

INTRODUCING CLIMATE-SMART MINING



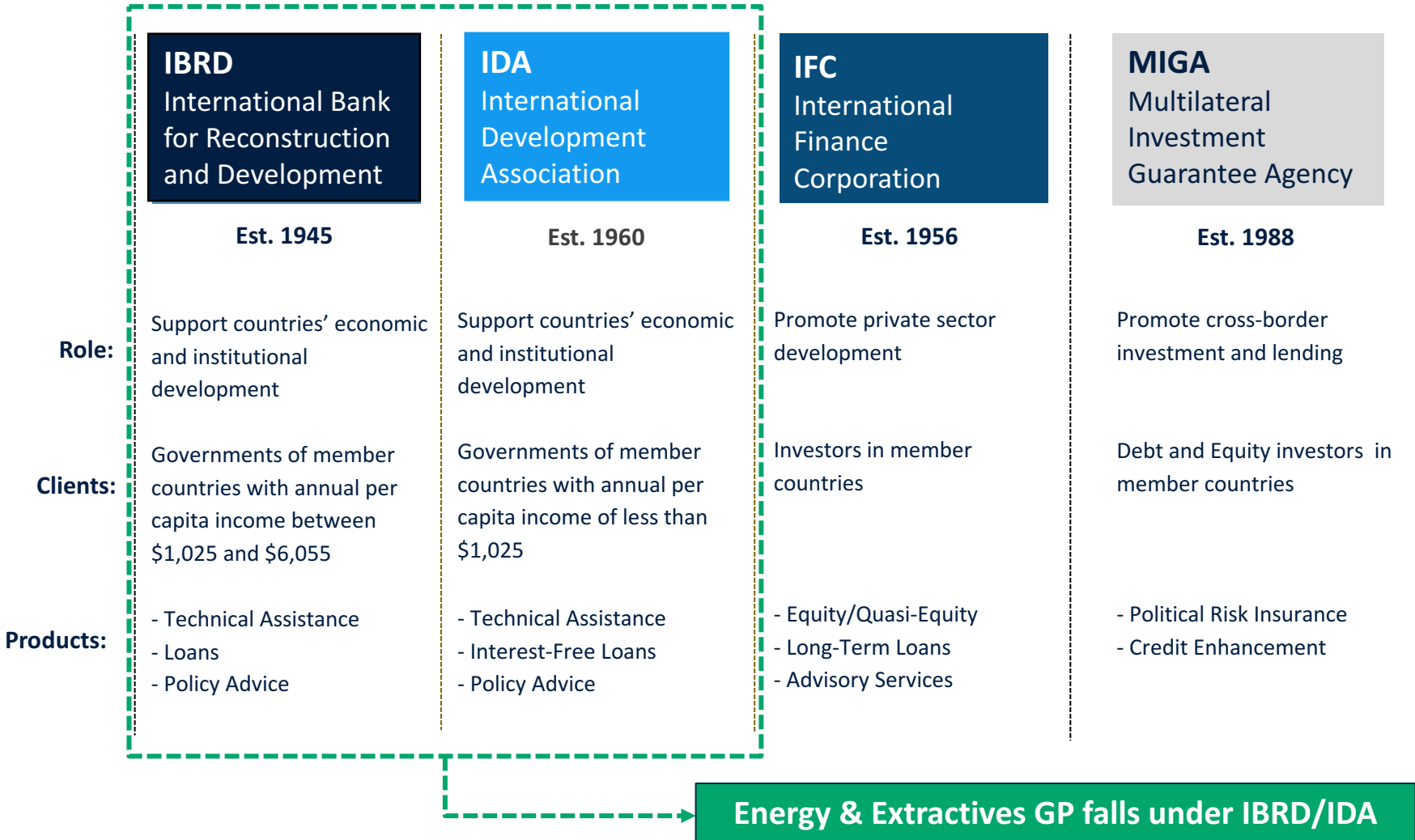
World Bank, IFC

October 2019



OVERVIEW OF WORLD BANK GROUP

The World Bank's twin goals are **ending extreme poverty by 2030** and **boosting shared prosperity** to support global sustainable development.



WORLD BANK: ENERGY & EXTRACTIVES GLOBAL PRACTICE

Natural resources play a dominant economic, social and political role in the lives of 3.5 billion people living in 81 countries. Africa alone is home to about 30% of the world's mineral reserves.

