



Geological Survey of Canada (GSC) Strategic Overview 2023-2028

October 2023



Natural Resources
Canada

Ressources naturelles
Canada

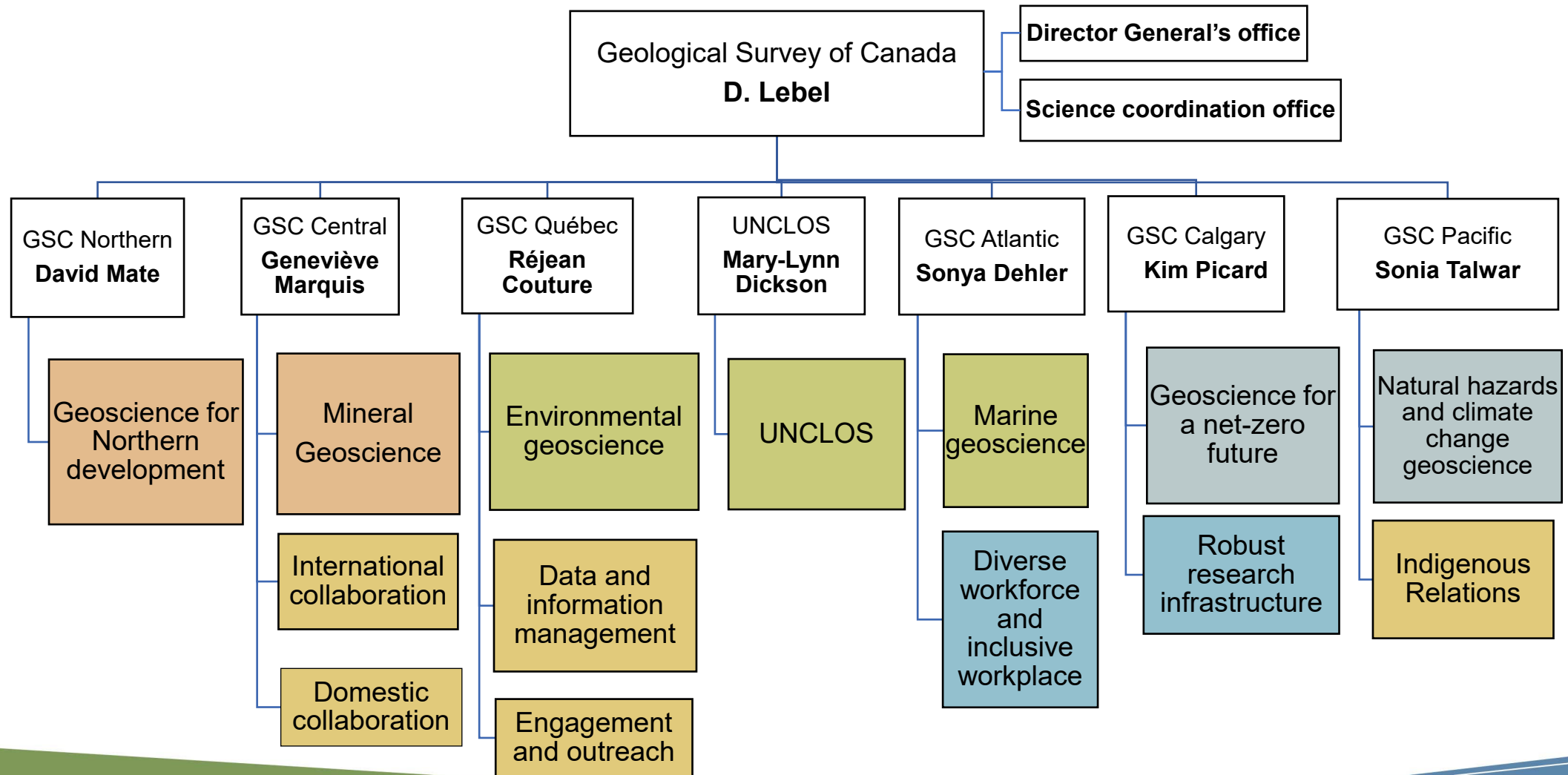
Canada

Outline

- The new GSC 2023-2028 Strategic Plan
 - GSC Meeting Canada's science and policy needs: New strategic **science** and **operational** priorities
 - Shaping the future through public geoscience and collaboration
- Strategic Science Priorities (SSP)
 1. Geoscience for Mineral and Northern Development
 2. Geoscience for Land Management
 3. Geoscience for Climate and Disaster Resilience



