



# CRITICAL MINERALS IN CANADA

## Securing North American and Global Supply Chains

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# THE GLOBAL ECONOMY IS INCREASINGLY DEPENDENT ON MINERAL INPUTS



Defence and Security Technologies



Consumer Electronics



Electric Vehicle Batteries



Critical Infrastructure



Renewable Energy Production and Storage





# LEADING ECONOMIES ARE TAKING ACTION TO SECURE CRITICAL MINERAL SUPPLIES



## UNITED STATES

The **US Critical Minerals Strategy** focuses on securing access to responsible and sustainable supplies of critical minerals to fuel the low carbon transition.



## EUROPEAN UNION

The **EU Raw Materials Strategy** focuses on securing access to responsible and sustainable critical minerals to fuel the low carbon transition.



## JAPAN & KOREA

Both nations are seeking to **minimize their import dependence** by **diversifying supply**. State-owned enterprises JOGMEC and KORES are aggressively seeking new global supplies.



## AUSTRALIA

Australia's **critical mineral strategy** focuses on promotes investment in processing, innovation incentives and infrastructure.



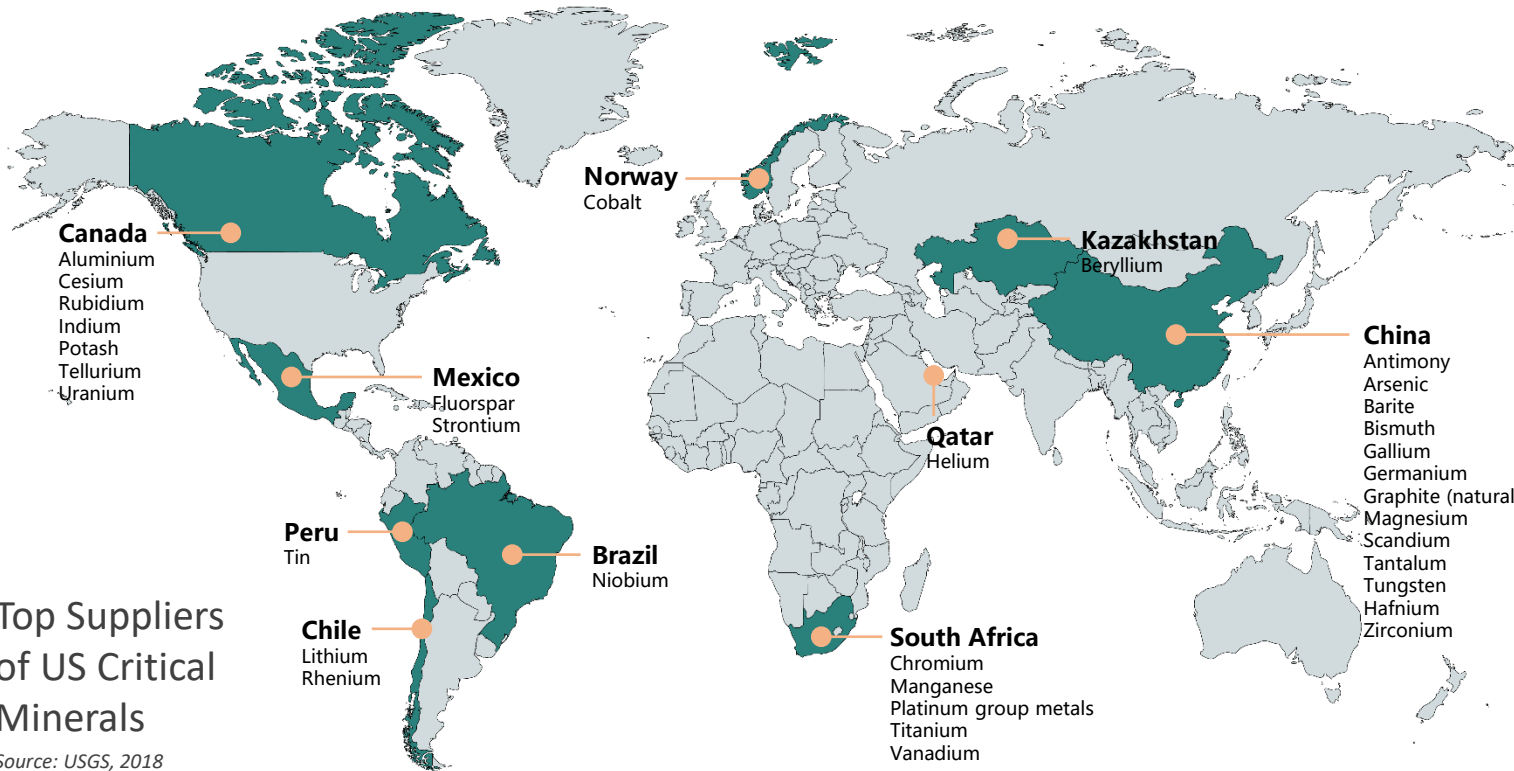
## CHINA

For decades, China has pursued a strategy to control global critical mineral production and processing. This strategy has led to China being the leading producer of minerals vital to the modern economy, including:

Lithium	59%
Graphite	70%
Cobalt	36%
Gallium	95%
Vanadium	56%
Rare Earth Elements	80%



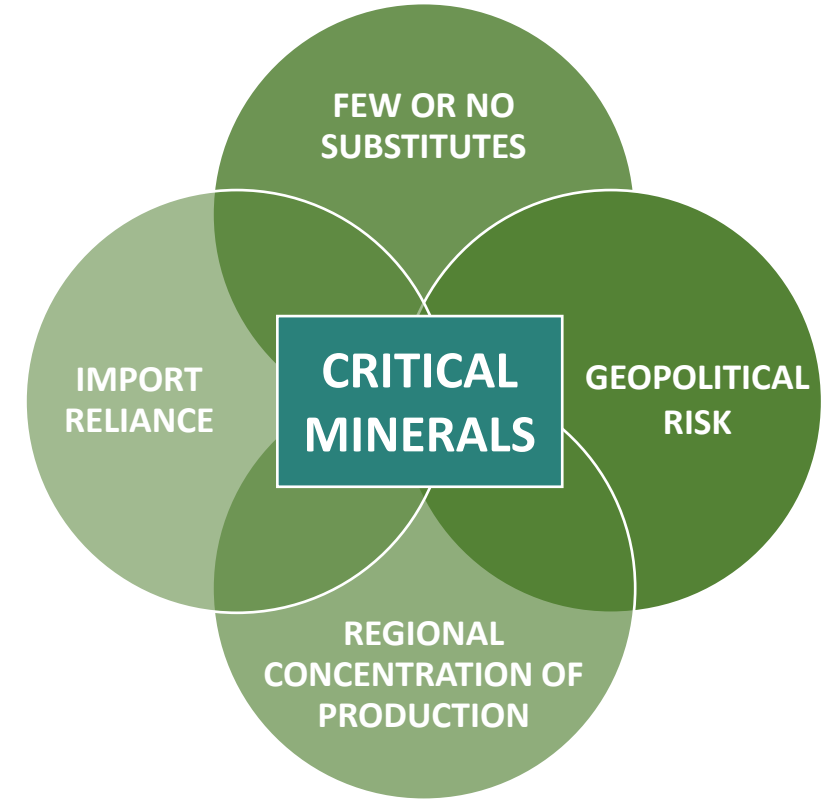
# CRITICAL MINERALS REPRESENT RISKS TO GLOBAL SUPPLY CHAINS



