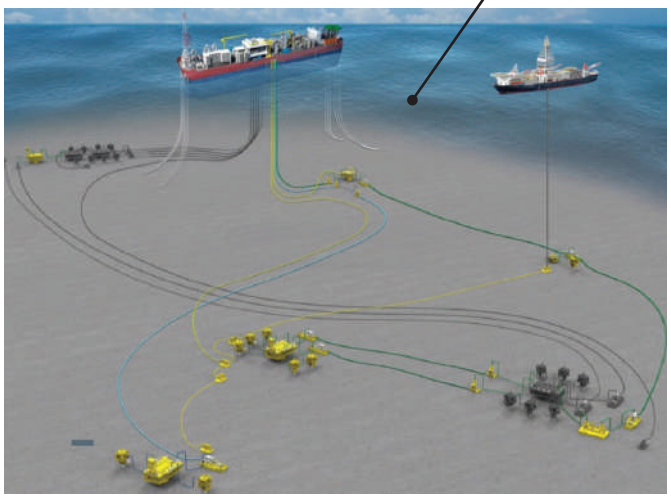
Define the volumes with more accuracy, in order to establish commerciality and the forward development plan

**Production wells**

Production wells are drilled when a decision has been reached to develop the field.

## 5th step: Field Development

Floating Production, Storage & Offloading Platform (FPSO)



- Detailed design of project (FEED - Front End Engineering Design)
- Development plan includes building and install offshore and onshore facilities/infrastructure to produce petroleum, Field Development Plan (FDP) includes building
- Drill development wells (~10-30 wells)
- **Total development costs US $5B -$10B (typically for offshore projects)**

## 6th step: Production

Processing, Storage & Transport Facilities

- Deliver oil or gas to onshore facilities for further processing into fuels, chemicals, and power generation
- First revenues are typically generated 10 -15 years after exploration commences
- Fields often produce for up to 20 and even longer
- Optimise field life
- **Revenue generation stage ($billions)**

## 8th step: Decommissioning

Decommission offshore platform

- Cease production and economic life
- Remove facilities & plugging and abandoning wells
- Return environment area to its natural state
- Long, complex process and expensive

# Types of Licenses

## & How They Work

### Reconnaissance License

A reconnaissance licence allows its holder to carry on reconnaissance operations subject to terms and conditions as stipulated under Section 22-28 of the Petroleum Exploration and Production Act, 1991. A reconnaissance Licence is non-exclusive.

### Exploration License

An exploration licence allows its holder to carry on exploration operations exclusively in the block(s) to which it relates subject to the terms and conditions and in the block(s) as may be specified in such Licence as stipulated under Section 29-38 of the Petroleum (Exploration and Production) Act, 1991.

### Production License

A production licence allows its holder to exclusively carry on production operations on the block(s) to which that licence relates and to sell or dispose of petroleum recovered within such block(s) and any other activities as stipulated under subsections 39-43 of the Petroleum (Exploration and Production) Act, 1991.

# The Award of Licenses

### Processes

### Typical criteria to qualify

### Typical parameters in the negotiations

- Well commitment
- Seismic acquisition
- Training
- Local Content Plan
- Other

### Typical work programs

- Seismic
  - 2D
  - 3D
- Wells
  - Number
  - Targets/minimum objectives
- Training
  - Petrofund
  - Internal
- Other

### The administration of licenses

- TAC
  - Established under the PA
  - The Minister will appoint a Chairman and four members representing the Government
  - The Applicant / Company will appoint 4 members
  - Meets at least twice a year and as required
  - To oversee and monitor all petroleum operations carried out by the company
  - To review any proposed exploration work progamme and budgets.
- OCM / OpCom
  - An Operating Committee composed of representatives of each Party holding a Participating Interest as per the JOA, shall be extablished.

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### Life span of exploration licenses

- **License sizes**
  - Average size is 5000 square Kilometers
- **Phases and durations**
  - Initial period of 4 Years
  - 1st Renewal period 2 years
  - 2nd Renewal period 2 years

### Life span of production licenses

- **Durations**
  - 25 Years
- **Extensions**
  - 10 years extension period

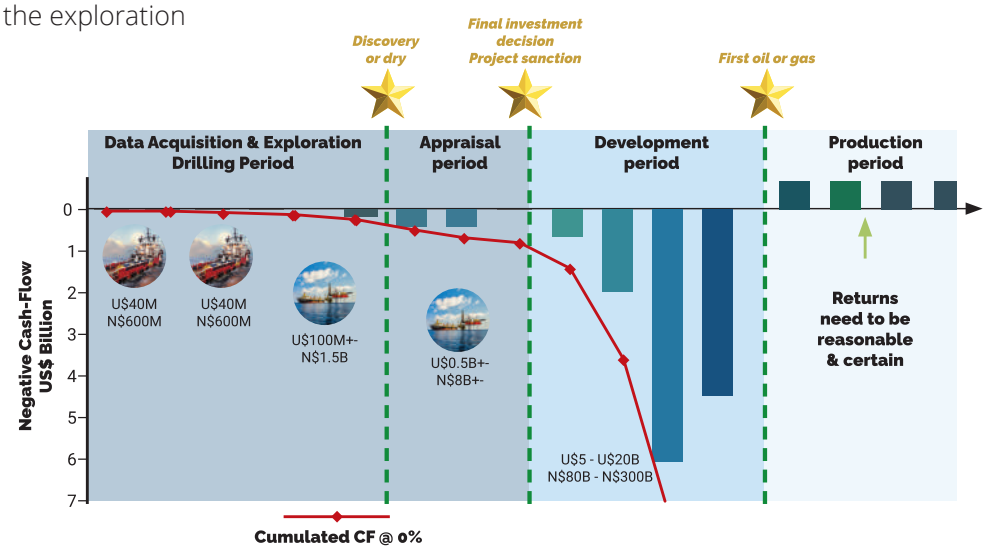
# What Happens
# If A Discovery is Made?

The discovery of petroleum in Namibia triggers a series of events that can impact the country's economy and energy security. Quick and accurate information flow is crucial among exploration companies, government agencies, and investors. The commercial viability of the field depends on factors such as reserve size, oil quality, and infrastructure. Exploration, assessment, and production licenses need approval, and petroleum fields have unique regulations. Once approved, the oil can be extracted and sold, creating a revenue source for Namibia.

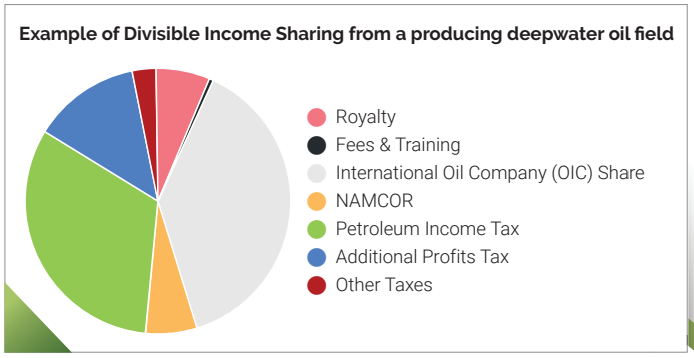
### In summary

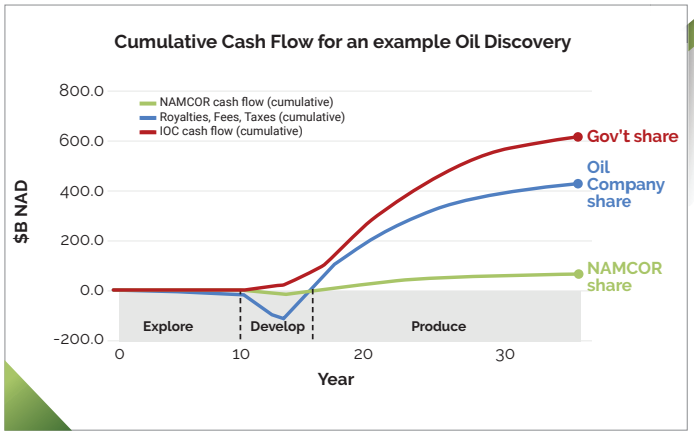
- Information flow
- Commercial or not
- Decision points and timelines
- Petroleum field vs the rest of the exploration license
- Production license

## For Deep Water Projects




## Namibia's Fiscal Share




## THE ECONOMIC CHALLENGE

- Under Namibian Petroleum Agreements (PA's), the Government is entitled to receive a share of any successful project once production has started
- Namibian petroleum agreements result in ~55-65% government take (including NAMCOR share)
- A large offshore oil development could result in Billions $NAD income for the Namibian government over the production life of the flied
- Multi-billion Investment $ are required to get to first oil & gas production
- Government policies are key to achieving success
- Predictability
- Transparency
- Sanctity of Contracts
- Stability of fiscal terms


Rail transport plays a critical role in enabling the mining industry to achieve operational efficiency, environmental sustainability and economic growth. Rail's capacity to handle bulk cargo is unmatched. It's connectivity, versatility and safety features make rail an indispensable component of the mining logistics chain. By tapping into the full potential of Namibia's rail network, mines can optimize their supply chain and expand their market reach, which will also contribute to a greener environment with less of a carbon footprint.

One of TransNamib's primary advantage is its high capacity for bulk transport. Rail systems can transport large volumes of materials over long distances with relative ease and minimal energy consumption. This capability allows mines to move a significant amount of tonnages from remote extraction sites to ports, plans or markets efficiently. The minerals and metals the company transports are, copper Concentrate, Copper Blister, Manganese, Coal and yellow cake.

The development of siding infrastructure in Namibia is pivotal to unlock the full potential of the mining industry. In Namibia, Dundee Precious Metals Tsumeb, Ohorongo Cement, Tradeport Namibia, Nampower and Rössing are some of the mines that have sidings to allow for the loading of bulk materials for TransNamib to transport. Given Namibia's vast and diverse geography, some mining operations are located in remote areas. Rail sidings offer a cost- effective and reliable solution to connect those remote mines to main railway networks. By establishing sidings close to mines, Namibia can unlock the potential of mineral deposits and enhance the overall output and growth of the mining industry.

TransNamib's access to the world-class ports at Walvis Bay and Lüderitz can boost efficacy at mining operations. A well-developed rail network at the ports extends connectivity to the hinterland, facilitating the transportation of goods to and from the interior regions of Namibia. The accessibility offered by TransNamib's rail connections opens up opportunities for mines and can accelerate economic growth for the mining industry.

Environmental sustainability is becoming increasingly important in the mining industry. Rail presents an eco-friendlier alternative compared to road or air

transport. Trains emit few greenhouse gases and have a far lower carbon footprint per unit of transported goods. Essentially one train takes 30 trucks off the road. By relying on rail for mining logistics, companies can contribute to reducing environmental aspects, leading to a greener and more sustainable approach to resource extraction.

### *Project Activities: Duel Fuel Locomotives*

The railways are a major consumer of energy in Namibia. With the TransNamib fleet due for an upgrade and upgrade funding being more readily at hand, an opportunity has arisen to combine the efforts in the Green Hydrogen Namibia drive by government with the railway sector in Namibia and implement a hydrogen off-take development project in one of the key industry sectors in the country. Thus, the idea of a hydrogen powered locomotive, using Namibian produced green hydrogen, has taken shape and is proposed here.

This project aims to develop the first H2 Dual Fuel Locomotive (diesel-H2) in Africa. It builds on existing green hydrogen (GH2) production and supply projects in Namibia, in an effort to create local off-take for the green H2 to be produced in the Western part of Namibia. This is done through development of an H2 consumption application in the railways, on locomotives.

The project will consist of two (2) hydrogen converted locomotives and one accompanying hydrogen fuel tender wagon and accessories.

***The project activities would include:***

- Design and engineering, systems engineering
- Installation, modification and assembly of components to vehicles
- Testing and commissioning of systems individually and on vehicles
- Homologation of locomotive consist
- In-service operation of the consist

Once these components have been designed, built and assembled and tested individually, they will be combined as a system and tested collectively before being used as a unit to pull a train in-service.

The pilot and research projects will take 24 months to complete.

### *Project Location*

The refurbishment, building, conversion, and assembly of the locomotives and consist will take place at two locations:

***Locomotive 1:*** Refurbishment, building, and assembly, including H2 conversion, will be carried out at the Traxtion Rail Hub in Rosslyn, South Africa.

***Locomotive 2:*** Refurbishment, building, and assembly will be conducted at the TransNamib Windhoek depot. TransNamib has committed to upgrading their workshops to ensure facilities of equal or better quality than those at the Traxtion Rail Hub.

The operational service of the locomotives will be on the Walvis Bay to Kranzberg corridor in Namibia, covering a distance of 210 km by rail. TransNamib will operate the locomotive consist for revenue service.

### *Sustainability and Impact:*

Railway operations In Namibia will continue for many years to come and the Namibian Government Is committed to upgrading and maintaining Its railway network. Accordingly, trains will be running In Namibia for many years to come.

Should the project be successful, railway carbon emissions will be reduced for the foreseeable future. This project will make a severe Impact on decarbonizing the railway activities In Namibia and furthermore has the potential to Impact the entire SADC region If Transnamib can assist with conversions of neighbouring countries 'locomotives as well.

Clients are Increasingly more concerned with reducing their carbon footprint and It Is envisaged that many heavy freight clients will benefit through lower carbon emissions and thereby earning carbon credits.

### *Moving Forward*

The opportunity is there to exponentially increase our volumes especially in terms of mining, and the company's is currently working towards eliminating its current rolling stock capacity challenges that affect our ability to realise those opportunities. Obsolete and aged rolling stock and a dilapidated railway infrastructure are our challenges in this respect. TransNamib's cash flow position also poses a significant challenge in terms of its operational capacity.

But we envisage to increase our capacity with the planned NAD 2.5Billion DBSA/DBN loan facility. The loan which will be used for the remanufacturing of rolling stock, acquisition of new rolling stock and the purchasing of spare parts amongst others. This will significantly allow us to increase TransNamib's current rolling stock capacity. TransNamib plays a critical role in fulfilling Namibia's vision to be a logistics hub for the region, thus investment in increasing our capacity and rail infrastructure is critical.

With the implementation of our five (5) year ISBP (Integrated Strategic Business Plan), we hope to have the required rolling stock capacity, in order to increase the volumes from the mining sector. We are also looking at HUB development at both Gobabis and Grootfontein to cater for exports & imports from Botswana, Zambia and DRC mining companies.

Namibia's Energy Transition:

# Balancing Oil & Gas with Renewable Energy

***Iitembu Shituula***
Manager: Client Coverage (Oil & Gas), Standard Bank Namibia

***Kerikora Kavari***
Manager: Client Coverage (Power & Infrastructure), Standard Bank Namibia

### *The Energy Transition*

The global energy sector is currently undergoing a major shift from hydrocarbon-based methods of energy production and consumption to systems driven by renewable energy sources. Dwindling hydrocarbon finds and increased consumer preferences for more decarbonized products and processes have necessitated for increased penetration of renewable energy into the energy supply mix. This transition to a lower-carbon economy, requires substituting hydrocarbon-based power with renewable energy whilst ensuring that energy remains accessible and affordable to the broader global community. The Namibian energy sector will need to grapple with the evolving question of how to balance its recent oil and gas discoveries with its immense renewable potential to ensure self-sufficiency and energy affordability for the Namibian population, whilst complying to the global decarbonization agenda.

### *The Renewable Energy Landscape*

As a nation with tremendous renewable energy potential, Namibia is well-positioned to become a key player. Whilst the country's energy mix is currently dominated by hydrocarbons with renewables making up less than a third of the sector, there has been over the last decade significant effort made to develop and diversify this mix. The Government driven Vision 2030 has spawned several policies and initiatives to promote the diversification strategy – These include the Renewable Energy Feed-In Tariff (REFIT) programme which incentivises renewable energy projects with favourable tariffs, and the Green Climate Fund to support the financing of these projects.

Government, in partnership with key private and public sector partners, has earmarked a number of strategic sites for future solar and wind power projects – These would support plans to increase the national energy grid's renewable energy capacity by over 170MW by 2025 of which 100MW would be allocated to NamPower while the balance will be tendered to Independent Power Producers. The Modified Single Buyer model allows transmission electricity consumers and Independent Power Producers (IPPs) to transact with each other directly for supply of electricity, for up to 30% of their energy requirements. Namibia, with the right policies and partners, could lead the charge for Southern Africa in moving towards renewable and decentralized power. With this, the country would be able to ensure long-term security of supply and position itself for sustainable growth.

