2023 to 2024 Departmental Sustainable Development Strategy Report

Polar Knowledge Canada

Introduction to the 2023 to 2024 Departmental Sustainable Development Strategy Report

The 2022 to 2026 Federal Sustainable Development Strategy (FSDS) presents the Government of Canada's sustainable development goals and targets, as required by the *Federal Sustainable Development Act*. This is the first FSDS to be framed using the 17 Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda and provides a balanced view of the environmental, social, and economic dimensions of sustainable development.

In keeping with the purpose of the Act, to make decision-making related to sustainable development more transparent and accountable to Parliament, Polar Knowledge Canada supports the goals laid out in the FSDS through the activities described in Polar Knowledge Canada's 2023 to 2027 Departmental Sustainable Development Strategy (DSDS). This Report provides a report on progress related to Polar Knowledge Canada's DSDS in the fiscal year 2023 to 2024.

The *Federal Sustainable Development Act* also sets out 7 principles that must be considered in the development of the FSDS as well as DSDSs. These basic principles have been considered and incorporated in Polar Knowledge Canada's DSDS and its 2023 to 2024 DSDS Report.

To promote coordinated action on sustainable development across the Government of Canada, Polar Knowledge Canada's departmental strategy reports on Canada's progress towards implementing the 2030 Agenda and advancing the SDGs, supported by the Global Indicator Framework (GIF) and Canadian Indicator Framework (CIF) targets and indicators. The Report also now captures progress on SDG initiatives that fall outside the scope of the FSDS.

Rhonda Steed

Commitments for Polar Knowledge Canada

GOAL 2: SUPPORT A HEALTHIER AND MORE SUSTAINABLE FOOD SYSTEM

FSDS Context:

Polar Knowledge Canada's Science and Technology Framework promotes understanding of how changes in the environment impact food security and the wellness of Northern communities. Through its One Health program, Polar Knowledge Canada conducts community-led research on country foods, their predators, and habitats, as well as diseases in Northern wildlife. This research enhances their understanding of climate change effects on community wellness and supports efforts to promote Northern food security.

Target theme: Sustainable food systems

Target: By 2030, support improvement in the environmental performance of the agriculture sector by achieving a score of 71 or higher for the Index of AgriEnvironmental Sustainability (Minister of Agriculture and Agri-Food)

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal **"Support a healthier and more sustainable food system"** but not a specific FSDS target

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IMPLEMENTATION STRATEGY	DEPARTMENTAL ACTION	PERFORMANCE INDICATOR STARTING POINT TARGET	HOW THE DEPARTMENTAL ACTION CONTRIBUTES TO THE FSDS GOAL AND TARGET AND, WHERE APPLICABLE, TO CANADA'S 2030 AGENDA NATIONAL STRATEGY AND SDGS	RESULTS ACHIEVED
Enhance Indigenous and northern food security	**Action:** Monitor and better understand the effects of diseases in wildlife population and environmental changes on food security and community wellness. **Program**: Science and Technology	**Performance indicator**: Number of initiatives listed in Polar Knowledge Canada's Departmental Work Plan that seek to monitor, and better understand the effects of diseases in wildlife population, and environmental changes on food security, and community wellness. **Starting point**: 1 initiative in 2023-24. **Target**: 2 initiatives in 2024-25	**Summary:** Efforts to understand the effects of wildlife diseases and environmental changes on wildlife paves the way for long-term food security domestically. **Relevant targets or ambitions:** *CIF Ambition/Target*: 2.1 - Canadians have access to sufficient, affordable and nutritious food *CIF Indicator*: 2.1.1 - Prevalence of food insecurity *GIF Target:* 2.1- By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	**Indicator result**: 2 initiatives in 2023-24 **Notes:** In 2023-24, Polar Knowledge Canada's Science and Technology program advanced 2 projects supporting the monitoring of wildlife population and environmental changes on food security and community wellness. These include: 1. Anderson Bay snow goose colony monitoring, including observations relevant to avian influenza, and the creation of a summative report. 2. Laboratory support to the Nunavut Trichinella Detection Program, including co-development of a short film promoting the program to Inuit harvesters and all Canadians, co-developed with Nunavut Tunngavik Inc. and the Nunavut Research Institute.