Top Suppliers of US Critical Minerals

Source: USGS, 2018

Created with mapchart.net

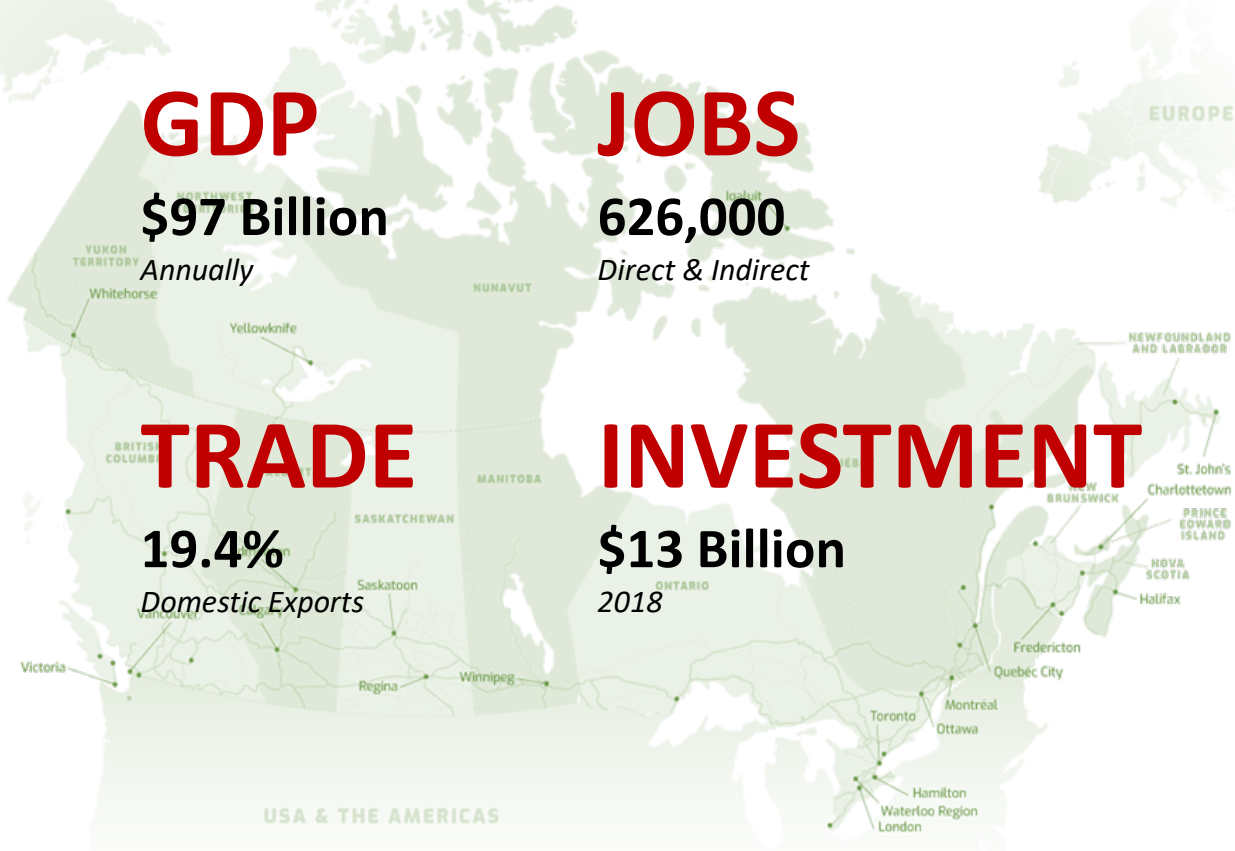


*There is no global definition of critical minerals. Critical minerals are country-specific and their 'criticality' can change based on supply and demand*

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# UNLOCKING CLEAN GROWTH AND INCLUSIVE PROSPERITY IN CANADA



## CANADA'S FIRST ALL ELECTRIC MINE

In 2018, the Government of Canada invested in Goldcorp's Canada Inc.'s Borden Mine to convert all diesel operated mobile equipment to battery electric vehicles, eliminating GhGs associated with the movement of ore and waste.

