IVEY Business School
WESTERN UNIVERSITY · CANADA
Energy Policy and Management Centre

Policy Brief
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Trends in Academic Research on Canadian Energy Policy, 2000-2012

INTRODUCTION

This report provides a review of the current state of Canadian energy policy research in the academic literature. The energy sector plays a critical role in Canada's economy at both the national and provincial levels. According to Natural Resources Canada the energy sector contributed approximately $155 billion or about 9% of total Canadian GDP, 496,500 jobs or 3% of total Canadian employment, and $119 billion or 28% of Canadian domestic merchandise exports in 2012.

As a consequence, literacy regarding the energy sector is an important issue for government, industry, and citizens. This is particularly true because energy policy and energy sector development are highly complex areas, affecting a broad range of often-competing policy areas. While energy literacy can be developed through multiple channels, such as media, industry associations, government agencies, and NGOs, academic sources of information on the energy sector are regarded as being particularly influential. Survey-based studies by the University of Calgary have found that respondents place the greatest trust and confidence in academic and economic experts when evaluating information on energy issues from different sources.[1]

In light of the importance of the energy sector in Canada's economy and the opportunity for academic researchers to have a meaningful impact on energy literacy and public discourse, an understanding of the research academics are conducting in this area has clear value. The rest of this report summarizes the main insights that emerge from the construction of a database of all papers published from 2000-2012 in peer-reviewed academic journals that studied an aspect of energy policy within Canada.[2] The primary finding is that both the amount and the focus of recent academic research on Canadian energy policy leave substantial opportunities for contribution to both the academic body of knowledge and public dialogue.

AMOUNT OF PUBLISHED RESEARCH ON ENERGY POLICY IN CANADA

Between 2000 and 2012 there were 181 papers, an average of 14 articles per year, published in 61 peer reviewed academic journals in which the topic of Canadian energy policy was discussed. There has been a gradual rate of increase in the number of publications per year over this 13-year period. However, this has been driven almost entirely by the growing number of publications on renewable energy. These headline numbers suggest that the extent of academic enquiry into Canadian energy policy is rather low.

[1] See Moore, et al. (2013) and Turcotte, et al. (2012).
[2] An extensive literature search was conducted to identify relevant articles published in peer-reviewed academic journals between January 1, 2000 and December 31, 2012. Initial searches were conducted using the terms "Canada", "Canadian", "energy" and "policy". In subsequent searches more specific terms were used including names of all provinces and territories as well as "electric", "nuclear", "oil", "gas" and "renewable". Studies were considered relevant if they discussed policy trends, implications or forecasts for Canada's energy sector, or included Canada in a multi-country study.

Out of the 181 papers, approximately 60% of the first-listed authors were affiliated with Canadian universities, representing 33 institutions in total. On average, these 33 universities had a first-authored faculty journal publication on Canadian energy policy just once every 4 years. This number may understate the actual amount of university research on energy policy since some studies may be conducted as university-sponsored reports, though these need not undergo a peer-review quality assurance process. Faculty may also write policy reports targeted at industry and government audiences or for independent think-tanks and institutes in the energy sector. However, original research published in academic peer-reviewed journals is often the foundation for further applied policy work aimed at non-academic audiences, so strengthening academic research capabilities would also contribute to the latter.

The distribution of energy policy research is naturally not evenly spread among and within Canadian universities. When ranked using affiliation of first authors, the universities of Alberta, Calgary and Waterloo each had more than 8 publications, while the median university in our data set had three publications over the 13-year period. Across departments, business, engineering, economics, and environmental science faculties generated the overwhelming majority of published energy policy literature, as shown in Table 1. 23% of the articles published over the study period came from business schools alone. In addition, 64 of the 181 published papers appeared in a single, well-ranked journal, Energy Policy. (See Table 2.)

Table 1: Journal Articles by Faculty of First Author

Faculty	Number of Publications
Business	42
Engineering	33
Economics	32
Environmental Studies	30
Policy Studies	17
Political Science	7
Sociology	5
Geography	5
Science	5
Law	3
Agriculture	1
Public Health	1

Table 2: Journal Articles by Publication Outlet

Journal	Number of Articles
Energy Policy	64
Energy Economics	16
Renewable and Sustainable Energy Reviews	9
Alternatives Journal	8
Canadian Public Policy	5
Renewable Energy	5
Energy Journal	4
Energy Law Journal	4
Applied Energy	3
Canadian Journal of Economics	3
Review of Policy Research	3
Applied Biochemistry and Biotechnology	2
Bulletin of Science Technology and Society	2
Energy Efficiency	2
Journal of Environmental Economics and Management	2
Journal of Environmental Law and Practice	2
Organization and Environment	2
The American Review of Canadian Studies	2
Other journals with 1 publication each	43