GOAL 4:
PROMOTE KNOWLEDGE AND SKILLS FOR SUSTAINABLE DEVELOPMENT

FSDS Context:

Polar Knowledge Canada supports this goal by advancing knowledge of the North, Canadian Arctic and other circumpolar regions through scientific research and knowledge creation, dissemination, and mobilization activities. Polar Knowledge Canada's Science and Technology Framework guides its research activities to improve knowledge of ecosystems, increase understanding of community wellness and environmental health connections, and advance energy, technology, and infrastructure solutions. Polar Knowledge Canada shares its research outcomes through publications, events, and partnerships with various organizations, and engages in research collaboration to address regional and circumpolar development issues. Additionally, the organization supports youth skill development for the next generation of polar researchers through its Grants and Contributions Programs. By building and maintaining partnerships and incorporating Indigenous traditional knowledge in research, Polar Knowledge Canada advances sustainable development and quality education goals.

Target theme: Research and knowledge sharing

Target: By 2025, Canada's Average Relative Citation (ARC) in natural sciences, engineering, and life sciences ranks within the top 10 of OECD countries, increasing from a ranking of 18 in 2020 (Minister of Innovation, Science and Industry)

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal **"Promote knowledge and skills for sustainable development"** but not a specific FSDS target

IMPLEMENTATION STRATEGY	DEPARTMENTAL ACTION	PERFORMANCE INDICATOR STARTING POINT TARGET	HOW THE DEPARTMENTAL ACTION CONTRIBUTES TO THE FSDS GOAL AND TARGET AND, WHERE APPLICABLE, TO CANADA'S 2030 AGENDA NATIONAL STRATEGY AND SDGS	RESULTS ACHIEVED
Support knowledge in the Arctic and Antarctic	**Action:** Ensure that Canada's polar science and technology research is publicly available and being applied. **Program:** Science and Technology and Knowledge Management and Engagement	**Performance indicator #1:** Percentage of research publications led or supported by Polar Knowledge Canada that are available online to the Canadian public. **Starting point:** 45% of research publications led or supported by Polar Knowledge Canada that are available to the Canadian public in 2022-23. **Target:** At least 30% by March 2025	**Summary:** Dissemination of polar science and technology research improves access to scientific information, fosters collaboration, transfers expertise, and translates research into actionable solutions for sustainable development. **Relevant targets or ambitions:** *CIF Ambition/Target*: Not applicable *CIF Indicator*: Not applicable *GIF Target:* 4.7 - By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development.	**Indicator #1 result**: 39% in 2023-24
		Performance indicator #2: Number of citations of research led or supported by Polar Knowledge Canada. **Starting point:** 188 citations of research led or supported by Polar Knowledge Canada in 2022-23. **Target:** At least 100 by March 2025		**Indicator #2 result**: 252 in 2023-24
		Performance indicator #3: Number of Polar Knowledge Canada-led or supported materials which communicate or synthesize research results for the public. **Starting point:** 188 Polar Knowledge Canada-led or supported materials which communicate or synthesize research results for the public in 2022-23. **Target:** At least 100 by March 2025		**Indicator #3 result**: 156 in 2023-24

GOAL 7: INCREASE CANADIANS' ACCESS TO CLEAN ENERGY

FSDS Context:

Polar Knowledge Canada prioritizes renewable energy research to address the vulnerability of northern and Arctic communities to global warming. It supports the testing and demonstration of clean energy solutions by industry, government, and academia. This includes collaborating with the National Research Council to test off-grid wind turbines and evaluate experimental solar panels at the Canadian High Arctic Research Station. These technologies aim to reduce the environmental impact in remote communities. Additionally, Polar Knowledge Canada is involved in developing a Community Energy Plan for Cambridge Bay, funded by Crown Indigenous Relations and Northern Affairs Canada's Northern Responsible Energy Approach for Community Heat and Electricity program.

