Nuclear Science and Technology in Canada

Issue

Canadian Chamber of Commerce members are concerned that the enormous benefits of Canada's nuclear industry to Canadians may be in jeopardy due to an apparent lack of understanding, strategic planning and promotion at the Federal level.

Background

The Canadian nuclear industry is a substantial and integral part of the Canadian economy, involving activities from mining to manufacturing to materials research to medicine. It generates over $6.6 billion a year in economic activity, over $1.5 billion in federal and provincial revenues, with over $1.2 billion in exports in 2008 alone. The industry sustains 71,000 direct and indirect full time jobs.

Nuclear energy is clean air technology. It produces over half of Ontario's electricity, plus more in Quebec and New Brunswick, without greenhouse gas or acid gas emissions. That's the equivalent of 90 million tones of CO2 -- *avoided each year*. In addition, Canada's emissions of nitrous oxides and sulphur dioxide have also been reduced by about 10% compared to the emission that would have been produced using coal.

The Canadian nuclear industry is also of immense strategic importance. Canada's CANDU heavy water reactor technology is unique and is used in electricity generation reactors in Korea, China, India, Argentina and Romania . The nuclear research conducted in Canada, principally at the Chalk River Laboratories (CRL) and at twelve universities that are members of the University Network for Excellence in Nuclear Engineering (UNENE), not only supports these made-in-Canada reactor technologies but is used by worldwide clients to test parts, materials and samples for many kinds of manufacturing, engineering, medicine and other areas of research. It is a key component of Canada's science, technology and manufacturing infrastructure, going well beyond nuclear alone.

Since Canada's world-class nuclear industry is a complex, multi-talented and interdependent technological program , it needs all aspects to operate efficiently and collaboratively to be most effective and competitive. This has occurred, in no small measure, due to the leadership and support of Canada's federal government in providing infrastructure – like public sector research laboratories – for which there is no free-market substitute. The world's most innovative economies, such as Japan, the U.S., Germany and Korea, invest greater proportions of their GDP in government –supported research and development infrastructure than Canada does.

A large part of Canada's nuclear business is reactor sales, both at home and abroad. A nuclear reactor is a strategic investment spanning several decades, and a buyer needs to know that the seller will support the product over the long term. Also, emerging nuclear nations are looking for technology partnerships, and they expect government to be part of the team. This is another area in which the federal government's active presence is indispensable to the industry's growth.

CANDU reactor designs are instrinsically safe and proliferation-resistant. They exceed federal standards and operate safely in six countries including two of the largest future markets for nuclear energy: China and India. On May 12, the Chinese Nuclear Energy Association announced plans to boost the country's nuclear capacity by as much as eight times by 2020. A day later, India's Atomic Energy Commission announced plans to increase production 13-fold by 2020. The potential for Canada is huge.

The CCC is concerned that government may not fully recognize the benefits of our Canadian nuclear industry to Canadians, and, in particular, that *research is at the heart of Canada's nuclear industry.* For Canada to remain a competitive player in the global nuclear industry (more than just reactor sales alone) we need investments in R&D infrastructure to maintain our expertise, which is known around the world.

Sales opportunities for CANDU technology exist right now, and the network of Canadian nuclear R&D facilities is needed to support these sales prospects . The Chalk River –based division of AECL that is not being divested is central to the nuclear science and technology sector in Canada. That sector also consists of major research facilities in Vancouver, Saskatoon and Laval plus various private companies and more than a dozen universities across the country.

Recommendation:

That the federal government, working with the Canadian Nuclear Industry, put in place on an ongoing basis, a panel/committee to include, but not be limited to, experts from nuclear operators, universities, and jurisdictions that may require nuclear energy in new applications to review, oversee and make recommendations on the governance and future of nuclear science and technology in Canada.