Namibia possesses massive potential for renewable energy resources, and as a result, over the last two years, has been a focal point for the development of green hydrogen for export to the European market. This resource potential makes Namibia an ideal candidate to supplement some of this global demand. While export of green hydrogen faces challenges due to infrastructure, geographic and carrier challenges – conventional renewable energy sources face some challenges of their own in decarbonizing the global economy, such as lack of efficient storage and transport technologies. As such, green hydrogen could play a

key role in the energy transition alongside these other technologies but only if buoyed by the appropriate supporting policy and investment framework.

### *The Oil & Gas Landscape*

In 2022 Namibia became the world's most prolific prospect with multi-billion-barrel discoveries. These potentially giant discoveries, namely Shell's Graff and Jonker as well as TotalEnergies' Venus adjacent finds, located in the deep waters of the Orange Basin are estimated to have 7.5 billion barrels of oil with large volumes of associated gas which will likely warrant gas commercialisation. These discoveries were later accompanied by Shell's LaRona and Culinan wells, and TotalEnergies' Nara. Chevron and Woodside recently farmed into Namibia and it is expected that BW Energy, Galp and Rhino Resources will all complete their 3D seismic surveys this year while ReconAfrica are currently testing onshore potential. The fiscal impact of the production of oil for the Namibian economy will be significant, with estimates of government revenues from the production of oil and gas, from the early 2030s onwards, to exceed current fiscal revenues.

BW Energy have awakened the 800MW gas-to-power project, with first production scheduled for 2026. This could be a short-term solution to energy self-sufficiency, along with afore-mentioned initiatives to be implemented through NamPower and Walvis Bay Gas Port which plans to generate over 500MW of power. Natural gas has been classified as clean transition fuel and, as such, replacing imported coal-generated electricity will have the effect of reducing Namibia's carbon footprint and move the country closer to its carbon emission reduction goals as defined in the Nationally Determined Contribution (NDC) policy.

Most oil and gas companies are currently restructuring their strategies to incorporate the energy transition. Going forward, African oil and gas projects will require significant emphasis on adhering to environmental standards to retain their social acceptance for operation and to attract local and foreign investment. We anticipate that upcoming African developments will strive to attain Scope 1 & 2 net zero emissions, and any financial support for such projects will be required to align with the Equator Principles, which Standard Bank Group currently adheres to.

In conclusion, there is an over-abundance of energy potential for Namibia. For Namibia to reach its economic and energy goals as highlighted in various development plans, it is key that the country accelerate progress in expanding its energy capacity. The discussion around balancing oil and gas with its renewable counterparts need not be a juxtaposed one, but rather one of collaboration – Significant investment into renewable energy is required to achieve the NDC goals, and the revenue to be generated from the commercialisation of oil and gas development could be used to bridge this funding gap. Conversely, renewable energy inputs into these hydrocarbon developments can further aid energy companies to achieve their net zero targets.

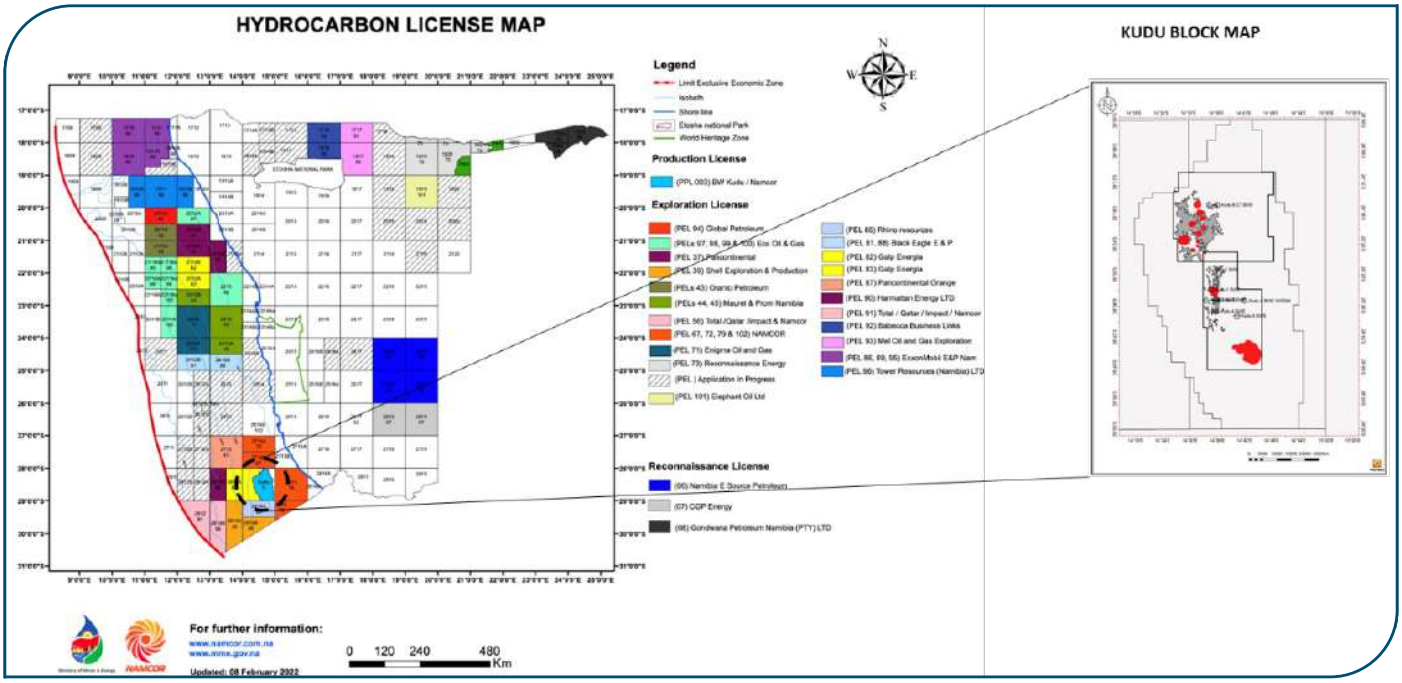
BW Kudu's Gas to Power Project:

# Providing Namibia a path for Long Term Energy Independence

BW Kudu (BWK) is a wholly owned subsidiary of BW Energy the independent oil and gas company listed on the Norwegian stock exchange. BWE holds other assets in Gabon and Brazil, in Brazil. BWE is part of the BW Group of companies, which comprise fourteen affiliates. BW Group is one of the largest private sector owned maritime groups involved in the transportation of gas, oil, and dry commodities with a fleet of over four hundred (400) vessels.

BWK is since 2017 a joint holder with NAMCOR of the Kudu Production Licence, PL003, which relates to the Kudu field. The Kudu gas field is in the northern Orange sub-basin approximately 130 km off the southwest coast of Namibia. The Kudu field and the recent oil finds by Shell and Total share the same origin, having all been sourced from the same rock units that was deposited in the nascent Atlantic Ocean one hundred million years ago.


*Where BWE operate*




*Orange River Basin Namibia*

In the case of the Kudu gas field, the exploration efforts which started in 1973 resulted in the first discovery of the Orange Basin in 1974. A further seven (7) wells were drilled leading to the delineation of the gas accumulation known as the Kudu Gas Field. The Field is made up of two accumulations, the Main Field, and Kudu East (much smaller in size and extent). BWK conducted a comprehensive two-year program to review all the legacy datasets and work products and concluded that significant potential remains in the block. This led to investing over NAD 500 million in the acquisition of a modern 3D seismic, gravity and magnetic dataset.

The Kudu field is being developed to produce electricity of between 400 – 800 MW by late 2026 or early 2027. Sizeable portion of the power will be used to replace NamPower's current imports from the region, while the balance will be fed into the regional grid for markets in South Africa and elsewhere. We intent producing small scall liquified natural gas (ssLNG) to ensure continuous gas feed to the power plant and for sale to off grid customers as an alternative fuel to diesel.

This ssLNG supply could be extended to provide feedstock for South African peaking power plants currently running on diesel. The expansion of the ssLNG offering is depended on our ability to discover additional gas resources. The new surveys mentioned above of over five thousand (5000) square kilometers each would assist us in drilling for additional gas. We believe that the additional gas, if proven, is substantial and could be used for a larger liquefied natural gas (LNG) facility focused on exports.

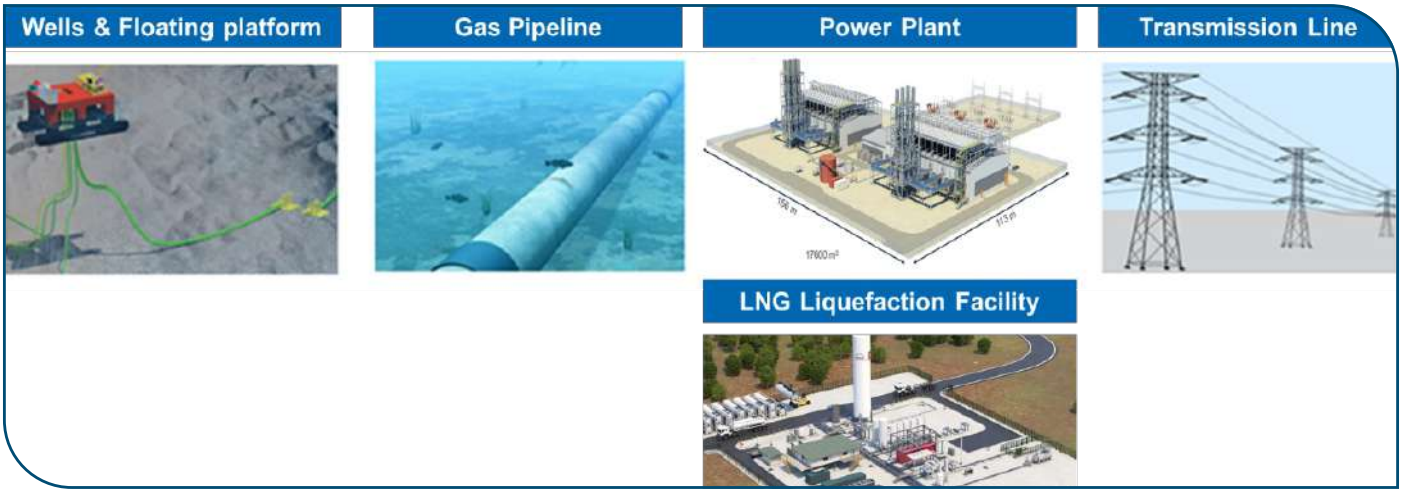
Namibia is currently importing electricity from three (3) countries, South Africa, Zambia, and Zimbabwe who are all loadshedding at home. Kudu will help ensure that Namibia becomes rare Sub-Saharan country with quality, cleaner base load electricity and not depended on other countries to meet its electricity needs. The impact on the balance of payment, GDP and foreign reserve will be positive. A 2018 study concluded that with Kudu the GDP would be 1.5 % higher. Other key benefits include a substantial reduction in greenhouse gas emissions. A recent study by an independent Namibian company, looking at 2019 numbers, indicated that the GHG emission attributable to Namibia through power imports is some 2.77 million tons of $CO_2$ equivalent per annual. The same study found that the GHG emissions for Namibia will be reduced by 1.5 million tons of $CO_2$ equivalent when Kudu comes online.

As Namibia is leading the push toward cleaner energy and fully embracing the energy transition through renewable (solar and wind), gas-based power from Kudu will support and enable large scale deployment of RE. Gas-based power is dispatchable and is supportive in ensuring that there is power 24/7 even when the sun is down, or the wind is not blowing. So, Kudu would assist the decarbonization efforts of the Namibian government.

The Kudu project is made of 6 components namely: production wells and subsea pipelines, floating production facility (FPF) to process and prepare the gas for export, export pipeline to transport gas from the field to the power plant, power plant that converts the gas to electricity, transmission line that evacuate the electricity from the power plant and connects to the rest of the NamPower grid, ssLNG that liquefied the gas for use as additional feedstock at the power plant or sold to customers as replacement of diesel and heavy fuel oil.

We see opportunities for participation in the various scope of the project by Namibian investors, supplier of goods and services and the financial sector. We have engaged several players in the financial sector on how certain aspects of the project could be financed locally to ensure broader participation by Namibians. Local content should not be seen as menace but should be embraced to the extent that inclusion of local companies does not raise the cost profile of the project, as this would have to be paid for by the Namibian energy consumers.

The project is currently in the front-end engineering phase (FEED), which include performing some detailed early engineering design, conducting environmental studies, geophysical and geotechnical studies of the routing of the pipeline and location of the power plant, selection of power plant location, engaging the market for cost and schedule proposals, finalizing revision to the field development plan. All these are required to support our economic modelling of the project, which informs the price of the gas and electricity. When this information is favorable and investment decision is anticipated by mid-2024, subject to financing terms with lenders and financiers.




*Elements of the Kudu Project*

# Namibia's oil resources lessons from African petrostates: How to avoid the "resource curse" with oil

by Theo Klein

Evidence suggests that the discovery of oil in developing countries has typically fledged these countries into anarchy and conflict. Between 1990 and 2009, 18 plus violent conflicts were sparked by the exploration of natural resources (including oil) in regions such as Angola, Cambodia, Democratic Republic of Congo, Darfur in the Sudan and the Middle East (United Nations Environmental Programme, 2009). Transnational Corporations which exploited resources in developing countries have played significant roles in a number of destructive civil wars in Colombia, Sierra Leone, Angola, the Democratic Republic of Congo, Azerbaijan and Myanmar. This serves as proof of the so-called resource curse thesis. Larsen (2006) highlights that core elements which avoid the resource curse include preventing rentseeking and large-scale corruption. A highly efficient judicial system that prosecutes rent seekers in an expeditious manner, a transparent reporting system that provides each citizen with revenue information, a strong media which serves as a watchdog and employing local citizens (with no discrimination against women) that places salaries directly into peoples' pockets from oil wealth are all factors which assisted in Norway's success in avoiding the resource curse with their oil reserves. The Norwegian government has also directed oil wealth into diversification investments such as building a manufacturing base, improving tertiary education (about 20% of citizens have a university degree) and establishing a sovereign wealth fund which stores oil revenues for future generations as the government acknowledges that oil is a non-renewable resource and cannot sustain economic prosperity indefinitely in Norway. An exception to the evidence that only developed countries truly benefit from natural resources is Botswana. Between 1966 and 1989, Botswana was one of the world's fastest growing economies, is now considered an upper-middle income country and managed to implement policies which ensured the judicious use of diamond revenue (Sarraf and Jiwanji, 2001). In a nutshell, the success of Norway and Botswana lies in their quality governance structures. Empirical evidence shows that natural resources are only a curse if governance structures are weak. Effective institutional mechanisms (e.g. contract law, property rights, transparency, legal/court system, etc.) need to be in place prior to oil revenues being generated in a developing country – such as Namibia – if the country wants to avoid the resource curse (Pegg, 2009). Namibia should also learn from the mistakes made in Angola, Nigeria, Equatorial Guinea and others and adapt the institutional models from Botswana or Norway to the Namibian context if we are to avoid the resource curse on our oil resources. In addition, to the above, the contracts signed between the host government and oil company(ies) is extremely crucial in determining whether oil revenues are managed effectively. Contracts are formulated on the basis of the resource country's relative bargaining strengths which in turn are influenced by geological features, tax incentives, political risks and market contexts (i.e. distance to markets, forecasted commodity prices, etc.). There has been an asymmetry of information in past oil contracts, where oil companies possess better information about an oil discovery's geological features and how to exploit it, which leads to contracts that are to the detriment of the host government most of the time. The current elevated oil price places the Namibian government in a better bargaining position, which should be used to increase its stake. 8 The question is, will Namibia be able to avoid the resource curse? Looking at a few indicators, Namibia is in a better institutional position compared to most African petrostates. Namibia has the highest governance index score compared to African petrostates (Figure 13). However, the strength of Namibia's governance system has deteriorated since 2019 according to a Bertelsmann Stiftung Transformation (BTI) index report.

Namibia also ranks higher than all African petrostates with regards to economic freedom (i.e. property rights, movement of labour and capital, financial freedom, freedom of speech, etc.) (Figure 14). Namibia scores better than all African petrostates in terms of corruption (Figure 15). Lastly, while Namibia's ease of doing business is nowhere close to optimal, it ranks much higher compared to all African petrostates.

