Landscape Review for National Framework for Environmental Learning

Conducted by Drs. Ellen Field and Christina Kwauk for ECCC

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Purpose:

The purpose of this Landscape Review is to ensure the National Framework for Environmental Learning (NFEL) is well informed by policies, commitments, examples of other international jurisdictions, and empirical research to identify learning outcomes and indicators for implementing and monitoring and evaluating the NFEL. Conducting a landscape review is a critical step in developing a national framework like the NFEL because it establishes a comprehensive understanding of the current policy environment, existing commitments, relevant frameworks, and evaluation practices, where implemented or applicable, at provincial, national, and international levels.

A landscape review provides the following benefits:

- It identifies strengths, gaps, and opportunities within existing policies, frameworks, and competencies, helping avoid duplication and ensuring alignment (SEPN, 2020) with Canada's national and international commitments (such as SDGs, UNDRIP, Paris Agreement, biodiversity conventions, and reconciliation actions).
- It consolidates evidence from empirical research and best practices, guiding the selection of learning objectives and multi-level indicators.
- It aims to support transparent decision-making and collaborator engagement because the review maps policy, practice, and outcome evidence across jurisdictions, helping to make shared priorities and tensions visible. Given the fragmented education system, there are varied policies and approaches across the country.
- It ensures that any new initiatives build upon pre-existing system and policy commitments while also identifying gaps and making space for innovation where needed.

In summary, the landscape review lays a foundation for an evidence-informed approach to environmental learning policy development. This landscape review enables next steps of drafting learning outcomes, multi-scale indicators, and finally, engaging collaborators in meaningful consultation on the NFEL.

The Landscape Review is organized by the following areas of inquiry:

There is an accompanying database for this Landscape Review: Landscape Review It is a living document.

Researcher Positionality:

The landscape review and this summary report are based on our knowledge and understanding and direct engagement with environmental learning practices, policies, and research from local to international scales. We have aimed to be both strategic and comprehensive - focusing on areas of importance while also attempting to be comprehensive in those areas. However we also recognize limitations in our approach as North American researchers with implicit biases and perspectives particular to our positions. We also see this as an opportunity to be innovative in our approach and create evidence-informed but also aspirational learning outcomes and indicators across multiple-levels of education systems to stimulate practices as well as evaluation in areas that may not be focal areas within existing monitoring of sub-national or national reporting frameworks. To say the least, it's been an exercise of organization, dreaming, analyzing, and trying to be practical, all at once.

Dr. Ellen Field is an Associate Professor in the Faculty of Education and her research focuses on policy and practice of climate change education in the Canadian K-12 system. She teaches Environmental Education and Climate Change Education in the Faculty of Education. She is co-lead of the Accelerate Climate Change Education in Teacher Education project, Assistant Editor of the Canadian Journal of Environmental Education, and co-chair of the Canadian Regional Hub of Monitoring and Evaluating Climate Communication and Education (MECCE) project. Recently, Ellen was an author on UNESCO's Greening Education Guidance, a policy framework for countries to follow when integrating climate change education into curricula. She is also a member of the Advisory Committee providing inputs and advice on the National Framework for Environmental Learning. Find Dr. Field's CV here.

Dr. Christina Kwauk is Co-Founder and Chief Technical Officer of Unbounded Alliance, a women-owned social enterprise dedicated to advancing a just transition through transformative change in the education sector. She leads the company's technical advisory services and applied research and policy analysis on issues of gender, education, and climate change. She is co-editor of *Curriculum and Learning for Climate Action: Toward an SDG 4.7 Roadmap for Systems Change*, co-author of "The new green learning agenda: Approaches to quality education for climate empowerment" and of UNESCO's Greening Education Guidance, and author of several stocktaking reports on the inclusion of education in national climate policies. She also serves on the Cosmos of Stars for RegenIntel, Girl Rising's Advisory Council, the International Panel on Social Progress's Workgroup on Human Security, Public Health, and Population Wellbeing, and is a member of the Climate Change Action Plan Ad Hoc Committee for the Prince George's County Public Schools Board of Education in Maryland. Find Dr. Kwauk's CV here.

Summary of Canada's International & Domestic Commitments

Canada, as a signatory to key international agreements and through comprehensive domestic policy frameworks, has firmly established the foundations for developing a National Framework for Environmental Learning. Internationally, Canada's commitments under Article 12 of the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework, the Baku Initiative on Human Development, and the UN Convention on the Rights of the Child all underscore the importance of advancing climate change education, fostering environmental and climate literacy, ensuring equitable and inclusive access to education, and preparing learners at all levels to actively participate in sustainability, resilience, and conservation goals. These global commitments drive integration of climate, biodiversity, and environmental learning throughout formal and informal education systems, with special attention to Indigenous rights, youth engagement, public awareness, and building future-ready skills.

Domestically, frameworks such as the Federal Sustainable Development Strategy, Canada's 2030 Nature Strategy, the Truth and Reconciliation Commission Calls to Action, the National Adaptation Strategy, and legislative measures like the Canadian Net-Zero Emissions Accountability Act demonstrate Canada's dedication to embedding sustainability, climate action, and equity into education, professional training, and public engagement. These policies support developing national guidelines for environmental learning, mainstreaming environmental and global citizenship education, supporting Indigenous and place-based knowledge, and coordinating cross-sectoral expertise to empower Canadians with the skills and understanding needed to address environmental challenges..

Together, this policy alignment at the international and domestic level provides the policy mandate and collaborative landscape necessary for creating a coherent, inclusive, and future-focused National Framework for Environmental Learning in Canada.

