



Forest Sector Innovation Framework



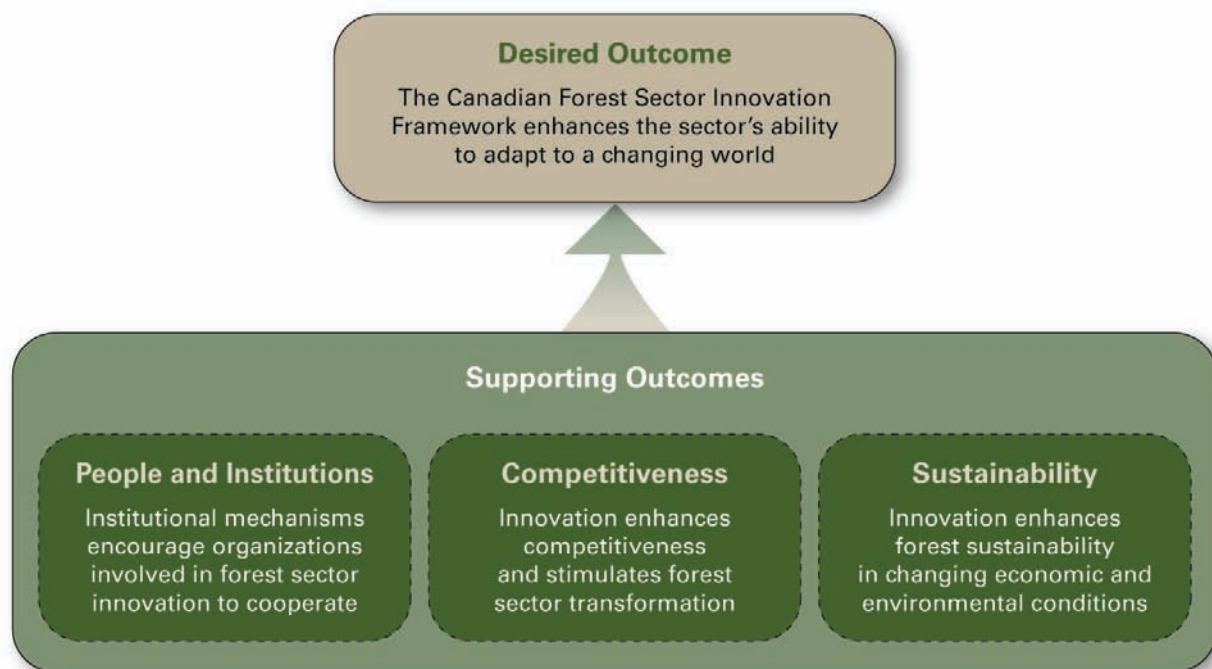
**Prepared
by**

**The CCFM Innovation Working Group
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Executive Summary

A national-level review of the institutional relationships among those who fund the acquisition of new knowledge, those who have the knowledge and those who need the knowledge has revealed continuing inefficiencies. Considerable progress has been made in the past couple of years particularly with the creation of FPInnovations and the Canadian Wood Fibre Centre. However, further progress is needed to link and focus available forest sector-related research and innovation capacities across Canada. It will also be important to better understand all key components of what should be in an effectively functioning national forest sector innovation system, and to address weaknesses or missing elements.

The Canadian Council of Forest Ministers (CCFM) is thus proposing that a national innovation framework be established to enable more of the nation's collective innovation capacity to be focused on priority issues at the national and regional levels. The framework is based on the development and strengthening of partnerships and on the collaboration of governments, industry, universities, and granting councils to achieve the desired and supporting outcomes as outlined below.



Rationale

Innovation: The key to forest sector challenges

The forest sector¹ has always faced tremendous challenges – it seeks to extract maximum value from a non-homogeneous natural resource with minimum environmental footprint. To maintain profitability and competitiveness, it needs to employ the best extraction and manufacturing technologies available, usually at high capital costs. The challenge of managing Canada's forest resources to provide for an increasingly diverse suite of outcomes continues to grow in complexity. How Canada's resource endowment is treated and used matters to Canadians, and to the world. On the domestic scene, the social license to pursue industrial harvesting of Canada's forests is linked to the forest sector's ability to demonstrate sound sustainable forest management practices. Internationally, some concerns related to the sustainable management of Canada's forests have led to significant pressures in the marketplace. This in turn is affecting access to export markets that are vital for the competitiveness of the forest sector and its positive contribution to Canada's economy. The ability to secure and demonstrate the sustainability of the forest resource is therefore critical to ensuring continued access to the forest land base, as well as the long-term supply of wood fiber with the right attributes.

