tharisa | enriching lives through innovating the resources company of the future

The next generation mine to megawatt resource group

THARISA GROUP

February 2025

DISCOVER
DEVELOP
DELIVER
DIVERSIFY

INTEGRATED MINE TO MEGAWATT ECOSYSTEM

Listed resources Group that provides vertical integration to deliver from extraction to critical metals' applications

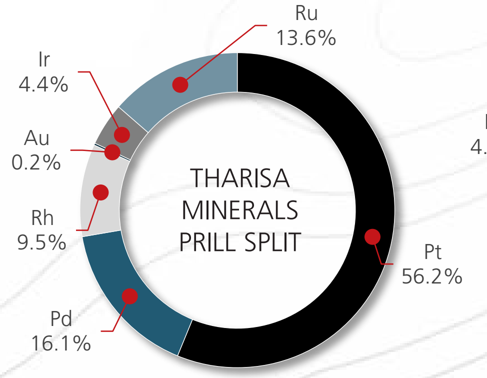
Focus on efficiency, sustainability and innovation

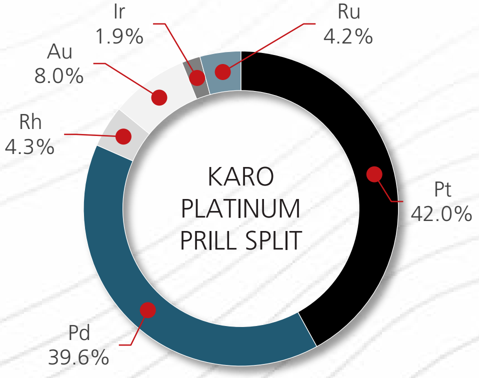
Operations located in key regions

Providing leading economies access to ethically sourced critical metals

CRITICAL METAL APPLICATIONS - PGMS

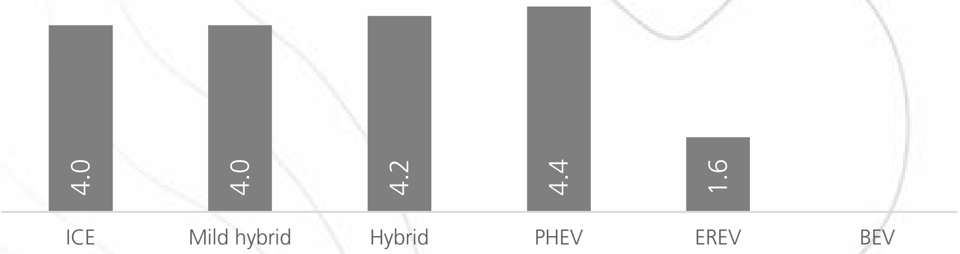
- Primary supply reduction should be the main catalyst for PGM price increases
- Recycling reduced proportion of supply due to the economics of recycling and longer vehicle ownership cycles
- Buying patterns by automakers have started to normalise
- PHEV and HEV to account for up to 36% of sales in 2024
- ICE remains a major demand driver with Tier 4 and Euro 7 emissions standards still to come
- Infrastructure rollout delays necessitating hybrid solutions
- Deficits in Rh, Ir, Ru with Pd to remain, Pt heading towards a record deficit
- Hydrogen economy to provide multi decade PGM demand