TOPICS OF PUBLISHED RESEARCH ON ENERGY POLICY IN CANADA

The broad topics of academic pursuit in the energy sector are skewed. Renewable energy has gained the most academic interest over the past 13 years with a total of 75 articles published in academic journals (41% of the total). This is followed by publications on electricity with 56 articles (31%), and 44 articles related to the oil and gas industry (24%). There is a dearth of academic literature involving nuclear energy with just six articles (3%) produced over the selected time period. (See Graph 1 and Table 3.)

Two characteristics are apparent. First, there is little positive correlation between the economic magnitude of the sector and the share of academic research attention. Renewable energy accounts for a very small, albeit growing, share of electricity production in the country but it has attracted the largest share of academic research. By contrast, nuclear electricity comprises approximately half of electricity generated in Ontario, and the Bruce Power facility is the largest in North America, yet it has not captured the attention of academics conducting energy policy research. Perhaps most surprising is the minimal amount of published policy research on oil and gas in Canada, approximately 3 published journal articles per year, while the sector is the single largest contributor to Canadian GDP. Oil and gas policy also faces considerable challenges given its impact on other policy areas, such as the natural environment, climate change, Aboriginal relations, national security and so forth.

Graph 1: Total Number of Journal Articles by Year

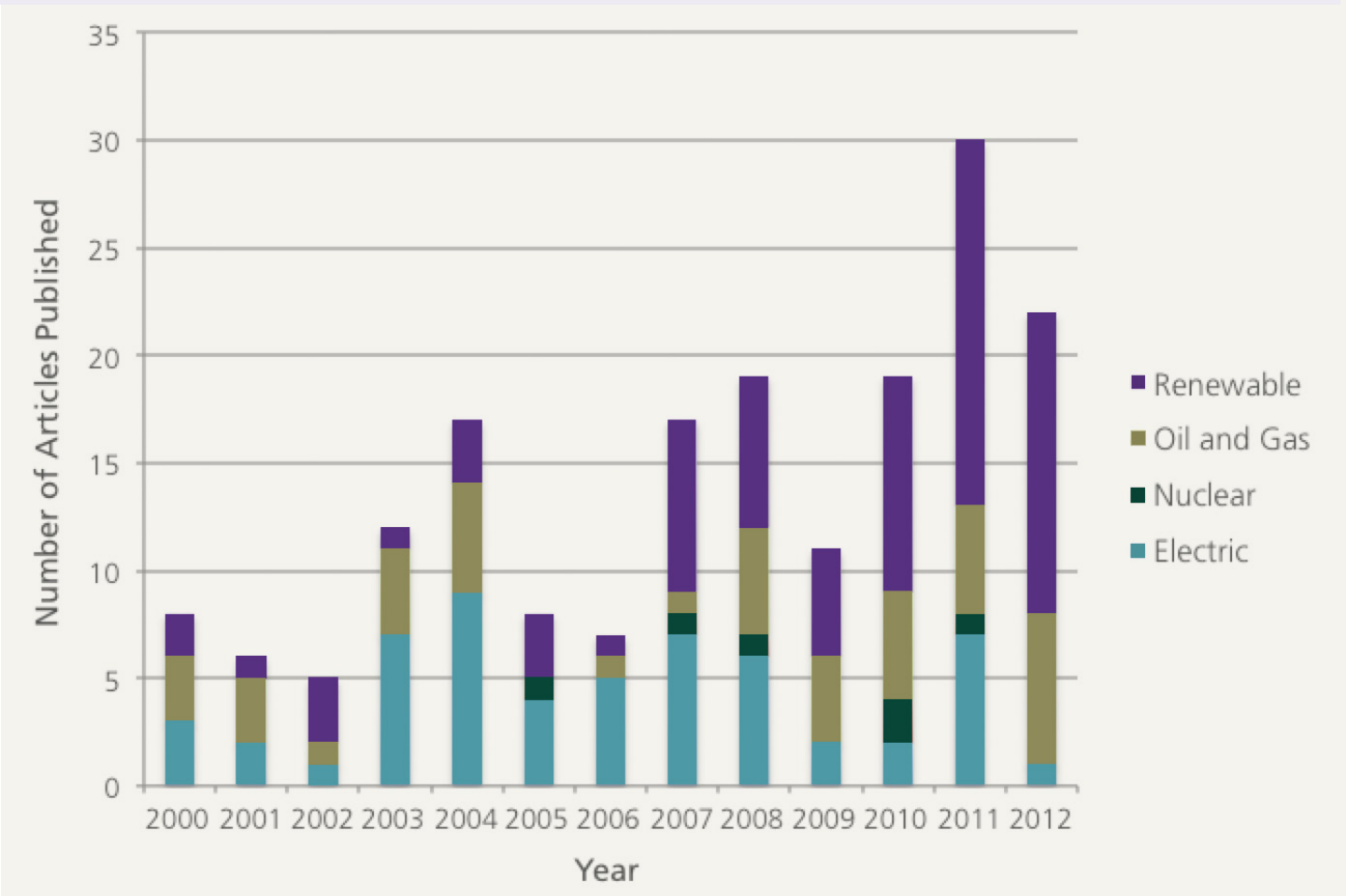

Table 3: Journal Articles by Year and Sub-Sector

Year	Electric	Nuclear	Oil/Gas	Renewables	Total
2000	3	0	3	2	8
2001	2	0	3	1	6
2002	1	0	1	3	5
2003	7	0	4	1	12
2004	9	0	5	3	17
2005	4	1	0	3	8
2006	5	0	1	1	7
2007	7	1	1	8	17
2008	6	1	5	7	19
2009	2	0	4	5	11
2010	2	2	5	10	19
2011	7	1	5	17	30
2012	1	0	7	14	22
Total	**56**	**6**	**44**	**75**	**181**

Second, within each of the four broad topic categories, there is a tendency for the focus of papers to cluster around specific sub-issues, which may or may not correlate with major policy debates and issues in the sector. Renewable energy publications, for instance, have substantially focused on the potential for, and barriers to, investment in renewable energy, the impact of alternative policy instruments on private investment, and on wind energy development in Ontario. Economic considerations such as cost and impact on consumer rates, which have been at the forefront of political and public discourse in many provinces, have not been extensively examined. In addition, the factors underlying local community acceptance of or resistance towards new, renewable energy infrastructure have not been systematically explored. In the oil and gas sector, the majority of published articles are related to environmental and climate impacts. Issues such as Canada's position in global commodity markets, shale gas development, and technological innovation, all of which are central to the future of the oil and gas sector, have captured a much smaller share of academic research.

