The Next Generation of Canada’s Forest Products Industry

Sustainability Report 2011
The next generation of Canada’s forest products industry

FPAC’s Market Leadership Programme complements Canada’s strict regulatory environment with five core principles of sustainable forest management that all members adhere to.

1. Harvest legally
2. Regenerate promptly
3. Reduce waste and promote paper recovery and recycling
4. Reduce greenhouse gas emissions
5. Be open to public scrutiny

From crisis comes opportunity. The collapse of the U.S. housing market, the global financial crisis and the soaring Canadian dollar hit Canada’s forest products industry hard. Against this backdrop of tough financial conditions, markets for traditional newsprint and for printing and writing paper are shrinking as the world goes online.

Despite these challenges, Canada remains a major global player in the forest products sector and is still one of the world’s largest exporters of forest products. New markets in China, India and other emerging economies are growing at astonishing rates. In fact, a March 2011 report from the Conference Board of Canada argues that the sector’s focus on downsizing will have to shift to a strategy that emphasizes recruiting and retaining workers. The report also notes that skill requirements for forestry workers, 40 percent of whom already hold a university or college degree, are expected to increase in coming years.¹

WHAT WILL THIS NEXT GENERATION OF CANADA’S FOREST INDUSTRY LOOK LIKE?

One thing is certain. It will present an ever more progressive face to the world. In May 2010, the Forest Products Association of Canada (FPAC), its members and nine leading environmental organizations, including Greenpeace, signed the largest conservation agreement the world has ever seen. The Canadian Boreal Forest Agreement covers more than 72 million hectares of public forests.

The Agreement stands out as a highlight of FPAC members’ commitment to sustainability. But there was a great deal more happening on this front in 2009 and 2010 as this biannual report shows. Between 2007 and 2009, FPAC members increased their use of waste-based biomass from 58 percent to 68 percent of overall energy requirements. Since 1990, they have reduced their total greenhouse gas emissions by 73 percent. Water quality continued to improve, dioxins have been virtually eliminated from water through process changes in mills, and effluents have been rendered non-toxic. And 82 percent of the paper made in Canada now comes from recovered paper and sawmill residues.

Meanwhile, the Bio-pathways project, involving FPAC, FPInnovations and Natural Resources Canada, is providing a blueprint that would see the industry lead the world in innovation and give Canada an advantage in world markets. Yesterday’s waste stream is fast becoming tomorrow’s green revenue stream as more value is extracted from every tree. The Bio-pathways project identifies a potential global market opportunity of around $200 billion by 2015.

The last two years also saw a change in attitudes as more and more FPAC member customers and international policy-makers acknowledged Canada as a leader on sustainable forest management practices. A comprehensive survey of forest product customers in the United States, Asia and Europe showed that Canada is seen as the most environmentally advanced supplier of forest products.
A bright future for Canada’s forests and Canadian forestry

With virtually zero deforestation and more original forest, protected forest, and third-party certified forest than any other country, as well as some of the toughest forestry regulations in the world, Canada is an environmental leader. On this foundation, Canada’s forest products producers are creating a nimble industry driven by emerging bio-technology opportunities.

SETTING THE ENVIRONMENTAL RECORD STRAIGHT

The forest products industry is working to set the environmental reputation agenda. After working tirelessly over the last two decades to integrate new science and innovation into forest management practices and mill operations, the industry has dramatically reduced its environmental footprint. FPAC members are promoting their environmental record as a way to differentiate their products from their competitors and secure a competitive advantage in world markets. FPAC is also seizing the opportunity to educate and counsel key stakeholders about the importance of sourcing from responsible producers. And the message is getting through. A comprehensive survey of forest product customers, in the United States, Asia and Europe showed that Canada is seen as the most environmentally advanced supplier of forest products.

