

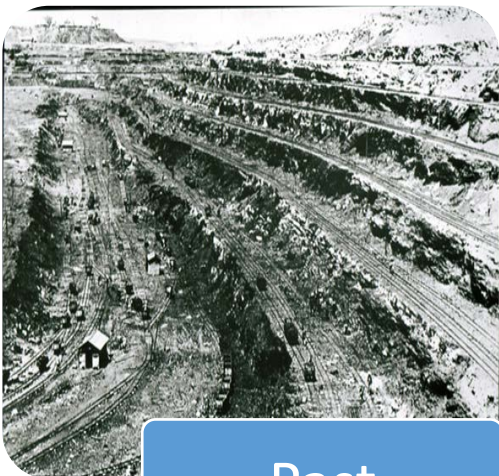
Mining and GHG Emissions

Risks and Opportunities

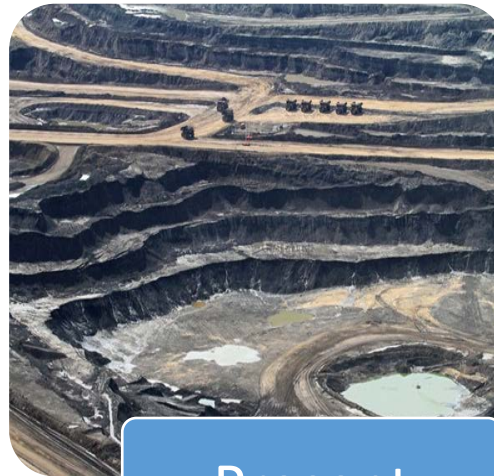
July 18, 2016

Flyn McCarthy

Climate Change Risks and Opportunities



Past



Present



Future?

“The mining industry is uniquely positioned to contribute to the transition to a sustainable world” WEF

Present Situation in Mining

PLEASE NOTE
 ICMM
 International Council
 on Mining & Metals

Implementing a global solution to managing
 a low emissions economy

Policy on climate change



Towards Sustainable Mining
 Vers le développement minier durable

“Industry favors a broad based carbon price,” Mining Association of Canada

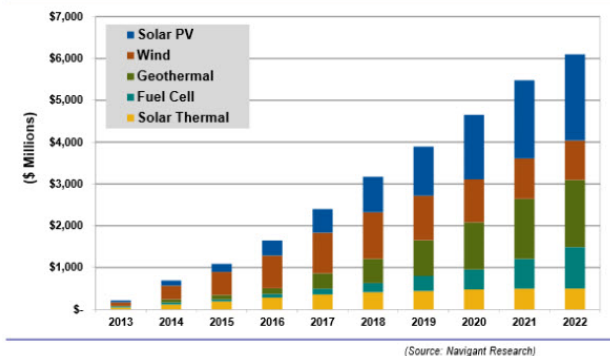
Forbes / Investing

Peabody Bankruptcy Offers Stark Warning To Oil And Gas Groups Of Risks Of Ignoring Climate Change



