GENERATING A GREEN TAX POLICY FOR RENEWABLE ELECTRICITY IN CANADA

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INTRODUCTION

Recent federal governments have been committed to policies reducing Canada's green house gas emissions through the promotion of green energy development.[1] Tax measures have been a vital instrument in working towards these policies. However, while recent tax measures have achieved a more level playing field between fossil fuel and green energy project development, they have proven insufficient to mitigate the primary obstacles to green energy market growth—significantly higher up front capital investment requirements and consequent higher financing risks and costs. This paper asserts that if tax instruments are to result in meaningful market growth for green energy, they must be developed out of a market transformation perspective which addresses these barriers. In doing so, this paper examines: (1) the recent tax policies of the Department of Finance ("Finance") within the context of the federal governments' broader sustainable development policies; (2) environmental market perspectives and economic frameworks in which tax measures can function as economic instruments to encourage the development of green energy; and (3), in light of these environmental policies and market perspectives, the tax instruments that have been introduced by Finance and the extent to which they have reached their objectives.

PART I - Sustainable Development and Green Energy Policies

In 1995, the federal government began implementing a broad governance policy of sustainable development. Providing a legislative foundation for these policies, the government

1 It is helpful to distinguish between renewable and green energy. The term "renewable energy" is generally used to refer to electricity produced from sources "that can be reasonably replenished within a human lifetime by either natural means [including include wind, solar, hydro, geothermal, biomass and ocean energy (tidal and wave)] or human assistance [e.g., replanting of crops used for biofuels]". "Green energy" is generally used to refer to environmentally optimal electricity produced from natural sources of wind, solar, hydro (small-scale run-of-the-river), geothermal, and ocean (tidal and wave) energy. While there is disagreement as to whether large-scale hydro should be viewed as green energy (as it has been increasingly associated with negative ecological and socioeconomic impacts), for the purposes of this paper it will be excluded. The same is true of biomass, which is a carbon fuel emitting GHGs. Organization for Economic Co-operation and Development/International Energy Agency, *Energy Market Reform: Power Generation Investment in Electricity Markets* (Paris: OECD/IEA, 2003), online: Organization for Economic Co-operation and Development/International Energy Agency <http://www.iea.org/dbtw-wpd/Textbase/publications/free_new_Desc.asp?PUBS_ID=1202> [OECD, "Energy Market Reform"].

amended the *Auditor General Act* to define "sustainable development" as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".[2] The following year, the government outlined its sustainable development policy as a three-fold integration of economic growth, social well-being and environmental protection.[3] Renewable energy and energy conservation were stated to be "key components of the federal government's climate change and sustainable development priorities".[4]

Implementing its sustainable development policy on the international stage, the federal government became a signatory to the Kyoto Protocol ("Kyoto") in 1997. Under Kyoto, Canada committed itself to reducing its greenhouse gas ("GHG") emissions to 6 per cent below 1990 levels by 2008–2012. In practice, this commitment is much larger than it first appears. At the time of signing, Canada's GHG emissions were already 13 per cent above 1990 levels, and had risen to almost 24 per cent above 1990 levels by the time the federal government ratified Kyoto in 2002.[5] Without increased government measures, Natural Resources Canada estimates that Canada's GHG emissions will increase to 26 per cent above 1990 levels by 2008–2012.[6] The OECD International Energy Agency ("IEA") estimates this figure to be almost 34 per cent.[7]

It is generally agreed that reducing GHG emissions from fossil fuels[8] will require a dual supply and demand approach: a reduction of energy demand (by reducing consumption through the development of more efficient energy technologies) and an increase of non-GHG-emitting energy production. In November 2002, one month before its ratification of Kyoto, the federal government released its "Climate Change Plan for Canada" containing over ninety federal and provincial programs aimed at reducing GHG emissions in Canada through the dual supply and demand approach.[9] A fundamental objective of this plan was the development and commissioning of green energy through the Wind Power Production Incentive ("WPPI"). The WPPI allocated $260 million over fifteen years through feed-in tariffs[10] with the goal of installing 1000 MW of wind farms.[11]

The Climate Change Plan of Canada was superseded in 2005 by a new plan entitled "Mov-

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2 *Auditor General Act* RSC 1985, c. A-17, s. 2. This definition of sustainable development, as well as the long title of the Act, "An Act respecting the office of the Auditor General of Canada and sustainable development monitoring and reporting", were added by amendment in 1995 (SC 1995 c.43).

