



MINING AND CLIMATE CHANGE: WHY SHOULD WE CARE?

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June 4, 2018



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OVERVIEW

- The Paris Agreement and its aftermath
- The contributions of the industry to GHG emissions
- Implications of GHG regulations/pricing policies
- Vulnerability of mining activities to climate change

THE PARIS AGREEMENT


Avoid an increase in the global average temperature to well below 2° C



THE STATE OF PLAY TODAY



- The US is the only country signaling likely intent to withdraw, however:
 - Renewables trends continues to show strong growth globally, accounting for nearly 2/3 of global investment in power plants in 2016 (165 GW total)
- China, India, UK, Netherlands, Norway (and counting) are making significant announcements on deadline for phasing out ICE (internal combustion engine) vehicles
- Nationally Determined Contributions (NDCs) are at beginning stages of implementation
- Contentious issues in negotiations are far from resolution (they always are)
 - Financing
 - Accelerating Paris commitments
 - Operationalizing the Paris Agreement: REDD (land use change), ITMOs (emissions trading) and Reporting Provisions



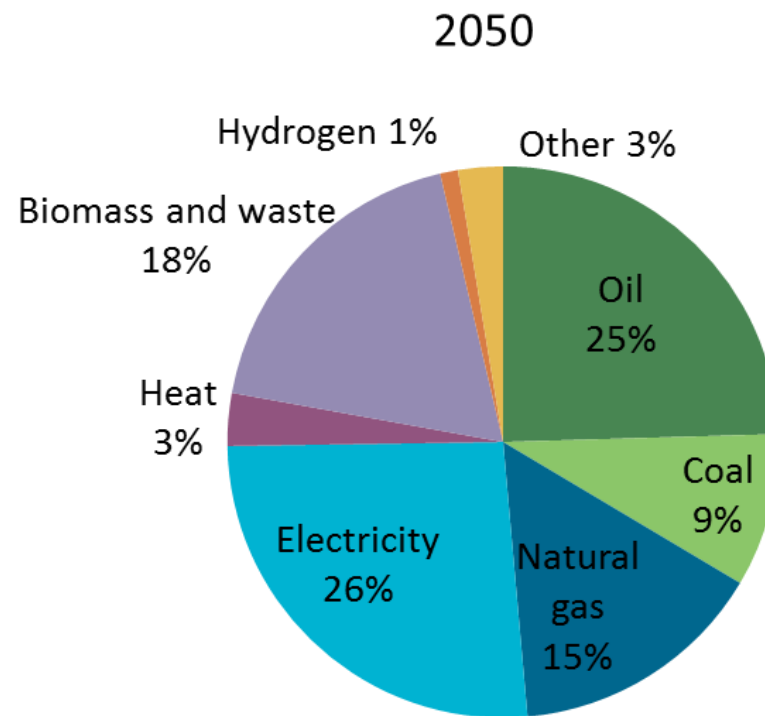
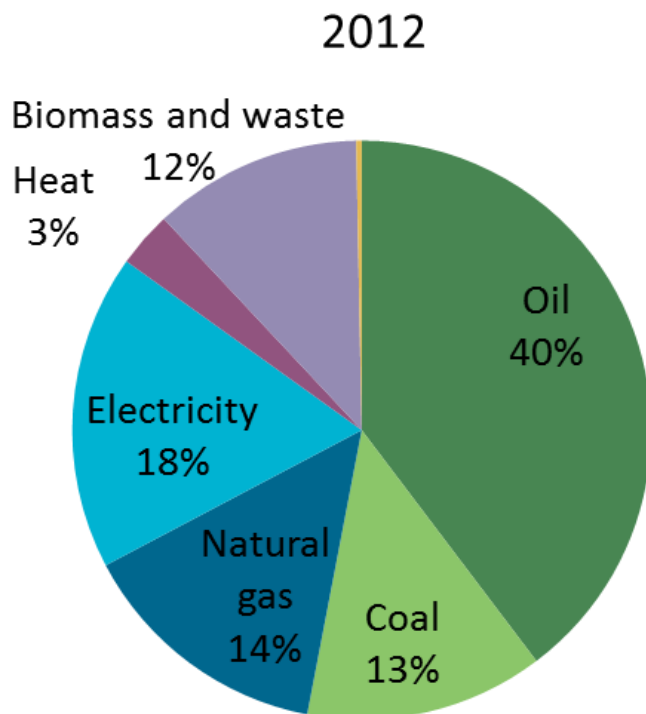
The Mining Industry Contributes to Global Warming

