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Canadian Policy Perspectives on Climate Change and Nature-Based Solutions

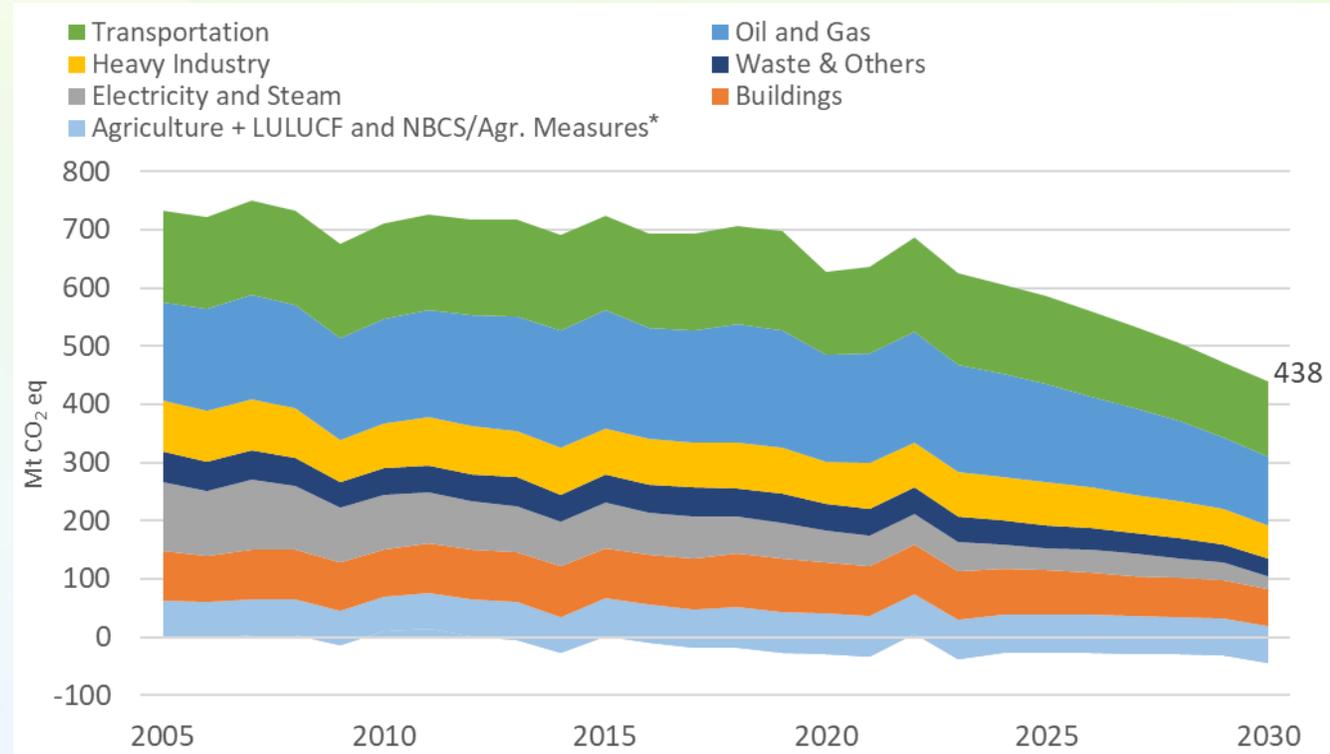
Forestry and Agriculture GHG Modeling Forum
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Canada's Climate Commitments

- The **Canadian Net-Zero Emissions Accountability Act** enshrines in legislation Canada's commitment to achieve **net-zero emissions by 2050**
- Canada's **2030 Emissions Reduction Plan** is a sector-by-sector roadmap that lays out the measures needed for Canada to **reduce its emissions by at least 40% below 2005 levels by 2030**



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Science shows substantial NbS potential in Canada

- 2021 study led by Nature United involving 16 other research institutions, including NRCan and AAFC, shows large-scale implementation of NCS by 2030 could provide annual mitigation of **78 MtCO₂e in 2030** and **100+ MtCO₂e in 2050** at competitive cost, with considerable co-benefits.

