

# Fiscal Policy for Long-term Carbon Emission Reductions

## Briefing Note and Budget Advice

### The National Round Table on the Environment and the Economy

The program on Ecological Fiscal Reform and Energy has, through its analysis and consultation processes, generated a number of findings and recommendations that are of direct relevance to current deliberations for the 2005 budget. What is provided in this briefing note are the program's key findings and recommendations. Both the findings and recommendations should be seen as directional in nature, although they do contain some proposals relating to program expenditures and tax measures. The findings relate to the broad lessons that emerged in the context of the program's examination of "*fiscal policy that consistently and systematically reduces energy-based carbon emissions in Canada, both in absolute terms and as a ratio of GDP, without increasing other pollutants*". The recommendations focus more on economic instruments themselves, and draw directly from the three case studies carried out, on (i) industrial energy efficiency, (ii) emerging renewable energy technologies, and (iii) hydrogen. We believe this note will provide decision-makers with some critical perspective on the opportunities and challenges that lie in the use of fiscal policy to promote long-term carbon emissions.

## A. Background

The National Round Table on the Environment and the Economy established a program in 2000 to promote the use of economic instruments in environmental policy making. This program came to be known as the Ecological Fiscal Reform (EFR) program, and set out to examine the potential for the use of fiscal policy in policy making at the intersection of the environment and the economy. After our initial examination of the theoretical underpinnings for EFR in Canada, the NRTEE decided in April of 2003 to extend the program into a second phase, and to focus the EFR research and consultation effort around the issue of energy, and in particular to the issue of long-term carbon emission reductions.

The rationale for the program is two-fold:

1. Fiscal policy is one of the most powerful means at the government's disposal to influence outcomes in the energy sector, but it is not typically employed in a consistent and strategic manner to promote objectives that have simultaneous economic and environmental benefits;
2. The related issues of climate change and energy present substantial challenges and opportunities to Canada, and fiscal policy – employed in the consistent and strategic manner alluded to previously – should be a key element of the government's response.

Subsequent to the initiation of this second phase, the NRTEE was asked by then Prime Minister Chrétien in late 2003 to examine priority areas that have high potential for long-term reductions in greenhouse gas emissions, and to explore the linkages between energy, climate change and the economy. This separate second project, titled *Energy and Climate Change Initiative*, has begun a discussion on the need for a more integrated and long-term approach to energy issues in relation to

the challenges of climate change. This is being carried out through workshops involving a broad range of experts, opinion-leaders and stakeholders, including representatives from provincial and territorial governments. In a first phase, the project will involve the publication of a Foundation Paper on Energy and Climate Change, expected in late spring of 2005.

## **B. Key Findings**

Four key findings emerge out of our analysis and consultation on the role of fiscal policy in promoting long-term carbon emission reductions:

- 1. Economic instruments can make a significant contribution to the achievement of long-term reductions of energy-based carbon emissions. Their full contribution will only be achieved, however, if:**
  - The government clearly restates its sustained commitment to long-term carbon emission reductions.
  - Fiscal policy is itself developed in a coherent and consistent fashion with reference to this long-term commitment to carbon emission reductions.
  - Close coordination exists with provincial strategies towards the same objectives.
  - Sufficient time, and a degree of predictability, is provided for in the introduction and application of economic instruments to allow for efficient and effective long-term investment decisions to be made and implemented.
  - An assessment is undertaken of the carbon emission reduction potential, on a life-cycle basis, of all technologies being targeted with economic instruments.
- 2. There is no contradiction between promoting long-term carbon emission reductions through EFR initiatives and pursuing Canada's other key societal objectives (such as energy security, economic development, etc.).** To do so, however, requires a framework that clearly identifies the opportunities that exist for achieving these objectives, and the necessary actions for doing so.
- 3. At the same time, promoting energy technology development through EFR initiatives does not necessarily equate to the reduction of long-term carbon emission reductions.** This points to the critical need for the integration of carbon emission objectives with technology development policies.
- 4. Economic instruments designed to promote these long-term carbon emission reduction through technology need to reflect both the market and technological maturity of the technology in question.** Specifically, for:
  - Mature carbon emission reduction technologies (such as those represented in our case study on industrial energy efficiency), the focus should be on “demand-pull” instruments that facilitate and promote the uptake of existing technologies, and R&D support for the development of new energy efficiency technologies, particularly those that offer radical energy efficiency benefits (e.g. through new production processes.)

- Emerging carbon-efficient energy technologies (such as those represented in our emerging renewables case study), the focus should be on using instruments that help bridge the price gap between the incumbent technologies and the emerging ones. The operating assumption is that the price gap will close with resulting market penetration and economies of scale.
- Longer-term carbon emission reduction technologies (such as those represented in our hydrogen case study), economic instruments should focus on promoting research and development to address critical technical and economic barriers.

