

Mineral Development in Northern Canada – *Defense and Dual Use Construction Opportunities* –

*For: United States CanArctic Indigenous Business Mission
November 2022*

Who is the Chamber of Mines?

About	Mission	Vision
<p>Since 1967, champion and supporter of responsible mineral resource development in the north.</p> <p>2 Offices: Yellowknife, NT and Iqaluit, NU</p> <p>We represent over 200 members:</p> <ul style="list-style-type: none">• Mining & exploration Companies• Service & supply companies – both Indigenous and non-Indigenous• Individuals	<p><i>To provide leadership on, and advocate for, responsible and sustainable mineral exploration and development in the NWT and Nunavut</i></p>	<p><i>A vibrant and sustainable exploration and mining industry in the NWT and Nunavut which has the support of the peoples of the North.</i></p>

Key Messages

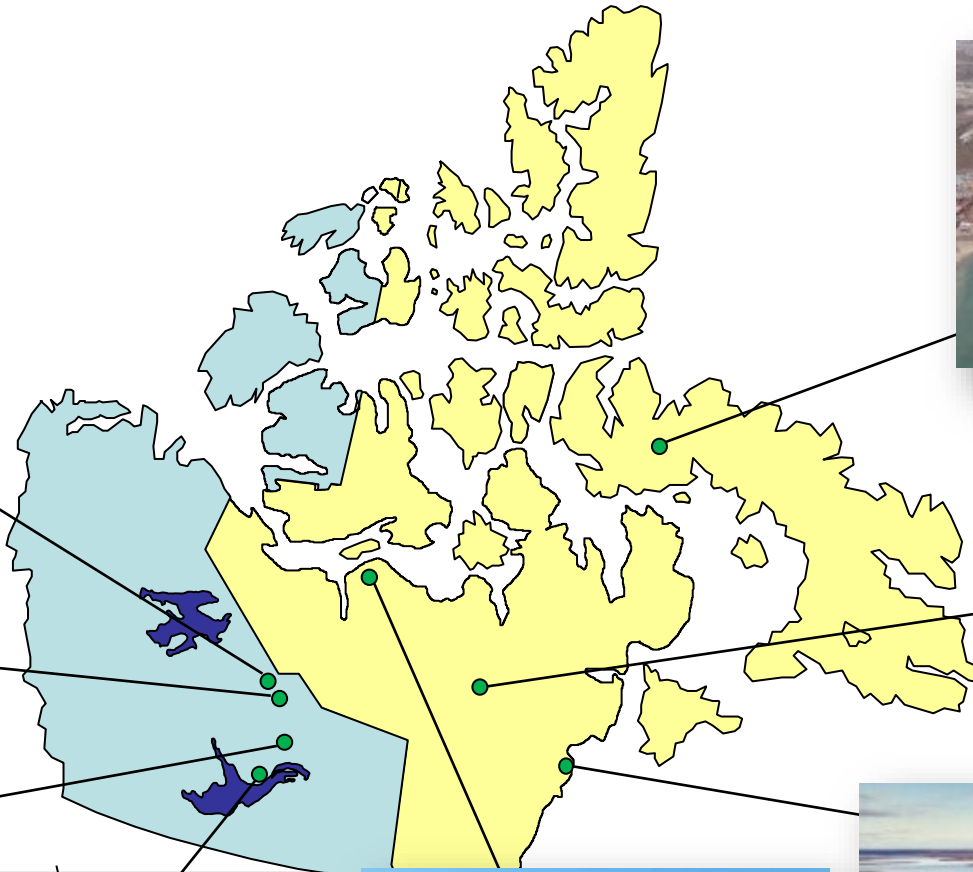
- Mining is important to northern Canada
- One reason is the Indigenous benefits it provides
- The North has great opportunities for more mining, including critical minerals
- But northern challenges are significant, and industry needs help
- Partnership opportunities will help us
- There are opportunities for US investment and benefits.