Climate Change is a Legitimate Business Risk

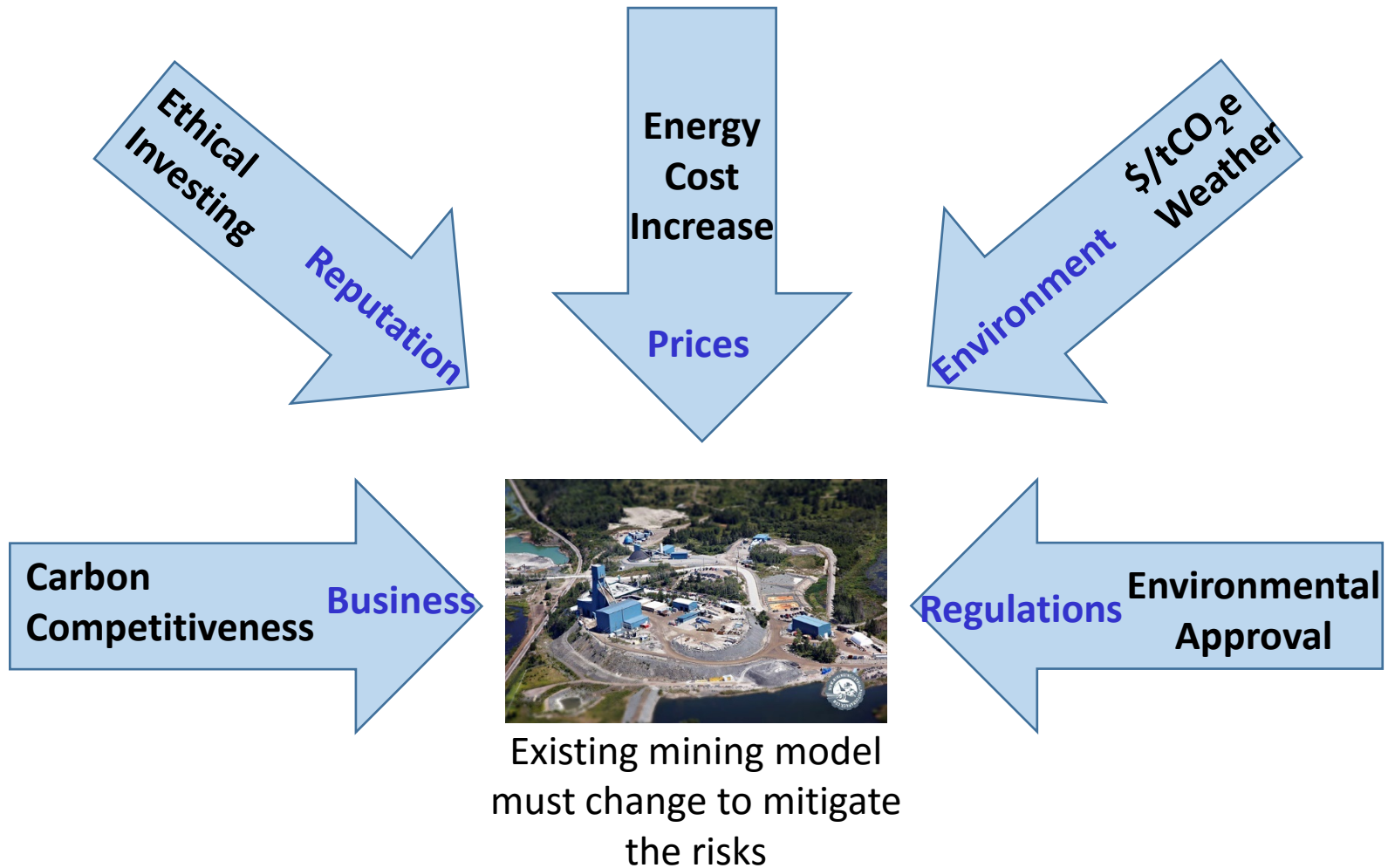
Chart 1.1 Renewable Energy for the Mining Industry Revenue by Technology, Aggressive Investment Scenario, World Markets: 2013-2022



“Tipping point has now been reached, mining views renewables as cost competitive power solution”

