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CREATE CHANGE

# The Complex Orebodies Database

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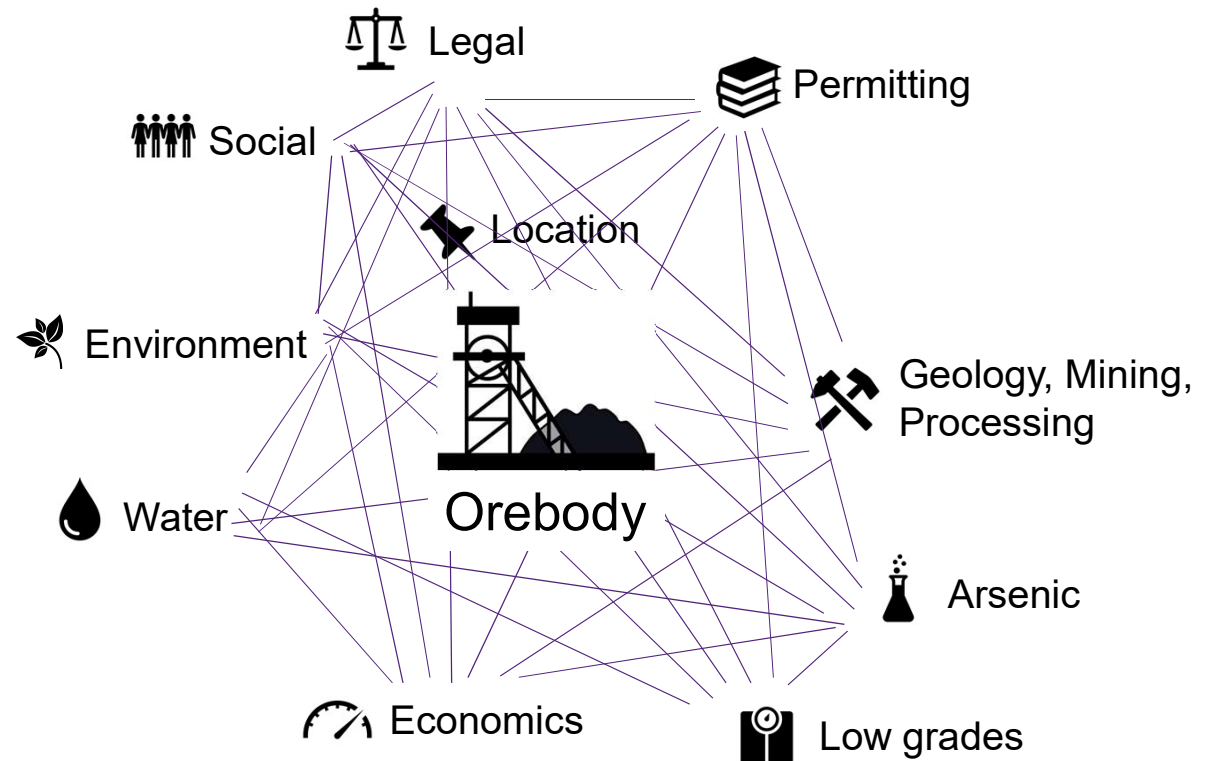
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# Background

# What is a complex orebody?

ESG risks...

Source risks...



## ESGs in the news

*“The U.K. Supreme Court sided with a lower court ruling allowing about **1,800 Zambians to file lawsuits against Vedanta Resources PLC**. [...] Ruling by the U.K. high court, which rejected the application by the company [...] to block a Zambian **pollution** lawsuit on jurisdiction grounds.”*

*“Copper transports at MMG Ltd.'s Las Bambas mine in Peru resumed after the local Fuerabamba community agreed to end a more than **two-month road blockade** that halted shipments.”*

*“The London Metal Exchange pushed the implementation of a **ban on cobalt** said to **be tainted by human rights abuses** to 2025 from 2022 to give producers more time to comply ...”*

*“Investors with a combined \$12.5 trillion in assets, including the Swedish National Pension Funds and the Church of England, could **review their stakes** in resource companies that use **storage dams** if they do not release information to assess safety risks.”*

*“Codelco closes Andina as copper operations **disrupted** by general **strike** in Chile”*

*“Norway's US\$1 trillion wealth fund built a 1.4% stake in Rio Tinto by the end of September [...]. Norway **refused to buy Rio Tinto stock** for more than a decade because of the **environmental damage** caused by the Grasberg copper and gold mine in Indonesia. Rio Tinto agreed to sell its stake in Grasberg to Freeport-McMoRan Inc. [...]”*









