



## **Mineral development in the NWT** **- An update for the Rotary Club -**

*For: Yellowknife Rotary Club – April 28, 2022*

*By: Tom Hoefer, Executive Director*

# Key messages

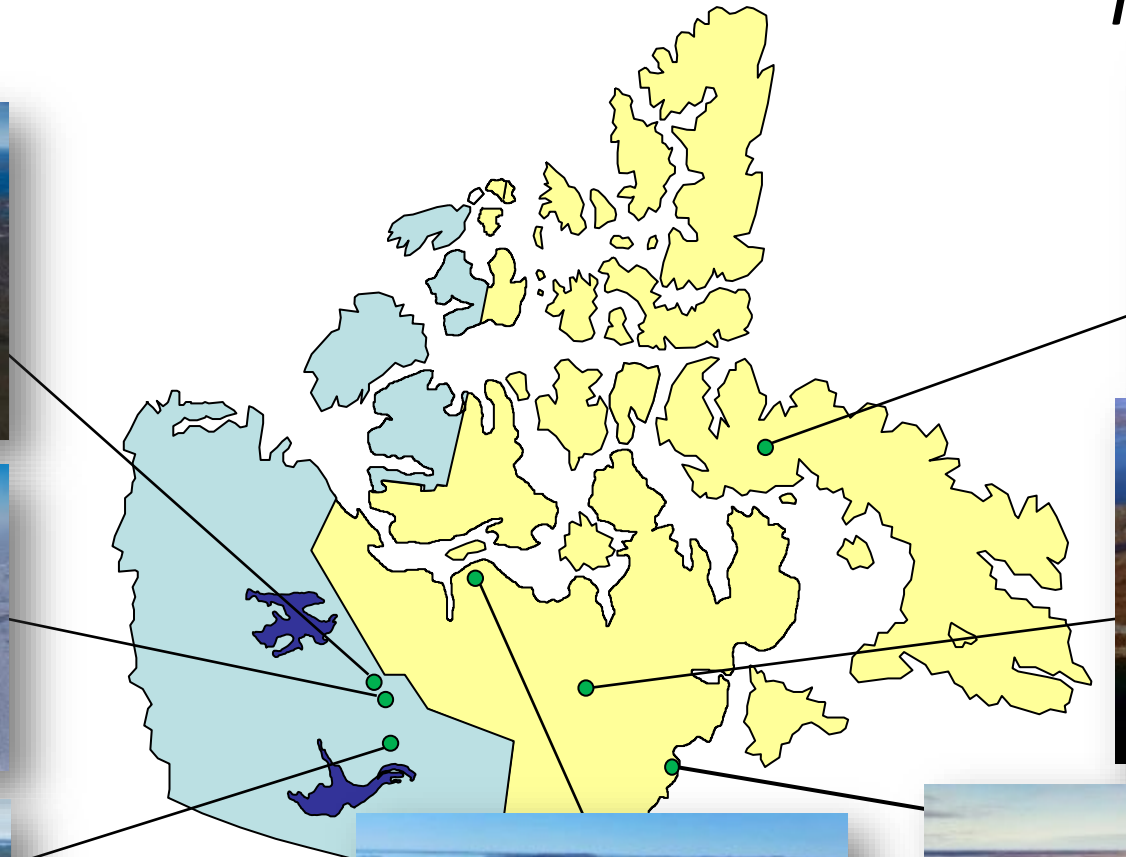
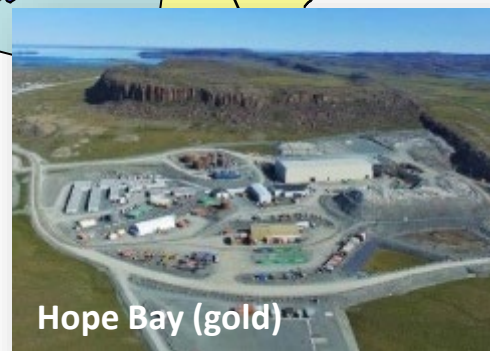
- Update on current NWT mining and its benefits
- NWT's challenges and opportunities
- Where the world is taking mining and why – critical minerals
- Why it's our new NWT opportunity

# Our current operating mines

## NWT Mines



## Nunavut Mines



# Why mining is important

*Diamond mines create important socio-economic benefits (1996-2020)*

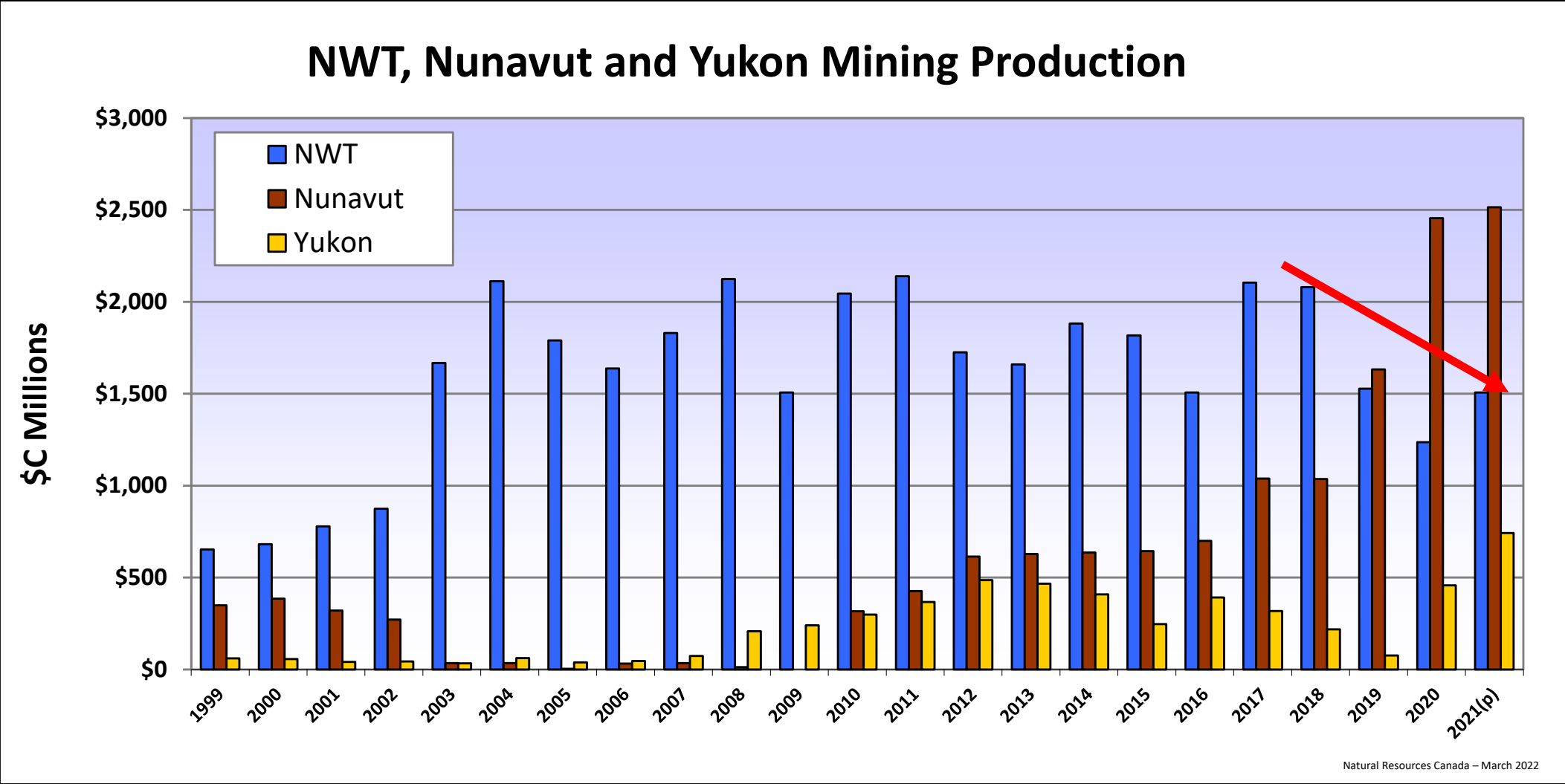
- 66,6000 person-years of employment
  - 47% northern/53% southern
  - 1,210 northern (638 Indigenous) in 2020
- \$29.7 Billion business spend
  - \$22.6 Billion northern (\$7B Indigenous) (76% northern)
- \$Billions in taxes and royalties to public and Indigenous governments
- \$100's million dollars to communities in IBA payments, scholarships, donations, & community wellness projects