The World Bank helps developing countries manage their natural resource wealth to ensure it contributes to sustainable economic growth and reduces poverty.

three main pillars :

(1) Financial Sustainability:

(2) Social Sustainability:

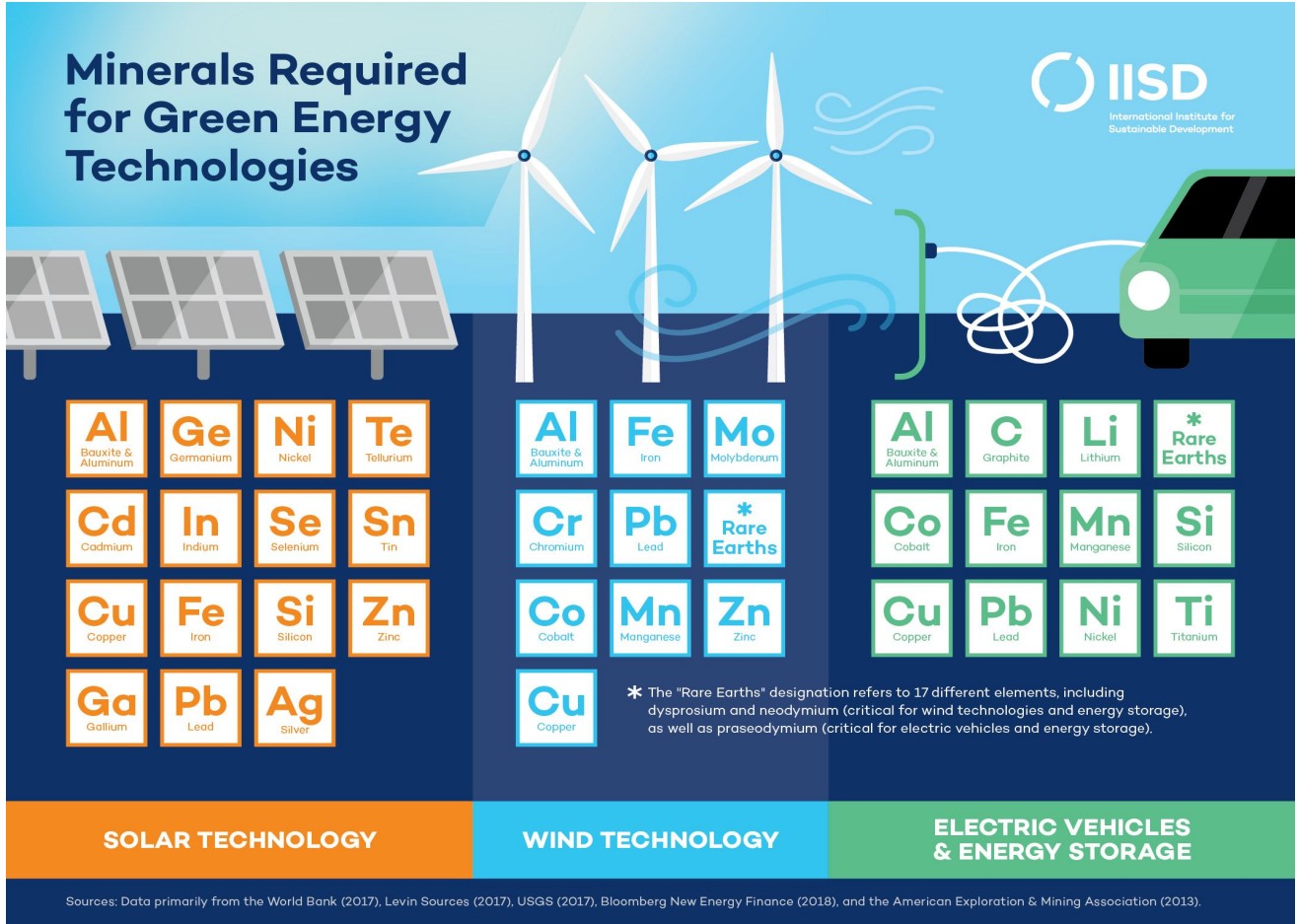
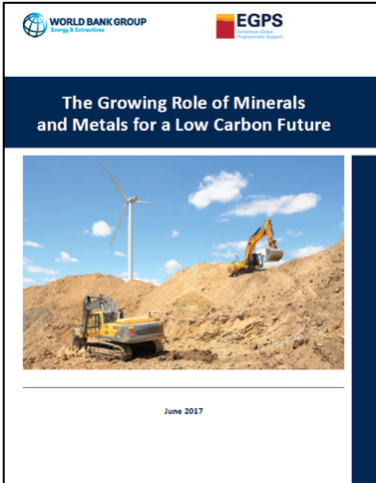
(3) Environmental Sustainability:

The World Bank is active in the extractive industries in about 70 countries and is the largest provider of extractives-related development assistance.