ENHANCING ENVIRONMENTAL SUSTAINABILITY

FPAC members understand that strong environmental credentials and economic viability cannot be separated. Members adhere to five environmental principles: harvest legally, regenerate harvested lands promptly, reduce waste and promote paper recovery and recycling, reduce greenhouse gases, and be open to public scrutiny. In 2010, FPAC, its members and nine leading environmental groups signed the Canadian Boreal Forest Agreement, the largest conservation agreement of its kind in history.
DEVELOPING NEW TECHNOLOGIES, PROCESSES AND PRODUCTS

The forest products industry is becoming a player in the new bio-economy. Innovation is focusing on extracting more value from every tree — from energy to chemicals and pharmaceuticals. In the near future, mill operations could include a bio-refinery that produces renewable fuels, plastics and chemicals for the pharmaceutical and food industries, as well as a power plant that feeds electricity back into the grid. The Canadian forest industry is well on its way to meet the growing $200 billion global demand for bio-products by 2015.

DEVELOPING NEW MARKETS AND OPPORTUNITIES

Global demand for forest products is forecast to continue to grow well into the future, driven by rapidly growing economies in China, India and other emerging markets. Canada is one of the globe’s most successful exporters of forest products. And forest products are Canada’s number one export to the emerging Asian markets. Over the past five years, the industry has more than tripled its wood exports to China.
A bio-future for Canada’s forest industry

The bio-pathways project is a blueprint for a dynamic future for Canada’s forest products industry.

A PROGRESSIVE GREEN FUTURE

It’s a future where Canada’s forest products industry could lead the world in innovation and give Canada a competitive advantage in the new bio-economy. It’s a future defined by new prospects for growth as the Canadian forest sector moves from an established, process-driven commodity industry to a nimble, green industry serving wider markets in the emerging 21st century bio-age.

The project was led by FPAC, with FPInnovations, Natural Resources Canada and scores of economic and scientific experts. While ground-breaking science is at the heart of the bio-pathways project, it is not about a complete break with the past. Instead, bio-pathways focuses on the best ways to integrate emerging innovation with established operations.

Imagine a conventional forest industry operation. You would see piles of timber or wood chips waiting to be processed, a building housing a sawmill or pulpmill and stacks of processed wood or pulp waiting to be shipped. But in the near future, some of these traditional mills might also include bio-refineries that produce renewable fuels, plastics and chemicals for the pharmaceutical and food industries while also generating electricity that can be added to the wider grid and used in people’s homes.

The trend toward integrating bio-technology with existing mill operations is also being fueled by the Canadian forest industry’s strict regulatory environment and long-standing commitment to sustainable forest management. When it comes
to harvesting, replanting, forest science, high-tech equipment and certification systems there is no better better partner to ensure the success of value from wood waste residue than the Canadian forest products industry.

Products such as salad dressing, bulletproof vests and probiotic medicines don’t come to mind when you think of extracting value from wood waste residue. But nanocellulose derived from wood products, described by researchers as a “pseudo-plastic,” has the potential to make these and many other products cheaper and more environmentally friendly than relying on fossil fuels, chemicals and other less sustainable compounds used today. These emerging forest-based bio-products are part of the existing and future products that are making up the new and dynamic face of forestry in Canada.

The Bio-economy to 2030: designing a policy agenda, an Organisation for Economic Co-operation and Development (OECD) study, estimates that the global bio-economy could contribute to 2.7 percent of the world’s gross domestic product in 2030. The study identifies forestry as one of the main beneficiaries of bio-technology advancements.

The OECD cites several factors that will drive the emerging bio-economy and create opportunities for investment. Perhaps the most important factors are increasing population and per capita income, particularly in developing countries. The world’s population is forecast to hit 8.3 billion in 2030. GDP is expected to grow by 4.6 percent per year in developing countries and by 2.3 percent in OECD countries. Demand for innovative products and the ability to pay for them is increasing.

More from every tree, not harvesting more trees

Bio-pathways is about extracting more value from every tree we harvest, not harvesting more trees. Because bio-technology applications — such as bio-energy, bio-chemicals and bio-pharmaceuticals — use more of every tree, we can turn yesterday’s waste stream into tomorrow’s revenue stream.

Bio-technology and revolutionizing healthcare

An expected increase in elderly populations, both in China and in OECD countries, will increase the need for therapies to treat chronic and neurodegenerative diseases. Some of these therapies will be based on bio-technology, which provides possible solutions to reduce the cost of pharmaceutical research and manufacturing.

