

# MINING

M A G A Z I N E

## WORLD MINING OUTLOOK

CRITICAL MINERALS • TECHNOLOGY •  
INVESTMENT • SUSTAINABILITY

## NAMIBIA MINING

### NAMIBIA & JAPAN HEAVY RARE EARTH PARTNERSHIP

- LOFDAL STUDY TESTS  
LOCAL PROCESSING
- JOGMEC BACKS NAMIBIA  
RARE-EARTH DEVELOPMENT



## World of Mining

- \* REFINING CONCENTRATION DEEPENS  
ACROSS CRITICAL MINERALS
- \* COPPER PROJECTS ADVANCE, BUT  
THE 2035 GAP PERSISTS
- \* RARE-EARTH PROCESSING BECOMES  
THE NEW SUPPLY-CHAIN TEST
- \* TRACEABILITY MOVES CLOSER TO  
REALITY

**NAMIBIA'S CRITICAL  
MINERALS: WHY  
LOCAL PROCESSING  
MATTERS**



**LOFDAL: JAPAN'S  
HEAVY RARE EARTH  
PARTNERSHIP**



**NAMIBIA'S  
URANIUM SECTOR:  
OPERATIONS AND  
PIPELINE**



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CRITICAL MINERALS • TECHNOLOGY •  
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Headline 1



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### NAMIBIA'S CRITICAL MINERALS: WHY LOCAL PROCESSING MATTERS

Namibia wants a larger share of the value created from its mineral resources. UN Trade and Development identified 353 potential products that match existing capabilities, including opportunities beyond the mine gate. The analysis also found obstacles: finance, skilled labour and access to technology. These constraints matter as much as the mineral deposits themselves.

Lofdal offers a practical test. Its current feasibility work will assess whether ore can be processed in Namibia into separate light and heavy rare earth carbonate products. The result is not yet a commercial plant. It is a study of the technology, costs and infrastructure required to build one.

**The choice facing investors is therefore concrete: which processing stages can be made viable locally, and what power, water, skills and financing will they require?**

# MINING

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## WORLD MINING OUTLOOK

CRITICAL MINERALS • TECHNOLOGY •  
INVESTMENT • SUSTAINABILITY

Headline 2



### LOFDAL: JAPAN'S HEAVY RARE EARTH PARTNERSHIP

The Lofdal project in Namibia's Kunene Region is being advanced by Namibia Critical Metals with Japan's JOGMEC and Toyota Tsusho. Its principal strategic appeal lies in dysprosium and terbium, rare earth elements used in permanent magnets. Toyota Tsusho joined as a development partner in March 2026.

In July, Toyota Tsusho established TJ Namibia Rare Earths Corporation to carry the Japanese side of the project. JOGMEC announced an investment of up to C\$47.668 million in this company and made an initial investment on 23 July. Separately, the Japanese partners completed a C\$23 million earn-in expenditure requirement. These figures describe different commitments and must not be added together as though they were one mine construction budget.

**The proposed transfer of a 50% participating interest still required shareholder consent and final exchange approval in Namibia Critical Metals' 31 August update.**

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Headline 3



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### NAMIBIA'S URANIUM SECTOR: OPERATIONS AND PIPELINE

Namibia's uranium industry combines established operations with projects seeking investment decisions. Paladin Energy restarted Langer Heinrich and has reported the mine's operating ramp-up. Rössing remains another major producer, while developers including Bannerman and Deep Yellow are working toward new capacity. Each project has its own financing, water and permitting requirements.

The industry's near-term outlook therefore depends on the performance of existing mines as well as progress at planned developments. Higher uranium prices may support investment, but a project under study is not yet production.

Water supply, power and logistics are especially important in Namibia's arid mining regions. As developers advance engineering and commercial arrangements, those supporting systems will help determine when additional uranium output can come to market.

# MINING

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INVESTMENT • SUSTAINABILITY

LOCAL NEWS

# NEWS

### OTHER NAMIBIA MINING NEWS

#### TWIN HILLS GOLD PROJECT MOVES TOWARD 2027 FIRST POUR

Osino Resources' US\$500 million Twin Hills gold project is advancing in central Namibia, with around 1,500 people working on site across more than 60 contractors. First gold is targeted for approximately August 2027. The operation is expected to create at least 1,000 permanent jobs once in production.

#### DEBMARINE DIAMOND OUTPUT FALLS 7% IN H1 2026

Namibia's diamond production declined 7% year on year to 1.09 million carats in the first half of 2026. Planned maintenance on Debmarine Namibia's Mafuta vessel and the retirement of Coral Sea affected output, while land-based producer Namdeb increased production by 7%.

#### ANDRADA POSTS RECORD TIN OUTPUT AND EXPANSION FUNDING

Andrada Mining's Uis operation produced a record 286 tonnes of tin in the quarter ending 31 May 2026, up 20% year on year. The company also secured conditional N\$98 million local financing for an ore-sorting circuit, supporting its tin, lithium and tungsten expansion plans.

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INVESTMENT • SUSTAINABILITY

Snapshot

### SNAPSHOT

#### NAMIBIA MINING SELECTED VERIFIED FIGURES

##### URANIUM

A major part of Namibia's mining economy.

**353**

##### PRODUCT OPPORTUNITIES

Identified by UNCTAD across 23 sectors.

**C\$23m**

##### LOFDAL EARN-IN

Expenditure requirement completed by Japan.

##### DYSPROSIUM & TERBIUM

##### HEAVY RARE EARTHS

Important for permanent magnets.

**C\$47.668m**

##### JOGMEC INVESTMENT LIMIT

Announced for the Japanese project company.

**N\$1.496bn**

##### EXPLORATION IN 2025

Reported by the Chamber of Mines.