WHERE WE STARTED: THE GROWING ROLE OF MINERALS AND METALS FOR A LOW-CARBON FUTURE (2017)

In June 2017, the World Bank released the report '*The Growing Role Minerals and Metals for a Low Carbon Future*' and concluded that a **low-carbon future would be very mineral intensive**.

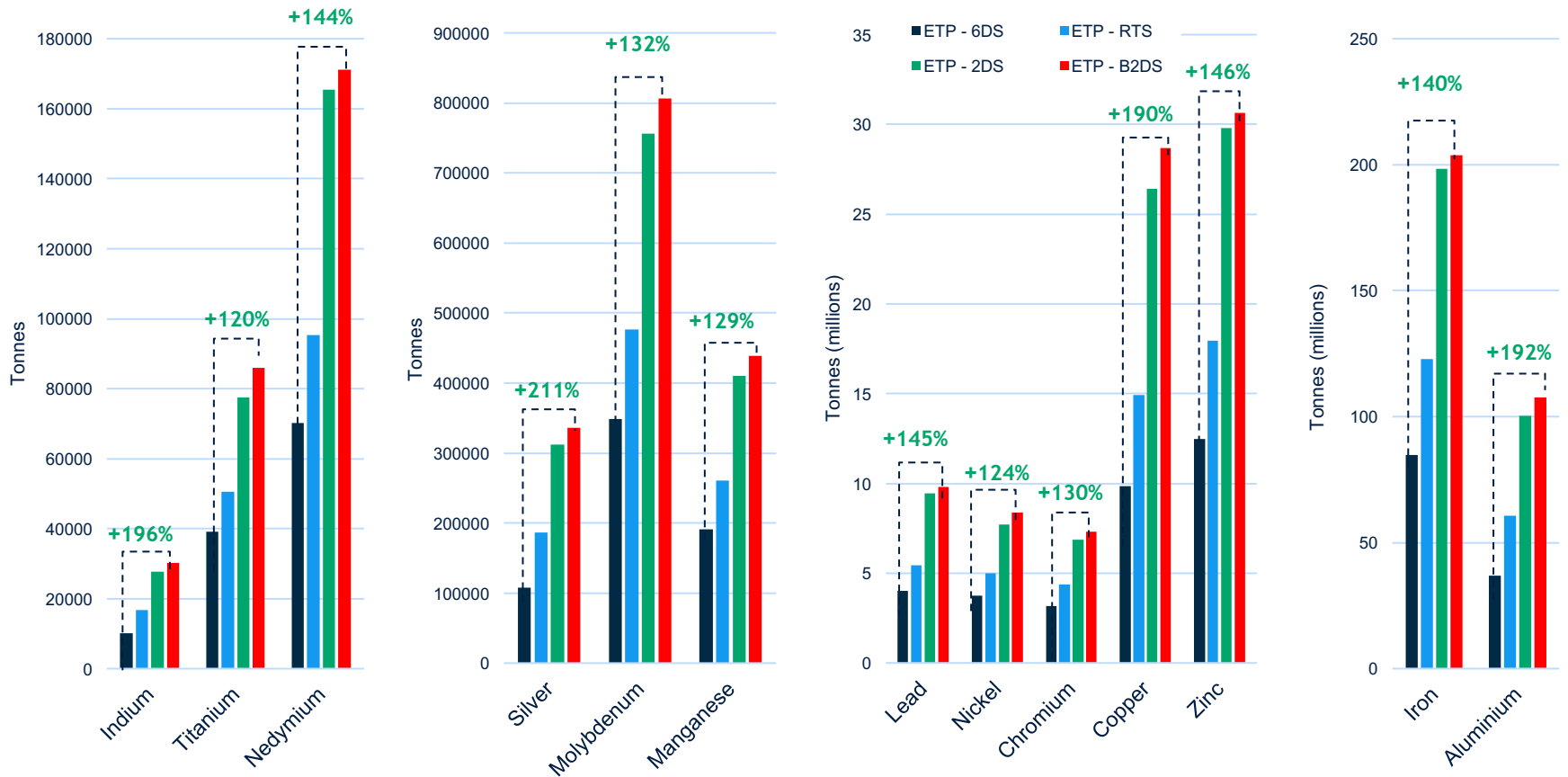


Sources: Data primarily from the World Bank (2017), Levin Sources (2017), USGS (2017), Bloomberg New Energy Finance (2018), and the American Exploration & Mining Association (2013).