Our current 8 operating mines – NWT + Nunavut

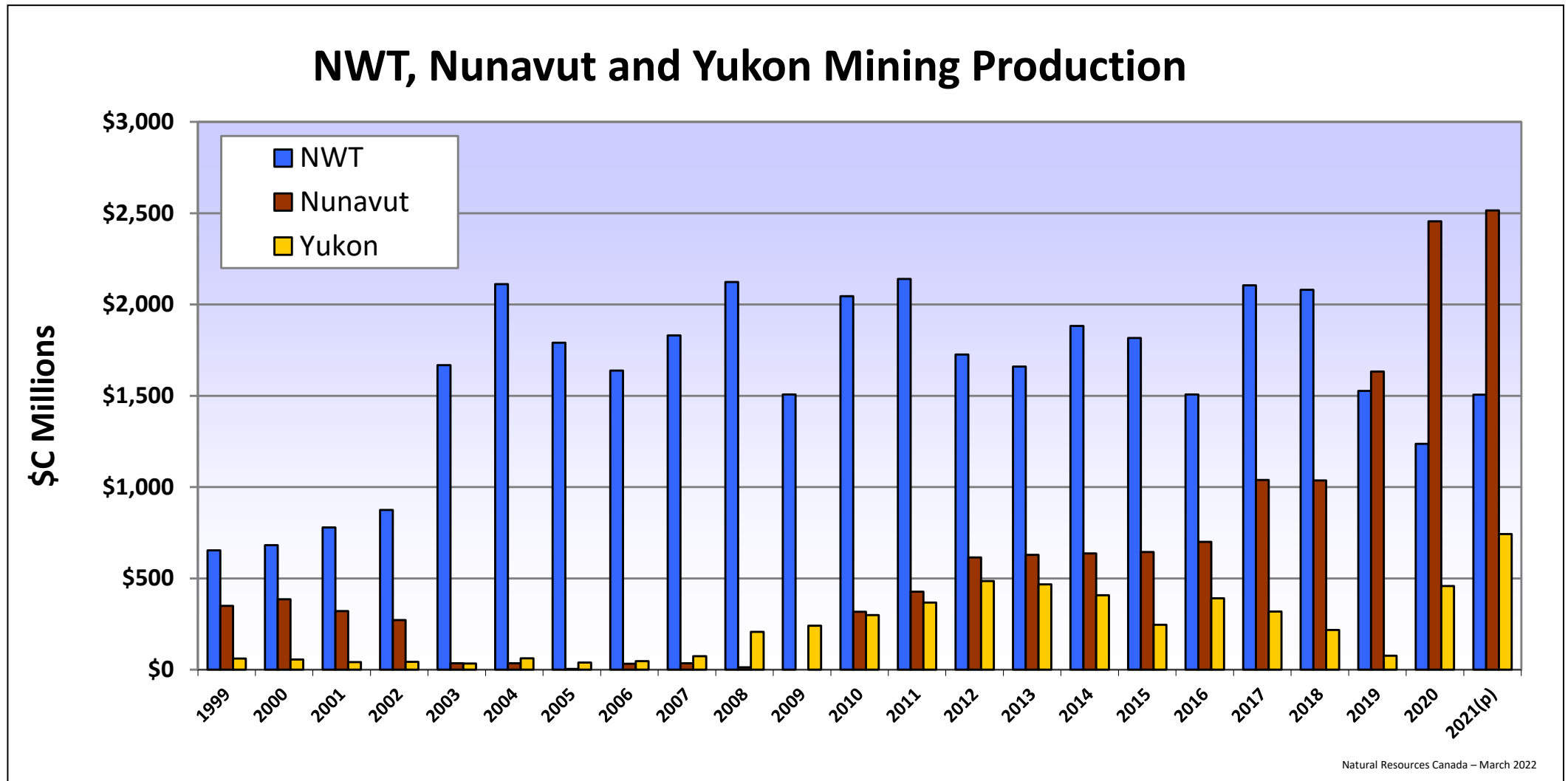
NWT Mines



Nunavut Mines



Generating important mineral production value



- Combined \$4 Billion production in 2021 from diamonds, gold, silver and iron

Why mining is important to the North: socio-economic benefits

Converting mineral production to NWT + Nunavut mining benefits (1996-2021)

- 100,000 person-years of employment
 - 7,500 plus employed annually
- \$34 Billion in business
- \$Billions in taxes and royalties to public and Indigenous governments
- \$100's million dollars to communities in IBA payments, scholarships, donations, & community wellness projects

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



Indigenous mining business development a game changer

Mining has spawned a new generation of Indigenous businesses in NWT and Nunavut

NWT Indigenous Businesses

- Tli Cho Logistics Inc.
- Tli Cho Landtran Transport Ltd.
- Tli Cho Air Inc.
- Tli Cho Road Constructors Ltd.
- Tli Cho Blasting Services Inc.
- Denesoline Western Explosives
- Aboriginal Engineering Ltd.
- Tli Cho Engineering & Environmental Services Ltd.
- Ventures West Transport Ltd.
- Metcrete Services Ltd.
- Metshaw Freighters Ltd.
- Kete Whii Ltd.
- Kete Whii Procon J.V.
- Sodexho Alliance
- Exploration Medical Services
- Kitikmeot Cementation Mining & Development
- Lac De Gras Constructors
- Nishi Khon SNC Lavalin Inc.
- North Slave Logistics
- Nuna Logistics
- Malca-Amit (NWT) Ltd.
- Nishi Khon / SNC Lavalin Inc.
- Tundra Site Services North
- KBEX
- Ekati Services
- Det'on Cho Earth Energy
- Det'on Cho DNX
- Bouwa Whee Catering
- Det'on Cho Foraco
- Det'on Cho Hazco
- Det'on Cho Nahanni Construction
- Det'on Cho New North
- Det'on Cho NUNA
- Det'on Cho Pure Earth Elements Environmental Solutions
- Det'on Cho Scarlet Security
- Det'on Cho Stantec
- Det'on Cho Training & Conference Centre
- Det'on Cho Logistics
- Det'on Cho Medic North
- Det'on Cho Mining Supplies
- DICAN / ADG
- Kete Whii / Ledcor
- Kete Whii / Procon
- Akaitcho Helicopters
- Dene-Emco Ltd.
- Denesoline/Air Tindi Joint Venture
- Denesoline/Arcan Construction
- Denesoline/De Beers Labour Contract
- North Slave Freighters Ltd.

- Northcan Freighters Ltd.
- Denesoline/Discovery Mining Services – Logistics Expediting
- Denesoline/Deton Cho/Procon
- Denesoline/Deton Cho/Ledcor
- Denesoline/Dyno Nobel
- Denesoline/ESS Compass
- Denesoline/McCaw Drilling & Blasting
- Denesoline/Nuna Logistics
- Denesoline/Tli Cho Logistics
- Lutsel K'e Air Services
- A.T.B. Construction
- Trinity Helicopters

