



Future Directions

This analysis revealed that, in general, the Canadian governments considered in this analysis are failing to maximize revenue generation from the exploitation of public oil and gas resources. In addition, we found that Canadian governments are making poor use of the revenues they do generate, using them to fund current expenditures rather than making long-term investments. This creates a fragile situation whereby the funding of core government services is vulnerable to uncontrollable and volatile shifts in commodity (oil and gas) prices. Finally, we revealed that the environmental impacts of oil and gas operations are rising. Not only is Canada drawing down on the resource asset, but we are causing significant collateral damage to other environmental capital as well. Based on the above, we offer a number of recommendations for future policy directions related to oil and gas developments in Canada:



1. Ensure that the citizens in western and northern Canada are receiving appropriate compensation for the development of oil and gas resources by reducing or removing credit and incentive programs, adjusting taxation and royalty regimes, and learning from the successes of other regions, such as Alaska and Norway, in capturing a high degree of economic rent.
2. Establish non-renewable permanent funds in the each of the regions to cushion boom and bust economic cycles, provide for future generations, transition to renewable energy sources, and provide a revenue stream after

non-renewable resources are exhausted.

3. Evaluate revenue generation from oil sands developments, and plan for increasing production levels in the future. In this study we found that while oil sands production has increased significantly (by 74% between 1995 and 2002), royalty revenue from oil sands has declined (by 30% over the same time period). Given the role that oil sands are expected to play in Canada's energy future (by 2010, oil sands are expected to account for more than 60 percent of total oil production in western Canada) this trend is a major concern worthy of additional consideration.
4. Minimize and/or mitigate environmental impacts associated with oil and gas developments. As oil and gas developments have increased, so too have associated environmental impacts. Thus not only will future generations not benefit from the current development of oil and gas resources, unless government action is taken, they will be left to deal with the environmental legacy of today's unsustainable activities.
5. Internalize environmental costs through the use of environmental taxes. An important component of addressing environmental impacts associated with oil and gas developments is the explicit recognition of negative environmental impacts within tax frameworks. Environmental taxes can be used as a proxy for environmental damage and provide incentive to alter behaviour and reduce impacts. The revenue from such taxes can be used in several ways, including the reduction of existing taxes or the addition of incentives (tax credits and grants) to invest in environmentally sensitive goods and technologies.

The Pembina Institute for Appropriate Development would like to thank the Walter and Duncan Gordon Foundation for its financial support of this project.

1 What is considered a "normal rate of return on investment" may vary from project to project and from company to company.
 2 Davis, Jeffrey, Rolando Ossowski, James Daniel and Steven Barnett. *Stabilization and Savings Funds for Nonrenewable Resources: Experience and Fiscal Policy Implications*. Washington, DC: International Monetary Fund, 2001.
 3 Bjerkholt, Olav. "Fiscal Rule Suggestions for Economies with Non-renewable Resources." Paper for IMF/World Bank Conference on Rules-Based Fiscal Policy in Emerging Market Economies, Oaxaca, Mexico, 2002.
 4 Chambers, Edward. "Comments on Diversification" in L. S. Wilson, ed. *Alberta's Volatile Government Revenues*. Edmonton, Alberta: Institute for Public Economics, 2002.
 5 Fasano, Ugo. *Review of the Experience with Oil Stabilization and Savings Funds in Selected Countries*. Washington, DC: International Monetary Fund, 2000.
 6 The first deposit into the Norway State Petroleum Fund took place in 1996, the first year that Norway realized a budget surplus since the fund was created in 1990.

When the Government is the Landlord

Economic Rent, Non-renewable Permanent Funds, and Environmental Impacts Related to Oil and Gas Developments in Canada

Executive Summary



Oil and gas developments have played a significant role in shaping Canada's energy sector. Globally, Canada is the third-largest producer of natural gas and the ninth-largest producer of oil. In 2001, British Columbia experienced record drilling and, recently, Alberta's oil sands were designated as the world's second-largest deposit of oil. Oil and gas production is expected to continue to increase in both Saskatchewan and British Columbia, and there is mounting pressure to develop oil and gas resources in Canada's northern territories. In light of the present importance of Canada's oil and gas resources, and their predicted future importance, this study was designed to explore the following questions, grouped into three distinct but related topics:

1. **Economic Rent:** Are Canadian governments receiving the maximum revenues obtainable from the development of public oil and gas resources? How does the performance of Canadian governments in this regard compare with jurisdictions outside of Canada?
2. **Non-renewable Permanent Funds:** What are governments in western and northern Canada doing with the revenues obtained from oil and gas developments? Are they, as many jurisdictions outside of Canada have done, using them to provide long-term stability and security to Canadian citizens through the establishment of non-renewable permanent funds?
3. **Environmental Impacts:** What are the trends in environmental impacts associated with oil and gas developments in western and northern Canada?