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INVESTMENT • SUSTAINABILITY

Outlook

### NAMIBIA MINING: PROCESSING AND INFRASTRUCTURE

Lofdal is testing whether separate rare earth carbonate products can be made in Namibia. A viable plant would need dependable power, water, trained staff and transport. The study must also establish reliable costs and product specifications.

UNCTAD identified 353 potential product opportunities across Namibia's economy, while highlighting finance and skilled labour as constraints. These opportunities are prospects, not factories already operating.

Local processing depends on successful technical studies and investment decisions. Infrastructure and supplier capacity will shape which stages can take place in Namibia.

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## MORE EFFICIENCY IN EVERY MATERIAL

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for maximum performance and durability.



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**+1,100%**  
LONGER SERVICE LIFE  
RUBBER (DRY PROCESSING)  
VS. WIRE MESH



UP TO  
**+1400%**  
LONGER SERVICE LIFE  
POLYURETHANE (WET PROCESSING)  
VS. WIRE MESH



**+50%**  
OPEN SCREENING AREA  
WITH KÜPER  
MAX SYSTEMS



**+50%**  
HIGHER THROUGHPUT  
WITH CLEAN RUBBER  
FOR STICKY MATERIALS



**-50%**  
SHORTER CHANGEOVER  
TIMES  
WITH KÜPER PLUG-IN SYSTEMS



**-40%**  
LOWER WEIGHT  
FOR ENERGY SAVINGS



AGGREGATES



RECYCLING



MINING



STEEL & ORES



FERTILIZERS & SALTS



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DURABLE  
EFFICIENT  
SUSTAINABLE



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INVESTMENT • SUSTAINABILITY

Opportunities

### EQUIPMENT, SKILLS AND LOCAL SUPPLY CHAINS

The route from extraction to local processing creates demand for engineering services, plant equipment and trained technicians. UNCTAD's assessment found that access to qualified labour is a barrier for 73.1% of the electrical equipment products and 68.3% of the machinery products it analysed. The figures describe product opportunities in the study, not the share of Namibian workers lacking skills.

At Lofdal, metallurgical testwork is evaluating intermediate rare earth carbonate products. If the project advances, suppliers will need to meet detailed technical specifications and commercial procurement requirements. Study contracts and development plans indicate potential demand; they are not guaranteed orders.

For Namibian businesses, the practical opening may begin with maintenance, transport and other mine services before moving into more specialised manufacturing. Training providers can work with project developers to identify the precise capabilities needed for processing equipment and plant operations.



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— INSIGHTS BEYOND BORDERS —

PEOPLE  
MARKETS  
TECHNOLOGY  
SOCIETY  
OUR PLANET

# GSR NEWS

M A G A Z I N E

GLOBAL PERSPECTIVE. REAL INSIGHTS.



SCREENING  
SOLUTIONS  
FOR A BETTER  
TOMORROW

# MORE THAN SCREENING. REAL PROGRESS.

INNOVATIVE SCREENING TECHNOLOGY  
FOR ALL APPLICATIONS



QUARRY  
& AGGREGATES



RECYCLING



STEEL & ORE



MINING



FERTILIZERS & SALTS



SAND & GRAVEL

TOUGHER  
SMARTER  
MORE EFFICIENT

## IDEAL

MAXIMUM OPEN  
SCREENING AREA.  
SIMPLY VERSATILE.

## VARIA

THE GENIUS PLUG-IN  
SYSTEM. EASY TO  
ASSEMBLE, ALWAYS  
THE RIGHT FIT.

## SIEBMATTEN

A PROVEN STANDARD  
FOR 20 YEARS:  
RECYCLABLE, WEAR-RESISTANT,  
SLIP-FRIENDLY.

## KERA GIGANT

EXTREME WEAR RESISTANCE  
WITH UP TO 3,300 %  
LONGER SERVICE LIFE.

## MEASURABLE ADVANTAGES FOR YOUR BUSINESS



**+1,100 %**

LONGER SERVICE LIFE  
WITH RUBBER  
IN DRY PROCESSING  
(compared to wire screens)



**+400 %**

LONGER SERVICE LIFE  
WITH POLYURETHANE  
IN WET PROCESSING  
(compared to wire screens)



**+50 %**

LARGER OPEN  
SCREENING AREA  
with KÜPER MAX systems



**+50 %**

HIGHER THROUGHPUT  
with CLEAN rubber  
(for critical, sticky materials)



**-50 %**

SHORTER CHANGEOVER  
TIMES  
with KÜPER plug-in systems



**-40 %**

LOWER WEIGHT  
for reduced operating  
energy costs

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FOR A CLEANER, MORE EFFICIENT WORLD.

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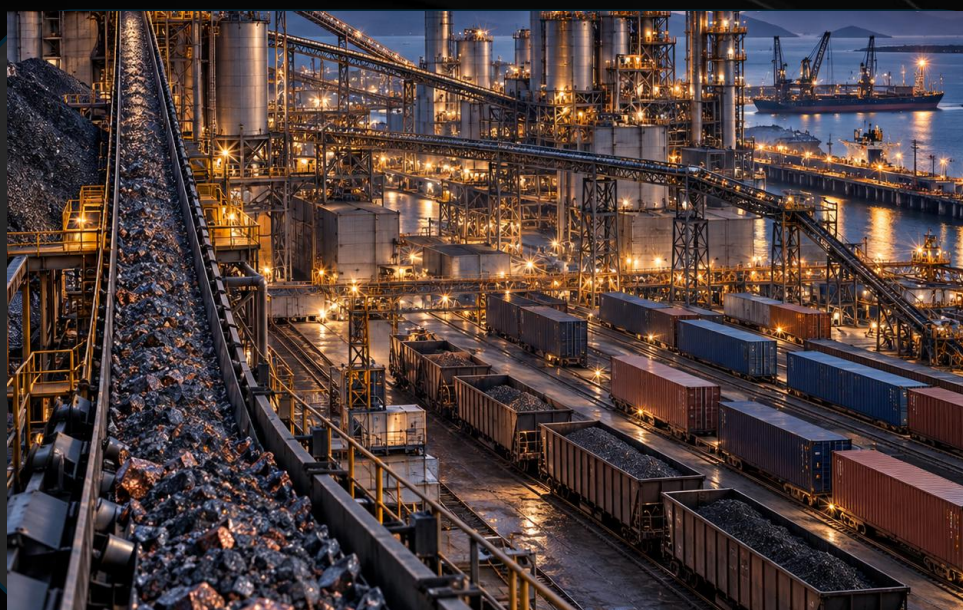
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INVESTMENT • SUSTAINABILITY