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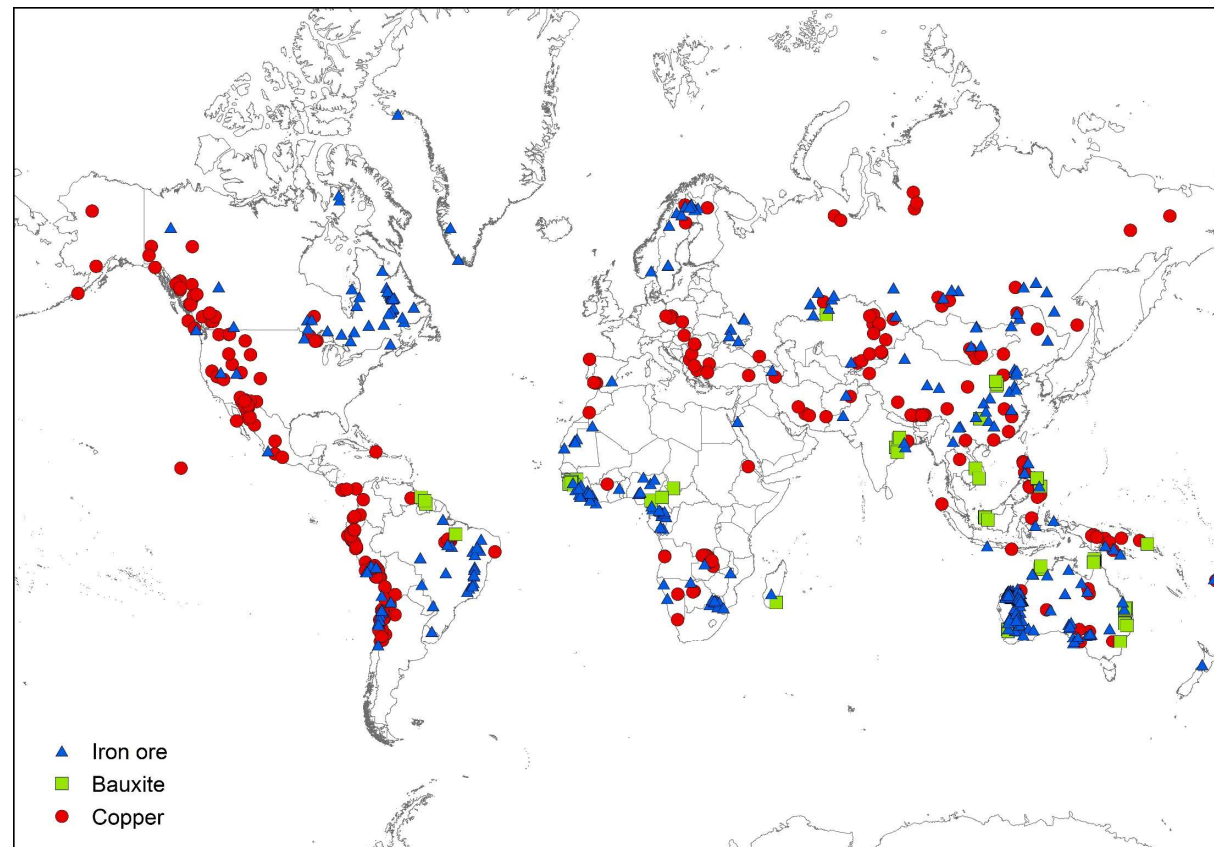
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# Methodology