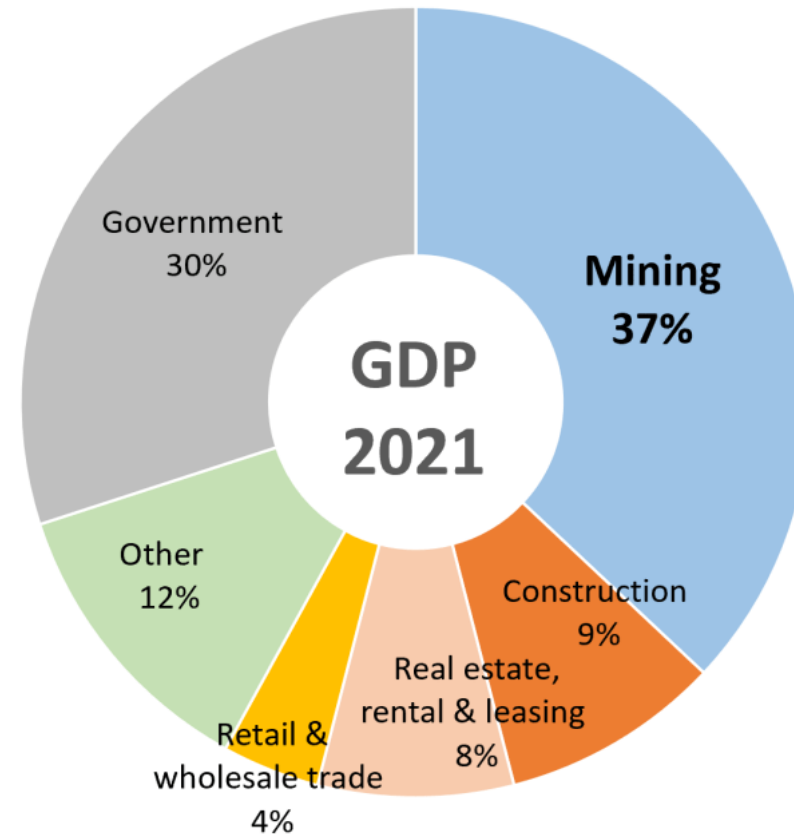
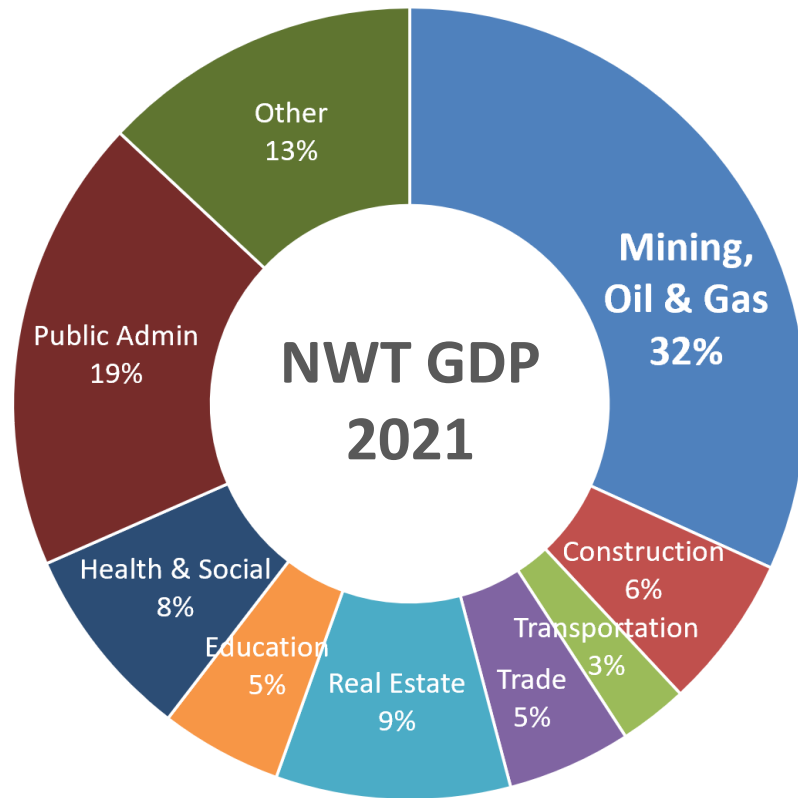
Nunavut Indigenous Businesses

- Kitikmeot Caterers
- Kitikmeot Cementation Mining & Development
- Geotek Ekutak
- Medic North Nunavut
- Nunavut Sealink & Supply
- Nanami Stantec Ltd
- Toromont Arctic Ltd
- Kitikmeot Blasting Services
- Kitikmeot Tire
- Kusugak Consulting
- Qikiqtani Industry Ltd.

- Nuna Group of Companies
- AGLU Consulting & Training
- Kitikmeot Caterers Ltd.
- Medic North Nunavut
- Baker Lake Contracting & Supply
- Forest North Aviation & Logistics
- Eskimo Point Lumber & Supply
- Kivalliq Expediting & Storage
- Kitikmeot Blasting Services
- Kitikmeot Cementation Mining
- M & T Enterprises
- Kasuk Exploration
- Jago Services
- Qillaq Innovations
- Toromont Arctic
- Kitnuna
- Oomilik Enterprises
- Akhaliak Consulting
- Qillaq Innovations
- Kiluk Ltd.
- Peter's Expediting
- Kitnuna

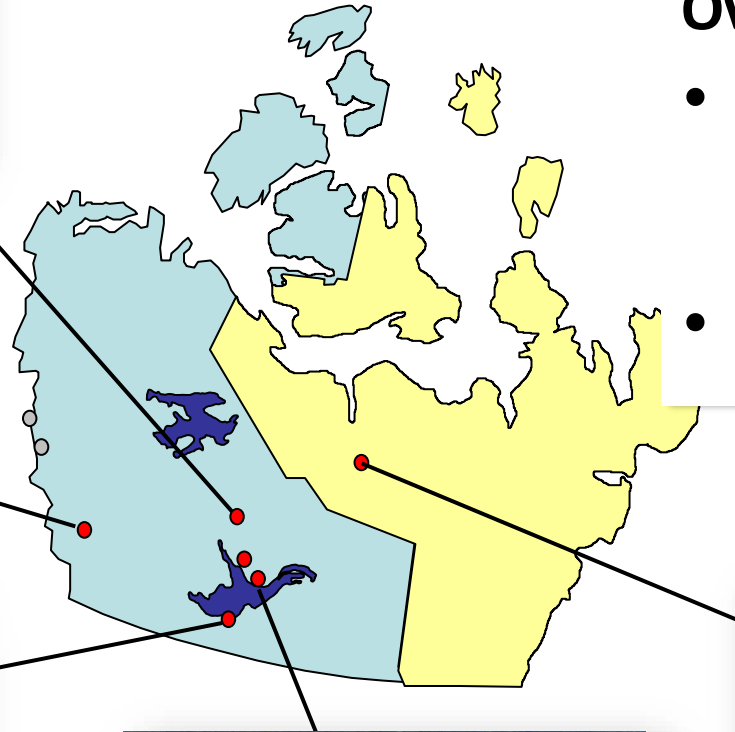
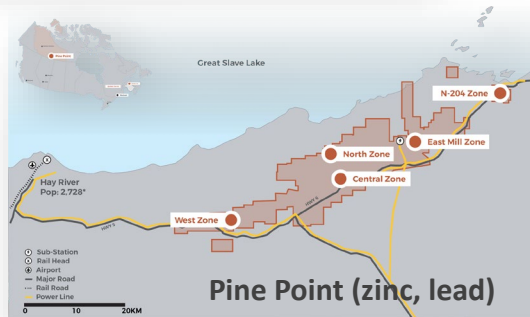


Huge benefits = North's largest private sector contributor



Direct plus indirect contributions can be as high as 50% of the economy in each of the territories