Target theme: Renewable and non-emitting sources of electricity

Target: By 2030, 90%, and in the long term 100% of Canada's electricity is generated from renewable and non-emitting sources
 (Minister of Natural Resources)

IMPLEMENTATION STRATEGY	DEPARTMENTAL ACTION	PERFORMANCE INDICATOR STARTING POINT TARGET	HOW THE DEPARTMENTAL ACTION CONTRIBUTES TO THE FSDS GOAL AND TARGET AND, WHERE APPLICABLE, TO CANADA'S 2030 AGENDA NATIONAL STRATEGY AND SDGS	RESULTS ACHIEVED
Invest in research, development and demonstration of clean energy technologies	**Action:** Facilitate the development and testing of energy technologies suitable for the unique environmental and socio-cultural conditions in the North and Arctic. **Program:** Science and Technology	**Performance Indicator**: Number of initiatives listed in Polar Knowledge Canada's Departmental Work Plan which seek to develop and test energy technologies suitable for the North and Arctic. **Starting point**: 1 initiative in 2023-24 **Target**: 2 initiatives in 2024-25	**Summary:** Enabling the development and testing of energy technologies in the North and Artic contributes to long-term access to clean, affordable, and reliable energy in Canada. **Relevant targets or ambitions:** *CIF Ambition/Target*: 7.2 – Canadians reduce their energy consumption *CIF Indicator*: 7.2 – Not applicable *GIF Target:* 7.1- By 2030, ensure universal access to affordable, reliable and modern energy services 7.3.a - By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.	**Indicator result**: 3 initiatives in 2023-24 **Notes:** The 3 initiatives for 2023-24 include: 1. Arctic Remote Energy Networks Academy in partnership with Gwich'in Council International and Nutrition North Canada. 2. Ekaluktutiak Hunters and Trappers Organization (EHTO) resource monitoring of wind and solar on the EHTO building. 3. Solar Powered Community Freezer

GOAL 9:
FOSTER INNOVATION AND GREEN INFRASTRUCUTRE IN CANADA

FSDS Context:

Polar Knowledge Canada aims to enhance waste and wastewater treatment in northern communities by developing new technologies that reduce waste and promote sustainability. This includes waste-to-energy, grey and black water management, green housing, and recycling initiatives. Notably, Polar Knowledge Canada has tested the Terragon Micro Automated Gasification System to convert household waste into heat and synthetic natural gas for electricity generation. The Agency has also collaborated with the National Research Council to evaluate the Bioelectrical Anaerobic Sewage Treatment System that produces heat and potential bio-fuels from sewage. Additionally, Polar Knowledge Canada facilitates the development of affordable, culturally adapted homes using sustainable materials, contributing to green infrastructure in the North and Arctic.

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal **"Foster innovation and green infrastructure in Canada"** but not a specific FSDS target

IMPLEMENTATION STRATEGY	DEPARTMENTAL ACTION	PERFORMANCE INDICATOR STARTING POINT TARGET	HOW THE DEPARTMENTAL ACTION CONTRIBUTES TO THE FSDS GOAL AND TARGET AND, WHERE APPLICABLE, TO CANADA'S 2030 AGENDA NATIONAL STRATEGY AND SDGS	RESULTS ACHIEVED
Develop our knowledge of clean technologies	**Action:** Undertake the development and testing of housing, water, and waste treatment technologies. **Program**: Science and Technology	**Performance indicator**: Number of initiatives listed in Polar Knowledge Canada's Departmental Workplan that support the development and testing of housing, water, and waste treatment technologies. **Starting point**: 1 initiative in 2023-24 **Target**: 2 initiatives in 2024-25	**Summary:** The development and testing of housing, water, and waste treatment technologies drive the adoption of sustainable practices, promoting resource efficiency, and fostering environmental stewardship. **Relevant targets or ambitions:** *CIF Ambition/Target*: 9.1- Canada fosters sustainable research and innovation 9.3- Canadians have access to modern and sustainable infrastructure *CIF Indicator*: 9.1.1- Proportion of innovation in environment-related technology *GIF Target:* 9.1- Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	**Indicator result**: 3 initiatives in 2023-24 **Notes:** The 3 initiatives for 2023-24 include: 1. BioElectrical Anaerobic Digestion of Sewage with Hydrolysis (BeAST) 2. Reverse osmosis of Spent Water to Hydrogen 3. Food Waste Biofuels