3 Canada, House of Commons, *Keeping a Promise: Towards a Sustainable Budget* , The Federal Government Response to The Eighth Report of the Standing Committee on Environment and Sustainable Development, (Ottawa: Department of Finance, July 1996), at 5.

4 Canada, House of Commons, *Sustainable Development Strategies: Using the Tax System and Managing Office Solid Waste*, Chapter 3, Report of the Commissioner of the Environment and Sustainable Development to the House of Commons (Ottawa: Public Works and Government Services, 2004), at 3–6 [Public Works, "Using the Tax System"].

5 Canada, House of Commons, *Government Support for Energy Investments*, Chapter 3, 2000 Report of the Commissioner of the Environment and Sustainable Development (Ottawa: Office of the Auditor General of Canada) online: Office of the Auditor General of Canada <http://www.oag-bvg.gc.ca/domino/reports.nsf/a1b15d892a1f761a852565c40068a492/6fd57c4419eb02f9852568e9004d6ee9?OpenDocument> at 5 [Auditor General].

6 *Ibid.*

7 Organization for Economic Co-operation and Development, *Energy Policies of IEA Countries: 2004 Review* (Paris: OECD, 2004) online: International Energy Agency – Energy Publications <http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1465> at 122 [OECD, "Energy Policies"].

8 The main source of GHG emissions in Canada (and elsewhere) is the production and consumption of energy derived from fossil fuels, as demonstrated by the top three GHG contributing sectors: transportation (25 per cent), fossil fuel production and distribution (19 per cent), and electric power generation (17 per cent). See David R. Boyd, *Unnatural Law: Rethinking Canadian Environmental Law and Policy* (Vancouver: UBC Press, 2003) at 84.

9 Canada, Department of Finance, *Sustainable Development Strategy 2004-2006* (Ottawa: Department of Finance, March 2004) at 19 [SDS 2004-2006].

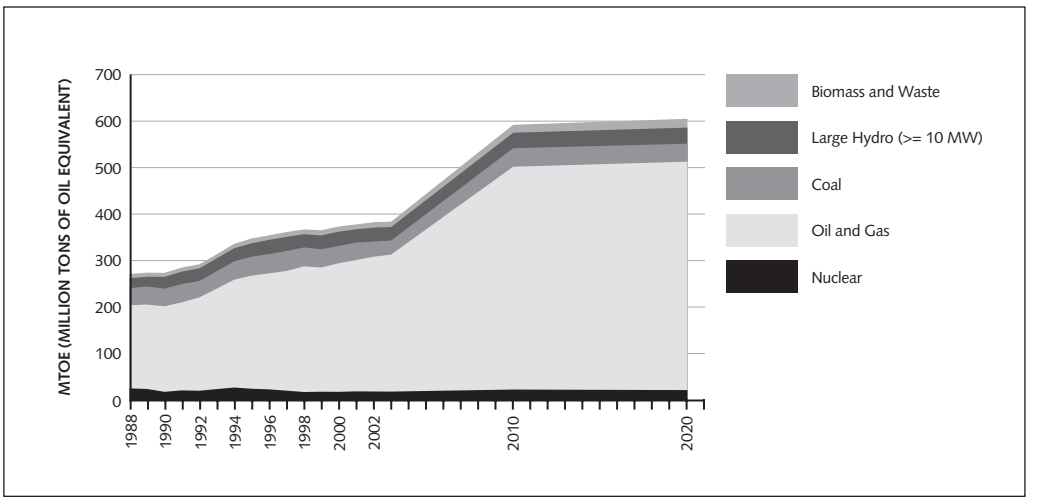
10 While there are several types of feed-in tariff mechanisms, those introduced by the federal government have taken the form of a premium paid by the government on the market purchase price of electricity purchased by electricity utilities from green power producers, generally on a kilowatt per hour basis, thereby enabling green energy producers to bid more competitively against non-renewable energy producers.