GLOBAL NEWS 1



GSRANALYTIX

## REFINING CONCENTRATION REMAINS A GLOBAL RISK

The geography of mineral refining remains a structural weakness in global supply chains. The International Energy Agency reports that the leading refining countries accounted for more than three quarters of refined-supply growth between 2023 and 2025.

Concentration matters because refining sits between the mine and the industrial user. A mine can operate in one country while buyers still rely on a limited number of processing routes.

Rare earth diversification has begun, but gaps remain between mining, separation, refining and magnet production. Projects need processing routes, technical partners and customers willing to support new supply chains.

**Source: Reuters — 14 September 2026**



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## WORLD MINING OUTLOOK

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INVESTMENT • SUSTAINABILITY

GLOBAL NEWS 2



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## COPPER PROJECTS ADVANCE, BUT THE GAP PERSISTS

The global copper project pipeline has improved, but the long-term supply challenge remains serious. The IEA reduced its projected 2035 copper supply gap from around 30% to 25% as more projects moved forward.

That does not make delivery automatic. Permitting, infrastructure, water, power, financing and skilled labour will determine whether projects reach production on schedule.

Copper-focused companies increased investment in 2025 while demand from electricity networks, industrial equipment and digital infrastructure continued to grow. The industry now faces an execution test.



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CRITICAL MINERALS • TECHNOLOGY •  
INVESTMENT • SUSTAINABILITY

GLOBAL NEWS 3



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## RARE-EARTH PROJECTS NEED PROCESSING CAPACITY

Rare-earth diversification is moving beyond mine announcements, but processing remains the decisive bottleneck. New refining projects in the United States and increased output in Malaysia reduced the largest supplier's refining share to 85% in 2025.

Outside the dominant supplier, planned refining capacity could cover around two thirds of expected mined output by 2035. Planned magnet-production capacity would cover only about one third.

A resource estimate alone is not enough. Processing technology, product specifications, customer qualification and dependable partners determine whether a project can secure finance.

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INVESTMENT • SUSTAINABILITY

GLOBAL NEWS



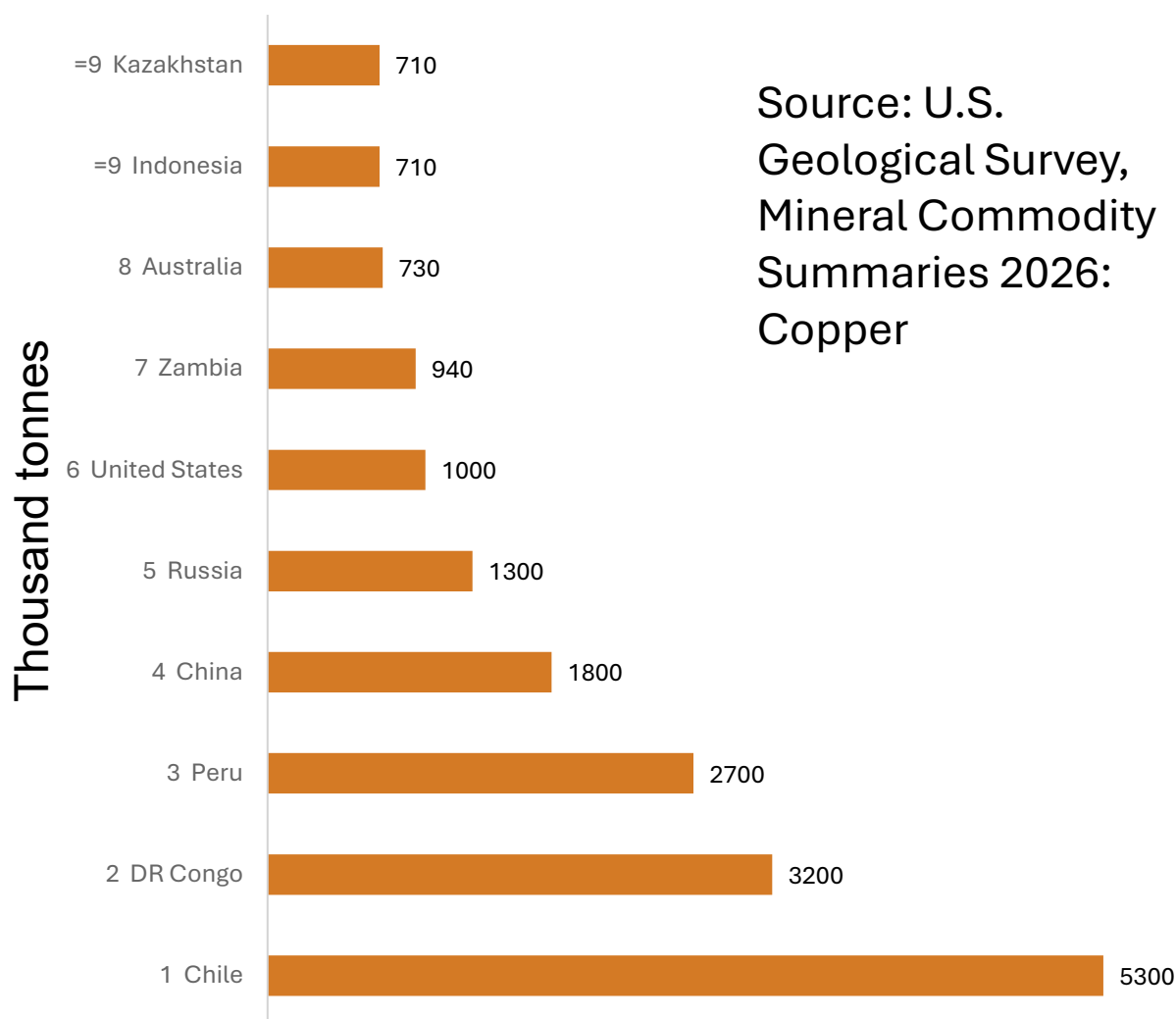
## TRACEABILITY MOVES INTO MINERAL SUPPLY CHAINS