GOAL 10:
ADVANCE RECONCILIATION WITH INDIGENOUS PEOPLES AND TAKE ACTION ON INEQUALITY

FSDS Context:

Polar Knowledge Canada is committed to reconciliation with Indigenous Peoples by engaging in sustained and collaborative efforts that promote economic development and job creation. Through its Science and Technology Framework, Polar Knowledge Canada engages with Indigenous partners in a meaningful way, builds capacity for community-based monitoring and research, and integrates Indigenous knowledge with scientific findings. Additionally, Polar Knowledge Canada prioritizes projects that include Indigenous and local knowledge and supports the economic wellbeing of Inuit employees through its Inuit Employment Plan and education support fund. Simultaneously, the Canadian High Arctic Research Station works to create employment opportunities for local people and boost economic development in Nunavut by prioritizing and reinforcing local Inuit businesses and organizations.

Target theme: Advancing reconciliation with First Nations, Inuit, and the Métis communities

Target: Between 2023 and 2026, and every year on an ongoing basis, develop and table annual progress reports on implementing the *United Nations Declaration on the Rights of Indigenous Peoples Act* (Minister of Justice and Attorney General of Canada)

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Implement the *United Nations Declaration on the Rights of Indigenous Peoples Act*	**Action #1:** Ensure that Canada's Arctic science includes Indigenous knowledge. **Program**: Science and Technology	**Performance indicator:** Percentage of Arctic research projects led or supported by Polar Knowledge Canada that include Indigenous or local knowledge. **Starting point:** 90% of Arctic research projects led or supported by Polar Knowledge Canada that include Indigenous or local knowledge in 2022-23. **Target:** At least 90% by March 2025	**Summary:** Ensuring that Indigenous knowledge is incorporated in Arctic science and decision-making advances reconciliation with Indigenous peoples and supports the implementation of the *United Nations Declaration on the Rights of Indigenous Peoples Act*. **Relevant targets or ambitions:** *CIF Ambition/Target:* 10.1- Canadians live free of discrimination and inequalities are reduced. *CIF Indicator:* Not applicable *GIF Target:* 10.2 - By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status 10.3 - Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies, and action in this regard	**Indicator result**: 88% in 2023-24
	Action #2: Increase Indigenous representation among Polar Knowledge Canada employees.	**Performance indicator:** Percentage of active employees self-identifying as Indigenous Persons at Polar Knowledge Canada.	**Summary:** Increasing the number of Indigenous employees at Polar Knowledge Canada advances reconciliation with Indigenous peoples and supports the	**Indicator result**: 28% in 2023-24 **Notes:** In November 2023, Polar Knowledge Canada implemented a human

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	Program: Human Resources 	**Starting point:** 27.5% of active employees self-identifying as Indigenous Persons at Polar Knowledge Canada in 2023-24. **Target:** 30% of active employees self-identifying as Indigenous Persons at Polar Knowledge Canada in 2024-25.	implementation of the *United Nations Declaration on the Rights of Indigenous Peoples Act*. **Relevant targets or ambitions:** *CIF Ambition/Target:* 10.1 - Canadians live free of discrimination and inequalities are reduced. *CIF Indicator:* Not applicable *GIF Target:* 10.2 - By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status 10.3 - Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies, and action in this regard	resources management system, which will improve the measurement of employment equity data such as Indigenous Peoples.