Economic Rent

Economic rent is the difference between the value of a publicly owned resource and the cost of producing that resource, including an allowance for a normal rate of return on investment.¹

For this study, the Pembina Institute began the investigation of economic rent by considering the amount of revenue governments in western and

northern Canada obtain from oil and gas developments through use of royalties, income taxes, bonus bids and other means related to the capture of economic rent. **Figure 1** shows by region the average amount of revenue collected between 1995 and 2002 for each unit of oil and gas produced. The figure reveals that, on average, Norway and Alaska collected more revenue from oil and gas production than did the Canadian regions considered in this study.

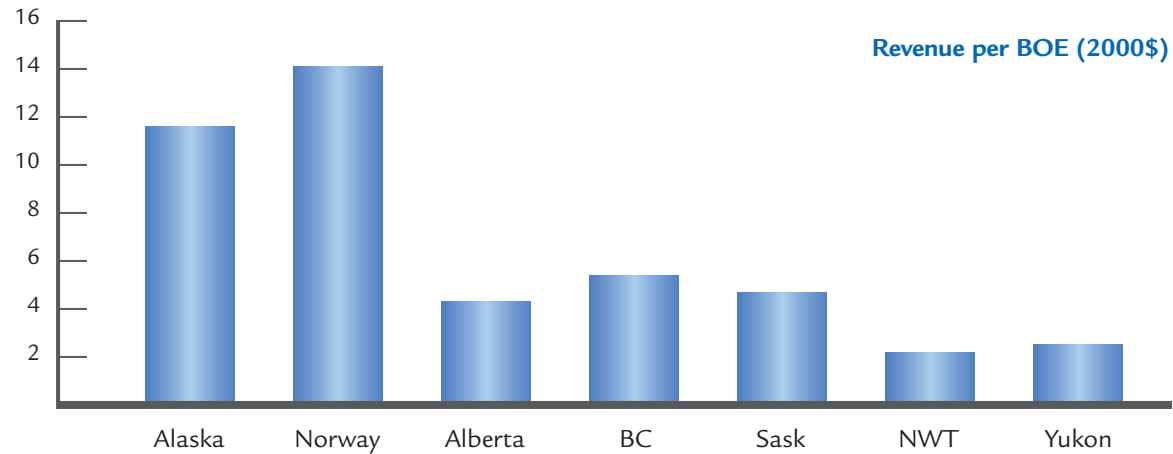


Figure 1 Average government revenues from oil and gas developments (2000\$/barrel of oil equivalent)

Having established the amount of revenue governments in the relevant regions collect from oil and gas developments, we compared these figures with the amount of revenue actually available for collection by government. That is, we compared the revenue actually generated with the economic

rent revenue actually available. **Figure 2** shows the average portion of economic rent captured by the government in each region. The values are an indication of the level of compensation citizens of each of the regions received for the development of oil and gas resources.

