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From data to diversification: Namibia's experience and regional lessons for harnessing critical energy transition minerals

By

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Data-Driven Diversification: Namibia's Approach to Unlocking Value in Critical Energy Transition Minerals

"From Data to diversification: Namibia's experience and regional lessons for harnessing critical energy transition minerals"

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OUTLINE

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3. Current CETM Landscape & Challenges
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BACKGROUND AND PROJECT OVERVIEW

- UNCTAD project financed by the Government of Japan, supporting rapid assessment of CETM value-addition and diversification in Southern Africa.

- Namibia is one of the beneficiary countries; NPC is the national coordinating institution.

- **Activities included:**
  - ❖ Stakeholder consultations (12–17 May 2025)
  - ❖ Two national workshops (7–18 July 2025)

- **Objectives of the project based on the three pillars**:
  - ❖ Data-driven assessment using space analysis
  - ❖ National and stakeholder consultations
  - ❖ Identification of diversification and value-addition pathways and reduce reliance on raw mineral exports.

- This presentation reflects results from the 2025 Rapid Assessment.

INTRODUCTION/ WHY CONVERSATION MATTERS

- Namibia is rich in mineral resources and mining is a key driver of our economy, contributed about **13.25% to Namibia's GDP in 2024.**
- **Namibia is an extractive commodity dependent developing country.**
- The **Ministry of Industries, Mines and Energy (MIME)** oversees the sector, developing, formulating policy, enforcing regulations, and granting licenses.
- **Stable, well-established regulatory framework** governing exploration and mining (Minerals Act of 1992, etc.), providing certainty for investors.
- The **government is committed** to facilitating mining growth and updating policies, to ensure investors can operate efficiently and profitably. **But there are risks…**

CETM ENDOWMENT & GLOBAL ROLE

- Thank UNCTAD for the platform and highlight the relevance of this session given global demand for energy-transition minerals.
- Namibia is endowed with **lithium, graphite, REEs, copper, manganese, and uranium**, positioning it as a key partner in the global energy transition.
- CETMs are essential for **EVs, solar PV, wind turbines, battery storage** and industrial **efficiency technologies**.
- **The session is timely**: global demand for CETMs is accelerating, creating both **opportunities** and **risks**.
- Namibia is committed to **sustainable industrialization, value addition,** and **regional collaboration**.

CHALLENGES IN CURRENT EXTRATIVE MODEL

- Mining contributes **13% of GDP and 50%+ of export earnings (2024)** but remains dominated by **raw exports / primary first stage concentrate materials.**