PLUS: 5 advancing mining projects – 4 for Critical Minerals



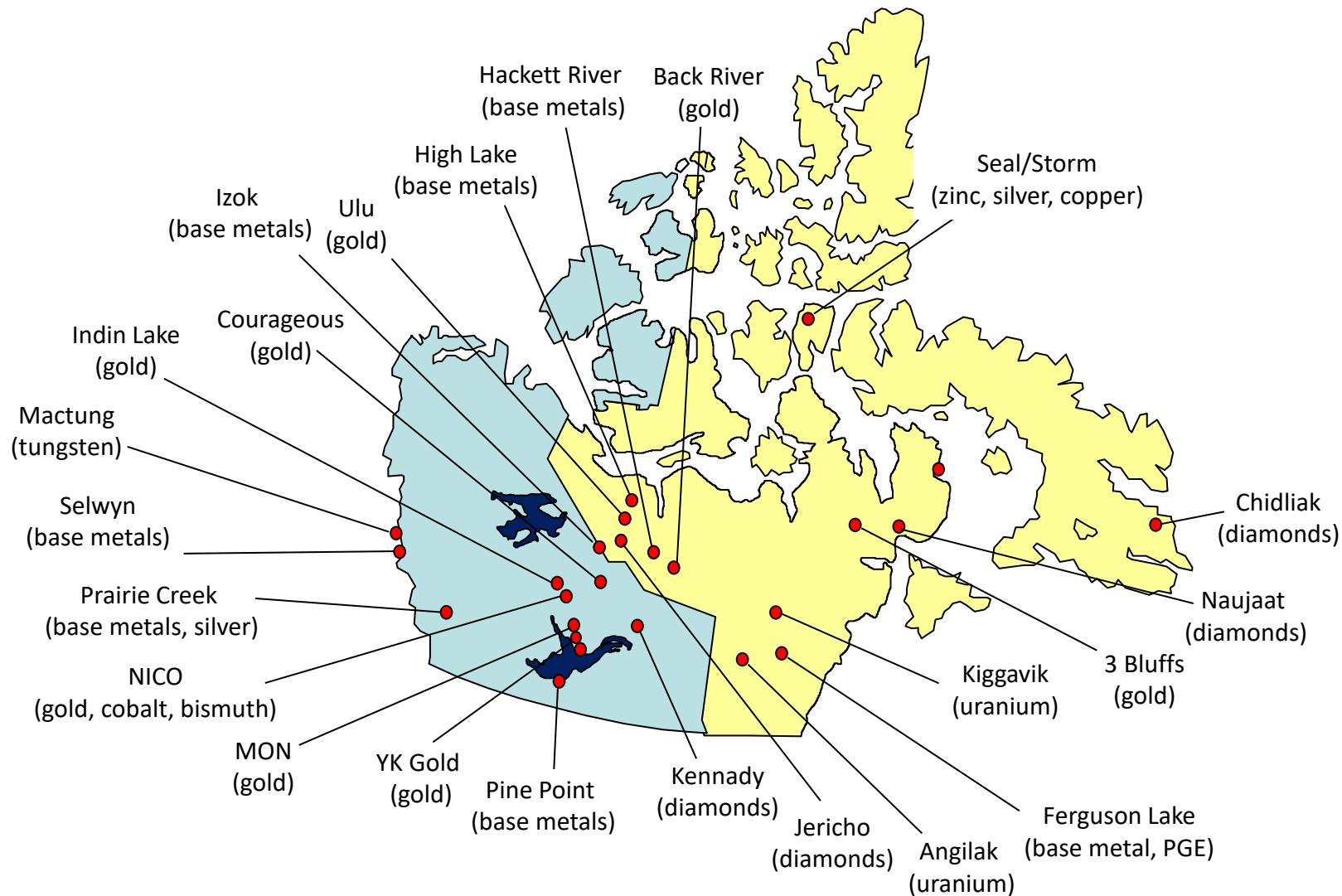
Over \$2 Billion investment

- 4 in NWT all **contain critical minerals**: rare earths, zinc, cobalt, copper, bismuth
- 1 in Nunavut is gold



Canada's first REE mine

PLUS: Many more advanced projects = potential mines?