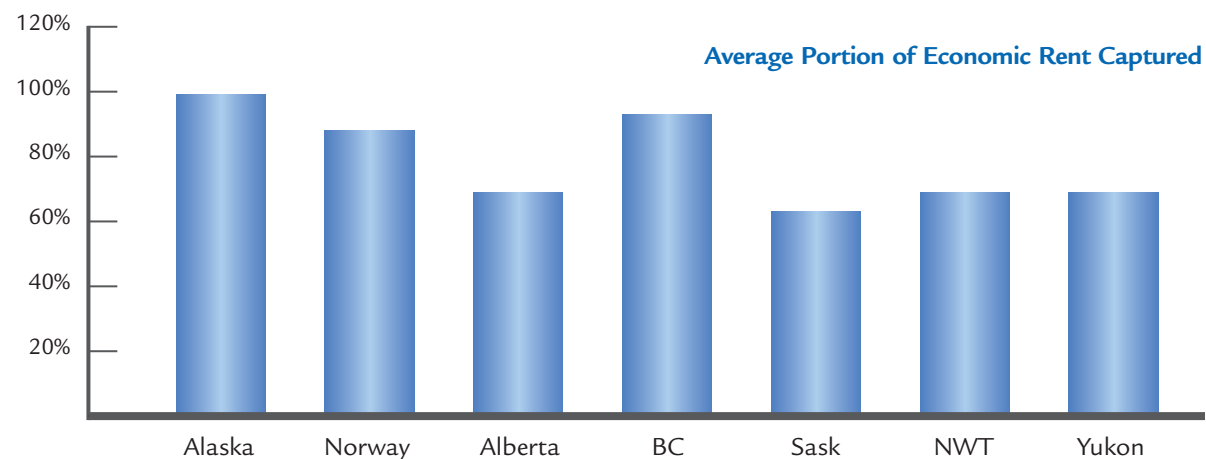


Figure 2 Average portion of economic rent captured by governments

As can be seen, with the exception of British Columbia, the Canadian regions do not capture as much rent as is available. Furthermore, they do not capture the same level of economic rent as do Alaska and Norway. In the case of British Columbia, it is

important to note that the introduction of a number of recent tax credit and incentive programs (introduced in 2002 and subsequently) are not reflected in this analysis. These new incentives could result in a significant reduction in revenues to government.

Non-renewable Permanent Funds

Regions that rely on oil, gas and other non-renewable resources for a substantial share of their revenue face two key problems: the revenue

stream is uncertain and volatile, and the supply of the resources is exhaustible.² Oil and gas prices have been known to fluctuate significantly and unpredictably over time.³ Regions whose economies lack diversity and rely on resource revenues for a large share of total revenues are particularly vulnerable to unpredictable commodity prices. Within Canada, the provinces ranked highest in measures of instability are Alberta, Saskatchewan and British Columbia.⁴

In light of these factors, policy makers must decide how to adjust government fiscal policy (spending in particular) to cushion the domestic economy from the sharp and unpredictable variations in oil and gas prices and associated revenues. Policy makers must also consider how much oil and gas income to spend on the present generation and how much to save for future generations.⁵ These challenges are compounded by the fact that oil and gas production causes negative environmental impacts. Many jurisdictions, including Alaska and Norway, have established non-renewable permanent funds (NPFs) to pool financial resources related to the development of oil and gas

(or other) resources and address these and other challenges.

The benefits of NPFs are substantial. These funds provide insurance against declining revenues from resource production as non-renewable resources are depleted over time. They also ensure that future generations will benefit from the production of resources today. They can be used to help mitigate boom and bust cycles, provide economic diversification to rural communities, and facilitate a transition to renewable resources in the future. In addition, money accumulated in NPFs can help to lessen future risk and liability associated with environmental impacts.

Canadian jurisdictions lag behind Alaska and Norway on the establishment of NPFs. British Columbia, Saskatchewan, the Yukon Territory and the Northwest Territories have not established such funds. In 1976, Peter Lougheed, then Premier of Alberta, established the Alberta Heritage Fund. Revenue from oil and gas developments was allotted to the fund, in different proportions, from its inception to 1995. **Table 1** compares the value of NPFs over the study period in Alaska, Norway and Alberta. As can be seen from the table, the value of the funds in Alaska and Norway far outweighs that of Alberta's Heritage Fund.



Table 1 NPFs in Alberta, Alaska and Norway, 1995 to 2002 (million 2000\$)

REGION	1995	1996	1997	1998	1999	2000	2001	2002
Alberta	13,753	13,677	12,956	13,054	12,524	12,419	12,123	11,852
Alaska	22,728	26,539	30,148	35,065	39,137	38,354	36,159	35,724
Norway	NA ⁶	11,103	27,103	39,827	45,519	80,415	110,650	101,073

Environmental Impacts Associated with Oil and Gas Developments

The final line of investigation related to this study was an evaluation of the trends in environmental impacts associated with oil and gas developments in western and northern Canada. Our analysis

revealed a significant rise in such impacts over the study period. For example, in British Columbia between 1995 and 2002, emissions of nitrogen oxides, sulphur dioxide and greenhouse gases

from oil and gas developments increased by 78 percent, 20 percent and 47 percent, respectively. In Alberta, oil and gas emissions of nitrogen oxides and greenhouse gases increased by 21 percent and 11 percent, respectively. Indicators of environmental impacts in Saskatchewan include increases in greenhouse gas emissions (58 percent) and the annual number of wells drilled in the province (63 percent). Any increases in oil and gas developments in northern Canada could lead to similar increases in environmental impacts in those regions.