

# The Mining Industry in Northwestern Ontario: An Analysis of Recent Developments and the Strategy for Success

Dr. Karl Skogstad & Dr. Ayman Alahmar

Centre of Excellence for Sustainable Mining & Exploration (CESME)  
Lakehead University

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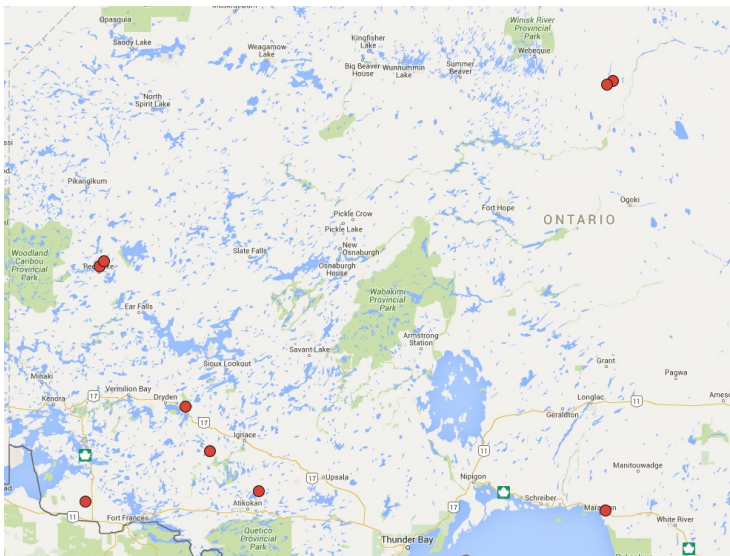
# The State of Mining Developments in NWO

- This report looks at 9 projects that were expected to be fully operational by 2017.
- As of today, only 2 projects are in the early production stage, and one additional mine may also be operating by 2017.
- The prospects for the other 6 projects are currently not very promising.
- We seek to understand why only 2 (maybe 3) projects made it through the development phase.
- Furthermore, we identify policies which can be implemented to allow future projects to succeed.

## Previous Studies

- Two previous reports examined the potential benefits these projects would bring, as well as the obstacles that they would face.
- “Advantage Northwest Mining Readiness Strategy” (April 2013) - SNC-Lavalin Inc. and Edward Hoshizaki Development Consulting.
- “Mining in Northwestern Ontario: Opportunities and Challenges” (September 2012) - Dadgostar et al.

# Map of Projects



## Potential benefits

- \$US 135.4 billion in metals and minerals (June 2012 commodity prices).
- Over 10,000 new employment positions.
- Tax revenues of over \$16 billion.
- \$1.5 to \$2.1 billion annual addition to Ontario's GDP.
- Nearly 80% of these benefits to remain in NWO.

# Potential Hurdles

- Potential hurdles identified by these reports include:
  - Aboriginal consultation process.
  - Labour market challenges.
  - Availability of infrastructure.
  - Mining regulations.
  - Economic challenges.
  - Community awareness and communication.

# Our Contribution

- Now that these reports are over two years old, we provide an update on the status of these projects.
- Which projects successfully made it through the development process and which did not?
- What factors were essential in the success of certain projects?
- Which challenges could other projects not overcome?
- Are there any patterns in the data?

# Current Status of Projects

- 2 of the projects are currently in the final stages of development/early stages of production.
- 1 project is entering the construction phase.
- 2 projects are currently still moving forward in the development process.
- Development has stopped/slowed significantly at 4 projects.



# Resource Prices

- The biggest change between today and three years ago has been the fall in resource prices.
- Resource prices, which had been increasing throughout the 2000s, have begun to fall in recent years.
- The depreciation of the Canadian dollar has partially sheltered Canadian mines from the full effect of this fall.

# Gold Prices (\$US)



# Gold Prices (\$CAN)



# Copper Prices (\$US)



# Nickel Prices (\$US)



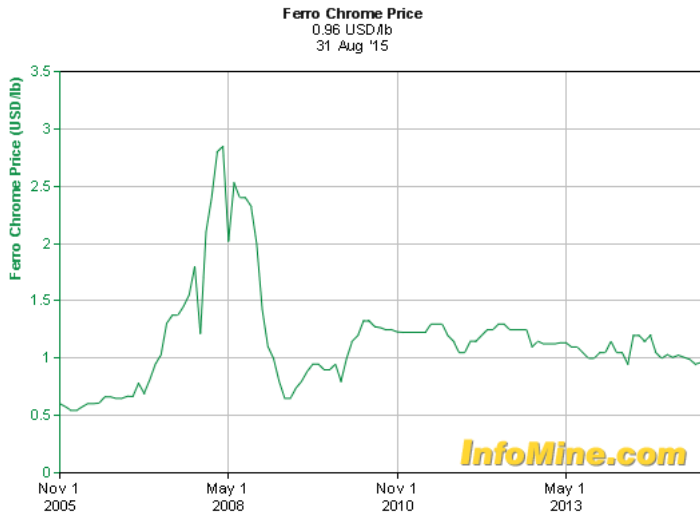
# Palladium Prices (\$US)