Despite Namibia ranking favourably compared to African petrostates, local perceptions remain on the skeptical side when considering government's ability to manage the economy (Figure 16). At the same time, trust in government by the Namibian population has also deteriorated since 2014 (Figure 17). About 70% of the Namibian population thinks that government is handling or addressing corruption fairly/very badly according to an Afrobarometer survey released in February 2022. These opinion polls indicate that the population might be very skeptical of government managing oil revenues to the benefit of society and future generations. While Namibia recently launched its first sovereign wealth fund (discussed in our Welwitschia Fund report released in May 2022), the population seemingly might not trust government to manage these funds for future generations.

***General policy recommendations:***
Strict laws and penalties should be in place against quasi-criminal conduct, corruption and crimes such as pipeline vandalism, fraud and oil bunkering as these have proven to be a direct influence on economic growth and collective wealth in oil producing countries (Adedapo et al, 2021). Revenue generated from crude oil sales and taxes paid by multinational companies should be channeled toward the provision of quality education, healthcare and infrastructure that will benefit the citizens of the oil producing country. Job creation and involvement of communities in the safeguarding, maintenance and monitoring of oil pipelines should be incorporated into the social responsibilities of oil companies. Adequate and timely compensation must be made to affected communities, with swift remedial activities when oil spills occur.

***Namibia's oil resources***
***A brief history of oil and gas exploration in Namibia***
Namibia's onshore oil potential has received eager explorers for almost a century. The first oil exploration well – Berseba-1 – was drilled by Southwest Africa

Petroleum Corporation in 1928. This was 46-years prior to the first offshore oil exploration well – Kudu 9A-1 – being drilled by Chevron-Texaco in the Orange Basin in 1974. Initially, results at Kudu-1 turned out to be dry, but upon further drilling, the Kudu gas field was discovered instead, in 1974.

Although a gas blow-out was reported at Berseba-1 in 1928, the well did not yield an oil discovery and led to skepticism about Namibia's onshore oil potential, which in turn could possibly explain why only twelve (mostly shallow) exploration wells have been drilled till 2019. Despite gas being discovered as early as 1974, nothing has been done to exploit these resources to date.

However, petroleum basins with hydrocarbon source rocks have been a big motivator for ongoing exploration for oil in Namibia's two basins: the Nama Basin (in the South) and the Owambo-Etosha basin (in the North). Between 1964 and 1991, five exploration wells were drilled with only the deepest well penetrating a potential reservoir zone and minor oil deposits were reported.

In 1968, DeBeers together with Shell and BP acquired a concession and performed the deepest drilling test exercise to date in the Nama Basin. These exploration exercises were not aggressive enough according to geologists. Another argument explains that exploration licence holders in the past were typically small companies with limited financial resources and/or technical capacity, which prevented further investment in Namibia.

During the early 2000's, numerous companies from America, Canada, Russia, Spain, Austria, South Africa and Angola, amongst other, explored for oil in Namibia, but this time the focus was more on offshore basins: Namibe, Walvis, Lüderitz and Orange. Onshore exploration wells were drilled in the Aranos Basin in 2008 and the Husab Basin in 2012, but the gas content did not prove to be commercially viable. Oil was discovered at the Wingat-1 Well in the Walvis Basin in 2013 by Brazil's HRT and its partner GALP Energia, however, the two oil source rocks were not meeting commercial volumes.

Finding several small reservoirs saturated with oil at the Wingat-1 Well in 2013 is considered to be the first-time offshore oil was discovered in Namibia. Despite the lack of commercial finds, the hope for an oil boom remained high and Namibia continued to attract oil explorers as buying into blocks in Tanzania and Mozambique were more expensive at the time. In 2014, there were no proven estimates of Namibia's oil reserves, but Canadian ECO Atlantic Oil & Gas estimated about 21.5 billion barrels of offshore oil in Namibia.

In 2015, geological estimates suggested that Namibia may have 11 billion barrels of crude oil (Polus, A; Kopinski, D & Tycholiz, W, 2015). At that time, exploration licences were given to medium-sized companies (e.g. Murphy Oil, Tullow Oil, Galp Energia and Repsol) and industry giants such as BP and Shell. Current global oil consumption is about 97 million bpd, which means the 11 billion potential reserves in Namibia account for 113 days of global oil consumption.

***Current oil findings in Namibia***

More recently, oil discoveries were made at the Graff-1 and Venus Wells off the coast of Namibia in the Orange Basin in early 2022. This is 94-years after the first oil exploration in Namibia. The recent findings estimate about 3 billion barrels in reserves (31 days of global demand) at TotalEnergies's Venus well, with no estimates of Shell's Graff-1 well yet. However, an updated geological assessment would need to confirm the accurate level of reserves, as the 3 billion barrels is a conservative estimate at this stage.

According to consultancy firm Wood Mackenzie, the recent findings might be Sub-Sahara Africa's biggest oil discovery to date and estimates over USD 3.5 billion annually in taxes and royalties for the Namibian government. The firm also expects Namibia to be the third largest oil producer in the region within 10 years, producing 250,000 bpd in its first phase (to be the third biggest oil producer in Africa, Namibia would have to produce about 2.8 million bpd currently). Namcor estimates USD 5.6 billion in annual oil revenues according to a Bloomberg interview.

We estimate potential oil revenues accruing to the Namibian government using the following assumptions:

- Namibia takes 8 years to put oil extraction and export contracts and infrastructure in place. Oil demand remains balanced with modest pace of energy transition taking place globally, ensuring a market for petroleum products for the next 20 years (especially for developing nations who lag behind advanced economies in energy transitioning). This leaves Namibia with oil revenue generating opportunities until 2050.
- Use production levels of 250,000, 500,000, 800,000 and 1 million bpd in four different scenarios. If we assume 5 billion barrels in reserves and constant global oil consumption of 97 million bpd, then the assumed 200,000 to 1.5 million bpd daily production levels will deplete the reserves after 68 to 14 years.
- Rystad UCube estimates a break-even oil price for new oil projects at USD 47 per barrel. The average break-even oil price for existing African petrostates is USD 85 per barrel. So, we take the average of these two estimates and derive a USD 66 break-even oil price for Namibia. Given this estimate, we only use Brent crude oil prices of USD 70, 100 and 130 in our different scenarios, which we keep constant over the 20-year period.
- Taking an average of production costs for certain developing petrostates, we estimate production costs at USD 32 per barrel for Namibia. We then assume an annual 6% increase in production costs owing to general inflation in all scenarios.

The average annual oil revenues that we estimated in Table 1 range between 2.4% and 60.6% of 2021's nominal GDP, which constitute a significant proportion of Namibia's economy for one sector alone.

Risks to the above estimates being achieved include Namibia not being able to sign contracts with foreign firms in a reasonable time and allowing these firms to construct the necessary infrastructure to extract and export oil. Given our ease of doing business scores, this process could be delayed. As stressed before, Namibia's oil revenue pursuit is time sensitive given global decarbonisation strategies. Also, Namibia is dependent on foreign firms with the know how to establish oil facilities and transfer skills to locals. At the same time, major global oil companies – such as TotalEnergies – have started investing more aggressively in renewable energy technologies and aim to significantly reduce their oil operations or revenues as a percentage of their total earnings between now and 2050. This remains a challenge to Namibia, especially given TotalEnergies' interests in the Venus well.

# PETROFUND

## Cultivating Skilled Workforce as Namibia's upstream oil and gas industry transitions from exploration to the next phases - appraisal, field development and eventually production.

***Nillian Mulemi***
PETROFUND CEO

Namibia's Petroleum Training and Education Fund (PETROFUND) is working to meet the growing demand for skilled workers in the country's expanding oil and gas sector.

The PETROFUND was established by the Government of the Republic of Namibia in 1993 to build the workforce for Namibia's upstream oil and gas sector using contributions from oil and gas companies granted exploration and production licences.

PETROFUND CEO Nillian Mulemi says that by end of 2022, the oil and gas Fund had trained over 300 Namibians since its inception.

"We are working to ensure that Namibia has the skilled workforce it needs to fully take advantage of the opportunities in the upstream oil and gas sector," she said.

The upstream oil and gas industry is segregated into 5 distinct phases. – Namely: exploration, appraisal, field development, production and decommissioning.

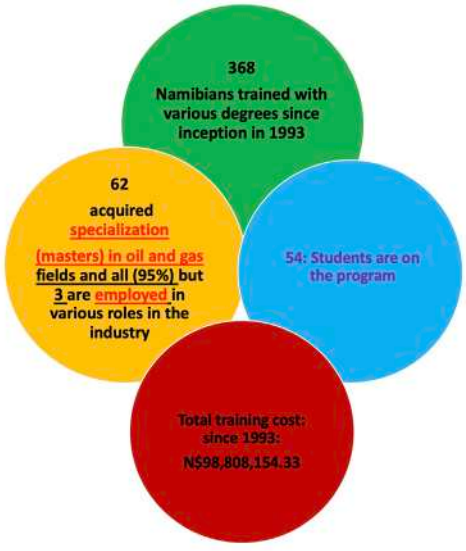
Until Q1 of 2022, Namibia's oil and gas industry was predominantly in the exploration phase. The skills that PETROFUND trained thus focused on the exploration phase of the upstream oil and gas industry to mitigate skills obsolesce due to lack of an associated industry.

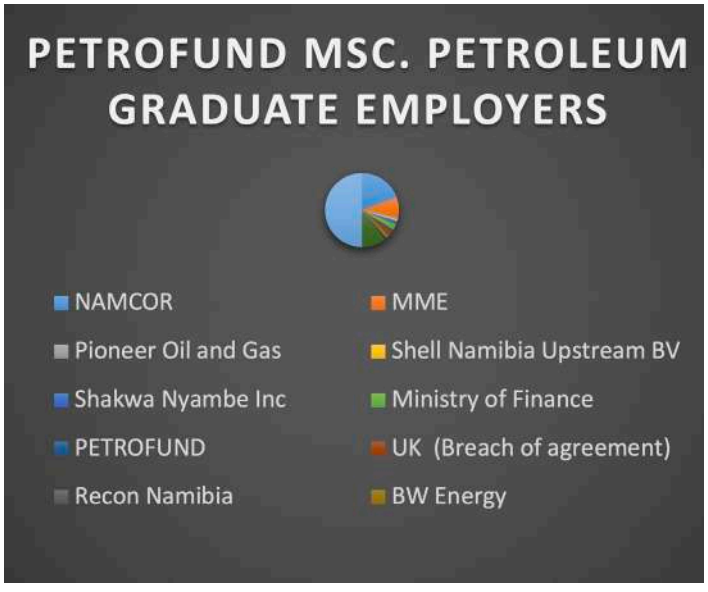
***PAST SKILLS: EXPLORATION PHASE***

The Trust Fund thus trained 368 Namibians in various undergraduate degrees and further trained 62 of the graduates in oil and gas specialized programs.

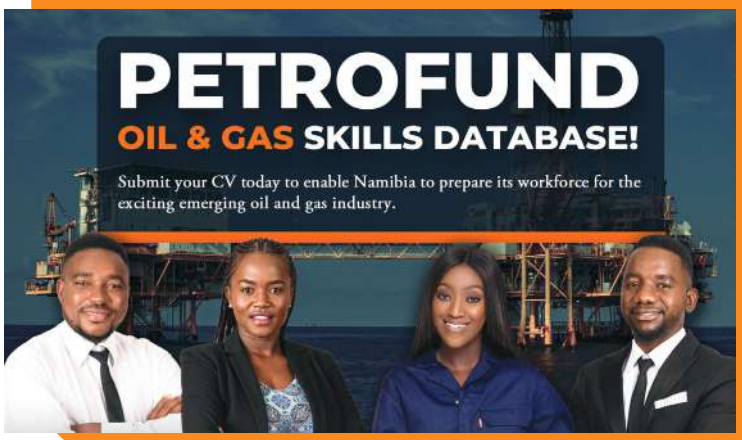
"We trained petroleum geoscientists, petroleum engineers, oil and gas legal experts, oil and gas taxation officials, petroleum accountants, petroleum environmentalists, petroleum GIS specialists, petroleum economists and petroleum cyber security experts to address multifarious sectoral demands."

39% (21) are employed at NAMCOR, 18% (11) are employed at MME, NAMRA employed the oil and gas tax officials (3) while others are employed by oil and gas operators, law firms and environmental consultants.




**Source:** *PETROFUND*




### NEW SKILLS FOR UPRAISAL, FIELD DEVELOPMENT AND PRODUCTION

Following 2022 Q1 discoveries of oil and gas – operators that made the discoveries advanced their drilling programs to appraisal while implementing intensified exploration programs. It is anticipated that appraisal programs will be fast tracked to field development and hopefully production with current projections targeting first oil by 2026 or earliest feasible opportunity.

PETROFUND has equally adjusted its scholarship program to prepare skills for the inevitable next stages of the upstream oil and gas sector.

From 1st Quarter of 2024, PETROFUND will equally start rolling out TVET scholarships wherein the Trust Fund targets to train oil and gas workover crew.

The oil and gas Fund has partnered with the established oil and gas Technical and Vocational Education and Training (TVET) institutions to rollout skills that support the sector's upcoming phases. The following programs will be considered for training amongst many others:

Drilling workover crew:
Roustabouts, roughnecks, derrickmen, assistant drillers, drillers, tool pushers, crane operators; deck officers, engineering officers, electricians and Remote Operated Vehicle (ROV) operators, oil and gas certified welders to name but a few.

The oil and gas Fund will further ramp up scholarships in the primary skills that support the full value chain of the oil and gas. Namely - mechanical, electrical, industrial and chemical engineering, geosciences, petroleum law and finance, oil and gas environmental programs

She added that her organisation is committed to ensuring that Namibia develops the skilled workforce it needs to take advantage of the opportunities in the oil and gas sector.

The oil and gas Fund will ensure that Namibians have the skills and opportunities they need to succeed as the industry transition to the next phases.

### EMPLOYMENT OPPORTUNITIES

The organisation is also working with oil and gas operators and oil and gas service companies to ensure that Namibians are given priority for jobs in the sector. In this regards, PETROFUND actively engage service companies including signing MoUs to facilitate that Namibians are granted priority consideration for job opportunities.

The Trust Fund has further launched an oil and gas CV database where Namibians can deposit CVs and be considered for training, internship and employment opportunities. So far 8473 CVs were received. The database will be updated periodically. Oil and gas service companies and Operators are already using the database.

### GENDER DIVERSITY

In addition to granting scholarships, PETROFUND is also working to promote gender equality by encouraging more women to pursue careers in the upstream oil and gas sector.

"We believe that everyone has the potential to succeed in the oil and gas sector, regardless of gender," Mulemi said.

The PETROFUND currently has 50:50 gender balance in the statistics of its upstream oil and gas professionals trained for the exploration phase.

### OIL AND GAS SAFETY TRAINING/CERTIFICATION

Safety training is mandatory for all oil and workers.

"Safety in the oil and gas domain is enshrined. It's an essential part of our training framework. Operations without safety adherence are untenable and thereby inadmissible. Specialized safety training centres are pivotal in pre-empting industry mishaps," Mulemi imparts.

PETROFUND's extensive liaisons with oil and gas operators and service companies ensure compatibility between training regimens and the sector's evolving needs.

The PETROFUND Boss reiterates that sustainable growth and ecological consciousness are non-negotiable elements of the oil and gas industry, underscoring PETROFUND's integration of safety protocols and environmental protection within its scholarship program.

Offshore survival training, firefighting and other international professional safety and environmental related technical accreditation are mandatory some of which are listed below.

### LONGTERM GOAL

"Entry into Namibia's the oil and gas sector necessitate securing a petroleum exploration licence from the Ministry of Mines and Energy as a fundamental prerequisite. Approximately 30 operators are in play. We are excited by the significant presence of renowned international oil corporations licenced in Namibia and new entrants," she said.

Mulemi emphasized the pertinence of collaboration with both entrenched industry stalwarts and emerging entrants.