## C. Recommendations

The first two recommendations focus on the type of policy instrument to be used in the pursuit of long-term carbon emission reductions:

1. The option of a broad-based price signal should be given serious consideration. The case study experience shows that this type of instrument (such as a charge or a permit market) is the most effective in delivering on the policy objective to which it is explicitly tied (in this case carbon emissions), and most cost-efficient to society in that it allows for the greatest degree of flexibility in societal response. A key feature of such instruments is that they are also effective in ensuring that some of the government's other policy objective – notably in the area of innovation and technology development – are promoted. At the same time, the consultation conducted in the course of the program revealed serious concerns about the competitiveness impacts of such a price signal. Another concern expressed was over the design and implementation challenges posed by a broad instrument of this sort, and the very high standard for “getting it right”. And finally, there was acknowledgement of the lukewarm political interest in such instruments. An existing model for Canadian policy makers – if they are to consider a broad-based signal – is the United Kingdom's *Climate Change Levy* and companion *Climate Change Agreements*<sup>1</sup>.
2. As an alternative to the consideration of broad-based price signals – and consistent with current policy approaches – economic instruments targeted to specific types of technology should be broadened and/or designed so as to be linked directly to the policy objective being pursued (in this case carbon emission reduction). This would allow targeted measures to share key characteristics of broad-based instruments, notably in their promotion of innovation. An example of such an instrument would be the United Kingdom's Enhanced Capital Allowance for vehicles with low carbon emissions<sup>2</sup>.

**The next four recommendations draw directly from the three case studies carried out in the context of the EFR and Energy Program:**

3. To support long-term carbon emission reductions through the adoption of industrial energy efficiency, the federal government should:
  - a) Integrate a carbon efficiency focus in activities to promote energy efficiency, so that these activities to promote energy efficiency do not perversely increase carbon emissions.

1 Her Majesty's Customs and Excise, “A general guide to climate change levy”. March 2002, at [www.hmce.gov.uk](http://www.hmce.gov.uk); and “Climate Change Agreements at [www.defra.gov.uk/environment/ccl/intro.htm](http://www.defra.gov.uk/environment/ccl/intro.htm).”

2 [http://www.inlandrevenue.gov.uk/capital\\_allowances/cars.htm](http://www.inlandrevenue.gov.uk/capital_allowances/cars.htm)

- b) Implement a broad-based price signal for carbon emission reduction.
  - c) If (b) is not possible, augment targeted tax measures (best suited to generic & auxiliary technologies) with broader market oriented regulation (either emissions or technology based) to capture system wide opportunities.
  - d) Provide R&D support for the development of new energy efficiency technologies, particularly those that offer radical energy efficiency benefits (e.g. through new production processes.) Follow this through to commercialization of the technology with targeted tax measures.
4. To support long-term carbon emission reductions through the development of emerging renewable power technologies, the federal government should ensure that its policies are fully supportive, and consistent with, provincial policies in this area. Specifically, the federal government should:
- a) Implement a broad-based price signal for carbon emissions reduction. This is the only tool of the ones considered in our study that will also influence consumer demand and the carbon emissions intensity of the full power system. Or, alternatively:
  - b) Supplement provincial renewable portfolio standards – which are being developed across the country – with a national system for trading of renewable energy certificates (REC)<sup>3</sup>, and combine this with a federally-funded renewable generation subsidy covering a range of emerging technologies. The development of a national REC market, and its relationship with a generation subsidy, should be carefully thought out and informed by experience in other jurisdictions.
  - c) Facilitate the implementation of “feed-in-tariffs” – where a minimum price for electricity generated from emerging renewables is combined with clear grid access rules – by working with provinces to develop clear standards for grid access and power purchase agreements. Feed-in-tariffs are more effective at promoting distributed renewables generation, which provides benefits in relation to energy security and grid stability.
  - d) Develop targeted measures for non-grid connected emerging renewables, such as geothermal, passive solar, etc.
  - e) Continue and expand its program to purchase electricity generated from emerging renewable power technologies.<sup>4</sup>
5. To support long-term carbon emission reductions through the use of hydrogen fuel, the federal government should:
- a) Direct public investments toward lower carbon pathways, including the provision of carbon-free energy sources to produce the hydrogen and elimination of carbon at its source through sequestration.

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3 Renewable Energy Certificates (or “green tags”) are tradeable commodities awarded to renewable power producers, consumers, or financial backers. Demand for the certificates – which are meant to act as a proxy for the environmental attributes of the renewable power – comes from, typically, power producers who are bound by regulation to deliver a certain percentage of renewable power, but who do not have sufficient generating assets to do so.

4 The Climate Change Action Plan for Canada currently commits the government to “green power purchases for 20 percent of the Government of Canada’s electricity needs”

- b) Fund and stimulate increased research and development to reduce the capital costs of fuel cell technologies, and to improve the energy balance and costs of hydrogen production.
  - c) Continue to focus on transportation applications with long-term carbon emission reduction potential, in recognition of Canada's industrial interests in the fuel cell, hydrogen, and auto sectors.
6. The recommendations made above should be adopted as a coordinated suite – from the short-term to the long-term – to allow for the maximum benefit to be derived from the technologies at the most appropriate point in their projected development, and to mitigate any discontinuity in the implementation of the economic instruments.

**And finally, these two recommendations relate to the need for enhanced information in the development of policy for long-term carbon emission reductions:**

7. A process should be put in place by the federal government to continuously evaluate and monitor progress in achieving the defined goals, and to suggest adaptation of measures based on their effectiveness, as circumstances change or as new opportunities start to develop.
8. To support a better ability to assess economic instruments for long term carbon emissions reduction,
- a) The federal government should regularly update the Canadian Emissions Outlook, incorporating new price forecasts and effects of new climate change initiatives as these are adopted.
  - b) Governments (federal and provincial) should support the development of reliable and comprehensive mapping of emerging renewable resource technical and practical potentials.
  - c) Governments (federal and provincial) should support the gathering of timely data on installed capacity and market activity for emerging technologies.
  - d) Governments (federal and provincial) should improve the data on current capital stock in both energy supply and use systems, and its performance characteristics.