GOAL 12:
REDUCE WASTE AND TRANSITION TO ZERO-EMISSION VEHICLES

FSDS Context:

Polar Knowledge Canada implements the *Policy on Green Procurement* by deploying common use procurement instruments and integrating environmental considerations into its procurement management processes; integrating environmental considerations into procurement management processes and controls; and reviewing its contracting templates to ensure alignment with the Policy. Polar Knowledge Canada also aims to render its green procurement processes more robust by ensuring that necessary parties continuously have the necessary training and awareness to support green procurement.

To reduce waste, Polar Knowledge Canada's Canadian High Arctic Research Station has systems in place for wastewater and waste management. Notably, Polar Knowledge Canada treats its wastewater with a reverse osmosis system which produces large amounts of clean water. Polar Knowledge Canada is also seeking collaborative efforts to transform wastewater into hydrogen, and to treat the sewage lagoon in Cambridge Bay, Nunavut.

Target theme: Federal Leadership on Responsible Consumption

Target: The Government of Canada's procurement of goods and services will be net-zero emissions by 2050, to aid the transition to a net-zero, circular economy (All Ministers)

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Strengthen green procurement criteria	**Action #1**: Ensure all procurement and materiel management specialists are trained in green procurement (such as, the Canada School of Public Service course on green procurement, or equivalent) within one year of being identified. **Program:** Internal Services/Procurement	**Performance indicator**: Percentage of procurement and materiel management specialists trained in green procurement within one year of being identified. **Starting point**: 100% of procurement and materiel management specialists trained in green procurement in in 2023-24. **Target**: Maintain 100% training rate for procurement officers and material management specialists in 2024-25.	**Summary:** Green procurement incorporates environmental considerations into purchasing decisions and is expected to motivate suppliers to reduce the environmental impact of the goods and services they deliver, and their supply chains. **Relevant targets or ambitions:** *CIF Ambition/Target*: Canadians consume in a sustainable manner *CIF Indicator*: 12.2.1 - Proportion of businesses that adopted selected environmental protection activities and management practices *GIF Target:* Promote public procurement practices that are sustainable, in accordance with national policies and priorities	**Indicator result**: 100% in 2023-24
	Action #2: Integrate Green Procurement option and information guide within contracting request form. **Program:** Internal Services/Procurement	**Performance indicator:** Percentage of contracting request forms that include Green Procurement requirement and information guide. **Starting point:** 100% of contracting request forms include green procurement option in 2023-24. **Target:** Maintain 100% of contracting request form with green procurement option in 2024-25.		**Indicator result**: 100% of contracting request forms in 2023-24 **Notes:** A Procurement Guide was drafted in 2023-24 and will be finalized in 2024-25.

GOAL 13:
TAKE ACTION ON CLIMATE CHANGE AND ITS IMPACTS

FSDS Context:

Polar Knowledge Canada takes proactive steps to transition to zero-emission vehicles and takes steps towards reducing waste and promoting sustainability practices in its operations. This includes the use of electric or hybrid vehicles. Additionally, the Canadian High Arctic Research Station has been designed for silver-level certification in Leadership in Energy and Environmental Design through such features as solar panels to facilitate the testing of photovoltaics in the North and Arctic, low-flow plumbing fixtures, innovative wastewater and waste management, light pollution reduction, energy conservation technology, and other features.

