Canadian Wood Pellets in a Net-Zero Future

Creating Economic Opportunities, Improving Circularity, and Reducing Emissions

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Canada's Forests

Canada is the **third** most forested country in the world - home to **9%** of the world's forests (362M ha)

40% of Canada is forested land with ~ **140 native tree species**

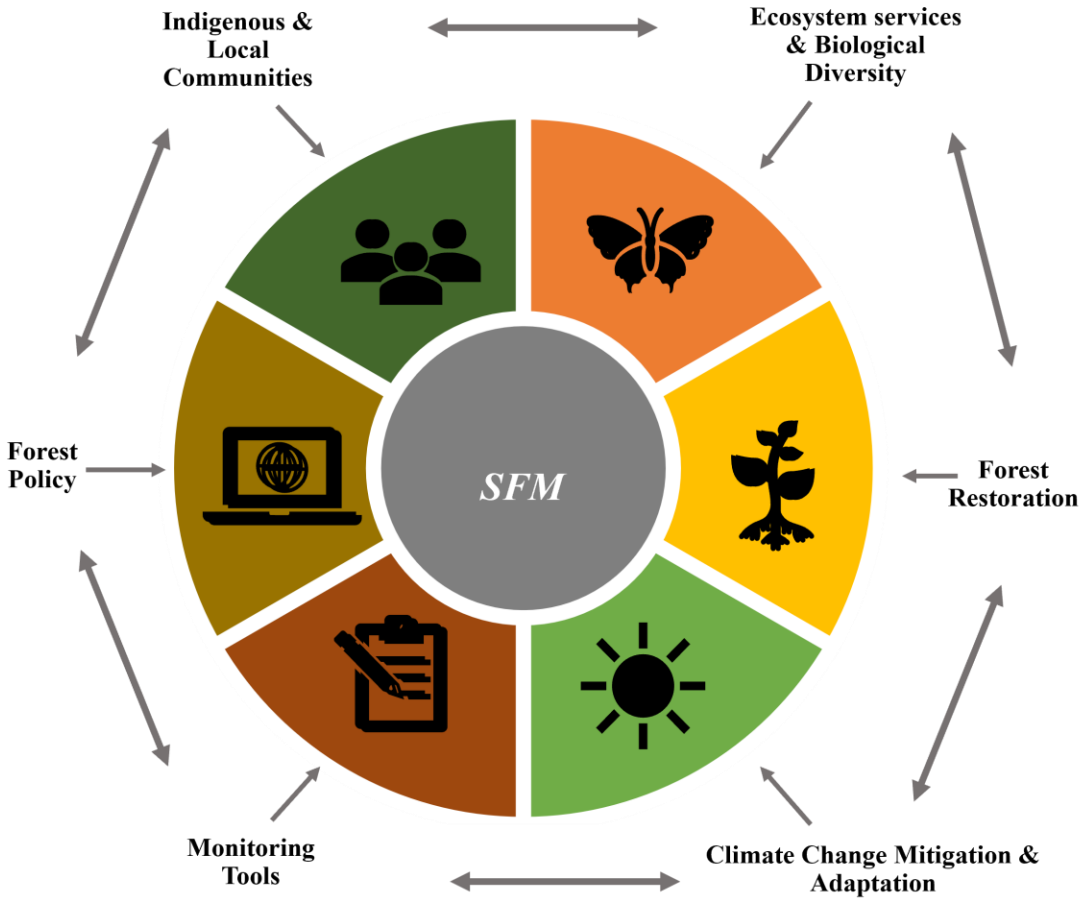
72% of Canada's managed forest land is certified to third-party standards for sustainable forest management

Sustainable Forest Management

Sustainable Forest Management (SFM) practices enable forests to maintain their **biodiversity and economic productivity** now and in the future

SFM takes in account the many components included in sustainable and healthy forests such as **environmental, social and cultural considerations**

SFM **is aligned** to support several of the sustainable development goals



Sustainable Forest Management in Canada

SFM underpins **federal policy objectives** including two overarching principles of:

Sustainable Harvesting

- The annual forest harvested area is monitored through the National Deforestation Monitoring System
- Sustainable harvesting ensures that the level of industrial activity is sustainable over the long term