11 Canada, Natural Resources, *Wind Power Production Incentive* (Ottawa: Natural Resources Canada, 2002), online: Canadian Renewable Energy Network <http://www.canren.gc.ca/app/filerepository/B13F241FE43A4584A993B21ECEFB9ADD.pdf>.

ing Forward on Climate Change: A Plan for Honouring our Kyoto Commitment". The plan quadrupled the WWPI, allocating $920 million over fifteen years to increase the generating capacity of wind farms by 4,000 MW, and established the Renewable Power Production Incentive, providing $97 million over five years to increase the generating capacity of run-of-the-river hydroelectric, biomass, and tidal installations to 1000 MW.[12] The current government cancelled both of these plans in 2006, launching a new ecoENERGY Renewable Initiative program in 2007. The ecoENERGY Initiative allocates $1.5 billion over the next ten years to increase the generating capacity of renewable energy installations by 4,000 MW through feed-in tariffs for renewable energy projects.[13]

Despite the positive steps taken by these programs, the IEA projects that by the year 2020 green energy sources will account for only 0.08 per cent of Canada's total energy production.[14] While this represents a market growth of 60 per cent over green energy's current share of Canada's total energy production (0.05 per cent), it remains well below the amount needed to significantly offset GHG emissions. As illustrated in Figure 1, whereas combustible energy is projected to continue to account for over 90 per cent of Canada's energy production in 2020, green energy production remains invisible.[15]

FIGURE 1
TOTAL CANADIAN ENERGY PRODUCTION FROM 1988-2003 WITH PROJECTIONS TO 2020 [a]



[a] Derived from data supplied by the Organization for Economic Co-operation and Development/International Energy Agency, *Energy Policies of IEA Countries* (Paris: OECD/IEA, 1988–2005), online: International Energy Agency – Energy Publications <http://www.iea.org/dbtw-wpd/Textbase/publications/index.asp>.

12 Canada, Natural Resources, *Backgrounder: Wind Power Production Incentive* (Ottawa: Natural Resources Canada, December 2005), online: Natural Resources Canada News Room - Backgrounder - 2005/12a <http://www.nrcan.gc.ca/media/newsreleases/2005/200512a_e.htm>.

13 Canada, Natural Resources, *Backgrounder: ecoENERGY Renewable Initiative: Increasing Canada's Renewable ecoENERGY Supplies* (Ottawa: Natural Resources Canada, February 2007), online: Natural Resources Canada News Room - Backgrounder 2007-01-19 <http://www.nrcan.gc.ca/media/newsreleases/2007/200702a_e.htm>.

14 Calculated from data provided by Organization for Economic Co-operation and Development/International Energy Agency, *Energy Policies of IEA Countries: 2005 Review* (Paris: OECD/IEA, 2005), online: International Energy Agency – Energy Publications <http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1803> at 431 [OECD, "Energy Policy Data"].

15 *Ibid.*

The continuing dominance of fossil fuel production is explained at least in part by Canada's energy policy. As a member of the IEA, Canada's energy policy seeks to balance environmental protection with energy security and economic development—collectively referred to as the "3Es".[16] The rapid growth in energy demand experienced by IEA countries, including Canada, has made this balance increasingly difficult, often resulting in priority given to energy security and economic development.[17] The IEA estimates that global energy demand will increase by 1.7 per cent per year over the next three decades requiring US$10 trillion of investment in the electricity sector alone.[18]

As public purses do not have such resources, IEA countries have agreed that mobilizing private investment "will require the lowering of regulatory and market barriers and the creation of an attractive investment climate".[19] While this policy appears to be succeeding in addressing energy security concerns, the increased competition for project investment capital has created difficulty for green energy projects to acquire financing. In the deregulated European electricity markets, renewable energy projects have had tremendous difficulty securing project financing, as lenders have been unwilling to bear the higher risks inherent in renewable projects.[20] Lenders that have agreed to take on certain risks have generally insisted on relatively high debt to equity ratios and significantly shorter loan maturities as compared with large fossil fuel power project financings.[21]