This section outlines key international and domestic policies that support the development of the NFEL:

International

- Canada's commitment to Article 12 of the Paris Agreement is to enhance climate change education, training, public awareness, and public participation by supporting environmental and climate literacy programs, integrating climate change education into formal curricula, and preparing youth and educators to contribute to climate action and sustainability goals across the country.
- The Kunming-Montreal Global Biodiversity Framework (KM-GBF) explicitly calls for enhancing education, awareness, and communication to inspire transformative action for biodiversity by 2030, emphasizing the integration of biodiversity values into educational systems, encouraging public participation, and supporting broad societal understanding and engagement for conservation efforts
- Canada has committed to supporting the Baku Initiative on Human Development by endorsing its principles at COP29, including advancing climate-resilient and low-carbon

education systems, fostering environmental literacy, and promoting equitable access to education and lifelong learning for youth, marginalized groups, and workers facing climate risks.
    - Specifically:
        - Principle 1: Align climate action with human development for a resilient future (NDCs, NAPs, NBSAPs, etc.)
        - Principle 3: Invest in integrating quality climate change education at all levels and regularly assessing student competencies to address climate change
        - Principle 4: Build climate resilient and low-carbon education systems
        - Principle 5: Enhance support to greening skills, qualifications, and occupational standards for priority sectors
        - Principle 9: Prioritize children's unique vulnerabilities in climate action, including through investment in climate-resilient and sustainable essential services
- The UN Convention on the Rights of the Child (UNCRC), which Canada is a signatory, requires Canada to ensure every child's right to access free and compulsory primary education, make secondary and higher education accessible, foster child participation, and incorporate diversity and dignity into the aims of education. Specifically, UNCRC rights that apply to the NFEL are:
        - Article 3: Best interests of the child
        - Article 6: Right to life
        - Article 12: Right to be heard / participation
        - Article 13: Freedom of expression
        - Article 24: Right to a Health and a Clean Environment
        - Article 28: Right to Education (quality, aimed at developing children's potential)
        - Article 29 (1d) Education must prepare the child for a responsible life in a free society...and respect for the natural environment

Domestic

- The Federal Sustainable Development Strategy (2022-2026) incorporates several SDGs that support environmental learning. These two goals in particular directly relate:
    - Goal 4: Promote knowledge and skills for sustainable development, with these indicators of note:
        - SDG 4.4 - By 2030 substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
        - SDG 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 and sustainable lifestyles.
        - SDG 4.7.1 - Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education and (d) student assessment
    - Goal 13: Take action on climate change and its impacts
        - SDG 13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

        - SDG 13.3.1 - Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment

- Canada is working towards the 2030 Nature Strategy, which includes conserving 30% of its lands, waters, and seas. This strategy highlights educational and awareness targets, mainstreaming biodiversity values, and supporting the inclusion of Indigenous knowledge and perspectives in education and stewardship. If Bill C-73 is passed by parliament it will enshrine Canada's 2030 Nature Strategy as the Nature Accountability Act.
- The Truth and Reconciliation Commission Calls to Action, UNDRIP Act, and related commitments emphasize Indigenous language revitalization, Indigenous-led teaching practices, intercultural understanding, capacity-building, and rights to a healthy environment, all of which have learning and education components embedded.
    - Calls 62 & 63 are specific to education:
        - Call 62.iii. funding to Aboriginal schools to use Indigenous knowledge and teaching methods in classroom
        - Call 63.iii. building student capacity for intercultural understanding, empathy, and mutual respect
- Canada's National Adaptation Strategy places education, awareness-raising, and knowledge sharing as core pillars in building climate resilience and supporting adaptation, including in Indigenous and northern communities.
    - Specifically these goals are worth noting:
        - Objective 3: Everyone in Canada is informed about climate risks and vulnerabilities. Available information is accessible, easy to understand, and designed for different audiences.
        - Objective 4: Everyone in Canada has equitable access to the tools and supports needed to prepare for, reduce, and respond to climate change impacts.
        - Under Knowledge and Training - "Education, training, and awareness raising are the main ways to communicate the need for incorporating adaptation into decisions and for taking urgent actions
        - Under Economy and Workers - includes Canada has a skilled, diverse, and adaptable workforce that is supported by educators, training, knowledge and skills development to respond to future impacts of climate change, including within Indigenous and northern economies
- The Canadian Net-Zero Emissions Accountability Act, which became law in June 2021, enshrines in legislation Canada's commitment to achieve net-zero emissions by 2050. The Act ensures transparency and accountability as the government works to deliver its targets.
    - Target to reduce emissions by 40-45 per cent from 2005 levels by 2030
- Through the Pan-Canadian Framework on Clean Growth and Climate Change, Canada offered a suite of programs to support industry to engage students and recent graduates and to provide meaningful work experiences (Mitacs, Business Higher Education Roundtable, Digital Skills for Youth, and Student Work Placement Program, Youth Employment and Skills Strategy).