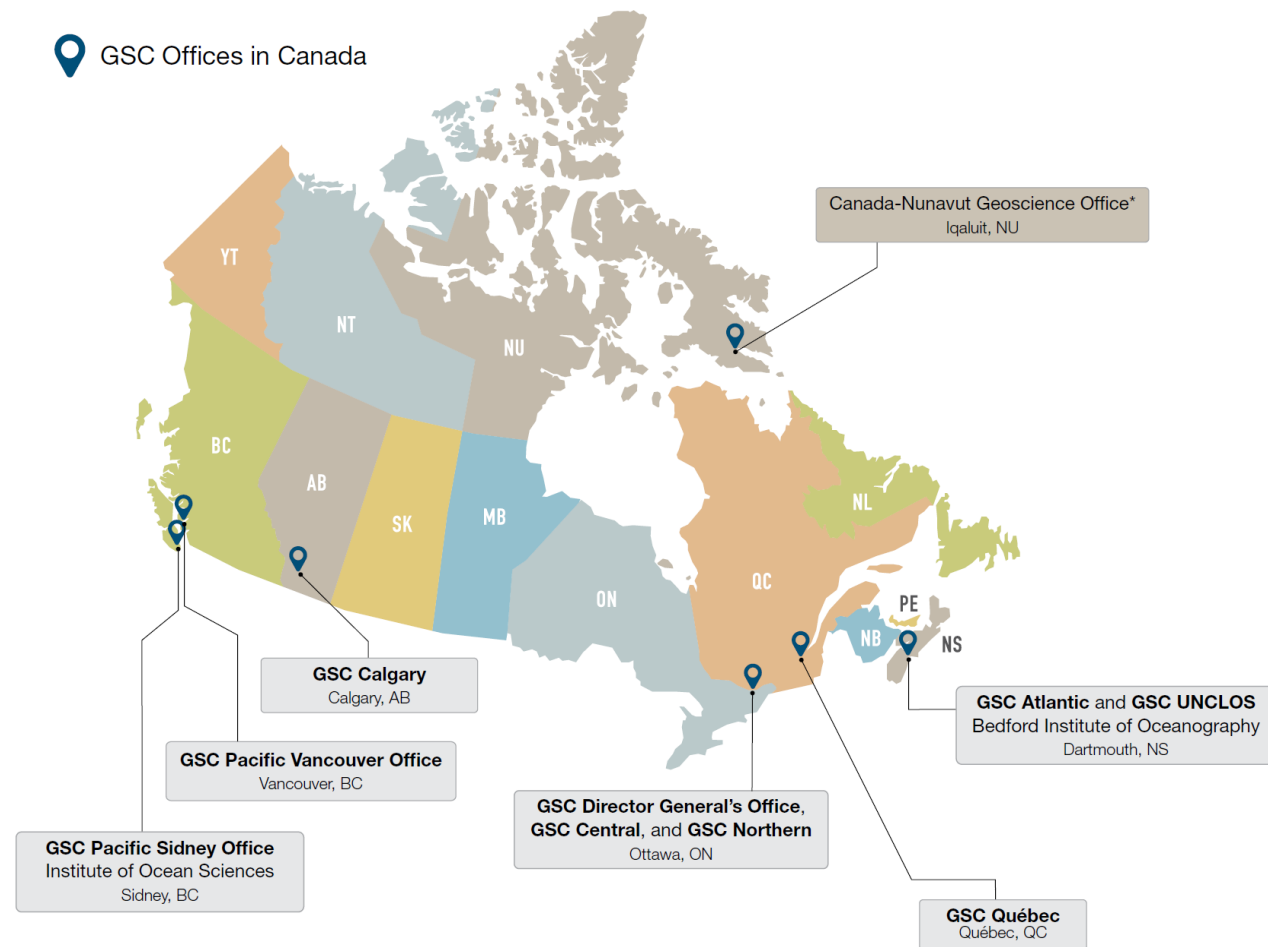
GSC Organizational Chart



Geological Survey of Canada (GSC) produces public geoscience to inform **policy**, manage the country's **landmass**, and develop **natural resources** responsibly