In 2021, the harvested area represented 0.2% of the total area of forest land

Forest Regeneration

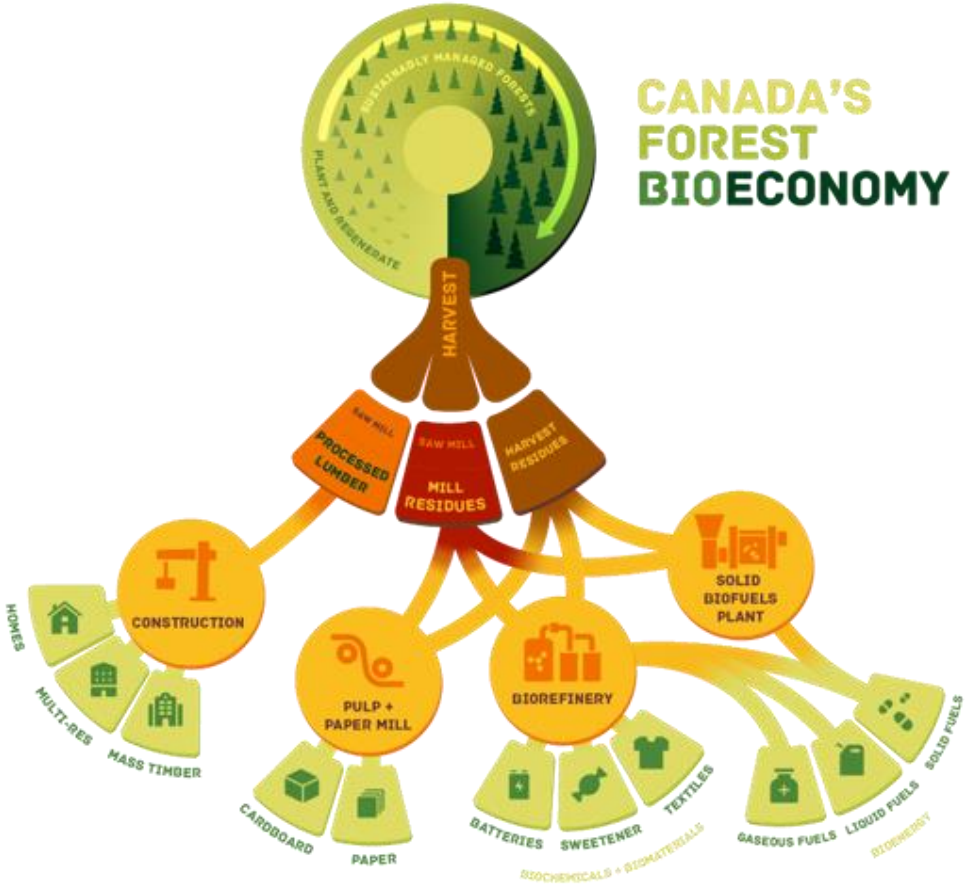
- All forests harvested on public lands must be regenerated by law
- Regeneration activities ensure that harvested areas regrow as forests

In 2021, over 625 million seedlings were planted in Canadian forests to replace harvested trees

The Forest Bioeconomy's Cascading Value Chain

Canada's forest bioeconomy is **an integrated and cascading value chain** that ensures all parts of a sustainably harvested tree are used for manufacturing products in decreasing economic value

This maximizes the use of harvested trees, eliminates waste, and supports manufacturing renewable low-carbon goods