UPDATED DATA: MINERALS STILL ESSENTIAL FOR A LOW-CARBON FUTURE

Updated data analysis, following the release of report '*The Growing Role Minerals and Metals for a Low Carbon Future*', demonstrate that a **low-carbon future is still very mineral intensive**.

Total Mineral Demand from Power Generation Technology to 2050, with 'Business as Usual' (ETP – 6DS)

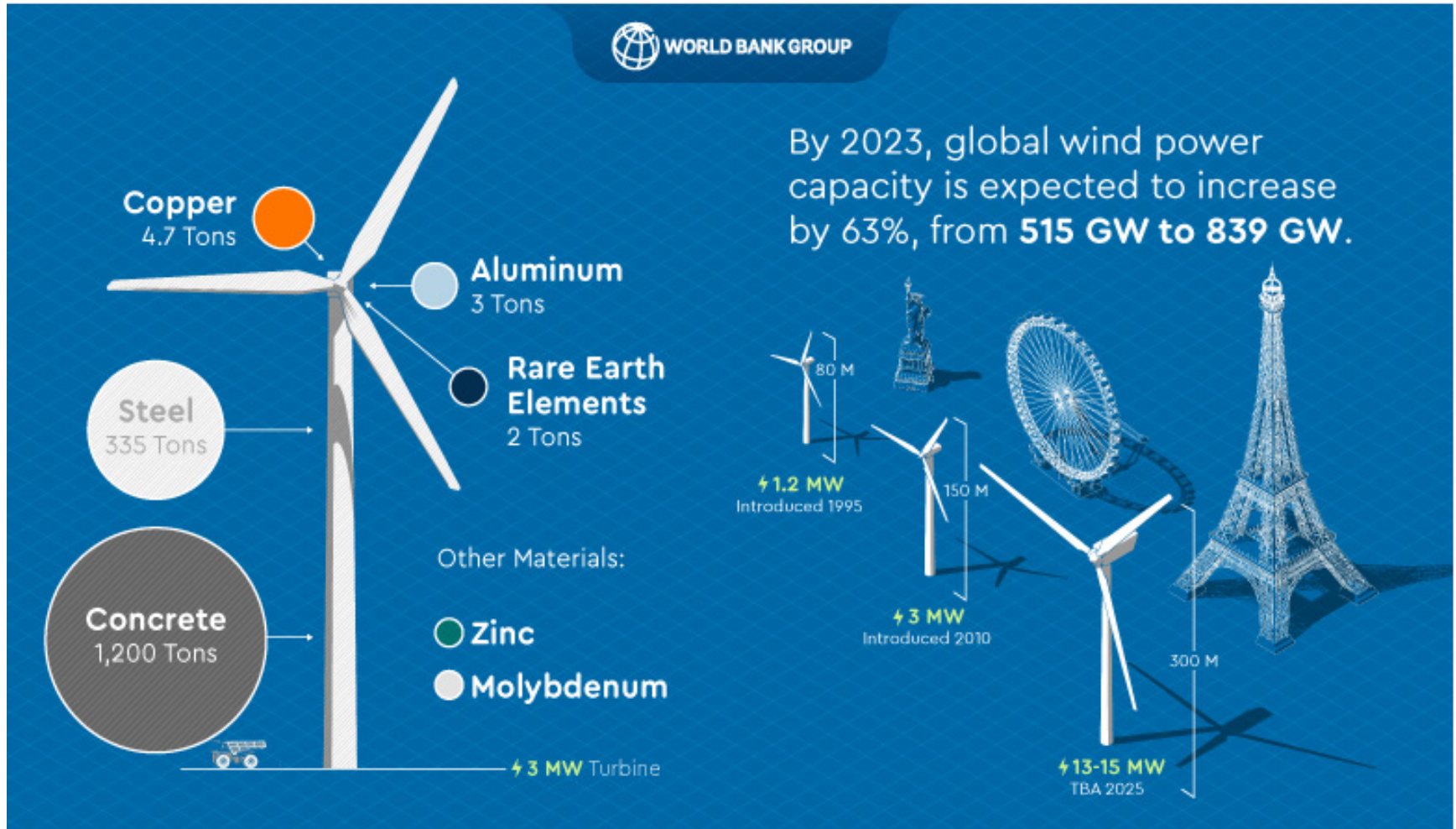


Source: International Energy Agency, Energy Technology Perspective (ETP) 2017, World Bank Analysis (preliminary results from Sep. 2018)

