Innovation Case Study: Forintek Canada Corp.

FORINTEK CANADA CORP.: The Government of Canada's First Privatization, 1979

A CASE STUDY IN FEDERAL-PROVINCIAL-PRIVATE SECTOR PARTNERSHIPS

What Was the Innovation: An Overview

In 1979, the Eastern and Western Wood Products Laboratories of the Canadian Forest Service (CFS) were privatized. The federal government invited the provinces and the private sector to help underwrite a new, not-for-profit organization -- Forintek Canada Corp. -- which would carry on the work CFS had done in-house. Today, Forintek is recognized world-wide as a centre of excellence in forest and wood products research. It operates state-of-the-art research facilities in Vancouver, B.C. and Sainte-Foy, Quebec with satellite centers in Edmonton, Alberta and Carleton University, in Ottawa, Ontario. With a staff of 130 scientists, engineers, and technologists, Forintek delivers high technology services, in both official languages, to wood products manufacturers across Canada and to the federal and provincial governments.

In 1994, the wood products industry directly employed approximately 242,500 people (indirect employment is estimated to provide a further 727,000 jobs), shipped goods worth $46.9 billion and added $29.3 billion to Canada's balance of trade. Traditionally, the industry relied on the quality and abundance of the Canadian fibre supply to maintain a dominant position in world markets. For the past decade, however, product and process innovation have become key to competitive success. In 1995, Forintek's $15 million national research program (NRP) accounted for nearly 60% of the industry's basic research and development work.

Importance of Forintek as an alternative service delivery model

- Forintek is a unique partnership which involves the federal government, six provincial governments, and 150 private companies.
- The partnership delivers "private services" to corporate members and a range of "public services" to/on behalf of multiple federal and provincial government departments.
- The partnership has delivered value for money to the partners. The Forintek story holds useful lessons about privatizing government research facilities

The Rationale for the Forintek Partnership

Forintek brings together a critical mass of technical and scientific talent. Few, if any companies, could maintain an R&D establishment of this size. Nor does any single government require so large a research capacity. However, the research partnership generates significant economies of scale which allow the partners to draw benefits substantially in excess of their contributions.

Benefits

Over the long-term, partnerships are sustained by delivering results which the partners value. A 1994 evaluation study commissioned by CFS demonstrated clearly that Forintek has met this test. It concluded, for example, that Forintek's research efforts have produced "several hundred million dollars in public and private benefits over the past decade" and recommended that "notwithstanding current government fiscal restraints, federal funding support for Forintek should be maintained."

The study also tried to gauge Forintek's performance from an industry perspective and found that more than nine in ten clients indicated they were either very (59%) or somewhat (37%) satisfied with Forintek's services. Further evidence of Forintek's ability to deliver results to the wood

products industry is in its growing membership base and the successful implementation of a 35% fee increase in 1995.

There has been no formal evaluation of provincial government satisfaction with the Forintek partnership. However, their active participation in decision-making structures as Directors and members of the National Research Program Committee and the five Technical Advisory Committees, and the substantial capital contributions of B.C. and Quebec (more than $17 million) toward new laboratory facilities indicate that the provinces are getting what they need out of the partnership.

Wood products research: A public service? At first glance, the connection between wood products research and "public service" may seem remote. However, when the end use of the research is taken into account, the public service dimension becomes quite clear. Governments use Forintek to pursue a number of public policy goals including public safety, economic development, access to international markets, and environmental protection.

