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Groundwater Geoscience Program

Federal research context…looking forward

Yves Michaud, Program Manager, GSC-Québec

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NATURAL RESOURCES CANADA - INVENTIVE BY NATURE

Role of Science in the GoC: *Science for Policy*

A. Scientific research applied to the government's priorities:

- Artificial Intelligence, Arctic, Clean Growth and Climate Change, Research Infrastructure, Health and Safety, etc.
- Supporting the legislative and regulatory roles

B. Diversified research in order to respondent to current issues:

- Public good: convergence of expertise and multidisciplinary scientific responses

C. Science diplomacy:

- Diplomacy ***for*** science / Science ***for*** diplomacy / Science ***in*** diplomacy

Linking Science with Policy…

Three types of documents to consider…

- Core mandate documents (long term)
  - *Resources and Technical Surveys Act, Natural Resources Act and Water Act*
- Current stream Policy documents (short to medium term)
  - Speach from the Throne, Budget, Minister's letter, Party's platform… Strategic plans and Strategic framework, HTT
- Think tank documents (short to long term…but mostly Gaps)
  - Senate committees, CCA, CCME, NRTEE, Munk School of Global Affairs, IJC, IPCC, OECD, etc.

Science Shifts for the “Public Good"

- ***What’s in it for Canadians? Align scientific programming with socio-economic benefits***
- ***What’s the public policy angle? Understand how science supports (and its mechanisms)***
- ***Who cares? Contribute to building a stronger culture of science for Canadians***

Key Questions to Guide your Discussion

- *What science have we yet to consider?*
- *How can we ensure strong science advice (science and policy integration)?*
- *How can we use science programming to further informed decision-making?*
- *Who are the important players?*
- *How can we increase uptake of open science data and information?*

Taking stock of the last 20 years of the program

Program's goal

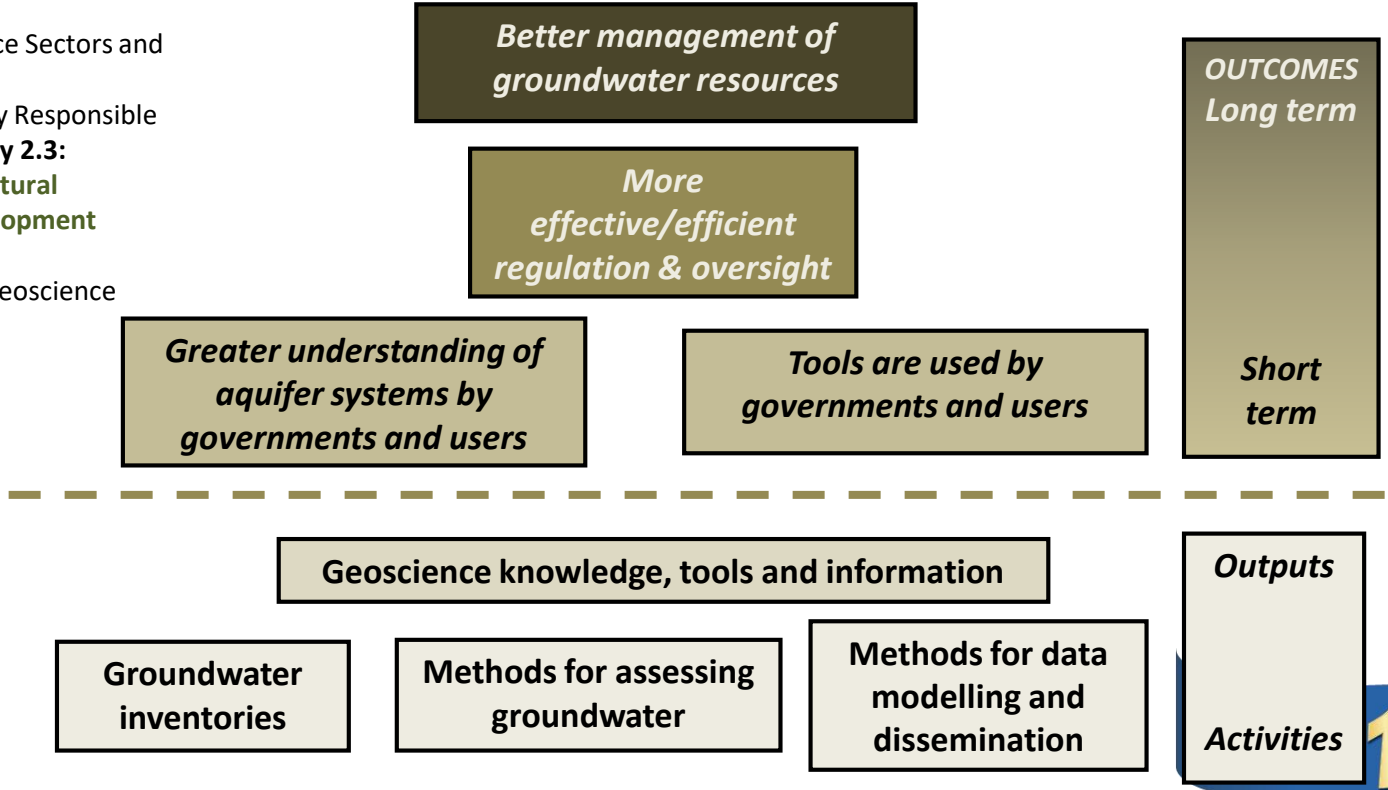
- The Groundwater Geoscience Program conducts GW mapping and assessment activities of key Canadian aquifers and makes data available through the Groundwater Information Network (GIN) in order to provide baseline information and scientific knowledge on GW resources for water management and protection.