- Climate Science 2050 includes priorities on knowledge synthesis and mobilization which informs climate literacy.
- Canada's Ocean Literacy Act - Outlines a vision for collaborative action to ensure a healthy, sustainable, and equitable relationship with the global ocean and Canada's waterways for future generations, with objectives across knowledge, socio-emotional, and behavioural dimensions.
- Sustainable Jobs Plan and Canadian Sustainable Jobs Act - creates a mechanism for the Government of Canada to effectively support Canadian workers and communities to seize historic opportunities of the shift to a low carbon economy, while fostering the creation of a more sustainable, inclusive and prosperous future.
- Canada-wide Action Plan on Zero Plastic Waste Vision sets a horizon of 2030. Enabling factors named in vision: public education, awareness, and behaviour change. The Canada government has an educators section on website: help our youth leaders of tomorrow by incorporating plastic education into your program and provides suggestions: purchase reuseable plastics for your classroom, challenge your students to recycle their plastics, host zero waste lunches, organize a clean-up around your school or community. The website also lists "capacity building through advancing citizen science initiatives related to the lifecycle of plastics, or plastic pollution and its removal."

Summary of International jurisdictions and available indicators

In this section, we provide descriptive summaries on relevant international jurisdictions indicators and how they may be applicable to the NFEL. First an overview of Global and OECD Frameworks is provided, followed by examples from high-income countries, followed by examples from low-income countries. The last section is a synthesis summary of indicators organized by the NFEL pillars.

**These summaries parallel entries in database: Landscape Review where URL links to specific policies can be found and coding of indicators of policies was undertaken.

- Global and OECD Frameworks:
    - Targets tend to focus on large-scale curriculum greening (e.g. 90% countries green national curriculum by 2030), universal access to education for sustainable development, and green school implementation targets (e.g., 50% of schools in every country greened by 2030).
    - Indicators tend to focus on the integration rates of climate and sustainability in curricula and policy; student proficiency in environmental science; institutional adoption of green school standards; community engagement and participation rates; and prevalence and reach of climate communication/education activities in civil society.
        - The OECD PISA Climate Literacy assessment provides standardized indicators measuring students' understanding of climate change, their

ability to interpret climate data, analyze information, and suggest solutions. This is widely used in countries like the UK, Finland, and New Zealand as a benchmark for system-wide climate literacy.
        - The UNESCO Greening Education Partnership, Kunming-Montreal Biodiversity Framework, and MECCE Global Indicators measure the extent to which climate change and sustainability are integrated at national curriculum levels (primary, secondary, cross-curricular), including student knowledge, attitudes, action, and systems change.
        - MECCE's global platform tracks indicators like the number of climate activities organized by libraries and civil society, adult willingness to participate in climate actions, and the prevalence of climate communication organizations.
- High-Income Countries:
    - Targets tend to focus on embedding climate and sustainability across curriculum; promoting green career readiness and STEM skills; adopting net-zero, and nature-connected physical environments on school estates; providing universal CPD and professional standards for teachers; and establishing leadership roles and networks for climate education.
    - Where present, indicators tend to focus on school estates' net-zero status; biodiversity and active travel metrics; number of trained teachers/CPD events offered; teacher standards for sustainability; presence of climate education leaders; and qualitative and quantitative evidence of student engagement and community climate action.
        - Australia's F-10 Curriculum includes sustainability as a cross-curricular priority with the aim of enhancing students' understanding of the ways social, economic, and environmental systems interact and their capacity to participate critically and act creatively in determining more sustainable ways of living.
        - England's Sustainability and Climate Change Strategy for Education focuses on reducing direct and indirect emissions from education buildings and active travel, mandatory CPD for teachers, incentivizing climate education through awards, and strengthening education and skills for a changing world. Indicators include metrics on connection to nature, teacher training rates, curriculum integration and career pathway development (e.g. green apprenticeships), green infrastructure in learning spaces, climate resilience in school buildings, community engagement through school leaders, and student participation in green skills training.
        - Finland's National Core Curriculum integrates sustainability as a cross-cutting theme aimed at increasing students' participation and involvement in building a sustainable future, however the Finnish National Agency for Education does not include specific indicators for monitoring progress on sustainability learning.
        - Italy's Linee Guida Educazion Ambientale/Environmental Education Guidelines focuses on raising awareness among students of climate

change and environmental degradation in the context of major problems afflicting the human condition, but does not include specific indicators for monitoring progress.
        - New Zealand's Mātauranga Whakauka Taiao/Environmental Education for Sustainability Plan aims to build students' ability to think and act sustainably, however does not include specific indicators for monitoring progress.
        - Northern Ireland's Green Skills Action Plan aims to promote awareness of green skills, green careers and opportunities in green jobs, with an emphasis on developing a skilled workforce for growing net zero sectors. Indicators include tracking job placements, skill shortages, training events, and program participation.
        - Scotland's Learning for Sustainability Action Plan targets the inclusion of learning for sustainability from a whole-institution approach, aiming for the integration of sustainability in curriculum, culture, community, and campus, and also targets strengthening professional standards for educators on sustainability topics.
- Low-Income Countries:
    - Targets tend to focus on building capacity in teacher training for climate integration; creating environmental committees; mainstreaming climate change learning from early childhood to tertiary; promoting school and community partnerships; supporting disaster risk reduction in education environments; and fostering local resilience and adaptation.
    - Indicators tend to focus on number of teachers trained and curricula revised; number of classroom and institutional research projects supported; clubs and committees formed; number of disaster-proofed classrooms; integration/funding of climate in sectoral policies; prevalence of community outreach and action programs; number of public awareness activities/materials; and environmental/climate learning events held.
        - The Dominican Republic's Estrategia Nacional para Fortalecer los Recursos Humanos y las Habilidades para Avanzar hacia un Desarrollo Verde, con Bajas Emisiones y Resiliencia Climática (National Strategy to Strengthen Human Resources and Skills to Advance Towards Green, Low-Emission and Climate-Resilient Development) includes comprehensive attention to teacher training and the development of educational materials to support teachers, climate curriculum integration from early childhood through higher education and in technical training institutions and non-formal learning environments, as well as community awareness raising and committee formation. Targets are also focused on developing and promoting the participation of young people in climate adaptation and mitigation capacity building that is closely connected to community impact, and on classroom and institutional research on climate change. However, no indicators are specified to track these progress on these targets.