- **ETP-RTS:** Scenario based on existing Paris Agreement Commitments (2.6°C – 3.1°C)
- **ETP-2DS:** Scenario where there is at least a 50% chance of limiting the avg. global temperature increase to 2°C by 2100
- **ETP-B2DS:** Scenario where there is at least a 50% chance of limiting avg. future temperature increases to 1.75°C



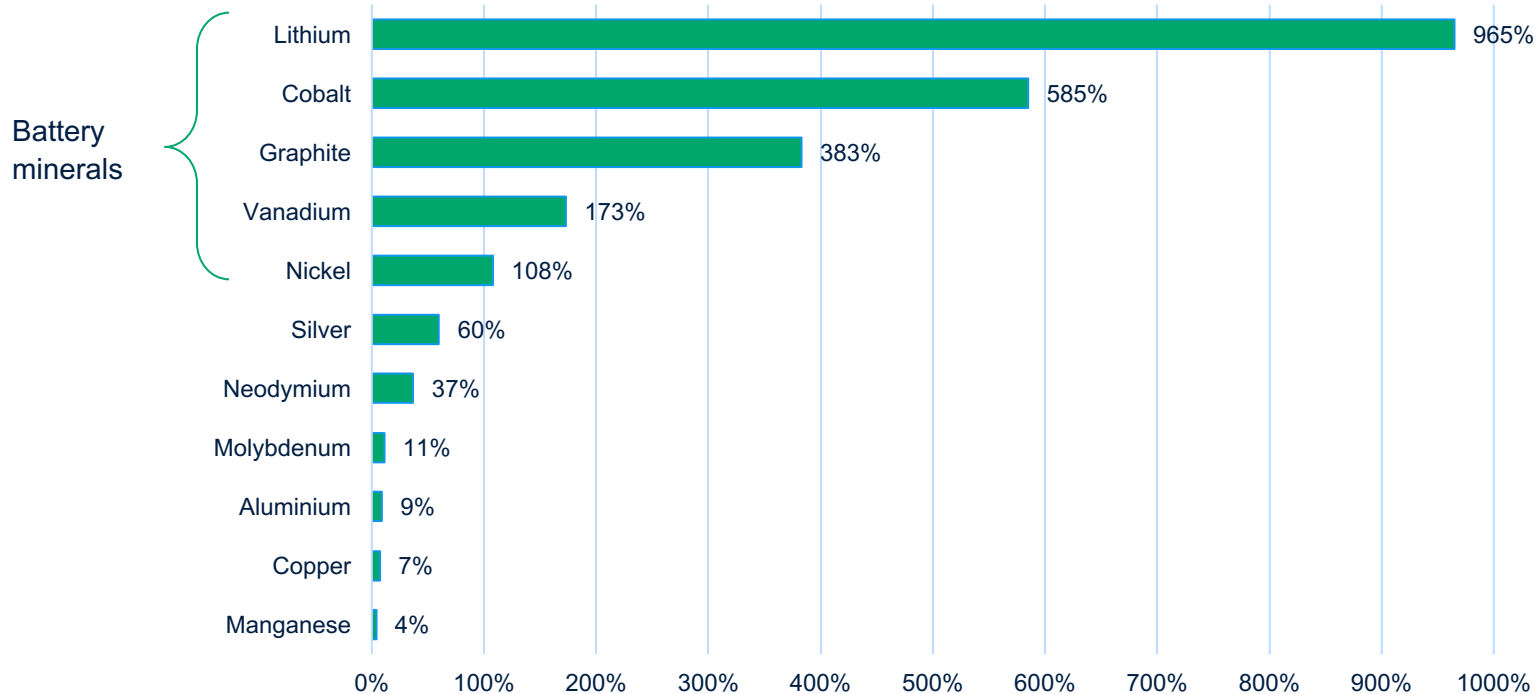
WITHOUT MINERALS, A **LOW-CARBON FUTURE** WOULD SIMPLY NOT BE POSSIBLE...



