# Minerals and Metals for a Low Carbon Future: The Need for 'Climate Smart Mining'

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WORLD BANK GROUP

## **Presentation outline**

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1. Why a lowcarbon future will be more mineral intensive 02

2.Implications for mineral rich developing countries 03

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# Defining 'Climate Smart Mining'

### Developing a Climate Smart Approach to the Extractives Industry Value Chain



- Integration of mineral and metal development with climate responsiveness
- Mineral supply chain for broader development goals under a changing climate



# 1) What Do We Mean By Climate Smart?

- In extracting, processing and supplying the requisite minerals and metals for a carbon constrained future, a climate smart approach aims to mitigate rising pressures, particularly at the local level
- From a climate perspective, climate smart mining initiatives will support more efficient mining processes with enhanced resilience
  - GHG emissions and local air
  - Energy needs
  - Landscape Impacts
  - Adaptation (e.g. water and ecosystems0



# Squaring the Circle: Mineral-Rich Developing Countries with Robust GHG Mitigation Plans

Country	Date of submission	PA Status	Mitigation target	Туре	Conditional?	GHG covered	Land Use Measures	Adaptation in included?
BRAZIL	09-25-15	Ratified	37% below 2005 levels by 2025 43% below 2005 levels by 2030	Absolute reductions economy wide	No	All IPCC GHGs	Yes. Estimated that as much as 90% of target to be met through this category.	Yes
CHINA	03-09-16	Ratified	60% - 65% below per unit GDP 2005 levels by 2020	Per capita	No	All IPCC GHG	Increase forest stock 4.5 billion hectare from 2005 levels by 2030	Yes
CANADA	05-25-15	Ratified	30% below 2005 levels by 3030	Absolute reduction, economy wide	No	All IPCC GHGs	Net-Net Approach	No
CHILE	01-05-16	Signed	30% or 35 – 45% below 2007 levels by 2030	Intensity, economy wide.	35% - 45% is conditional on external financing	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, PCFs	100,000 hectares of forest land, equating to 600,000 CO <sub>2</sub> tons sequestered as of 2030	Yes
COLOMBIA	09-07-15	Signed	20% or 30% below from BAU (335 Mt) by 2030	Absolute growth, economy wide	30% below BAU conditional on external financing	All IPCC Gases	Commits to reduce deforestation but no numbers provided	Yes
INDONESIA	10-24-15	Signed	-29% or 41% reductions by 2030. - (2.881 GtCO <sub>2</sub> )	Absolute growth, economy wide.	41% conditional on external financing	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O	Vast proportion of reductions will come through forestry related projects.	Yes
PERU	09-28-15	Ratified	20% reduction from 2030 BAU 30% reduction from 2030 BAU (298 Mt including LULUCF, 139 Mt without LULUCF)	Absolute growth. Economy wide.	30% reduction conditional on external financing	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O <sub>.</sub>	Vast majority of mitigation activities likely to be met through land use measures.	Yes
SOUTH AFRICA	09-25-16	Signed	34% from BAU by 2020 42% from BAU by 2025)	Absolute growth, economy wide	None, outside of assumption that all nations will do their fair share	All IPCC Gases	Yes, but not a priority	Yes

### Market Pressure from Investors for Sustainable, Clean Development



- Codelco will produce 'green copper'
- Mining Association of Canada: <u>Towards Sustainable Mining</u>

• Tesla is committed to <u>'ethically</u> and locally sourcing materials'



# "Almost every mine I know of is looking at

## putting in renewable energy... It decreases

### your costs." – Ross Beaty, chair, PanAmerican Silver



Electrification via renewable energy reduces carbon emissions AND provides a competitive advantage

#### cleanenergycanada.org

# だ CLEAN ENERGY CANAD

# Game changer: Renewable energy to power mines

- Making a 'business case' for using renewable energy has never been easier
- It is much more than simply installing a wind turbine or solar panel
  - Solar and wind are *free* energy sources
  - Saves money on fuel costs compared to diesel





### The Competitiveness Case For Mining in Carbon Constrained World





Source: www.icmm.com

### Improving Your Data Sources and Practices

- GHG Emissions
- Geological Data
- Smart Practices



# Integrated Landscape Management and Planning

- 20% of all GHG emissions come from deforestation
- Grades diminish, deforestation increases
- Footprint of associated with infrastructure
- Spatial planning/ resource corridors

*Challenge: Requires a leading role from governments and intergovernmental actors* 



# Timely Climate Change Adaptation

The Mining industry is vulnerable to climate change:

- Isolated environments
- Fixed assets
- Water and energy demands
- Local communities
- Global supply chains

### A Framework for Identifying Climate Impacts

Impact areas	Impact evaluation	Business implications		
Inputs (e.g. water, energy )	Description What is the impact?			
Supply chains	Timeframe	Financial Higher operating expenditure or unplanned capital expenditure		
Markets	When will the impact occur? When is action necessary?			
Exploration	Stakeholders Who is impacted?			
Construction	Primary/secondary			
Operation	Does the impact directly affect activities or does it trigger other impacts?	Reputational Increased risk of litigation, regulatory non-compliance, inability to operate		
Closure	Likelihood How certain is the impact?			
Post-closure	How much more often is it likely to occur?			

### 2) What Do We Mean By Climate Smart Mining? Mining and SDGs



- A Climate Smart Mining approach also means taking into account other SDG priorities, including:
  - Local governance, including indigenous rights
  - Sharing the wealth with local communities
  - Meaningful employment and economic development opportunities
  - Health and education
  - Others
- It will also attempt to address the tradeoffs and synergies between SDGs with measures to address climate change



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# Conclusion #1: Towards Climate Smart Mining

- Meeting the Paris Agreement target will require a radical restructuring of energy supply and transmission systems globally
- The clean energy shift will be significantly MORE material intensive, but with potentially strong climate and economic benefits
- Technology choices matter: need for a flexible approach
- Local implications for sustainable development needs to be factored into a 'climate smart' approach



## Conclusion #2: Towards Climate Smart Mining

- To address growing demand, more production will have to come from mineral-rich developing countries. This will call for:
  - Robust geological data
  - Strong governance and environmental management
  - Investment in technologies and practices that minimize the carbon footprint of mining, processing and metal production
  - Landscape level planning (including infrastructure)
  - Climate resilience and adaptation

Need for a Dialogue Between Mining/Metals, Clean Energy, Climate/SD, Financing, and Investment Communities







#### Thank you!

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Full WB report: The Role of Minerals and Metals for a Low Carbon Future