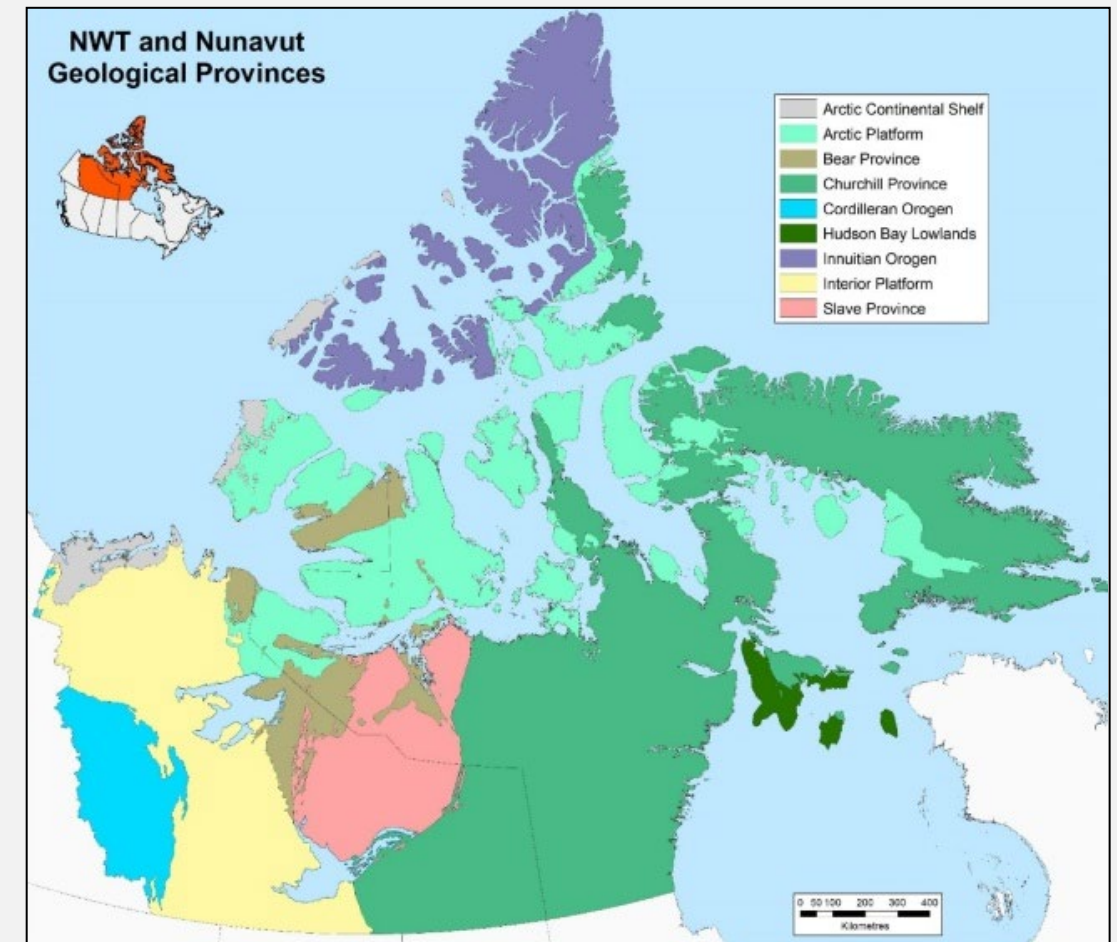


Could be advanced to the mining stage with improved:

- Market conditions
- Infrastructure
- Size threshold
- Gov't support

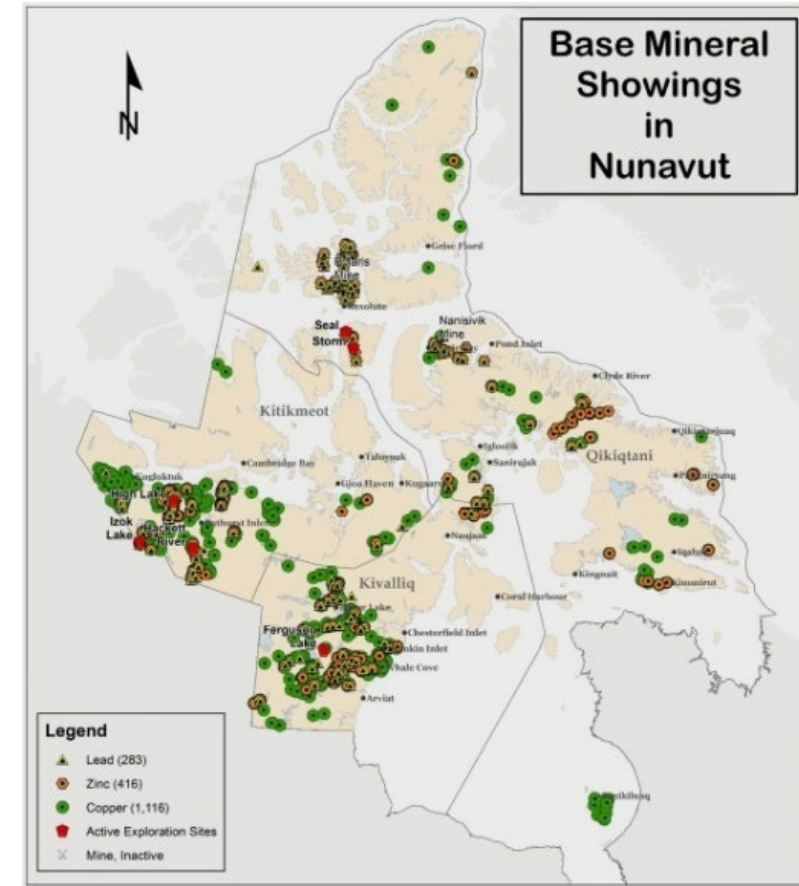
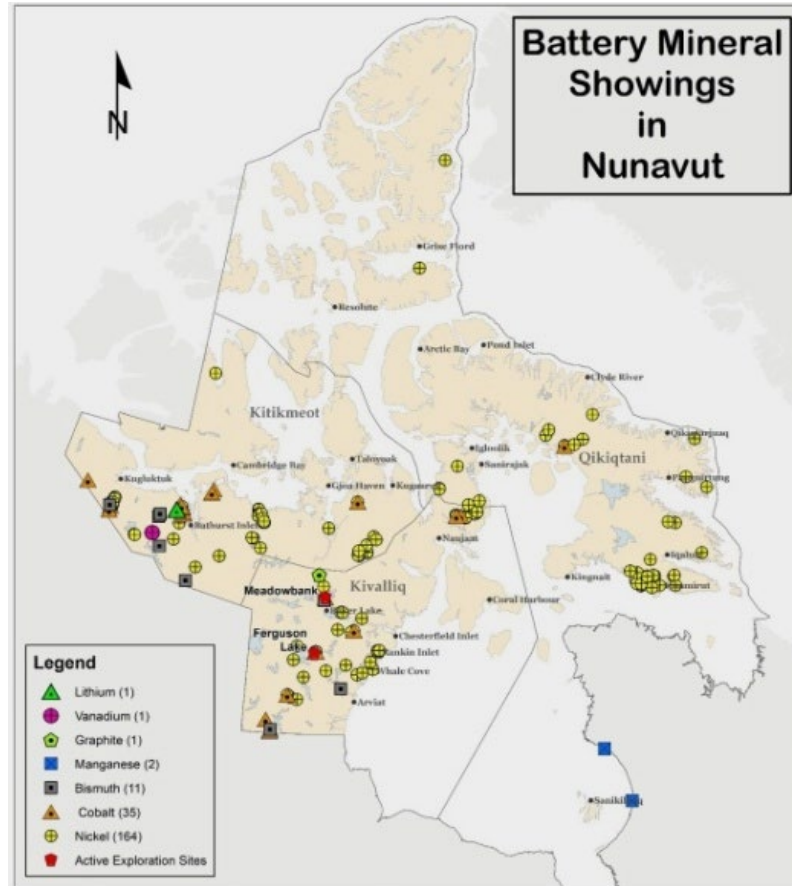
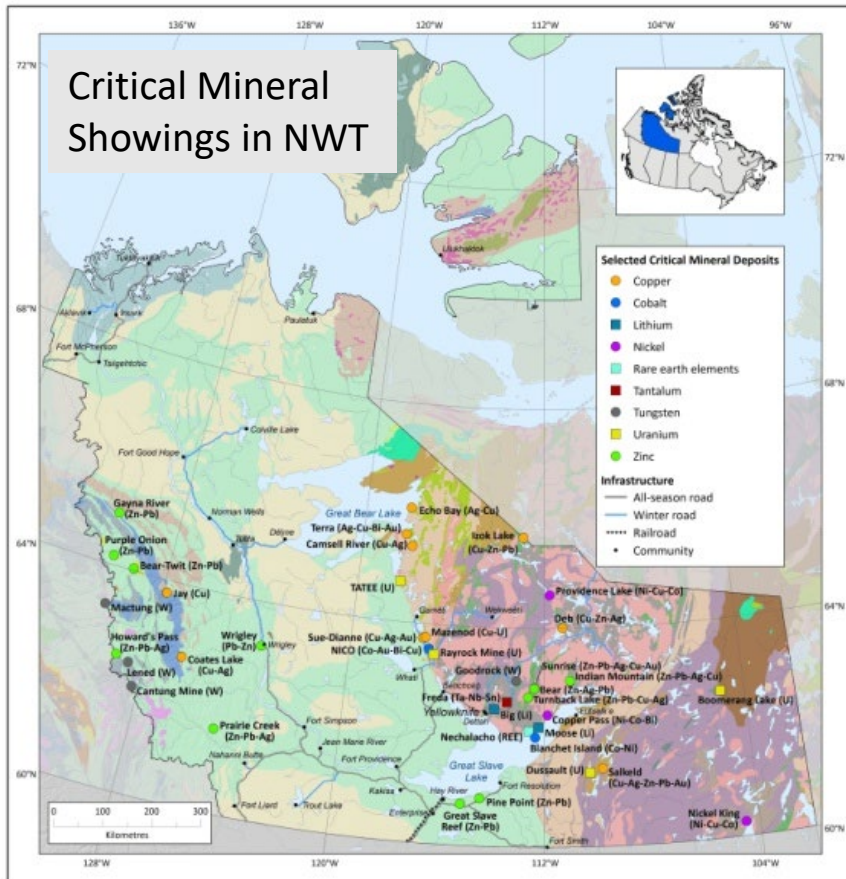
The North has Rich Mineral Potential