Under its funding agreement with the CFS, Forintek is held accountable to discharge a range of legislative responsibilities established under the Natural Resources and Forestry Acts and address other government priorities. For example, Forintek:

- provides Canadian trade officials with the expert technical backing they require to negotiate trade agreements (e.g., the FTA and NAFTA) and to defend Canadian interests in trade disputes which may threaten export sales worth hundreds of millions of dollars;
- develops, submits and defends the scientific test data required to achieve certification for Canadian wood products under foreign building codes (e.g., Japan and the U.S.A.) thus opening multi-billion-dollar export markets;
- establishes performance criteria for wood products under the Canadian and provincial building codes to ensure public safety and the quality of the building stock;
- addresses federal and provincial industrial development priorities by transferring new technology to small and medium sized enterprises;
- assists wood products manufacturers to minimize waste, maximize value-added and thereby reduce pressure on the forest stock; and
- developed a leading-edge environmental assessment technology which gives governments the data necessary to align building codes, procurement, and other policies with Canada's overall environmental priorities.

For examples of specific Forintek activities in support of government priorities, see Appendix I.

Many of Forintek's public service activities also deliver benefits to Forintek's member companies and may as well address provincial government priorities e.g., industrial development, support to small business through technical services and training programs, consumer protection, and environmental sustainability. It is this convergence of federal, provincial, and private sector interests which underlies the Forintek partnership and drives the national research program. The three partners share in both the costs and benefits.

For examples of typical member benefits of Forintek activities, sec Appendix II.

Risks, Problems, Barriers

The decision to privatize.. Rocky beginnings (1979-1984)

In 1978, with its deficit pushing $13 billion, the federal government launched a $2 billion expenditure reduction program that would trim 5,000 people from the federal payroll. One line item in the announcement proclaimed the government's intention to "privatize Ottawa and Vancouver forest product development laboratories with supporting federal contributions if necessary.

The plan called for a $4 million federal contribution in the expectation that the provinces and wood products industry would finance the remainder of the new Forintek Canada Corp.'s $7.3 million research budget.

The caveat if necessary proved to be not only prophetic, but seemed also to reflect a lack of strategic forethought about the whole exercise. There were no solid commitments from the provinces or the industry to top up the federal contributions. Nor, did the seven-month period between the announcement and launch date afford sufficient time to deal with important issues such as the status of the 250 employees, tenure rights, or the transfer of pension credits.

The federal government's initial sortie into privatization had the trappings of a technocratic exercise, planned at the centre by officials with little first-hand knowledge of the forest sector or the challenges of running a scientific research establishment. While privatization appeared to have some support in the private sector and in the forest research community, there was no consensus on how it should proceed. Moreover, formal consultation with the proposed partners does not appear to have begun until after the announcement was made. This set the new organization on a rocky course.

Forintek's founding Board of Directors sought to fund the "partnership" through continuing federal contributions equivalent to roughly half of the total research budget, with the provinces and industry chipping in 25% each. Ottawa responded with a $4 million annual commitment through to 1984. Forest-dependent British Columbia committed to yearly support of $ 1.5 million. Other provinces and notably the industry, stayed largely on the sidelines, however. Less than $1 million was raised from the major companies represented on Forintek's Board of Directors. The company scrambled to make up the shortfall through a combination of contract research and cost cutting. Staff levels fell, however, morale declined, and there were no funds available to upgrade obsolete capital equipment.

In hindsight, three main factors appear to have complicated the birth of Forintek:

1. Federal planners failed to account for the "commodity culture" of the wood products industry. Its success had been built on the quality and abundance of the Canadian fibre stock which let it pump low value-added products into a world market with a seemingly insatiable appetite for wood. There was no R&D tradition in the industry and hence little reason to expect that industry leaders would rally to the cause.

2. A second, reinforcing factor lay in the culture of Forintek and staff attitudes toward research and customer service which they inherited from their former employers. As CFS employees, Forintek personnel were understandably more attuned to government research priorities than to innovations

aimed at the bottom line. This orientation did little to overcome inherent industry scepticism about the value of R&D or the potential contribution which Forintek could make to their operations.

3. Federal planners do not appear to have accounted for the notoriously cyclical nature of the wood products sector. While buoyant markets greeted Forintek in 1979, two years later the industry was mired in its worst recession ever. In this climate, the lukewarm response to Forintek was understandable.

