

## **Canadian Nuclear Energy Policy**

edited by G.B. DOERN, A. DORMAN and R.W. MORRISON

University of Toronto Press, Toronto, 2001; 384 pages; ISBN 080247882

Nuclear energy policy is both relevant and important to Canada and to Canadians. The future development and commercialization of the CANDU technology, continued operation of CANDU reactors in New Brunswick, Québec and especially Ontario and the eventual disposal of nuclear waste within this country are all issues of economic, political and environmental importance. As such, the audience for a book describing institutions, policies and market challenges of a Canadian nuclear energy policy should be broad and large. Policy makers, political scientists, economists and others should be interested in the issues and analysis.

*Canadian Nuclear Energy Policy* will only partially satisfy its readers though. As is often the case with books that present a collection of conference papers, this book lacks a clear focus and the chapters present an uneven read. Most chapters are in fact interesting, but the flow is often lacking between them. This is not necessarily a problem at a conference, but makes for an unsatisfying text.

The first chapter sets the stage by describing the “precarious opportunity” available to Canada in setting future policies and evolving institutions. This chapter would have benefited by presenting more facts on the industry though. Data such as that which is presented in Chapter 3 for the United Kingdom (on the history of development, on costs, on subsidy levels, etc.) would have been helpful here, especially for readers with little prior knowledge of Canada’s nuclear industry. Having said that, the most valuable contribution of the chapter is the presentation and discussion of five key nuclear policy and institutional choices.

- (1) Who will pay for and carry out nuclear R&D and waste management?
- (2) What models of regulation will govern nuclear energy in the global innovation age?
- (3) What are Canada’s prospects for marketing CANDU reactors and uranium abroad, what long-term commitments do these efforts imply, and what is the role of government in this area?

- (4) Will a renewed federal-Ontario nuclear partnership be reconstructed to replace the more distant relationships of the past decade, one that makes sense in the context of the new quasi-competitive regime for Ontario electricity generation and AECL's focus on CANDU exports?
- (5) Can new forms of trust and transparency be built between the Canadian public and the array of public and private institutions that govern nuclear energy in Canada and abroad, especially in the context of climate change and sustainable development?

Chapter 2 presents an analysis of global nuclear markets in the context of climate change and sustainable development. Unfortunately some of the material here, likely written in the late 1990s, is already dated. For instance, the \$100/tonne of carbon figure quoted may in fact be the level at which nuclear dominates coal-fired generation. However today this figure is well above cost numbers being discussed as maximum levels for Canada's climate change implementation. Coal-fired generation is in fact on the upswing in many parts of North America. With regard to sales of new units to developing markets, nothing appears to have changed. To quote the authors, "(e)ach sale is a struggle, with long delays in purchasing decisions." (page 37) Nothing in the rest of the chapter suggests to the reader that optimism regarding future development of international markets for new nuclear units is warranted. Curiously, the chapter does not contain much discussion of the clean development mechanism (CDM), one way in which nuclear power could leverage climate change strategies to its benefit.

The chapter on nuclear power and deregulation in the United Kingdom is one of the best chapters in this collection. It presents in a clear and concise manner some of the history of nuclear development and then situates some of the key issues for nuclear in the 1990s during the deregulation of the electricity industry. The section on competitive markets and nuclear power is particularly relevant to the current situation in Ontario. The observation that British Energy is particularly vulnerable to its inflexible cost structure is, alas, all too obvious today to those who have followed BE's problems in Ontario. Finally, although the long-term issues of waste disposal and costs have not been diminished by privatization, at least they are now clear and transparent.

Chapter 4 addresses the challenges of transforming AECL into an export company. It is stated on the first page of this chapter that the "Canadian nuclear industry (...) is generally considered to be one of the most important high-tech components of the nation's economy." I would have expected this statement to be backed up by statistics that are commonly used in these types of arguments – jobs, investment dollars, exports, etc. None are presented. How does this sector compare to the telecom sector? Or high-tech? Interested readers would like to know. The

chapter really focuses on an institutional analysis of AECL rather than a business analysis. It certainly appears that the institutional challenges are quite large. If AECL remains a Crown corporation, without the ability to borrow on capital markets, how can it hope to become a viable commercial enterprise?

The evolution of the Atomic Energy Control Board and nuclear regulation in Canada is discussed in Chapter 5. The authors ably describe the evolving role of the AECB and are quite optimistic regarding its status and functions. Of particular interest is the discussion of the regulation of Ontario Hydro and the link between it and the AECB.

Nuclear waste disposal is probably the second most important issue in the minds of the public, after safe operation of nuclear plants. Chapter 6 does a good job of describing where authority lies in designing waste disposal policy in Canada. Like the U.S., Canada is considering deep geological sequestration of nuclear waste. Given the massive amount of research, analysis and debate that has gone on regarding the U.S. plans for the Yucca Mountain site, it was a little surprising to see no reference to it in this chapter. Some description of the relative size of the problem in Canada compared to the U.S., such as relative volumes of waste and geographical distribution, would also have been useful.

Chapter 7, "Ontario's Role in Nuclear Energy", is interesting but already relatively dated, given the twists and turns that have taken place in Ontario over the last two years. How does the current status of Ontario Power Generation's nuclear units impact competition, and vice-versa? What decisions will OPG make to deal with inoperative units? How might this impact construction of new plants, nuclear and other, in the province? These are the questions that the reader would like to ask today. Although interesting, much of the discussion of restructuring of the industry in Ontario is relatively superficial. The section on the impact of competition on nuclear (the operator's perspective) does not really seem to deal with issues related to competition.

Chapter 8 is one of the better chapters in this collection. It looks at restructured electricity markets and the basic message is that market-based decisions do in fact benefit nuclear generation. This may be true, but as the last two years have demonstrated in North America, electricity markets can be quite volatile. Changing conditions in fuel markets, changing environmental policies, to name but two issues, have important impacts on the relative economics of different generation technologies. Likewise decisions on Bruce and Darlington in Ontario will affect investments in other resources. The chapter provides a lot of useful information, but not enough to convince this reader that nuclear power is necessarily going to benefit in restructured electricity markets.

Chapter 9 provides a good description of the "new" Ontario Energy Board and its evolving roles and responsibilities. It is a fairly general presentation of economic

regulation and the OEB. Nuclear power seems to be something of an afterthought in this chapter. The reference to Floyd Laughren's appointment as Chair and the Harris government's choice of a "political heavy-weight" rings hollow in light of Premier Eves' unfortunate and unwarranted attacks on Laughren in 2002.

Finally, the concluding chapter does a good job of wrapping up the discussion with a look at three issues, all of which were discussed in earlier chapters. The issues are the place of nuclear in restructured electricity markets, nuclear and public opinion and waster management and intergenerational decision-making.

In summary then, this book does provide a fair amount of interesting information and discussion of many issues related to Canadian nuclear policy and industry. Part of my dissatisfaction with the text is that the chapters don't flow that well from one to the other and are uneven in terms of contribution and overall quality. However, this is not surprising given that the authors come from different backgrounds and use different approaches to analyze the issues. As an economist, I would have liked to see more discussion of markets and more data.

Joseph A. Doucet  
University of Alberta  
Edmonton, Canada