"it is imperative that in the short-term experienced training partners from countries like Angola, Indonesia, Malaysia, UK, USA, SA, Norway and Brazil will be utilized to fast track the rollout of skills"

"The oil and gas sector thrives on information technology software. Every facet of their work is underpinned by technology. Ideally, training institutions partner with developers of training simulations and software to amplify the training experience," Mulemi asserts. The department of Geology at the University of Namibia has benefited from such support where PETROFUND collaborated with an oil and gas software developer to provide petroleum geosciences software while PETROFUND provided the requisite hardware hence the MSc. Petroleum Geology program has been offered in Namibia since 2015.

It is thus imperative that in the long-run as the industry's phases transition to the field development and the production phase, all training must be conducted in Namibia starting from safety and technical accreditation all the way to oil and gas TVET related programs. The aim is immediate efficacy followed by long-term self-sufficiency

As Namibia's oil sector attracts global attention and investments, PETROFUND strives to harmonize local skill development with the influx of international expertise.

"Our equilibrium lies in fostering Namibian expertise. The need for international specialists is significantly diminished where local talent flourishes," she says.

I encourage all Namibians interested in pursuing a career in the upstream oil and gas sector to apply for the upcoming scholarships.

# Namibia records surge in Renewable Energy Investments

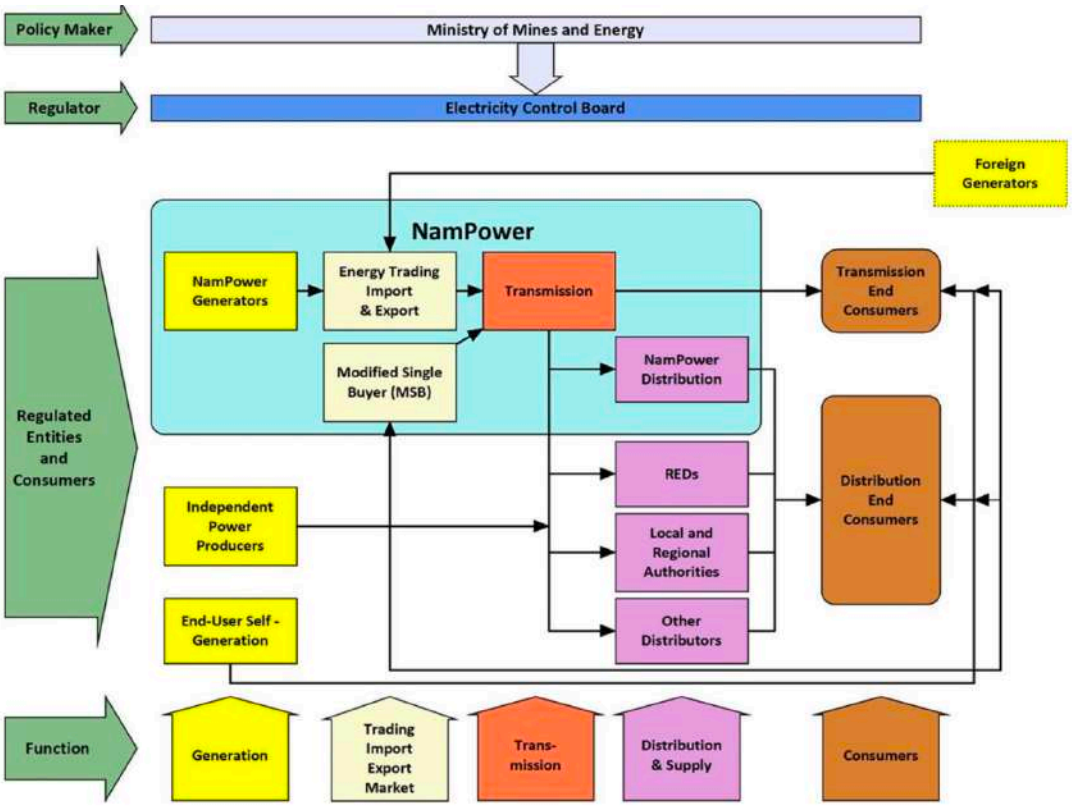
The Electricity Control Board (ECB) says it has recorded a total investment in renewable energy projects worth N$4.48 billion since 2014.

The projects include investments by Independent Power Producers (IPPs) under the Namibia Renewable Energy Feed-In Tariff (REFIT), including NamPower's own renewable energy projects, and other utility scale IPP projects.

ECB Chief Executive Officer Robert Kahimise however, said the amounts exclude net metering investments (rooftop systems) and off-grid electrification projects.

He made these remarks to elucidate on the capacity of existing players in the sector as well as their contribution to the energy supply.

*Below is a diagram of the Namibia Electricity Supply Industry Structure:*




*Operational Power Plants in Namibia*

**Licensed Capacity (MW)**

685

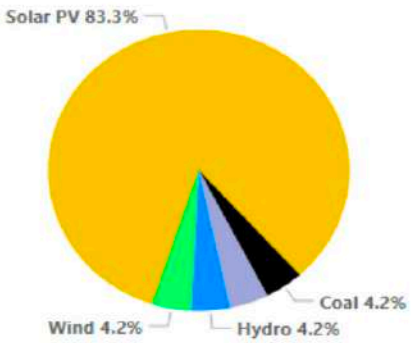
**Number of Licensees**

24

**Select License Type**

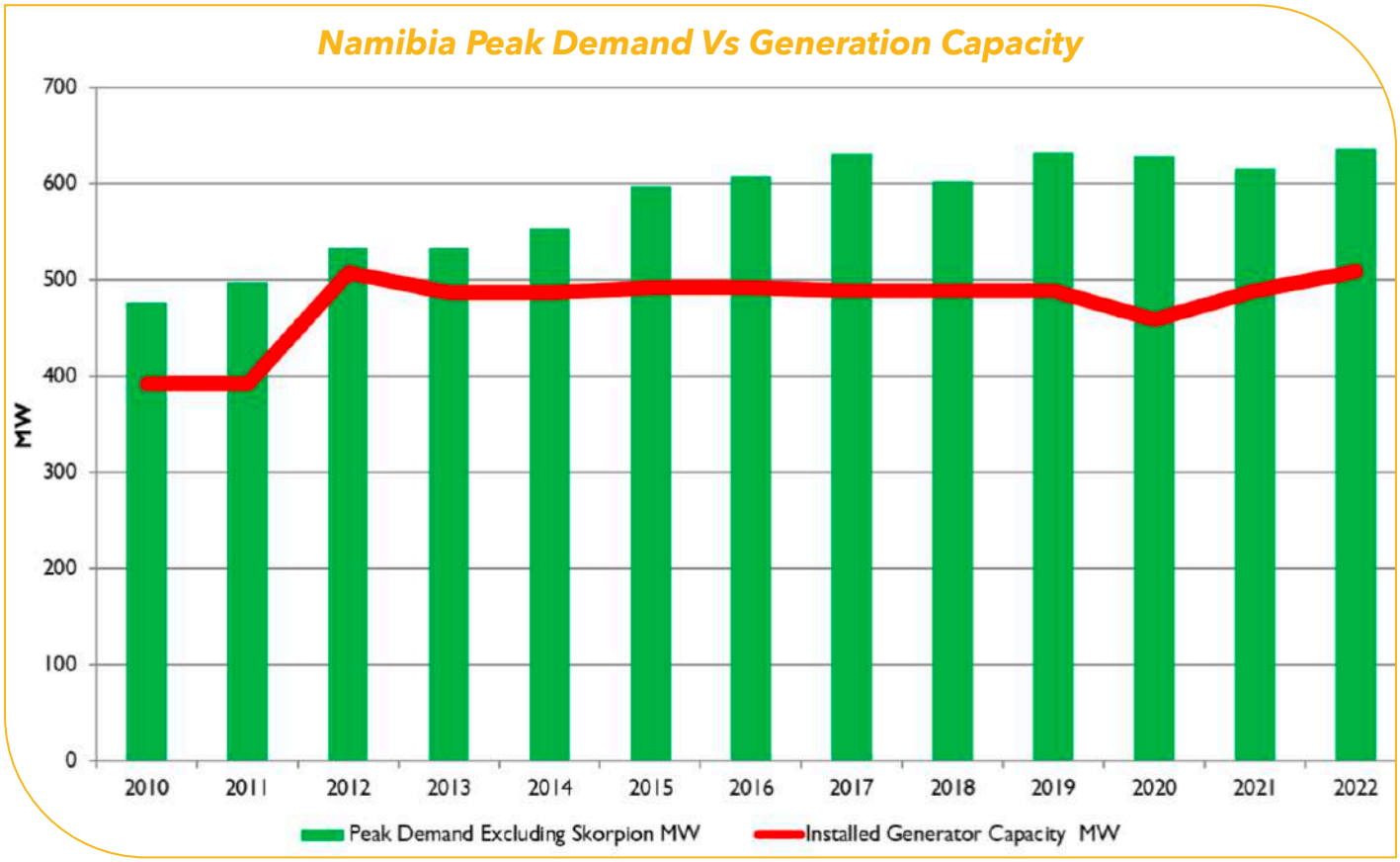
All

**Technologies Used**




| Technology | # | Licensed Capacity |
|---|---|---|
| Hydro | 1 | 347.00 |
| Solar PV | 20 | 189.94 |
| Coal | 1 | 120.00 |
| HFO | 1 | 22.00 |
| Wind | 1 | 6.00 |
| **Total** | **24** | **684.94** |

**Source:** *ECB*




**Source:** *ECB*

In the same vein Kahimise highlighted upcoming projects that will enhance the country's generation capacity, among them is the 50MW Lüderitz Wind IPP, 40MW Biomass, 44MW Diaz Wind project, and Bess 58 MW/60MWh all set for completion between July and December 2025.

This is in addition to the 50MW Anixas II (HFO/Diesel), and the 20 MW Khan Solar PV IPP currently under construction and envisaged for completion in April and September 2024 respectively.

In addition, Kahimise said there are favourable investment opportunities and collaborations through the Modified Single Buyer market model.

"Meanwhile, the Modified Single Buyer (MSB) model is intended to promote more private sector investment in the generation of electricity in the country, investors can participate in the electricity supply industry through engaging potential contestable customers on a bilateral basis and do not need to only sell electricity to utilities. It is established that through the MSB there is an opportunity that sellers and consumers can transact amongst each other," said Kahimise.

There are 28 licenced entities under the MSB market model with a combined power capacity of 1526.882 MW.

Other licences include 14 REFIT with an installed capacity of 81.71MW, five Unsolicited IPPS with a combined installed capacity of 74.81MW, and five solicited IPPs 61.47MW installed capacity.

In addition, five rooftop energy systems are licenced for 8.93MW, 56MW installed capacity from 12 standby gensets, while five embedded generator licence holders have an installed capacity of 51.7MW, with NamPower's three power plants with a combined power capacity of 489MW.

In terms of distribution and supply, as of June, the ECB issued 46 licencees.

ECB is mandated to exercise control over the Electricity Supply Industry (ESI) with the main responsibility of regulating electricity generation, transmission, trading, distribution, supply, import and export in Namibia through setting tariffs and issuance of licences.

"Government through the Ministry of Mines and Energy, developed the National Integrated Resource Plan (NIRP). The NIRP is a long-term development plan for Namibia's Electricity Supply Industry. The principal goal of the NIRP is to identify the supply mix of resources to meet the near and long-term electric power needs in Namibia in a sustainable, efficient, safe and reliable manner at the lowest reasonable cost. Namibia is currently implementing the NIRP and the ECB is issuing generation licences to complement government's efforts," stated the CEO.

Delving into the ECB's role in the development of Namibia's Green Hydrogen Sector, Kahimise noted that green hydrogen developers will have to apply for the necessary licences regarding the electricity supply from the ECB.

"In considering these licences, the ECB will take into consideration the approved MSB Market Rules, as far as our involvement is concerned. As you are aware, the Green Hydrogen project is driven by the Office of the President. The ECB's role with regard to green hydrogen is limited to electricity-related aspects, such as the generation of electricity (whether from solar PV or wind) and the transmission and export of electricity, depending on the business plans of the green hydrogen developers," he said.

ELECTRICITY CONTROL BOARD
23 Years of Successful Regulation

# LICENSING AND COMPLIANCE FREQUENTLY ASKED QUESTIONS

The following Frequently Asked Questions and Answers are intended to assist industry stakeholders and potential investors to understand the legal requirements, regulatory processes and technical compliance issues related to licensing.

**1. Where can I get the application forms to apply for a licence?**

To apply for a new licence, application process and forms are available on ECB website http://www.ecb.org.na/index.php/licensing/licence-application-procedure

**2. What are the typical requirements to apply for a licence?**

Different licence types have different requirements. The application forms are detailed and will guide a prospective applicant in terms of the requirements. All licence types are required to submit the following documents:

- Certified copies of the company registration papers.
- Shareholding structure of the company applying.
- Where the applicant is a company, a board resolution authorising the applicant must be attached.
- If the applicant is a local government body, attach a copy of the proclamation establishing such body.
- Valid good Standing Certificate from Inland Revenue for foreign and local applicants.
- Valid good Standing Certificate from Social Security Commission for local applicants.
- Valid certified copy of Affirmative Action Compliance Certificate or Exemption thereof issued by the Employment Equity Commission for local applicants.
- Audited Annual Financial Statements for up to 3 years.
- CVs of designated persons/authorities:
  - Authorised Person for Licence Application
  - Designated Competent Authority during Construction
  - Designated Competent Authority during Operation
  - Designated Compliance Person for Licence
- A Business Plan clearly indicating the cost and tariff of the project.

**3. What type of licences are issued by the ECB?**

- **Generation**
  A Generation licence is required by all generators that wish to generate electricity or sell capacity or ancillary services to customers within the Namibian market only. Generators can sell to the MSB (NamPower), Contestable Customers or Traders.
- **Transmission (incl. Systems Operations)**
  Allows the transmission network operator to develop and run the transmission network and system operations.
- **Distribution**
  Allows a distribution network operator to develop and run a specified distribution network and distribution system operations. Allows them to sell energy and electricity related services to captive distribution customers.
- **Import**
  Allows the licensee to import power from the Southern Africa Power Pool (SAPP) into Namibia for sale to contestable customers. Does not allow the licensee to buy power in Namibia for sale to contestable customers.
- **Export**
  Allows the licensee to export power out of Namibia. This is not a generation licence (i.e. an exporter may not necessarily be a generator, but any generator that wishes to sell power in the SAPP jurisdiction, will need an export licence as well as a generation licence.) Exporters will be considered as Contestable Customers at the border and will need Regulatory approval to become a Contestable Customer.
- **Trading**
  Will allow the licensee to buy power from Eligible Sellers and sell power to Contestable Customers within Namibia. Does not allow Imports or Exports.

**4. What are the typical requirements for a generation licence?**

Majority of the potential investors are interested in applying for a generation. The requirements for applying for a generation licence are as follows:

- Identity of the applicant, including certified copies of its constitutive documentation in the form of memorandum and articles of association, certified copy of certificate to commence business and signed resolution of board approving the submission of the application.
- Map showing the proposed location where plant is erected.
- Description of the technical design including an one-line diagram of the proposed plant and its surrounding electrical system.
- Description including the site layout of the area within which applicant intends to carry out activities authorized under the licence.
- Calculation of net present value of the proposed plant.
- Complete list of tariffs which the applicant intends charging to be specified in the schedule of approved tariffs.
- Outline of intended operational and business plan.
- Desired licence period, including a motivation for such period, and an estimate of the expected income and expenditure of the undertaking to be carried out by the applicant.
- Power Purchase Agreement (PPA) with the off-taker.
- Proof of funding for the project from financiers.
- Proof of land in a form of land lease agreement or a letter of provisional grant from the landowner or a title deed on the land if it is your own land.
- Registration with the MSB (NamPower) office if your intent to participate in the MSB market.
- The contestable customer/your off-taker must be registered with the ECB.
- Such other information as the Electricity Control Board may require or as required in terms of the Electricity Act of 2007.

**5. What fees are payable for licences?**

There are different types of fees payable depending on the activity. For all activities applied for, an application fee is required. Upon approval, further payment will be required for issuing or granting the request. A typical activity for which a licence is applied for are: issuance of a new licence, amendment of the licence, renewal of the licence, exemption of a licence and transfer of a licence. License fees payable by licensees have been aligned with the latest decisions by the ECB, including the provision for annual licence fees to be paid by licensees. The Government gazette detailing the fees payable is posted on the ECB website.