        - Ghana's National Climate Change and Green Economy Learning Strategy targets building green human resources, research capacity, school disaster risk reduction, policy integration, and public awareness. Indicators to monitor progress include metrics like the number of professionals/students trained, curricula revised, climate-related clubs formed, funding for climate research, and research outputs.
        - Zambia's National Climate Change Learning Strategy focuses on building knowledge and awareness among learners, policy mainstreaming, and climate integration across all levels of education, tracking these objectives with metrics on student club formation, integration of climate into syllabi and teacher training, and the number of public campaigns.
        - Vanuatu's Climate Change Strategy for the Ministry of Education and Training Skills Centres and its Education Sector Strategic Plan focus on flourishing learning spaces, targeting the identification of and strategies for responding to climate risks to learning environments, supporting disaster risk reduction efforts, and contextualizing curriculum integration for more relevant climate learning spaces. Indicators include metrics on planning processes, disaster management plans, resilience and adaptation actions, and infrastructure audits.
        - Zimbabwe's National Climate Change Learning Strategy quantifies educators trained, curriculum audits, student skills development, and research outputs for climate education as metrics for tracking targets around data and research, enhancing educator capacities, and strengthening green skills.

Common Indicator Types from International Jurisdictions in alignment with NFEL pillars

This section provides a synthesis of relevant indicators from international jurisdictions according to how they align with specific NFEL pillars. At times, there is some overlap between pillars, especially between Flourishing Learning Spaces and Growing Green Communities, as both pillars can extend into the enabling learning environments necessary for transformative environmental learning. The coding of these policies and indicators can be viewed in database: Landscape Review

- Expanding Educator Capacity
    - Indicators tend to emphasize professional development and upskilling for teachers and educators, with a focus on mainstreaming sustainability and climate content into CPD, teacher preparation, and ongoing training.
    - Typical Targets/Goals:
        - Ensure all teachers, including early childhood and higher education instructors, receive training to mainstream climate and sustainability learning.
        - Establish senior leadership roles for climate education at schools and expand accredited CPD opportunities.

        - Strengthen networks and support for sharing best practice in teaching climate and sustainability.
    - Sample Indicators:
        - Number and percentage of teachers/educators trained in climate change and sustainability.
        - Proportion of training workshops held, lesson plans developed, and curriculum reviews to incorporate climate topics.
        - Number of teaching/learning materials produced and used for mainstreaming climate change.
- Flourishing Learning Spaces
    - Indicators tend to focus on transforming the physical, social, and educational environment so that it models climate resilience, inclusion, and whole-institution approaches to sustainability.
    - Typical Targets/Goals:
        - Achieve targets for the percentage of schools meeting “greened” or climate-resilient standards by specific years (e.g., 50% by 2030).
        - Develop and mainstream climate change into sectoral policies, curricula, and school operations.
        - Ensure every setting employs a whole-institution approach to learning for sustainability, including community engagement for disaster risk reduction.
    - Sample Indicators:
        - Number of schools with Green School governance/committees.
        - Adoption of inclusive operational policies.
        - Amount of funding and number of policies with climate integration.
        - Disaster risk management and training activities tracked.
        - Extent of integrated curriculum, DRR plans, and resilient infrastructure in school and technical/vocational sectors.
- Developing Data and Research
    - Indicators capture research capacity, the quantity and quality of data, and the mainstreaming of new evidence into practice and policy for environmental and climate education, with an emphasis on higher education institutions.
    - Typical Targets/Goals:
        - Encourage classroom and institutional research on climate change and build research capacity at all education levels.
        - Mainstream innovation, Indigenous knowledge, and technical expertise in climate education.
    - Sample Indicators:
        - Number and focus of peer-reviewed publications, research projects funded, or technical workshops delivered on climate education.
        - Tracking dissemination and adoption of research results and best practices into curricula.
- Growing Green Communities

    - Indicators tend to measure the extent of engagement, leadership, and action at the school and community level for climate resilience and education; there is a notable focus on institutionally led, extra-curricular, and cross-sectoral initiatives.
    - Typical Targets/Goals:
        - “Green” at least 50% of schools by 2030 and embed school and community engagement functions for climate action.
        - Establish climate education leadership and regular national professional/educator meetings.
        - Strengthen or create Environmental Education Committees and increase community-led climate action.
    - Sample Indicators:
        - Prevalence and impact of community-based climate initiatives (e.g., school-led awareness campaigns, committees, or community projects).
        - Extent of climate programming within libraries, organizations, and non-formal education; willingness and rate of participation in climate action.
        - Institutional engagement metrics for local resilience-building and education responses.
- Strengthening Green Skills
    - Indicators here tend to directly target skills development for climate and sustainability-related careers, workforce capability, and the integration of these objectives throughout all education sectors and levels.
    - Typical Targets/Goals:
        - Mainstream climate/social/environmental content in K-12 and post-secondary curricula; create green workforce pipelines.
        - Meet SDG and national benchmarks for education for sustainable development.
        - Prepare learners and workers for transition to low-carbon and green economies, including entrepreneurship.
    - Sample Indicators:
        - Level of integration of climate, sustainability, and green skills in curricula, assessments, and professional pathways (e.g., SDG 4.7.1, curriculum audits).
        - Proportion of graduates or students entering green jobs, completing related training, or attaining proficiency in climate/environmental literacy.
        - Quantitative metrics for green job preparedness, capacity building, and lifelong learning initiatives.