Many countries and healthcare providers will try to use bio-tech advances to reverse rapidly increasing healthcare costs. The OECD study argues that biotechnology could improve the cost-effectiveness of health therapy. Bio-technology could also contribute 10 to 14 new drugs per year by 2015, according to the study. Already, paclitaxel, a bio-active compound originally isolated from the bark of western yew, is a proven anti-tumour agent.

Bio-energy is a renewable energy resource derived from living organisms or their byproducts. It currently accounts for about 6 percent of Canada’s total energy supply. Increases in energy demand, especially if combined with measures to reduce greenhouse gases, could create large markets for bio-energy. Already, thousands of new jobs have been created through the expansion of the bio-energy industry, many of them in the rural areas of Canada where jobs are scarce.

Subjecting wood products to high pressure and temperature can produce renewable bio-oil in seconds. This petroleum substitute turns a forest waste stream into a revenue stream. The bio-pathways findings showed that producing more heat and power — and even transportation fuels — is economically viable in bio-refineries where high-value byproducts are also made, or where feedstock is inexpensive.
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIRES: FORESTS ARE ON THE MOVE</td>
<td>Lignin, the organic substance that holds together the individual fibres of wood, is being considered as a replacement for carbon black, a petroleum product used to manufacture rubber needed for products such as car tires.</td>
<td></td>
</tr>
<tr>
<td>BIO-OIL: FOREST POWER</td>
<td>Subjecting wood products to high pressure and temperature can produce renewable bio-oil in seconds.</td>
<td></td>
</tr>
<tr>
<td>BIO-ACTIVE PAPER AND PACKAGING: SMART FOREST PRODUCTS</td>
<td>Emerging technology is pointing to new uses for paper: paper towels could indicate contamination on kitchen counters, strips of paper could remove pathogens from water, and intelligent packaging could change colour to indicate freshness.</td>
<td></td>
</tr>
<tr>
<td>BIO-PHARMACEUTICALS: FOREST MEDICINES</td>
<td>Bio-active compounds in plants could lead to new and economically viable pharmaceuticals and other bio-products.</td>
<td></td>
</tr>
<tr>
<td>BIO-BUILDINGS: REACHING FOR THE SKY</td>
<td>New buildings and construction techniques are making the possibility of 10-storey (or higher) wood buildings.</td>
<td></td>
</tr>
</tbody>
</table>
A World Leader in Sustainable Forest Management

FPAC members are global leaders in producing sustainable forest products under strict environmental rules.

**ENVIRONMENTAL SUSTAINABILITY IS OUR NATURE**

Canada’s forestry regulations and laws were cited in a study from Yale University as being among the most stringent in the world. Against this tough regulatory backdrop, FPAC members continued to make good progress on environmental performance in 2009 and 2010. FPAC members maintained their strong commitment to sustainable forest management, fighting climate change, conserving water, reducing air pollution and reusing fibre.

**MANAGING FORESTS SUSTAINABLY**

FPAC members have all the forestlands they manage independently certified to one of three certification systems in use in Canada: Canadian Standards Association, the Forest Stewardship Council, or the Sustainable Forestry Initiative standards. Since 2006, third-party certification has been a condition of FPAC membership.

**Canadian Certification in a Global Context**

<table>
<thead>
<tr>
<th>Country</th>
<th>Mililitres of hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>44.9</td>
</tr>
<tr>
<td>Russia</td>
<td>25.8</td>
</tr>
<tr>
<td>Finland</td>
<td>20.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>18.5</td>
</tr>
<tr>
<td>Australia</td>
<td>10.2</td>
</tr>
<tr>
<td>Germany</td>
<td>7.7</td>
</tr>
<tr>
<td>Brasil</td>
<td>6.8</td>
</tr>
<tr>
<td>France</td>
<td>5.1</td>
</tr>
<tr>
<td>Chile</td>
<td>2.5</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1.6</td>
</tr>
</tbody>
</table>

3 Global Environmental Forest Policies: Canada as a Constant Case Comparison of Select Forest Practice Regulations, Cashore, Benjamin. Yale University, 2004.
Globally, Canada accounts for over 42 percent of all certified forests, while FPAC members alone are responsible for 26 percent of all global certified forests. FPAC members are also working to enhance certification standards. Signing and implementing the Canadian Boreal Forest Agreement in 2010 signalled a commitment to developing world-leading forest management practices.