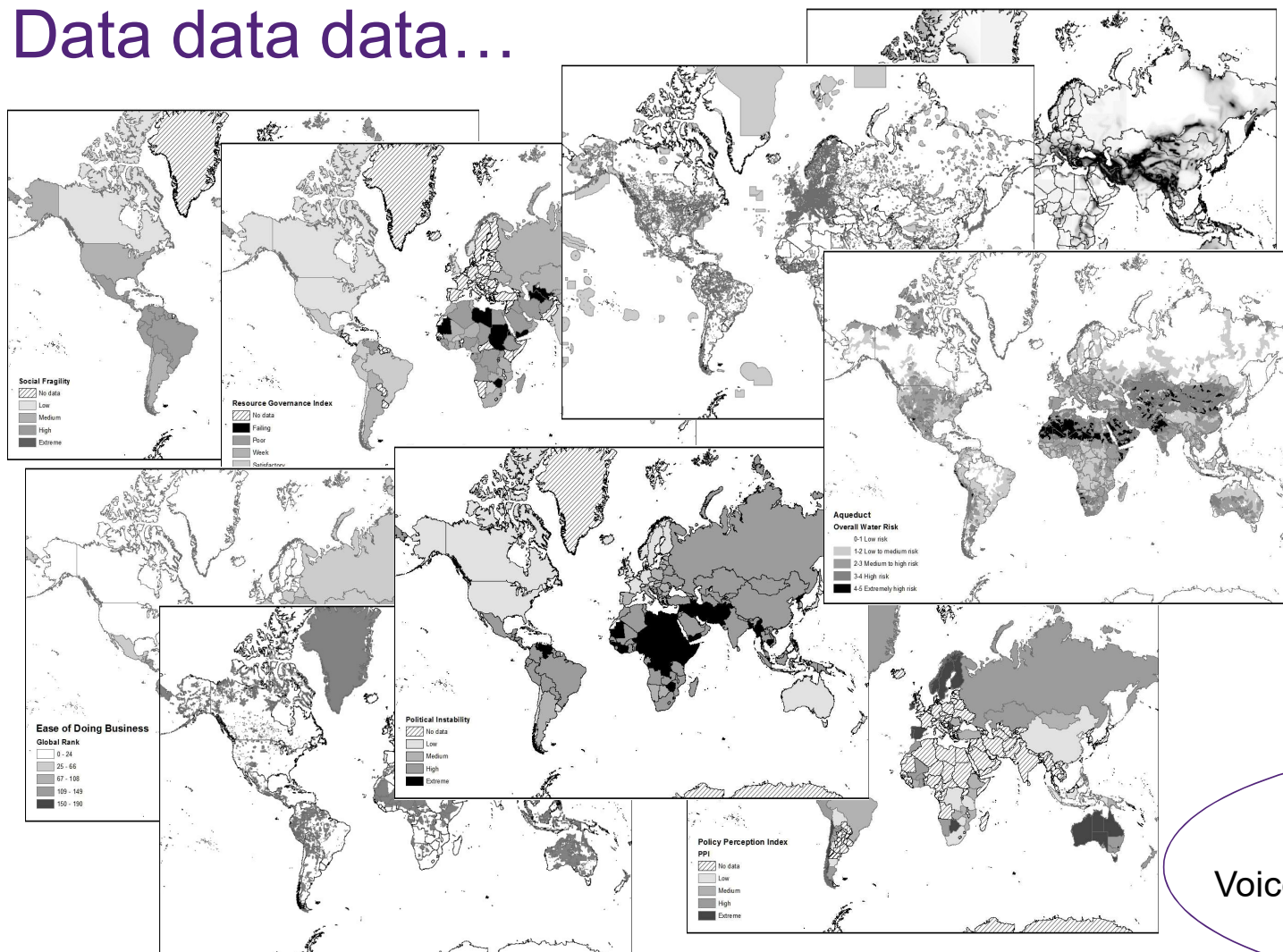
# Data

## S&P Global Market Intelligence database

-  Location
-  Size, grade
-  Economics
-  Geology, Mining,  
Processing



# Data data data...



Elevation

Terrain ruggedness

Precipitations

Seismicity

Wind

Cyclones

Biodiversity hotspots

Water stress

Protected Areas