Traceability is becoming a practical business issue for the mining sector. In a 2026 IEA–OECD survey of more than 80 companies, roughly two thirds reported some form of traceability system.

Coverage remains uneven. Thirty per cent reported full coverage, while many tracked only selected minerals or supply chains. Country of origin was common, but detailed data on provenance and transformation stages was less consistent.

Manufacturers increasingly want credible evidence of origin, processing route and responsible production. Data quality and shared standards will decide whether traceability becomes a commercial advantage.

## WORLD'S LEADING COPPER MINING COUNTRIES



# MINING

## M A G A Z I N E

## WORLD MINING OUTLOOK

CRITICAL MINERALS • TECHNOLOGY •  
INVESTMENT • SUSTAINABILITY

DIGITAL OPERATIONS



### MINE SAFETY & DIGITAL OPERATIONS

How Technology Is Making Mining Safer, Smarter and More Connected

TECHNOLOGY  
PEOPLE  
PROGRESS  
A STRONGER TOMORROW

PEOPLE SAFER  
OPERATION SMARTER  
MINES MORE CONNECTED  
A MORE SUSTAINABLE FUTURE

SMART MINE OPERATIONS  
FLEET STATUS  
EQUIPMENT HEALTH  
SAFETY ALERTS  
REAL-TIME DATA  
PRODUCTION  
SUSTAINABILITY

DATA  
SAFER MINES  
HIGHER PRODUCTIVITY  
A CLEANER TOMORROW

AI & PREDICTIVE SAFETY  
Detect risks. Prevent incidents. Keep people safe.

REMOTE & AUTONOMOUS OPERATIONS  
People out of danger. Higher efficiency.

CONNECTED MINES & CYBERSECURITY  
Secure data. Reliable operations.

WEARABLES, DRONES & REAL-TIME MONITORING  
More visibility. Faster response.

THE MINE OF THE FUTURE WILL NOT ONLY BE MORE PRODUCTIVE — IT WILL BE SAFER, MORE AUTOMATED AND INCREASINGLY CONNECTED.

## MINE SAFETY & DIGITAL OPERATIONS

Mining is becoming increasingly connected, automated and data-driven. Across modern operations, digital technologies are helping companies reduce risk, improve productivity and monitor conditions in real time.

**AI and predictive analytics** can identify equipment failures, unsafe conditions and operational anomalies before they develop into serious incidents. By analysing sensor data continuously, mining companies can move from reactive maintenance toward prevention.

**Remote and autonomous operations** are also changing how mines are managed. Autonomous haul trucks, drilling systems and remote-control equipment can keep workers away from hazardous zones while maintaining production across large sites.

At the same time, connected mines create a new challenge: **cybersecurity**. Operational networks, sensors and automated systems must be protected against disruption, data loss and unauthorised access.

Wearable devices, drones and real-time monitoring platforms add another layer of safety by tracking workers, measuring gas levels, inspecting inaccessible areas and supporting faster emergency response.

The result is a new generation of mining operations where **safety, automation and digital intelligence** increasingly work together.

# KÜPER®

SCREENING  
SOLUTIONS  
THAT PERFORM

## MORE THAN SCREENING. A CLEAR ADVANTAGE.

Rubber and polyurethane screening media for higher efficiency, lower costs and a more sustainable future.

TOUGHER  
SMARTER  
CLEANER  
GREENER 



### SCREEN MATS

Durable. Recyclable.  
Smooth running.

### VARIA

The smart modular system.  
Quick installation.  
Always the right fit.

### IDEAL

Maximum open area.  
Simply universal.

### PRISMENFELD SP 90

Higher dewatering  
performance.  
Less surface moisture.  
Better drying.

## PROVEN PERFORMANCE. REAL BENEFITS.



**+1,100 %**

LONGER SERVICE LIFE  
with rubber in  
dry processing  
(compared to wire screens)



**+400 %**

LONGER SERVICE LIFE  
with polyurethane  
in wet processing  
(compared to wire screens)



**+50 %**

LARGER OPEN  
SCREEN AREA  
with KÜPER  
MAX systems



**+50 %**

HIGHER CAPACITY  
with CLEAN rubber  
for critical materials



**-50 %**

SHORTER  
CHANGE-OUT TIMES  
with KÜPER  
modular systems



**-40 %**

LOWER WEIGHT  
for reduced  
operating energy  
consumption

## APPLICATIONS ACROSS INDUSTRIES



QUARRYING



SAND & GRAVEL



RECYCLING



STEEL & ORE



MINING



FERTILIZERS & SALTS

EFFICIENCY TODAY.  
A CLEANER TOMORROW.