**6. How long does it take for a licence to be granted?**

From the date the application has been advertised, it takes on average 90 days to be granted.

**7. What is the advertisement procedure?**

The objective of the advertisement is to inform the general public about the licence application submitted to the ECB. The publication of the advert must run for a 30-day period to allow for objections. The advertisement must be published in at least one national newspaper circulating in Namibia or one local newspaper circulating in the relevant local area as per the Electricity Act 4 of 2007. The advertisement will be at the applicant's own cost. A draft copy of the advertisement must be submitted to the ECB for approval before being published.

**8. Does the application process involve public participation?**

Any party directly or indirectly opposed to the plans in the application has the right to comment or complain to the ECB. The ECB will consider the application together with objections, if any, and may at its discretion arrange for a public hearing of the application at a suitable time and place about which relevant stakeholders, particularly the applicant and the objectors must be notified within a period of not less than 14 days. At the hearing, the applicant and objector(s) may be represented by a legal practitioner and may lead evidence in support of the application or objection.

**9. What are the duties of a licensee?**

The duties of a licensee refer to the on-going responsibilities that the licensee must fulfil. Failure to comply with the on-going requirements of these conditions, may result in the cancellation of a licence. Each licence is issued with conditions to comply with.

**10. What is the Modified Single Buyer (MSB) Market model?**

The MSB is a market platform that allows consumers and private generators to transact directly, and it is operational since September 2019. The MSB market aims to allow more new local generation capacity, support efficient competition (lower tariffs) and customer choice. It encourages more private sector investment in electricity generation. The successful implementation of the MSB market will address security of supply in Namibia and make Namibia become energy self-sufficient. The MSB market has the potential for energy exports.

**11. Who are the Contestable Customers?**

Contestable Customers do not require licences but do require a formal Regulatory Approval and must register with the MSB office in order to participate in the MSB market. The Regulator has a critical responsibility to manage the contestable quantities in the market. This cannot be done via restrictive licensing conditions of new sellers. However, the Regulator can manage the contestable volumes via approval of contestable customer quantities. Once a customer has received an approval from the Regulator, they will need to register with the MSB office and notify them of any potential transactions in accordance with the market rules.

**12. Who sets the Quality of Supply and Service Standards (QoSSS) in Namibia?**

It is the ECB which sets the QoSSS in Namibia. The present QoSSS were approved by the ECB Board after a consultative process with the electricity sector. The electricity QoSSS are public documents and can be accessed from the ECB website at www.ecb.org.na

All licenced entities are expected to implement the standards.

**13. Does the ECB regulate electricity prices?**

Yes, the ECB has been mandated to regulate prices, but must do so within the parameters of the Electricity Act. It must ensure that the prices are such that they cover the cost licensees incur when providing service to customers on the one hand, and that they are also affordable to consumers on the other. For instance, the ECB held public consultations every time it received applications from the national utility, NamPower, for a tariff review.

**14. Is the ECB able to intervene where licensees offer some unsatisfactory service to customers?**

The ECB resolves complaints/queries that have been lodged with it. The customers must first lodge their complaints with licensees. Only after exhausting all possible remedies with the licensee may the complainant approach the ECB for intervention.



No 35 Dr. Theo-Ben Gurirab Street, Klein Windhoek.
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by Junior Baino

# Guidelines of Environmental Impact Assessment in Renewable Energy

Environmental Impact Assessment (EIA) guidelines for renewable energy projects in Namibia is dictated by the provisions of the Environmental Management Act of 2007, Environmental Impact Assessment regulations of 2012 and GRN notice 29 of the list of activities that cannot be undertaken without the Environmental Clearance certificate, Renewable Energy is part of the listed activities undersection 1 of the listed activities. The main aim of the EIA is to assess the potential environmental impacts of a project and propose mitigation measures. Below are some common steps and components found in EIA guidelines for renewable energy projects.

**1. Scoping and Initial Assessment:**
- Define the scope of the assessment, including the boundaries of the study area and the potential environmental impacts to be considered.
- Identify the relevant environmental and social aspects that need to be assessed, such as land use, water resources, biodiversity, noise, and social and cultural impacts.

**2. Baseline Data Collection:**
- Gather data on the existing environmental conditions in the project area before any construction or operation activities begin. This includes information about air and water quality, ecosystems, local communities, and more.

**3. Impact Prediction and Assessment:**
- Identify potential direct and indirect impacts that the renewable energy project might have on the environment, including both positive and negative effects.
- Assess the significance of these impacts in terms of their magnitude, duration, spatial extent, and reversibility.

**4. Mitigation Measures and Alternatives:**
- Propose mitigation measures to minimize or offset negative impacts. These measures might include changes in project design, site selection, technology choice, and operational practices.
- Evaluate alternative scenarios, such as different project locations or technologies, to identify the least environmentally harmful option.

**5. Public Participation and Consultation:**
- Engage with local communities, stakeholders, and relevant authorities to gather input and address concerns.
- Provide opportunities for public participation throughout the assessment process.

**6. Environmental Management Plan (EMP):**
- Develop an EMP that outlines how the project will be managed and monitored to ensure compliance with environmental regulations and mitigation measures.
- Include provisions for ongoing monitoring, reporting, and adaptive management based on the assessment findings.

**7. Regulatory Approvals and Permits:**
- Submit the EIA report along with the EMP to regulatory authorities for review and approval.
- Obtain the necessary permits and approvals before commencing construction or operation.

**8. Post-Construction Monitoring:**
- Monitor the actual environmental impacts of the project during and after construction to ensure that they match the predictions made during the assessment.
- Make adjustments to the project's operation or mitigation measures if necessary.

**9. Closure and Decommissioning:**
- Develop a plan for the eventual closure and decommissioning of the renewable energy facility, including site restoration and waste disposal.

It's important to note that these steps provide a general overview of the EIA process for renewable energy projects. Specific guidelines and requirements can vary based on local regulations, the scale of the project, the type of renewable energy technology (such as solar, wind, hydro, etc.), and the characteristics of the project site. Developers should consult the official EIA guidelines provided by the relevant regulatory authorities in their jurisdiction for detailed and accurate guidance.

NamPower
Powering the Nation and beyond


# LIGHTING THE WAY EVERY DAY

Where does the power to grow a nation come from? For us, ensuring security of electricity supply for all Namibians is more than a job – it's lights that brighten the future of the next generation, heat that keeps families warm, and power that keeps the wheels of our economy turning.

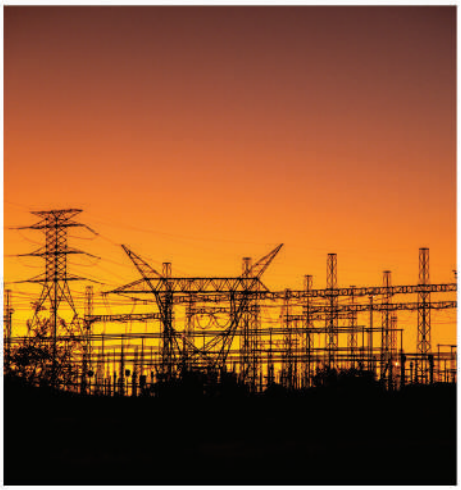
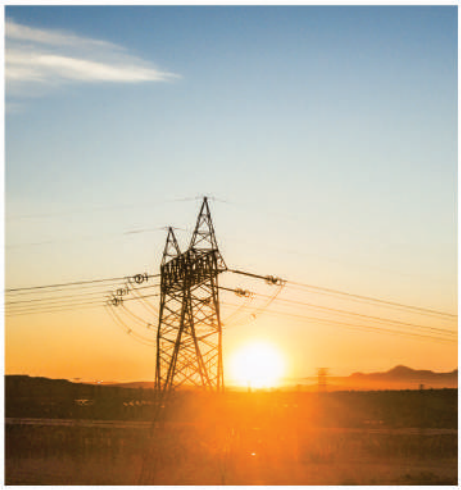
Through strong values, good governance, and sound investments, we continue to enable Namibians to make their own impact in this country's great story.

We are dedicated to ensuring your life is lit every step of the way.

**MANDATE**
To generate, transmit, supply and trade electricity, including the importing and exporting of electricity.

**VISION**
To be the leading electricity solutions provider of choice in SADC.

**MISSION**
To provide innovative electricity solutions, in an evolving market, which satisfy the needs of our customers, fulfil the aspirations of our staff and the expectations of ouar stakeholders in a competitive, sustainable and environmentally friendly manner.


# TRANSMISSION PROJECTS

NamPower has in place a Transmission Master Plan that provides for large transmission backbone developments across the country. The Transmission Master Plan is updated on an annual basis to ensure that the company maintains pace with the evolving electricity needs of the country. The plan involves the construction of new transmission lines, new substations and the upgrading of existing transmission infrastructure. New infrastructure is required due to existing internal supply limitations, to provide for future load growth, the integration of upcoming generation plants, and possible wheeling of electric power through the transmission grid to the Southern African Power Pool (SAPP) region.

**Below are some major projects from the Transmission Master Plan, which are either under construction, bidding process or in planning phases:**

**PROJECT NAME:**
**AUAS–GERUS 400 KV TRANSMISSION LINE PROJECT**

The Auas–Gerus 400 kV transmission line project forms part of the Transmission Master Plan 400 kV development which is currently under implementation to ensure security of power supply for Namibia. The Auas–Gerus 400 kV line project will support the Auas-Van Eck-Omburu 220 kV network (providing for contingencies, benefit of improved losses and improved network stability) and strengthen the network to Gerus Substation. This will enable NamPower to accommodate increased electricity transfer and wheeling via the Gerus- Zambezi High Voltage Direct Current (HVDC) link.

This project comprises of a 290 km transmission line from Auas Substation near Windhoek to Gerus Substation near Otjiwarongo and associated works required at both substations to integrate the line into NamPower's existing network. The project commenced in May 2021 and the new line is planned to be commissioned in July 2023.

**PROJECT NAME:**
**AUAS–KOKERBOOM 400 KV TRANSMISSION LINE**

The Auas–Kokerboom 400 kV transmission line and associated feeder bay project forms part of the Transmission Master Plan 400 kV development. The project comprises a 500 km transmission line from Auas Substation near Windhoek to Kokerboom Substation near Keetmanshoop and associated works required at both substations to integrate the line into the NamPower network.

**PROJECT NAME:**
**330 (400) KV KUNENE AND OMATANDO SUBSTATION PROJECTS**

The 400 kV line from the Kunene Substation site to the 400 kV Omatando Substation site has been completed. Two substations have been built at each end of the line, one at Kunene near Ruacana and another one at Omatando near Ongwediva, for this line to commercially operate. This development planned to be commissioned in August 2023.

**PROJECT NAME:**
**OBIB–ORANJEMOND 400 KV TRANSMISSION LINE**

A 400 kV transmission line will be constructed from Oranjemond Substation in South Africa to Obib Substation near Rosh Pinah. This project will improve the reliability of the existing transmission interconnection between Namibia and South Africa, allow for increased power trading with South Africa's Eskom, and improve the utilisation of the NamPower network for trading or wheeling of power between Southern African Power Pool (SAPP) member utilities.

**PROJECT NAME:**
**132/66/33 KV SEKELDUIN SUBSTATION PROJECT**

The Sekelduin Substation project is a new 132/66/33 kV indoor substation in the vicinity of Swakopmund. The substation will become the main transmission supply to the Swakopmund and Tamarisk substations, NamWater's water supply scheme to Husab Uranium Mine and the Erongo RED 33 kV network. The Sekelduin Substation will be supplied with two 132 kV overhead lines from the Kuiseb Substation.

The construction of the substation will allow for all high voltage equipment to be housed indoors in a purpose-suited building to protect it against the highly corrosive coastal and desert environment. The high voltage equipment that will be installed are compact gas-insulated mixed technology switchgear (MTS) for the 132 kV and 66 kV switching systems, as well as gas-insulated metal-enclosed switchgear (MES) for the 33 kV switching system.This development is planned to be commissioned in March 2024.

**PROJECT NAME:**
**220/132 KV MASIVI AND 132/66/33 KV SHIYAMBI SUBSTATIONS**

Electricity demand in the Kavango area has surpassed the capability of the existing transmission infrastructure, hence these two projects to address the situation. The new 132 kV line between Masivi and Shiyambi substations, as well as parts of the 132/33 kV Shiyambi Substation, have been completed. Work on the substations commenced in May 2021 and completion is planned at the end of 2024

# GENERATION PROJECTS

## 50 MW
### Lüderitz Wind Power Project

**APPROXIMATELY 20 KM SOUTH OF LÜDERITZ**

NamPower has awarded the bid for the development of a 50MW Wind IPP Power Plant to the China Energy International Group – Riminii Investments Joint Venture (now known as CERIM Lüderitz Energy (Pty) Ltd) on 3 January 2023. following an open, transparent and competitive bidding process.

The project will contribute towards reducing the overall NamPower tariff to the customer by introducing an affordable "new build" renewable energy to the Namibian grid; support the renewable commitments prescribed in the Renewable Energy Policy and National Energy Policy; provide renewable energy outside of the typical Solar PV dispatch profile, especially in the evening peaks (the wind resource profile supports evening peaks); pool in private sector investment in the Electricity Supply Industry.

Target commercial operation date for the power plant is scheduled for 2025.

## 40 MW
### Otjikoto Biomass Power Project

**APPROXIMATELY 15 KM WEST OF TSUMEB**

The project entails the development of a 40MWe Biomass Power Station utilizing encroacher bush biomass woodchips as the fuel source. Bush encroachment in Namibia currently affects 26 million hectares of potential agricultural land for livestock and food production.

As a potential project of national importance, the power station will not only assist NamPower to strengthen its domestic local generation mix with a fully dispatchable energy source (which could provide baseload energy), but also benefit the greater Namibian economy with its significant macro- and microeconomic benefits from the value addition of harvesting encroacher bush as a local fuel source.

Project completion date for the power station is planned for 2026.

## 58 MW
### Omburu Bess Project

**OMBURU SUBSTATION, 12 KM SOUTH-EAST OF OMARURU**

The project entails a stand-alone grid connected 50MW (minimum 50MWh) Battery Energy Storage System implemented at the Omburu Substation. This project will be grant funded (€20 million) by the KfW Development Bank and approximately N$ 100 million funded by NamPower for Transmission integration, local taxes and import duties.

The project will provide various grid stability services and will enable the grid to integrate additional intermittent renewable energy generation capacities, whilst ensuring security of supply.

Project completion for the power plant is planned for 2025.

## 70 MW
### Rosh Pinah Solar PV Project

**33 KM NORTH-WEST OF THE MINING TOWN OF ROSH PINAH**

This project replaces the 40 MW Rosh Pinah Wind Project, which has been discontinued because the wind resource at the Rosh Pinah site is lower than anticipated.

The Rosh Pinah 70MW PV Project will reduce the overall NamPower tariff to the end-customer by introducing an affordable "new-build" renewable energy to the Namibian grid; address and supporting the renewable energy commitments prescribed in the Renewable Energy Policy and National Energy Policy; Include the possibility for future addition of a Battery Energy Storage System (BESS), once the market prices for BESS have reduced to an acceptable entry point; and be implemented to be battery energy storage ready.

The project completion is planned for 2025.

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Embracing a Sustainable Future:

# Namibia's Renewable Energy Potential Highlighting Investment Opportunities

As the world grapples with the challenges of climate change, Namibia stands at the threshold of a sustainable future, empowered by its abundant renewable energy potential. The country's commitment to harnessing clean and green energy sources offers a promising investment landscape for those seeking to be part of a brighter, more sustainable tomorrow.

Namibia's renewable energy potential is truly remarkable, particularly when it comes to solar energy. According to the World Bank's Global Solar Atlas, Namibia ranks among the countries with the world's highest practical photovoltaic power potential, with an average annual global horizontal irradiation ranging from 2,118 to 2,447 kWh/m². This immense solar potential creates a fertile ground for solar power projects that can help meet the growing electricity demand in the country.

Despite its vast potential, Namibia is hugely reliant on imported power, with 72% of the country's energy requirements acquired from its neighbouring countries through the Southern African Power Purchasing Pool. Moreover, approximately 80% of the population in rural areas lack access to electricity. There is thus an increasing and urgent need for sizeable investments in renewable energy to projects to help bridge this gap.