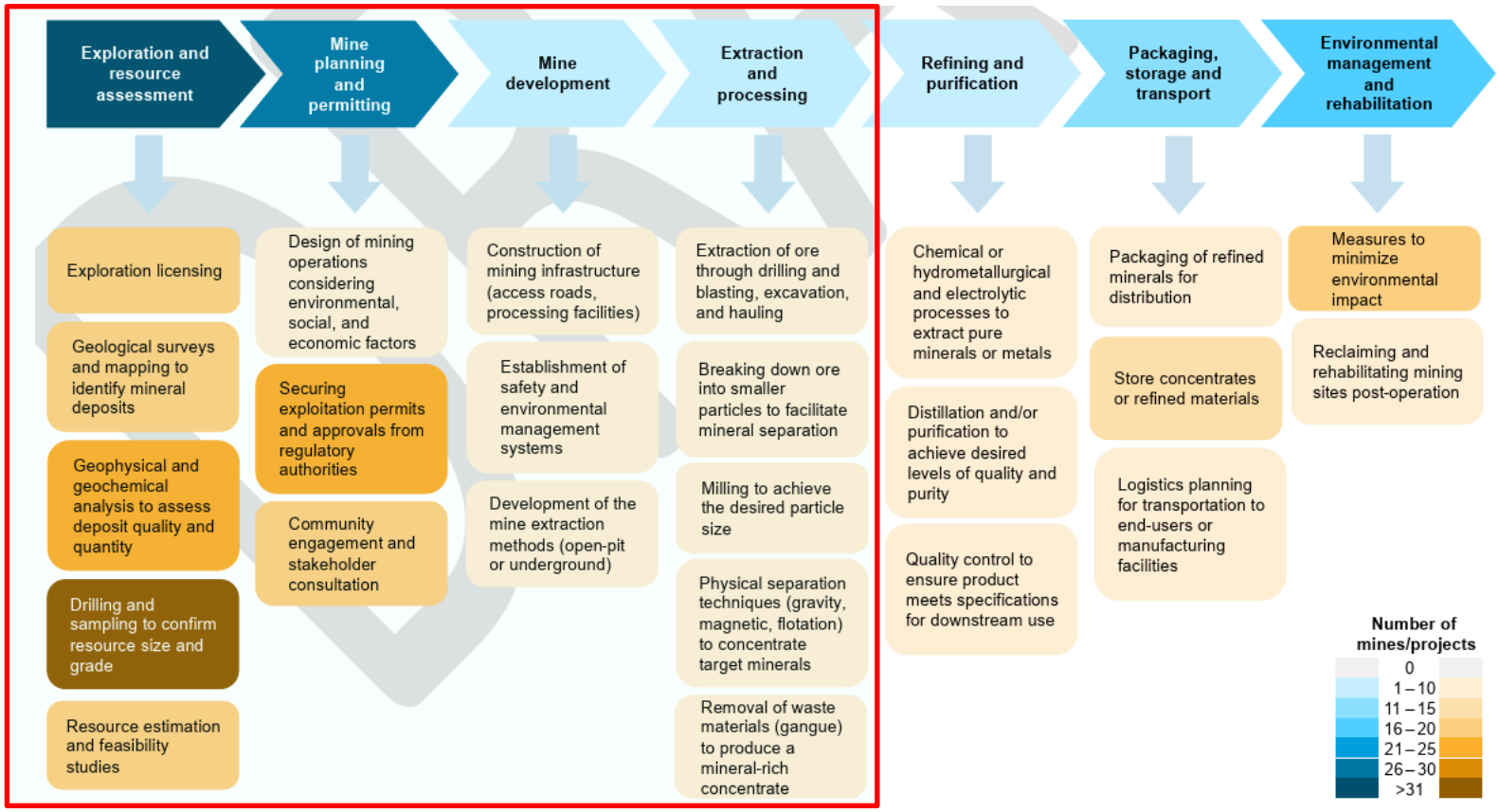
- **Namibia Vulnerabilities include:**
  - **Exposure to Global Price Volatility**: Heavy dependence on a few commodities makes export earnings vulnerable to international market swings.
  - **Minimal Domestic Value Addition**: Limited local processing and refining capacity constrain the potential for downstream industries.
  - **Low Employment and Technology Spillovers:** Capital-intensive operations create few jobs and limited knowledge transfer to domestic firms.

- **Policy Response**: Government response: **export ban on unprocessed lithium and selected critical minerals** (2023) to stimulate beneficiation.

STAKEHOLDER MAPPING FINDINGS

- Value chain participation remains concentrated **upstream**: exploration, extraction, basic processing.
- **Foreign ownership dominates (≈72%)** in exploration, though local participation is growing through Epangelo Mining and partnerships.
- **ASM sector** employs over **10,000 people,** with growing involvement in lithium, copper, tin, and tantalum—but **faces major constraints** (finance, tech, formalization).
- Advanced refining is limited: only **six mines** conduct purification or hydrometallurgical processes.
- **Implication:**
  Substantial opportunities exist to move **downstream** in value chains.

NAMIBIA'S ROLE ACROSS THE MINERAL VALUE CHAIN



Source: UNCTAD.

KEY INSIGHTS FROM DATA & CAPABILITIES

- Use of **product space** and **economic complexity** tools to identify diversification pathways.

- **Strong existing capabilities:**
  - **Chemicals**
  - **Iron & steel; fabricated metal products**
  - **Machinery & mechanical appliances**
  - **Emerging mineral processing capacity**

- These clusters indicate that Namibia has a base of productive capabilities, not a blank slate.