# Platinum Prices (\$CAN)



# Ferro Chrome Prices (\$US)





# Iron Prices (\$US)

## Iron Ore Pellets Price

61.26 USD/t

31 Aug '15



InfoMine.com

## Gold Mines

	Phoenix	Goliath	Rainy River	Hammond Reef
<b>Financial</b>				
Initial capital expenditure (millions)	\$224	\$94	\$931	\$682
Cash cost per ounce of gold milled	\$629	\$731	\$737	\$502
All in cost per ounce of gold milled	\$926	\$920	\$1080	\$658
<b>Operational</b>				
Ounces of gold recovered (LOM) (thousands)	2,190	793	3,402	5,119
Life of mine (years)	13	10	14	15
Workforce size	335	200	150-606	417-527
<b>Return on Investment</b>				
NPV (5%) (After-tax) (millions)	\$531	\$144	\$330	\$458
Internal rate of return (After-tax)	27%	32%	11%	15%
<b>Assumptions</b>				
Assumed gold price (USD/oz)	\$1385	\$1375	\$1300	\$825
Assumed US-Canada exchange rate	1.05	1.02	1.05	1.11
Date of report	Feb, 2014	Aug, 2012	Feb, 2014	Nov, 2009

# Red Lake Mines

- Goldcorp's Cochenour project and Rubicon's Phoenix project are the two most successful projects we examined.
- Their success is largely due to their location:
  - High grade gold.
  - Infrastructure already established.
  - Labour and suppliers already operating in region.
  - Strong community support.

## Other Gold Mines

- Canadian Malartic - Hammond Reef:
  - Initial capital expenditures estimates increased to \$1.5 to \$1.8 billion.
  - Difficult environmental review process.
  - Strong local support from Atikokan and Aboriginal communities.
  - Decent access to infrastructure.
- Treasury Metals - Goliath Gold:
  - Low costs thanks to great access to infrastructure.
  - Lengthy environmental review process.
  - Difficulties in negotiating with local Aboriginals.
  - Relatively small ore body.
- New Gold - Rainy River Project:
  - Good infrastructure.
  - Supported by the community.
  - Relatively easy environmental review process.
  - Relatively high capital and production costs.

# Ring of Fire

- Noront - Black Thor
  - Complete lack of infrastructure.
  - Huge upfront capital investment required.
  - Significant local opposition.
  - Lengthy environmental review process.
  - High costs and low resource prices.
- Noront - Eagle's Nest
  - Enjoys more local support - operating a labour training program.
  - Complete lack of infrastructure.
  - Lengthy environmental review process.
  - Provincial - Matawa discussions.

# Other Mines

- Bending Lake Iron Group - Josephine Cone Mine
  - Some infrastructure available.
  - Strong local support.
  - Very large capital investment required.
  - Iron prices are very low.
- Stillwater - Marathon Cu-PGM
  - Great access to infrastructure.
  - Labour and suppliers located nearby.
  - Estimated initial capital costs have more than doubled.
  - Lengthy environmental review process.

## Most Important factors

- Ultimately it is the high costs of mining operations in the province that led to the failure of most of the projects.
- High initial capital costs are exacerbated by a lack of infrastructure in the region.
- High production costs are caused largely by lack of available labour and high energy costs.
- Mining suppliers lack capacity to surge in times of high demand.
- Lengthy environmental review process prevents firms from capitalizing quickly when mineral prices are high.

## Factors that were Surmountable

- Aboriginal consultation process.
- Community awareness and communication.



## Future Resource Prices

- Future resource price projections are not very promising.

	Nominal	2016	2020	2025
Gold	USD/oz	1,156	1,084	1,000
Copper	USD/lb	2.70	2.90	3.18
Nickel	USD/lb	6.16	7.31	9.07
Platinum	USD/oz	1,135	1,285	1,500
Iron Ore	USD/t	57	64	75

Source: World Bank

- Canadian dollar projected to remain around the same level in the near future.

# Recommended Policy Changes

- Make investments in infrastructure now to take advantage of low interest rates.
- Continue to encourage youth to train for jobs in the mining sector.
- Reduce the time needed to conduct an environmental review process.