Noting that energy security objectives may also conflict with sustainability goals of reducing GHG emissions, the IEA has stated:

> These goals can be both complementary and contradictory. More secure energy would normally promote long-term economic development, but can involve higher costs. And higher energy consumption associated with economic growth can increase pollution. Devising policies that strike the right balance between the "3Es" and that embrace cost-effective approaches to achieving them are, and will remain, at the heart of the IEA's mission. … How to meet climate change and sustainable development objectives while enhancing the security of energy supplies and economic and social development.[22]

Renewable energy is increasingly being considered by policy-makers as "striking the right balance" between energy and environmental objectives.[23] Canada's National Round Table on the Environment and the Economy has identified numerous economic, social, and environmental benefits that Canadians will gain from the development of green technology (in addition to the resulting reduction in GHG emissions), including development of new energy resources, reduced health care costs, increased competitiveness of the domestic renewable industry, and

16 OECD, "Energy Policies", *supra* note 7 at 39.

17 Organization for Economic Co-operation and Development, *Mobilising Energy Technology: Activities of the IEA Working Parties and Expert Groups* (Paris: OECD, 2005) online: International Energy Agency – Energy Publications <http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1514> at 9 [OECD, "Mobilising Energy"].

18 OECD, "Energy Policies", *supra* note 7 at 34–5.

19 *Ibid.* at 35.

20 Peter Gish, "Project Financing of Renewable Energy Projects in Europe: An Improving Market," (1999) 22 *Suffolk Transnational Law Review* 405–440.

21 *Ibid.* at 426.

22 OECD, "Energy Policies", *supra* note 7 at 39.

23 Organization for Economic Co-operation and Development, *Renewable Energy: Market and Policy Trends in IEA Countries* (Paris: OECD, 2004) online: International Energy Agency – Energy Publications <http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1263> at 37 [OECD, "Renewable Energy"].

the creation of new jobs.[24]

PART II - Green Market Policies and Tax Instrument Rationales

While IEA members agree that green energy must be made economically competitive in order for the IEA to achieve both environmental and energy security objectives,[25] there is no consensus as to how to do so. "Just as all markets are exceedingly varied and complex, apparently so are the instruments that might be used to frame or modify those markets".[26] However, nearly every IEA member country has developed tax measures of one sort or another as an economic instrument to improve green energy markets.[27]

An inherent advantage of tax measures when compared to other economic instruments is their capacity to be broad performance-based measures which leave market choices to participants and avoid the risks associated with instruments that pick winners.[28] Moreover, tax measures have a greater capacity to provide a comprehensive approach to achieving multiple objectives, resulting in lower administrative costs and less piecemeal results.

Environmental tax measures are broadly categorized as either environmental taxes or tax expenditures. Environmental taxes have been defined as a tax whose base "is a physical unit (or a proxy for it) of something that has a proven specific negative impact on the environment, when used or released".[29] Environmental tax expenditures, on the other hand, are generally thought of as "deliberate departures from otherwise applicable taxes in order to encourage the [environmentally positive] activity at which the incentive is directed".[30] The development of tax measures in either category has generally occurred according to three market perspectives: (1) reducing market inefficiency barriers, (2) encouraging research, development and deployment, and (3) creating market transformation.[31]

2.1) MARKET EFFICIENCY PERSPECTIVE

The market efficiency perspective views the adoption of green energy, as with any market decision, as an economic process involving decisions between investors and consumers.[32] Where the prices of goods and services accurately reflect their real costs and benefits, these

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24 National Roundtable on the Environment and the Economy, *State of the Debate: Economic Instruments for Long-term Reductions in Energy-based Carbon Emissions* (Ottawa: National Roundtable on the Environment and the Economy, 2005) online: National Roundtable on the Environment and the Economy <http://www.nrtee-trnee.ca/eng/programs/current_programs/EFR-Energy/EFR-SOD-Report/Full-Report/200507-EFR-SOD-FullReport_Introduction_E.htm> at 16–9 [National Roundtable].