GSC Offices in Canada



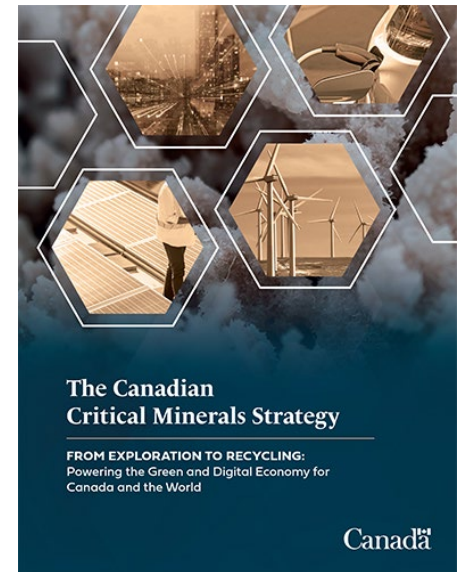
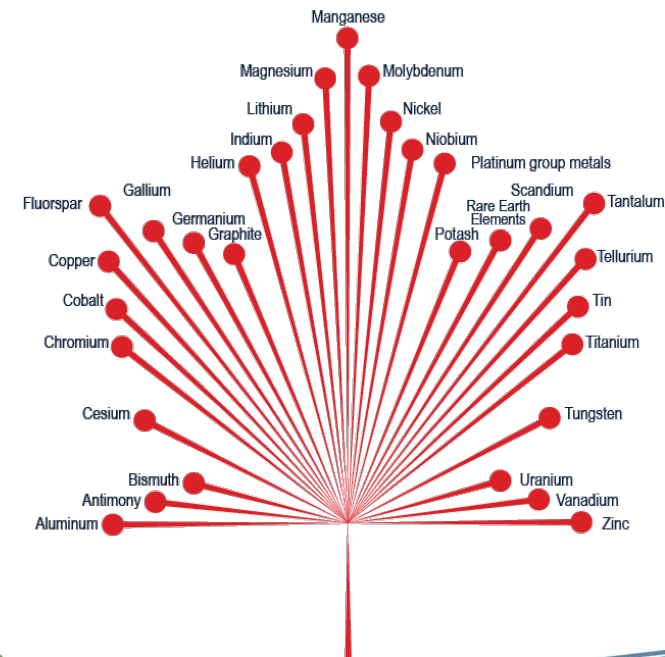
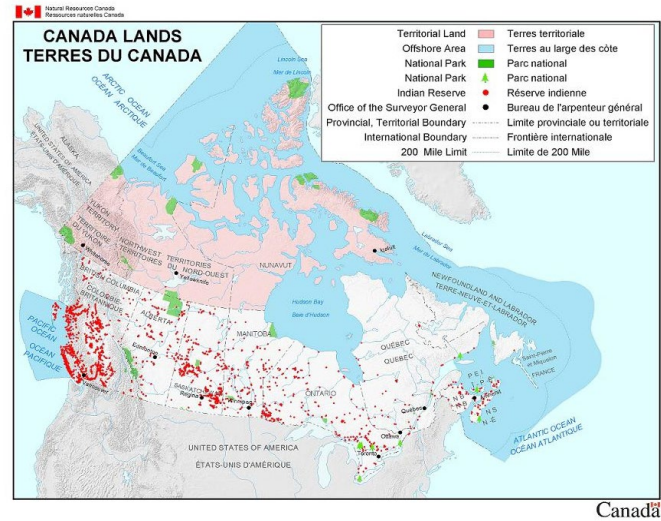
Natural Resources
Canada

Ressources naturelles
Canada

Canada

Shaping the Future: Public geoscience

- Canada's geology, geography and people continue to shape the culture and socio-economic fate of Canada
- Extensive landmass and offshore regions
- Diverse land regime including extensive indigenous land claims and rights
- High potential for **minerals and energy resources**
 - In top global producer of potash, uranium, nickel
 - In important energy transition to renewable and clean energy
 - **Want to support world transition to clean energy and net-zero GHG by 2050**





SSP 1.1 Mineral Geoscience

**GSC's Mineral Geoscience Program is funded through two major federal initiatives:
The Targeted Geoscience Initiative and the Critical Minerals Geoscience and Data Initiative**

Targeted Geoscience Initiative (On-going)

Targeted Geoscience Initiative

Ore Systems Project

Digital Geoscience and Method
Development Project

Activities:

Hydrothermal Ore Systems

Magmatic Ore Systems

Orogenic Ore Systems

Activities:

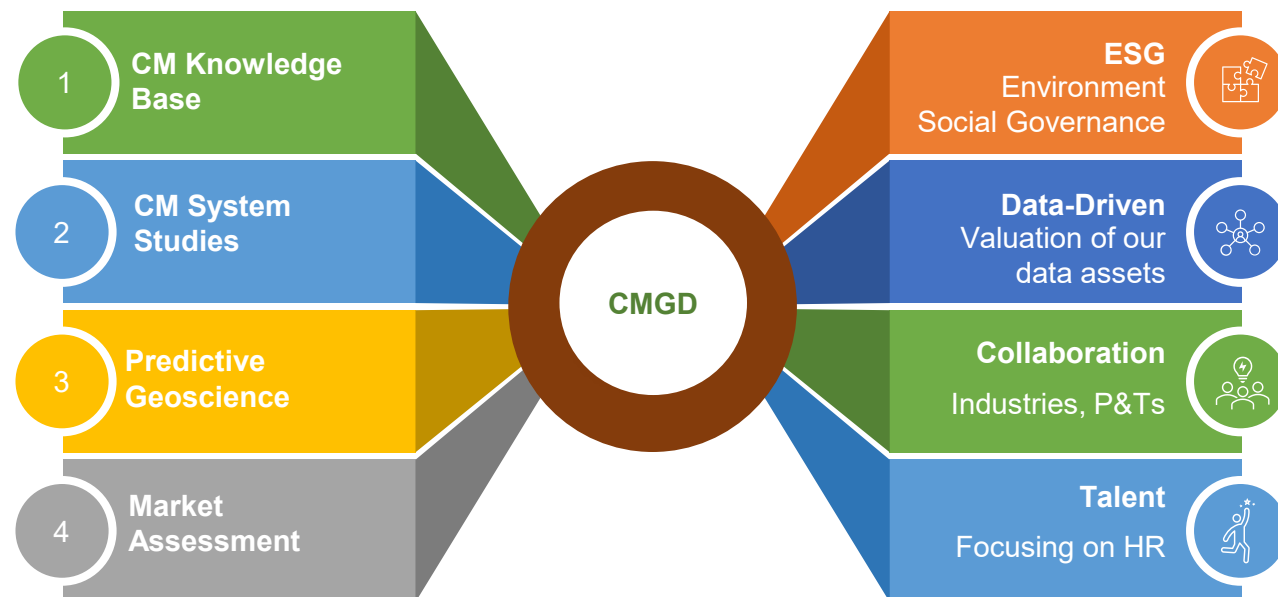
AI and 3D Earth Modelling*

Method Development*

Spatial Data Infrastructure

Critical Minerals Geoscience and Data Initiative - CMGD (2022-2027)

Four solutions

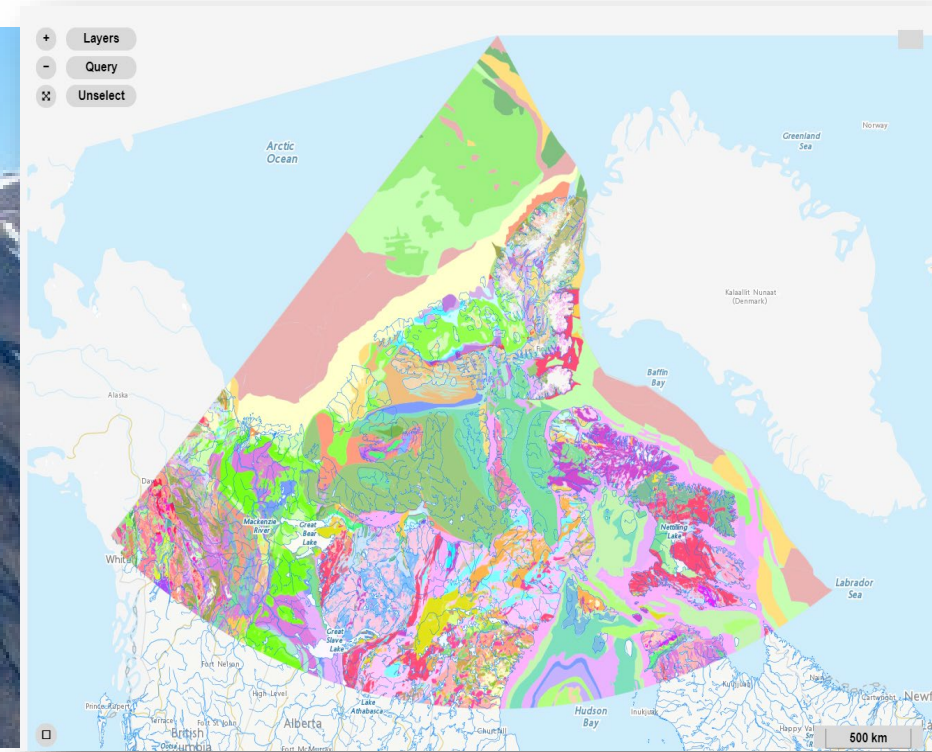




Geoscience for mineral and Northern development

SSP 1.2 Geoscience for Northern Development

7



GSC is now in phase 3 of the Geo-mapping for Energy and Minerals Program for the North (GEM-GeoNorth) with major new geoscience activities and community engagement