**Bonus Unreported discovery ~\$3Billion:**  
Employee wages are not required to be reported in NWT SEA reports.

*Source: Compilation of mines' annual socio-economic agreement data*



# Mining production – a worrisome NWT diamond trend

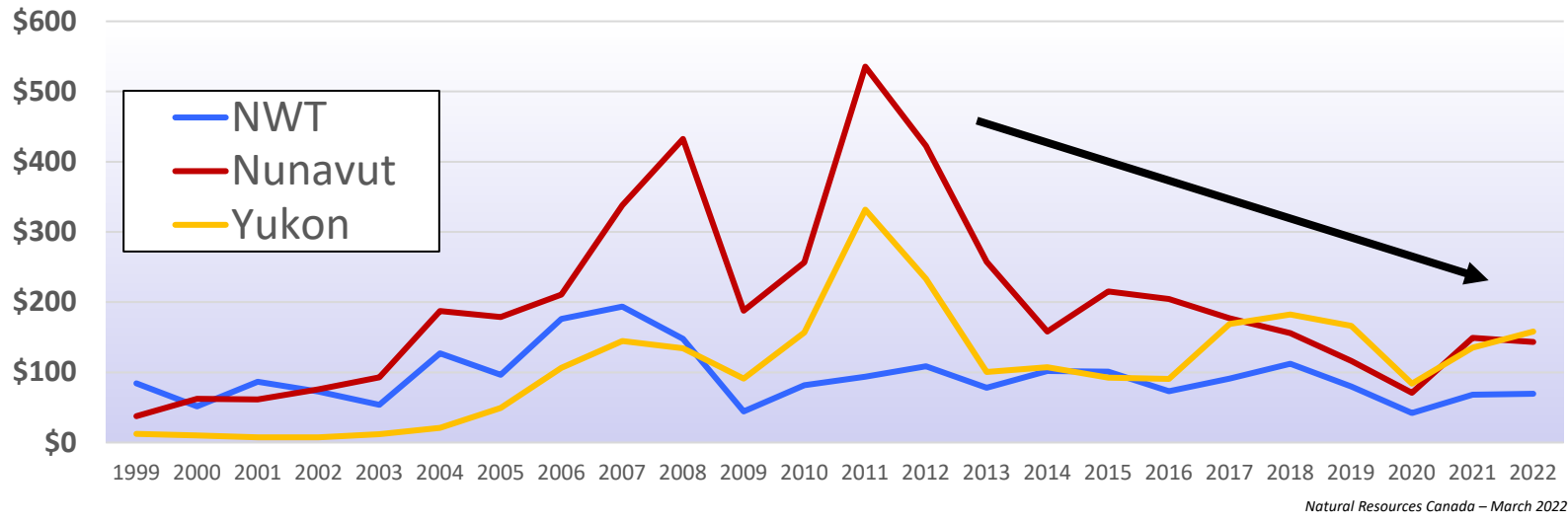


- Strong NWT diamond production for over 20 years. Big COVID decline, now maturing.
- Simultaneously, Nunavut production is increasing significantly.

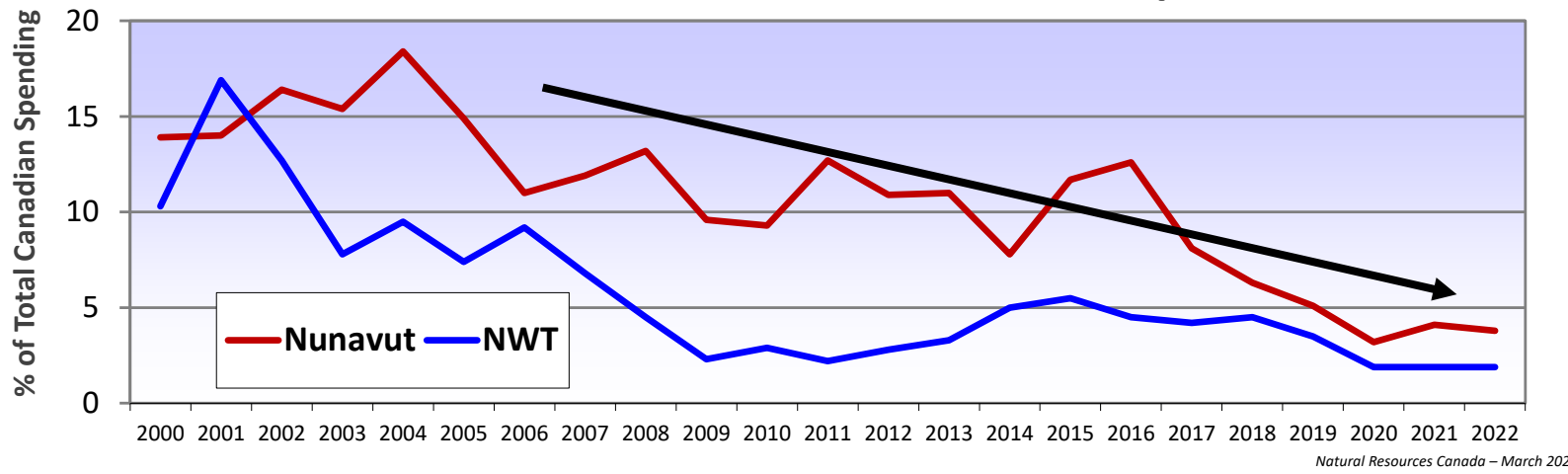


# Challenge: Exploration to sustain mining continues to underperform

Mineral Exploration Expenditures (millions)