***Investment Opportunities in the Sector:***

***1. Solar Energy:*** With its high solar irradiation levels, Namibia presents attractive opportunities for large-scale solar projects. Solar farms and distributed solar installations can contribute significantly to the country's electricity generation capacity and provide clean energy to industries and communities.

***2. Wind Energy:*** The coastal regions of Namibia boast strong and consistent winds, making wind power projects a viable investment option. By harnessing wind energy, investors can add another reliable and sustainable source of electricity to the nation's energy mix

***3. Biomass Energy:*** Namibia has significant biomass resources, through the vast encroachment of naturally occurring bush, which can be utilized for biomass energy can be utilized for biomass energy projects. Investing in biomass power generation not only helps to resolve Namibia's severe bush encroachment problem that is negatively impacting agriculture and ecosystems, but will also contribute to sustainable energy production in Namibia.

### *Namibia's Investment Case for Renewable Energy Regulatory Environment*

Namibia's government has demonstrated its commitment to renewable energy by setting clear targets and implementing supportive policies. Investors can find stability and confidence in the government's long-term vision for the sector such as the National Integrated Resource Plan which aims to achieve a renewable energy power target of 70% in electricity generation by 2030.

One of the main drivers attracting investors to Namibia's renewable energy sector is the Feed-in Tariff (FIT) system. The FIT guarantees a fixed premium price for electricity generated from renewable sources, providing investors with a secure and predictable return on their investments. This favorable regulatory environment has already attracted significant interest from both domestic and international investor.

The Modifed Single Buyer Model also allows transmission electricity consumers and Independent Power Producers to transact directly with one another. The consumption of off-grid renewable energy is also supported allowing net metering and for installations smaller than 500 Kw.

### *Market Opportunities*

As of 2022, Namibia has an installed generation capacity of 131.5 MW of renewable energy, and by 2025 plans to increase this by additional 130MW to meet the country's growing energy needs and become self-sufficient in terms of power generation. In addition, Namibia's committed plans to develop its large-scale green hydrogen industry will require 7GW of renewable energy capacity, creating massive investment opportunities in Namibia's RE sector.

Due to the majority of Namibia's population that do not have access to electricity, there are also are also significant off-grid investment opportunities, particularly for solar. This comes with the realization that off-grid households, and small-scale agriculture projects in rural areas stand to benefit significantly from PV installations, which is now more affordable and accessible with the reduction in the costs of solar technologies and increasing installation capacity in Namibia.

Namibia's renewable energy potential and endless market opportunities make it a compelling sector to invest and participate it. The supportive regulatory framework, along with abundant resources and a growing market, create a conducive environment for investment in the renewable energy industry.

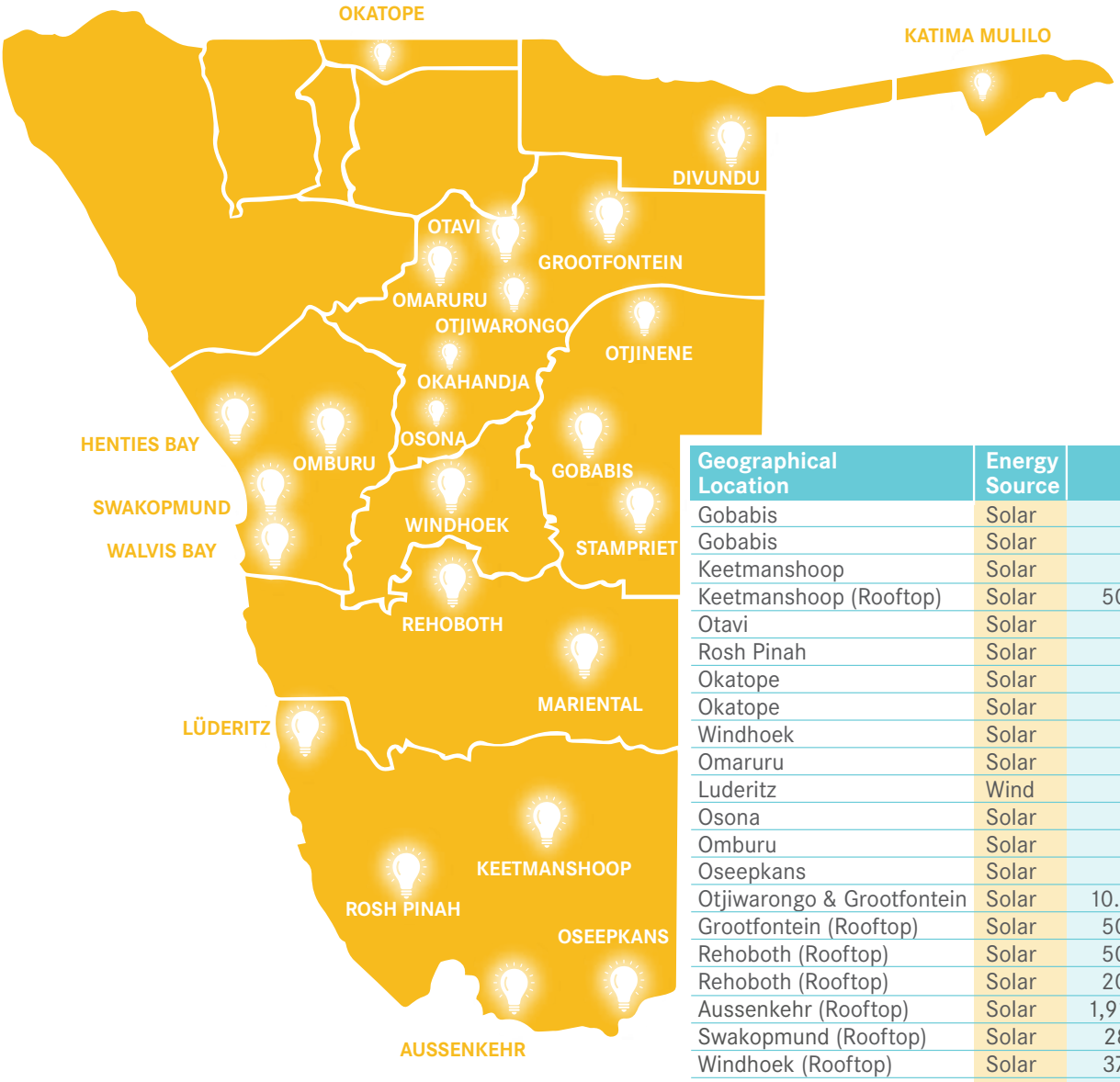
As the Renewable Energy Industry Association of Namibia, we encourage both local and international investors to seize this unique opportunity to partner with us in building a sustainable future. By embracing renewable energy and investing in clean technologies, we can contribute to Namibia's growth, preserve our environment, and foster prosperity for generations to come.

**By:** *Renewable Energy Industry Association of Namibia*

GIPF
Government Institutions Pension Fund

*To guard, and to grow.*

# GIPF **LIGHTING** UP THE NATION




| Geographical Location | Energy Source | Units |
|---|---|---|
| Gobabis | Solar | 5 MW |
| Gobabis | Solar | 5 MW |
| Keetmanshoop | Solar | 5 MW |
| Keetmanshoop (Rooftop) | Solar | 500 kWp |
| Otavi | Solar | 5 MW |
| Rosh Pinah | Solar | 5 MW |
| Okatope | Solar | 5 MW |
| Okatope | Solar | 5 MW |
| Windhoek | Solar | 10 MW |
| Omaruru | Solar | 20 MW |
| Luderitz | Wind | 5 MW |
| Osona | Solar | 5 MW |
| Omburu | Solar | 5 MW |
| Oseepkans | Solar | 5 MW |
| Otjiwarongo & Grootfontein | Solar | 10.75 MW |
| Grootfontein (Rooftop) | Solar | 500 kWp |
| Rehoboth (Rooftop) | Solar | 500 kWp |
| Rehoboth (Rooftop) | Solar | 200 kWp |
| Aussenkehr (Rooftop) | Solar | 1,914 kWp |
| Swakopmund (Rooftop) | Solar | 281 kWp |
| Windhoek (Rooftop) | Solar | 375 kWp |
| Katima Mulilo (Rooftop) | Solar | 1,102 kWp |
| Mariental (Rooftop) | Solar | 660 kWp |
| Okahandja (Rooftop) | Solar | 1,256 kWp |
| Otjinene (Rooftop) | Solar | 328 kWp |
| Stampriet (Rooftop) | Solar | 626 kWp |
| Henties Bay (Rooftop) | Solar | 220 kWp |
| Walvis Bay (Rooftop) | Solar | 109 kWp |
| Divundu (Rooftop) | Solar | 108 kWp |
| | **TOTAL** | **104.42 MW** |

# GIPF invests N$2.2 Billion in Namibia's Renewable Sector

Namibia's largest pension fund, the Government Institutions Pension Fund (GIPF) has been a key investor in the country's renewable energy drive, having to date committed N$2.2billion (US$123 million) while the Fund had invested N$1,110 million (around US$62.15 million) in the sector.

The investments by the fund – with assets of over N$159.5 billion (US$9 billion) as of 31 July 2023 – mainly in solar energy, have to date created a generation capacity of 104.42 megawatts.

The fund is also looking into the possibility of investing in wind generation and has a total renewable energy project in the pipeline worth N$134 million (around US$7.8 million).

According to the pension fund the investments have been done through an investment class called Real Assets or Unlisted Infrastructure under the Developmental Investment Policy, which is of a long-term nature, that matches well from a duration perspective with the Liabilities of the fund.

The income generated from the investments is also linked to inflation.

The fund notes that the fund managers that specialise in Unlisted Infrastructure, are guided by technical and financial due diligence assessments before making the investment into any of the projects and only invest when all risks foreseen are suitably addressed.

According to the GIPF, it only considers projects that meet its Financial Return (Hurdle rate) requirements, and which also have a defensive position such as reliable off-takers.

One such project is the Omburu Solar Power Station which was connected to the national grid in March last year and is located in Omaruru.

Occupying 12 hectares of the 40 allotted land, the power station can deliver 20 megawatts of power, which was spearheaded by HopSol Africa and Tulive Private Equity , a leading solar energy company that was appointed as the EPC (Engineering, Procurement, and Construction ) contractor for the project.

Omburu consists of 33 000 solar panels and 100 inverters and can supply 20 000 Namibian households with clean renewable energy via the NamPower grid.

Omaruru was deemed an ideal location for the power station, following an Environmental Impact Assessment, which is mandatory for all projects that could have a significant impact on the environment.

Omaruru was found to be an ideal location for a solar plant due to the region's sparse annual rainfall, which translates to an abundance of sunshine.
The Omburu Solar Power Station experiences around 8760 hours of sunshine annually, with approximately 300 sunny days out of 365, and 33% of these hours provide maximum output.

HOPSOL
Smart Energy Solution

## COMPANY PROFILE

HopSol Africa (Pty) Ltd was formed in 2011 as a privately owned business.
To date it has grown to be a leading Engineering, Procurement and Construction (EPC) company in Namibia with Alpha Namibia Industries Renewable Energy Power (ANIREP), the only Renewable Energy utility entity listed on the Namibian Stock Exchange (NSX) acquiring majority shareholding in HopSol in 2020.

HopSol Africa boosts having installed a total of over 95.5 MWp of Solar Farms & over 4.7 MWp of industrial scale roof top systems in Namibia.

All solutions we provide are future-proofed with maintenance service offerings.

## SERVICES

- **IPP made possible with the parent company ANIREP,**
- **EPC for the turnkey installation of photovoltaic Solar Power Plants,**
- **O&M Services for Solar Power Plants,**
- **Cost-Benefit Analysis to aid investment decisions.**

## UTILITY SCALE PROJECTS

We have successfully implemented projects as an IPP, EPC solutions and O&M service provider for utility scale projects ranging from 5MW to 47 MWp since inception.

## COMMERCIAL & INDUSTRIAL SCALE AS WELL AS OFF-GRID PROJECTS

We have successfully implemented EPC turnkey projects and offered O&M service for the commercial and industrial sector as well as settlements ranging from 3kWp to 450 kWp. The number of C&I installations keep increasing owing to industries opting for cheaper energy and embarking on decarbonization efforts.

## OUR CLIENTS

We are proud to work with some of Namibia's best-known brands such as NamPower, FNB, CENORED, Shell-Vivo Energy, Namib Mills, Cymot, Indongo Group, to mention just a few. We value our clients and welcome potential clients.

## THE FUTURE OF RENEWABLE ENERGY AND HOPSOL

The global energy landscape has been transforming, with a rapid uptake in renewable energy sources. HopSol Africa aims to use its industry expertise and strong stakeholder relationships to make valuable contributions to a just green energy transition in Namibia, and the world in general. The goal is to help Namibia meet the National green hydrogen and ammonia strategies by providing the best power solutions, assisting entities to meet the carbon emission neutrality to reduce their carbon footprint and to become a diversified renewable solutions provider in Sub-Sahara Africa.

# Renewable Energy Commodity as an Enabler for Sustainable Mining and the Role of Independent Power Producers

by Silvester Wayiti, the CEO of HopSol Africa

The Namibian Electricity Supply Industry (ESI) has seen growing participation by electricity generators other than the traditional generator a role which was spared for the country's bulk electricity provider and national utility, NamPower. This has been made possible firstly, by the introduction of the country's renewable energy feed-in tariff (REFIT) just short of a decade ago. Secondly, the introduction of the Modified Single Buyer (MSB) market framework in 2019, as a tool to further liberalise the Namibian ESI ignited interest from Independent Power Producers (IPP) to develop more localized energy generation plants. End users of electricity (consumers) have started to vigorously seek alternative energy sources as the cost of electricity from traditional sources continues to increase, in most cases as a result of fluctuating costs of energy from fossil fuels sources.

In neighbouring South Africa, the incapacity of Eskom to provide for the demand for power, as seen by crippling load shedding initiatives is driving businesses to look at alternative sources of energy in an effort to safeguard the survival of business operations. The residential sector is participating too – installing backup sources of energy which includes energy storage for use when grid power is not available. This is definitely a paradigm shift! Clearly the behaviour of consumers is changing.

Back at home, for Namibia's economy to flourish with resilience, the country needs to become energy self-sufficient and reduce dependency on imports. Namibia must have control on its own energy needs to determine when it needs it and how much it needs. This is all possible when all industry stakeholders bring their part.

As far as mining is concerned, this primary industry is central to Namibia's growth witnessed by decades of mining diamonds, gold, copper, uranium, zinc, marble and other commodities. The recent discoveries of mineral resources such as gold, lithium, graphite to mention just a few, and the ensuing exploration and appraisal activities both off shore and onshore, is further testimony of why Namibia and energy producers in particular, should ready themselves to enable economic growth driven by activities in the mining sector.

As a country, there is therefore a need for a quick turnaround in providing electricity generating, solutions. It should however be noted that the global drive to ensure that our economic activities do not harm the environment implies that not only do we need quick power generation solutions, but that cleaner energy supply solutions are a must constituent of the energy mix as the world transitions towards a greener economy.

Of course, sustainable mining has long started with ways and means of extracting resources in ways that minimize negative impacts on social, economic and environmental aspects. In most cases, this was however done mainly focusing on mining techniques, and the well-being of communities (corporate social investment) in which mining activities took place.

It is high time that renewable energy generation in mining becomes a necessity as renewable energy helps reduce negative impact on the environment through reduction of greenhouse gasses consequently minimizing the carbon footprint from mining activities. Renewable energy further brings about cost stability to mining operational costs since the cost of energy provision from these sources can be predicted thereby ensuring long-term economic benefits.

As many mining sites are located in remote areas which may not have immediate access to the national grid, renewable energy can provide power generation solutions that are faster and cost-effective thereby fast tracking the start of actual extraction activities and the reaping of economic benefits from mining.

Lastly, as environmental laws are changing, in many instance becoming more stricter in the wake of accelerating negative climate changes, renewable energy will no longer be a choice, but part of the solution. In essence, renewable energy helps align mining activities with the environmental, social and sustainability goals.

Independent Power producers, and service providers utilizing renewable energy sources are central to this cause because of their ability to develop and execute energy generation faster. The solar power generation technology for instance, is no longer a technology to be imported, given its maturity and the availability of local expertise. At the same time, the development of behind the meter wind turbine generators and the ongoing energy storage system developments is bringing in a possibility of hybrid systems and integrated energy generation solutions that complement each other. This will make energy supply from renewable energy sources firmer, more reliable, and securer, which is a need for mining operations which in most instances run for a 24-hour cycle non-stop, save for planned maintenance.