- Economic complexity analysis highlights **353 viable products** closely aligned with national capabilities, many linked to CETM supply chains.

PRIORITY DIVERSITICATION OPPORTUNITES

- Economic complexity analysis highlights **353 viable products** closely aligned with national capabilities, many linked to CETM supply chains in **across 14 sectors**.
- Identification of regional export and import-substitution opportunities (**US$116.8 million across 14 sectors**).

- **These sectors represent Namibia's most feasible entry points into higher-value CETM-linked production." :**
  - ❖ Organic chemicals (e.g...)
  - ❖ Iron & steel and fabricated metal components
  - ❖ Machinery & mechanical appliances
  - ❖ Specialized equipment for mineral processing
  - ❖ Battery precursor materials (medium- to long-term)
  - ❖ Green hydrogen–linked industrial products (leveraging Namibia's hydrogen program)
- These align with **existing capabilities**, **global demand**, and **regional markets (SADC, AfCFTA)**.

VALUE ADDITION PATHWAYS IN CETMs

Within CETM value chains:

Opportunities across refining, purification, specialized processing (e.g., hydrometallurgical methods), currently limited in Namibia but technically feasible; only six mines conduct advanced refining steps.

- **Top Opportunities Identified:**
  - **Lithium:** Ore concentration → chemical processing → **precursor materials** → potential link to battery assembly.
  - **Graphite:** Beneficiation → purification → **battery-grade graphite**.
  - **Rare Earth Elements (REEs):** Separation → value-added components → **magnets** (long-term ambition).
  - **Copper:** Refining → **wires, cables, harnesses**, copper components for renewables.
  - **Uranium:** Limited downstream options due to regulation, but strong synergies with **energy sector development**.

- **Lesson:**
  Each mineral has a different industrial route; Namibia must prioritize **feasible, scalable steps**.

MOVING FROM EXTRATION TO INDUSTRIALISATION

- **Key Strategies / Initiatives that can enable the success pf diversification:**

  Namibia has already begun investing in **SEZs**, **green hydrogen corridors**, and **logistics upgrades (Railway and Ports)** .

  - **Fully Implementation of the Industrial policy alignment (**NDP6, Minerals Beneficiation Strategy**).**
  - **Invest and develop Infrastructure readiness**: energy, water, ports, logistics networks.
  - **Investment attraction & de-risking**: blended finance, diversification bonds.
  - **Access amd integration into Regional market**: AfCFTA, SACU, SADC.
  - **Research, Innovation and Skills development**: TVET modernization, engineering specializations.

FROM STAKEHOLDER & DATA SYNTHESIS

Critical gaps to address that we Namibian have reorganise :

- Skills shortages in metallurgy, chemical engineering, robotics, and automation.
- **Weak R&D ecosystem;** limited testing, certification, and standards labs.
- **Finance barriers**, especially for SMEs and ASM cooperatives.
- High capital cost of processing technologies and technology transfer.
- **Need for stronger circular economy systems** (recycling, waste management).
- **Institutional coordination** requires strengthening across NPC, MIME, MEFT, NIPDB, NTA. Addressing these gaps is essential for successful industrial upgrading.

NEXT STEPS FOR NAMIBIA TO DIVERSIFY

Short–Medium Term Actions: Namibia is positioned to become a regional hub for CETM processing and manufacturing.

- Finalize the **Rapid Assessment of Value addition and Diversification Capacity along Critical Energy Transition Minerals: Namibia** report.
- A Data-Driven Roadmap for Namibia's Industrial Future
  - Prioritize 10–15 high-potential products for targeted industrial action plans.
  - Work with multi-stakeholder or possibility establish technical working groups.
  - Prepare investment-ready project pipelines.
  - Strengthen regional collaboration mechanisms.

The rapid assessment provides a data-driven roadmap to reduce dependency on raw mineral exports and build a more resilient, inclusive industrial base.

"Namibia is on course, and is an example towards mineral diversification for industrialization"

THANK YOU!!

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