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SCREENING  
WEAR PROTECTION  
PROCESS EFFICIENCY  
SUSTAINABILITY

# THE RISE OF SMART MINES

Automation, AI and Autonomous Operations Are Redefining Mining

From autonomous trucks to AI-driven insights, mining is entering a new era. Smart technologies are making operations safer, more efficient and more sustainable — and they are reshaping the future of the industry.

SMART  
MINES  
STRONGER  
TOMORROW

RESOURCES  
PEOPLE  
TECHNOLOGY  
A CLEANER FUTURE

- REAL-TIME DATA
- HIGHER EFFICIENCY
- LOWER RISK
- SUSTAINABLE OPERATIONS



## AUTONOMOUS OPERATIONS

Self-driving trucks, drills and loaders are increasing productivity while keeping people away from high-risk areas.

## ROBOTICS IN MINING

Remote-controlled and autonomous equipment are enabling safer, more precise and continuous operations.

## AI & PREDICTIVE MAINTENANCE

Artificial intelligence analyses data in real time to predict equipment failures and optimise performance.

## DIGITAL TWINS

Virtual models of mines help simulate scenarios, improve planning and reduce operational risks.

## CONNECTED DECISIONS

Real-time data from sensors, drones and wearables enables faster, smarter and more informed decision-making.



# EXPLORATION & GEOSCIENCE

## Finding the Resources for a Changing World

Exploration is the foundation of the mining industry. As demand for critical minerals grows, new technologies and advanced geoscience are helping companies find resources faster, more accurately and with less environmental impact.

DISCOVER  
EXPLORE  
DEVELOP  
A BRIGHTER  
TOMORROW

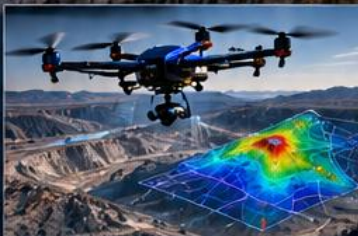
SCIENCE  
TECHNOLOGY  
PEOPLE  
NEW OPPORTUNITIES



### SATELLITE & REMOTE SENSING

High-resolution satellite data helps identify geological structures, alteration zones and potential mineral deposits across large and remote areas.

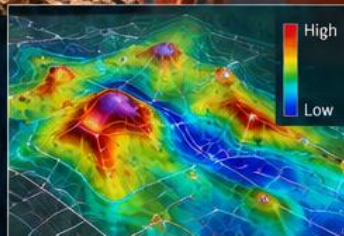
- Multispectral & hyperspectral imaging
- Structural mapping
- Faster, lower-cost reconnaissance



### DRONES & AERIAL SURVEYS

Drones provide detailed, high-precision data on topography, geology and site conditions, improving accuracy and safety in the exploration phase.

- 3D mapping and modelling
- High-resolution imagery
- Access to difficult terrain



### GEOPHYSICAL SURVEYS

Geophysical methods reveal what lies beneath the surface, helping to detect mineralized structures and reduce drilling risks.

- Magnetic, gravity and seismic surveys
- Electrical & electromagnetic methods
- Deeper insights, smarter targeting

### KEY MINERALS DRIVING EXPLORATION



**Cu** COPPER  
Clean energy grids and electrification



**Li** LITHIUM  
Batteries and e-mobility



**Ni** NICKEL  
EV batteries and stainless steel



**Co** COBALT  
High-performance batteries



**REE** RARE EARTHS  
Advanced electronics and renewable energy



### AI & DATA ANALYTICS

Artificial intelligence analyses large datasets to identify patterns and predict high-potential areas, making exploration more efficient and cost-effective.

- Machine learning models
- Integrated geological data
- Better decision-making



### EXPLORATION DRILLING

Drilling remains a critical step to confirm mineralization. Modern drilling techniques are faster, more precise and increasingly sustainable.

- Diamond and reverse circulation (RC)
- Real-time data collection
- Reduced environmental footprint



### ENVIRONMENT & COMMUNITIES

Modern exploration focuses on minimizing environmental impact and building strong relationships with local communities.

- Responsible exploration practices
- Biodiversity protection
- Shared value and local opportunities

# DR CONGO BUILDS A \$180 MILLION DIGITAL EXPLORATION MAP

## GEOLOGICAL DATA BECOMES A STRATEGIC ASSET

The Democratic Republic of Congo (DRC) has launched a major program to digitalize its geological data, including a \$180 million airborne geophysical survey and the creation of a national geological database by 2026, in partnership with UK-based Xcalibur Multiphysics. The initiative aims to attract investment, identify new mineral resources and strengthen state control over strategic data.

MAPPING  
TOMORROW'S  
OPPORTUNITIES



A RICHER  
CONGO  
A STRONGER  
AFRICA



**\$180 MILLION**  
AIRBORNE GEOPHYSICAL  
SURVEY PROGRAM



NATIONAL  
GEOLOGICAL  
DATABASE  
BY 2026



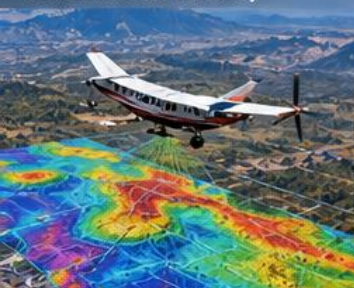
**ONLY ~20%**  
OF DRC SYSTEMATICALLY  
EXPLORED



STRONGER INVESTMENT,  
MORE TRANSPARENCY,  
GREATER OPPORTUNITIES

### 1 AIRBORNE SURVEYS

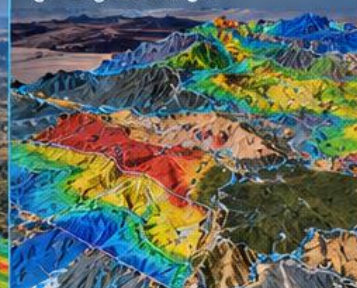
High-resolution data  
across a vast territory



