



POLAR
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Polar Knowledge Canada Science and Technology Framework

2026–2029



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For more information about Polar Knowledge Canada, contact:

Canadian High Arctic Research Station
1 Uvajuq Road, P.O. BOX 2150
Cambridge Bay, NU X0B 0C0
Canada

Email: info@polar-polaire.gc.ca

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The Science and Technology Framework

The 2026-2029 POLAR Science and Technology (S&T) Framework renews Polar Knowledge Canada's (POLAR) research priorities for the coming four years. It advances and builds on the previous Framework (2020-2025) that was co-developed with key agency partners, including Indigenous rights-holder organizations and governments in the Yukon, Northwest Territories, and Inuit Nunangat.

The S&T Framework seeks to align with the Government of Canada's current Arctic policies and with the priorities of northern and Indigenous organizations and communities. It aims to meet the needs of Canada's growing local, national, and international polar research partnerships, as well as with POLAR's role as an operational focal point for Arctic research across Canada and around the world.

POLAR's S&T Framework also aligns with Canadian Arctic science priorities, namely, to increase understanding, innovation, and advance technology addressing the growing challenges and opportunities faced by Arctic communities and regions, including Indigenous leadership and wellbeing, sustainable economic growth, environmental resilience, and Canadian sovereignty and security.



Who we are

POLAR is the federal agency responsible for advancing Canada's knowledge of the Arctic and for strengthening Canadian leadership, partnerships and collaborations in polar science and technology. The agency is headquartered at the Canadian High Arctic Research Station (CHARS) in Cambridge Bay, Nunavut, and maintains satellite offices in Whitehorse, Yukon, and Ottawa, Ontario.

POLAR works nationally and internationally with universities, Indigenous groups, industry, governments, and local communities to respond to research questions critical to the lives and livelihoods of northerners and all Canadians, as well as to national and global research challenges. POLAR has a presence across the Canadian Arctic and will continue to advance a distinctions-based approach to the implementation of the S&T Framework.



Pillars of the 2026-2029 Science and Technology Framework

POLAR's 2026-2029 S&T Framework comprises three pillars of research and knowledge that continue the agency's previous S&T goals. The 2026-2029 pillars are informed by key drivers, including the rapid changes affecting the Arctic and its communities, the importance of relationships and partnerships with northern communities and Indigenous organizations, and advances in scientific understanding and new technologies

The three pillars of POLAR's renewed S&T Framework (2026-2029) are connected through interdisciplinary research projects that are developed with partners in the north, across the country, and around the world.

Pillar 1

One Health

Pillar 2

Energy, technology and cold climate innovation

Pillar 3

Climate, biodiversity and shifting landscapes

Pillar 1



One Health

“One Health” is an integrated approach to understanding wildlife health, human health, and ecosystem health. In the Arctic, for example, wildlife harvest is fundamental to the diet, cultural identity, and traditional practices of many Indigenous people. POLAR will undertake and support the research and knowledge needed to better understand various impacts and drivers on the health of Arctic ecosystems, wildlife and human health and wellbeing. A top priority of this pillar is to help address food insecurity in the North through research linking wildlife harvests, sustainable northern supply chains, food safety, and new transportation technologies.

Pillar 2



Energy, technology, and cold climate innovation

This pillar will focus on informing solutions to energy and infrastructure challenges associated with very cold climates and remote locations. CHARS will continue to provide capacity for testing high-latitude and cold climate energy, waste-management, transportation, and housing technologies. Partnerships with the public and private sectors will be pursued to develop a world class cold-climate test centre at CHARS and through partnerships with public, private, Indigenous, and academic partners across northern, southern, and international locations.

Pillar 3



Climate, biodiversity, and shifting landscapes

This pillar will support research on the effects of climate change on the Arctic's terrestrial, freshwater and marine environments with the objective of identifying changes and trends affecting these ecosystems and informing Canada's response. Various hazards such as microbially generated greenhouse gases from permafrost, melting glaciers and sea ice, shifting ranges of wildlife and vegetation, and forest fires and extreme weather are important variables to consider as Canada responds to landscape-level pressures in Arctic environments. Work under this pillar will continue to support partners' long-term monitoring programs based at CHARS and contribute to Canada's international obligations related to climate change, protecting biodiversity, and reducing the impacts of pollution.

Implementing POLAR's Science and Technology Framework (2026-2029)

Activities in support of the three pillars will be guided by principles tightly linked to Canadian Arctic policy goals, including meaningful reconciliation with Indigenous people, sustainable and prosperous economic development, climate adaptation, and securing Canada's Arctic sovereignty and security.

1

Recognizing and supporting Indigenous self-determination in research

POLAR co-develops science and technology priorities with Indigenous partners, ensuring Indigenous leadership, knowledge, and tangible benefits for northern communities are embedded across governance, funding, and research activities. POLAR also works with northern institutions and federal programs to expand local employment, training, and career pathways in Arctic research.

2

Partnership-based research delivery

POLAR advances its mandate through strong partnerships with communities, federal and northern government agencies, and domestic and international organizations, by leveraging, facilitating or coordinating Indigenous, government, industry, and academic expertise to strengthen polar research, training, and community development.

3

Collaboration and cooperation across the polar research system

POLAR fosters collaboration and coordination among federal departments, research institutions, and Arctic research infrastructure operators to reduce duplication, share resources, and strengthen Canada's Arctic and Antarctic science ecosystem to create and mobilize knowledge.

4**Knowledge sharing and communication**

POLAR communicates Arctic and Antarctic science to researchers, policy-makers, Indigenous and northern communities, and the public, to support evidence-based decision-making and raise awareness of the importance of polar science.

5**Providing a national and international Arctic research hub**

CHARS offers critical infrastructure, technical expertise, and coordination that enables collaborative, efficient, and world-class Arctic research and innovation. CHARS expertise and resources provide support to the network of research stations and infrastructures across northern Canada.

Our commitment

POLAR's S&T Framework (2026-2029) provides a solid foundation for innovative and collaborative research, involving Indigenous partners and others across the country and around the world. The S&T Framework addresses the Arctic's complex challenges and opportunities to improve the lives and livelihoods of northerners and all Canadians. The S&T Framework provides POLAR with strategic guidance to advance regional and national science and technology, and to help create an ecologically, economically, and culturally resilient and prosperous future across Canada's vast and vital North.

info@polar-polaire.gc.ca

Website canada.ca/polar
Instagram [@polar.knowledge](https://www.instagram.com/polar.knowledge)
Facebook [@PolarKnowledge](https://www.facebook.com/PolarKnowledge)
LinkedIn [Polar Knowledge Canada \(POLAR\)](https://www.linkedin.com/company/Polar Knowledge Canada (POLAR))

Headquarters

Canadian High Arctic Research Station
1 Uvajuq Road, P.O. Box 2150
Cambridge Bay, NU, X0B 0C0, Canada

Regional offices

Ottawa

170 Laurier Avenue West
2nd Floor, Suite 200
Ottawa, ON, K1P 5V5, Canada

Whitehorse

Suite 305, 300 Main Street
Elijah Smith Building
Whitehorse, YT, Y1A 2B5, Canada