Natural Resources
Canada

Ressources naturelles
Canada

Canada



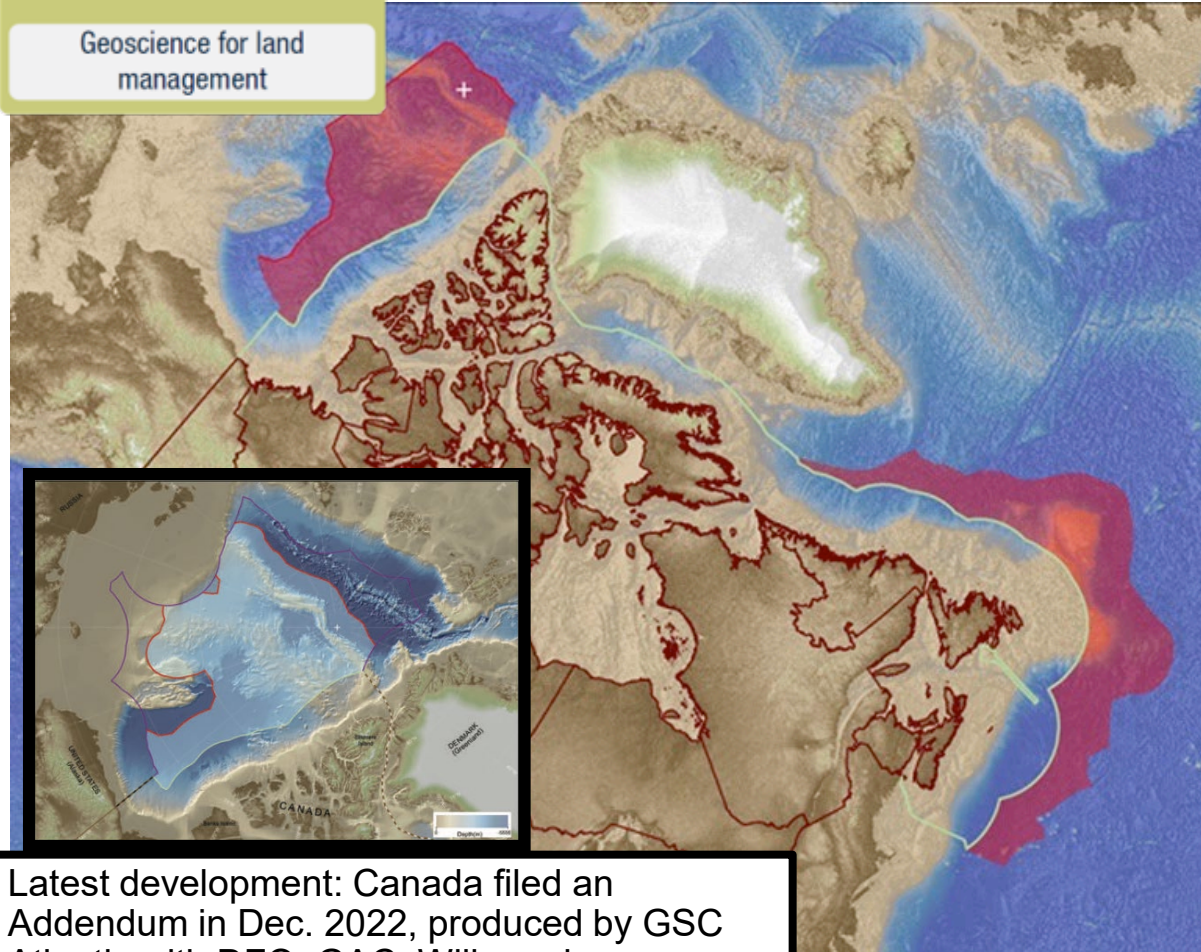
SSP 2.1 Geoscience to delineate Canada's continental shelf

Canada's United Nations Convention on the Law of the Sea (UNCLOS)

The UNCLOS Program received its first Cabinet mandate in 2003 and is a shared responsibility of:

- Global Affairs Canada (GAC) – legal/diplomatic aspects
- Natural Resources Canada (NRCan) – geoscience, survey planning/coordination
- Department of Fisheries and Oceans (DFO) – bathymetry, survey planning

Two submissions have been filed with the UN Commission on the Limits of the Continental Shelf: Atlantic (2013) and Arctic (2019).



Latest development: Canada filed an Addendum in Dec. 2022, produced by GSC Atlantic with DFO, GAC. Will require an updated submission for the Arctic





SSP 2.2 Environmental Geoscience

GSC will be starting in 2024 a new Land Planning Geoscience Program with funding through a major federal initiative:

- Impact assessments
- Cumulative Effects and Strategic Environmental Reviews
- Support the development of new terrestrial conservation and geodiversity areas (including Geoparks).
- Will work closely to support ESG goals for the CMGD initiative
- Will regroup the former GSC Environmental geoscience and Groundwater geoscience programs and aim for new goals to be defined in 2023
- Also supports the multidepartmental Impact Assessment and Regulatory Processes Initiative

Goal to deliver geoscience to support evidence-based decisions on land use, major development project, impact on communities.

