

Geoscience knowledge is the foundation upon which the mineral and energy industries plan and conduct their exploration activities. The knowledge base has been developed over many years through partnerships among governments, industry, and academia. Federal government and provincial geological surveys provide objective geoscience information in the form of data, maps, and reports, which aid the development and maintenance of essential expertise on the geology and resources of Canada.

Resource exploration is a complex, multistage process that proceeds from strategic decisions about what commodities will be sought in what countries and what deposit types will best deliver those commodities, through the selection of target areas and geoscience technologies to apply, to regional reconnaissance and detailed exploration. The regional geoscience knowledge provided by federal and provincial governments as a public good reduces the need for costly duplication of regional surveys at the early, high-risk stages of exploration programs. In the context of mineral exploration, this is particularly important in Canada, where junior companies and individual prospectors account for a large percentage of exploration activity and a significant number of discoveries.

Groundwater

Land use decisions affect the supply of groundwater, a renewable natural resource that is essential to the well-being of Canadians and ecosystems, as well as to the Canadian economy. It is currently the source of potable water for 25 percent of Canadians. Hydrogeological information, including three-dimensional characterization of aquifers and the geology that contains them, is critical to the sustainable use of Canada's freshwater resources. An example is the inventory of the nation's groundwater resources and the geology that contains them that is being developed by the Government of Canada and partners. Remote sensing information, collected through RADARSAT data, contributes to the mapping and monitoring of surface water resources.

Earth sciences information is used to define Canada's provincial, territorial, federal, and international boundaries. For example, the Global Positioning System is used in a collaborative effort between Canada and the United States to maintain an effective boundary between the two nations, as set out in international treaties.

Environmental Challenges

Environmental Research and Monitoring

Canadian geoscientists are studying the mechanisms through which metals are released and transported in the environment. They are also working to establish baselines and monitor levels of potentially hazardous metals and other toxic substances in the environment,