Summary of Provincial / Territorial Education Policies and Frameworks related to Environmental Learning

Canada's provinces and territories reflect a mosaic of environmental learning policies: some embed climate and sustainability directly in curriculum, while others focus more on Indigenous knowledge, stewardship or citizenship, and social responsibility. There are notable efforts to update curriculum, train educators, and integrate Indigenous Ways of Knowing and Being in some jurisdictions. The NFEL's success depends on working closely with Ministries and school boards to build capacity and drive implementation, while collaborating with a growing network of sub-national policies to strengthen ambition and cohesiveness across Canada's public K-12 system

The sub-national summaries parallel entries in database: Landscape Review where URL links to specific policies can be found.

This section outlines key sub-national policies that align with the NFEL:

Alberta

- IUCN signatory
- The Guiding Framework for K–12 Curriculum emphasizes citizenship and shared responsibility for environmental stewardship, though climate change itself is mentioned mainly in historical context.
- The Ministerial Order on Student Learning expects students to recognize the responsibility for environmental stewardship and sustainability.
- Alberta's approach has included debates about balancing climate change education with local industry perspectives such as oil sands.

British Columbia

- Greening Education Partnership member
- BC's redesigned curriculum is concept-based and competency-driven, with strong integration of climate change and environmental topics across grades and subjects.
- The province is working to support educators with climate resources (currently K-3 resource guide is available) and offers a dedicated Climate Change Education page.
- Climate preparedness/adaptation strategy aims to strengthen resilience
- BC is a member of the Greening Education Partnership.

Manitoba

- "Tomorrow Now" Green Plan emphasizes whole-society mobilization for environmental sustainability, including green skills development, public awareness, and support for K-12 environmental education

- Indigenous Education Policy Framework (Mamàhtawisiwin) establishes principles and practices for embedding Indigenous perspectives, knowledge, and teaching into all aspects of Manitoba's education system
- Better Education Starts Today: Putting Students First policy focuses on system-wide improvements that include learner-centered approaches, skills for future readiness, and inclusive curriculum development
- Education for Sustainable Development (ESD) Toolkit & Correlation Chart provides practical K-12 curriculum tools and templates for integrating sustainability learning across subjects and grades.

Ontario

- "Acting Today, Shaping Tomorrow" (2009) set goals for student engagement, teaching, and environmental leadership.
- The framework aims for Grade 12 students to acquire knowledge, skills, and perspectives to foster connections to living things and the environment.
- Many school boards use a system of EcoSchools certification for sustainability performance.

New Brunswick

- The Climate Education Framework (2022) covers climate literacy in science and social studies, linking curriculum to the SDGs and climate resilience.
- A Climate Action Plan and recent curriculum revisions set objectives for environmental literacy and action.
- In Annex A of Climate Action Plan - By 2027, the goal is for 10–20% of educational staff to receive climate change training.

Newfoundland and Labrador

- *Way Forward on Climate Change* (2019) takes a whole-of-government approach rooted in the Pan-Canadian Framework, prioritizing GHG reduction, climate adaptation, and capacity-building across sectors. It emphasizes stakeholder, public, and Indigenous engagement in climate action, with sections on public education and community outreach as essential tools for building resilience and sustainable behaviours.
- *Climate Change Action Plan* (Midterm Update, 2021) advances environmental protection and climate resilience by reinforcing climate adaptation, pollution prevention, and net-zero emissions as departmental priorities. It supports green workforce transition and energy efficiency, while working with industry and unions on the skills and knowledge needed for a climate-ready future AND stresses intersectoral partnerships and programs designed to increase climate literacy among employers, employees, and the public.
- *Indigenous Education Framework* (2018) embeds principles of Indigenous knowledge, perspectives, and land-based learning into the curriculum and teaching practices of Newfoundland and Labrador's school system.

- *Dedicated to Diversity: A Framework for Multicultural Education in Newfoundland and Labrador* establishes foundational values of respect, equity, and inclusion for all students, ensuring that multicultural education is mainstreamed throughout curriculum, learning environments, and policy

Northwest Territories

- The *Educational Renewal and Innovation Framework* encourages partnerships between schools and communities for positive relationship-building around environmental learning.

Nova Scotia

- Greening Education Partnership Member
- *Our Climate, Our Future: Nova Scotia's Climate Change Plan for Clean Growth* is the province's 2022 plan to address climate change by reducing emissions and building a cleaner economy. It contains 68 actions organized into four areas: responding to climate impacts, reducing greenhouse gas emissions, seizing clean economy opportunities, and reporting and evaluating progress.
- *Taking on Climate Change: A Teaching Companion for Educators Across Nova Scotia* is meant to encourage the inclusion of climate change education in Nova Scotia schools.
- *Accountability Report 2022-2023* (Department of Education and Early Childhood Development) focused on renewing and updating curriculum by supporting learning on environmental stewardship through sharing new materials created to support Science 10/Sciences 10, distributing materials on climate change, biodiversity and environmental sustainability to schools, and making additional resources available.

Nunavut

- Inuit Qaujimajatuqangit Education Framework embeds environmental stewardship and interconnectedness of life throughout curricula, using Inuit knowledge and values.