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# CANADA IS A SIGNIFICANT PRODUCER OF CRITICAL MINERALS WITH POTENTIAL FOR MANY OTHERS

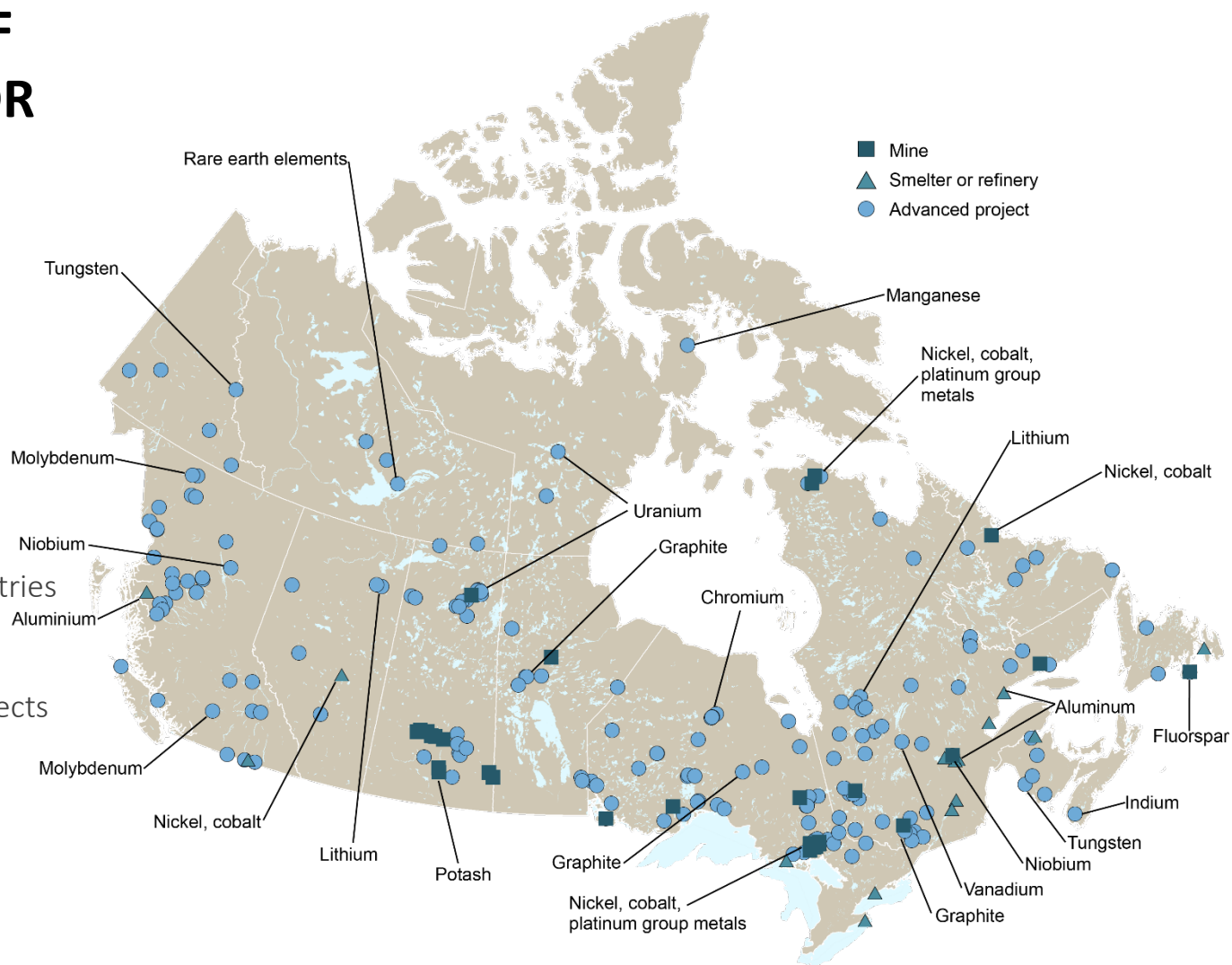


**\$72 BILLION IN INVESTMENT\*\*** is poised to transform Canada's mining sector



**108 MAJOR PROJECTS\*\*** have been announced or are under construction in Canada's mining sector

- ✓ Rare earths: 16 advanced projects and potentially 1 of the top 5 countries in the world
- ✓ Cobalt and nickel: world leading producer and 70 advanced stage projects
- ✓ Graphite: 4<sup>th</sup> in global production and 14 advanced stage projects
- ✓ Lithium: 17 advanced and near production stage projects
- ✓ Potash: World's leading supplier and largest reserves



Overview of critical mineral projects, 2019, NRCan

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# CANADA IS ONE OF THE MOST PREDICTABLE MINING MARKETS



## WELCOMING BUSINESS ENVIRONMENT

Canada is the second best country on the planet for economic freedom and investor protection, according to World Bank



## FINANCIAL STABILITY

Canada's banking system, ranked third by the World Economic Forum, is one of the soundest in the world. Canada is also the world's largest market for mining and exploration financing.



## MAJOR PROJECTS MANAGEMENT OFFICE

A federal office dedicated to facilitating the review of major natural resources projects



## PREDICTABLE PROJECT REVIEWS

Predictable and timely environmental impact and national security reviews



## Leading the World in Exploration

# #1

in non-ferrous mineral exploration

# 15%

of global exploration budgets spent in Canada