AGRICULTURE



37 MtCO₂e/yr by 2030

38 MtCO₂e/yr by 2050

- Cover crops
- Biochar
- Nutrient management
- Trees in agricultural lands

FORESTS



12 MtCO₂e/yr by 2030

56 MtCO₂e/yr by 2050

- Afforestation
- Less old growth harvest
- Improved tree growth
- Increased wood utilization
- Avoided forest conversion
- Urban canopy cover

WETLANDS



16 MtCO₂e/yr by 2030

7 MtCO₂e/yr by 2050

- Avoided peatland conversion
- Avoided conversion of freshwater mineral wetlands
- Salt marsh restoration

GRASSLANDS



13 MtCO₂e/yr by 2030

5 MtCO₂e/yr by 2050

- Avoided conversion grasslands
- Grassland restoration of riparian buffers

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How Canada manages its forests and the values from them is a core part of NbS

- 362 million hectares of forest (40% of Canada's land base, 9% of world forest cover)
- Contains 2/3 of all species in Canada
- Over 23 million people lived in or near forests in Canada (2/3 of total population in 2016 Census)
- 70% of forest land managed in Canada is independently certified as sustainably managed
- 9.1% of Annual Allowable Cut is held by Indigenous
- 500-600 million trees planted each year
- Managed forests and associated wood products are currently projected to contribute 42 Mt CO₂e towards meeting Canada's 2030 climate target

benefits can take decades to materialize

And involve complex interaction at the ecosystem level amongst living organisms

- Forests can store large amounts of carbon, but carbon removals (sink) decrease with forest age
- Emissions/removals result from natural dynamics, natural disturbances (e.g. wildfires, insects) and human activities
- Climate change is affecting forests; natural disturbances are increasing, causing very large emissions and negatively affecting conservation goals

Domestic nature-based solution investments



Natural Climate Solutions Fund:
Over \$5 Billion invested in domestic measures leveraging nature to provide emission reductions and co-benefits for human well-being and biodiversity

2 Billion Trees
\$3.2 Billion

**Nature Smart
Climate Solutions**
\$1.4 Billion

**Agricultural
Climate Solutions**
\$655 Million

Supported by ongoing science:

- Maximizing tree survival and carbon sequestration
- Better calculating and maximizing GHG reductions
- Identifying, measuring and maximizing co-benefits of NbS



Includes support for provinces and territories implementation of forest-based mitigation activities involving afforestation, reforestation after natural disturbances, improved forest management and use of waste wood for energy.

Carbon trading is a key NbS Implementation Tool

- A number of trading regimes exist where carbon offsets can be traded, encouraging private sector investment in NbS
- The **federal GHG offset system** will incentivise GHG emission reductions from sources not covered by **federal carbon pricing**. Two protocols in the land sector:
 - **Improved Forest Management on Private Land** (draft released)
 - **Enhanced Soil Organic Carbon** (under development)
- Provincial offset systems with forest sector protocols:
 - **British Columbia** has an established offset system and a revised draft protocol on forest projects
 - **Quebec** has an offset system with a protocol for afforestation/reforestation on private land

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Conservation initiatives

- Canada committed to conserving **30%** of its lands and oceans **by 2030**
- Canada is investing up to \$500 million to **protect and conserve biodiversity, habitats, and species at risk**, and restore ecosystems in the province of **British Columbia**