NWT & NU as % of Total Canadian Mineral Exploration



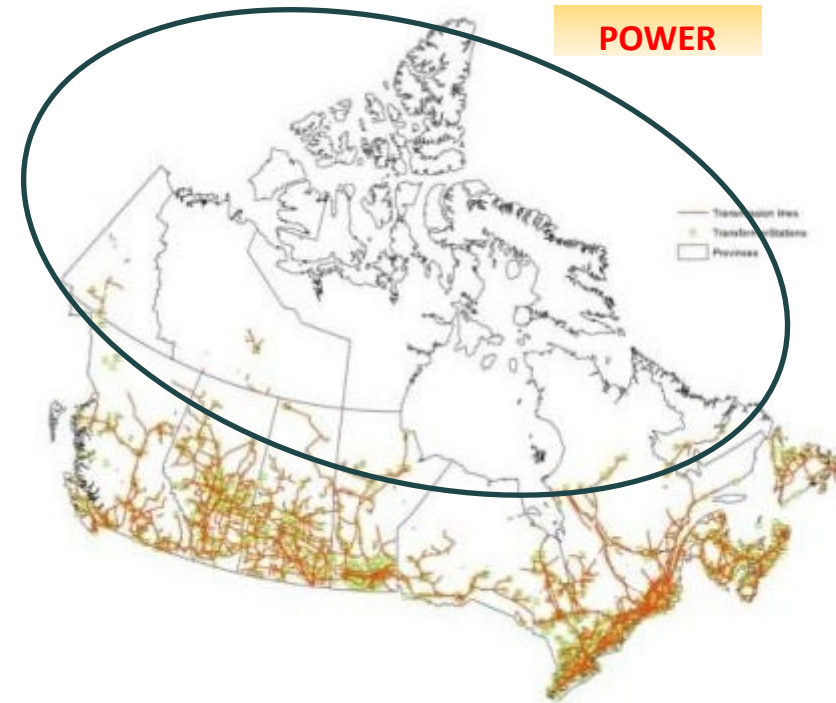
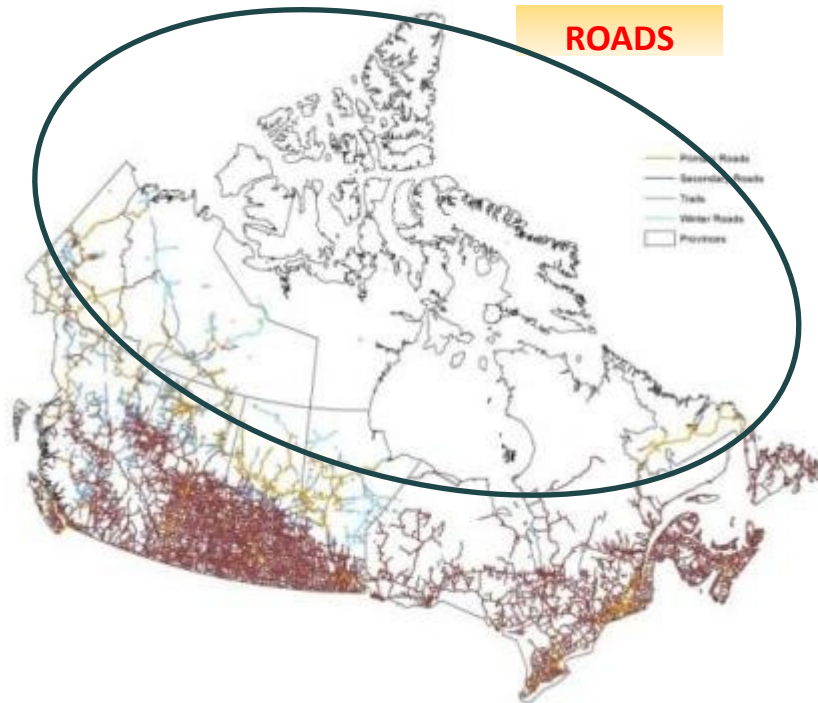
## WHY?

1. Governance
  - a. Shrinking access to mineral rich lands (conservation, unsettled land claims, land use planning, etc.)
  - b. Complex regulatory processes
2. Higher costs due to Canada's largest and significant infrastructure deficit
3. Higher government incentives in provinces

## The Result:

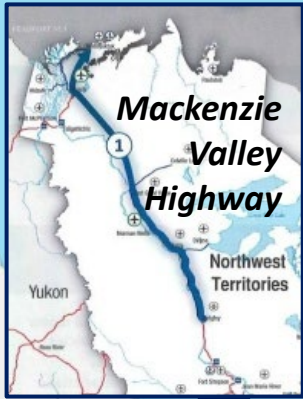
- Other jurisdictions are less risky and expensive and attract the investment

# Challenges: Infrastructure deficit creates high costs



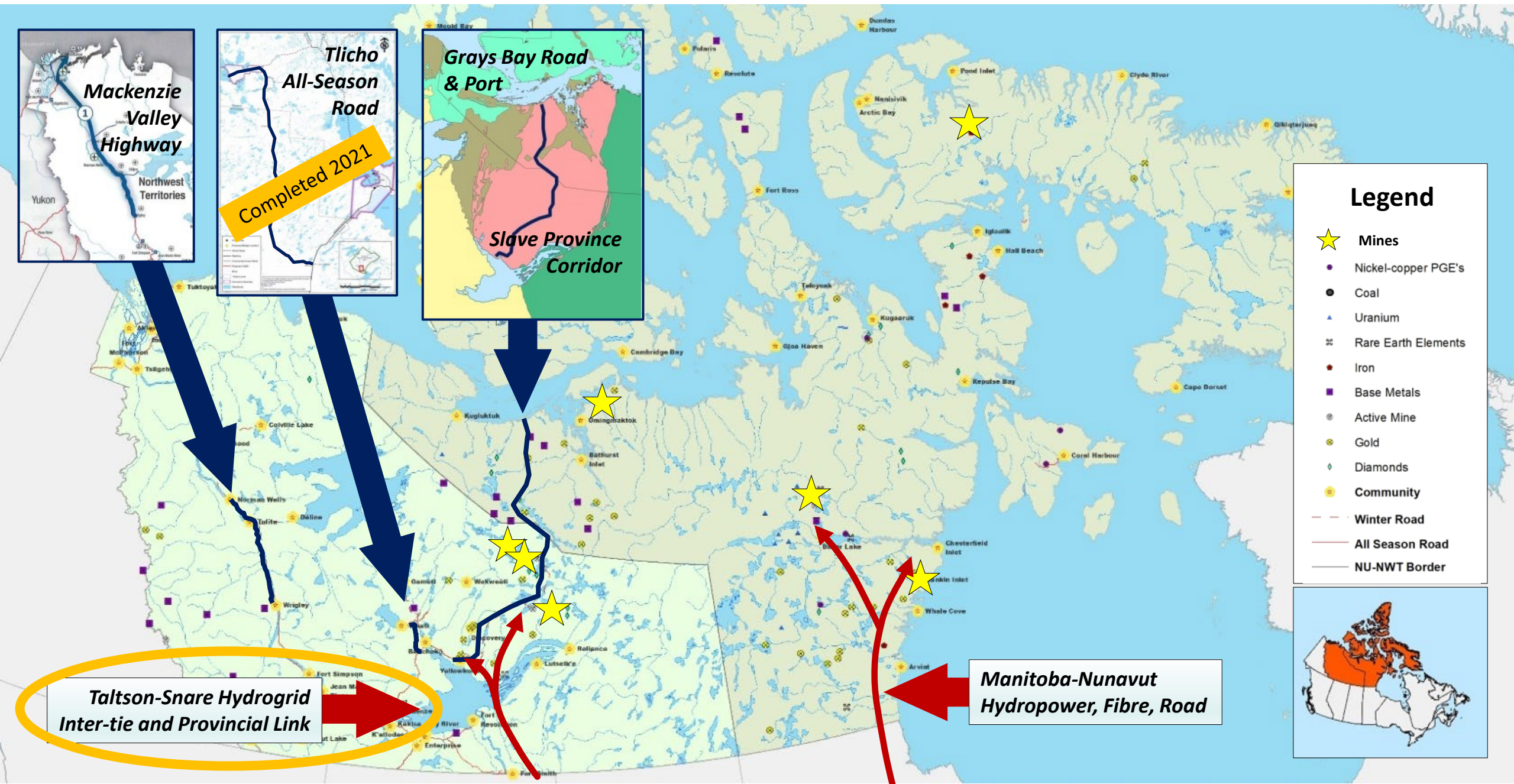
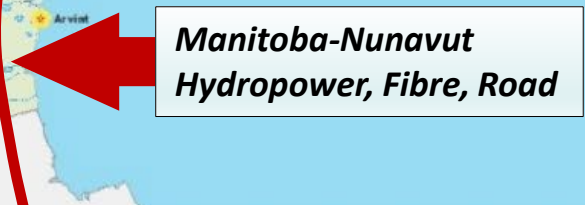
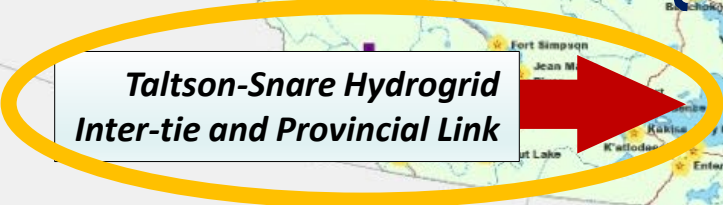
- Exploration costs up to 6 x higher than the south
- Mine capital costs up to 2.5 times more
- Mine operating costs 30 to 60% higher

# Infrastructure investment would improve access, reduce costs



### Legend

- ★ Mines
- Nickel-copper PGE's
- Coal
- ▲ Uranium
- ⚡ Rare Earth Elements
- Iron
- Base Metals
- ⊙ Active Mine
- ⊙ Gold
- ◆ Diamonds
- ⊙ Community
- - - Winter Road
- All Season Road
- NU-NWT Border