**FIGHTING CLIMATE CHANGE**

FPAC members continue to work toward meeting their commitment to industry-wide carbon-neutrality by 2015. This will be achieved without the purchase of carbon offset credits. FPAC members are making substantial progress on climate change. Between 2007 and 2009, FPAC members increased their use of waste-based biomass from 58 percent to 68 percent of overall energy requirements. Since 1990, they have reduced their total greenhouse gas emissions by 73 percent.4 Between 2007 and 2009, members’ pulp and paper facilities greenhouse gas emissions intensity (emissions per unit output) decreased to extend improvement relative to 1990 levels by a further 2 percent. This decrease came primarily from energy efficiency gains and from switching to biomass fuels.

**CONSERVING WATER**

Water quality and quantity are managed through two main approaches: protecting water resources through sustainable forest management and managing water use and quality at pulp and paper mills. Since 1996, significant gains have been made by FPAC members in reducing water use and in improving effluent water quality. Dioxins have been virtually eliminated through process changes in mills and effluents have been rendered non-toxic by the installation of biological effluent treatment systems. Over the same period, FPAC members have achieved and maintained significant reductions in oxygen-demanding substances and suspended solids — by 90 percent and 70 percent respectively.

---

4 These results have not been adjusted to reconcile differences in survey participation rates or mill closures.
### Reducing Air Pollution

FPAC members have made substantial advancements in improving local air quality over the past decade. Recent emphasis has been on reducing sulphur that contributes to odour and on reducing particulate matter that reduces air quality. Between 2007 and 2009, FPAC members’ pulp and paper mills reduced the amount of total reduced sulphur released per tonne of output by almost 15 percent. FPAC members’ pulp and paper mills reduced the amount of total particulate matter released per tonne of output by 0.20 kilograms, or 27 percent, during the same period.

In addition to ongoing management efforts and capital investments to reduce air emissions, FPAC members are participating in the Government of Canada’s Pulp and Paper Green Transformation Program as a way to make technological improvements in mills that will improve air quality.

### Reusing Fibre

Through increased innovation and targeted capital investments, FPAC members continue to integrate increasing amounts of recovered fibre into their supply chain. In 2003, FPAC members committed to reach a 55 percent recovery rate by 2012. By 2007, the Canadian paper recovery rate had already reached 58 percent. It rose to 66 percent by 2009, and today 82 percent of the paper made in Canada comes from recovered paper and sawmill residues. The industry has doubled the amount of recycled paper it produces. And it has reduced the amount of paper going to landfills by 40 percent. The key drivers behind Canada’s ever-increasing paper recovery rate are steady demand for recycled paper and increasing demand for recovered paper exports.

FPAC members have also issued a don’t waste wood challenge to municipalities. Wood waste reduction programs and tools available through FPAC’s www.dontwastewood.com are becoming an important part of the overall waste management solution for municipalities.

---

**THE CANADIAN BOREAL FOREST AGREEMENT**

Setting a New Global Standard for Conservation

FPAC, its members and nine leading environmental organizations, including Greenpeace, signed the largest conservation agreement the world has ever seen in May 2010. It covers more than 72 million hectares of public forests licensed to FPAC member companies across Canada. It is a concrete commitment between FPAC members and environmental groups to work together in the marketplace and on the ground to support sustainable forest management.

The landmark agreement changes the old paradigm of the economy versus the environment to finding collaborative solutions for the economy and the environment. And the world is taking notice. Avrim Lazar, FPAC President and CEO, was recognized for his work in bringing together industry and environmental groups at the 2011 gala dinner of the United Nations Association in Canada. The event also celebrated the United Nations International Year of Forests.
New markets and new jobs

The advent of new markets bodes well for the future of Canada’s forest products industry.