# 37%

of global exploration expenditures were by Canadian-based firms



# THE CANADIAN MINERALS AND METALS PLAN WILL ANCHOR OUR APPROACH TO CRITICAL MINERALS

The first Action Plan under the CMMP is scheduled to be released at Prospectors and Developers Association of Canada’s Annual Conference in March 2020

A vision for a stronger and more competitive mining sector, the Plan will provide a foundation for Canada’s critical minerals industry and help ensure good projects get built

Under the Plan, the Government of Canada is developing a **battery minerals strategy** to seize value added opportunities in the global supply chain and support the production of critical minerals for batteries

Among other priorities, the Plan envisions a modern and innovative industry that is supported by world-leading science and technology—across all phases of the mineral development cycle



[minescanada.ca](http://minescanada.ca)





# CANADA HAS WORLD-LEADING PUBLIC GEOSCIENCE AND CRITICAL MINERALS RESEARCH

## Rare Earth Elements R&D Program

\$16 million over 6 years (2015-2021) to develop metallurgical processes for these very complex ores, improve extraction efficiency, address Canadian regulations and improve understanding of Canadian deposits

## Chromite R&D Program

\$9 million over 6 years (2015-2021) to develop metallurgical processes and environmental knowledge to develop the Ring of Fire chromite deposits

## Mining Value from Waste

Current projects on critical metals include – tungsten tailings, REE and scandium from coal fly ash, cobalt and PGEs from pyrrhotite tailings, magnesium from asbestos tailings