NEW PROJECT ANNUAL MINERAL DEMAND FROM ENERGY TECHNOLOGIES

Under a **2-degree scenario (2DS)**, the **overall mineral demand** from energy technologies is expected to be significant for **certain minerals and metals in 2050**, particularly minerals used in battery technology

Projected Annual Demand from Energy Technologies in 2050 (2DS)
(Percentage of 2017 Annual Production)



Source: *International Energy Agency, Energy Technology Perspective (ETP) 2017, Deetman et al (2018), World Bank Analysis (2018)*

- **ETP-2DS:** Scenario where there is at least a 50% chance of limiting the avg. global temperature increase to 2°C by 2100

WHERE WILL ALL THESE MINERALS COME FROM?

Many of these minerals will come from **resource-rich developing countries** and **emerging economies**.



IMPLICATIONS OF CLEAN ENERGY TRANSITION

Clean energy transition gives the mining sector the opportunity to ramp up its act and improve its operations worldwide through improved practices

Challenges

Significant **more minerals** will be needed for a low-carbon transition

- *Environmental footprint of mining sector*
 - Consumes up to 11% of global energy
 - Mine sites often use diesel generators
 - 70% of mining operations of 6th largest companies in water-stressed countries
- *Strategic minerals in countries with poor governance, weak institutional capacity*
 - Avoiding the resource curse
 - (Geological)knowledge gap
 - Creating 1st and 2nd tier minerals

Opportunities

Growth and development opportunities for **mineral-rich developing countries**

- Supplying key minerals and metals to enable transition
 - Lithium, copper, nickel, cobalt and other strategic minerals located in developing countries: over a 100 million people depend on them
- Enabling sustainable and responsible resource development
 - Appetite to develop sustainably and become an active player in clean energy supply chain
 - Potential to create a re-use and recycling mineral industry
- Technology transfer to client countries through innovation
 - Reprocessing of tailings to reduce waste

WHAT IS 'CLIMATE-SMART MINING'?

Climate Smart Mining

'Climate-Smart Mining' supports the responsible **extraction**, **processing** and **recycling** of **minerals** to secure supply for clean energy technologies while *minimizing* the climate and material footprint throughout the value chain.

CSMF: OBJECTIVES

The Facility will be a *multi-year program* providing both technical assistance and advisory financing to support resource-rich client countries in developing their strategic mineral reserves while adopting CSM practices.



Objectives

Support the **research** and **adoption of innovative practices** in the extraction, processing, recycling and transportation of critical raw materials to 'green' the clean technology value chain from extraction to the end-consumer product

✓ Leverage resources to **finance greenfield** and **brownfield projects** for strategic low carbon minerals with a **climate smart mining innovative approach**, allowing client countries to contribute to the clean tech supply chain

✓ **De-risk investments for low-carbon minerals** by creating an enabling environment for private sector investments in mineral-rich developing countries

✓ Assess opportunities for **mineral recycling operations** in developing countries

CSM BUILDING BLOCKS

Strong Governance and Adequate Regulatory Framework

	GHG Mitigation	GHG Adaptation	Reducing Material Impacts	Creating Market Opportunities
World Bank, IFC Support to Decarbonize and Reduce Material Footprint of Mining Sector	Integration of Renewable Energy in the Mining Sector	Forest Smart Mining within Landscape Management	Adoption of a 'Circular Economy' for Low-Carbon Minerals	De-risking Investments for Low-Carbon Minerals
	Innovation in Extractive Practices	Resource Efficiency in Mineral Value Chain	Re-Use / Recycling of Low Carbon Minerals	Enabling Carbon Finance Instruments
	Energy Efficiency in Mineral Value Chain	Innovative Waste Solutions	Low-Carbon Mineral Supply Chain Management	Robust Geological Data Management