Notwithstanding the above, it is important that industry participants exhaust local service provision as far as the generation of renewable energy is concerned before considering the import of such services from elsewhere. The latter will ensure maximum benefits for the local economy, a strong component of ESSG!

# Why Green Hydrogen makes sense for Namibia

by Marco Raffinetti, CEO of Hyphen Hydrogen Energy

Since early 2021, Namibia has been establishing itself as a hub of green hydrogen activity and is uniquely placed to play a leading role in the world's transition to green hydrogen. In May, the Government of the Republic of Namibia (GRN) signed a landmark agreement setting out the process for the realisation of sub-Saharan Africa's largest, and only, fully vertically integrated, green hydrogen project. Our company, Hyphen, is working alongside the GRN to deliver that project, placing Namibia firmly on the world energy map.

Green hydrogen only requires four ingredients: sun, wind, land and water, meaning it can technically be produced anywhere in the world. However, when it comes to the first three of these key resources, Namibia has a global competitive advantage.

Namibia is a vast country, with a population of only 2.5 million – a large percentage of which live in urban areas – meaning it has large swathes of uninhabited and undeveloped land, deemed to be among the best in the world for onshore wind and solar resources. In other words: Namibia has huge, untapped potential.

The country's large-scale green hydrogen journey starts with our project. At full-scale development, anticipated before the end of this decade, our project will produce 2 million tonnes of green ammonia annually for regional and global markets. This alone will cut 5-6 million tonnes of global CO2 emissions per year – that's more than Namibia's total emissions in 2021 (4 million tonnes).

So, we know Namibia is good for green hydrogen, but why is green hydrogen good for Namibia?

The Hyphen project will certainly help the global deployment of green hydrogen and drive the energy transition but it will do so much more than.

With a total capital investment of over US$10 billion, roughly equivalent to Namibia's current annual gross domestic product (GDP), the project will support the


local economy through employment, local procurement and industrial development.

The Namibian people have been at the heart of our project from its inception, and will continue to be throughout the project's construction and into the future. Hyphen's project is set to provide numerous long-term benefits to local communities. Our Socio-Economic Development (SED) framework outlines our continued commitment to supporting Namibian communities at every stage of the project's lifecycle.

We estimate that the project will create up to 15,000 new jobs during the construction phase and 3,000 permanent jobs during operation at full production scale. The target is for 90% of these jobs to be filled by Namibians, with 20% specifically targeted for young people. We are also targeting 30% of goods, services and materials for the project to be locally sourced. These are aspirations and the final numbers will be found through baseline studies and engaging with local communities.

At Hyphen, we firmly believe in the importance of upskilling local communities, which is vital for the energy transition, and we will be working with GRN to offer targeted education and training to support our Namibian employment goals. Working closely with the GRN means that this project is structured in a way that is equitable, sustainable, environmentally responsible and socially just.

GRN is exercising its option to take up a 24% equity shareholding interest in Hyphen, making GRN, and the people of Namibia, a direct shareholder partner in the project, benefiting from the financial success of the project.

The demand centres for renewable power reside in the Global North, while the best and most valuable natural renewable resources for producing green hydrogen are located in the Global South. This presents Africa with a once-in-a-generation opportunity to leverage these natural resources to industrialise its economies and lead the green energy revolution.

This is where our project comes in. Hyphen's project will convert Namibia's abundant renewable energy into green hydrogen, and then into green ammonia, which will be shipped to the likes of Europe, Japan and South Korea , to help decarbonise their heavy industries. In the short term any excess electricity from our project can be provided to Namibia's national grid, helping Namibia meet its clean energy ambitions and helping make the country energy independent and, in the longer-term, green hydrogen can be used to help decarbonise Namibia and southern Africa's economies.

With the GRN owning all the high value renewable resource land, Namibia is well-placed to scale its green hydrogen production volumes to 50 times that of the project being developed by Hyphen – enough to sustain as many as 200,000 direct jobs annually.

Hyphen, in partnership with the GRN, has an enormous responsibility as Namibia's first large scale green hydrogen project to help create the framework and architecture to establish an entire industry.

It's an interesting and eventful time for everyone involved in unlocking Namibia's boundless green hydrogen potential. We will continue to work in partnership with GRN and local communities to ensure Hyphen's project brings benefits to this wonderful country collectively – as one people, one Namibia.

To read more about Hyphen's commitment to Namibia's socio-economic development,
*visit: https://hyphenafrica.com.*

# Legislating "Green"

## The Law's Role in Unlocking Namibia's Green Hydrogen Potential

by ***Stefanie Busch***

***With its high potential for solar irradiation and wind power, Namibia has been identified as one of the most promising potential green hydrogen production and export hubs in the world. While the technical attributes are in place, the country's legislative framework will ultimately shape the character of Namibia's GH2 industry and thereby influence the country's competitiveness in the global GH2 market.***

The emergence of any new industry, such as GH2, poses a challenge. The race to emerge as an early entrant requires the new industry to be implemented as soon as possible. However, given the nascency of the industry, there may not be suitable law in place to facilitate this implementation. Conversely, the establishment of a legislative framework prior to the development of the industry may cause a significant delay and prove a difficult task to regulate that what is still unknown. This challenge carries the risk of either under- or over-regulation of the GH2 industry.

***What is in place?***

As it stands, no specific legislation or policy has been published in Namibia which deals with or governs the production and export of GH2, either in its pure form or as a synthetic, such as ammonia. Namibia is certainly not alone in this respect, as many other jurisdictions are also still developing GH2-specific legislation.

Many elements within the GH2 production value chain could be authorised by already existing licencing regimes. Material authorisations would include an electricity generation licence, an environmental clearance certificate, a water abstraction permit and an exemption to release brine into the ocean following desalination.

The Namibia Green Hydrogen and Derivatives Strategy published in 2022 by the Ministry of Mines and Energy envisions the adoption of a fit-for-purpose legislative regime. The regime and the key legislative tools which are so envisioned are, however, not set out in the Strategy.

***Where are we heading?***

Although the Namibian government has responded immediately and has not ignored the significant opportunity arising out of GH2 - for which the government should be commended -, there are challenges of a general regulatory nature which would need to be addressed in Namibia's GH2 legislative regime. These would include matters relating to – (i) licensing, (ii) health and safety in relation to the production, transport, storage and use of GH2 and its derivatives, (iii) standardisation of key processes and equipment, (iv) distribution, sale and use of synthetic fuels and (v) certification.

A competitive fiscal regime would also have to be developed, as this will ultimately determine the competitiveness of Namibian-produced GH2 products on the global GH2 market. Fiscal incentives, green hubs governed by industry-specific legislation, state subsidisation or the adoption of contracts for difference models are just a few of the many options which could be considered in designing a suitable fiscal regime. Ancillary mechanisms such as carbon credits and carbon taxes could also serve to drive the industry and attract investment.

The identification and enabling of backward and forward linkages would further be crucial in unlocking the full benefits which Namibia could yield as a key GH2 hub. Measures could be put in place to enable and facilitate the development of the industry's supply chain, for example, by the manufacturing of key renewable energy equipment. Further, given that the emergence of a green economy has the potential of shifting energy-intensive industries from countries which lack the appropriate renewable energy sources to regions which are comparatively advantaged, a focus towards enabling the creation of green industrial clusters within Namibia should also be at the forefront. This could include green steel production, minerals beneficiation and downstream processing of minerals from the SADC region, manufacturing and data centres, all powered by green electrons. Another forward linkage would be the integration of GH2 into the energy mix of the extractives industries, such as mining or petroleum, thereby spurring on the decarbonisation of these sectors.

For purposes of enabling such linkages, the development of the necessary skills, expertise and technological know-how of Namibians, Namibian

contractors and Namibian technology developers is central. Local beneficiation and integration into the industry could be effected by way of policies which envision a gradual ramping up of local employment and procurement targets, in line with the development of the necessary skills and expertise in the market. Until such time, the facilitation of the movement of human capital skills into the country from abroad will serve to spur on the development of the industry and enable cross-learnings and knowledge transfers.

***The Way Forward***

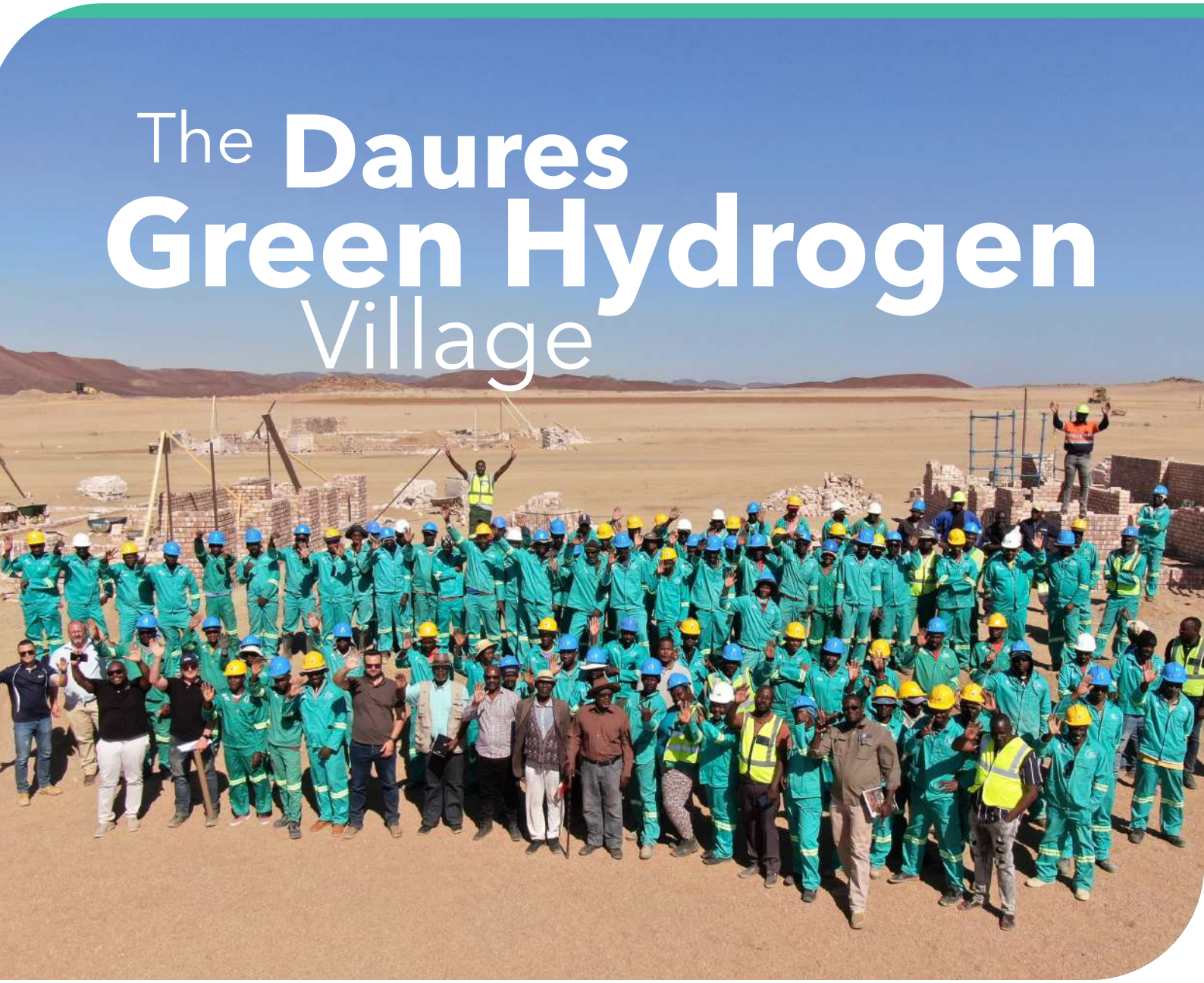
In developing Namibia's legislative framework relating to GH2, an appropriate balance needs to be struck. The necessary checks and balances on the industry would need to be put in place in order to protect the interests of the state, its people and the environment. However, not too many restrictions and regulations should be imposed so as to drive away investors or to render the industry unprofitable. The importance of an overarching policy which maps out the country's policy goals and deliverables – while remaining flexible to the ever-changing dynamics of a still developing market - cannot be overemphasised, as this will not only guide the development of any legislation in connection with the GH2 industry, but also provide the needed certainty to investors of the Namibian government's commitment and approach to the emerging GH2 industry.

## Biography:
# Stefanie Busch

Stefanie is a practicing attorney at Africa' largest law firm, ENSafrica, and practices in Windhoek, Namibia. She specialises in energy and environmental law, as well as project development, ESG and general commercial and transactional work. Her work involves advising numerous local and international clients in respect of their entry into the Namibian energy market, which includes renewable energy and oil & gas.

Stefanie is currently finalising her Advanced Masters in Energy Law offered by the North Sea Energy Law Partnership, consisting of a partnership between the University of Groningen, University of Oslo, University of Aberdeen and University of Copenhagen. She is also the regional lead for Southern Africa for Women in Renewable Energy and the Vice-Chairperson of the Environmental Lawyers Network of Namibia.

# The Daures Green Hydrogen Village



Located in the heart of the Erongo region is Namibia's largest constituency that will house the Daures Green Hydrogen village - Africa's first Net Zero community. The Daures Green Hydrogen Village is approximately 100 kilometres away from Uis, 140 kilometres away from Henties Bay and is 40 kilometres from the sea with no communities or settlements within a 50km radius of the project site.

The projects first pilot phase will showcase the sustainable production of green hydrogen and ammonia from renewable sources, demonstrate green hydrogen applications, pilot a green hydrogen economy with export potential for hydrogen derivatives while creating research opportunities for local and international students. Notably, the project aims to produce Namibia's first green hydrogen and ammonia in 2024 with the completion of it's pilot phase. The project has partnered with the University of Namibia and Stuttgart in order to facilitate an environment fit for research and capacity building in addition to many other key stakeholders. In addition to the aforementioned research partners, the project is unique as well in terms of its current shareholding structure which is 100% Namibian and features ownership from local community groups such as the Daure Daman Traditional Authority and Tsiseb Conservancy.

The project is backed by funding from the Namibian government and the German Federal Ministry of Research and Education (BMBF) to the value of 12m euros funding. This pioneering project plans to use renewable energy to create a sustainable green economy on the back of the production of green hydrogen and green ammonia. The project will look to produce 100 tons of green ammonia per day on the back of less than 1MW of renewable energy. In addition to this the firm will produce agriculture on site through

a state-of-the-art green house that consists of a closed irrigation cycle which recycles water, ensuring no drop goes to waste. This approach offers an environmentally-friendly, cost-effective solution to agriculture in this environment.

The project's pilot phase is already underway and anticipated completion of construction of the facility and its commissioning is intended for the end of Q1 2024 thereby realizing Namibia's first production of green hydrogen and green ammonia. This first phase will see houses, an eco-lodge, a campsite, a lab, research facilities, electrolyser and ammonia synthesis loop all powered by solar and wind energy generators in addition to a commercial greenhouse and nursery both for growing and research purposes. At present the project has created in excess of 100 jobs on site during construction with a significant portion of those employed sourced from the Daures Constituency. There is also ongoing support of local SMEs in the area with 30% of the project work allocated to SMEs hailing from the Daures Constituency.

The Daures Green Hydrogen Village does have its sights set on commercial production of green hydrogen and green ammonia to support both local consumption and uses cases of green hydrogen and ammonia and the global aspirations of a just energy transition. During the pilot phase the total facility will utilize an area of 250 hectares only, the total size of land for the project is 15,000 hectares and the Daures Green Hydrogen Village is in the process of conducting various feasibility studies which should unlock the full potential of the area with commercial production on site. The current feasibility work which is currently underway indicate that the full site can house in excess of 750,000 tons of green ammonia production on the back of more than 2GW of Wind and Solar energy.

# Making **Renewable Energy** a Vehicle for Expanded Access to Affordable Electricity in Namibia.

***Shoopala Angombe***
Co-founder of Tukomani Investments Namibia

The feasibility of these plans is propelled by strong regulatory support, abundant resources, a drive for diversification, and the growing demand for decentralized power systems.