Proximity to saltwater

Inequalities

Age Dependency

Health

Poverty

Education

Forests

Pastures

Croplands

Indigenous Peoples

Population Density

Regulatory Quality

Corruption

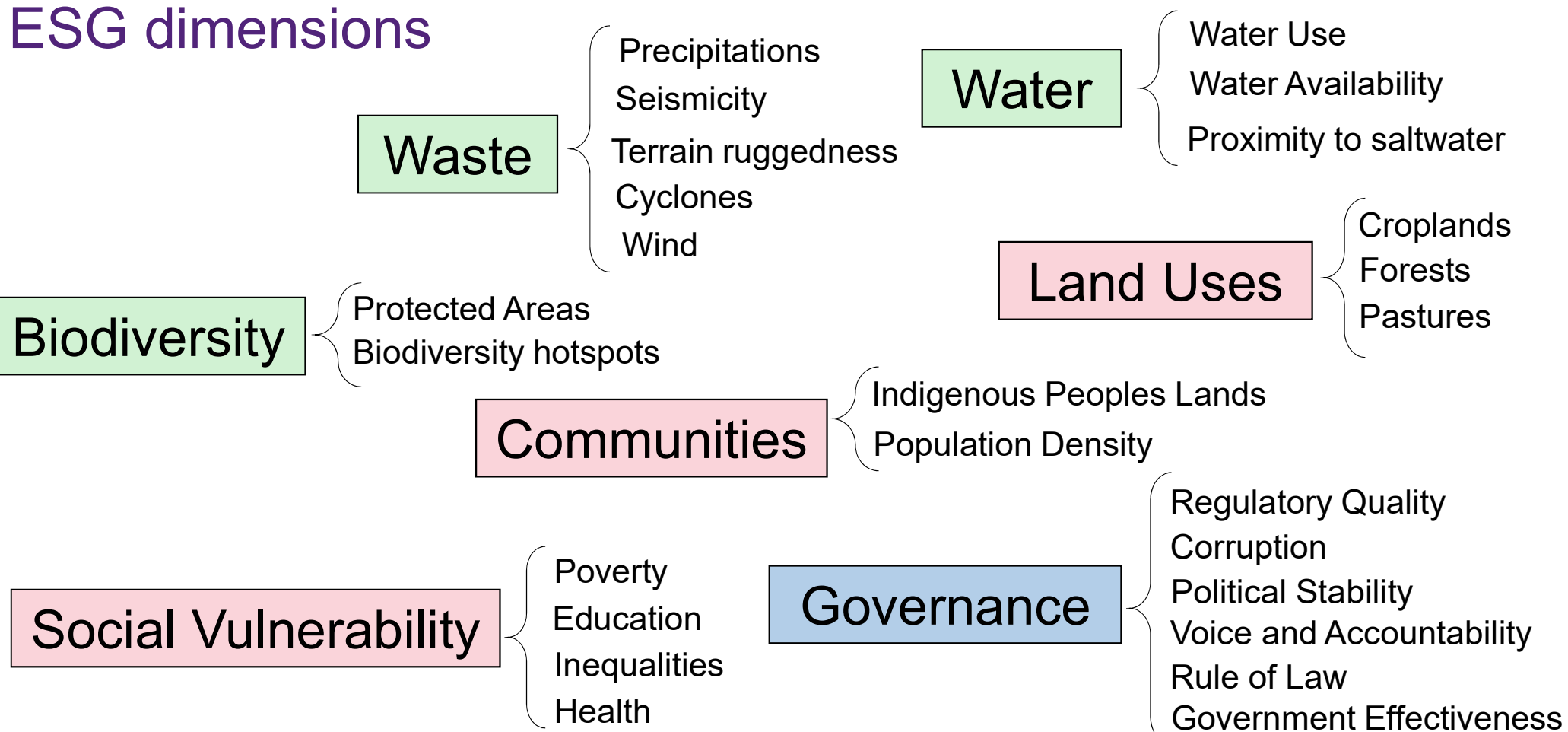
Political Stability

Voice and Accountability

Rule of Law

Government Effectiveness

