

CASCADING USE PRINCIPLE

Across global markets, bioenergy customers and regulators recognize circular economy principles—such as the cascading use of wood—as essential to achieving climate goals. Cascading means using wood in the smartest order: first for long-lived products, then for re-use and recycling and only at the end for energy. This principle is central to Canada's approach to forestry and the wood pellet sector, guiding how resources are managed from forest to final product. It also aligns with the European Union's Renewable Energy Directive (REDIII), which requires cascading use and safeguards against market distortions.

Managed under some of the world's strongest laws and independent certification systems, the

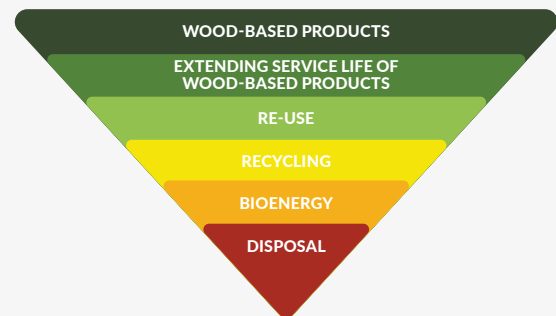
Canadian forest sector delivers sustainability, value and efficiency. Harvested trees first supply lumber, panels and other long-lived products that store carbon for decades, while by-products and lower-grade materials are channelled into other productive purposes. This ensures no part of the tree is wasted while also supporting rural economies.

Within this integrated system, Canadian wood pellets are made entirely from residuals. This includes sawmill by-products that were once burned as waste. Increasingly, pellets also incorporate harvest residues such as treetops, branches and low-quality logs, and salvaged fire- or pest-damaged wood that cannot be used by other mills.

Figure 1 The order of use of woody biomass according to the Renewable Energy Directive 2023

Canada's pellet industry is built on an integrated approach that maximizes the value of every tree—storing carbon in long-lived products first, then using residuals to produce renewable energy.

This model aligns with global sustainability priorities and underscores Canada's position as a trusted partner in advancing the circular economy and cascading use of wood.



THE CASCADING USE PRINCIPLE IN PRACTICE

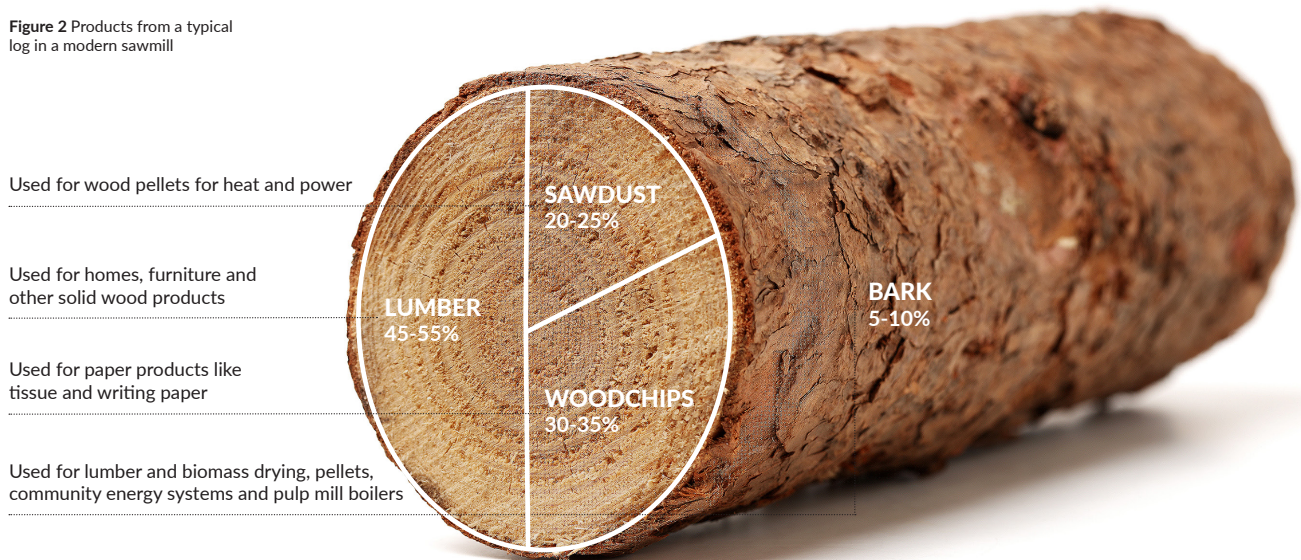
Cascading use means directing wood to its highest value use first, recycling and reusing where possible and recovering energy only from material that cannot be used elsewhere. This approach maximizes resource efficiency and climate benefits including:

- **Carbon storage** – High-quality wood products keep carbon locked away for decades.
- **Fossil fuel displacement** – Residuals made into wood pellets replace coal or oil, reducing greenhouse gas emissions.
- **Future potential** – Coupling bioenergy with carbon capture and storage (BECCS) could deliver permanent carbon removals, further advancing global net-zero goals.

Canada's integrated fibre flow is fundamentally based on the cascading use principle. Logs are first directed to lumber production, with additional fibre supplied as pulp chips to pulp mills. The remaining sawdust and shavings are used to make pellets. The bark is also fully utilized—primarily for energy in lumber and biomass drying, with some incorporated into pellets.

This model ensures that long-lived uses are always prioritized, preventing the market distortions that concern policymakers. Pellets provide a sustainable outlet for material that cannot otherwise be used.

Figure 2 Products from a typical log in a modern sawmill



INDEPENDENT ASSURANCE AND GLOBAL RECOGNITION

Governments and regulators increasingly rely on independent certification to verify that biomass is sourced legally, sustainably and in line with cascading use. The Sustainable Biomass Program (SBP) is a leading standard that explicitly requires application of the cascading principle, tracking material through the supply chain and confirming both life-cycle greenhouse gas performance and cascading use.

In Japan, for example, the SBP is recognised under its Feed-in Tariff (FIT) and Feed-in Premium (FIP)

programs, confirming compliance with the *Clean Wood Act* and its focus on cascading use. Canadian pellet exporters meet SBP requirements, ensuring products satisfy strict legal, sustainability and climate criteria. This builds on the sector's long-standing commitment to forest management certification systems such as the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) and, the Sustainable Forestry Initiative (SFI) which add another layer of independent verification from forest to final product.