THE COST OF DOING BUSINESS

- **Potential for raising operational costs:**
 - Coal: expected to globally peak by 2020, and then steady decline thereafter to reach 2° C target – unless there is an unprecedented level of CCS investment over the short-term
 - Informal estimate of global contribution of 2% through extractives/refining activities (in same ball park as Canada’s contribution)
 - Matching GHG emissions to inventories is far from an easy task:
 - Energy (combustion)
 - Industrial processes
 - Land use and land use change
 - ‘Source 2’ emissions (power and transportation) represent the lion’s share of the extractives sector’s GHG contributions
 - Many developing countries’ competitive advantage due to ‘cheap’ energy access for industry (e.g. South Africa and the aluminum industry)

SHIFTING TO ENERGY SOURCES

ELECTRICITY PROVIDES THE LARGEST SHARE OF FINAL CONSUMPTION IN 2050, UNDER THE 2° C SCENARIO, SURPASSING OIL



MINERAL-RICH DEVELOPING COUNTRIES WITH GHG MITIGATIONS PLANS (NDCs)

Country	Date of submission	PA Status	Mitigation target	Type	Conditional?	GHG covered	Land Use Measures	Adaption?
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
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 ₂ , CH ₄ , N ₂ O, PCFs	100,000 hectares of forest land, equating to 600,000 CO ₂ 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 ₂)	Absolute growth, economy wide.	41% conditional on external financing	CO ₂ , CH ₄ , N ₂ 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 ₂ , CH ₄ , N ₂ O.	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

OBSERVATIONS FROM THE FACTSHEETS

- **Resource development** remains a key aspect of **Latin American economic progress**
- Resource-rich developing countries in Latin America have governments who are amongst the most proactive in addressing climate change and in developing national plans to mitigate and adapt to climate change
- Little evidence of explicit linkages between mining and relevance to national climate policies: only 2 countries (Brazil and Chile have a specific mention of mining in their NDCs)
- Nevertheless, relevance of both climate policy and climate is real for the industry

ICMM STUDY: COMPETITIVENESS ISSUES FOR EXTRACTIVES

Region	Commodities covered (ICMM % share of total regional production shown in brackets)			
	Aluminium	Copper	Iron Ore	Coal
EU	37%	-	-	-
Australia	44%	59%	66%	31%
South Africa	100%	41%	62%	45%
British Columbia	84%	71%	21%	35%
Quebec	84%	71%	21%	-
US	-	57%	-	2%