# An Opportunity falls into our lap: Where the world is taking mining – The Opportunity


## The Role of Critical Minerals in Clean Energy Transitions

World Energy Outlook Special Report




- What are critical minerals?
  - metals and non-metals that are considered vital for the economic well-being of the world's major and emerging economies,
  - yet whose supply may be at risk due to geological scarcity, geopolitical issues, trade policy or other factors.
- **Play a key role in energy transition for climate change**

# CM's play a key role in energy transition for climate change




## Electric vehicles

Sales are forecast to increase by at least **25%** a year over the next 10 years




Electric vehicles use neodymium magnets containing **30%** rare earths

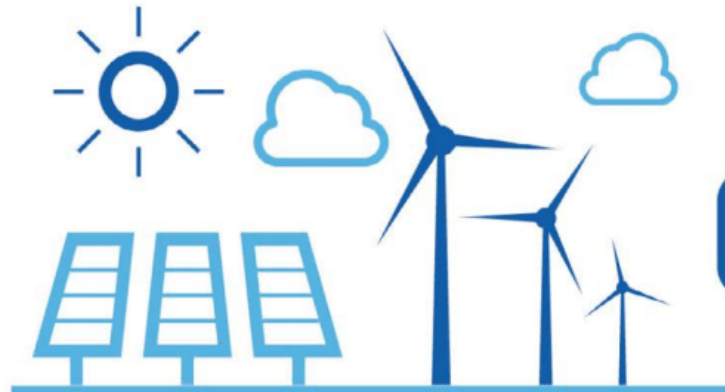



## Renewable energy and energy storage

Wind and solar electricity generation use cobalt, manganese and rare earths



Wind and solar generation are projected to account for **35%** of generation capacity in 2028



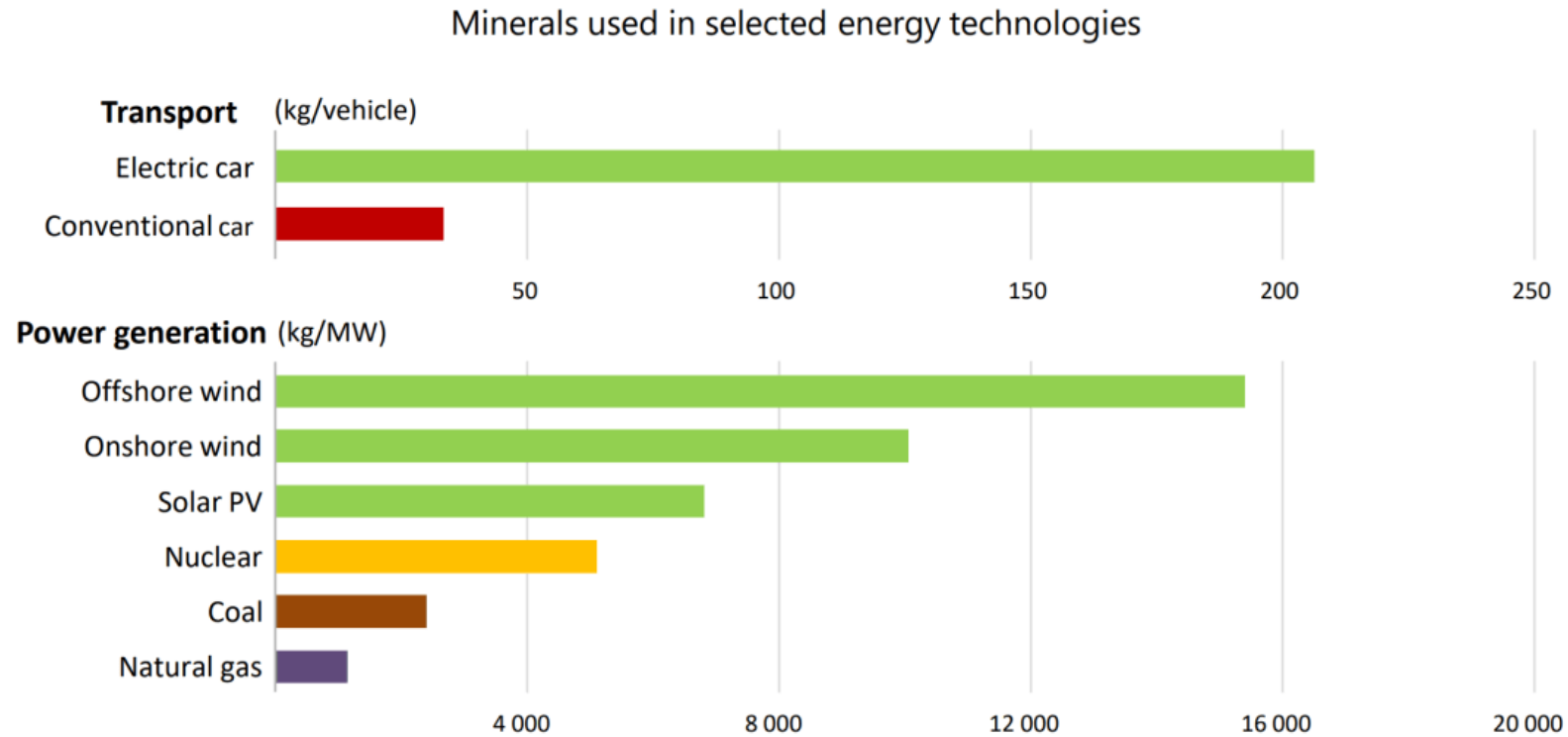
## Batteries

EV batteries use lithium, cobalt and rare earths

Lithium battery demand forecast to grow by **25%** per year, exceeding 1400 GWh by 2028