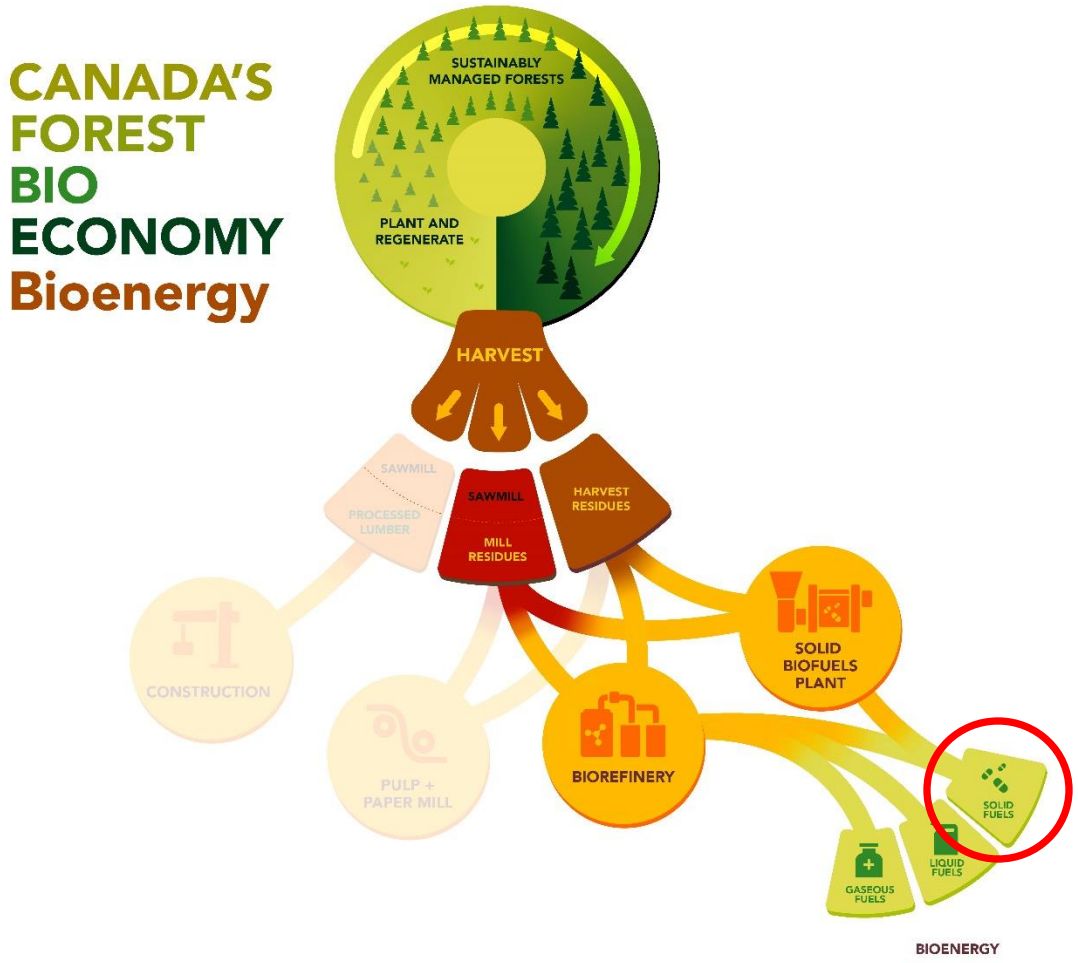


The Forest Bioeconomy's Cascading Value Chain and Wood Pellets

As part of the forest bioeconomy's value chain, wood pellets, and other biofuels, **add-value to waste and by-products** that would otherwise go unused

This **avoids value-less emissions and ensures energy capture** and use from materials that would be left to decay or burned for waste-management

This also **creates new economic opportunities** for companies and communities and **supports the diversification of the value chain**