Making progress towards protecting 25% of our land and water by 2025



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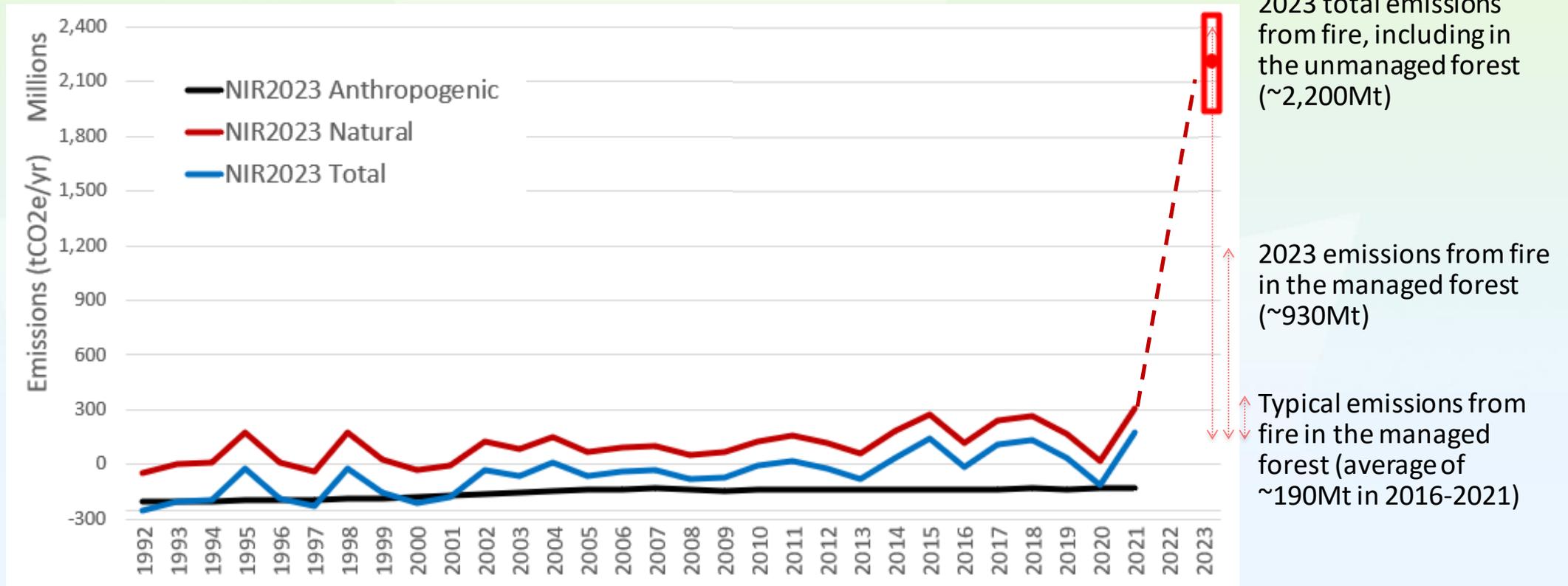
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Forests are at risk from climate change

- 2023 saw unprecedented wildfires, with Canada's entire forest (managed + unmanaged) releasing **3.3x the emissions from all other sectors** in Canada (~2200 Mt) [preliminary estimate]

Managed forest (ecosystem) GHG emissions/removals



Working towards increasing resilience to wildfire

- Science is ongoing to understand **mitigation potential** from actions such as fire breaks, planting more hardwood, thinning, or fuel load management.
- There are **trade-offs** involved in wildfire prevention measures:
 - May increase emissions in short term (e.g. fuel reduction)
 - May have short term smaller adverse impacts on biodiversity and habitat (vs long term larger losses from severe large wildfires)
 - Trade implications (e.g. SLA subsidies, market access)
- Canada's \$285 M **Wildfire Resilient Futures Initiative (WRFI)** will enhance community prevention and mitigation, and support innovation in wildland fire knowledge and research



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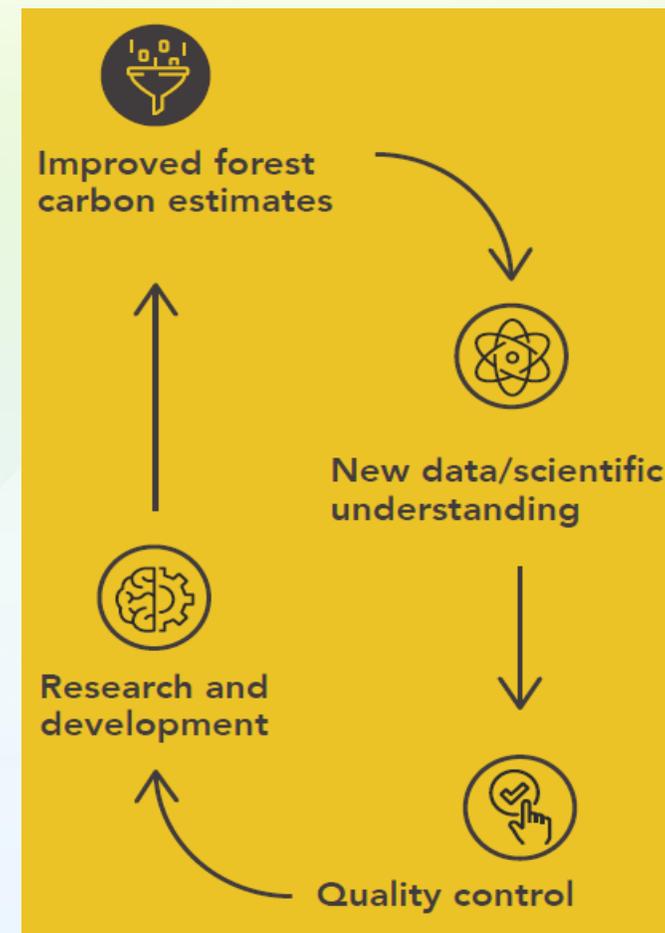
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Forest carbon estimates and modelling are continuously improved