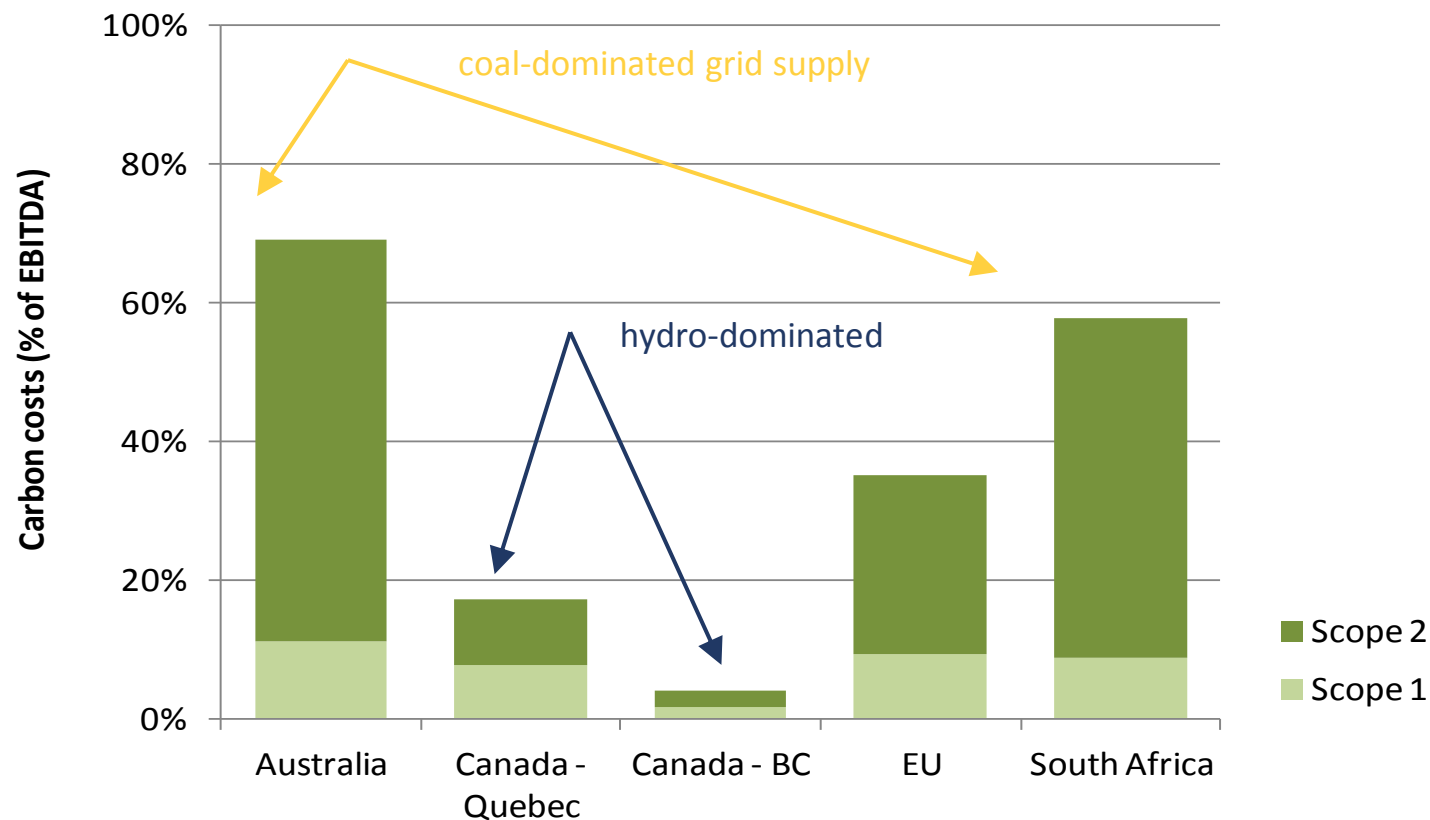
Notes: For British Columbia and Quebec, the coverage figures refer to Canada total; US figures refer to US total. Copper includes reported concentrate and cathode production. Where specific sites/operations are owned jointly by both ICMM and non-ICMM companies, production figures have been allocated to ICMM members on the basis of ownership.

Sources: ICMM member Annual Report data (reported commodity production for 2011); British Geological Survey (BGS) World Mineral Production (BGS, 2012)