With some prior experience in privatization and a more intimate understanding of the wood Products sector, federal officials might have acted differently or, perhaps, moderated their expectations about industry support for Forintek during the early years. With its five-year funding commitment soon to expire, Ottawa began to serve notice that it would pull the plug on Forintek if the industry failed to step up its contribution. Still, by 1983, despite some notable achievements on the research front, the hoped-for 25% industry contribution was still a long way off. The government's first experiment with privatization appeared to be on its last legs.

Laying the foundation for partnership

Fortunately, a number of factors began to converge in 1984 which offered Forintek a new lease on life. First, the building products market began to show some signs of recovery, but new competitors from Brazil, the U. S. south east, and New Zealand, began to appear on the scene and challenge the dominant position of Canadian wood producers. In addition, new product innovations were beginning to compete with the Canadian mainstays of plywood and dimension lumber. More ominously still, a number of Canadian wood producers began to experience fibre shortages. The traditional source of competitive advantage was disappearing.

By 1984, harvest restrictions and other conservation measures imposed by provincial governments were limiting access to prime stands of old-growth forest. However, Canadian mills, designed for a now-bygone era, could not profitably exploit the smaller and different species of trees that were now available. A technological transformation was required and more of the industry began to recognize a clear rationale for investing in basic product and process research and development.

The stage was now set for Forintek to become a relevant player in the wood products industry.

With a new CEO at the helm, it took steps to capitalize on a more favourable business environment. First, a membership fee structure, based on production volume, was established so that members profiting most from Forintek innovations, bore a greater proportion of developmental costs. Second, the research program was refocussed on transferring new technology to help members cope with changes in the fibre supply. Finally, Forintek management began to engineer a much-needed change in the corporate culture. Research staff were pried out of the labs and put into the field, conducting technical audits, training employees in the use of new technology, and custom-designing solutions to problems.

On the strength of this new orientation, membership increased and, in fiscal year 1984/85, the industry met its 25% funding commitment and helped to lever additional provincial funds into the research program. Although Forintek had turned an important comer, further re-engineering was

nonetheless required to solidify the partnership and equip it to manage potentially difficult federal-provincial and regional tensions.

Two organizational developments were particularly critical. The first was to reorganize the eastern and western operating divisions so they: focussed on different product sectors, reflected the significant differences in the forest profile and fibre supply and hence, the member-technology requirements in the two regions. A second innovation was to put in place an advisory process which had the mandate to define what research was important, why it was important, and make project choices in line with those priorities. These decision-making committees included industry representatives as well as federal and provincial government officials. The committees gave each partner an opportunity to shape Forintek's research agenda and secure an adequate return on their investment. This process was the foundation for the National Research Program Committee and Technical Advisory Committees established in 1991.

By 1988, the Forintek partnership had evolved enormously from the arranged marriage which the federal government had engineered a decade earlier. In that year, the partners jointly financed a new, world-class laboratory facility in Vancouver. The $22 million cost was borne by the federal government ($13.5 million), the B.C. government ($9.5 million), and by the B.C.-based Forintek members ($3 million).

In 1994, the transformation from a federally owned concern to a functioning three-way partnership was completed with the closure of Forintek's Ottawa facility and the opening of a new state-of-the-art laboratory in Sainte-Foy, Quebec. Here too, the project was jointly financed by an $8.1 million federal contribution, matched by the government of Quebec, and a $2 million investment from Qucbec-based wood producers.

Planning for the future of the partnership

The Forintek partnership must continue to adapt to meet the changing needs and financial capacities of its members and government backers.

As Canadian wood producers face growing competition and the available fibre stream changes in character, process innovation and product development will become even more key to the industry's success. Forintek must rise to this challenge with greater emphasis on the longer-terin research needs of industry and expanded member-service capacity at the mill level. At the same time, it must continue to address the trade, environmental, and industrial development agendas of its federal and provincial government investors. To meet these needs, the Forintek Board has called for an increase in the national research program budget from $15 million in 1995 to roughly $20 million by 2002.