# Energy transition requires significantly more minerals

## The shift to a more mineral-intensive energy system

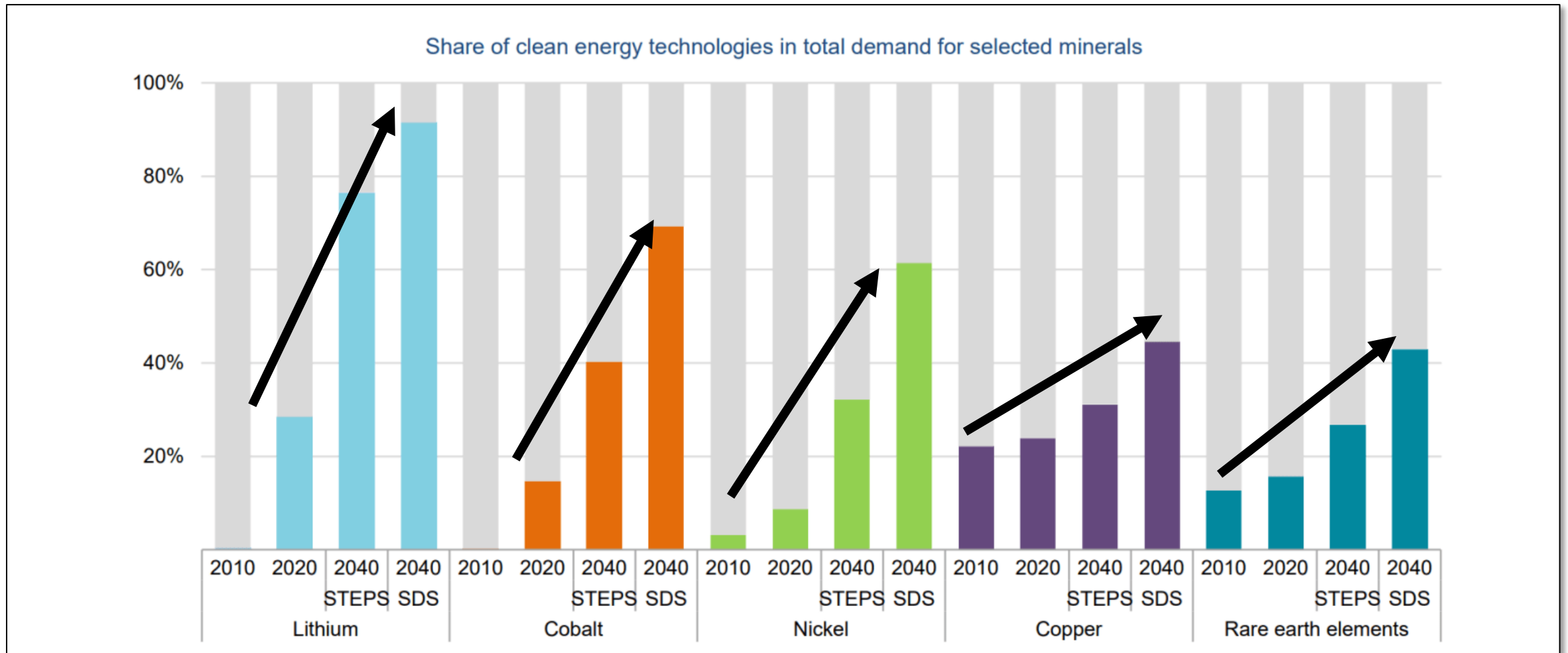


A typical electric car requires six times the mineral inputs of a conventional car, and an offshore wind plant requires thirteen times more mineral resources than a similarly sized gas-fired power plant

IEA 2021. All rights reserved.



# Huge growth demand for Energy Transition minerals

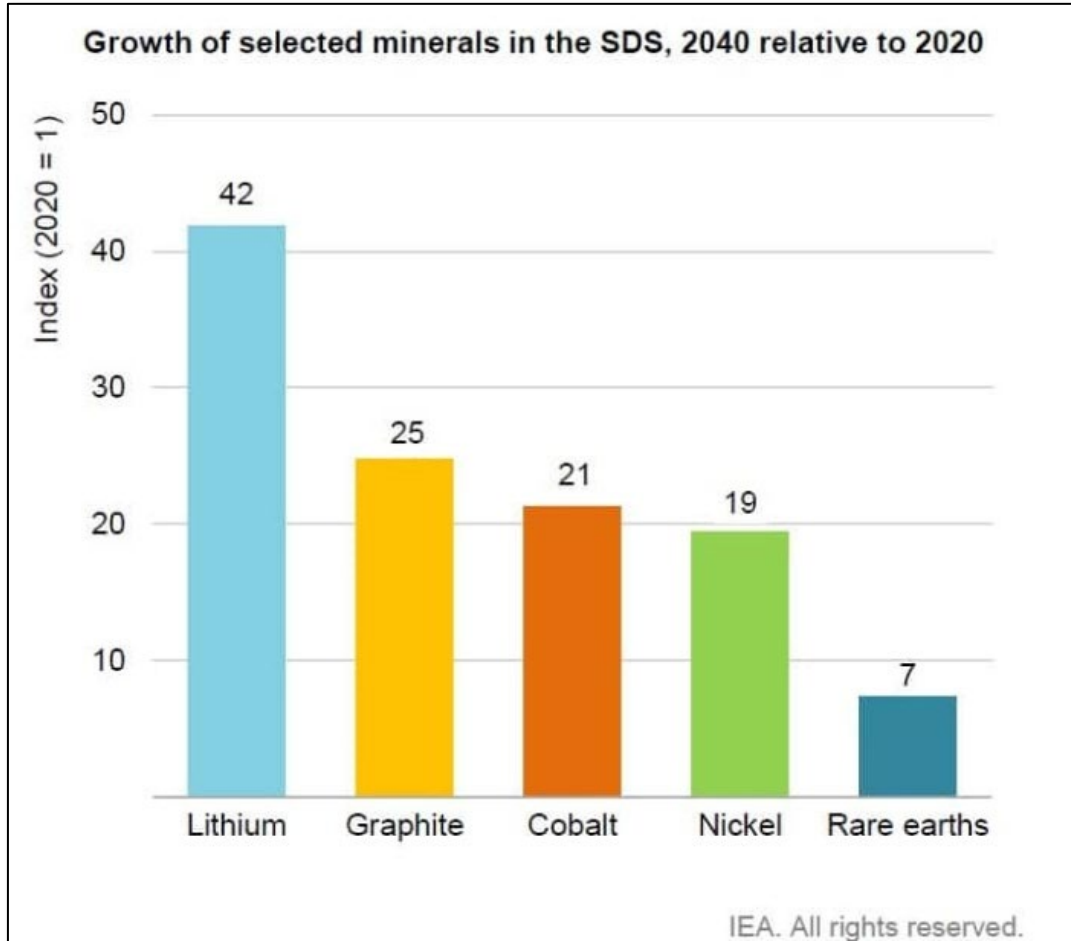


*The Role of Critical minerals in Clean Energy Transitions, International Energy Agency*



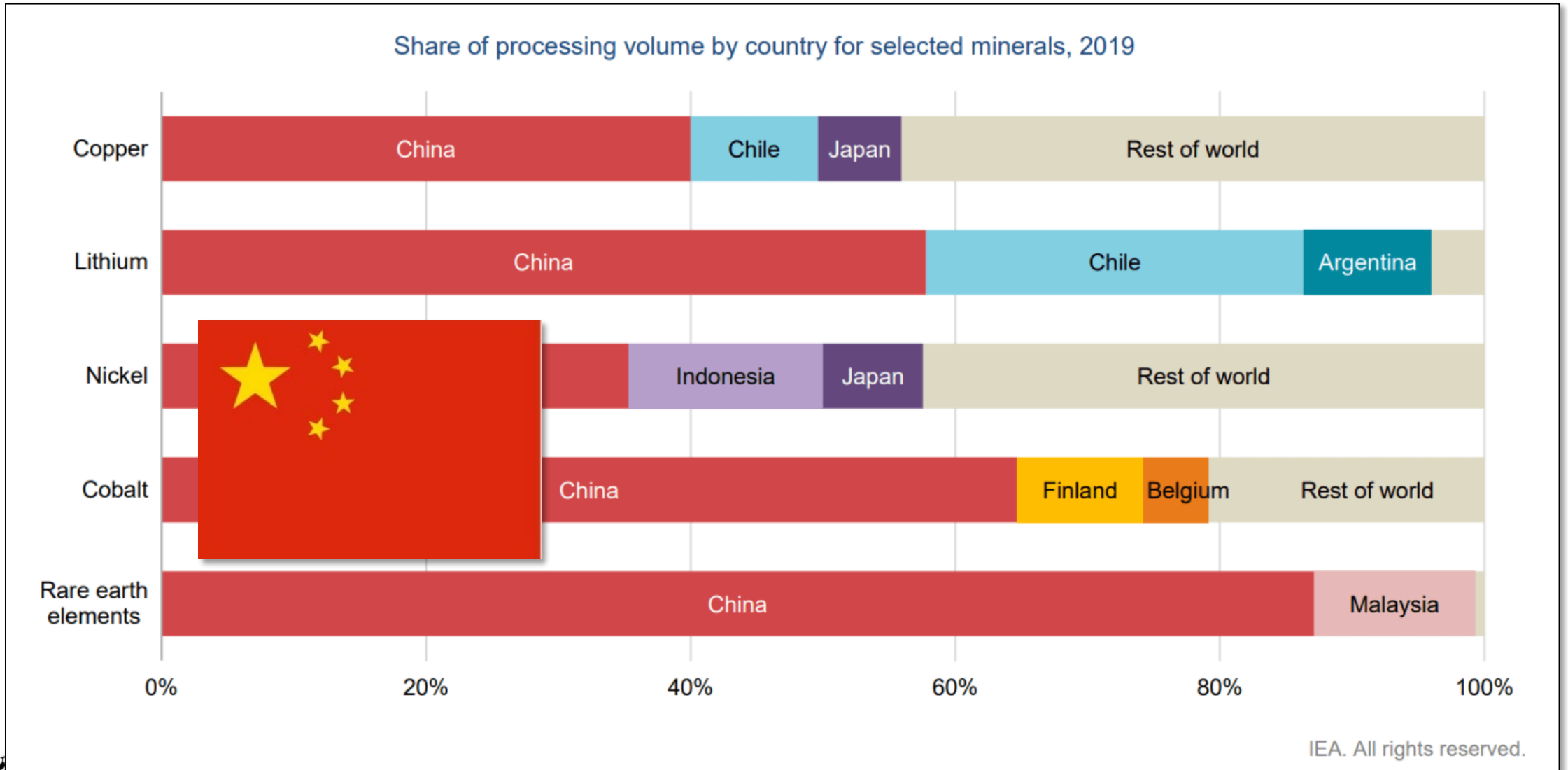
- 2040 SDS = Sustainable Development Scenario under Paris Agreement goals