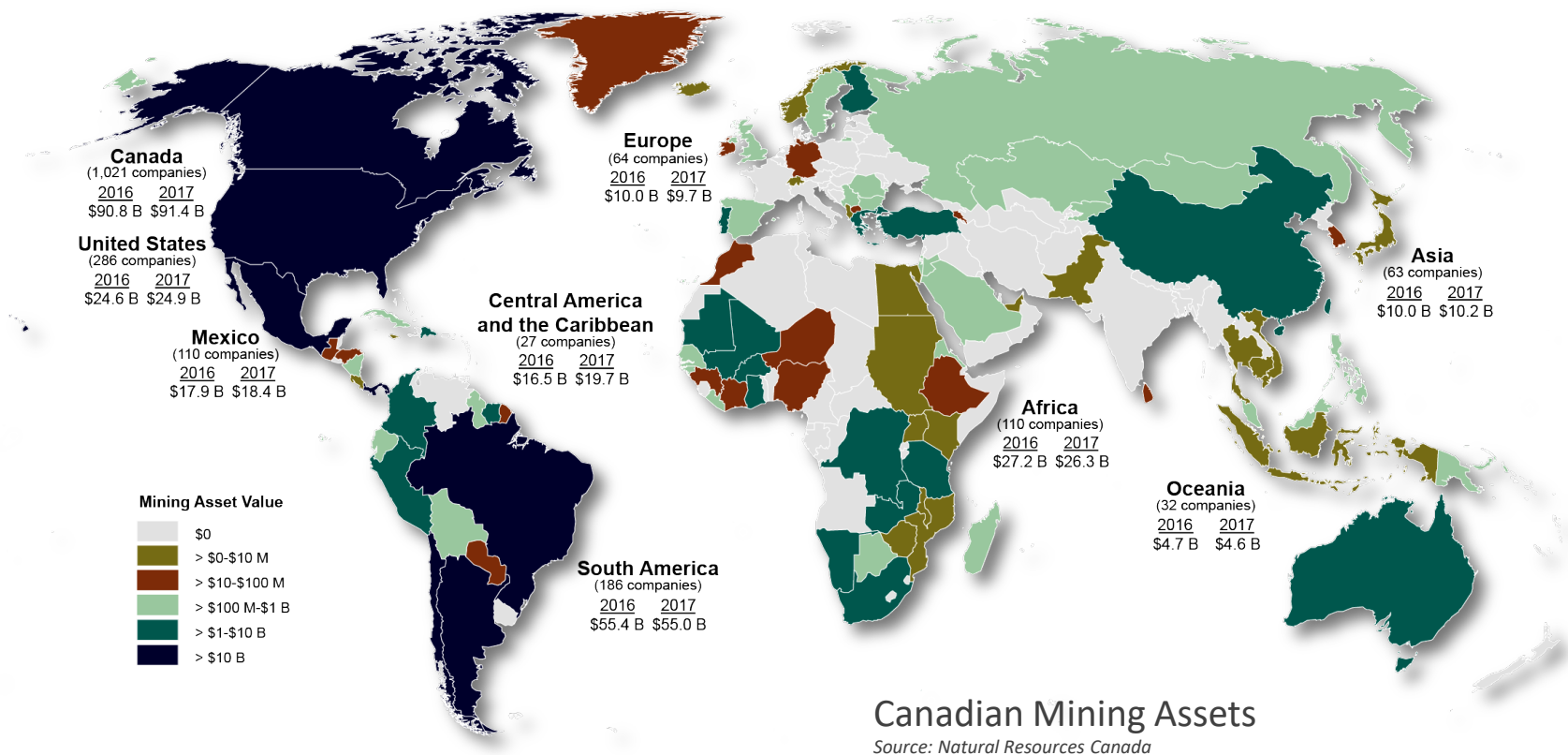
# Canada's Battery Research Ecosystem Will Help Accelerate North America's Industry



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# CANADIAN MINING COMPANIES ARE INTEGRAL TO THE GLOBAL SUPPLY OF MINERALS



## Canada is a Leader in Governance Capacity Building & Sustainable Development



**IGF**

INTERGOVERNMENTAL FORUM on Mining, Minerals, Metals and Sustainable Development



**CIRDI**

Canadian International Resources and Development Institute



Towards Sustainable Mining  
Vers le développement minier durable



**A Framework for Responsible Exploration**  
l'exploration minérale responsable



## CANADA AND THE UNITED STATES ARE DEVELOPING A JOINT ACTION PLAN ON CRITICAL MINERALS COLLABORATION

On June 20, 2019, Prime Minister Trudeau and President Trump announced their intent to develop a Joint Action Plan on Critical Minerals Collaboration

A Joint Action Plan will complement the US Federal Critical Minerals Strategy and the Canadian Minerals and Metals Plan

Possible areas of collaboration include:

- Increased R&D and information sharing
- Enhanced critical minerals supply chains
- Stronger defense industrial base
- Enhanced international trade and cooperation



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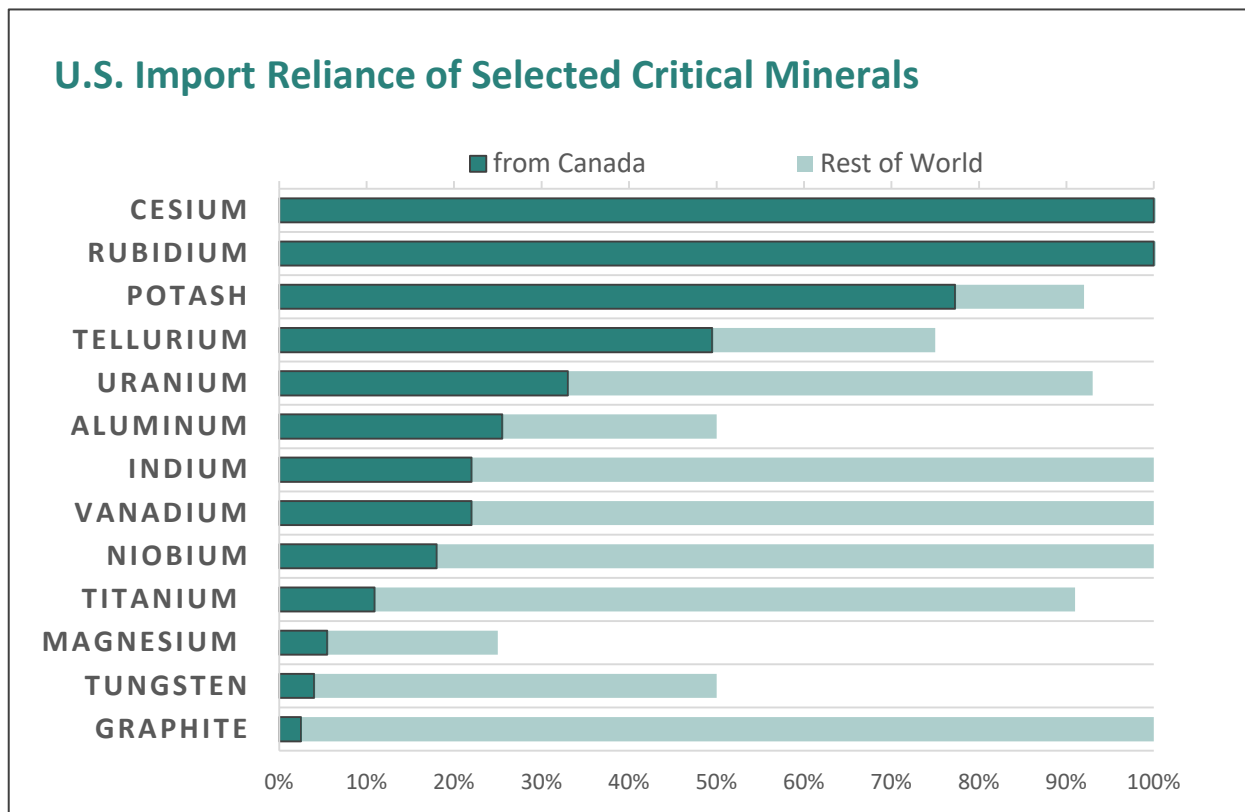
# CANADA AND THE UNITED STATES ARE LONG-STANDING CRITICAL MINERALS PARTNERS

Canada is a leading supplier for 13 of the 35 US critical minerals

52% of Canada’s minerals and metals exports are to the US with 47.5% of imports coming from the US

Canada is part of the US National Technology and Industrial Base (NTIB), reflecting long standing defence and economic alliances

286 Canadian mining companies hold assets in the US valued at US\$24.9 billion, accounting for 15% of Canada’s mining assets abroad



Canada 