Gender & Multi-stakeholder Engagement

Climate Smart Mining



WORLD BANK PROJECTS: CLIMATE-SMART MINING ACTIVITIES

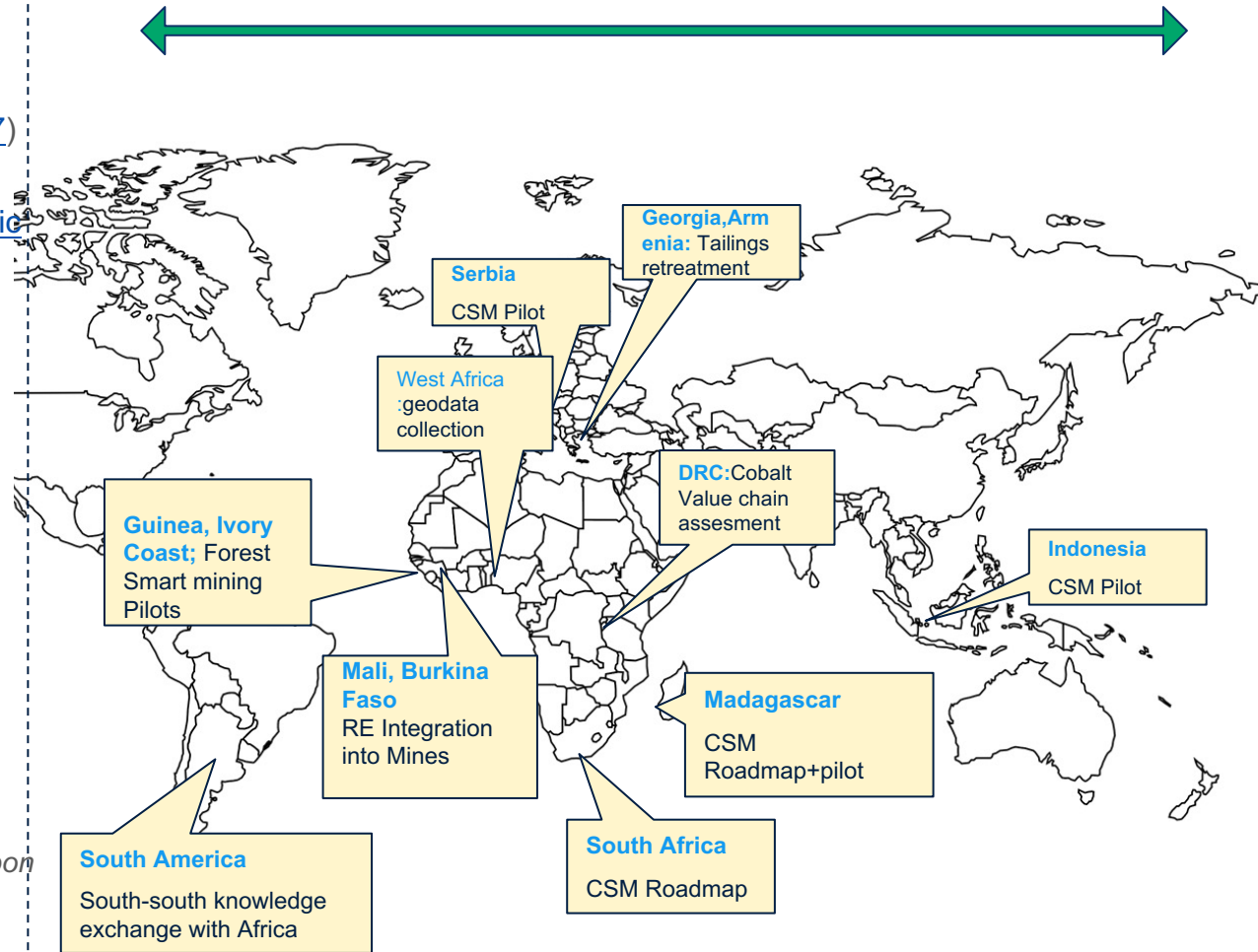
CSM Reports & Knowledge Products

(released and/or in progress)

- *The Growing Role of Minerals and Metals for a Low Carbon Future* ([2017](#))
- Minerals for Climate Action: [infographic](#) & [video](#) (2019)
- *Making Mining Forest-Smart* ([2019](#))
- Updated Report on Mineral Demand from Clean Energy Transition (*in progress*)
- Roadmap on Gender and CSM (in Progress)
- *Building Resilience: A Green Growth Framework for Mobilizing Mining Investments* (*in progress*)
- *Using Blockchain and AI to track the carbon footprint of a clean-energy mineral value chain* (*in Progress*)

Examples of pipeline projects in client countries

Re-use/recycling feasibility, tailings reprocessing studies, water



THE REALITY IN NIGER: MINING FOR GRAVEL



QUESTIONS?