# Clean energy needs will “supercharge” critical mineral demand

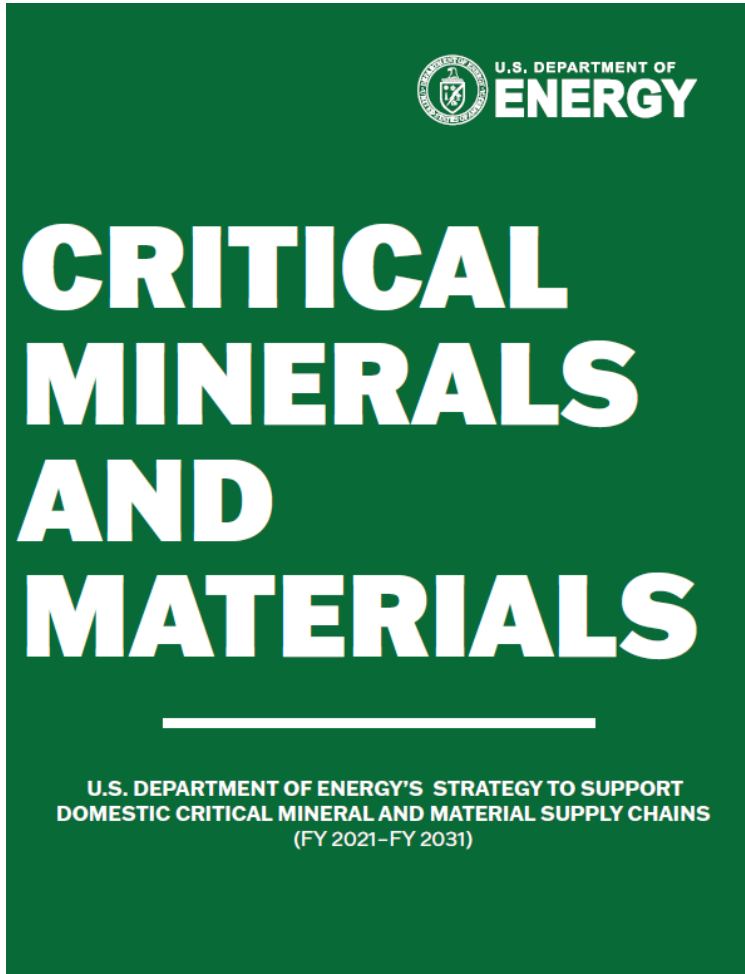


- Paris Agreement goals will require significant increased demand for critical minerals for electric vehicles, battery storage, solar and wind energy, etc
  - 42 times the lithium required
  - 25 times graphite
  - 21 times cobalt
  - 19 times nickel
  - 7 times rare earth elements

# Concern: China has dominance in critical minerals processing

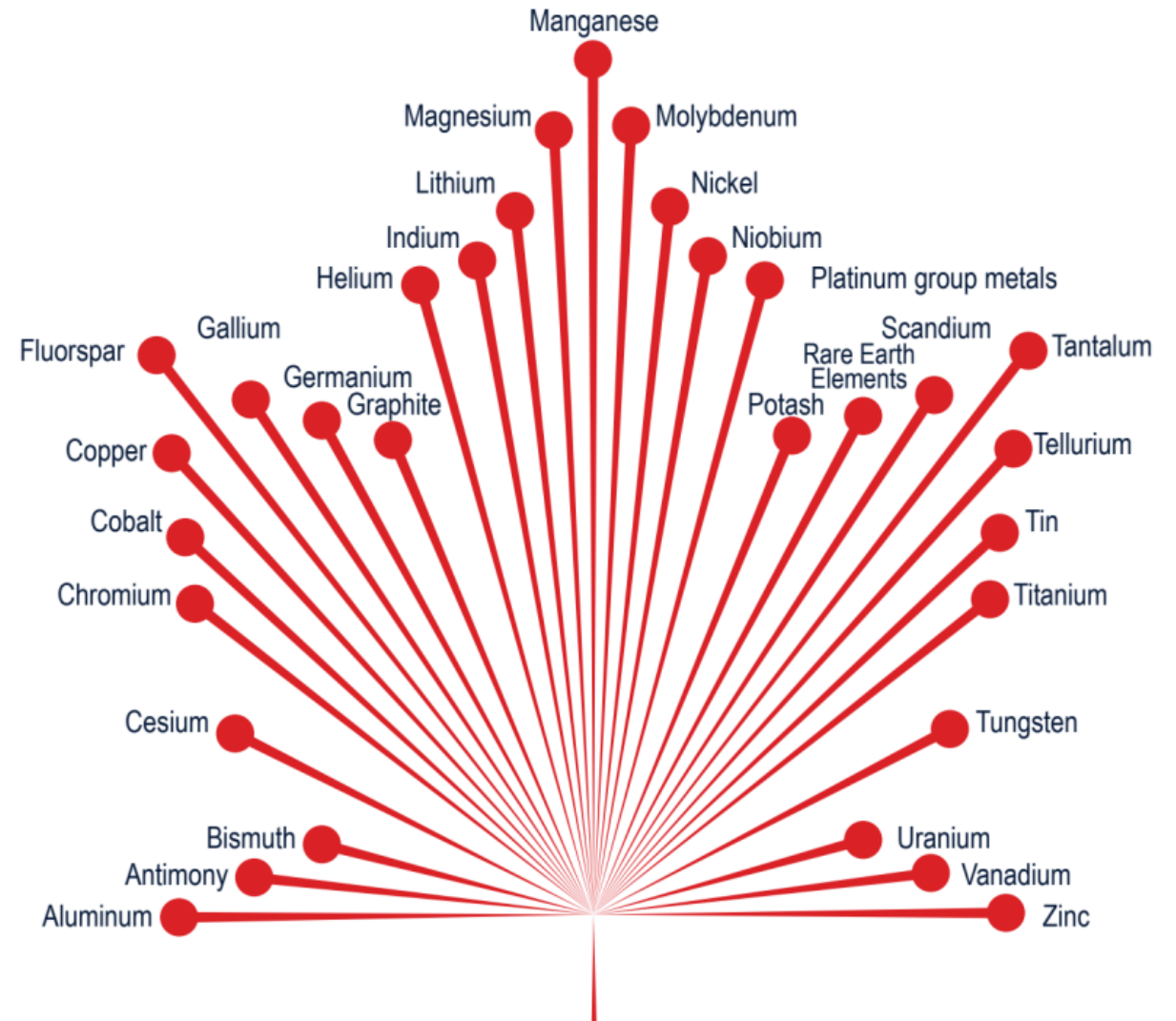


# The Western World is taking action to create its own supply



# Canada is creating its own Critical Mineral Strategy

- 31 minerals essential to Canada's economic security
- Required for Canada's transition to a low-carbon economy
- A sustainable source of critical minerals for our partners
- NWT is working on its own *Critical Minerals Action Plan*