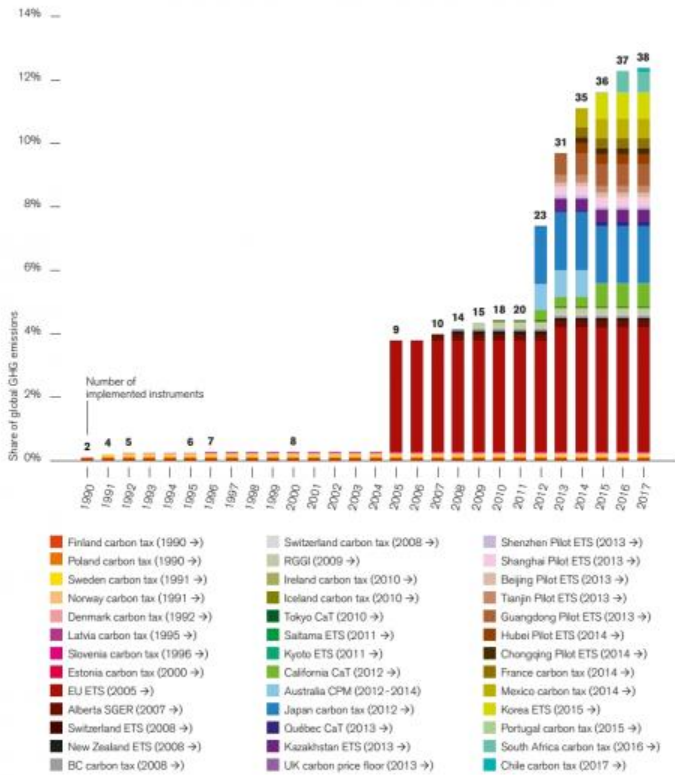


Current Business Risk

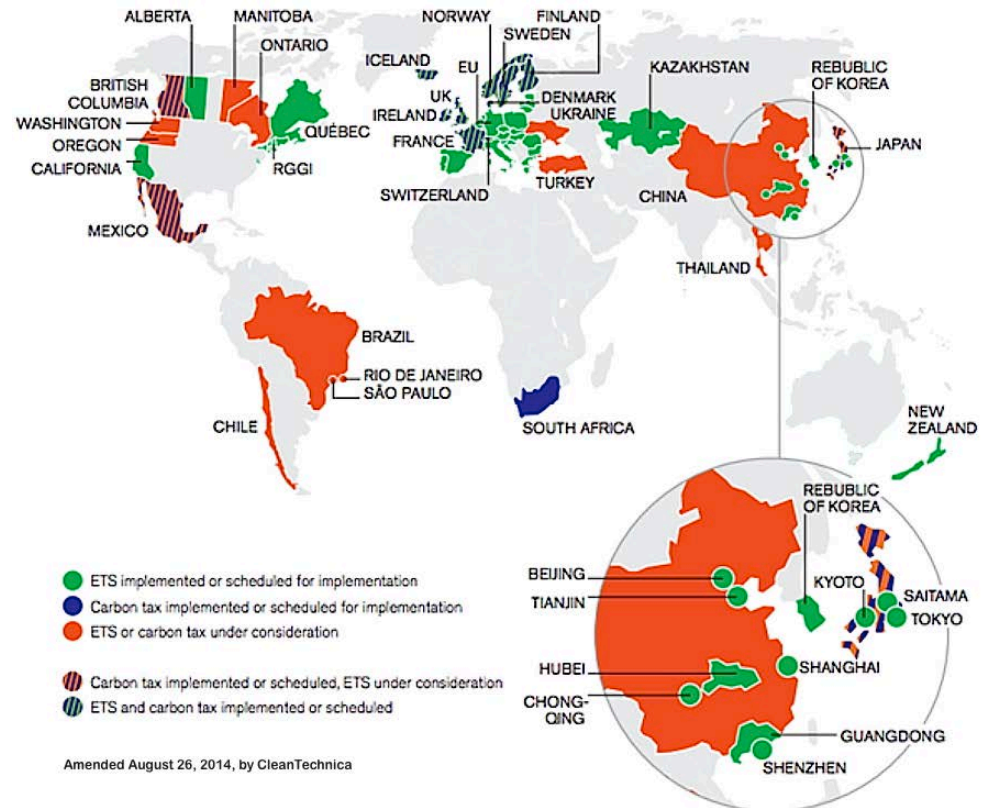


Carbon Pricing

Regions Included Under GHG Pricing



Greenhouse Gas Pricing Regions

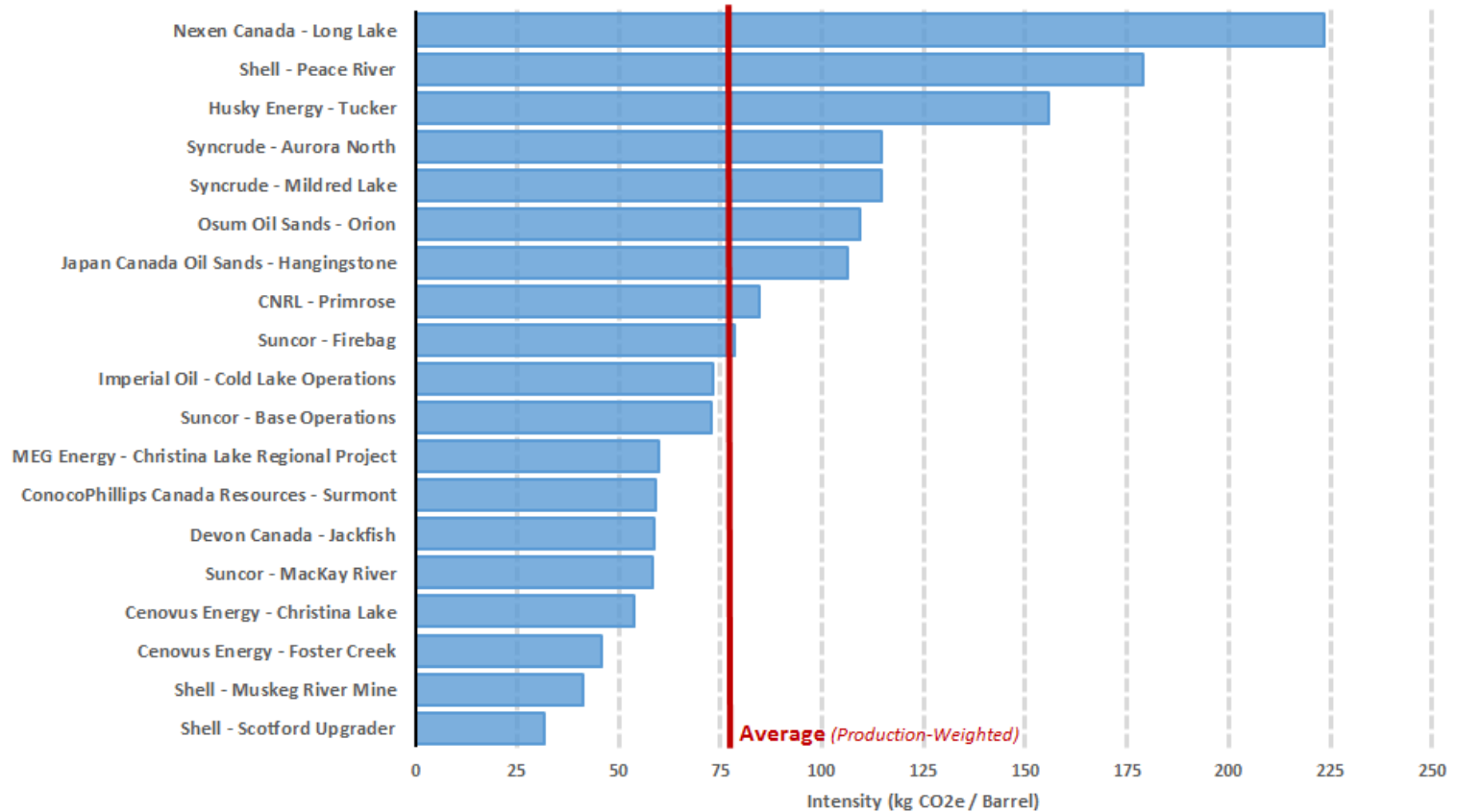


Note: Only the introduction or removal of an ETS or carbon tax is shown. Emissions are given as a share of global GHG emissions in 2012. Annual changes in global, regional, national and subnational GHG emissions are not shown in the graph. Data on the coverage of the city-level Kyoto ETS are not accessible, its coverage is therefore shown as area.