CARBON COST IMPACTS: ALUMINUM PRODUCTION

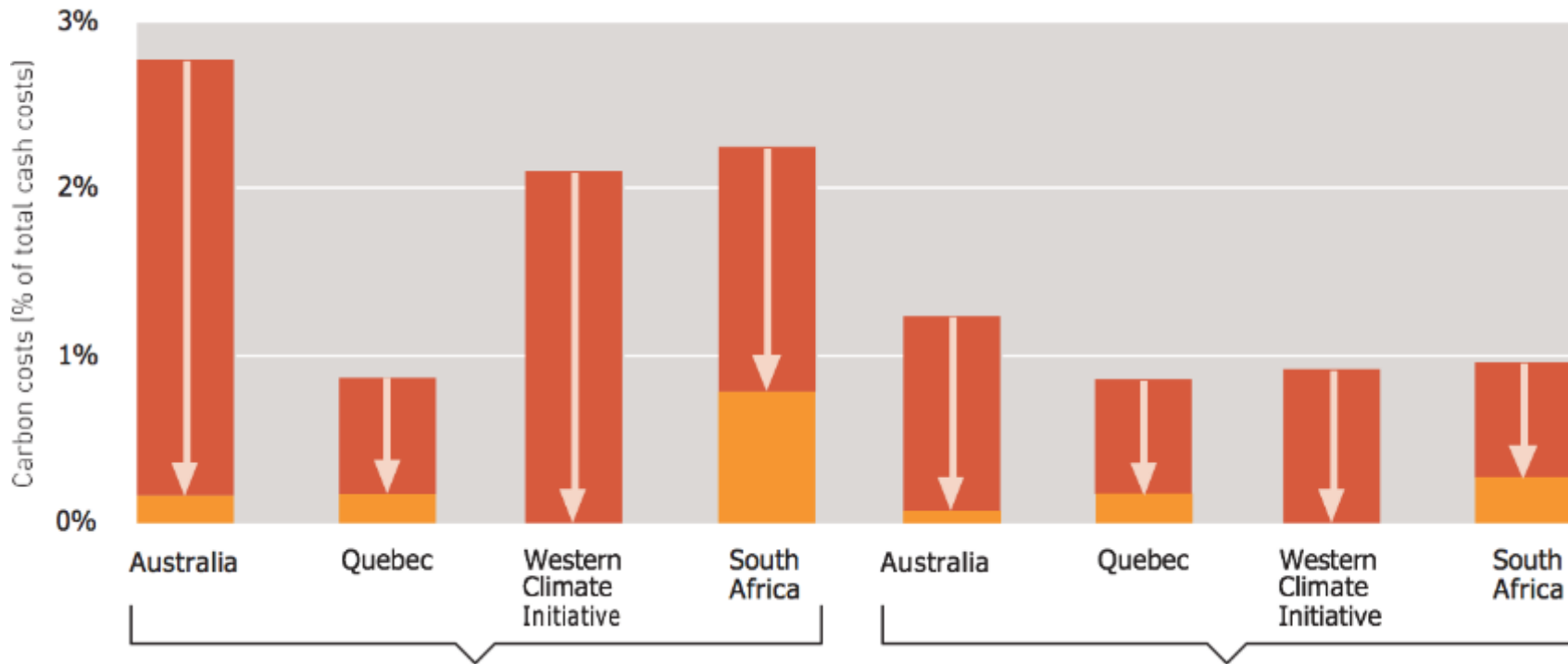
Carbon intensity of grid supply also a key factor

Grid supply with 100% cost pass-through
(carbon costs in 2013 without support measures)



