



Quantifying the Cost Differential of Mineral Development in Northern Canada: Grounding the Next Step Forward

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The Mining Association of Canada
2014 Nunavut Mining Symposium



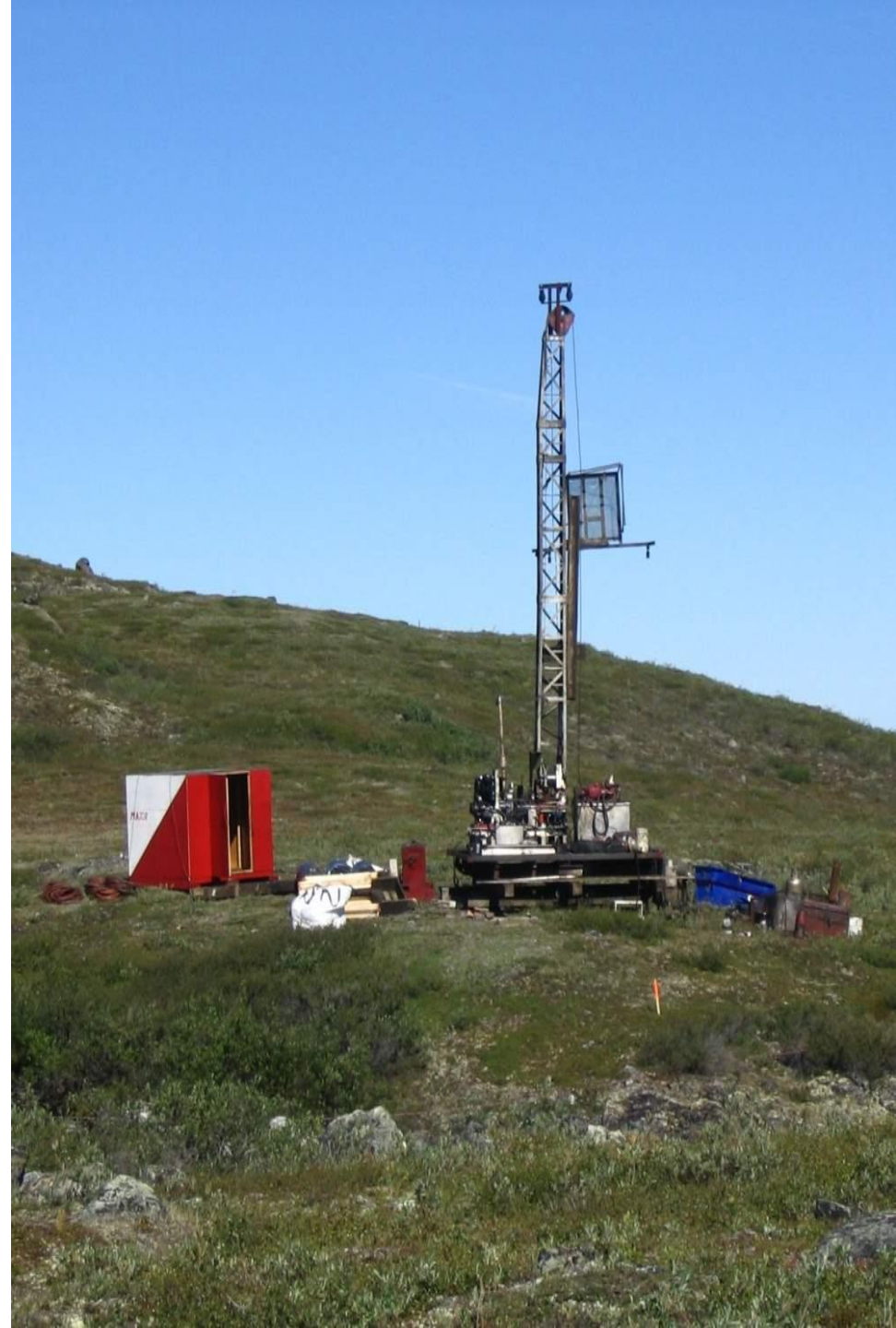
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Presentation Overview

- About MAC
- The Northern Opportunity
- Northern Policy Background
- Genesis of the Study
- Study Methodology
- Preliminary Case Studies
- Looking Forward