- ✓ Magnetic, radiometric and hyperspectral data
- ✓ Covers remote and previously inaccessible areas
- ✓ Faster, more efficient than ground surveys

### 2 DIGITAL MAPPING

Turning data into  
geological insight



- ✓ Advanced data processing and 3D geological models
- ✓ Integration of historical and new data
- ✓ Identification of high-potential mineral belts

### 3 NATIONAL DATABASE

A central source for  
investors and authorities



- ✓ Unified, standardized geological data
- ✓ Improved transparency and access
- ✓ Supports better decision-making and responsible investment

### 4 NEW EXPLORATION OPPORTUNITIES

From data to discovery



- ✓ More accurate targeting
- ✓ Reduced exploration risk and cost
- ✓ Potential for new copper, cobalt, lithium, gold and rare earth discoveries

“

“We are building a modern geological information system for the DRC, using the latest technology to unlock the country’s enormous mineral potential.”

DRC MINES MINISTRY  
Official Statement, 2026

VAST RESOURCES.  
A BRIGHTER FUTURE.

KNOWLEDGE TODAY.  
DISCOVERIES TOMORROW.

### KEY TAKEAWAYS

- ✓ \$180 million airborne survey with Xcalibur
- ✓ National geological database by 2026
- ✓ Only ~20% of DRC explored
- ✓ Greater investment opportunities
- ✓ Supports sustainable and responsible mining development



SCREENING SOLUTIONS  
FOR A TOUGHER TOMORROW

MORE EFFICIENCY  
HIGHER UPTIME  
A CLEANER FUTURE

# THE SMARTER WAY TO SCREEN

Screening media made of rubber and polyurethane.  
More performance. Lower costs. A sustainable future.

BUILT  
FOR REAL  
CONDITIONS.



UP TO

**+1,100%**

LONGER SERVICE LIFE

vs. wire screens  
with rubber  
in dry processing



UP TO

**+400%**

LONGER SERVICE LIFE

vs. wire screens  
with polyurethane  
in wet processing



**+50%**

OPEN SCREEN AREA

with KÜPER  
MAX systems



**+50%**

HIGHER CAPACITY

with CLEAN rubber  
for difficult-to-screen  
materials



**-50%**

SHORTER  
CHANGEOVER TIMES

with KÜPER  
plug-in systems



**-40%**

LOWER WEIGHT

for reduced  
energy consumption

## PROVEN IN MANY INDUSTRIES



QUARRYING



SAND & GRAVEL



RECYCLING



STEEL & ORE



MINING



FERTILIZERS  
& SALTS



WEAR RESISTANT

Maximum reliability  
in demanding applications



SUSTAINABLE

Recyclable materials  
for a cleaner tomorrow



ENGINEERED IN GERMANY

Precision. Performance.  
Partnership.

# SCREEN TRANSFORMS TOMORROW.

GET IN TOUCH



[info@gsranalytix.com](mailto:info@gsranalytix.com)

LET'S SCREEN A BRIGHTER TOMORROW.

# SMART MINING & AUTOMATION

## AUTONOMOUS EQUIPMENT & REMOTE OPERATIONS

From autonomous haul trucks to remote control centers, mining is entering a new era of safety, productivity and sustainability.

TECHNOLOGY  
DRIVES  
A SAFER,  
CLEANER AND  
MORE EFFICIENT  
MINING FUTURE.

**AUTONOMOUS**  
SAFER PEOPLE  
HIGHER PRODUCTIVITY  
LOWER EMISSIONS

**CONNECTED**  
REAL-TIME DATA  
SMART DECISIONS  
OPTIMIZED OPERATIONS

**SUSTAINABLE**  
LESS FUEL  
LOWER EMISSIONS  
A CLEANER TOMORROW

**MONITOR  
CONTROL  
OPTIMIZE  
ANYWHERE**

### AUTONOMOUS HAULAGE



- Driverless trucks
- 24/7 operations
- Higher efficiency
- Improved safety

### REMOTE OPERATIONS



- Centralized control centers
- Real-time monitoring
- Faster response
- Reduced operational risk

### DRONES & AI



- Aerial surveys & mapping
- AI-driven analysis
- Predictive maintenance
- Early risk detection

### AUTONOMOUS DRILLING



- Precision drilling
- Optimized blasting
- Lower costs
- Minimal environmental impact

“Automation is not just about machines, it's about people, sustainability and a stronger future for mining.”

# DIGITAL TWINS & PREDICTIVE MAINTENANCE

## A VIRTUAL MINE THAT PREDICTS PROBLEMS BEFORE THEY HAPPEN

By combining real-time data, AI and advanced analytics, digital twins create a live virtual replica of the mine, its equipment and processes — helping operators optimize performance, reduce downtime and make smarter decisions.



### 1 DIGITAL TWIN

A real-time virtual model of the mine, equipment and production processes.



- ✓ Live data integration
- ✓ 3D visualisation
- ✓ Scenario testing

### 2 PREDICTIVE MAINTENANCE

Detect potential failures before they occur using AI and sensor data.



- ✓ Early fault detection
- ✓ Less unplanned downtime
- ✓ Longer equipment life

### 3 FLEET OPTIMIZATION

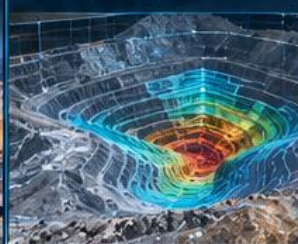
Optimize truck, excavator and loader operations in real time.