CARBON COST IMPACT OF COPPER PRODUCTION

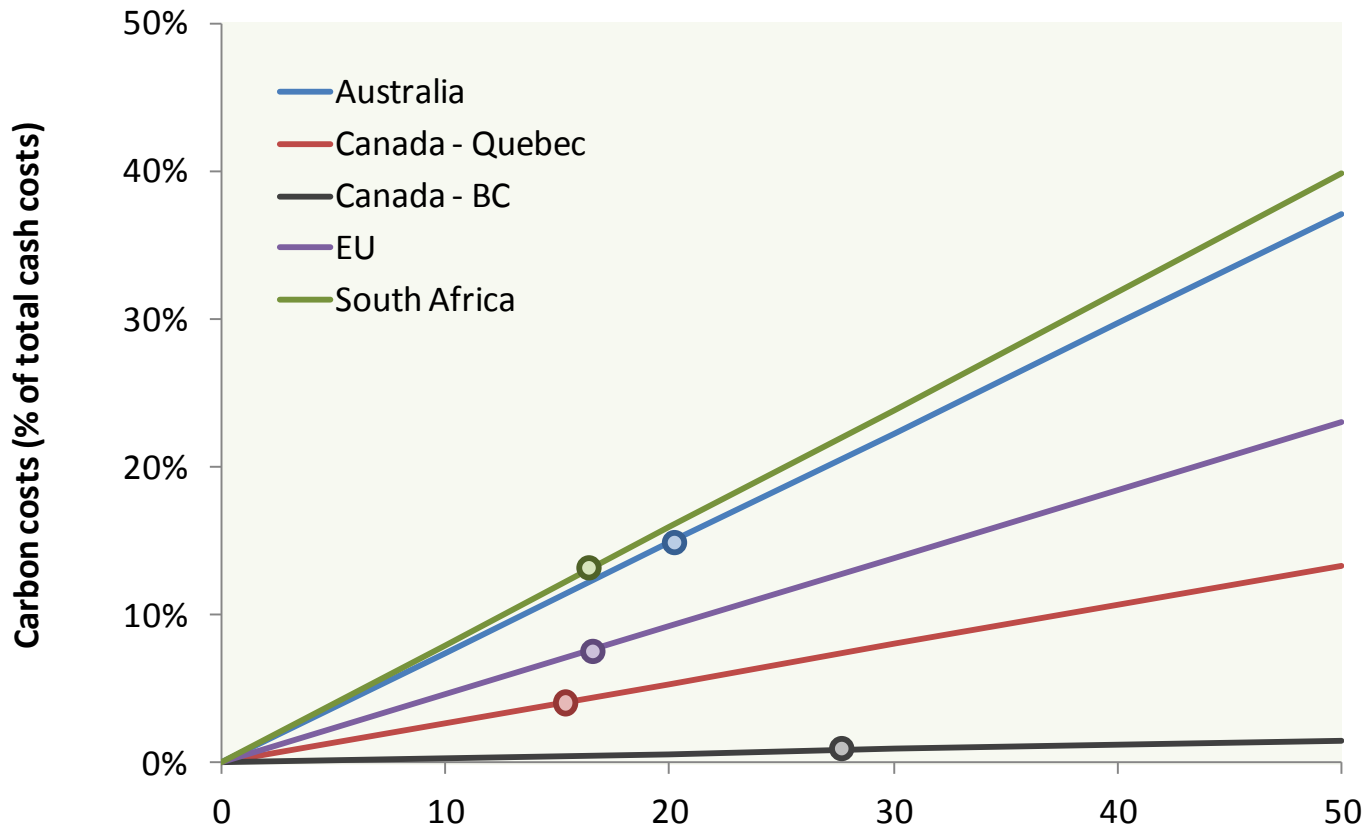
Carbon cost impacts in 2013 with and without support measures



CARBON COST IMPACTS: CARBON PRICE/TAX LEVEL

As levels rise, impacts increasingly diverge

Regional grid supply without support measures



CLIMATE CONSIDERATIONS PROVIDE NEW POSSIBILITIES



AS PRESSURE INCREASES TO PROVIDE LOW CARBON, RESPONSIBLY PRODUCED METALS

- Hydro powered smelters charge ‘premium prices’ for ‘green aluminum’.
- Tesla looking to develop a supply chain that is focusing on minimizing environmental impact.

Codelco to produce “green” copper:

- The president of Chile’s Codelco, Nelson Pizarro, announced Friday that the state-owned company has plans to produce sustainable copper cathode in the years to come.
- In an interview with [Reuters](#), Pizarro said that the idea is to generate a product attending to very strict environmental and social considerations.

BY CONTRIBUTING TO LANDSCAPE MANAGEMENT

Landscape management includes infrastructure planning and forest conservation



BUILDING RESILIENCE

For the mine

For the
infrastructure

For
communities



WE HAVE YET TO COVER THE CORE INTENT OF IT IN THIS WORKSHOP

*Implications of the Growing Role of Minerals and Metals in A Low
Carbon Future*



GRACIAS

[Full Report](#): The Growing Role of Minerals and Metals for a Low Carbon Future
(also in your USB key)