Oil Sands Carbon Competitiveness

Greenhouse Gas Intensity of Selected Oil Sands Facilities in 2011

Source: Alberta Government Oil Sands Information Portal, the User Friendly Map is at <http://osip.alberta.ca/map/>



Key Questions

1. How are mining companies **responding** to the risk of carbon regulations and climate change?
2. What kind of **mitigation strategies** are companies employing?
3. What impacts will climate change have on corporate **earnings and investments**?

Mining's Response

Proactive Companies

- Lead in risk identification and disclosure
- Develop GHG Management Programs



Reactive Companies

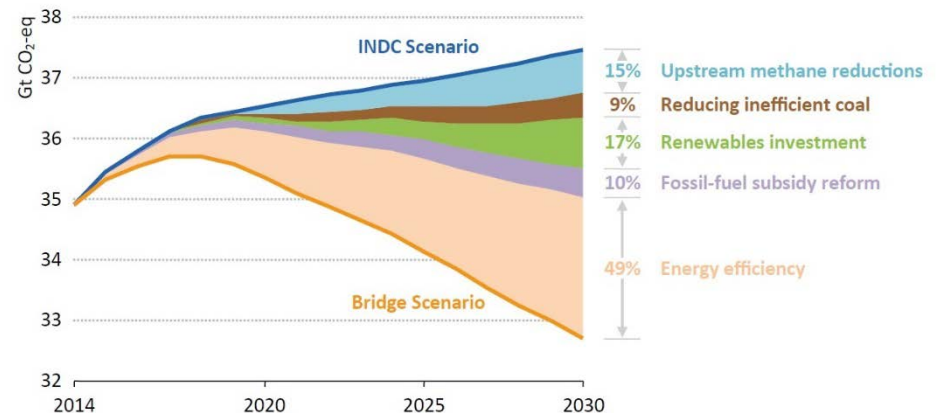
- Assume the risk is minimal
- Blame downturn as reason for in-action

Short-termism and the threat from climate change

April 2015 – By not acting now, we're allowing the future costs of the greenhouse-gas crisis to compound. Eventually, the consequences will be irreversible.

Best In Class

- Policy makers and companies need to work together on clear mechanisms,
- Companies need to know the risks,
- Delay is not a strategy
- Market competitiveness is a risk,
- Know and develop mitigation strategies



Thank You

“Systems approach to energy,
carbon, and the environment”

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GHG Management – Drivers and Barriers