OPEN FOR BUSINESS

Although the U.S. market remains extremely weak in the wake of the financial crisis, other countries are picking up the slack. And demand looks set to soar once the U.S. fully recovers.

Consider that with the exception of paper and paperboard, forest product imports have been growing in the emerging BRIC countries — Brazil, Russia, India and China — since 2005. Over the past 10 years, BRIC countries have contributed over a third of world GDP growth. Looking forward to the coming decade, this trend is expected to continue and become even more pronounced.5

Canada’s forest products industry is moving quickly to take advantage of these opportunities. This is playing itself out in places such as B.C.’s ports. Traditionally, most of B.C.’s wood went to the United States, by rail or truck. Today, lumber is backing up at ports in Vancouver and Prince Rupert ready to set sail for China.

In 2010, B.C. sales to mainland China jumped 120 percent to $794 million, and China is now the number-two destination for Canadian wood. Forestry companies are chartering, and even buying, container ships so they can avoid the bottleneck and ship directly to China.

5 Is this the BRICs Decade? Goldman Sachs, May 2010.
WORKFORCE OPPORTUNITIES AND CHALLENGES

Although the forest products sector endured a 42 percent decline in employment between its peak in 2003 and the bottom it hit in 2009, the sector continues to pay above-average wages and salaries.\(^6\) And after years of job losses, the industry is set to enjoy a period of job growth. To meet the challenges ahead, the forest products industry must adopt innovative labour force management.

The growth of the green economy, together with the integration of new products and processes into existing forestry infrastructure, will require new talent, new skills, and new education and training programs. Already, occupations accounting for almost 40 percent of the forestry workforce require a college or university degree. Many other positions require various certificates and licences.\(^7\)

The forest products sector’s workforce is also older than the Canadian average, which suggests that retirees may need to be replaced in substantial numbers. But recent job losses have made younger people hesitant to pursue education in forestry sector specific programs.\(^8\) Given that job losses in recent years dominated employment policies, it is important that industry and government reorient themselves to prepare for a looming labour shortage — especially among highly skilled forestry workers.

---

7. Ibid.
8. Ibid.
Sustainability: It’s in our nature

SCIENCE AND VERIFICATION

FPAC members’ approach to sustainable forest management has its foundation in science. All of our policies and practices are based on six verifiable, scientifically tested criteria of sustainability developed by the Canadian Council of Forest Ministers. Each criteria is supported by specific measurable indicators.

CRITERIA 1:
Conservation of biological diversity

CRITERIA 2:
Forest ecosystem condition and productivity

CRITERIA 3:
Conservation of soil and water

CRITERIA 4:
Role in global ecological cycles

CRITERIA 5:
Economic and social benefits

CRITERIA 6:
Society’s responsibilities

BUILDING ON A PROUD PAST FOR A BETTER FUTURE

FPAC member companies continue to take pride in their track record of sustainability. But there is no hint of complacency among members. They will continue to focus on continual improvement and operate in a way that supports the FPAC Sustainability Statement.

FPAC SUSTAINABILITY STATEMENT

The Canadian forest products industry contributes to society’s well-being through its products and activities — from forest to market. FPAC members are committed to a sustainable development path built on a profitable and competitive industry.

WE WILL OPERATE IN A MANNER THAT IS:

Environmentally responsible, socially desirable and economically viable.

Forest Products Association of Canada fpac.ca
ABOUT FPAC

FPAC represents the largest Canadian producers of forest products, and all FPAC members are signatories of the historic Canadian Boreal Forest Agreement. Our members are responsible for 66% of certified forest lands in Canada. FPAC and its members, as well as a number of environmental organizations, are partners in the Canadian Boreal Forest Agreement. The group works to identify solutions to conservation issues that meet the goal of balancing the three pillars of sustainability linked to human activities. Third-party certification of member companies’ forest practices is a condition of membership in the Association – a world first.

Forest Products Association of Canada
fpac.ca

Suite 410–99 Bank Street, Ottawa, Ontario, K1P 6B9
Tel.: +1 (613) 563-1441