In view of difficult fiscal realities, particularly in the federal public sector, Forintek has proposed a financial restructuring that will see industry contributions rise to 50% of total research spending by 2002, with the federal and provincial governments each contributing 25%. In absolute terms, the plan would see the federal contribution frozen at roughly $5 million per year, the provincial contribution rising to roughly $5 million per year, and the industry share more than doubling to $ 10 million from its 1995 level of $3.7 million.

Above all, to allocate research funds strategically on projects which will sustain the wood products industry in the next century, the partners must plan together to generate a stable income stream. This will require important changes in approach by both public and private sector backers.

Member contributions must shift away from being based exclusively on production volume toward a combination of production value and volume basis to reflect the fact that innovation now drives product quality as opposed to quantity. Forintek must redouble its efforts to recruit new members and to increase member fees to levels consistent with the higher returns generated by R&D investments in today's wood products market.

Governments, too, must change their approach to funding the partnership within the context of their deficit reduction strategies. Where funding is delivered through a single department while benefits flow to several portfolios, a consortium approach may be necessary to permit long-term funding commitments. Furthermore, while investments in Forintek are appropriated as Grants and Contributions, expenditure managers must recognize the tangible services which flow to governments.

What lessons does the Forintek experience hold for the privatization of government research facilities?

The partnership model for privatizing research facilities may offer governments an opportunity to deliver 'technology intensive" service to the public at a reduced cost to the taxpayer. Forintek's experience since 1979 may hold some important lessons for policy makers who are considering this option.

1. The government's intent on privatization must be clear, consistent and transparent to the business community. It should not be an "offloading' or cost recovery exercise, but rather a recognition of government's role in supporting a technological capability (core competency) within the country and the benefits it expects from the investment in the partnership.

2. Planners must recognize that the priorities and operating culture of government research facilities inevitably reflect the needs of the owner and the interests of staff. Therefore, a strategy to change the culture of the organization must be part and parcel of the privatization decision.

3. Expectations about private sector participation in the partnership should be confirmed through market research and a comprehensive consultative process, prior to any announcement. A clear rationale for the long-term financial commitments of all partners must be established,

4. In timing the launch of a partnership venture, planners must consider the general economic outlook and state of the business cycle in the target industry sector.

From the beginning, mechanisms must be in place to give each partner a hand in shaping the partnership's research agenda. Decision-making structures must give partners an opportunity to explain and pursue their needs.

6. If the partnership provides services that impact more than one government department's mandate, each should commit to underwriting a share of the partnership costs. As well, line departments must

ensure that central agencies view contributions as a service delivery cost rather than a transfer to industry.

7. Planners must recognize that the key assets in any research facility are the scientific and technical staff who work there. They must be consulted before any formal announcement and the privatization strategy must specifically address human resource issues.

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Appendix I: A Forintek Canada Success Story: Development of Poplar and Mixed Species LVL in Canada

Many countries are approaching or exceeding the limit of their annual cut for economically accessible softwoods. In Canada, lumber producers have experienced a reduction in the availability of large logs suitable for the production of high-grade, large dimension lumber. The impact of the diminishing supply of premium logs will be greatest in eastern Canada where the overall volume of premium timber is lower. Yet, in North America, there is a growing demand for construction materials for engineered applications.

Laminated veneer lumber (LVL) can offer a partial solution to this potential supply crisis. The product was developed in the seventies using high-grade Douglas-fir veneer. Produced in large blanks, it is then cut into beams for use in residential construction where its uniform strength and wide range of dimensions allow for innovative design configurations. A second fast-growing market is its use as a high-strength flange material for composite I-beams that are now widely used as floor and roof joists in residential and light commercial construction.

A limited supply of high-quality Douglas-fir veneer encouraged LVL producers to examine other softwood species such as southern yellow pine. Several mills have been built in the southern U.S. In western Canada, the existing veneer and plywood industry is already suffering from a gradual reduction in veneer quality and, as a result, no LVL mills have been built. The eastern Canadian veneer and plywood industry is based exclusively on hardwood which includes a handful of poplar plywood mills. The market for poplar plywood, however, has shifted from a basic sheathing product to small specialty applications as other composite panel products absorb markets.