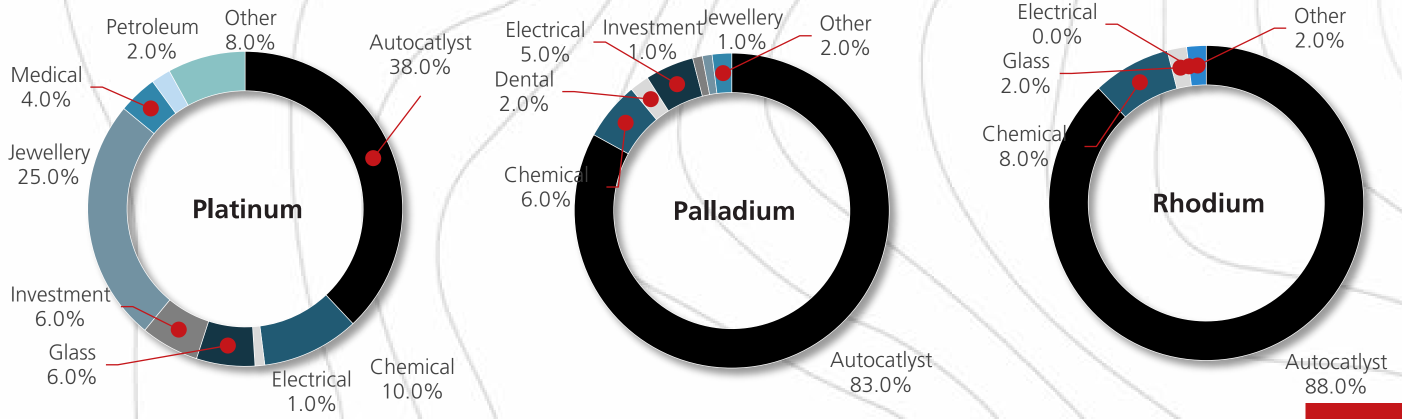
PLATINUM INTENSITY BY DRIVE TRAIN

Estimated grammes per unit



Source: BMO Capital Markets

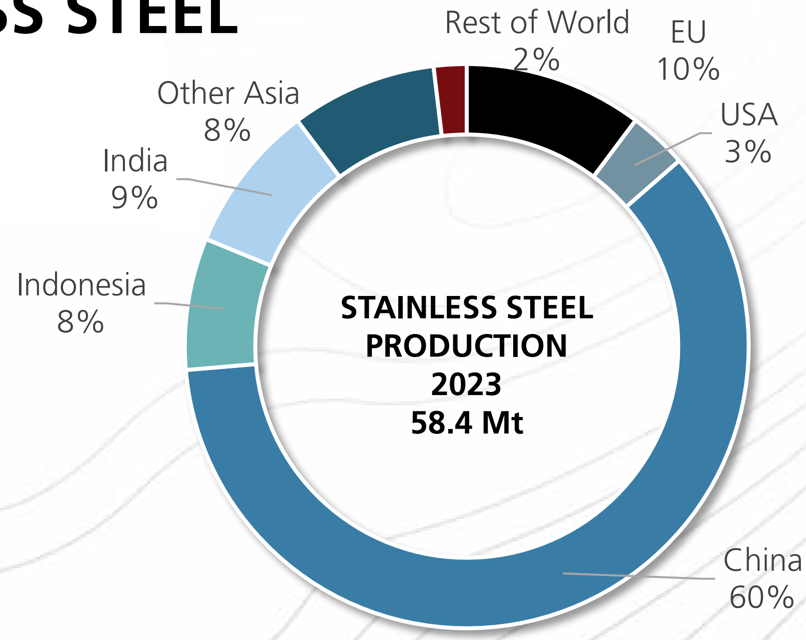
PGM DEMAND BY USE

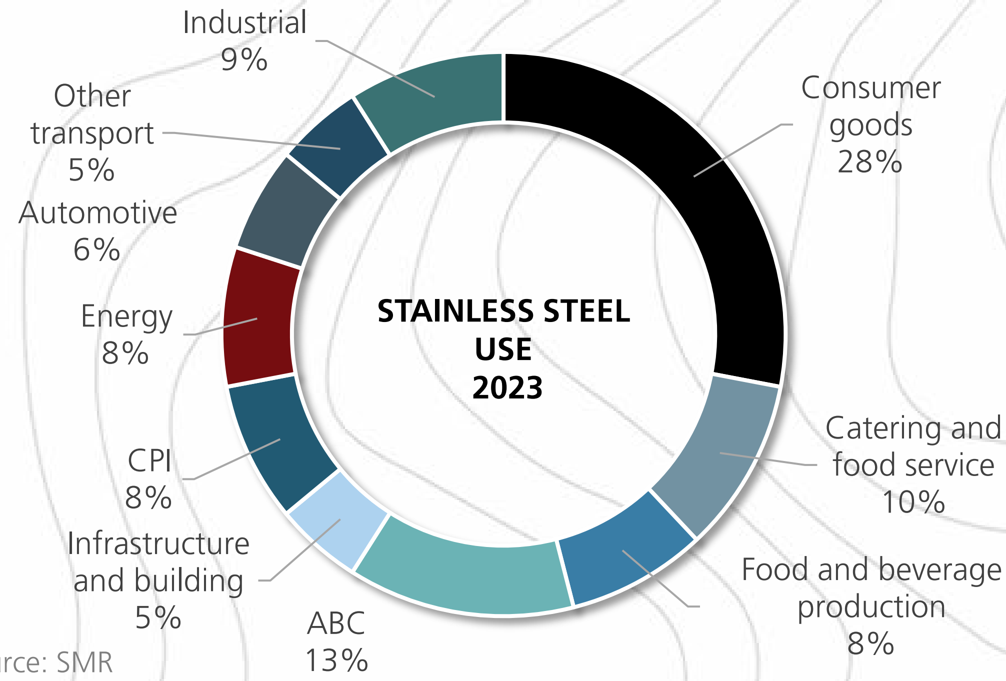


Source: Berenberg

CRITICAL METAL APPLICATIONS – STAINLESS STEEL

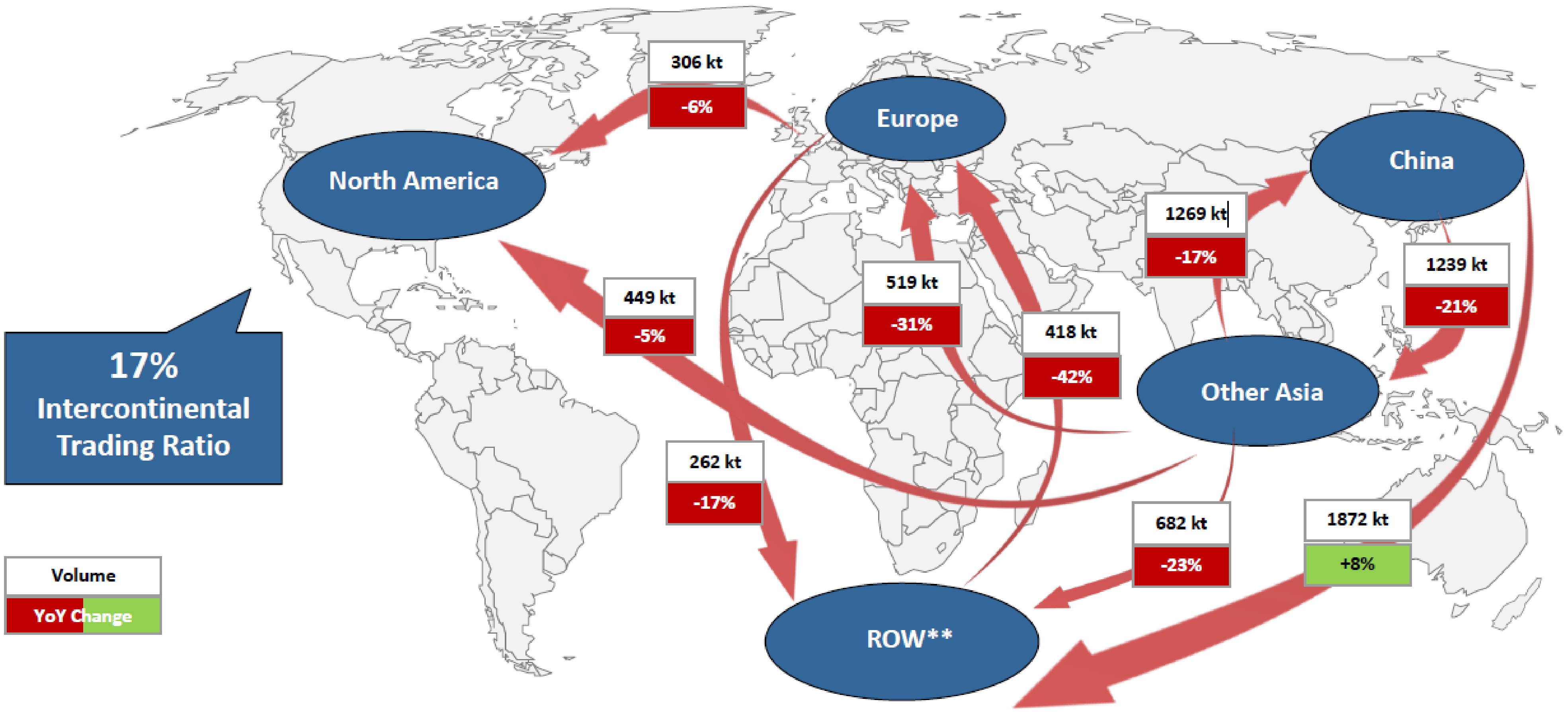
- No substitution for chrome in stainless steel production
- Chrome is a designated critical metal
- Global stainless steel production increased for the first half of 2024 by 6.3% to 30.4 Mt
- Chinese stainless steel production increased by 5.9% for the same period
- South Africa supplies 80% of China's chrome needs
- Notwithstanding logistics challenges and constraints in Southern Africa hindering supply chain, Tharisa has delivered into its commitments
- Tharisa is a major supplier of chrome to China and Indonesia





