

Wildfire Management: Canada's Carbon Opportunity and a Lesson for All

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Canada's recent wildfires have released well over half a gigaton of carbon dioxide in a single season, which on par with the annual emissions of Japan or Germany. Removing this volume through engineered carbon capture would cost more than one trillion dollars, yet only a fraction of that is spent on wildfire suppression and sustainable mitigation. Proactive forest management, which includes thinning, harvesting, and putting fuel wood to productive use, offers a far more cost-effective path, reducing fire intensity while creating low-carbon products and rural jobs. Redirecting even a small share of carbon-offset spending toward such projects could fund lasting prevention. For both Canada and elsewhere, investing in prevention is sound climate policy and an economic imperative.

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In 2023, Canadian wildfires released an estimated 570 to 727 teragrams (Tg) or as much as 727 million metric tons of carbon dioxide (CO₂) according to NASA's Jet Propulsion Laboratory (Byrne *et al.* 2024). That staggering number doesn't even include other greenhouse gases, fine particulates, or the broader health, ecological, and economic devastation, such as communities erased from the map (Jasper, Alberta), wildlife habitat destroyed, human health crises, and weeks of hazardous air quality across major cities. To put these emissions in perspective, the CO₂ emitted from Canada's wildfires is comparable to Germany's annual CO₂ emissions of about 750 million tons in 2024 (European Commission).

Capturing that volume of CO₂ from a point source, which is arguably the simplest carbon capture scenario, would require more than USD 1.3 trillion in capital investment, not including ongoing operating costs. And that is a conservative estimate. By comparison, Canada's most recent wildfire suppression spending was just over CAD 1 billion. Adjusted for exchange rates, that's the financial equivalent of spending \$1 to fix a problem that will cost \$1,800 if left unchecked.

The imbalance is clear: we are investing far too little in prevention, while the "after-the-fact" solution is astronomically expensive. Bridging this gap is not optional. From both a capital-effectiveness and climate-policy standpoint, modernized forest management is not just the cheaper path, it's the only sustainable one.

The Case for Proactive, Not Reactive, Forest Policy

For decades, Canada's wildfire strategy has been built around centralized suppression, in other words, reacting to fires already out of control. In contrast, the Nordic

model for wildfire prevention, which is used in Norway, Finland, and Sweden, offers a proven alternative: active forest management. By thinning overcrowded stands, harvesting mature timber, and maintaining mixed-age, mixed-species forests, these countries reduce fire intensity, increase carbon storage, and protect biodiversity. This is not theoretical. Fuel reduction programs in Alberta and British Columbia, run in partnership with Indigenous communities and private contractors, have lowered treatment costs by about 20% and reduced severe fire incidence by 60% in treated areas. Scaling these programs nationwide could break the cycle of mega-fires.

Canada leaves vast amounts of biomass unused. In Ontario alone, about 14 million cubic metres of harvestable biomass go untapped annually. Across the country, slash piles comprising branches, tops, and small trees are left roadside or burned, either way wasting a resource and releasing carbon. That same material could be transformed into mass timber and engineered wood products that displace carbon-intensive steel and concrete, or into pulp, paper, and packaging that replace plastics. It could be converted into bioenergy and advanced biofuels to cut fossil fuel use or processed into biochemicals and specialty products for high-value markets. Turning underutilized biomass into durable products or clean energy reduces fire risk, generates rural jobs, and locks carbon away.

Today, organizations will pay hundreds of dollars for permanent CO₂ removal. Could these same buyers fund verified forest management projects that measurably reduce emissions by preventing mega-fires? By redirecting even a fraction of carbon-offset dollars toward prevention—particularly projects that actively utilize fuel wood removed during thinning and hazard-reduction treatments—Canada could create a new revenue stream for rural and Indigenous communities while lowering climate risk for everyone.

This fuel wood, if processed into biomass energy, pellets, mass timber, pulp, or biochemicals, not only offsets fossil fuel use and locks carbon away in durable products, but it also makes fuel reduction financially sustainable. These are tangible, verifiable interventions that transform what would otherwise be dangerous wildfire fuel into low-carbon economic value.

The western United States faces a similar wildfire-carbon spiral. Lessons from Canada's shift toward proactive, partnership-based management could be applied south of the border, especially in states such as California, Oregon, and Washington, where climate, forest type, and fire behavior parallel much of British Columbia and Alberta. Coordinated investment in active management could transform wildfire from a recurring catastrophe into a manageable ecological process.

Policy Imperative

If countries are serious about climate leadership and solving the challenge of wildfires, they must rebalance budgets to shift from reactive suppression toward proactive fuel reduction and biomass utilization. In Canada, indigenous-led stewardship should be scaled up, integrating traditional fire knowledge into national policy. Tenure reform, infrastructure investment, and market development can incentivize biomass use, while carbon markets can provide a powerful financing tool for verifiable prevention. And above all, wildfire prevention must be treated as climate policy, not just public safety.

Every year while we wait, fuel loads grow, the climate warms, and the fires burn hotter. We can either spend billions now on prevention or trillions later trying to undo the damage.

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