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EARTH SCIENCE SECTOR
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**The Targeted Geoscience Initiative 4
Increasing Deep Mineral Exploration
Effectiveness**

Geological Survey of Canada

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Targeted Geoscience Initiative 4: Increasing Deep Mineral Exploration Effectiveness

The Targeted Geoscience Initiative 4 (TGI-4) is a collaborative federal geoscience program that provides industry with the next generation of geoscience knowledge and innovative techniques, which will result in more effective targeting of buried mineral deposits.

Current situation

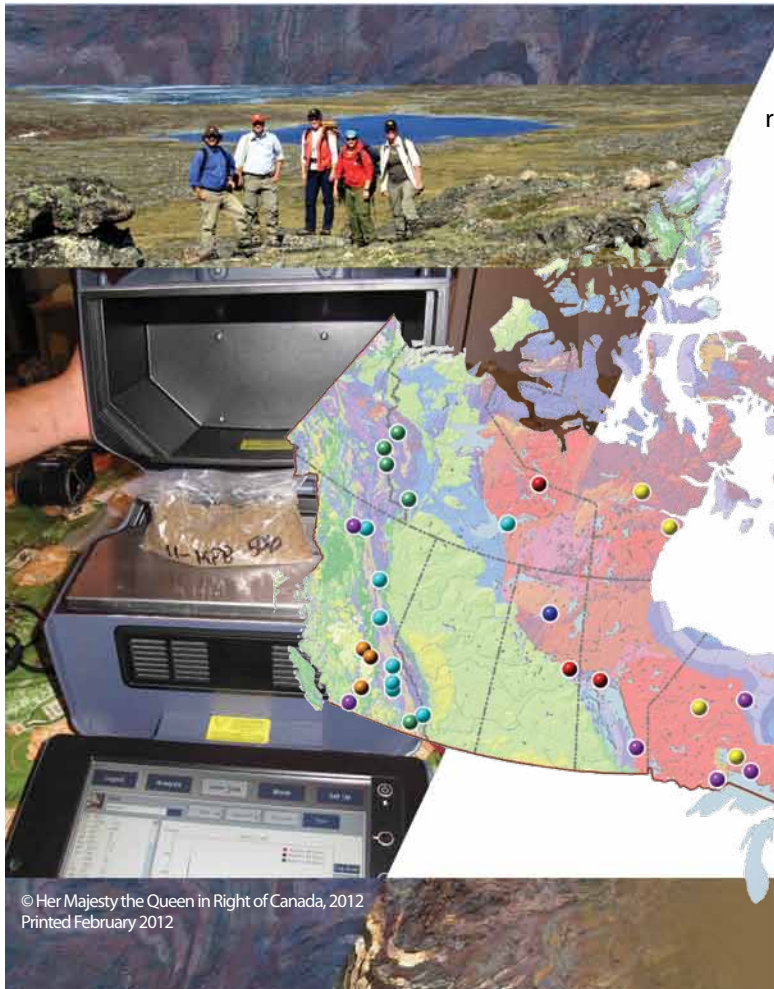
- Canada's reserves of metals have been declining for more than 28 years.
- Deeper exploration for new resources is required because of the increasing rarity of surface discoveries.

Focus of the TGI-4 program

- developing a more robust means of measuring whether a geological system may contain deeply buried ore (system fertility) and providing a direction to that ore (exploration vectors), thereby reducing the investment risk and cost
- developing new and improved geoscience knowledge and techniques to better understand, model and detect Canada's major mineral systems
- training and mentoring students to increase the number of highly qualified personnel available to the mineral industry

Program design: Ore system approach

- TGI-4 is a knowledge-based, thematic program that uses the best examples of ore systems from across Canada.
- Projects and activities are not centred in a geographic region. Instead, they are thematic and integrate data and knowledge from multiple mining camps across the country (see map).
- Scientific hypotheses underpin the program and define the critical knowledge gaps within ore systems.



TGI-4 uses an ore-system approach to project definition. This approach will guarantee that the best-suited deposits are used to support the development of the next generation of exploration-related geoscience knowledge and methods.

The following ore systems were identified by the TGI-4 program:

- lode gold systems
- nickel-copper-PGE-chrome systems
- intrusion-related systems (e.g. porphyry-style deposits)
- SEDEX systems
- volcanogenic massive sulphide systems
- uranium systems
- specialty metal systems (e.g. niobium, rare earth elements)

Research sites

- VMS
- Lode gold
- Intrusion related
- Ni-Cu-PGE-Cr
- Specialty metals
- SEDEX
- Uranium