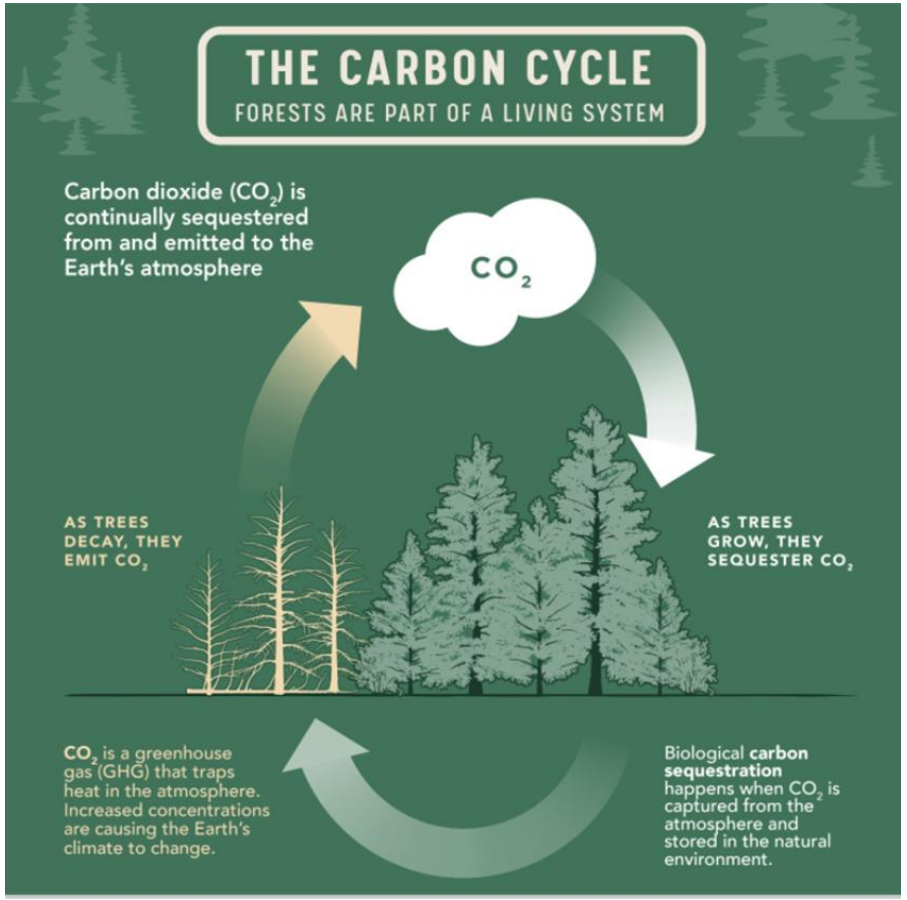


Forest Carbon Cycle Overview

Forests form part of the earth's **natural biogenic carbon cycle which consists of the emission and sequestration of CO_2** in the earth's ecosystems and atmosphere through processes such as photosynthesis, respiration, and decomposition

When trees are harvested, the emission of carbon across the life span of harvested trees, and forest products made from them, is carbon **that was previously sequestered from the atmosphere** by the forest stand through photosynthesis

The emission of carbon from harvested trees **is balanced by regeneration**, which is legally mandated in Canada, to ensure the earth's carbon cycle remains stable



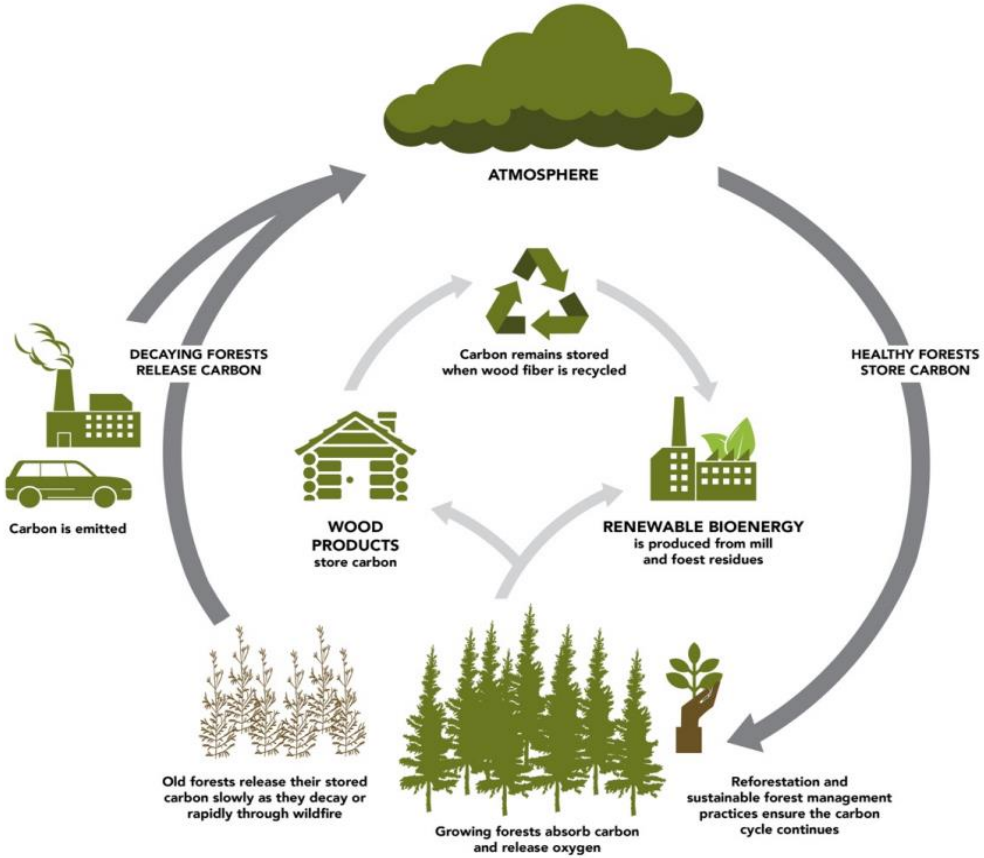
Forest Carbon Cycle and Wood Pellets

The forest bioeconomy's value chain **also aligns with the forest carbon cycle**

Harvested trees used to manufacture long-lived wood products store carbon over time while displacing more carbon-intensive materials