About MAC

- Advocacy - to advance the business of mining
- Towards Sustainable Mining Initiative – stewardship and social license
- 38 members in iron ore, gold, diamonds, oil sands, met-coal, base metals, uranium
- 49 associate members in engineering, environment, finance
- Members engaged in exploration, mining, smelting, semi-fabrication, supply



Hydrogen



Lithium



Beryllium



Sodium



Magnesium



Potassium



Calcium



Scandium



Titanium



Vanadium



Chromium



Manganese



Iron



Cobalt



Nickel



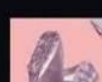
Copper



Rubidium



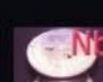
Strontium



Yttrium



Zirconium



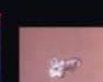
Niobium



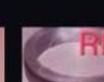
Molybdenum



Technetium



Ruthenium



Rhodium



Palladium



Silver



Cesium



Barium



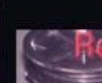
Hafnium



Tantalum



Tungsten



Rhenium



Osmium



Iridium



Platinum



Gold



Francium



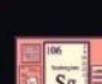
Radium



Rutherfordium



Dubnium



Seaborgium



Bohrium



Hassium



Meitnerium



Darmstadtium



Roentgenium



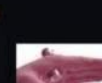
Lanthanum



Cerium



Praseodymium



Neodymium



Promethium



Samarium



Europium



Gadolinium



Actinium



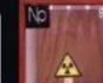
Thorium



Protactinium



Uranium



Americium



Curium

Economic Contributions

Natural resource wealth helped Canada weather economic crisis

- Canada did not fall into recession
- Lowest debt/GDP ratio in G8
- Low unemployment

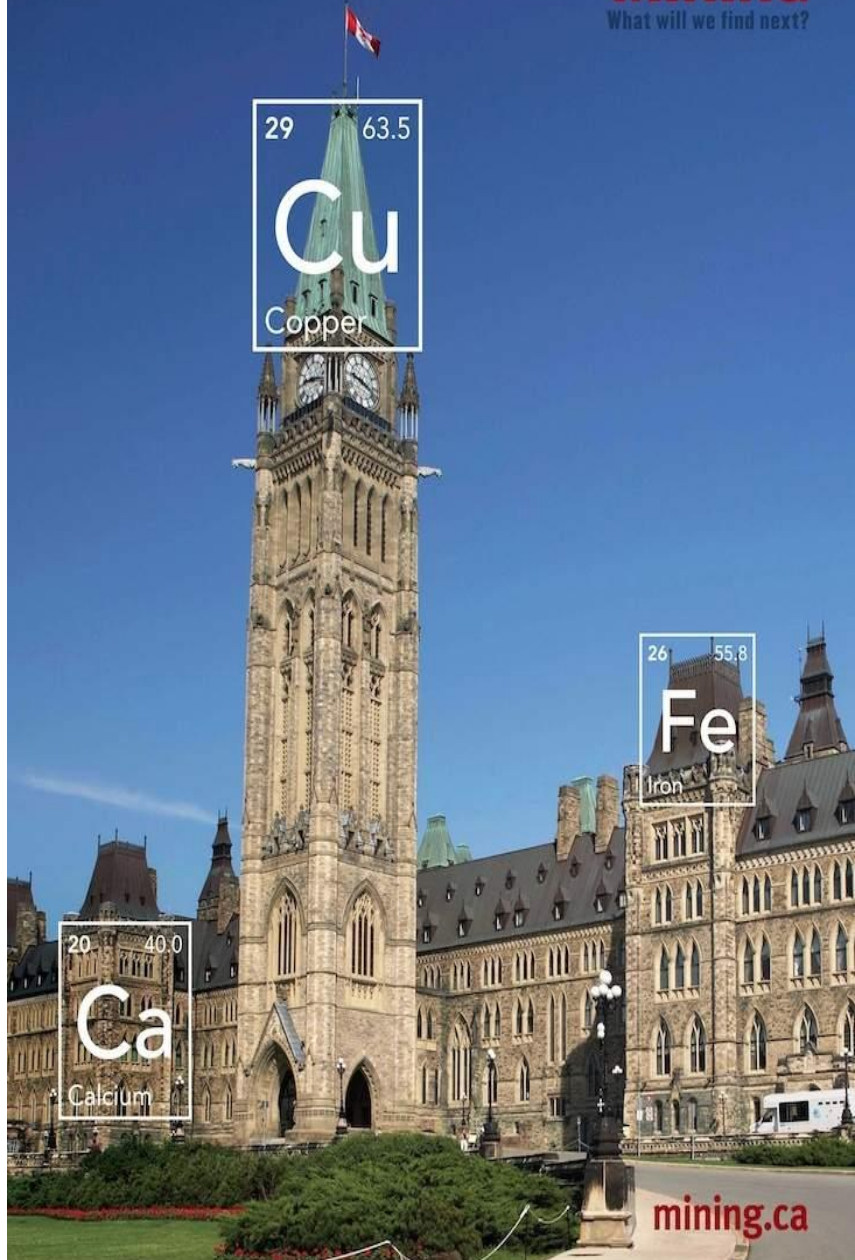
Economic Contributions:

- Approximately 400,000 jobs
- Average mining salary per week \$1560 (Canadian average \$933)
- Over \$71 billion paid to governments over the last decade
- 20.4% of Canada’s total export value

Mining is Canada’s largest shipping customer:

- 40% of maritime bulk volume
- 50% of rail bulk volume and revenues

Before it's ours, it's mined.



Mining's Contribution to Canada's North (1998-2012)

- **Employment** - 35,000+ person-years
- **Production** ~\$20 B+ in diamonds, copper, gold, silver, zinc
- **Investment/Spending**
 - \$13 B+ in capital and operating expenditures
 - **Northern Business Development;**
 - \$9 B+ Northern of which \$4 B Aboriginal
- **Contributions to Northern Infrastructure:**
 - Roads, rail, hydro development, ports, and ice roads
 - Support for communities - health care, education and sports facilities
- **Workforce & Social development**
 - Extensive programming in Aboriginal skills training and education
 - Over \$100 million social contributions

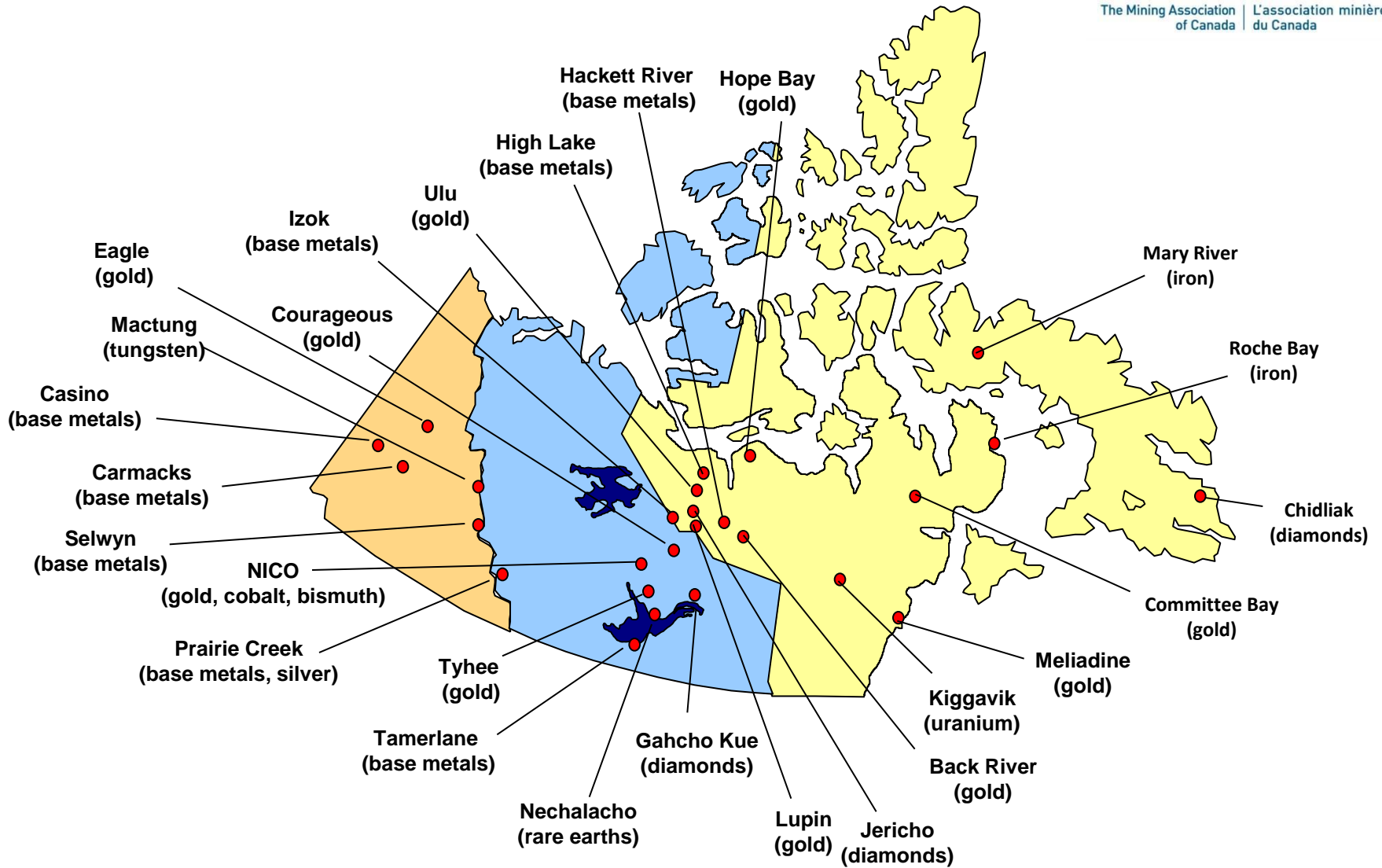


***Mining is Canada's
Northern Economic
Opportunity***

Northern Canada's Mining Potential



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More than \$8 Billion in New Development in the Next Decade

Overview: Federal Northern Policy

Canada's Northern Strategy (2009)

- “Mining activities and major projects ... are the cornerstones of sustained economic activity in the North and the key to building prosperous Aboriginal and Northern communities.”

Arctic Marine Shipping Assessment Report (2009)

- “Improvements in Arctic marine infrastructure are needed to enhance safety and environmental protection in support of sustainable development.”



“The North’s rapidly growing extractive industry is driving prosperity and creating demand for local skilled workers” **Prime Minister Stephen Harper**

Overview: Federal Northern Policy

Canada's Arctic Foreign Policy (2010)