# ESG dimensions





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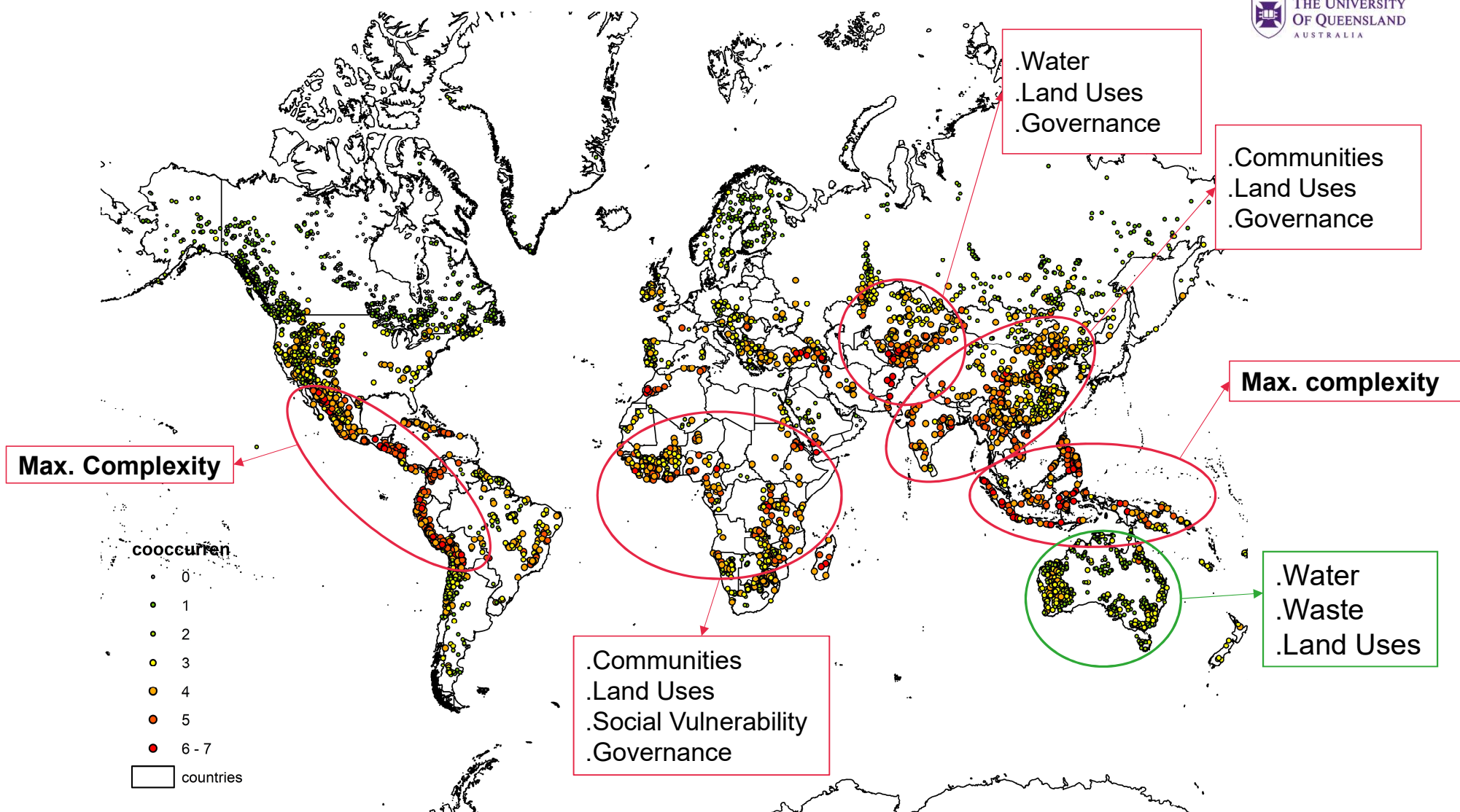
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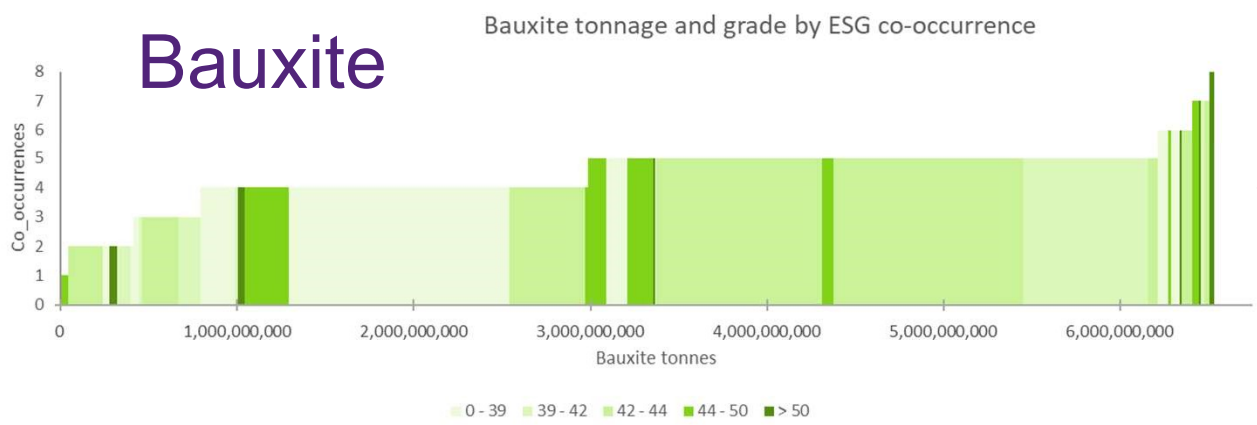
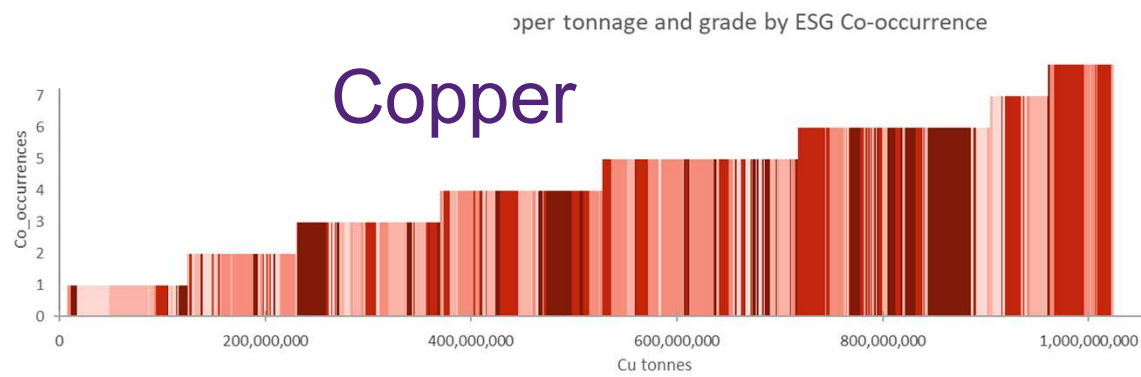
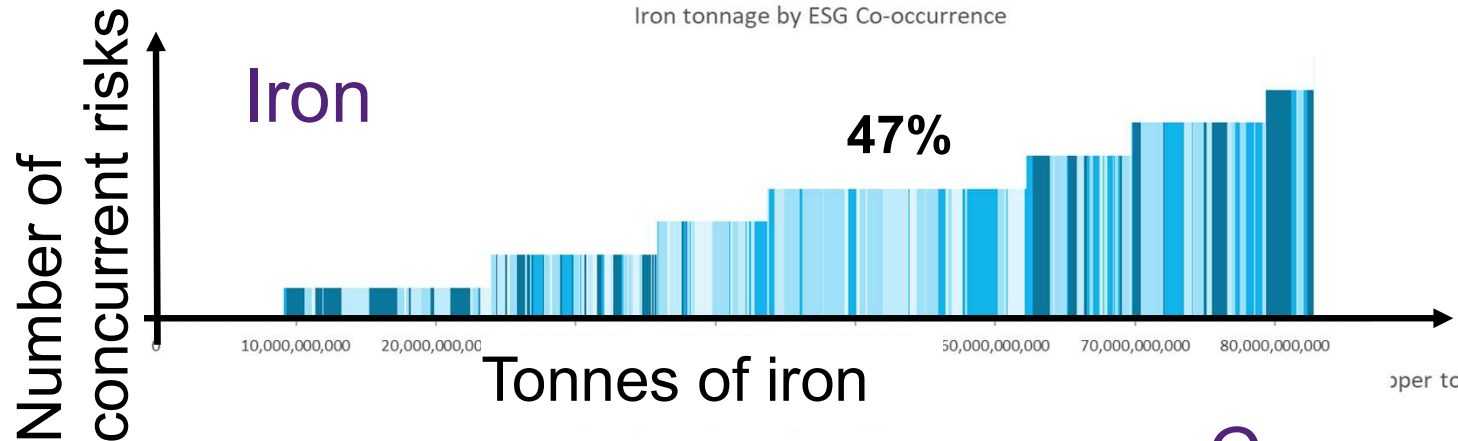
Commodity Profile