- The North is as large as Europe
- Great variety of geology and diverse mineralogy
 - Gold, silver, diamonds, lead, zinc, uranium, tungsten, rare earths, cobalt, bismuth, nickel, copper, iron, etc.
- Under-mapped & remote means under-explored
- Odds of rich discoveries are high
- Equals tremendous opportunity



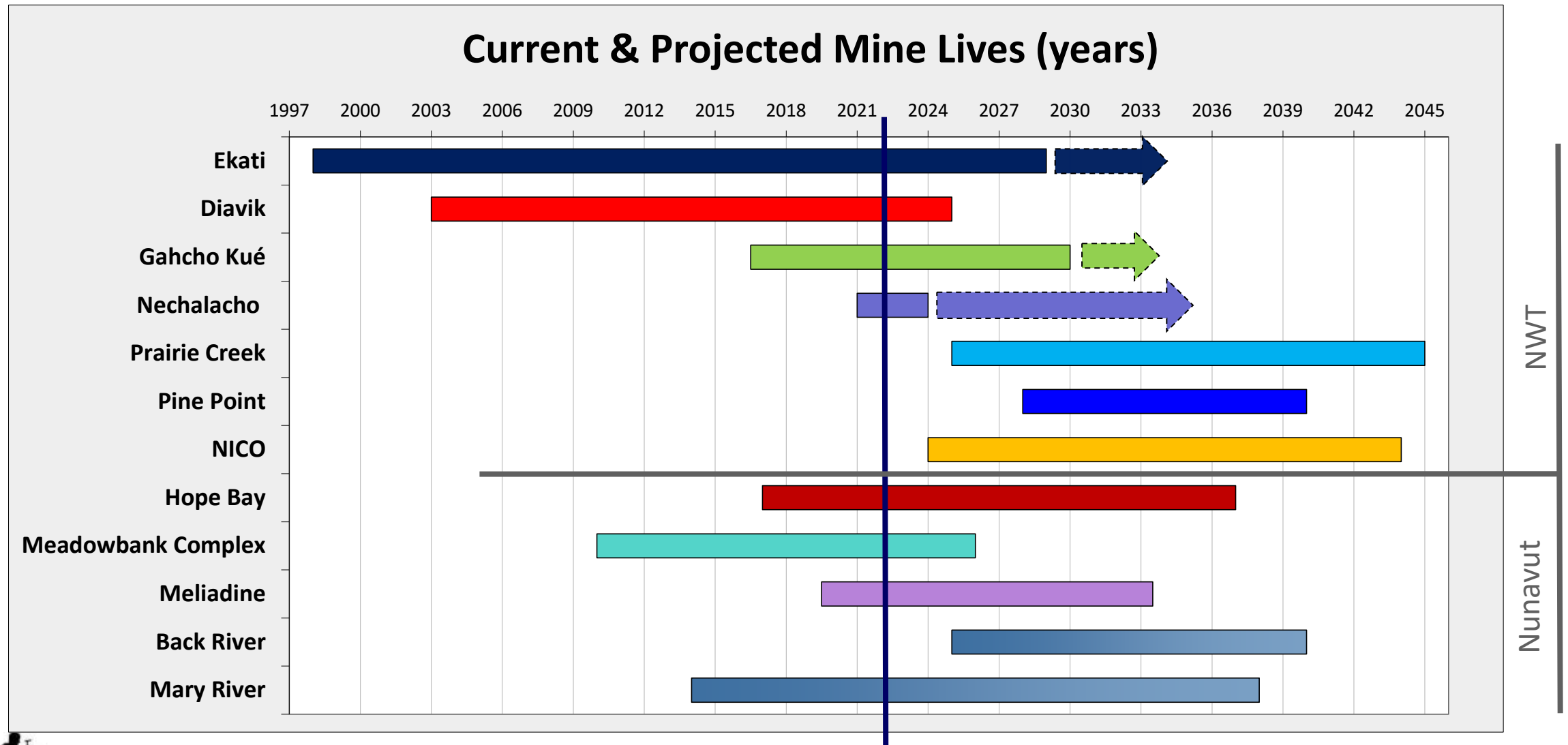
9 geological provinces with diverse mineralogy