Source: SMR

STAINLESS STEEL TRADE FLOWS



N.B.: Data showing 2023 and Chnage vs 2022, >200,000 t shown **incl. India and Turkey

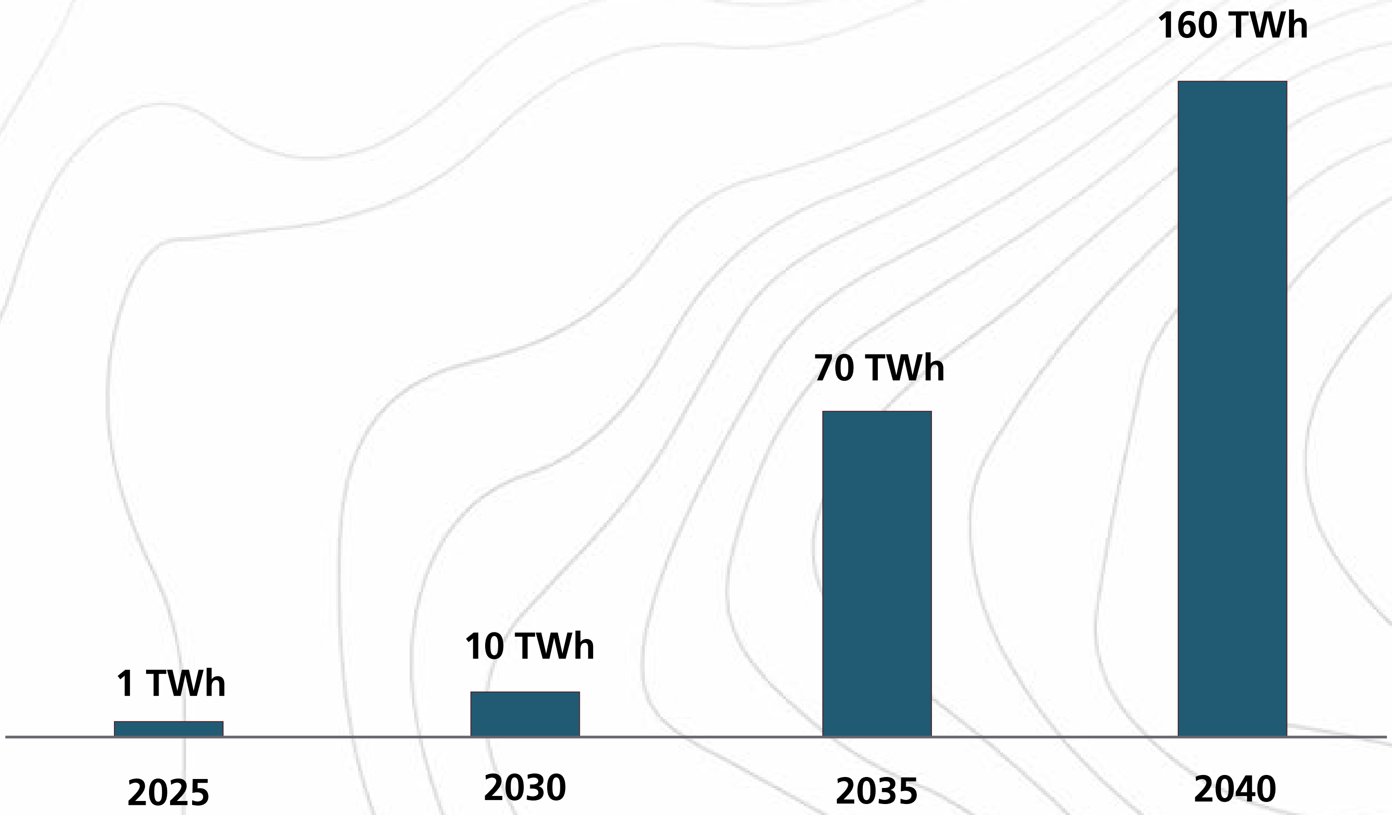
Source: SMR

CRITICAL METAL APPLICATIONS – ENERGY STORAGE

- According to the International Energy Association IEA by 2030, the world is projected to grow intermittent renewables by 3 times, reaching nearly 50% of the electricity generation capacity
- To shift renewables generation to periods of demand, there is a growing need for LDES systems that will enable the continued growth of intermittent renewables such as wind and solar
- Daily renewable energy generation does not follow demand
- Safe, cost-effective, reliable, sustainable, and scalable, Redox One's Iron-Chromium Redox Flow Batteries are poised to power a decarbonised future in a market growing to USD3 trillion by 2040