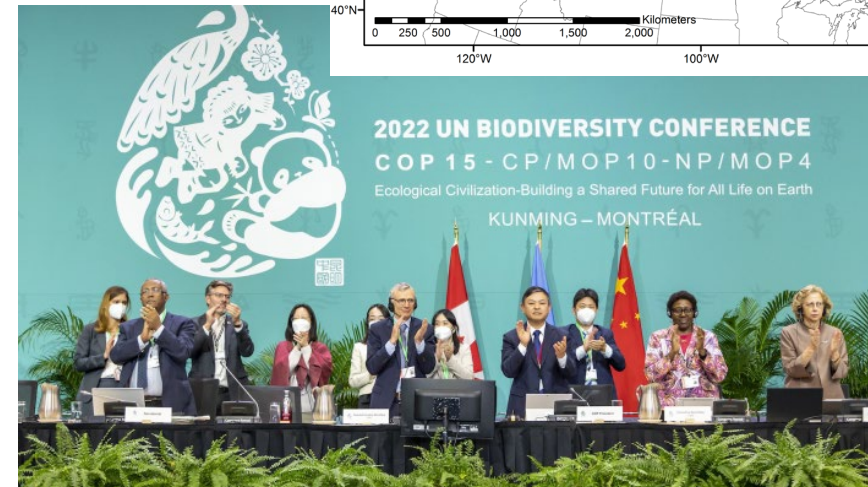
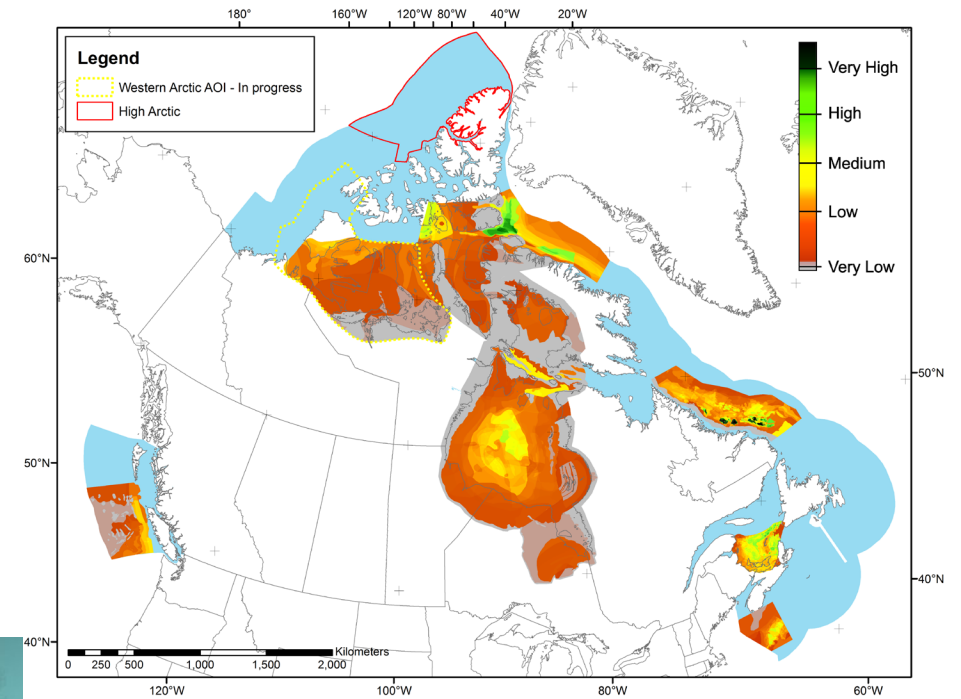




SSP 2.3 Marine Geoscience

In 2024, GSC's Marine geoscience program will be contributing to global marine biodiversity conservation and marine planning

- Will group the Marine Conservation Targets Initiative and work previously conducted under Marine Geoscience for Marine Spatial Planning
- Also supports the multidepartmental Impact Assessment and Regulatory Processes Initiative
- **National need:** Canada committed to conserve 10% of marine and coastal lands by 2020, and 25% by 2025. New goal announced at Montreal COP 15 (Dec. 2023) to reach 30% by 2030, onshore and offshore.
- **GSC action: We provide information to support decisions:**
 - Detailed assessments of potential for mineral and energy resources
 - “Heat maps” that translate these complex reports into visual representations
- **Outcomes: Biodiversity protected for future generations using Evidence-based decisions and stakeholder buy-in.**





SSP 3.1 Natural Hazards and Climate Change Geoscience

- Will bring together the former GSC Public Safety Geoscience and Climate Change Geoscience into a new Program to supply communities and decision makers with key information to reduce risks and increase societal resilience.
- Program multi-funded and aligned with federal needs for the Emergency Management Strategy, National Adaptation Strategy, response to UN Disaster Risk Reduction initiative, UN SD Goals, UNFCCC