…then, it was rephrased in 2013 in the GSC Strategic plan in:

- Understanding the dynamics of archetypical Canadian aquifers and developing methods to assess them.
- Acquire, manage and disseminate all geoscience data by using internationally accepted, web-enabled methods and standards for quality, authority, timeliness and accessibility.

GROUNDWATER GEOSCIENCE PROGRAM Logic Model 2014-2019

PAA 2014-15
Departmental Strategic Outcome 2:
Natural Resource Sectors and Consumers are Environmentally Responsible
Program activity 2.3:
Responsible Natural Resource Development
Program 2.3.2
Groundwater Geoscience



Roles & Responsibilities for Groundwater Resources
Federal Role

- Under the ***Resources and Technical Surveys Act*** 3(c), "the Minister shall (c) make a full and scientific examination and survey of the geological structure and mineralogy of Canada", including the *geological structures which are host to groundwater, known as "aquifers".*

- Under the ***Canada Water Act***, the federal government has co-management responsibilities with the provinces for waters where there is a "significant national interest in the water resource management", meaning:
  - *boundary waters, and trans-boundary aquifers*;
  - *standardization of approaches to data collection, analysis, and dissemination*; and
  - *mutually agreed F/PT co-management arrangements, using standardized approaches.*

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GoC POLICY CONTEXT -Groundwater Geoscience

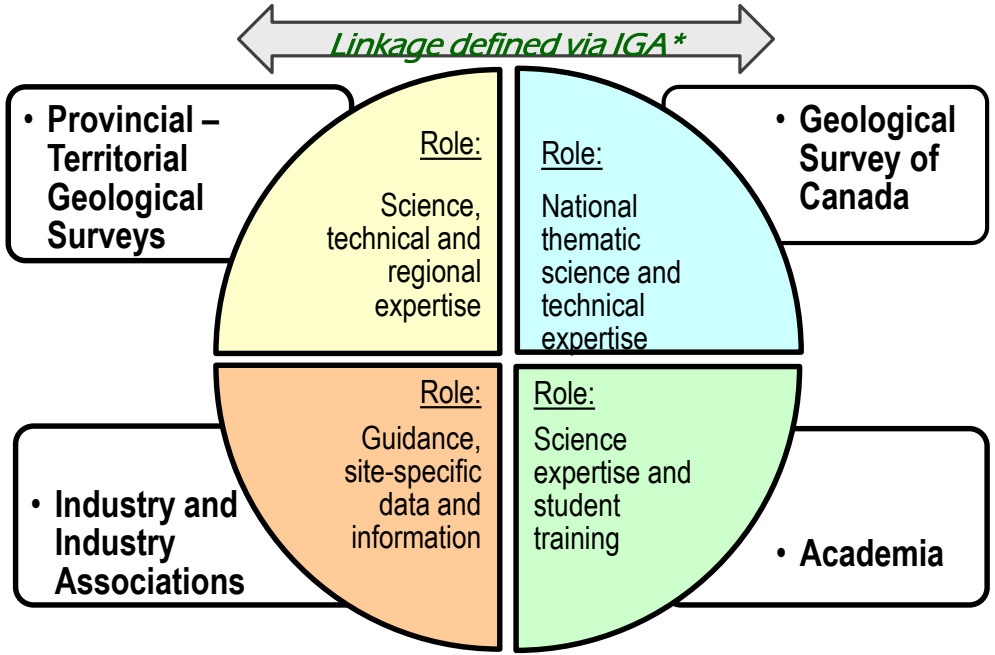
NRCan Minister mandate letter

- **Work with the Minister of Environment and Climate Change**…
  - ensure that ***decisions are based on science***, **facts, and evidence**, and *serve the public's interest*;

ECCC Minister mandate letter

- **Work with the Minister of Natural Resources**…
  - *Treat **our freshwater as a precious resource** that deserves **protection** … using education, **geo-mapping, watershed protection**, …*
  - *…, **renew our commitment to protect the Great Lakes,** the St. Lawrence River Basin and the Lake Winnipeg Basin.*

Canada's Geoscience Knowledge- A Collaborative Effort



* *The Intergovernmental Geoscience Accord (IGA)* defines the complementary roles of Canada's geological surveys, as well as mechanisms for cooperation and collaboration

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Research context at Natural Resources Canada