Prince Edward Island

- Prince Edward Island and Climate Change: A Strategy for Reducing the Impacts of Global Warming (2008) establishes a province-wide, cross-departmental approach to climate adaptation, community resilience, GHG mitigation, and public awareness-building, with an explicit section on integrating climate change into public school education (K-12)
- Climate Change Action Plan (2018–2023) outlines a five-year plan structured around adaptation, GHG reduction, carbon sequestration, education & capacity building, and knowledge sharing. It also commits government to integrating climate change knowledge into K-12 learning environments, and to developing public education programs and

professional development for key adaptation roles (engineers, planners, emergency responders).
- 2040 Net Zero Framework: Accelerating Our Transition to a Clean, Sustainable Economy sets ambitious targets for achieving net-zero GHG emissions by 2040, with a focus on whole-society climate literacy, career transition supports, and education embedded across all sectors. It identifies skills training, youth climate leadership, and accessible sustainability education as key levers for economic development and climate resilience.
- Building Resilience: Climate Adaptation Plan details priority actions to increase provincial climate resilience, including integrating climate adaptation into school curricula, supporting educator training, and public information campaigns.

Quebec

- Signatory to Common Agenda for Education and Climate Change at COP 28
- IUCN signatory
- Greening Education Partnership member
- Quebec Education Program focuses on competency development, including eco-citizenship and environmental/sustainability concepts.
- Early childhood programs include nature-based learning, while advocacy networks push for further integration of environmental concepts.

Saskatchewan

- *Educational Governance Review Report: Kindergarten to Grade 12 (Saskatchewan Teachers' Federation, 2017)* articulates principles of equitable, student-centered, and community-responsive governance, emphasizing that teaching and learning must be central to any policy or structural change.
- *Prairie Resilience: A Made-in-Saskatchewan Climate Change Strategy* is Saskatchewan's comprehensive approach to climate adaptation and GHG reduction, structured around resilience in environment, communities, and economy. It highlights the integration of climate resilience education, public awareness campaigns, and skills development for youth as key strategic actions.
- *Inspiring Success: First Nations and Métis PreK-12 Education Policy Framework (2018)* establishes guiding principles and actionable outcomes for Indigenous education, including cultural safety, Indigenous language revitalization, and land-based learning.
- *Crude Lessons: Fossil Fuel Industry Influence on Environmental Education* reports on the influence of the fossil fuel industry in Saskatchewan's K-12 curriculum and learning resources, especially around energy and climate topics.
- Development of New Oil and Gas Courses for Grade 11 & 12 Students is the creation and provincial rollout of high school elective courses focused on oil and gas, critiqued for not aligning with climate science or global sustainability targets. It raises concerns from educators and external reviewers about insufficient integration of climate risk, energy

transition, and environmental impacts, suggesting a need for realignment with best practices in climate education.
- *Provincial Education Plan: Supports Students to 2030* sets out vision and strategic priorities for Saskatchewan's education system through 2030, including skills for future readiness, diversity, well-being, and community partnerships.
- *Supporting Student Assessment Saskatchewan* provides a framework and guidelines for student assessment practices that emphasize equity, reflection, and holistic evaluation of learning.

Yukon

- Yukon curriculum adopts BC's with adaptations for Yukon content and First Nations Ways of Knowing and Being.
- *Climate Change Action Plan (2009)* establishes a territorial vision for climate change adaptation and mitigation, including commitments to youth climate education, public awareness, and formal partnerships with Indigenous governments.
- *Grade 8–9 Cross-curricular Unit: Climate Change* (Yukon First Nations Curriculum Working Group) provides an interdisciplinary teaching framework connecting climate science, place-based inquiry, and Yukon First Nations traditional knowledge and stewardship principles.
- *Quality Student-Centered Assessment and Communication i*s Yukon's approach to assessment emphasizes student voice, growth, and reflection, and is closely aligned with BC guidelines but tailored for Yukon's local and Indigenous contexts.
- *Our Clean Future Strategy (2020)* serves as Yukon's main blueprint for collective climate action, targeting GHG reduction, renewable energy, sustainable livelihoods, and resilient communities:
    - "This strategy will support youth to continue being involved in these important areas, educating and empowering them to step forward as the next generation of leaders. Our approach to empowering and educating youth will respect and reflect Indigenous ways of knowing, doing and being."

Existing frameworks and learning outcomes from non-formal education

While Canadian NGOs show leadership in fostering environmental awareness, stewardship behaviour, and experiential learning, there is a lot of diversity in learning outcomes and programmatic offering. There is opportunity to build learning outcomes and programs that align with the NFEL by the following:

- Awareness and capacity-building of NFEL to nonformal education organizations, including learning outcomes and indicators.
- Embed national and international commitments and Indigenous perspectives in NGO programming
- Develop explicit, measurable indicators and assessment strategies
- Include NFEL reporting to any education funding from the Canadian government

Finding ways to build capacity and awareness within the non-formal education sector to build programs in line with the NFEL will help to bridge the gap between current practice. While reviewing learning outcomes provided by NGOs, we noted how the EcoSchools model ranks levels of engagement within schools - from program initiation, emerging, developing, accomplished, to outstanding. This type of ranking could be helpful for ranking education systems across NFEL areas.

Summary of Indicators from Empirical Research

A rapid review of empirical research and program evaluation studies has shown several categories of indicators used to assess aspects of environmental learning outcomes. These indicators span formal education, non-formal programs, health programs, and youth development, with varying degrees of relevance and robustness for monitoring or evaluating the implementation of the national framework. For this rapid review, we treated it as exploratory rather than comprehensive. We wanted to gain an understanding of the methods and tools used for data collection. We plan to revisit empirical research where warranted as learning outcomes and indicators are developed in the next stage. At this point of time, this rapid review provided enough familiarity with the research design and data collection methods to realize that significant time and resources would need to be allocated to apply many of these tools at scale for monitoring progress on the NFEL across Canada.