Lately, a confluence of pressures is resulting in structural changes, which in turn are challenging the ability of Canada's forest industry to remain competitive. These pressures include entry to the marketplace of new low-cost competitors; rising input costs; appreciation of the Canadian dollar against the US currency; and increasing global competition with a shifting in demand from North America to Asia. As a result, Canada's forest industry has been undergoing a long-term structural adjustment and transformation. A transformed sector must be part of the knowledge economy and focussed on innovation². This includes, generally, new higher-value uses for our forest

¹ "Forest Sector" is "the broad forest community as found in government, in the public service, in industry, in academia, in institutes, in various interest groups and the public at large. It includes all who are bound together in their desire for a forest future that will fulfill the legitimate ambitions of all interests, be they environmental, social, economic or cultural." [Page 447 in Apsy, T. M. (Mike) (2001) Dynamic initiatives on the sustainable forest management journey. *The Forestry Chronicle* 77(3):447-450].

Forest Sector – the people and organizations that derive value and create wealth and well-being from the forest and its related resources. [Page 1, A Vision for Canada's Forests 2008 and Beyond (Drafft) CCFM].

² Forest sector innovation means many things - improved technology, processes and services, new and improved products, and more effective organizational and business models. It is really about tapping into human ingenuity at all levels. Innovation may involve invention or being a leader in adopting new technologies from other manufacturing sectors and from service providers. (Page 10, OUR SHARED Vision, Strategic Plan 2008 – 2012. CCFM,2007).

Innovation is often defined as new knowledge applied and includes new technologies for products and processes, regulations, policy, management, data management, market research and public decision-making processes. Moreover, CFIC viewed innovation as a culture that can encompass policy, management, regulations, products, processes, services, ideas and behaviour. Specifically innovation means:

- Introduction of new or significantly improved products, processes or services;

resources in a changing world, and, particularly, addressing changing social and economical dimensions intertwined with climate change patterns. Therefore, there is a need to focus on catalyzing investments towards expanding applied R&D in order to adopt new products, processes and technologies, and realize the untapped value of Canada's forest. Forest sector innovation need to stimulate a stream of innovative approaches linking emerging science and technology with new opportunities throughout the forest product value chain, integrating sustainable forest production methods, forest operations, transport, regulatory needs, processes and marketing. This will allow the forest sector to take advantage of new opportunities for enhanced competitiveness and sustainability. Innovation continues to be paramount in managing such challenges in a manner that supports sustainable development³.

Trends in research and innovation

At a global level, the key trend is integration and partnerships to bring together institutions that fund research (governments, granting agencies, industry, financial institutions) with those that perform research (governments, universities, industry, research institutes) and that apply research findings (e.g., governments, primary and secondary industries, marketing entities, NGOs). This is particularly true if one is interested in innovation as opposed to research. In the Canadian forest sector, the expenditures on research are equally shared between governments and industry. However, industry is mainly concerned with manufacturing, while governments concentrate primarily on forest-related research due to the predominance of Crown-owned forest land. This upstream/downstream divide resulted from Canada's unique forest research system with the industrial research institutes—Paprican, FERIC, and Forintek—focused on manufacturing and the Canadian Forest Service (Natural Resources Canada) and certain Provinces with in-house capacity (B.C., Alberta, Quebec and Ontario) focused on forest sustainability. Universities cover the full spectrum of topics.

Since the mid-1990s, the federal government has funded Networks of Centres of Excellence (NCEs) to encourage interactions between universities, governments, non-government organizations, or NGOs, and industry. The forest sector has enjoyed two NCEs—Mechanical Wood-Pulps and Sustainable Forest Management (SFM). The Mechanical Wood-Pulps has transformed itself into Papier (the Canadian Pulp and

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- The process of adopting a new thing, idea, or behaviour pattern into culture;
 - The act of creatively beginning or introducing something new;
 - The generation and exploitation of new ideas;
 - The process that moves products and services, human and capital resources, markets and production processes beyond their current boundaries and capabilities.