Strategic priorities of the Lands and Minerals Sector

- Geoscience for the Sustainable Development of Natural Resources

Groundwater Geoscience Program

- Geol. Knowledge for On+offshore Lands
- Keeping Canada Safe
- Geoscience for Society
- Our People, Our Science

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12

ESS Strategic Water Framework (2012)

ESS Strategic Vision for Water:

Provide public geoscience and geomatic knowledge to inform decisions for responsible development of natural resources and sustainable water resources management

Strategic Objective 1

Assessing Canada's Water Resources:

Accurate assessment of current and future water availability in Canada for increased competitiveness and environmental performance of natural resource sectors

Strategic Objective 2

Managing Water in a Changing Climate:

Natural resource sectors and communities are more resilient to a changing climate including impacts on water resources that will impact operations

Strategic Objective 3

Information Management for Improved Water Management:

Easy access to integrated, quality information for the responsible management of water resources

Strategic Objective 4

Unique Water Issues in Canada's North:

Sustainable water resources management in the North to promote responsible development

Guiding Principles for Decisions related to Water

Mandate ***Relevance*** **Impact** ***Efficiency*** ***Capacity Innovation***

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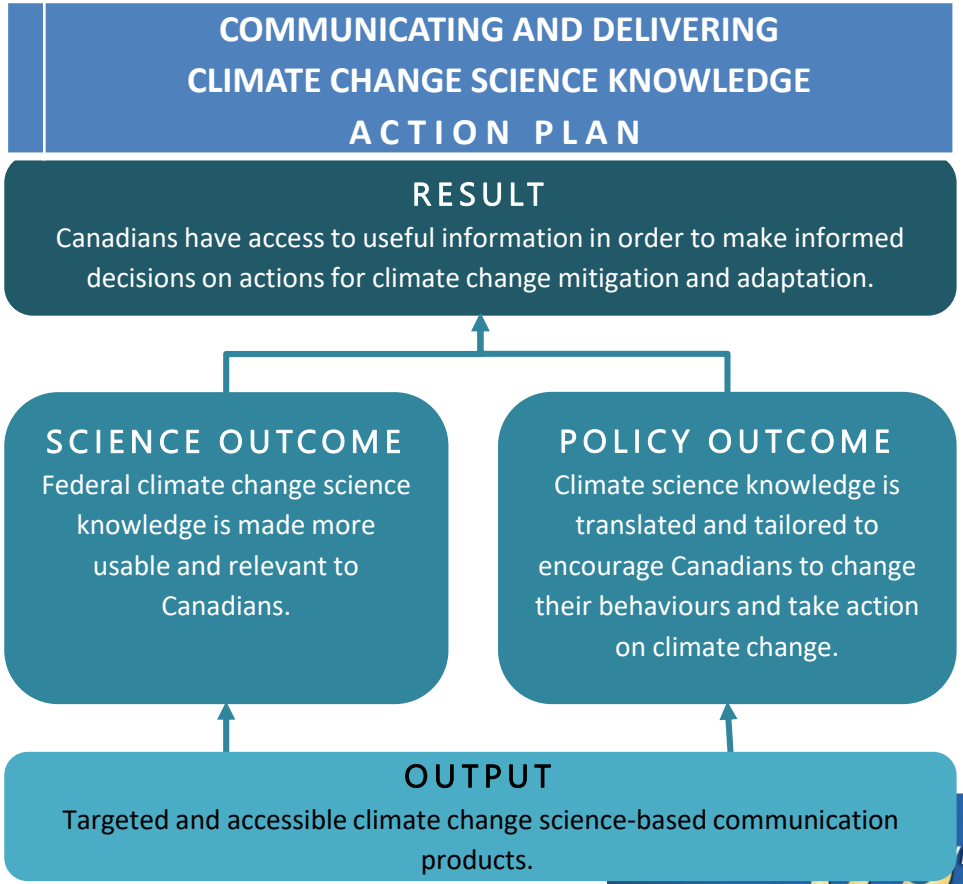
The Pan-Canadian Framework on Clean Growth and Climate Change

Targeted Federal Climate Change Science Plan



Water Science Dialogue (2017)

1. **Space-Time Nexus for Water**: Different regions in Canada are experiencing changes in water at different times
2. **Changes in the quantity and quality of water is creating transboundary challenges**
3. **Sustainability of water management**
   - Challenge for availability of water, which includes poor water quality impacting availability depending on its end use
   - Challenge due to increased competition from development, e.g. Food-Water-Energy Nexus
4. **Impact of droughts and floods for Canadian prosperity and sustainability**
   - Challenge to public safety
   - Opportunity for climate change adaptation measures
5. **Water as a "precious resource" – Valuation of water**
   - Costing of water versus cultural value
   - Value of water as part of ecosystem services
6. **Water's role in creating carbon sinks**
   - Role of the ocean as a carbon sink
   - Indirect role of water in supporting forests as a carbon sink

Source: Alexandre Bourque-Viens

What will be our next contribution?

Be creative

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