- ✓ Optimal routing
- ✓ Shorter cycle times
- ✓ Higher productivity

### 4 SCENARIO SIMULATION

Test different mine plans and operational changes in a virtual environment.



- ✓ Assess production scenarios
- ✓ Reduce risk
- ✓ Better investment decisions

### 5 REAL-TIME DECISIONS

All key data in one integrated platform for faster, smarter decisions.



- ✓ Unified data platform
- ✓ Live performance KPIs
- ✓ Improved safety & ESG

## HOW IT WORKS



### SENSORS

Collect data from equipment, conveyors, crushers, mills and the environment.



### REAL-TIME DATA

Data is transmitted to a central platform via IoT and cloud systems.



### DIGITAL TWIN

A live virtual model of the mine is continuously updated.



### AI ANALYSIS

AI and machine learning analyze patterns and detect anomalies.



### PREDICTION

Potential issues and opportunities are identified early.



### ACTION

Operators take proactive action, optimizing operations in real time.

## FROM DATA TO ACTION

## A SMARTER, SAFER AND MORE SUSTAINABLE MINE.



HIGHER PRODUCTIVITY



IMPROVED SAFETY



LOWER OPERATING COSTS



LOWER EMISSIONS



MORE EFFICIENT RESOURCE USE

### WHY OPERATORS CARE

- ✓ Fewer unexpected breakdowns
- ✓ Higher equipment availability
- ✓ Lower maintenance costs
- ✓ Better resource utilization
- ✓ Increased production efficiency
- ✓ Improved safety for people and assets
- ✓ Supports ESG and sustainability goals

**DON'T WAIT FOR EQUIPMENT TO FAIL — PREDICT WHAT HAPPENS NEXT.**

# MINERAL PROCESSING

## FROM ORE TO VALUE

Advanced processing turns natural resources into the materials that power our world.



HIGHER RECOVERY



GREATER EFFICIENCY



STRONGER ECONOMIES



A CLEANER TOMORROW

MINERALS  
FUEL PROGRESS



### 1 CRUSHING

Reduces large rocks into smaller, manageable sizes.



### 2 GRINDING

Further reduces size to liberate valuable minerals.



### 3 ORE SORTING

Separates valuable minerals using advanced sensor technologies (XRT, AI, optical).



### 4 BENEFICIATION

Concentrates valuable minerals using physical and chemical processes (flotation, gravity, magnetic separation).



RAW ORE



PROCESSED MATERIAL



CONCENTRATE



VALUABLE METALS  
FOR A BRIGHTER FUTURE

## PROCESSING TODAY A STRONGER TOMORROW

Efficient mineral processing maximizes resource value, reduces waste and supports a more sustainable future for generations to come.



SUPPLYING  
CRITICAL MINERALS



SUPPORTING  
A LOW-CARBON WORLD



CREATING JOBS  
AND OPPORTUNITIES



TURNING RESOURCES  
INTO LASTING VALUE

# COARSE PARTICLE FLOTATION

## MORE RECOVERY, LESS GRINDING

Recovering valuable minerals at larger particle sizes can reduce grinding intensity, lower energy and water use, and capture material that conventional flotation may leave behind.



**HIGHER  
RECOVERY**



**LOWER  
ENERGY USE**



**LESS  
WATER**



**GREATER  
VALUE**

**Metso**  
Sampo Cell™

Coarse Particle  
Flotation

**TARGETING  
MORE VALUE  
FROM EVERY  
TON OF ORE**



### **1 LESS GRINDING**

Coarser particles can enter separation earlier, reducing the need for energy-intensive fine grinding.



### **2 HIGHER RECOVERY**

New flotation cells target coarse particles that may otherwise report to tailings, increasing overall metal recovery.



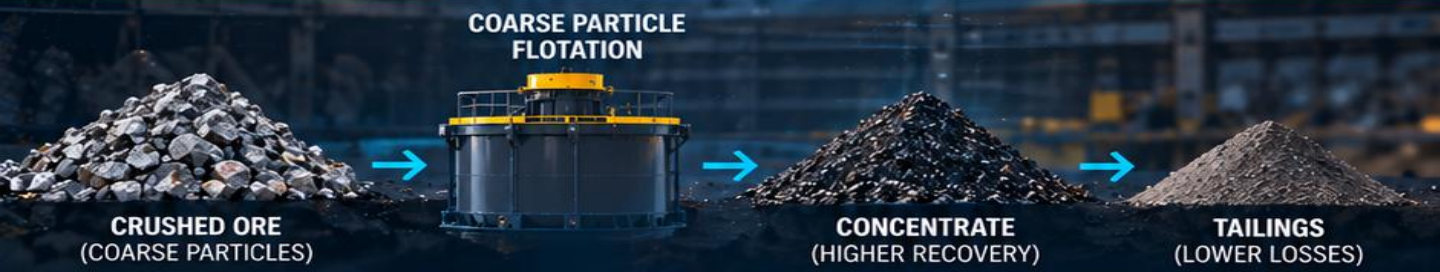
### **3 LOWER WATER & ENERGY USE**

Simpler flowsheets and reduced comminution can improve the environmental performance of concentrators.



### **4 EASIER PLANT INTEGRATION**

New-generation systems are designed for integration into existing flotation circuits with fewer auxiliary stages.



**THE NEXT BREAKTHROUGH  
IN MINERAL PROCESSING  
MAY BE DOING MORE —  
WITH LESS GRINDING.**



**MORE EFFICIENT  
OPERATIONS**



**A SMALLER  
ENVIRONMENTAL FOOTPRINT**



**STRONGER  
ECONOMICS**



# NEXT-GENERATION MINE SAFETY

## FROM REACTIVE PROTECTION TO PREDICTIVE SAFETY

New technologies are transforming mining safety, using real-time data, AI and automation to prevent incidents before they happen — protecting people, equipment and operations.