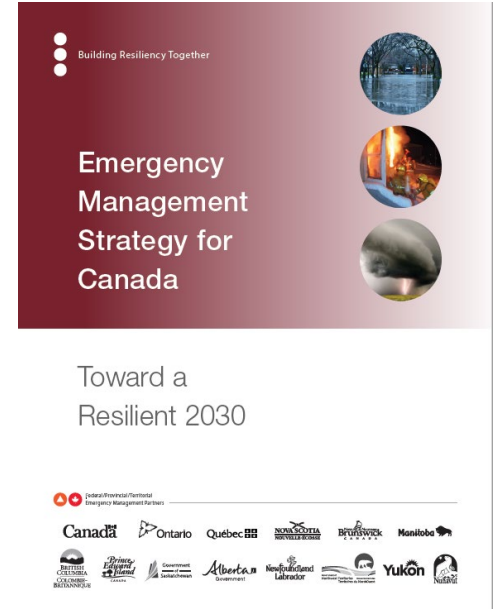
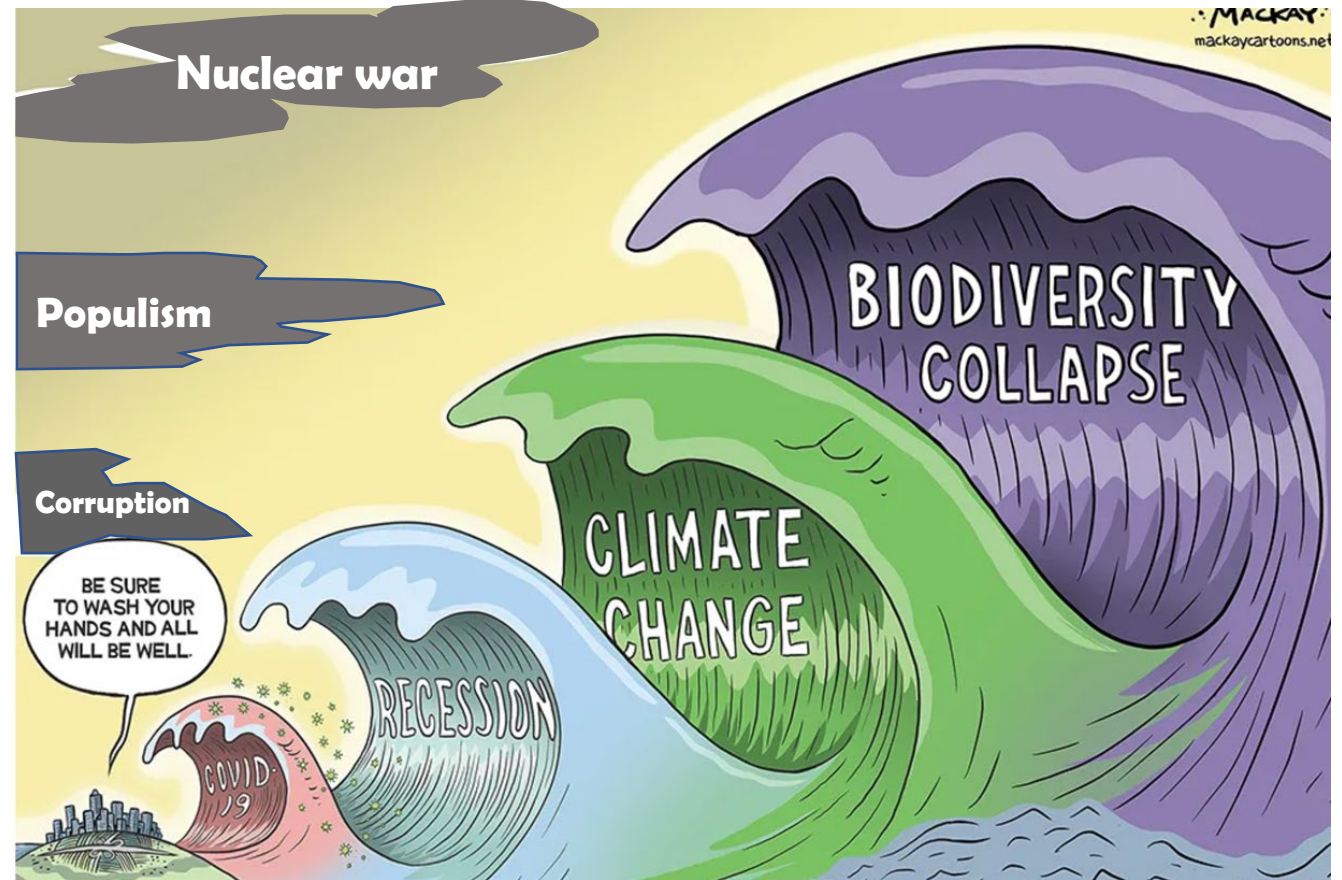


Figure 1. The five National Adaptation Strategy systems.