Major Indicator Types

- Cognitive Outcomes:
    - Critical Thinking and Problem-Solving Skills: Evaluative frameworks such as those reviewed by NAAEE track growth in inquiry, analysis, and problem-solving abilities, the new PISA assessment is another example. Qualitative prompts (e.g., student journal reflections) are also used to assess sense of place and systems thinking capacities.
    - Knowledge/Content Mastery: Many studies measure increases in environmental knowledge, content-specific understanding, and issue awareness following educational interventions. These indicators often focus on changes in students' ability to articulate scientific concepts, ecological systems, and current environmental issues.
    - Skills and Green Competencies: Research includes transfer of practical skills, technical knowledge, and transformative abilities relevant for sustainability—such as project planning, leadership, or citizen science participation. Research is also emerging around measurement and indicators of specific green competencies/skills.

- Socio-Emotional Outcomes: Indicators increasingly capture climate emotions (e.g., hope, anxiety), pro-environmental attitudes, and values using mixed methods. There are a couple of emerging scales focused on hope and climate emotions in the literature that could be employed at scale. Positive Youth Development (PYD) models, including Lerner's Five Cs (competence, confidence, connection, character, caring), are applied to measure broader impacts on social-emotional learning and resilience.

- Behavioural and Action-Oriented Measures: Programs often assess observable stewardship behaviours, action intentions (e.g., willingness to participate in conservation efforts), and completed environmental actions. Capacity-building and self-reported behaviour changes are frequently cited.

Implementation Notes

- Mixed methods approaches are common: quantitative (pre-post surveys, knowledge tests) and qualitative (interviews, journal prompts, project artefact review). Mixed methods study take considerable time and resources.
- Most robust evaluations integrate indicators across multiple domains (e.g., combining knowledge, skills, and behaviour assessment) - these also take considerable time and resources to monitor and evaluate.
- Studies note gaps in explicit outcome definitions and in the comparability of indicators, limiting longitudinal tracking and national benchmarking.
- Current emphasis in research is on measuring direct environmental/climate learning outcomes at the individual level; fewer studies measure indicators of pro-environmental/pro-climate behavioral change at individual or collective/community level that would allow tracking whether environmental/climate learning is having measurable impact on society-wide environmental and climate outcomes.

Illustrative Models and Tools Referenced

- NAAEE's Outcome Tools and Evaluation Indicators resource provides a comprehensive list of indicators and qualitative tools for evaluating sense of place, pro-environmental behaviour, and youth development in environmental education programs.
- Lerner's Positive Youth Development (PYD) model is commonly referenced for measuring broader impacts on participants under age 18.

Empirical research studies provide a foundation of evaluative indicators for environmental learning, but further work is required to align and standardize these tools for consistent use in monitoring and evaluating the NFEL. There are also many questions of feasibility of transferring a research instrument to a large Pan-Canadian monitoring and evaluating project.

Synthesis

The landscape review demonstrates noticeable diversity in policies, frameworks, and evaluative practices across international, national, provincial/territorial, and non-formal education contexts, reflecting both areas of innovation (such as BC's curriculum integration, Indigenous-led approaches, and provincial frameworks and curriculum policy) and persistent fragmentation at a system-wide level. However, policy at the international level provides the mandate to develop the NFEL while existing sub-national policies show a fragmented foundation from which the National Framework and Environmental Learning can work to create more coherent and future-focused practices across Canada.

Strong policy alignment is visible with global commitments such as SDG 4.7, SDG 13.3, the Paris Agreement, and the Kunming-Montreal Biodiversity Framework, yet indicators supporting formal monitoring and reporting for these commitments remain inconsistent or underdeveloped across Pan-Canadian curricula or monitoring and evaluating processes.

International examples showcase diverse approaches to multi-domain and multi-scale indicators of environmental learning and their associated learning outcomes. However, the landscape review of international jurisdictions suggests existing indicators tend to focus on coverage, participation, and process/output, with fewer outcome-based or impact metrics—an area that could be further developed for long-term tracking. For example:

- For the Expanding Educator Capacity pillar, most existing indicators focus on participation in training, but fewer capture ongoing efficacy, quality/impact of educator networks, or change in classroom practice.
- For Flourishing Learning Spaces, the international landscape suggests there is good coverage of policy integration and disaster/climate resilience in the school context, but there is limited attention to holistic, equity-driven space metrics like the quality of physical learning spaces, inclusive design, environmental health/safety, nature-based and/or outdoor learning, and comprehensive community utilization of learning spaces.
- For the Developing Data and Research pillar, existing indicators emphasize output/activity measures (e.g. research conducted, number of publications) rather than measures of data use, policy uptake, or transformative impact on education practice.
- While there are solid indicators for the Growing Green Communities pillar based on tracking the number of initiatives, leadership, and formation of structures (like committees or awareness campaigns), there are relatively few robust metrics for evaluating long-term behavior change, deep civic empowerment, or community-scale impact (beyond participation, prevalence, or program delivery).
- For the Strengthening Green Skills pillar, existing indicators tend to emphasize curriculum content and proficiency, but miss metrics for workforce connectivity, career outcomes, green skill development and acquisition, and education-green industry alignment necessary to gauge the quality of connection between education outputs and real-world green labor market integration.