SAFER PEOPLE  
SMARTER MINES  
STRONGER FUTURES

**TECHNOLOGY TURNS  
RISK INTO INSIGHT.**

### 1 AI-BASED COLLISION AVOIDANCE

Detects and prevents risks in real time.



- ✓ Real-time detection of people and equipment
- ✓ AI-powered risk alerts
- ✓ Automatic braking and speed control
- ✓ Works in open pit and underground mines

### 2 SMART WEARABLES

Monitoring people, health and environment.



- ✓ Real-time health monitoring
- ✓ Location tracking
- ✓ Exposure to gases and environmental risks
- ✓ Emergency alerts (man-down detection)

### 3 GEOFENCING & PROXIMITY ALERTS

Keeps people out of danger zones.



- ✓ Virtual safety boundaries
- ✓ Instant alerts when entering restricted areas
- ✓ Protects workers and equipment
- ✓ Customizable zones for different risk levels

### 4 DRONES FOR HAZARD INSPECTION

Reaching the places people shouldn't.



- ✓ Inspection of high-risk and hard-to-reach areas
- ✓ Thermal and visual imaging
- ✓ Monitoring of slopes, pits and tailings dams
- ✓ Faster and safer inspections

### 5 PREDICTIVE SAFETY ANALYTICS

Turning data into safer decisions.



- ✓ Analyze historical incidents and real-time data
- ✓ Identify high-risk situations before they happen
- ✓ AI-driven risk prediction
- ✓ Support proactive safety management

### 6 UNDERGROUND CONNECTIVITY

Keeping everyone connected.



- ✓ Reliable communication networks
- ✓ Real-time location of all personnel
- ✓ Emergency response support
- ✓ Improved safety in underground operations

THE FUTURE OF MINE SAFETY  
IS NOT JUST RESPONDING FASTER —  
**IT IS PREDICTING RISK  
BEFORE AN INCIDENT HAPPENS.**

- ✓ Fewer accidents
- ✓ Healthier people
- ✓ More efficient operations
- ✓ Stronger, more resilient mines
- ✓ A more sustainable future



SCREENING SOLUTIONS  
FOR A BETTER TOMORROW

TOUGHER  
SMARTER  
MORE EFFICIENT

# MORE THAN SCREENING. A CLEAR ADVANTAGE.

High-performance screening media made from rubber and polyurethane for maximum efficiency in the harshest conditions.

ENGINEERED  
FOR A WIDER  
RANGE OF  
APPLICATIONS



**+1,100%**

LONGER SERVICE LIFE

vs. wire screens  
with rubber in dry  
processing



**+400%**

LONGER SERVICE LIFE

vs. wire screens  
with polyurethane  
in wet processing



**+50%**

MORE OPEN  
SCREENING AREA

with KÜPER  
MAX systems



**+50%**

HIGHER CAPACITY

with CLEAN rubber  
for critical materials



**-50%**

SHORTER  
CHANGE OVER TIMES

with KÜPER  
plug-in systems



**-40%**

LOWER WEIGHT

for reduced  
operating costs



## SCREEN MATS

Durable. Recyclable.  
Wear-resistant. Smooth running.



## VARIA

The clever plug-in system.  
Simple assembly,  
always the right fit.



## IDEAL

Maximum open screening area.  
Simple, universal, IDEAL.



## SPECIAL SOLUTIONS

Customised designs  
for your application.

## APPLICATIONS



QUARRYING  
& AGGREGATES



SAND & GRAVEL



RECYCLING



STEEL & ORE



MINING



FERTILISERS  
& SALTS

PROVEN IN TOUGH ENVIRONMENTS.  
BUILT FOR YOUR SUCCESS.



CONTACT US

[info@gsranalytix.com](mailto:info@gsranalytix.com)

LET'S SCREEN A BRIGHTER TOMORROW.

# SAVE THE AMAZON



# THANK YOU FOR READING

## MINING TODAY. A BRIGHTER TOMORROW.

We bring you global insights, country opportunities and industry trends to support a stronger, more sustainable mining future.

THE EARTH  
PROVIDES.  
WE CREATE  
POSSIBILITIES.



### GLOBAL PERSPECTIVE

Facts. Trends. Opportunities.



### INDUSTRY INTELLIGENCE

Data that drives decisions.



### SUSTAINABLE GROWTH

For people, environment  
and future generations.



### A STRONGER TOMORROW

Through knowledge  
and collaboration.



### RESPONSIBLE MINING

Balancing progress  
with the planet.



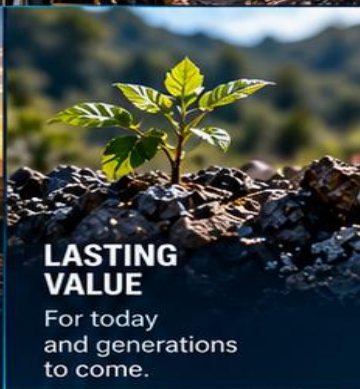
### VALUABLE RESOURCES

Powering industries  
and communities.



### CLEANER ENERGY

Critical minerals  
for a low-carbon world.



### LASTING VALUE

For today  
and generations  
to come.

## DIFFERENT COUNTRIES. A SHARED TOMORROW.

Thank you for being part  
of our global mining community.



*See you  
in the next issue!*

NATURAL  
RESOURCES  
STRONGER  
PEOPLE  
BRIGHTER  
FUTURES

PEOPLE  
DATA  
RESOURCES  
INNOVATION  
SUSTAINABILITY  
OPPORTUNITIES  
A BRIGHTER  
TOMORROW



is a member of the GSR ANALYTIX  
family