Any waste or by-products are then used to used to produce value-added products like wood pellets, that use byproducts that would otherwise be left to decay or burned

Wood pellets, and other biofuels, can be used in turn to replace fossil fuels and **are part of the biogenic carbon cycle**

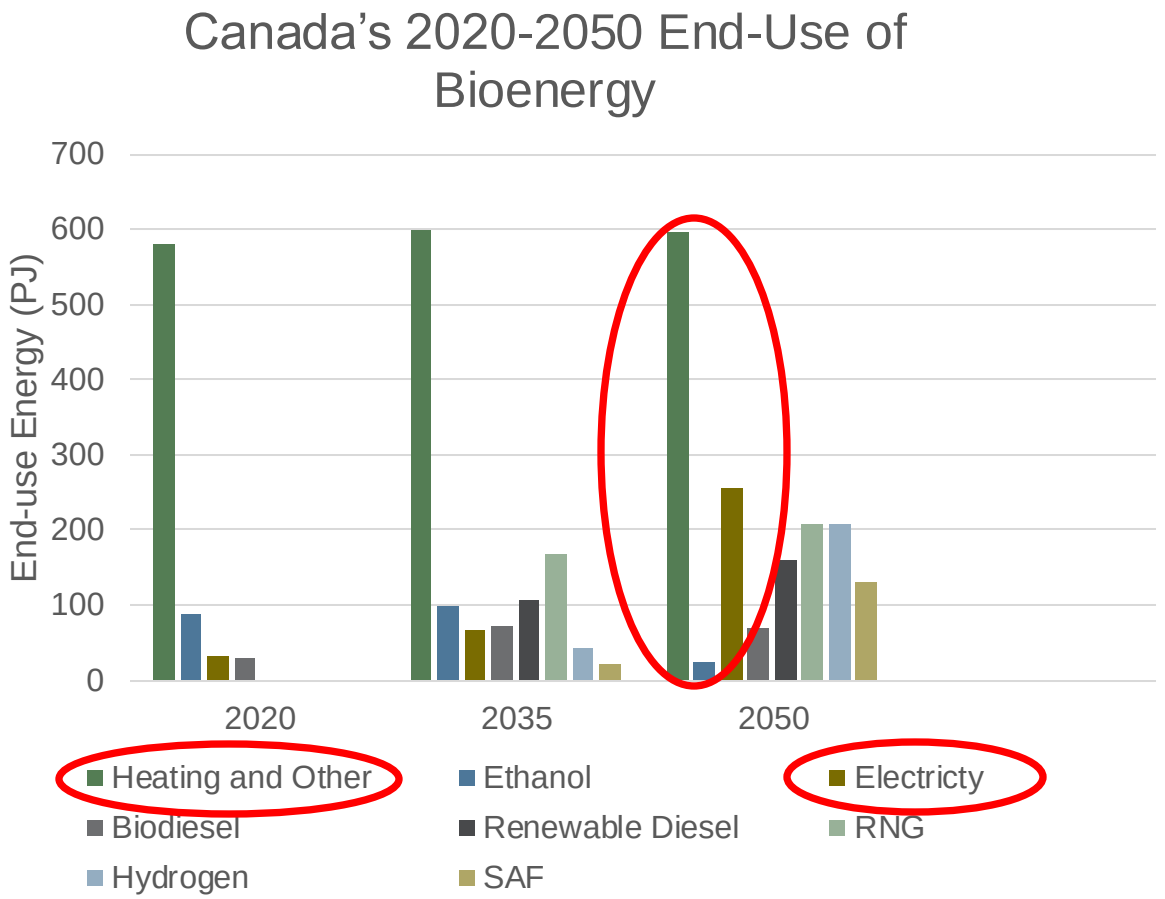


Wood Pellets and Canada's Energy Transition

By 2050 bioenergy anticipated to make up about **16% of Canada's energy supply**

Use of biomass for heating and electricity expected to make up the largest share

Significant opportunities exist for wood pellets **to support 'drop-in ready' emission reductions** in hard-to-electrify sectors



Source: Canada Energy Regulator, 2023.

