International Institute of Social Studies

GRIP-ARM

Green Industrial Policy in the Age of Rare Metals: A Trans-regional Comparison of Growth Strategies in Rare Earth Mining (GRIP-ARM)

GRIP-ARM is a **five-year project** (2021-2026) that interrogates the dynamics behind rare earth mining as a tool for economic development. It examines **globalized supply and demand for rare earths** - from mining, processing, manufacturing, use and recycling - to have a closer scrutiny of mining both as a strategy for **industrialization** and as an integral part of contemporary efforts towards a **sustainable supply of raw materials.**

Research Questions

Supply of rare earths

- How do state capacity, business power and organizational structure of domestic markets shape the design of industrial policies in resource-rich countries?
- How do some countries successfully generate linkages between resource extraction and manufacturing, and what accounts for their failure?

Demand of rare earths

- How effective are responses of importing countries and their manufacturing industries in securing a stable supply while reducing socio-environmental costs of extraction?

Data Collection

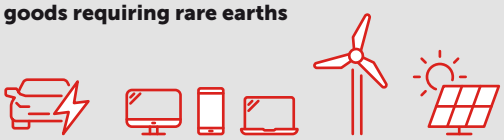
Data collection draws on a trans-regional comparison of **China, Brazil and Kazakhstan**, three resource-rich countries with rare earths used in high tech sectors such as digital, renewable and energy technologies. The project receives advice from an advisory board.

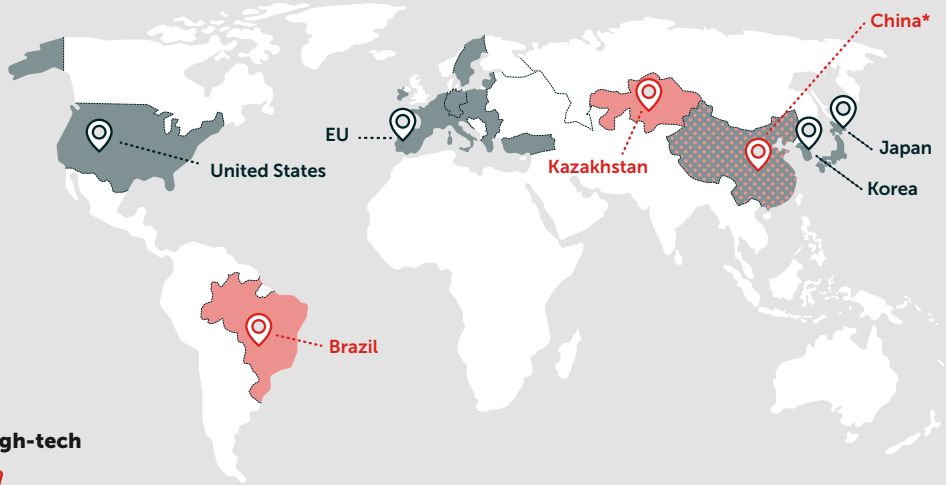
8 experts
(Advisory board)

What are rare earths?

Rare earths are 17 chemically similar metals, with special properties of ferromagnetism, superconductivity, and luminescence. They are vital for production of advanced manufacturing and low-carbon technology.

Examples of energy efficient and high-tech goods requiring rare earths





*China is both a supply and demand country

Demand countries Supply countries

Erasmus University Rotterdam

Erasmus

Why is this research relevant?

1. **Low and middle-income countries joining the race for industrialization** are increasing demands for hightech goods and energy-efficient, low-carbon consumer products. This accelerates the pace and breadth of natural resource exploitation.
2. **Increasing export restrictions by China (the dominant market player in rare earths mining),** to increase domestic industrialization, will lead to a global resource crunch. It creates incentives for mineral states to gain strategic and economic advantage.

The Global Value Chain (GVC) of Rare Earth Mining: Case features & work packages (WP)

GRIP-ARM examines how (both national and sub-national) domestic politics of supply countries become intertwined with demand countries and their manufacturing firms, in shaping the GVC of rare earths mining. Each of the 5 WPs will focus on different aims:

China
(WP 1)

State controlled export dominance and resource conservation to support New Silk Road Campaign.

Aims:

Focus on the impact of rare earths production on health and environmental hazards in these mining communities.

Focus on rare earths mining as a tool for security and industrial policy as well as economic diplomacy.

Brazil
(WP 2)

Accelerated exploitation through resource nationalism.

Aims:

Conduct fieldwork in selected mining regions (Amazon and Minas Gerais) to examine the national-local dynamics of extraction.

Focus on technological innovation of mining for higher-value manufacturing, renewable energy, and national defense.

Kazakhstan
(WP 3)

Supply chain consolidation through joint ventures with MNEs.

Aims:

Conduct fieldwork in selected mining regions including in Chu-Sarysu to examine national-local dynamics.

Focus on the impacts of market reforms in acquiring investment, technology, and expertise.

EU & East Asia
(WP 4)

Responses from demand countries and firms.

Aims:

Examine the changing GVC of processing important products, and their role in promoting green technology.

Study alternative approaches to creating a supply chain, focusing on EU and East Asian governments' industrial strategies to promote circular economy.

China-Brazil-Kazakhstan-EU-East Asia (WP 5)

The Changing Global Value Chains of REEs.

Aims:

Examine how domestic politics, policy preferences, and industrial strategies across the resource GVC shapes the world economy.

Bring together theoretical and empirical learnings from the 4 WPs to produce a systematic, trans-regional comparison of mining-based industrial policy among resource producers and to analyze the prospects and challenges of a greener political economy.

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European Research Council
Established by the European Commission

Research Team

The project team is led by Dr Jewellord Nem Singh (nemsingh@iss.nl). The research team is currently being recruited.

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