Including many Critical Minerals



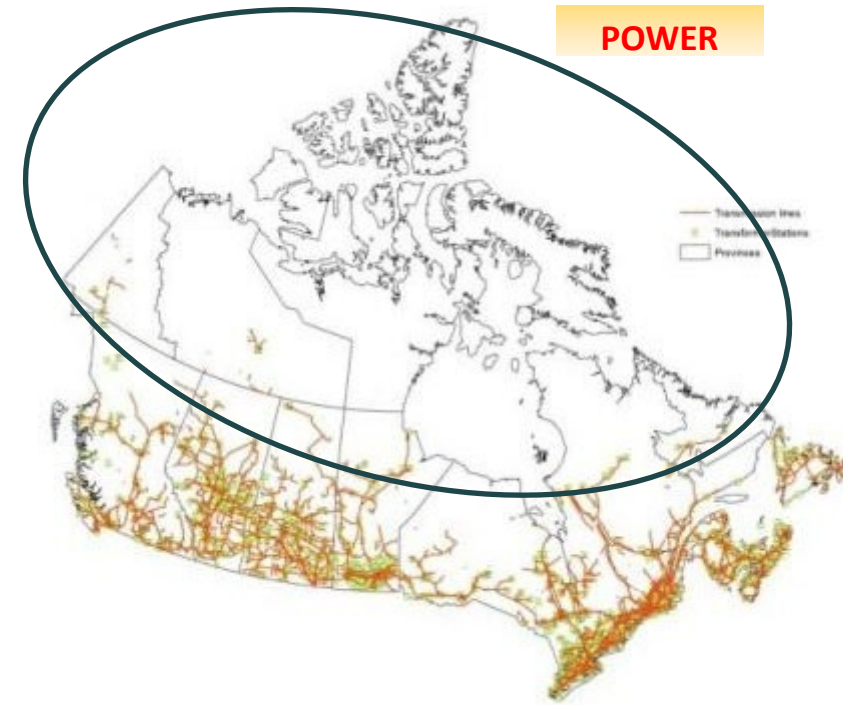
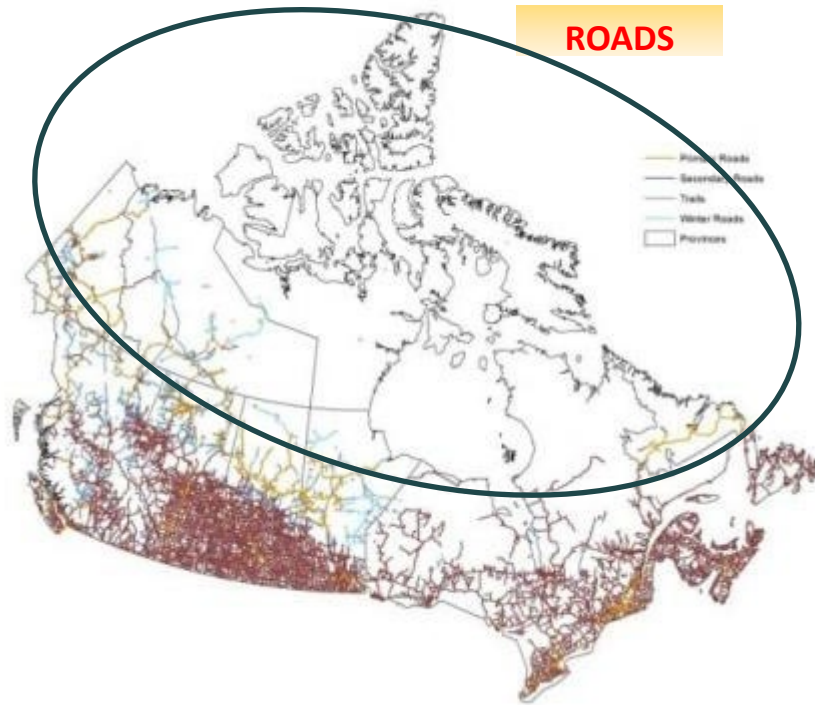
The north has known occurrences of over 23 of Canada's critical minerals

Mineral potential can carry mining well into future



- Exploration today is to find new mines 10-20 years from now, to replace or extend existing mines.

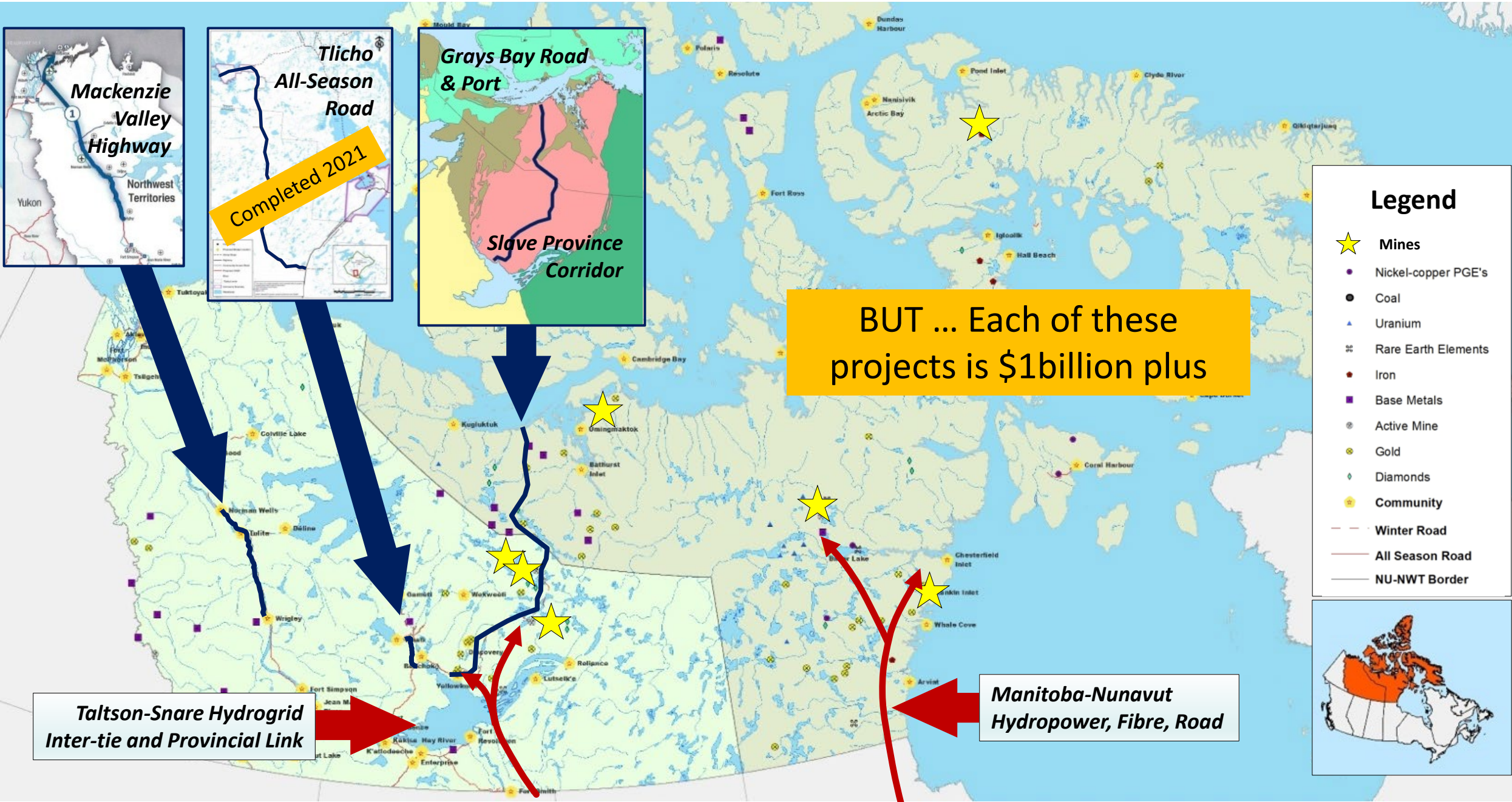
But ... our biggest handicap is our infrastructure deficit