Poplar is a remarkable species. It is fast-growing and extremely tolerant to a variety of soil and weather conditions. It is not a species of choice for lumber production but produces excellent veneer. Although perceived to be a weak species when compared to softwoods, it has a relatively high specific strength. Although it is now used for many applications, such as pulp and composite panel products, poplar is still abundant in many regions and regenerates quickly.

Following a series of poplar plywood mill analyses in 1986 and 1987, it became obvious that unless new markets were developed, many of these plywood operations would fail.

Forintek scientists proposed a research project to examine the potential of producing poplar LVL. The results of laboratory tests were very positive and the project moved quickly to mill trials in 1988 and 1989. An LVIL plant in North Carolina, operating on a highly variable southern yellow pine veneer supply, was anxious to cooperate in order to gain first-hand experience on a potential new veneer supply. Mill-produced poplar LVL was exhaustively tested in comparison to commercial softwood LVL. The results demonstrated clearly that quality poplar LVL could be produced. The results were shared with poplar plywood producers and, in 1989, Tembec announced the construction of the first-ever poplar LVL plant at the site of a closed plywood operation in Temiscamingue, Québec.

Since the upper stiffness limit of poplar LVL was found to be below standards set by Douglas-fir producers many years earlier, Forintek continued to examine other alternatives to further improve properties. It was found that replacing the outer 4-plys of poplar LVL with another species, such as white birch, significantly improved LVL stiffness properties. A process of making LVL from mixed species was developed to overcome any potential incompatibilities of species and Canadian and U.S. patents were filed on the process.

The Tembec plant was opened in 1991 and the company, with the assistance of Forintek and a certification agency, developed engineering properties for the Canadian and U.S. codes. Temlam* (product name) is now well accepted by architects, engineers, and builders. Following trials in 1994, Temlam* will also offer a mixed species LVL product line for customers desiring higher stiffness material based on the Forintek-patented process. It is interesting to note that softwood LVL producers have recently stopped producing the higher stiffness grades of LVL due to the declining quality of their veneer.

APPENDIX II: A Forintek Canada Success Story: The Pinewood Nematode

Forintek contributed to maintaining the access of Canadian softwood lumber to European markets by developing a plant-health-safe and cost-effective method to eradicate pinewood nematode (PWN).

In 1990, the pinewood nematode became the source of a trade dispute between Canada and the European Union (EU). PWN was considered a potential threat to European coniferous forests, and green softwood lumber shipments from North America were restricted. The EU proposed that all imports be kiln-dried. Canada quickly responded by initiating a joint research program with the EU. Efforts focused on finding a more cost-effective, yet plant-health-safe solution. The initiative involved a broad spectrum of participants, including Natural Resources Canada (Canadian Forest Service), Agriculture Canada, External Affairs, Industry Canada, the Canadian forest industry, University of Simon Fraser, and Forintek, who conducted the research with the University of New Brunswick.

Within two years, "heat treatment, which requires green lumber to be treated to a core temperature of 560C for 30 minutes, was deemed by the EU to be a safe-plant-health measure against PWN and its vector. Heat treatment reduced costs by 75 % when compared to conventional kiln-drying. Forintek rapidly transferred the technology to the industry and the project was completed by developing the Agriculture Canada Heat Treatment Procedure.

The economic impact of this successful project is significant for the Canadian industry. First, the Canada-EU joint research initiative provided a two-year extension of the EU derogation, allowing the entrance of Canadian green softwood lumber estimated to be worth $700 million. Further, the lower cost of the heat treatment is today saving the Canadian industry an estimated $30 million/year based on a conventional kiln-drying treatment cost of $100/Mbf, and assuming that an export volume of 400 Bbf would have had to be kiln-dried.

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