Empirical research data collection and validation tools generally require in depth time and resources to distribute, collect, and analyze, which will not be feasible for monitoring and evaluating NFEL data points. Collecting and aggregating data that is comparable across these scales will require carefully scaffolded indicator design, standardized tools (where possible), and capacity-building support at all implementation levels.

Indigenous knowledge systems, Land-based education, and reconciliation calls are increasingly referenced as priorities, yet the integration of Indigenous-led approaches into mainstream policy and indicator frameworks is variable and warrants sustained collaboration. In addition monitoring and evaluating Indigenous approaches to environmental learning often requires context-specific evaluation studies and do not seem to be currently monitored or tracked.

There is clear momentum and innovation in sub-national and non-formal initiatives, but the review highlights the need for a more cohesive, nation-wide vision to support system-wide transformation and evaluation in environmental learning.

Recommendations:

Ensure NFEL is scaleable in current version
Endeavour to use Pan-Canadian Indigenous language and concepts where possible to ensure inclusivity. This should be done through consultation with Indigenous collaborators.

Clarify differences and boundaries between pillars. For example, Flourishing Learning Spaces, seems to involve the physical built learning environment, natural learning spaces, and potentially also content and pedagogies. This will most likely result in this pillar having far more learning outcomes and indicators than other pillars. Between Flourishing Learning Spaces and Growing Green Communities there is potential confusion and overlap, especially as the pillars are concerned with the enabling of the environment that supports environmental learning. Current pillars do not reference curriculum or specifics of teaching and learning and so some clarification about exactly where this occurs would be helpful. Data and Research could also be changed to be part of an implementation and monitoring and evaluating plan rather than a central pillar to the framework.

Consider learning outcomes as guiding Environmental Learning in Canada rather than bound to pillars
Develop a concise set of learning outcomes that articulate the core capacities Canadians should develop through environmental learning. These principles will inform the design of programs under all NFEL pillars but will be most visible through Flourishing Learning Spaces, Strengthening Green Skills, and Growing Green Communities. They would not be specifically tied to the pillars since Expanding Educator's Capacity and Data and Research would not have learning outcomes. In this way, the learning outcomes would be considered overarching and cross-cutting but still aim to inform all pillars.

Adopt Multi-Scale Indicators for monitoring and evaluating NFEL

Multi-scale indicators enable tracking of environmental progress of implementing the NFEL at multiple levels—from individual/classroom (“nano”), school/program (“micro”), district/system (“meso”), to province/nation/international (“macro”).

This approach draws on research such as Fazio & Campbell (2024) and Bhowmik et al. (2020), both studies recognize the importance of scale in systems of interventions - Fazio & Campbell focused on curriculum intervention and Bhowmilk et al. focused on size of community for climate intervention.

Bhowmilk et al., (2020) argue the most effective scale for climate action is at the community level—groups of about 10,000 people. At this scale, collective action achieves the largest reduction in CO_2 emissions (179 gigatons) and supports the widest range of implementable solutions (56 actions) across all sectors. While slightly larger networks (around 100,000 people) yield higher financial returns, the community level represents the “sweet spot” where climate action can be most efficiently initiated, incubated, and scaled for systemwide impact.

Fazio & Campbell, 2024*	Bhowmilk et al., 2020*	NFEL proposed indicators
Nano	10^0 10^1	Individual / classroom
Micro	10^2 10^3 10	school/ program
Meso	10^4 10^5 (10,000 - 1,000,000)	School board
Macro	10^{678910}	Subnational, national, international
*Fazio, X. E., & Campbell, T. (2024). Science curriculum-making for the Anthropocene: Perspectives and possibilities. *International Journal of Science Education*, 1-21.	*Bhowmik, A. K., McCaffrey, M. S., Ruskey, A. M., Frischmann, C., & Gaffney, O. (2020). Powers of 10: seeking ‘sweet spots’ for rapid climate and sustainability actions between individual and global scales. *Environmental Research Letters*, *15*(9), 094011.	*Proposed approach, recognizing most impact level at meso/school board level.

Multi-scale indicators help to identify system-level levers and bottlenecks, facilitate strategic interventions, and will hopefully enable Canada to report consistently on local, provincial, and international commitments (e.g., SDGs, Paris Agreement).

Invest in Data Infrastructure and Capacity-Building

Support the development of user-friendly measurement tools and data systems at the school

and district levels, paired with professional learning for educators and administrators. This will be important for tracking progress (for example Expanding Educator Capacity, data collection on % of teachers participating in PD or for Flourishing Learning Spaces, data collection on energy savings, etc.). This will help bridge the gap between policy intentions and on-the-ground data collection, analysis, and use.

Prioritize Indigenous-Led and Land-Based Approaches
Center reconciliation and Indigenous knowledge through genuine partnership, investment in co-developed indicators, and responsive evaluation frameworks. This approach will foster cultural safety and meaningful inclusion, and provide context-sensitive models for broader system change

Clarify Accountability and Reporting Pathways for Global Commitments
Establish clear reporting mechanisms and feedback loops for SDGs, Paris Agreement, and biodiversity targets, ensuring Canadian educational data is robust, transparent, and actionable at local, regional, and global levels. If information isn't passed to a reporting body for inclusion in international reporting then it doesn't get reported. This could be why Canada sometimes ranks lower in accountability reporting on international and global commitments.

Facilitate Cross-Sector Collaboration and Innovation Networks
Encourage and resource partnerships among education systems, NGOs, research institutions, and youth organizations to pilot new approaches, share data, and build capacity for adaptive evaluation and continuous improvement in service of the goals of the NFEL.