- “The potential for wealth and job creation through resource development, both living and non-living, is great. ... These resources can and will be a cornerstone of sustained economic activity in the North and a key to building prosperous indigenous and Northern communities.”

Canadian Chairmanship of the Arctic Council (2013-2015)

- The theme of Canada's chairmanship is “development for the people of the North,” with a focus on responsible Arctic resource development, safe Arctic shipping and sustainable circumpolar communities.



“Not only is the North a land of raw and majestic beauty that has inspired generations of authors, artists and adventurers...it also holds the potential to be a transformative economic asset for the country.”

Prime Minister Stephen Harper

Genesis of the Study:

Consecutive elimination/reduction of direct and indirect mining tax assistance in Federal Budgets 2012 and 2013

Budget 2012:

- Eliminated the Corporate Mineral Exploration and (preproduction) Development Tax Credit
- Eliminated the Atlantic Investment Tax Credit
- Reduced the Scientific Research & Experimental Development program
- Introduced the FAD rules

Budget 2013:

- Eliminated the ACCA for miners
- Made pre-production expenses ineligible for CEE deductions



Genesis of the Study:

Reductions in tax assistance were made under the auspices that tax neutrality will direct investment to the most productive uses...

Mining Industry Reality:

- Miners need to go where the deposits are located –
- Future of the industry increasingly lies in remote and northern regions.
- While tax neutrality is an attempt to “*level the playing field*” across industries, geography itself creates an uneven playing field that tax incentives could balance out.
- Without strategic government assistance (to compensate for geography), mineral investment is less likely to flow to remote parts of the country, and potentially flee the country.
- A quantitative analysis could demonstrate how these reductions challenge project economics, and also identify extent of support needed to increase both viability and northern prosperity.