³ “The concept of sustainable development does imply limits—not absolute limits, but limitations imposed by the present state of technology and social organizations on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth” (Page 8 in *Our Common Future*, World Commission on Environment and Development, 1987, Oxford University Press, Oxford, UK).

Paper Network for Innovation in Education and Research), whereas the SFM Network will terminate March 2009 after receiving 14 years of funding. It is in the process of investigating different models for a new enterprise.

Efforts to develop mechanisms to consolidate the innovation system were initiated through the creation of the Canadian Forest Innovation Council (CFIC), an executive level council composed of representatives of the three constituencies that fund research and development (R&D): industry, the provinces and territories, and the Government of Canada. CFIC provided an institutional framework for the partnering of industry and the two levels of governments, particularly within the realm of innovations focused on forest sector competitiveness and across the full value chain from forests to market.

CFIC launched reviews of the innovation system in place within Canada and observed that although domestic forest sector R&D was heralded as being high quality, the system of interactions among the R&D delivery bodies was viewed as fragmented. The work initiated by CFIC facilitated two major changes—the creation of FPInnovations and the Canadian Wood Fibre Centre. CFIC was subsequently disbanded because the Board of Directors of FPInnovations was to take over its mandate.

FPInnovations is the amalgamation of the three national research institutes—FERIC, Forintek, and Paprican; it is the largest private forest research organization in the world. The fourth division of FPInnovations is the Canadian Wood Fibre Centre, a virtual organization within the Canadian Forest Service. The Fibre Centre focuses on economic opportunities for Canadian wood fibre and on the integration of the upstream with downstream to provide research along the full value chain.

The partnership of industry and the two levels of government embodied within FPInnovations is an important first step towards a fully functioning national system of innovation within the forest sector. However, the next step is certainly the inclusion of the education sector within this partnership.

Value of an innovation framework

Canada's forest resources are not simply the astonishing natural wealth provided by nature; they are the result of Canadian ingenuity and a democratic society that uses an inclusive science-based decision-making process. It is fortunate that Canada has in the intellect, adaptability, and creativity of its citizens and its institutions a resource that can be tapped to meet economic, social, and environmental challenges. However, the demands placed on Canada's knowledge base and expertise to remain competitive in the world economy and fulfill environmental and social responsibilities are constantly growing.

Creation of FP Innovations was an important step in consolidating and aligning resources for research and innovation. But more work is needed to harness Canadian talent across the full range of disciplines and institutions in order to address the

formidable challenges described above. A necessary part of this undertaking is to develop a better understanding of all key components of the forest sector innovation system, their strengths, weakness and linkages. Research and development is one component, and will be the initial focus of CCFM's framework initiative. The key reason for proposing a forest sector innovation framework is to complete the network of relationships and create the conditions for further alignment and synergy in research and innovation efforts among existing and new players.

The framework would mobilize a constellation of equal partners and would effectively multiply the power of human creativity to transform Canada's forest-related economy and society. The framework's view of environment/resource and economic interactions would be this: by focusing on the transformative power of human ingenuity, society can increase the value of its resources over time rather than be constrained by their limits.

The Canadian Council of Forest Ministers (CCFM) has increasingly played a role in strategic guidance and priority setting since its formation in 1985. It is thus proposing that an innovation framework be established through which the nation's innovation capacity (e.g., government, industry, university, granting councils) will coalesce to further the competitiveness of the sector and to enhance the sustainability of the sector. The Framework will include provision for partnerships to enable the better integration of innovation program planning, priority setting and delivery, involving national, regional and local research program planning groups.