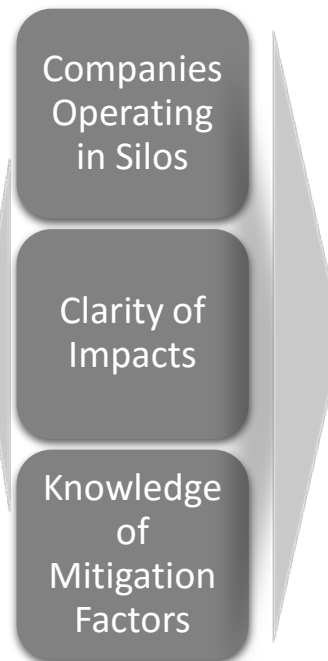
Global Drivers



Company Drivers



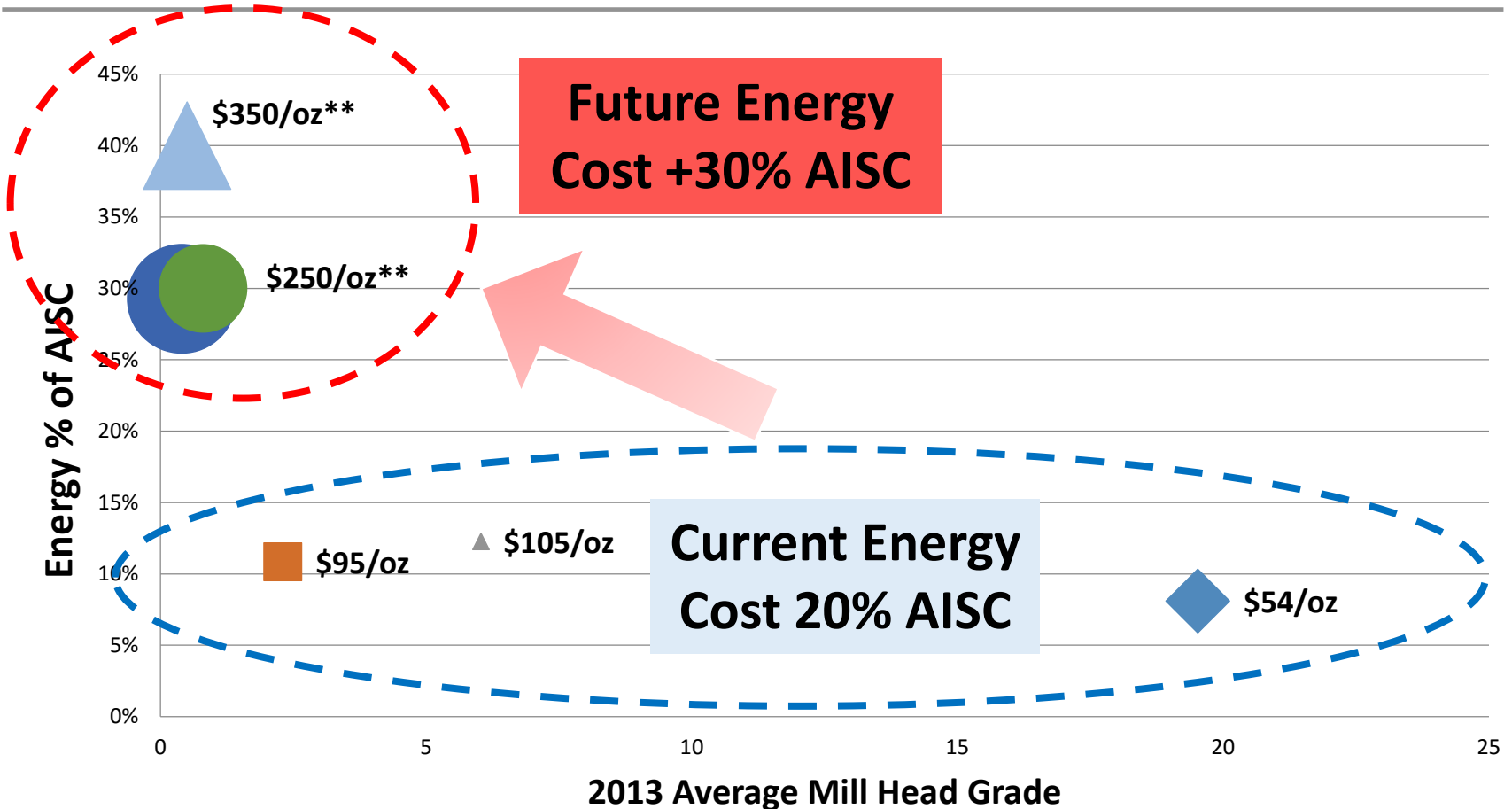
Barriers



GHG Management

- Reduced costs (Social, Environmental, OPEX)
- Improved competitiveness
- Reduced risk from changing regulations
- Robust Accounting and Reporting Program

Energy Challenge



*Average Energy Costs as a Percent of All in Sustaining Costs
 ** Gold Equivalent Ounces