Arctic/Northern Development Policy



Mining Tax Policy

“The tax system should not impede or reduce the productive capacity of the economy.” **American Institute of Certified Public Accountants**

Methodology

- To assess project economic implications of the cost differential between northern and centrally located mines
- Partnerships with companies active in the region to develop accurate Arctic Factors – companies have quantified the cost differential of operating in the north.
- Arctic Factors, developed for both capital and operating cost differentials, including the “above and beyond” costs associated with:
 - Construction, Transportation, Infrastructure, Energy/Power, Human Resources, etc.
- These arctic factors were developed against representative southern projects and provided by participating companies.
- The study is seeking “representativeness” and does not model any specific project per se, but focuses on the implications of the augmented costs.
- Partners to the study include: MAC, PDAC, NWT Nunavut Chamber of Mines, ACEC and NRCan.

Basic Modelling Assumptions

- Single Mine Company, i.e. no other active mines
- The Federal Tax system is mature – assumes recent federal mining related tax measures have been fully implemented (no ACCA, no pre-production expense relief)
- Takes into account current provincial and territorial mining tax regimes
- All mines have a nominal acquisition cost

	Arctic Factor*	Percent of Northern Project Costs due to Arctic Factors
Gold Case		
CAPEX	2.1	~51
OPEX	1.6	~37
Base Metal Case		
CAPEX	2.1	~60
OPEX	1.6	~23

*Ratio of capital or operating costs in northern project to equivalent in southern project

Gold Case Study Results:

	SOUTH GOLD	NORTH GOLD
Pre-Tax IRR %	39.6	9.5
Post-Tax IRR%		
- Nunavut	x	6.2%
- NWT	x	6.2%
- Yukon	x	6.0%
- Quebec	28.9%	6.1%
- Ontario	32.2%	6.8%
- British Columbia	31.0%	6.8%

Gold Case Assumptions:

- Mine life: 4 years construction, 9 years production
- Total Capex North: \$1.1 billion
- Total Capex South: \$600 million
- Production: 370 000 oz annually
- Price: \$US 1280/oz

Pre-tax: *Project Economics are highly attractive in a central location, and marginal but manageable in the north.*

Post-tax: When the after tax environment is considered – 30.7% average post tax IRR in the south versus a 6.4% average post tax IRR in the north – it is clear that tax and development assistance would increase project attractiveness/viability.

Base Metal Case:

	SOUTH BASE METAL MINE	NORTH BASE METAL MINE
Pre-Tax IRR %	37.62	14.12
Post-Tax IRR%		
- Nunavut	x	10.6%
- NWT	x	10.7%
- Yukon	x	10.3%
- Quebec	30.4%	11.2%
- Ontario	31.2%	11.2%
- British Columbia	30.7%	11.0%