- 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

Companies must provide their own power, roads, airports, ports, community services, etc.

Opportunities: New Infrastructure could help reduce costs, GHG's



Other potential infrastructure opportunities might help



Liquefied Natural Gas



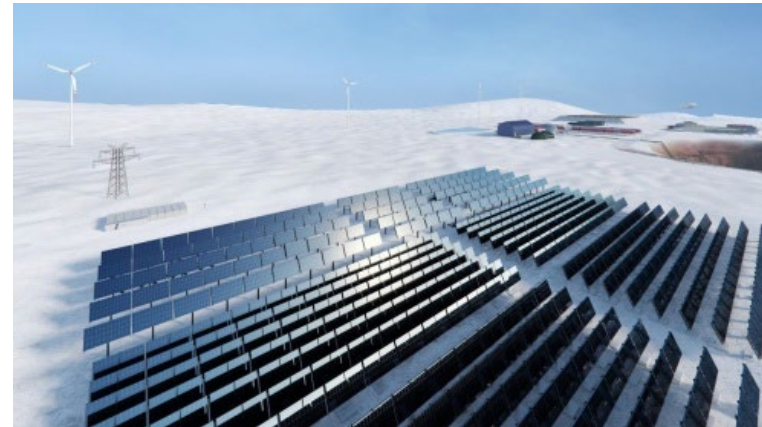
Hybrid Air Vehicles



Railways



Wind



Solar

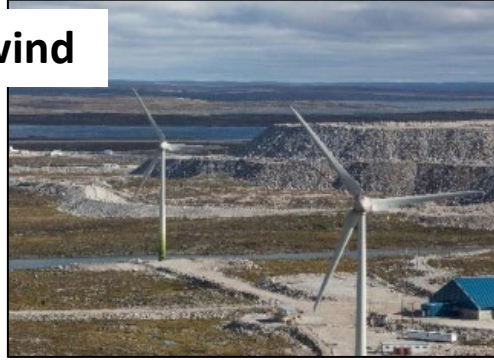
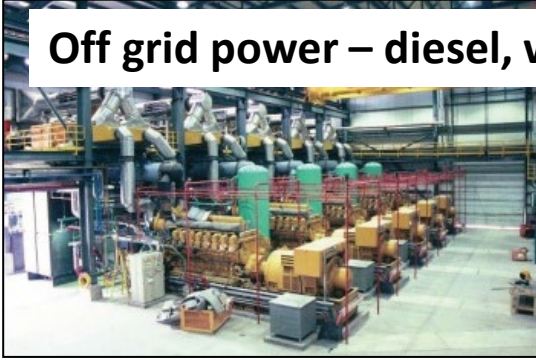


Small Modular Nuclear Reactors

- All bring new costs and technical challenges in the north

Currently industry carries the entire infrastructure burden

Off grid power – diesel, wind



- The North is a high-cost jurisdiction
- Today, mines are on their own to pay it all
- This adds risk, limits development

Roads – seasonal, all weather



Buy & Store Annual Inventories



Sea Ports and Air Ports



Room & board, medical



= \$!

This creates a thin margin for northern miners, eg: (note, these mine examples all occurred in the last 12 years)

- Meadowbank gold mine profitability – deposit quality, infrastructure costs
- Snap Lake diamond profitability & mine closure – deposit quality
- Jericho diamond mine closure and bankruptcy – deposit quality
- Ekati mine bankruptcy protection – maturing deposit quality, COVID market
- Mary River iron mine profitability – market risk, infrastructure deficit
- Hope Bay gold mine profitability – technology risk in Arctic

Partnerships and Drivers could help

- Partnerships can:
 - Spread / share risk / share costs
 - Reduce costs by converting capex to opex
 - Bring new expertise and technology
- Potential partners
 - Other private sector companies
 - Military and industry: share infrastructure and its costs
 - Governments (public and/or Indigenous) pay capex up front, lease back as opex, eg: AIDEA with Red Dog mine, Alaska
- Some partnership drivers
 - Sovereignty / Defense / Mutual economic benefits
 - Critical mineral demands
 - Climate change
 - Population growth, eg: approaching tsunami of 10,000 youth require jobs
 - Government policies and incentives



A parting thought on a partnership idea



- Nanisivik is a former critical mineral (zinc) mine in the high Arctic located at 73°N
- The decision to make it a naval facility was made years after the mine closed and community and other infrastructure removed.
- In future, perhaps industry and military can work together to better partner for mutual benefit.