# Canada's recent budget is very bullish on critical minerals

Federal budget proposes \$3.8B to support Canada's critical minerals industry



Finance Minister Chrystia Freeland delivers the 2022 Federal budget

## FINANCIAL POST

### Canadian miners cheer Ottawa's \$3.8-billion critical minerals budget plan

*'This is a game-changer'*



Reuters  
Ernest Scheyder and Steve Scherer

### Trudeau presses for Canada to become a critical mineral powerhouse

ROBERT FIFE > OTTAWA BUREAU CHIEF  
BILL CURRY >  
OTTAWA  
PUBLISHED DECEMBER 16, 2021



2022 • 3 minute read • 5 Comments



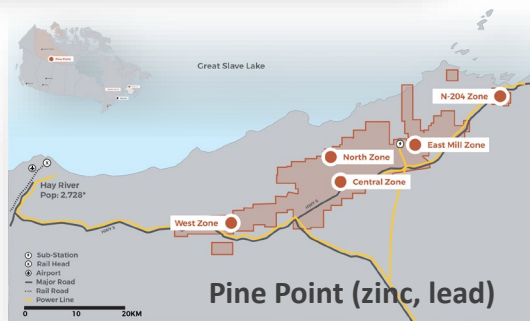
# The NWT's Critical Minerals Opportunity

- NWT Opportunities
  - The NWT has **23 Critical Minerals** with significant occurrence and potential for more discoveries.
  - 4 critical mineral mining projects are advancing:
    - Nechalacho – Rare Earth Elements
    - NICO – Cobalt, Bismuth, Copper (Gold)
    - Pine Point – Zinc (Lead)
    - Prairie Creek – Zinc (Silver, Lead)
  - And we have one currently closed critical mineral mine:
    - Cantung – Tungsten, Copper



Map courtesy NWT Geological Survey)

# 5 Advancing mining projects – 4 are for Critical Minerals



- ### Over \$2 Billion investment
- 5 projects advancing to investment and mining decisions
  - 4 in NWT all **contain critical minerals**: rare earths, zinc, cobalt, copper, bismuth
  - 1 in Nunavut is gold



Canada's first REE mine

# Canada's First Rare Earth Elements Mine – Nechalacho, NWT

- Owner: Australia's Vital Metals subsidiary Cheetah Resources
- Open pit mine with optical processing
- **Constructing Canada's first REE extraction facility in Saskatchewan**
- First phase capital costs: C\$50 Million; expansion planned
- Focused on non-China buyers including Norway, with **supply chain identified now to German electric motor and car manufacturers**
- Operations began in 2021 – **significant long-life potential**



# Proposed NICO cobalt, gold, bismuth, copper mine, NWT

- Owner: Fortune Minerals Limited
- Open pit and underground – 20 year mine life
- Start commissioning 2025
- **Construct processing plant in Alberta** →
- Capital cost: C\$775 million
- Workforce: 220 in NWT & 85 in AB
- Construct all-season road to new Tlicho Highway

*“Fortune’s new refinery is exactly the type of job creating, diversifying investment we envisioned with our mineral strategy and action plan.”*

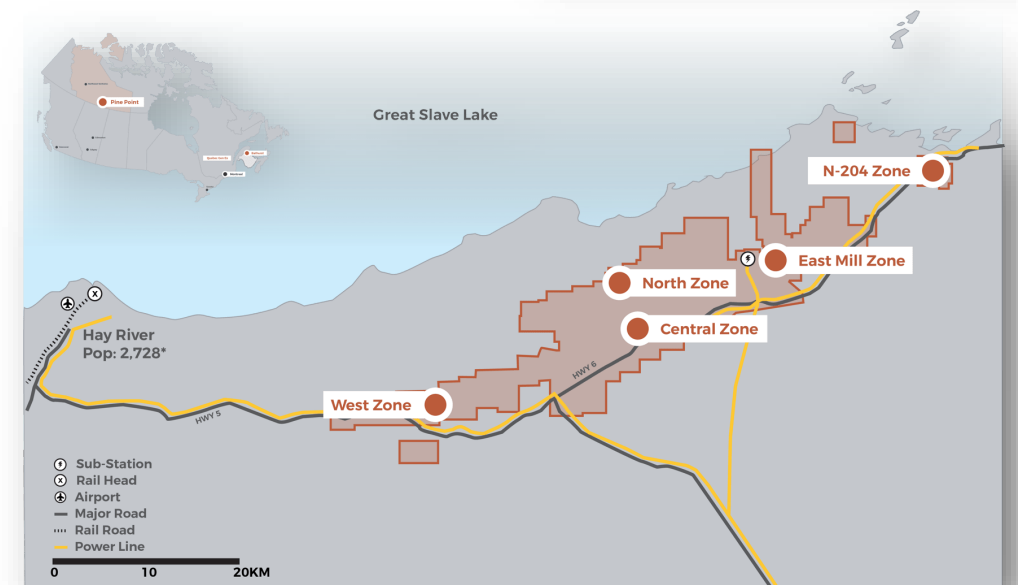
**Jason Kenney**  
*Premier of Alberta*



Rendering of proposed NICO pit, mill and camp site in the Northwest Territories

# Pine Point Zinc/Lead Development Project, NWT

- Owner: Osisko Metals Incorporated / Pine Point Mining Ltd.
- Brownfield site: previously mined 1964 to 1988
  - Existing infrastructure (road, rail, power)
  - 100 km of haul roads saves project \$100 million
- PEA Capital Cost Estimate: C\$555 million
  - Construction could begin 2024; Operations 2026
- Open pit and underground mining
  - 10 open pit deposits mined in sequence
  - Exploration potential is significant
- 10-year mine life, average 450 jobs
- Potential to be a “Top 10” global zinc mine



# Proposed Prairie Creek zinc, silver, lead mine, NWT

- Owner: Norzinc Ltd. (and subsidiary Canadian Zinc), listed on TSX
- Pre-production cost – \$368 million (significant existing mine infrastructure in place), including \$90 million for **184km access road** from mine to Liard Highway
- Annual operating costs in NWT ~ \$100 million; significant benefits to local and regional communities, IGOs, government and employment
- One of world's premier Zinc-Lead-Silver deposits: 3<sup>rd</sup> highest grade
- 20-year mine life with opportunity to extend
- Workforce: >600 construction; >300 operation
- 3 years construction; production 2025
- Strong ESG plan
  - Enables use of Liquefied Natural Gas
  - No tailings; 100% paste and backfill
  - 100% water recycling from process plant