Risk across commodities

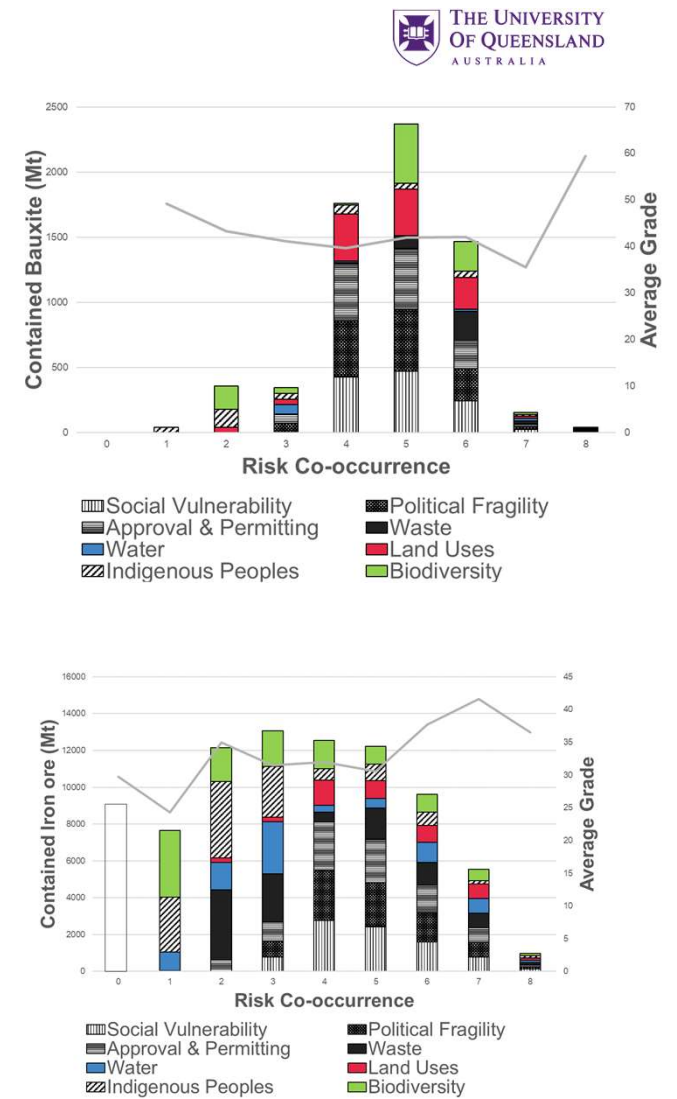
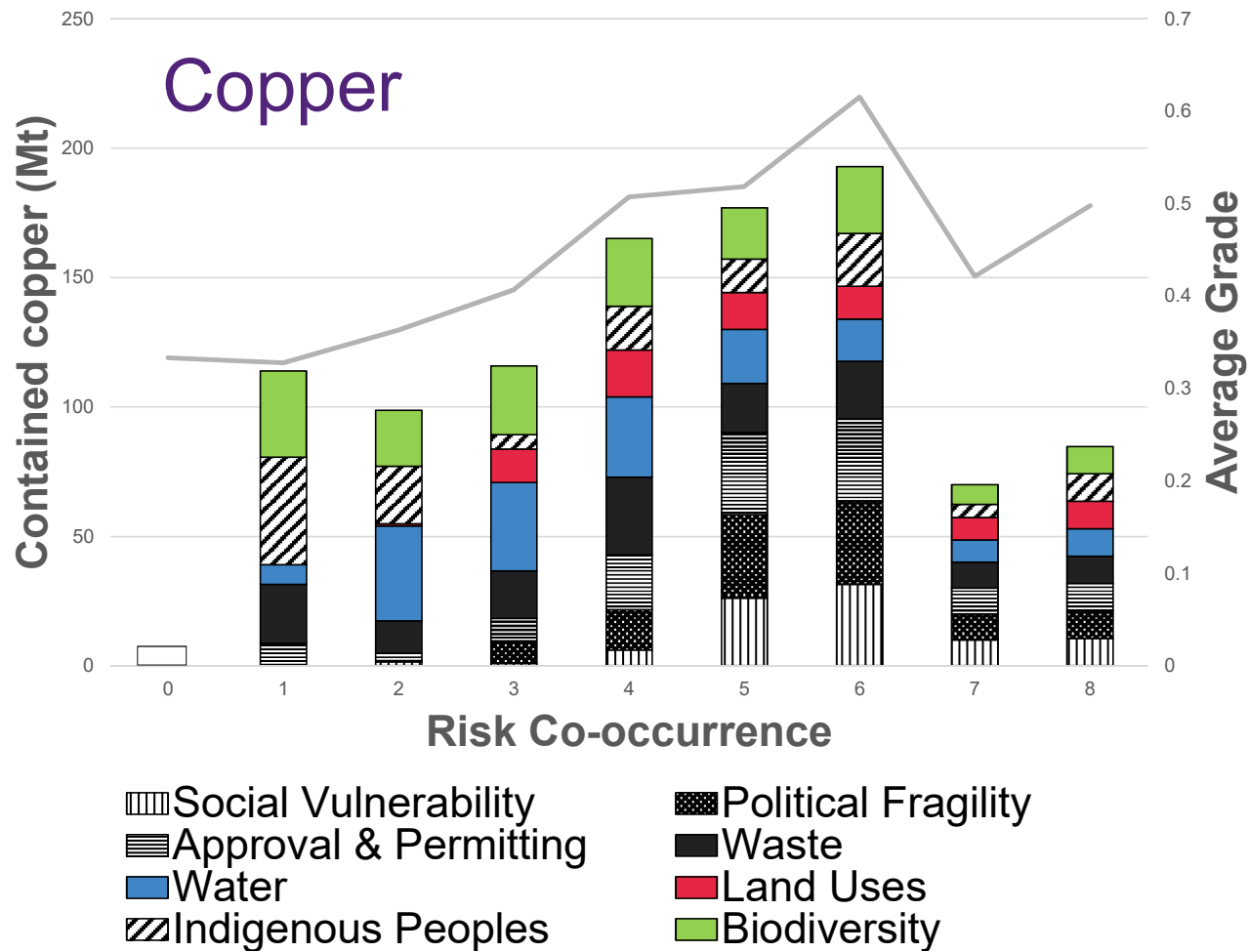
Risk by region