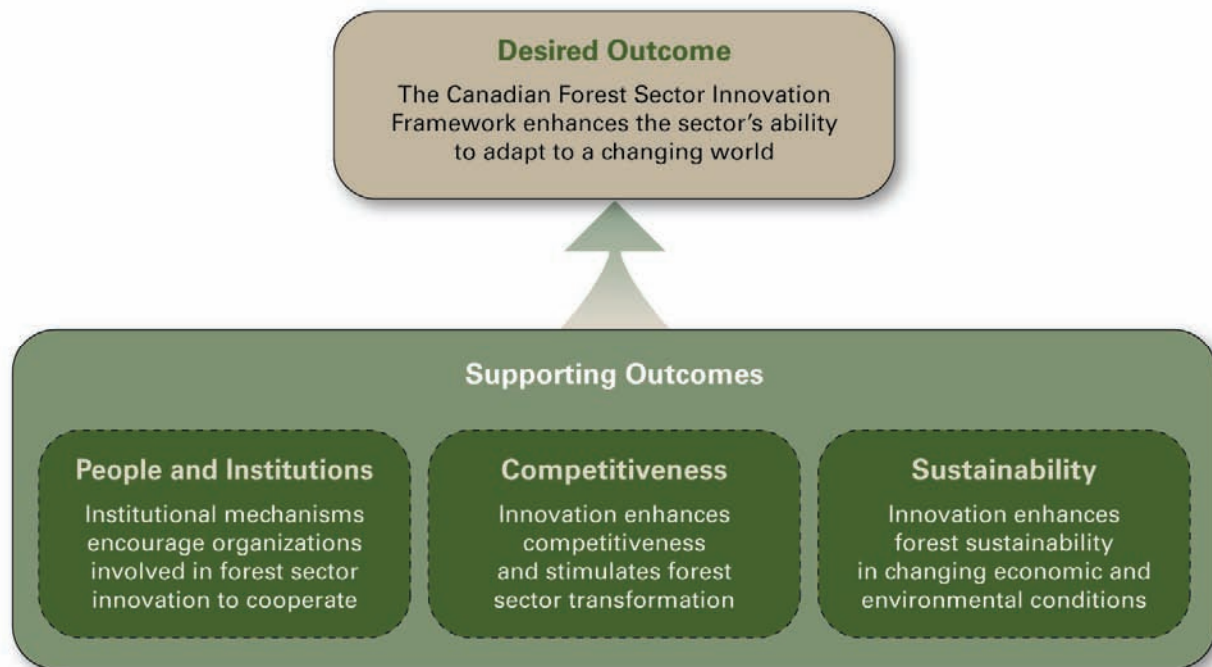
Guiding Principles for a National Forest Sector Innovation Framework

The national forest sector innovation framework seeks to enhance communication among the R&D players (See Appendix I for the preliminary list of players) and the opportunity for the players to work together for the collective benefit of Canada. To this end the participants within the system will work together to:

- a. Establish effective communication on innovation and organizational awareness, for instance, through meetings, workshops, reports, and task teams;
- b. Understand the attributes of players and enable research organizations to work collaboratively while respecting each organization's mandate, relationship, and clients;
- c. Identify areas of required cooperation that are national in scope and provide for regional expression, such as with mountain pine beetle initiatives;
- d. Marshal resources towards areas of required cooperation;
- e. Be inclusive and seek to leverage input from universities, industry, both levels of government, research boards and councils, and other research/extension providers ; and

- f. Facilitate new delivery mechanisms founded on good relationships and backed by solid agreements.

Desired Outcome



Supporting Outcomes

Canada has taken steps in transforming the way that innovation within the forest sector is organized and performed. The framework envisages the following 3 supporting outcomes.

Supporting Outcome #1- People and Institutions: Institutional mechanisms encourage organizations involved in forest sector innovation to cooperate

The desired result is a strengthened culture of teamwork and collaboration within a pan-Canadian science and innovation system. Within the system, Canadian

forest sector organizations collectively set R&D and innovation priorities to encourage greater investment in innovation. Significant attention is placed on the application of knowledge, linkage with learning organizations and education institutions, and in understanding the components of innovation and how they can be strengthened. This will require the integration and building of relationships between the players across sub-sectors and the key R&D performers and innovators within governments, universities, research institutions, and service providers to support a complementary flow of new ideas and solutions.

In this process, we hope to foster a larger cadre of leaders within the sector that can champion the role of science and innovation, as key ingredients to forest sector transformation, climate change adaptation and sustainability.