CUMULATIVE GLOBAL LDES CAPACITY NEEDED

Forecast in TWh



Source
McKinsey, LDES Council, BNEF

SECURITY OF CRITICAL RAW MATERIAL SUPPLY

SHALLOW MULTIGENERATIONAL MINERALS ASSETS

- **THARISA MINERALS – FLAGSHIP CO PRODUCT OPEN PIT MINE**
  - Mining right area of 5 475 ha
  - Mines and processes MG reef from Bushveld Complex, South Africa
  - Resource of 841. Mt containing 39.1 Moz PGMs and 165.6 Mt chrome
  - Reserves of 74.5 Mt containing 3.6 Moz PGMs and 13.8 Mt chrome
  - Annual PGM concentrate production of 145.1 koz
  - Annual chrome concentrate production of 1.7 Mt
  - Progressing underground studies to access +60 year life
  - Secured renewable energy solutions

- **KARO PLATINUM – LONG TERM STRATEGIC DEVELOPMENT ASSET**
  - Mining right area of 23 903 ha in the Great Dyke of Zimbabwe
  - Resource of 178.2 Mt containing 11.3 Moz PGMs and 403.2 kt base metals
  - Reserves of 24.8 Mt containing 2.2 Moz PGMs and 57.1 kt base metals
  - Annual production will be 200 koz PGMs with significant base metal credits – 2.2 ktpa copper and 2.5 ktpa nickel
  - Construction has commenced and major mechanicals have been fabricated
  - Project completion of 18 months from financial close



TECHNOLOGY AND INNOVATION

UNIQUE DOWNSTREAM TECHNOLOGY DEVELOPMENT

- **ARXO METALS BENEFICIATION SITE**
  - Dedicated commercial pyrometallurgical site – producing novel alloys
  - Routine production of PGM alloys and first production of novel chrome alloy – technical viability proven
  - Unique PGM refining process has been proven to produce precious metals

- **ARXO METALS TECHNOLOGY DEVELOPMENT CENTRE**
  - Facility based at university premises to conduct laboratory and pilot scale test work – downstream beneficiation focus
  - Access to latest research and theoretical developments

- **ARXO METALS RENEWABLE ENERGY CENTRE**
  - Focus on energy generation and storage solutions using chromium
  - Different renewable energy technologies are being demonstrated
  - Novel electrolyte process developed and in demonstration scale production

ENERGY SOLUTIONS

THE FUTURE OF ENERGY STORAGE

- **REDOX ONE**
  - Long duration energy storage solution – iron chromium redox flow batteries
  - Safe, cost effective and scalable solution – high temperature stable
  - Proprietary electrolyte manufacturing processes direct from ores – estimated cost 80% lower than vanadium electrolytes
  - First demonstration LDES units are being commissioned
  - Upscaled units being tested on proprietary electrolyte
  - Complete battery solution including rebalancing to be tested in live operational environment
  - Dedicated skilled resource based to accelerate commercialisation

SUSTAINABILITY AT THE CORE

COMMITTED TO ESG

- **JOB CREATION**
  - 4 879 Group employees and contractors
  - Stable work environment in challenging sector
  - Five year wage agreement concluded
- **EDUCATION AND WELLNESS**
  - Learnerships, bursaries, study assistance, internships and skills and enterprise development training
  - Thusanang (“helping each other”) wellness programme
- **ENVIRONMENT**
  - Planned 30% reduction in carbon footprint by 2030
  - 15 year PPA for wheeling of renewable energy
  - Onsite solar power generation project PPA progressing
  - Community agricultural project
- **GOVERNANCE**
  - Highest standards of corporate governance
  - Promotion of ethical practices across the Group