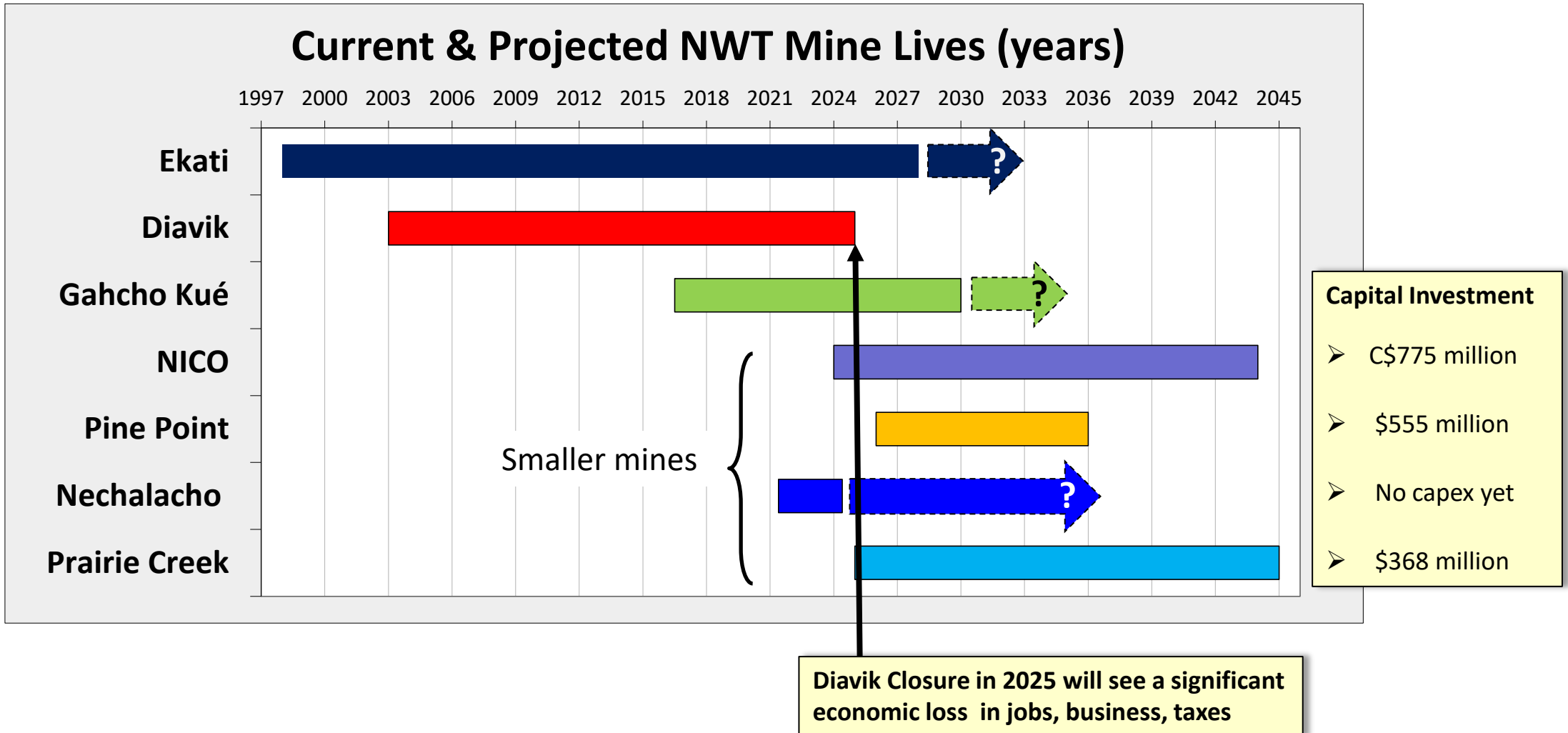
# A Yellowknife bonus? Goose gold mine project, Nunavut

- Owner: Sabina Gold & Silver Resources
- Construction underway; first gold 2025
- Mine life 15 years (Goose property alone, with additional deposit potential)
- Capital cost: C\$610 million (already raised)
- Open pit & underground (highest grade undeveloped open pits in the world)
- Marine laydown area completed; new airstrip, underground drifting underway, camp, etc.
- **Close to NWT: How much benefit can we attract?**

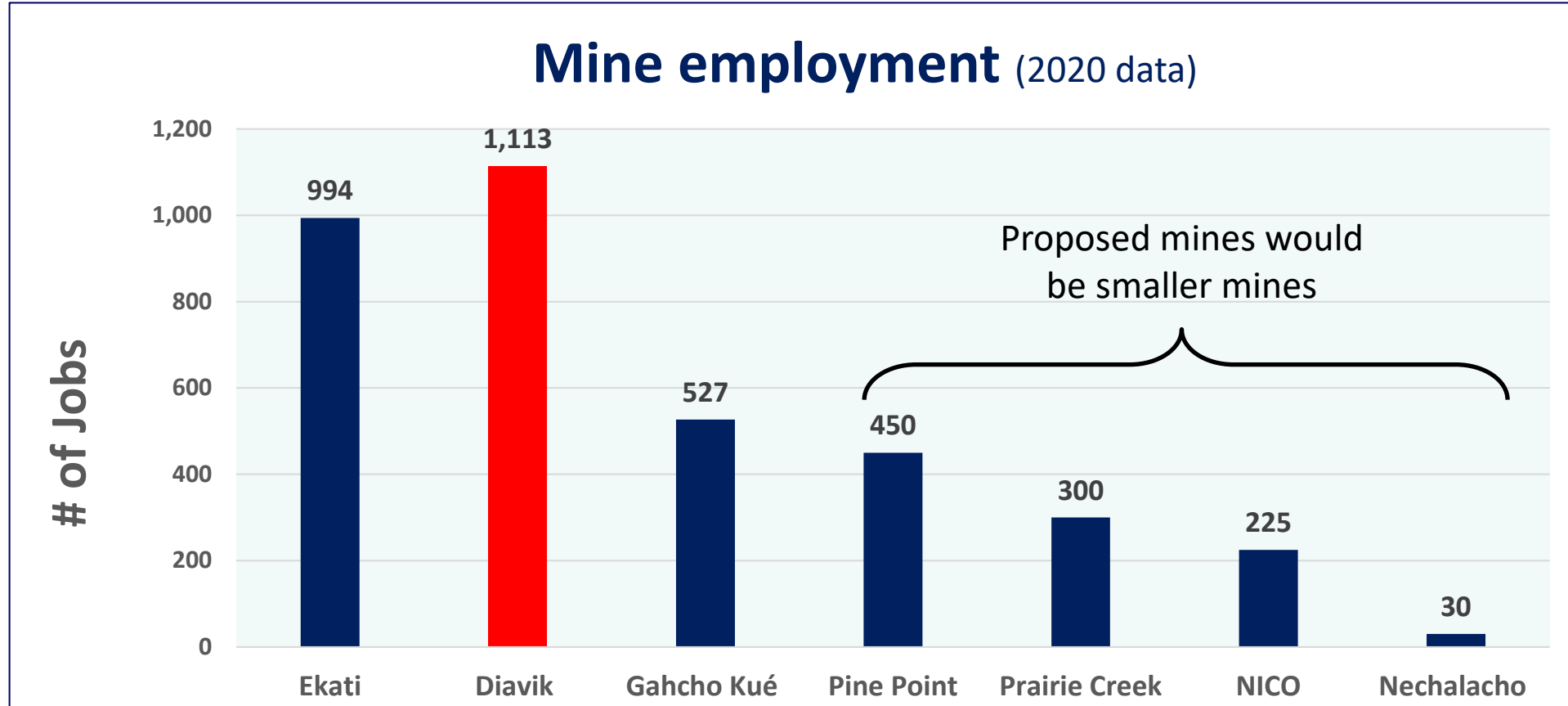




# Critical mineral mines could help sustain NWT's mining benefits



# But ... 4 critical mineral mines would not fully replace Diavik



- Just as employment is smaller, business spending by these smaller mines will likely be smaller than Diavik's
- Note proposed mines are not slam dunks: can still be affected negatively by markets, regulatory hurdles, infrastructure challenges, etc.

# Mining 101: Governments need to help as Resource Partners

- Governments own the mineral resources NOT companies
- They invite companies to come do what they cannot do themselves:
  - Find, raise and bring money to invest,
  - Absorb significant risks (only 1:1,000 odds of success), and
  - Apply expertise to find, develop and convert public resources into public benefits.
- As the resource owner, and the inviter, Governments have a role in helping their industry become successful in creating public benefits.

# Where we are asking governments for help

- Our pre-budget ask of Canada and what they gave:
  - ✓ Reduce regulatory complexity
  - ✓ Provide project specific infrastructure support
  - ✓ Provide critical minerals supply chain support
  - ✓ Provide regional infrastructure in roads, hydropower, ports
  - ✓ Support Indigenous economic reconciliation throughout
  - ✓ Create a “North of 60” Mineral Exploration Tax Credit of 40%

- Hallelujah! Federal Budget 2022 supports virtually all those concepts.
- The NWT now needs Canada to follow up with actions in the North.

## Remiss if I didn't tell you ...

- Critical minerals are important to our future, without a doubt
- However, frankly all minerals are critical to our NWT economy and deserve support, including diamonds, gold, silver, etc.
- Thankfully, we have a number of additional and welcome investors that continue to persevere and finance exploration and development activities
  - Thanks to GNWT and CanNor too for providing exploration assistance
- A rising tide of governments' support would lift all boats

GOLD TERRA



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ARCTIC STAR  
EXPLORATION



SLZ  
Slave Lake Zinc



Talmora  
Diamond Inc.

MOUNTAIN  
PROVINCE DIAMONDS



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