Target theme: Federal Leadership on Greenhouse Gas Emissions Reductions and Climate Resilience

Target: The Government of Canada will transition to net-zero carbon operations for facilities and conventional fleets by 2050 (All Ministers)

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Implement the Greening Government Strategy through measures that reduce greenhouse gas emissions, improve climate resilience, and green the government's overall operations	**Action:** Ensure all relevant employees are trained on assessing climate change impacts, undertaking climate change risk assessments, and developing adaptation actions within one year of being identified. **Program**: Internal Services	**Performance indicator**: Percentage of relevant employees trained on assessing climate change impacts, undertaking climate change risk assessments, and developing adaptation actions within one year of being identified. **Starting point**: New Program **Target**: 100% trained by 2024-25	**Summary:** Trained staff can identify risk to critical program delivery and develop responses to increase the resilience of operations to impacts of climate change. **Relevant targets or ambitions:** *CIF Ambition/Target*: 13.3 Canadians are well-equipped and resilient to face the effects of Climate change *CIF Indicator*: 13.3.1 - Proportion of municipal organization who factored climate change adaptation into their decision-making process *GIF Target:* 13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries 13.3 - Improve education, awareness raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	**Indicator result**: 0% in 2023-24 **Notes:** Work to identify relevant employees to undertake this training and the required courses is in progress.

GOAL 15:
PROTECT AND RECOVER SPECIES,
CONSERVE CANADIAN BIODIVERSITY

FSDS Context:

Polar Knowledge Canada advances understanding of northern and Arctic ecosystems to help Canadian biodiversity in the face of climate change. It collects baseline data and monitors changes in terrestrial, freshwater, and marine ecosystems. Knowledge and results are shared with decision makers and networks to support conservation and adaptation. Recently, Polar Knowledge Canada has partnered with the Canadian Museum of Nature, providing $1 million over three years to advance research on climate impacts on wildlife, northern and Arctic plant species, vulnerability, and marine biodiversity.

Target theme: Conservation of Land Fresh Water

Target: Conserve 25% of Canada's land and inland waters by 2025, working toward 30% by 2030, from 12.5% recognized as conserved as of the end of 2020, in support of the commitment to work to halt and reverse nature loss by 2030 in Canada, and achieve a full recovery for nature by 2050 (Minister of Environment and Climate Change)

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Other	**Action:** Undertake research, remote sensing and environmental monitoring of permafrost, and biodiversity changes in the Kitikmeot Environmental Research Area with the collaboration of partners. **Program**: Science and Technology	**Performance indicator**: Number of initiatives listed in Polar Knowledge Canada's Annual Departmental Work Plan which seek to undertake research, remote sensing and environmental monitoring of permafrost, and biodiversity change. **Starting point**: 1 initiative in 2023-24 **Target**: 2 initiatives in 2024-25	**Summary:** Canadian research and monitoring of northern and Arctic biodiversity changes protect Canadian biodiversity by providing crucial data on climate change impacts, and guiding conservation efforts for vulnerable species and habitats. **Relevant targets or ambitions:** *CIF Ambition/Target*: 15.1 - Canada ensures all species have healthy and viable populations. 15.3 - Canada conserves and restores ecosystems and habitat *CIF Indicator*: Not applicable *GIF Target:* 15.1 - By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains, and drylands, in line with obligations under international agreements. 15.5 - Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	**Indicator result**: 4 initiatives in 2023-24 **Notes:** The 4 initiatives for 2023-24 include: 1. Ecosystem mapping and remote sensing for climate monitoring 2. Permafrost and cryosphere research 3. Biodiversity and performance monitoring for microbes and invertebrates 4. Biodiversity and performance monitoring of vascular plants, lichens and mosses Each of these initiatives includes a variety of research projects and collaborations.

Integrating Sustainable Development

Polar Knowledge Canada will continue to ensure that its decision-making process includes consideration of FSDS goals and targets through its Strategic Environmental Assessment (SEA) process. An SEA for a policy, plan or program proposal includes an analysis of the impacts of the given proposal on the environment, including on relevant FSDS goals and targets.

Public statements on the results of Polar Knowledge Canada's assessments are made public when an initiative has undergone a detailed SEA (see here). The purpose of the public statement is to demonstrate that the environmental effects, including the impacts on achieving the FSDS goals and targets, of the approved policy, plan or program have been considered during proposal development and decision making.

Polar Knowledge Canada did not complete any detailed SEAs in 2023-24.