Shaping the Future: Geoscience collaboration is more important than ever in the face of mounting global risks and challenges

- We are living in the era of “The Long Emergency”: risks have turned into cumulative waves of crises. Dormant risks are hovering again over our heads.
- The world is turning to their governments to seek direction, relief and action.
- Mineral and energy resources, natural hazards, human impacts on atmosphere and oceans cross national boundaries.
- How can geoscience help, provide hope and relief through knowledge and orientation of action?



Adapted from Mackay 2020



Natural Resources
Canada

Ressources naturelles
Canada

Canada



SSP 3.2 Geoscience for a Net-Zero Future

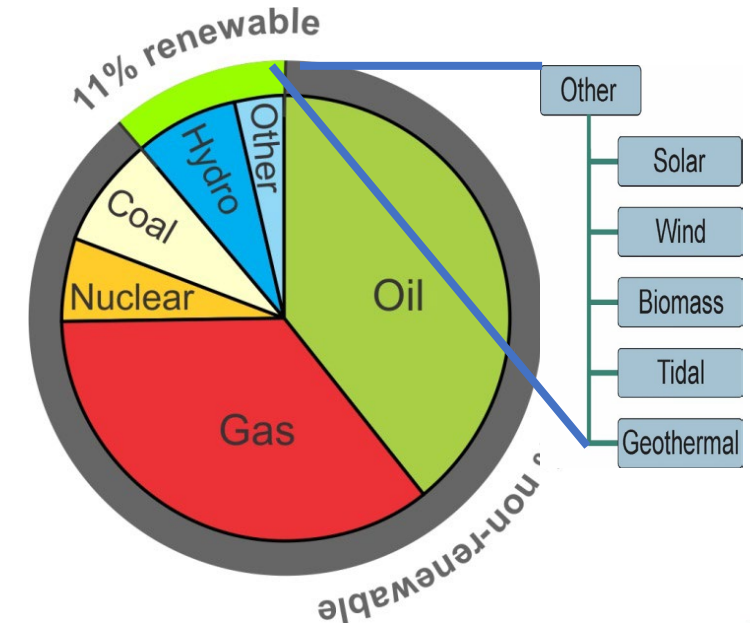
Goal: Supporting transition to a low carbon economy to reduce climate change impact

- Will bring together the former GSC Geoscience for New Energy Program with Carbon Sequestration R&D into a new Program to progress on the use of geothermal energy and reduction of carbon to support Canada's goal to reach Netzero target by 2050.
- Program multi-funded and aligned with federal needs for Energy R&D, UN SD Goals, UNFCCC, bi-national trade and cooperation agreement.
- Complementary to Critical Mineral Strategy

Carbon Capture Use and Storage Research (CCUS)



Net-Zero Emissions by 2050



Canada contributes through the:

- @GSC_CGC

- @WCOGS1



Questions?

Contact info:

Geneviève Marquis

Executive Director, Central Division

Geological Survey of Canada

Genevieve.Marquis@nrcan-rncan.gc.ca



Natural Resources
Canada

Ressources naturelles
Canada

Canada

Canada

© His Majesty the King in Right of Canada, as represented by the Minister of Natural Resources, 2023



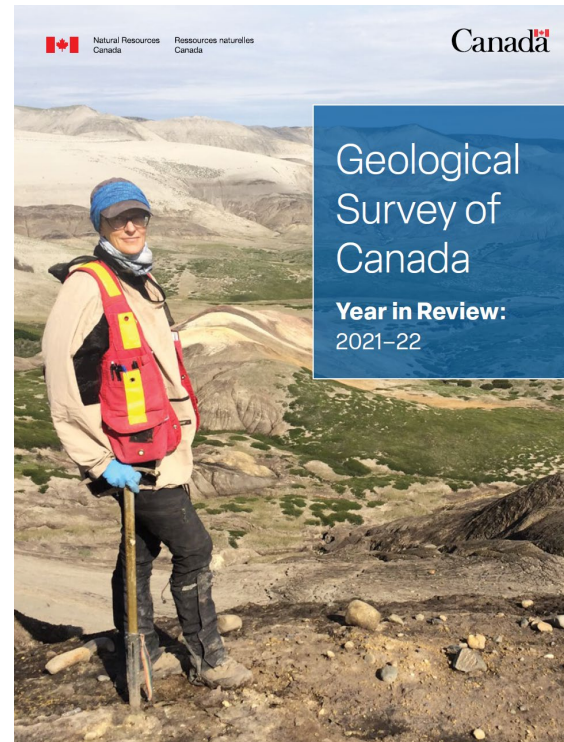
Natural Resources
Canada

Ressources naturelles
Canada

Canada

Strategic Plan publication is expected online in November. In the meantime, review the latest annual report and check out our other online resources!

- www.nrcan.gc.ca/geoscience
- www.rncan.gc.ca/geosciences



Natural Resources
Canada

Ressources naturelles
Canada

Canada