Risk co-occurrence



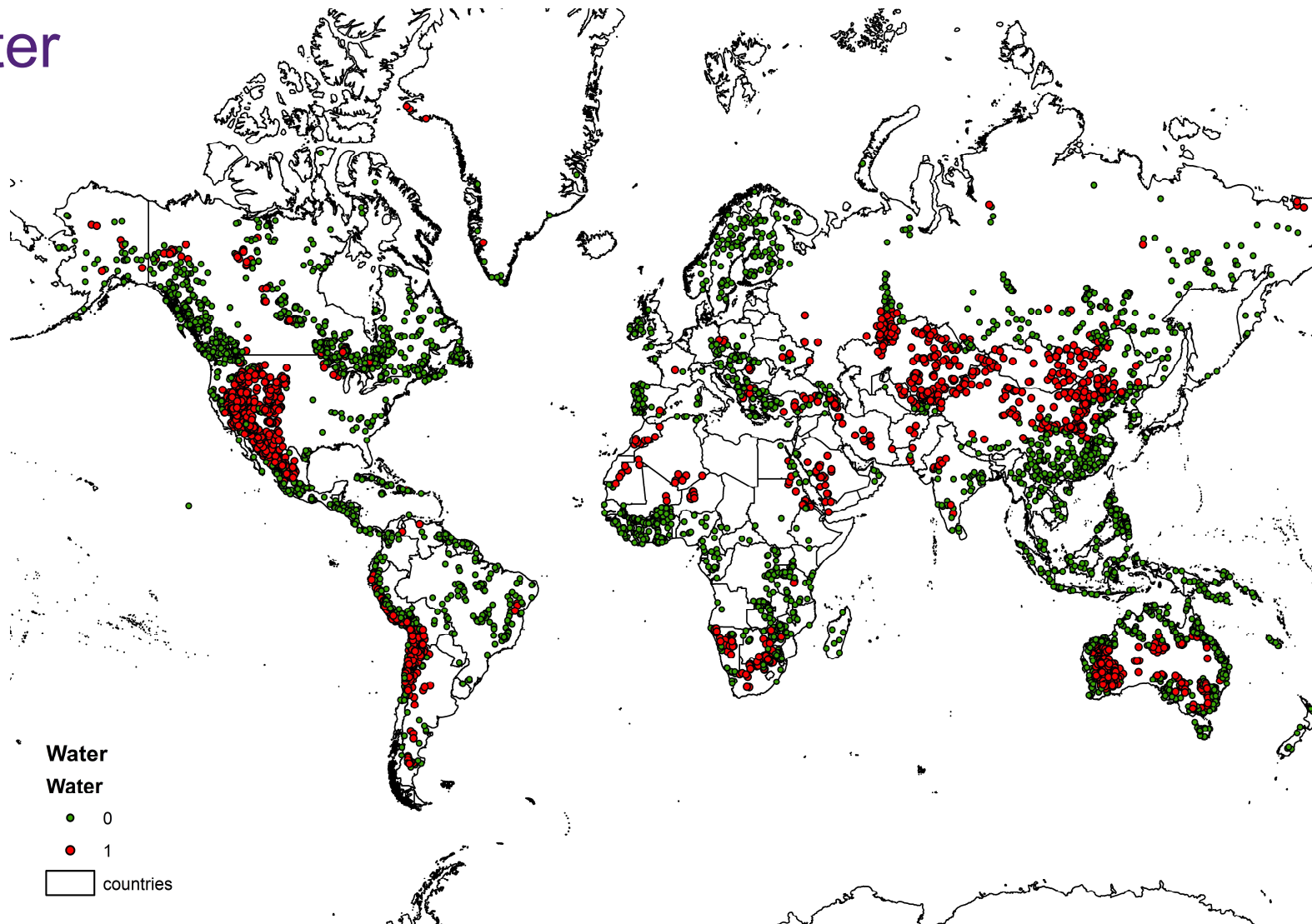








# Water

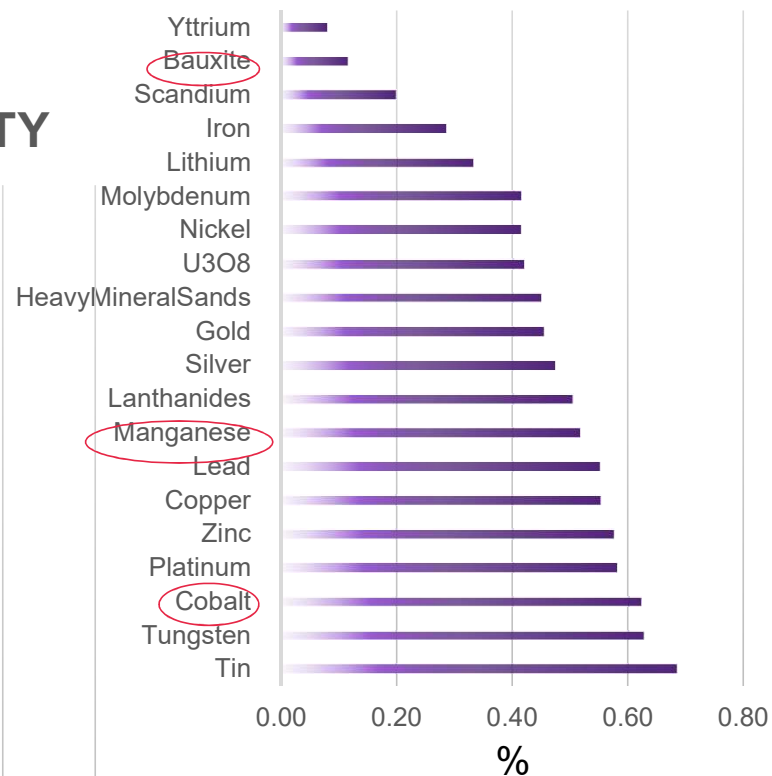
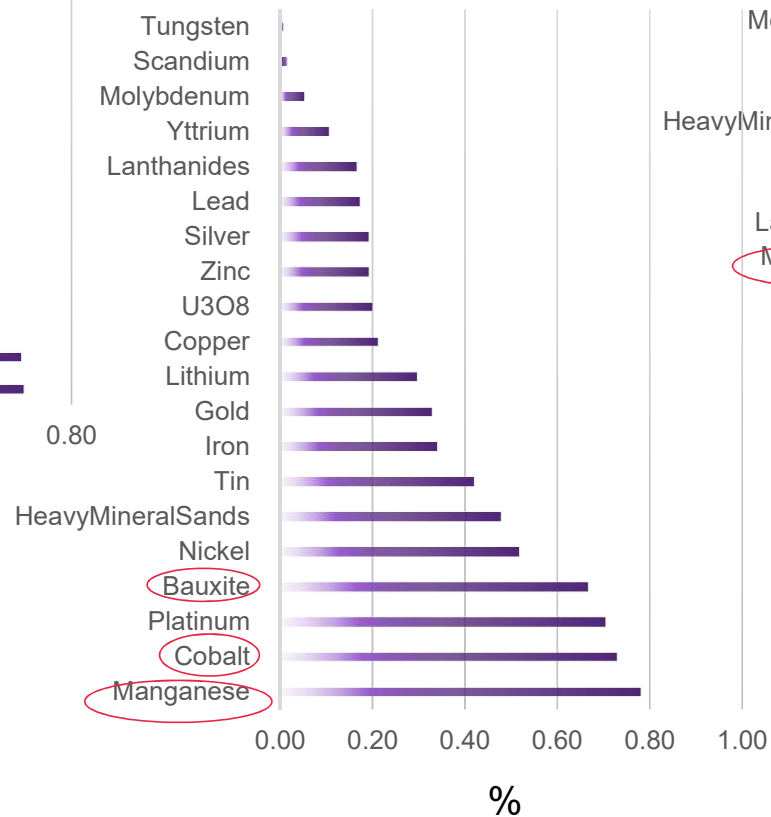
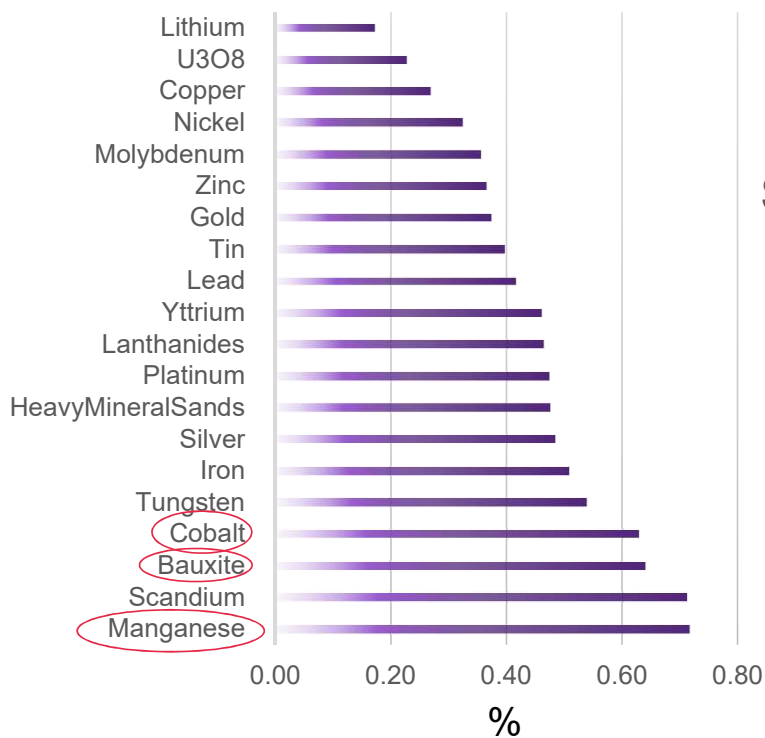