CCFM output:

1. Identify forest sector research and innovation issues and priorities
2. Promote to a better understanding of all key components of the forest sector innovation system.
3. Seek views and inputs from forest sector players such as:
 - a. FPInnovations Board of Directors (linkage with forest products and fibre flow innovation system);
 - b. Federal, Provincial and Territorial government departments (with cross-cutting and specific needs);
 - c. National and regional science and innovation granting councils and funding bodies.
 - d. FPAC (Forest Products Association of Canada) and other industry organizations;
 - e. First Nations and Aboriginal organizations;
 - f. Community and environmental organizations
 - g. Universities, research institutes, extension organizations and other science based agencies;

CCFM Actions

1. CCFM Innovation Working Group promotes the Innovation Framework at national and regional levels, and facilitates partnerships for setting and resourcing national priorities.
2. CCFM Innovation Working Group initiates discussion on mechanisms to integrate universities and the granting councils within current national institutional arrangements, with effective linkages to regional science and innovation planning and decision bodies, Priority attention is to be given to the area of forest sustainability research.

3. Federal, Provincial and Territorial representatives take the initiative to liaise with colleagues in other departments, to foster an awareness of the proposed Framework and to engender cooperation and support so that many cross-cutting aspects of forest sector innovation are collaboratively addressed.
4. CCFM develop and support strategic collaboration on forest issues created or exacerbated by a changing climate e.g. as initiated through the Council of Federation.
5. CCFM invites and encourages partners to join in collaborative initiatives to examine all components of an effective innovation “system” , and how to achieve better linkages and strengthen under-represented elements.

Supporting outcome #2- Competitiveness: Innovation enhances competitiveness and stimulates forest sector transformation

The desired result is the promotion of forest sector innovation through the stimulation of a stream of innovative approaches linking emerging science and technology with new opportunities across the forest product value chain. This includes sustainable forest production methods, forest operations, transport, regulatory needs, processes, and marketing and will allow the forest sector to take advantage of new opportunities for enhanced competitiveness.

Outputs:

Enhanced knowledge transfer and uptake by the forest sector:

CCFM Actions:

1. Enhance forest sector R&D investments by and collaboration of industry, governments, and academia in research programs and transformative technology research.
2. Enhance research extension initiatives so that available, as well as new knowledge, is collated, synthesized and related to current and emerging issues. This work must involve the close collaboration of a full range of R&D clients to ensure that products are timely and relevant.

Supporting Outcome #3- Sustainability: Innovation enhances forest sustainability in changing economic and environmental conditions

The desired result is continued forest sustainability. This will require new models that take into account changes in the sector from economic factors and in the forest itself due to a changing climate and socio-economic conditions. Traditional research has focused on the biological aspects of sustainability; however, new models integrating the social sciences with the natural sciences are required to stimulate a sector transformation that will recognize and benefit from the emerging values from the forests.

Moreover, forests are already being affected by climate change, and projections suggest that future climate may be quite different than today, especially in the northern regions and continental interiors, where most of Canada's forest is located. Some future impacts on the forest may be beneficial, but many will not and impacts will vary by location and over time. If forest sector policy-makers and stakeholders do not focus attention on adaptation, Canada's future ability to reap benefits from its forests may be compromised.

Awareness of the effects of changing environmental and economic conditions on the management of Canada's forest resources is growing. At its meetings of January 28/29, 2008 the Council of the Federation considered the adaptive challenges posed by a changing climate. Premiers identified the need for strategic collaboration on forest issues created or exacerbated by a changing climate.

Outputs

- Models integrating the social sciences with the natural sciences
- Awareness of the effects of changing environmental and economic conditions on the management of Canada's forest resources.
- Forest sector policy's attention on climate change impacts and adaptation

CCFM Actions:

1. Prepare policy-relevant information to enhance forest sustainability and stimulate sector transformation
2. Acquire more knowledge on the phenomenon itself in forest.
3. Acquire information to help the forest sector actors regarding their own emissions of CO₂ (to improve the performance of the sector).
4. Suggest alternative forest practices for climate change adaptation

5. Integrate assessment of climate change impacts and adaptation options.

Next Steps / Actions

- Development of a consensus document for approval by CCFM Deputy Ministers in June.
 - Initiate consultation at 3 levels – National, provincial/territorial (including regional R&D planning groups) and academia.
 - Results of these consultations will guide for the next steps / actions.