25 OECD, "Mobilising Energy", supra note 17 at 35.

26 Ryan H. Wiser, *The Role of Public Policy in Emerging Green Power Markets: An Analysis of Marketer Preferences* (Berkeley: Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory, 1999) online: Environmental Energy Technologies Division, University of California <http://eetd.lbl.gov/ea/EMS/reports/44178.pdf> at 33.

27 It is beyond the scope of this paper to evaluate the suitability of these various instruments to Canada's economy, and so they are not listed here. An excellent overview of the various tax measures employed by each OECD member country is provided by the OECD in *Renewable Energy: Market and Policy Trends in IEA Countries* (OECD, "Mobilising Energy", *supra* note 17). The IEA also maintains an updated online database at: International Energy Agency <http://www.iea.org/textbase/pamsdb/grlist.aspx?by=policy>. An excellent database on state, local, utility, and selected federal incentives in the United States is published online by The Database of State Incentives for Renewable Energy (DSIRE) online: Database of State Incentives for Renewable Energy <http://www.dsireusa.org/>.

28 National Roundtable, *supra* note 24 at 26.

29 David G. Duff, "Tax Policy and Global Warming" (2003), vol. 51, no. 6 *Canadian Tax Journal*, 2063-2118, 2068.

30 *Ibid.* at 2078.

31 Organization for Economic Co-operation and Development/International Energy Agency, *Creating Markets for Energy Technologies* (Paris: OECD/IEA, 2003) online: International Energy Agency – Energy Publications <http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1100> [OECD, "Creating Markets"].

32 *Ibid.* at 12.

transactions will result in an optimal allocation of capital.[33] Accordingly, this perspective seeks to identify and correct economic barriers which prevent markets from efficiently allocating the costs and benefits involved in any given transaction.[34] The two main market barriers identified under this perspective are (1) energy externalities and (2) non–level playing fields as a result of uneven government subsidies.

2.1.1) Energy Externalities

> [Externalities] occur in a market transaction if any of the costs or benefits involved in it are not accounted for in the price paid for the product that is exchanged. If there are costs that are external to the market (i.e., the buyer does not pay some of the costs incurred in producing the product), a negative externality occurs. If there are external benefits, a positive externality occurs.[35]

Where product externalities are not properly accounted for in unit prices, markets fail to allocate distributed costs and benefits, thereby creating inefficiencies and resulting in market failure.[36] Economic instruments may correct this failure by internalizing externalities in unit prices, thereby enabling consumer preference to reflect actual costs and benefits, and resulting in greater market efficiency.

As concerns green energy, the market efficiency perspective aims to provide market participants with "a policy framework that provides a basis to select the best energy choice at the optimal price while internalizing externalities related to energy security, environmental protection and economic development".[37] Economists generally agree that the most effective instrument by which to accomplish this internalization is a carbon or CO_2 tax imposed on the unit price of carbon goods, whereby the external costs incurred as a result of GHG emissions and other pollution are internalized in the unit price of the carbon.[38] In addition to market efficiency, a carbon tax has also been rationalized as "compensating owners of the 'environmental commons' for the environmental injury they cause and to minimize future harm".[39]

While externalities and injury caused by carbon combustion are difficult to calculate with certainty, it seems to be a general principle that "some level of environmental taxation may be more likely to promote economic efficiency than no tax at all".[40] Moreover, a nominal amount may be necessary in light of the inability of economic analysis to "determine whether environmental costs should be measured by an affected population's willingness to pay to be free from environmental harm (which assumes a polluter's right to pollute) or its willingness to accept a payment in order to suffer the harm (which assumes a basic right to be free from pollution)".[41]

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33 *Ibid.*

34 *Ibid.* at 83.

35 *Ibid.* at 67.

36 Julia Reinaud, *The European Refinery Industry Under the EU Emissions Trading Scheme: Competitiveness, Trade Flows and Investment Implications* (Paris: IEA Publications, November 2005) online: International Energy Agency – Energy Publications <http://www.iea.org/dbtw-wpd/Textbase/publications/free_new_Desc.asp?PUBS_ID=1577> at 3.

