



Natural Resources  
Canada

Ressources naturelles  
Canada

CANADIAN FOREST SERVICE

# SPOTLIGHT

DECEMBER 2012

## Forestry Innovation: Why It Matters

Innovation is a key part of the federal government's strategy to improve the competitiveness of Canada's forest sector.

Forestry innovation involves the development of emerging and breakthrough technologies and processes, as well as diversifying the sector's products into higher-value, niche areas like bio-energy, bio-chemicals, nanotechnology and advanced materials. In turn, these products can provide the sector with new revenue sources that will protect it from future cyclical drops in overall demand. They can also help the sector offset market share losses resulting from structural challenges like the ongoing decline of newsprint demand or having to compete with lower-cost international producers.

Since 2007, the government of Canada has pursued a strategy of both encouraging innovation in Canada's forest sector and expanding market opportunities for Canadian forest products in traditional and offshore markets. This combination is expected to improve the competitiveness of Canada's forest sector and position it for a more prosperous future.

To foster innovation in Canada's forest sector, the federal government has invested \$256 million in the Transformative Technologies Program. The program supports research on the development, adaptation and deployment of pre-commercial innovative technologies and processes for the sector. The research is delivered by FPInnovations, Canada's national forest research institute, in partnership with industry, universities and provincial governments.

Since it was launched in 2007, the Transformative Technologies Program has seen a number of notable achievements. These include nanocrystalline cellulose, cross-laminated timber, and the development of bioproducts derived from lignin.

Federal investments in research on nanocrystalline cellulose (NCC), for instance, culminated in the January 2012 opening of CelluForce, the world's first pilot-scale facility for NCC. Derived from the cell walls of trees, NCC has been shown to increase the strength and stiffness of a number of materials and can be used in industrial sectors ranging from the medical to aerospace sectors. CelluForce, located at the Domtar pulp and paper mill in Windsor, Quebec, will eventually be able to produce one tonne of NCC per day, an important step in the full commercialization of this advanced material.

Cross-laminated timber (CLT) is another success. This new panel product, made of layers of timber stacked and then glued together using hydraulic or vacuum presses, can be used in commercial and mid-rise residential construction. Research under the Transformative Technologies Program has been key to its development and introduction in the North American marketplace.

Finally, there are lignin-derived bioproducts. Lignin is an organic substance that binds the cellulose fibres in wood, rendering them stiff and strong. Research under the Transformative Technologies Program has enabled its affordable extraction from wood and forest residues during the pulping process. This has enabled the development of new, higher-value applications for lignin, such as resins and thermoplastics, resulting in a broader basket of goods developed for the marketplace by the forest sector.

The federal government remains committed to positioning Canada's forest sector for the future based on a strategy that optimizes the value of forest resources through the development of innovative products, processes and technologies for the marketplace.