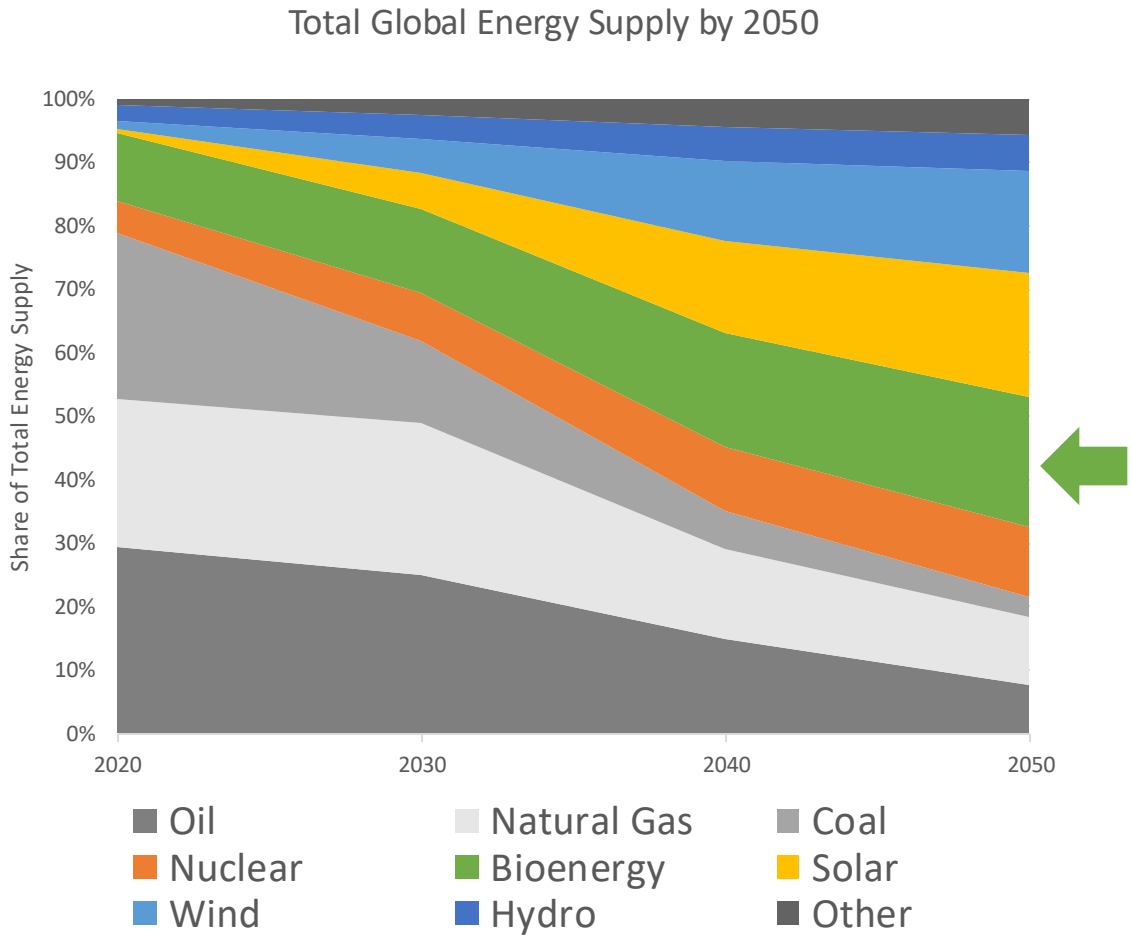
Wood Pellets and the Global Energy Transition

Demand for bioenergy to increase six-fold by 2050

Will make up **20% of total global energy supply**

Continued **market development** for low-value by-products and **export opportunities** expected for Canadian wood pellets in a global net-zero future

Will not impact Annual Allowable Cuts (AAC) in Canada as they **are not determined by pellet demand** - ensuring continued sustainability of Canadian bioenergy



Source: International Energy Agency

Role of the Canadian Forest Service

Sustainability & Traceability

Working with industry, provinces and territories to support capacity to trace sources of fibre for forest products and to affirm use of residues and waste for bioenergy products

Carbon Accounting

Working with provinces, territories, and academia to support forest carbon research domestically and internationally to improve understanding of forest carbon dynamics

Wood Fibre Supply & Availability

Working with provinces and territories to improve understanding of wood fibre supply, accessibility, logistics, and impacts from natural disturbances to support value chain development

Market Development & International Trade

Promoting Canadian forest products to growing international markets

Conclusion

When sourced from sustainably managed forests and part of a cascading value chain, where they are produced using residues and waste, wood pellets are a source of renewable energy

There are growing opportunities to use wood pellets and other solid biofuels across different sectors to support Canada's energy transition

Canada can continue to supply global demand for wood pellets to support emissions reductions in heat and electricity generation and will need to be prepared to address issues related to traceability and sustainability