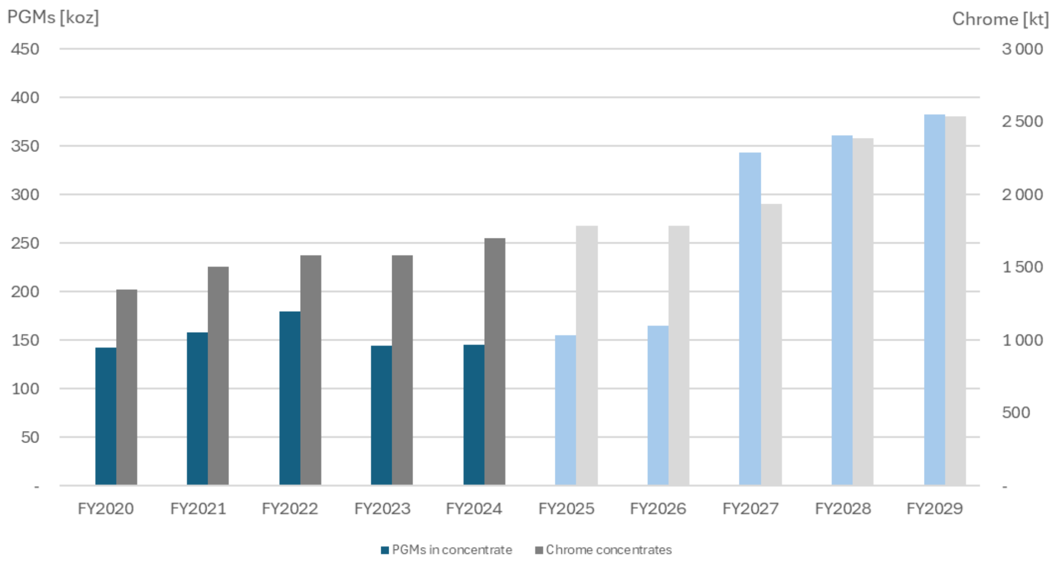


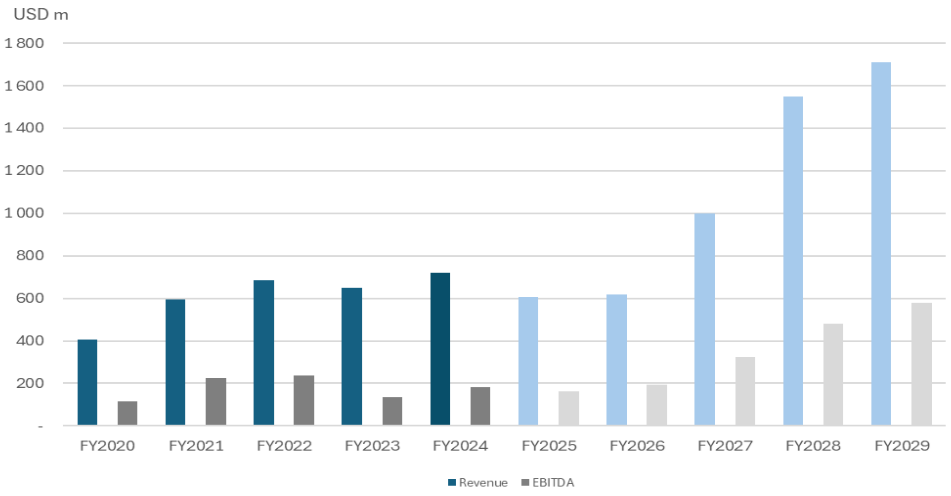


PROFITABLE AND SUSTAINABLE GROWTH

SOLID TRACK RECORD TO PROVIDE LONG TERM VALUE PLAY

- **CRITICAL COMMODITIES**
  - +15 year track record of co-production of minerals critical to sustainable future with operational flexibility
  - Output of PGMs set to double with development of Karo Platinum
  - Tharisa is a major supplier of chrome to China and Indonesia, vital to stainless steel production
- **DIVERSIFICATION, BENEFICIATION AND ENERGY TRANSITION**
  - Maximising value of commodities using innovation and technology
  - Commercial downstream plans well underway with technical viability proven
  - Critical long duration energy storage solution
- **DELIVERING VALUE FOR STAKEHOLDERS**
  - Strict capital discipline policy that balances allocation to capital for sustaining operations, growth projects and returning value to shareholders





THARISA IS AN END TO END CRITICAL METALS AND ENERGY SOLUTION PROVIDER INNOVATING THE RESOURCES COMPANY OF THE FUTURE

tharisa

16 years	11 years	10 years	US$1.3 bn	~US$112 m	~US$780 m
operations	cash generative	profitable	EBITDA generated	returned to shareholders	capital invested

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