## LAND USES

## Social Dimensions

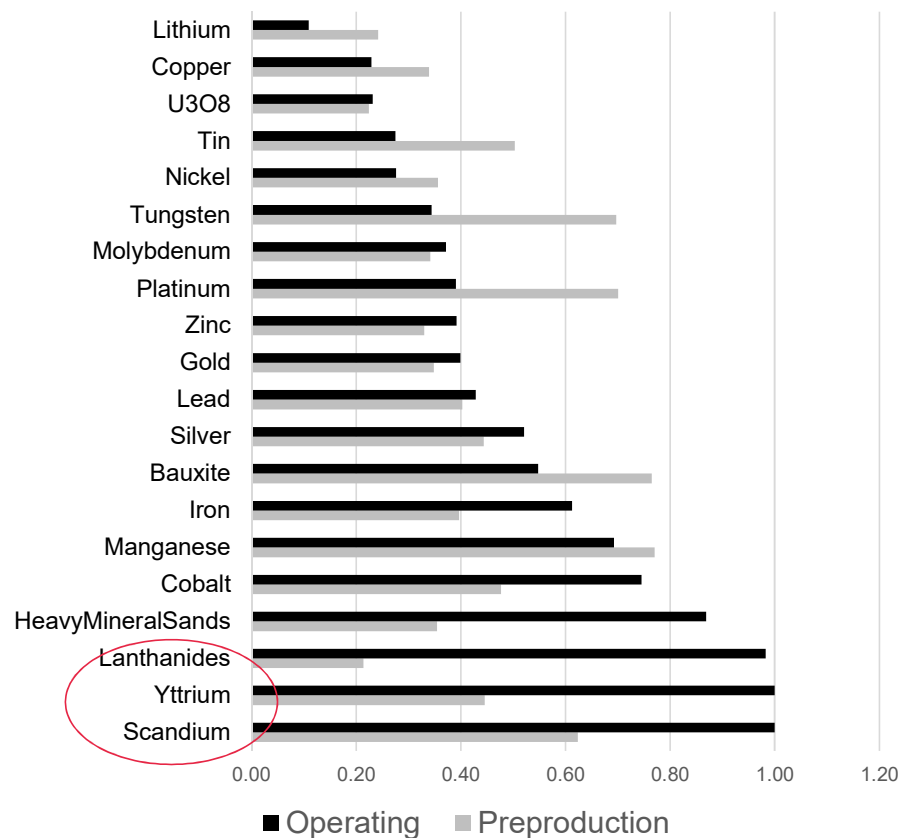
## COMMUNITIES

## SOCIAL VULNERABILITY

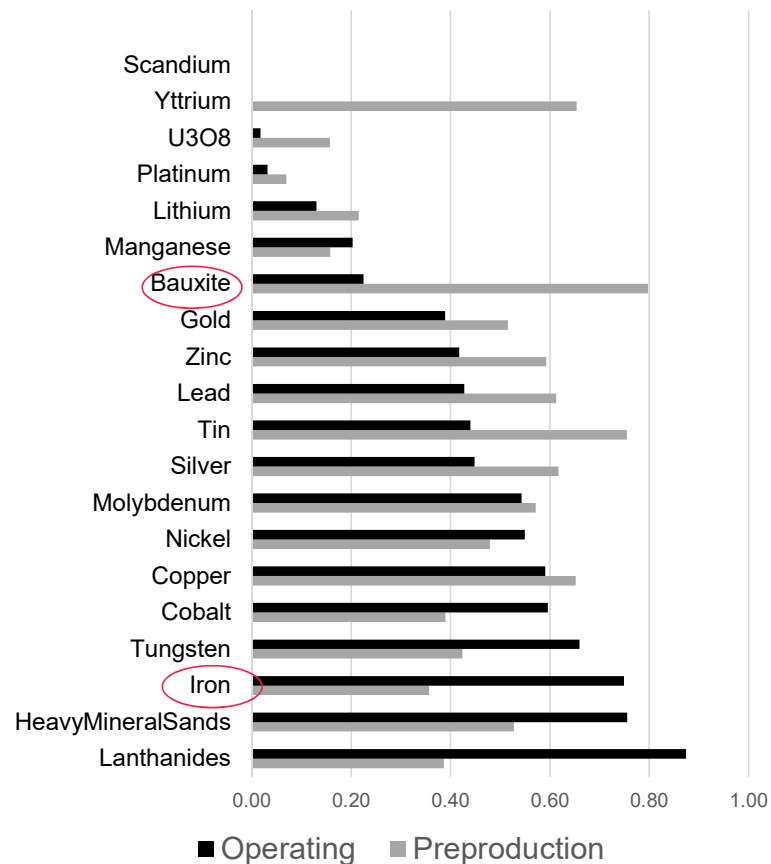


# Present vs Future Supply

## Land Uses



## Waste





- ❖ What is the contribution of source risks to metal criticality?
  - Aluminium?
- ❖ What are the implications of a low-carbon energy transition?
  - Lithium, Cobalt, REs, Platinum ...
- ❖ What is the context of tailings dam failures?
  - Seismicity, Elevation, Precipitations, Population Density, Settlements...



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# Thank You

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