37 OECD, "Renewable Energy", *supra* note 23 at 38.

38 "Taxes on energy or energy-related CO_2 emissions were first adopted in a number of northern European countries in the early 1990s. Such taxes are now found in Austria, the Czech Republic, Denmark, Estonia, Finland, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland, and the U.K.". Lynn Price,Christina Galitsky & Jonathan Sinton, *Tax and Fiscal Policies for Promotion of Industrial Energy Efficiency: A Survey of International Experience* (Berkeley: Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory, September 2005) online: Environmental Energy Technologies Division, University of California <http://repositories.cdlib.org/lbnl/LBNL-58128/> at 5 [Price, Galitsky, & Sinton].

39 Duff, *supra* note 29 at 2069.

40 *Ibid.* at 2077.

41 *Ibid.* at 2071.

Whichever measure is utilized, studies have indicated that carbon taxes "generally achieve their objective of reducing emissions" by reducing demand for the product taxed.[42]

But what of its effect on green energy development? Theoretically, if energy prices more accurately reflected actual costs of consumption, fossil fuel would cost more and the price of green energy would be more competitive, thus resulting in green energy gaining market share.[43] However, this will only be the case where consumers have the choice to choose green energy as an alternative. As most green energy is electrical, and as electrical generation is controlled by tendering processes under provincially regulated utilities in Canada, a carbon tax on end-use consumers will have little impact on green energy demand.

Thus, a carbon tax will only result in green energy market growth through tax shifting, whereby revenue generated from the tax is earmarked for green energy development, or other environmentally beneficial projects. For example, a carbon levy imposed on gasoline sales might be dedicated to funding green energy projects—or tax expenditures to promote such projects. Such shifting has been criticized as illegitimate under a market efficiency perspective, under the assumption that it will result in a distortion of green energy price signals and thereby contribute to market inefficiencies.[44] However, this criticism fails to take into account that whereas a carbon tax internalizes the negative externalities resulting from fossil fuel consumption, a dedicated use of the revenues to facilitate market deployment of green energy internalizes the positive externalities resulting from green energy consumption—namely the displaced costs of GHGs. This internalization of both positive and negative externalities through carbon tax shifting has been described as realizing "double dividends"—reduced consumption of fossil fuels and an increased production of green energy.[45]

2.1.2) Un-level Playing Fields

Playing field inefficiencies do not involve externalities, but rather focus "on direct project revenues and costs from the perspective of the investor".[46] A market playing field is uneven where the costs of goods and services are subsidized through government expenditures in an uneven manner such that profit margins fail to reflect the costs of production thereby resulting in inefficient allocations of capital investment. However, rectifying an uneven playing field is not as simple as removing uneven subsidies. The inefficient allocation of project capital results in an entrenched market advantage for the previously subsidized producers which remains well after the original subsidies have ceased. This entrenched advantage is a result of existing projects with lower financing costs, more developed technology, and entrenched consumer preferences.

Within the Canadian tax system,

> [t]he relative tax treatment of competing energy investments is a long-standing policy issue. At its core is the perception that the tax system, through a variety of incentive provisions, favours non-renewable energy investments, chiefly in oil and natural gas, to the detriment of renewable energy and energy efficiency investments.[47]

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42 Price, Galitsky & Sinton, *supra* note 38 at 6.

43 OECD, "Creating Markets", *supra* note 31 at 65, 84; and Duff, *supra* note 29 at 2079.

44 *Ibid.*

45 The concept of "double dividends" has more commonly referred to tax shifting whereby the revenues from a carbon tax are used to reduce other taxes such as income taxes. However, as the subject of this paper is tax measures which will encourage the growth of green energy, this paper focuses on the concept of earmarking revenues for green energy.

46 Canada, Natural Resources Canada, *The Level Playing Field: The Tax Treatment of Competing Energy Investments* (Ottawa: Natural Resources Canada, 1996) online: Natural Resources Canada <http://www.nrcan.gc.ca/es/ep/efd/lpf-toc.html> at 5 [NRCan, "The Level Playing Field"].

47 *Ibid.* at 3.

