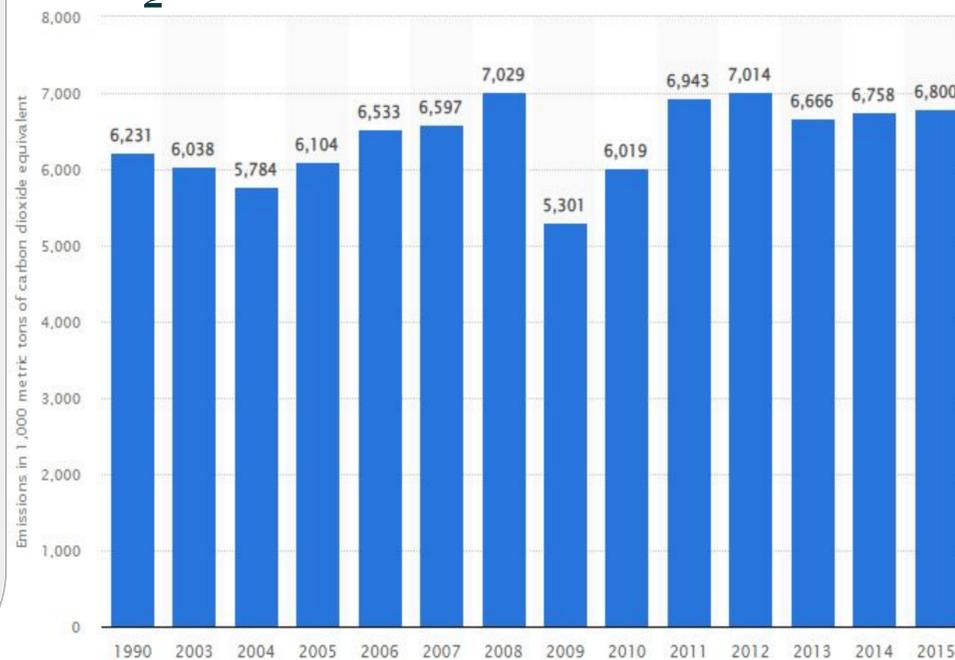


Building Resilience for Climate Change: Decarbonizing Canada's Mining Sector

Introduction

To address the current state of the climate crisis, Canada has set a target of reaching net-zero emissions by 2050. In order to achieve this goal, Canada's most emissions intensive sectors must be decarbonized to accelerate the process. This paper specifically provide policy recommendations for the decarbonization and of the mining sector as it is one of the largest industries in the country and contains a multitude of factors that must be considered before transitioning to a low-carbon economy.

Canadian Mining Sector Emissions (tCO₂e)



Recommendations

Level of Government	Policy Recommendation	Addressing TCFD Category
Provincial	Restructure the current form of electricity governance to provide easier access to clean electricity for mining operations	Technological Risks
Provincial	Promote consultations with local communities as well as educate mining executives on pervasive effects of mining operations on social activities	Reputational Risks
Federal	Enforce climate modelling within planning standards and environmental assessments	Physical Risks
Federal	Provide increased access to capital to promote decarbonization initiatives such as the usage of nuclear energy	Technological Risks
Federal	Impose a carbon border tariff to promote local mining decarbonization	Market and Geopolitical Risks

Revenue from each mineral commodity group (\$ millions)

Commodity	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Metals	23,558	23,497	24,225	23,198	23,302	25,738	27,059	29,496	31,635	35,657
Non-metals	16,471	15,477	15,779	16,520	13,724	13,304	15,531	12,943	10,777	11,884
Coal	5,881	4,887	3,897	3,126	4,009	6,281	6,459	5,625	3,957	7,965
Total	45,911	43,861	43,900	42,843	41,036	45,323	49,049	48,065	46,369	55,506

Key Research Objectives

1. What is the current state of the mining sector in Canada in terms of emissions generated and pollution on the environment?
2. How have Canadian Federal mining policies developed over time?
3. What are the key mining operations that generate the highest emissions?
4. What are the major risks and opportunities associated with decarbonizing mines?

Methodology

- Used Google Scholar, Scopus, UofT Libraries, Elsevier and Web of Science to collect research papers for a literature review on mining decarbonization
- Phase 1 of the research involved synthesizing papers to highlight the importance of mining decarbonization, current state of the mining sector, emissions intensive operations in mining and current mining policies
- Phase 2 of the research involved using the TCFD framework to thematically source research papers on the risks (technological, physical, market, and reputational) of a climate-related transition

References

1. Statista. 2013. Greenhouse gas emissions from the mining industry in Canada from 1990 to 2015
2. Government of Canada. 2022. Minerals and the economy

Literature Review Results

- Phase 1 of the research indicated that policies are outdated for mining decarbonization and that major mineral extraction operations need significant upgrades to technologies and access to financial resources to accomplish the low-carbon transition
- Although Canada has a predominantly clean electricity grid, the lack of infrastructure and advancements in low-carbon mining technology makes it difficult to support mining decarbonization
- Mining companies do not have an incentive to transition towards low-carbon technologies as sourcing non-renewable fuels such as diesel for power generation is cheaper