- Canada's next GHG inventory report (April 2024) will include a **significant improvement** to forest GHG estimates
 - Involves new data from provinces/territories on areas harvested prior to 1990
- Canada is reviewing its **accounting approach** for determining the contribution of forests towards Canada's climate targets
 - Canada currently uses forest **reference level** approach
- Announced in Budget 2023, the government has committed \$54.6 million over three years for improved **national forest monitoring data and reporting**:
 - Enhancing Canada's **forest carbon analysis tools** and reporting capabilities
 - Improving our data to estimate of the **impact of industrial forestry** on forest carbon
 - Improving our understanding of **forest degradation** and developing a reporting framework for Canada



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Canada's Forest Carbon Blueprint

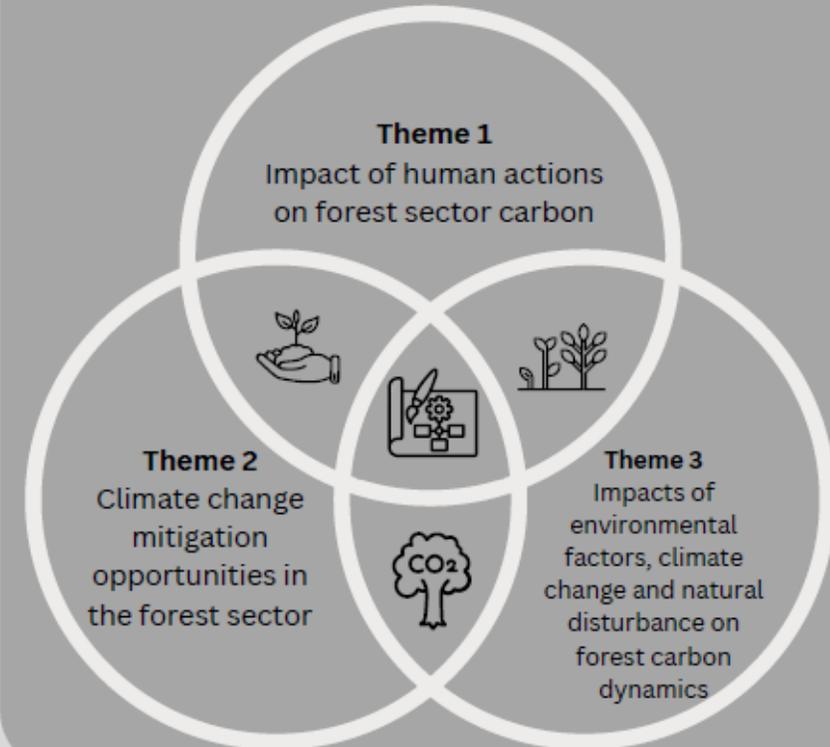
- Canada recently updated its [Blueprint for Forest Carbon Science](#) following extensive consultation and collaboration with external experts and stakeholders
- Takes stock of the **progress** made in forest carbon research since 2012
- Identifies **research priorities needed to support forest carbon policy** over the next decade through 5 themes
- Goal is to help funding organizations and the forest carbon science and policy communities across Canada to focus their resources and align their efforts

Societal Outcomes

Theme 4: Indigenous Perspectives and Traditional Knowledge

Theme 5: Connecting forest carbon to other values

Data and modelling infrastructure



NbS in the forest sector face challenges, but also offer opportunities

There are many uncertainties involved in calculating NbS benefits and their impact on emissions

- Quantifying the co-benefits of NbS is a recent and evolving field of study
- Opportunity to develop and integrate tools and models to better understand implications of NbS on emissions, biodiversity, wildfires, community climate change resilience, etc

Climate change is already increasing the severity and frequency of natural disturbances (e.g. wildfire) and extreme weather events, affecting forest productivity and causing very large emissions from forests

- NbS will require a long-term approach to forest management that seeks to reduce these risks and promote adaptation
- Opportunity to advance modelling the projected impacts of climate change on forest carbon

Effective implementation of NbS must be grounded in respect for Indigenous rights, culture and traditions

- Opportunity to advance reconciliation through Indigenous leadership in NbS implementation and weaving Indigenous knowledge with western science

Trade-offs can arise between mitigation measures and other objectives such as biodiversity

- Mitigation measures may have low biodiversity value, such as afforestation with non-native monocultures
- Biodiversity NbS may have low mitigation value such as the significant warming potential of forests (albedo effect).

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