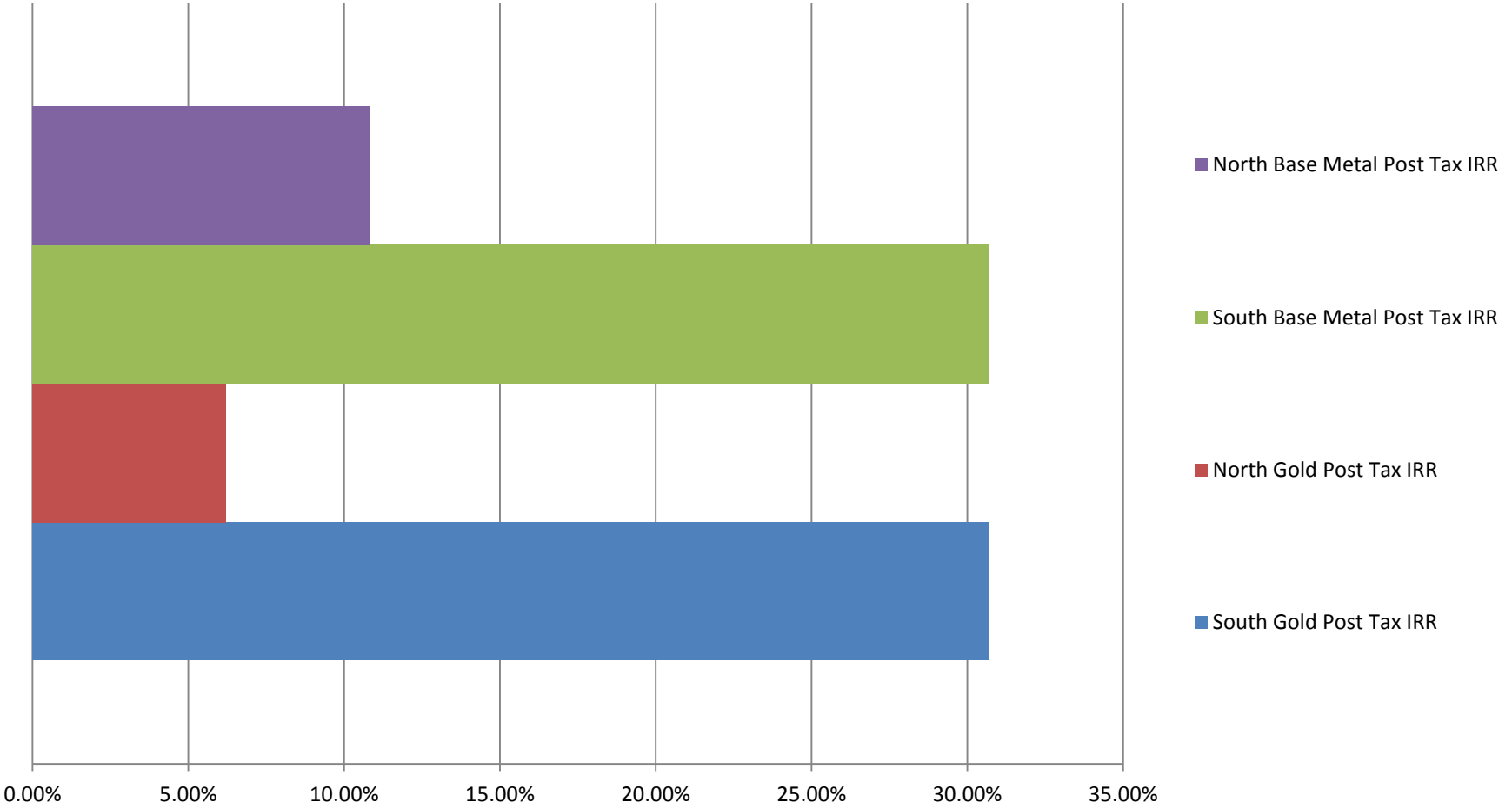
Zinc/Copper Case Assumptions:

- Mine life: 3 years construction, 15 years production
- Total Capex North: \$630 million
- Total Capex South: \$340 million
- Annual Revenue: \$370 million
- Prices: Zinc - \$US 1.10/lb
Copper - \$US 3/lb

Pre-tax: Project Economics are highly attractive when this mine is centrally located, and reasonable in the north.

Post-tax: When the after tax environment is considered – 30.7% average post tax IRR in the south versus a 10.8% average post tax IRR in the north – it is clear that tax and development assistance would increase project viability.

Post Tax IRR Comparison



Preliminary Conclusions

- “Post-tax” scenarios indicate healthy deposits by southern standards are marginal in the north – but not out of reach given the right support.
- Strategic government assistance such as fiscal incentives and/or infrastructure investments are needed to enhance project viability.
- Return on government investment in mining is significant at the federal and territorial levels: increased taxes, royalties and employment, decreased unemployment and federal reliance, infrastructure and social development – nation building opportunity.
- Mining has already been an economic driver for the north – what is the opportunity cost of not ensuring this continues into the future?

Next Steps

- Complete remaining case studies for mining and exploration
- Develop suite of recommendations for Budget 2015
- Launch report

A level playing field for miners?

- Mining companies compete in the capital and labour markets with manufacturers and metal fabricators.
- Geography: Mining companies in Canada increasingly will have to locate and develop new mines in very remote areas that lack many basic components of public infrastructure that these two other sectors enjoy
- Manufacturers do not :
 - Build and maintain their own roads and bridges.
 - Need planes to fly their employees to work
 - House or feed their employees
 - Work and manage assets at -45 degree temperatures
- Helping the mining sector meet these challenges is not a hand-out but a hand up that will benefit the whole Canadian economy, especially remote and northern regions, helping attain publically stated policy objectives for the North.

Thank You

**FOR MORE INFORMATION
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