The independent, faculty-directed nature of academic research implies that there need not be a correlation between the economic importance of a sector or the topical issues of contemporary public discourse and the amount of attention received in academic quarters. However, this brief overview suggests that there is a real opportunity for the academic literature to make a greater contribution to policy-making in the energy sector by broadening the scope of topics addressed.

CONCLUSION

In order for energy policies to be successful, credible sources of information and policy analysis should be engaged to help inform all stakeholders: consumers, business leaders, government officials, and others involved in crafting policy initiatives. Academics and economic experts are a central source of independent policy research and are well positioned to contribute to public dialogue on Canada's future in the energy sector. However, while academic interest in energy policy appears to be increasing, the absolute number of academic articles published since 2000 is very small relative to the economic importance of the energy sector in Canada. In addition, the amount of research focused on particular subsectors may be poorly allocated relative to the policy challenges Canada faces. One way to address these issues is to strengthen the relationships between universities, industry and government and to increase funding for academic research on energy policy through grants, endowed chairs, postdoctoral scholarships, graduate study and conference support. Greater access to energy sector data from credible sources such as Statistics Canada, the National Energy Board, and Natural Resources Canada would also benefit both policy researchers and other stakeholders. One option for increasing access would be to create a centralized energy data repository similar to that maintained by the US Energy Information Administration.

With greater access to energy data, researchers will be able to undertake a broader array of policy questions. Developing a broader and deeper university-based infrastructure for energy research will ultimately contribute to more informed citizens, business leaders and government policy-makers on complex energy issues.

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ABOUT THE IVEY ENERGY POLICY AND MANGEMENT CENTRE

The Ivey Energy Policy and Management Centre is the centre of expertise at the Ivey Business School focused on national energy business issues and public policies. It conducts and disseminates first class research on energy policy; and promotes informed debate on public policy in the sector through supporting conferences and workshops that bring together industry, government, academia and other stakeholders in a neutral forum. The Centre draws on leading edge research by Ivey faculty as well as by faculty within Western University.

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