### *Untapped resources*

Namibia, a country on the south-west coast of Africa is regarded as the driest country in sub-Saharan Africa. The Namib Desert in the west and the Kalahari Desert in the east are separated by the Central Plateau. The country is abundantly endowed with diverse energy sources and possesses a technical wind potential of over 100 GW making it one of the windiest places in the world with a capacity factor of around 50. The country boasts the world's second highest solar regime, offering a climate well-suited for solar generation. The country has a potential to capture around 10 hours of strong sunlight per day for 300 days per year. In addition to the hydropower potential, Namibia has a large capacity of rangeland and biodiversity which make it suitable for the accumulated biomass opportunities from bush thinning, making this an economically viable resource for value addition opportunities. Despite the potential for solar deployment, much of the market remains untapped. This untapped potential makes the country a highly attractive solar play and is a key driver behind the expansion of the market in 2023.

### *Efforts to diversify the country's energy mix*

NamPower presently imports 70% of its energy requirement due to local generation producing only 40 % of electricity - hydropower accounts for a large share of the energy mix, biomass and diesel-fired power generation are still heavily relied upon. Namibia's peak demand is at 600 MW. This demand is expected to grow at about 5% per annum. The country's generation capacity currently stands at approximately 486.5MW.

Total generation capacity delivers approximately 400MW, thereby rendering a deficit of about 200MW. The gap is made up by electricity imports. As such, the government is prioritizing the diversification of both the energy mix and the broader economy, expanding investment into renewable energy to support alternative energy sources, job creation and revenue generation.

Recently the government of the Republic of Namibia entered into an agreement with Hyphen Hydrogen Energy for the construction of large-scale green hydrogen facilities – of which solar represents a major part. The US$ 10 billion project is based in an area of ~4,000 km2 of land within the Tsau Khaeb National Park, near the coastal town of Lüderitz and will ultimately produce around 300,000 tonnes of green hydrogen per year for local as well as regional and global markets before the end of the decade, with first production in 2026. Namibia's world-class solar and wind energy sources will enable the country to produce hydrogen at a low cost in comparison to other countries making Namibia's green hydrogen competitive in the market. On 24 May 2023, the Cabinet of the Government of the Republic of Namibia approved an agreement with Hyphen Hydrogen Energy concerning the development, implementation, and operation of the project. The approval was followed by the signing of the Feasibility and Implementation Agreement (FIA) at a ceremony held on 26 May at Namibia's State House in Windhoek.

### *Decentralized Demand*

It is estimated that 70-80% of the rural households do not have access to electricity while figures in urban localities are much better, as around 70% of households in urban areas are connected to the power grid. This was revealed by the executive director in the Ministry of Mines and Energy in 2022. To bolster rural electrification, the government has turned to solar and is making a compelling case for decentralized, off-grid solar systems across the country. Rising demand for decentralized systems is driving solar deployment in Namibia, with a number of Independent Power Producers seizing the opportunities the market presents. Backed by policies such as the Off-Grid Energy Master Plan – a framework established in 2007 that aims to provide access to remote areas by establishing 'energy shops' that sell suitable, approved energy products – the government is making headway to connect the population with the off-grid market experiencing a surge in investment.

Additionally, companies located in off-grid areas are deploying their own solar systems, accessible to local communities. Examples include a 5.4 MW facility constructed at the Rosh Pinah zinc and lead mine in the Karas region, a 2.5 MWh off-grid plant constructed at Gam Village in Otjozondjupa, and a 50 kWp solar system installed at the Nambwa Tented Lodge in Bwabwata National Park. Furthermore, Omburu, which is located on a 42ha location near Omaruru, was commissioned on 29 March 2022, becoming NamPower's first entirely owned and operated renewable energy power station

### *Governmental Support*

Namibia's commitment to supporting renewable energy is prescribed in the National Renewable Energy Policy (2017) and the National Energy Policy. The National Renewable Energy Policy aims to achieve 70% or more of electricity generated in the country to be from renewable energy sources. Coupled with the Independent Power Producer (IPP) policy and Modified Single Buyer (MSB) arrangements – further private sector investments into the energy sector are anticipated. Investment opportunities for Independent Power Producers exists, as the Government of Namibia introduced the newly MSB model in 2019. This allows large electricity customers to buy up to 30% of their demand directly from an IPP rather than from Nampower. The MSB framework is expected to add 450MW of solar power to the national generation capacity, once fully implemented, as well as export into SAPP. Under efforts to attract foreign investment and private sector participation, the government has implemented a series of policies aimed at improving market clarity, transparency, and fiscal support.

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*This article is written in my own personal capacity*

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# Namibia needs **Regulatory Overhaul** for **Burgeoning Energy Sector**

***Shakwa Nyambe***
Managing Partner, SNC Incorporated. VP - Communications, Association of International Energy Negotiators (AIEN)

Namibia urgently requires regulatory reforms to establish much-needed transparency and accountability in its emerging oil and gas sector.

"There are significant gaps, particularly in the later stages of the oil and gas project lifecycle, post-exploration. We may need distinct regulations for development and production. It's imperative to address this now, as delaying until production commences might prove too late. We must establish comprehensive measures and ensure their enforcement," said energy lawyer Shakwa Nyambe of SNC Incorporated.

Nyambe, known for representing various international and national oil and gas companies and industry service providers, suggests that the Namibian government should draw lessons from proficient energy resource management in other jurisdictions like Norway, Tanzania, and Canada.

"Following the global models, an autonomous Namibian regulatory body could grant licences, oversee local involvement, enforce environmental protocols, and monitor petroleum activities. Such a regulatory entity can thwart political interference and minimize corruption risks," Nyambe said.

Nyambe observed that in line with its 2017 national energy policy, the Namibian government has already acknowledged the necessity for a local content legal framework to bolster Namibian workforce engagement and local business participation in the oil and gas sector and additionally, it has recognized the need for an independent regulator distinct from the Minister of Mines and Energy.

"Consequently, we anticipate their commitment to implement this policy by amending existing legislation and regulations to incorporate these provisions," Nyambe said.

Given the considerable financial stakes involved, Nyambe emphasized the urgency of rectifying shortcomings, instating local content requirements to facilitate Namibian company participation across the value chain, and ensuring transparency and accountability, possibly through the establishment of an autonomous upstream regulator.

"The oil and gas industry operates with its unique complexities, requiring legal professionals well-versed in pertinent legal matters and capable of offering business guidance. This encompasses adhering to local regulations and global standards, spanning from project conceptualization through execution and project closure," Nyambe elaborated.

This comes as oil majors, TotalEnergies and Shell have made significant oil discoveries offshore Namibia, poised to evolve into multi-billion-dollar undertakings. Additional 2023 findings have bolstered Namibia's rapid ascent as a promising frontier for African energy. Consequently, the nation's economy is projected to double within 15 to 20 years following the onset of production.

## **Biography:** Shakwa Nyambe

Shakwa Nyambe is the founder and managing partner of the law firm SNC Incorporated, with the main office in Windhoek, Namibia. He is a specialist energy, natural resources, and commercial lawyer and is an expert in the drafting, reviewing, and negotiating of contracts. He has advised international corporations, state-owned enterprises, governments, and individuals in oil & gas, renewable energy, and mining projects, and provided legal services to foreign investors in matters ranging from M&A, commercial transactions, and corporate governance to project financing. His clients include some of the oil and gas companies, renewable energy companies, mining companies, construction and infrastructure companies, State Owned Enterprises, Governments, and corporate entities.

Shakwa previously worked as a Legal Counsel at the National Petroleum Corporation of Namibia, as a Chief Legal Officer at the Ministry of Justice, Namibia and as a State Advocate at the High Court of Namibia. Shakwa recently joined the Executive Committee of the Association of International Energy Negotiators' (AIEN) Board of Directors as the new Vice President for Communications after having served as the Director of the African Chapter for the past three years. Shakwa also serves on the AIEN JOA Committee, LNG, SPA Committee, Asset Sale and Purchase Agreement Committee and the Drilling Contract Committee as well as on the Hydrogen Taskforce, among other roles. He is a legal practitioner of the High Court and Supreme Court of Namibia.

Development Bank of Namibia

Expect more.

# DISCOVER
## YOUR TRUE POTENTIAL

Since Namibia has adopted a growth at home strategy which aims to re-enforce the acceleration of growth and reduce income equality and increasing of employment, Namibia's economy like many other economies globally have had its own share of events. Now is not the time for business owners to count losses but look forward during these post Covid-19 times.

It is indeed clear that this pandemic did not only threaten our macro-economic stability but also impacted our sustainable economic development which has slowed down the economic outlook of the country. Now is the time to embrace the future and post Covid-19 measures. This mean that we open for credit extension measures, businesses, households, old and potential new clients, as required by the Bank of Namibia. It is based on this understanding that the Development Bank of Namibia is urging its clientele, household and potential business owners to "dare to dream, not just mare dreams but to dream bigger, This would mean that one must imagine doing something bigger and greater than usual, it's about time to venture in a world that looks impossible but, attainable, and most important of all, a world of prosperity.

Now comes the questions as how does this happen? How do one become who he/she is destined to be? Answering these question means that we are already in quantification of ideas or thoughts which is a critical component of planning and SWOT analysis. Once such questions are hovering around you, know that it is time

**The Development Bank of Namibia urges business owners to "dare to dream, bigger."**

"This would mean that one must imagine doing something bigger and greater than usual, it means it's about time to venture in a world that looks impossible but, attainable, and most important of all a world of prosperity."

to pin them down. Know that your childhood dreams are about to become a reality. All it takes is a strong will and knowledge about economic advancement.

World Economies that venture in Commodity Based Industrial Action has by nature, long term goals, and are capital intensive. But once these goals are attained, these business ventures can at times exist for a longer period after our life existance. There is no magic formula to this, but it is indeed possible once combined with a bankable business strategy. The stake in success becomes high and business owners with a leap of faith can surely leave a footprint not only here in Namibia but regionally and internationally. What makes it even easier is that the Development Bank of Namibia has recently embarked upon a coaching and mentoring exercise as an option for new or old clients, more especially the SMEs which can also be tailor made for bigger enterprises should such a need arise.

One of DBN's key strategic focuses is the provision of Finance in Commodity Based industries as these plays a key role and have a direct impact on the personnel, services, products, supply chain and the customers. For example, if a factory doesn't produce good quality products as a direct result of low staff morale or industrial action which result in delaying service delivery or supply chain, the chances are very high that such a business will not only suffer financial loses but also reputational damage that might scare the client base or slowdown economic growth. It is therefore imperative that clients adopt a healthy financial model that will carry them from the initial stages, breakeven and eventually through profit.

Since the government of the Republic of Namibia through its growth at home strategy advocates for setting up manufacturing plants in Namibia, this is the opportune time to dream about expansion of your business, thus, creating opportunities for jobseekers and be a role model for upcoming young entrepreneurs who also intend to contribute to job creation on a smaller scale.

Another area of consideration is that products compete in price. In the manufacturing Industry, the higher the volume of your product the cheaper the price. Once the price of a good product is attractive, it also enhances demand creation, and once the demand is created, you need to keep up with it otherwise the credibility of your business can be affected by these economies of scale.

Jerome Mutumba
Head of Marketing & Corporate Communications

Among other economic literature, the Country Private Sector Diagnostic Report 2022 of the World Bank Group states that, "The Namibian government has limited capacity to create public sector jobs or undertake large public investments." This in essence calls for an aggressive approach to overhaul the private sector. It is therefore imperative that business owners step up and make Namibia the desired economic hub during these post Covid – 19 era.

"If your actions inspire others to dream more, learn more, do more and become more, you are a leader."- John Quincy Adams.

DBN offers great opportunities for the innovative and business minded. We have a range of finance products designed to meet the needs of SMEs, larger enterprises, infrastructure development, PPPs and others. Our finance products range from bridging finance, guarantees, contract & tender based finance, asset backed finance, business finance, invoice discounting, business acquisition finance, commercial property finance, project finance, franchise finance, local authority finance, private public partnership (PPP) finance and public infrastructure finance.

You are all urged to visit our stand to familiarise yourselves with DBN products and how the Development Bank can add value towards the realisation of your dream and inspirations.

# ESG Principles
## are vital for Unlocking Namibia's economic prosperity

Namibia is on the cusp of significant economic growth and opportunities. According to the Bank of Namibia's monetary policy statement in early 2023, Namibia's gross domestic product (GDP) growth is expected to reach 2.7% in the current year, which is good news for Namibian individuals and businesses. This growth will be driven by several factors, including the recovery of the tourism industry and increased investment in various sectors such as agriculture, manufacturing, and mining.

'To fully unlock the potential of these sectors, the various industries must prioritise the integration of environmental, social, and governance (ESG) considerations into their growth strategies. This means adopting a more sustainable and responsible approach to economic development that prioritises social equity, environmental protection, and good governance,' says Tjivingurura Mbuende, Nedbank Executive of Corporate and Investment Banking (CIB).

Industries must work closely with stakeholders across different sectors to identify ESG priorities, establish clear ESG goals and targets, and put in place the necessary tools and resources to monitor and report on progress. By doing so, Namibia, particularly the private sector, can ensure that its economic growth is sustainable, inclusive, and resilient and that it creates lasting value for all its citizens.

A recent Forbes article highlighted that the banking industry is also increasingly focused on ESG considerations. 'Banks can play a crucial role in supporting sustainable business practices by providing financial solutions that promote environmental and social sustainability,' he says. Nedbank is committed to 'green' funding, responsible lending and supporting sustainability initiatives. 'Nedbank Namibia prefers to offer finance for projects in energy efficiency and renewable energy such as landfill gas, solar, hydro and wind projects,' says Mbuende.

On 22 April 2021, Nedbank released its energy policy and updated its climate change position statement. According to media reports, this energy policy is by far the most ambitious fossil fuel financing policy in Southern Africa and appears to set a global leadership standard among large commercial banks. The energy policy clearly articulates the urgent need to decarbonise Nedbank's financing and it includes short-, medium- and long-term deadlines for doing so. The policy also expands on Nedbank's fossil fuels financing exclusions.

'At Nedbank Namibia CIB, seeing money differently is about more than finding solutions for current problems. It's about taking a step back to look at the bigger picture and positioning solutions for future growth. Nedbank Namibia CIB is a strategic financial partner with a focused objective to help our clients achieve their business ambitions and opportunities. This is achieved through the provision of tailored solutions, characterised by fresh thinking, innovation, and a highly integrated partnership approach,' explains Mbuende.

Sustainable business practices ensure that the environmental impact of industries is minimised, and the economic benefits are shared equitably. With an eye on the future, industries must adhere to strict environmental standards, which include reducing their carbon footprint, minimising water usage, and managing waste responsibly. These practices ensure that various sectors do not harm the environment and that future generations can benefit from the earth's limited and sometimes fragile resources.

For more information, please contact Nedbank CIB at ***cib@nedbank.com.na***.

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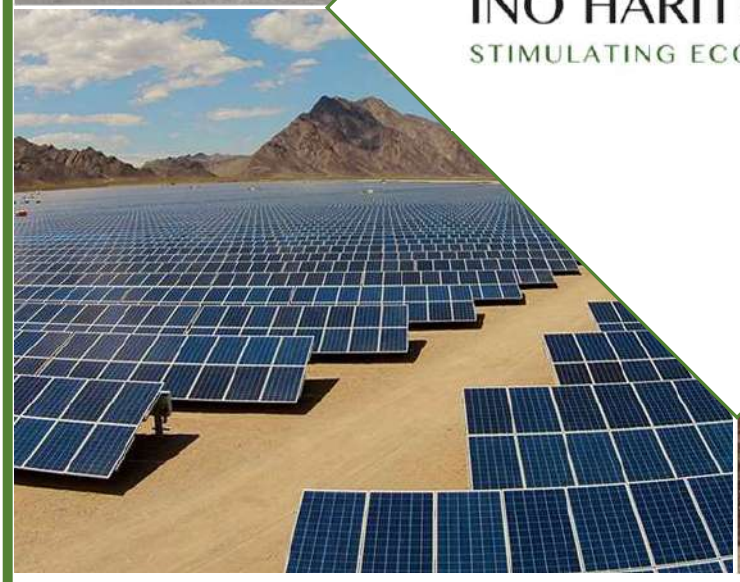

# BUILDING NAMIBIA ONE INVESTMENT AT A TIME

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**For more information visit www.ino-harith.com**


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