In contrast to the double dividend afforded by carbon tax shifting, tax instruments which are preferential to oil and gas result in double costs to consumers: first in the provision of tax expenditures, and second in bearing the negative externalities produced both at the time of the subsidies and as a result of the entrenched market advantage.[48] Further, to the extent that the government introduces additional tax expenditures in order to level the playing field, taxpayers may in effect bear the cost of subsidizing two industries with no net effect.[49]

2.2) RESEARCH, DEVELOPMENT AND MARKET DEPLOYMENT PERSPECTIVE

Whereas the market efficiency perspective adopts a narrow approach to identifying market barriers as impediments to market efficiency, the research, development, and deployment ("RD&D") perspective adopts a broader approach, identifying barriers as anything that inhibits market expansion of green technology.[50] These may include institutional, financial, and social barriers. Further, whereas environmental tax measures under the market efficiency perspective are limited to efficiency objectives, measures under the RD&D perspective aim to transform market decisions by encouraging "economic actors to adopt more environmentally sensitive alternatives" through the promotion of "environmental awareness and shared responsibility for creating a better environmental future".[51] This rationale allows tax instruments to take into account "factors other than marginal costs and benefits" in their development and serve to promote awareness "through conveying information about environmentally harmful activities, fostering different attitudes regarding their costs and benefits, and encouraging alternative activities with less deleterious environmental consequences".[52]

While acknowledging that market efficiency objectives alone may be insufficient to achieve sustainable market patterns, influencing market behaviour must nonetheless be balanced with efficiency concerns. Illustrating this balance, the RD&D approach aims to create a "virtuous cycle" between the laboratory and the market, whereby the "learning" that occurs in one arena reinforces the "learning" that occurs in the other.[53] It has been consistently demonstrated that the benefits incurred from subsidized research and development, namely increased technological capacity and decreased technological costs, are amplified through incentives which encourage their market deployment.[54] Subsidized deployment serves to further reduce technological costs through increased economies of scale in equipment production and installation, and increased RD&D performance gains through "learning by doing".[55]

Within both the laboratory and the market, the RD&D approach identifies institutional barriers such as

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48 Petition from Mr. Charles Caccia, c/o Institute of the Environment, Friends of the Earth Canada, Pembina Institute for Appropriate Development and Sierra Legal Defence Fund to the Auditor General of Canada, "respecting federal tax and other subsidies to the oil and gas industry that undermine government spending and regulations aimed at complying with the Kyoto Protocol and fighting climate change", October 3, online: Sierra Legal <http://www.sierralegal.org/reports/oilgas-AGPetition-oct0305.pdf> at 35 [Petition].

49 For example, the Pembina Institute has claimed, "[i]t makes absolutely no sense for the Government to use our taxes—and almost nothing but our taxes—to reduce CO_2 emissions and, at the same time, use even more of our taxes to provide massive subsidies which increases them". *Ibid.,* citing Jim McNeill, *The Art of the Possible: Environmental Sustainability through a Political Glass, Darkly*, speech at the University of Ottawa, May 5, 2005.

50 OECD, "Creating Markets", *supra* note 31 at 19.

51 Duff, *supra* note 29 at 2070.

52 Duff, *supra* note 29 at 2077, 2075.

53 OECD, "Creating Markets", *supra* note 31 at 42.

54 Market evidence demonstrates that the rate at which "the cost of using a new technology falls and its technical performance improves as sales and operational experience accumulate". The implantation of this cycle through economic instruments in a 77 per cent reduction in photovoltaic modules in Japan and a 50 per cent cost reduction for wind turbines in Germany. Duff, *supra* note 29 at 53–4.

55 National Roundtable, *supra* note 24 at 98; See also OECD, "Creating Markets", *supra* note 31 at 46.

> market acceptance and demand, permitting and community acceptance, intermittency of the resource, proximity of resources to transmission grids, insufficient transmission capacity, dearth of resource mapping, lack of engineering standards and national technical rule making, shortages in trained technical labour, and a wide variety of policies and regulations that, inadvertently perhaps, give preference to other technologies.[56]

Theoretically, Canada's energy market deregulation should provide increased opportunity to overcome these barriers through "[a]ccelerated technological progress due to an infusion of entrepreneurial dynamism and increased competition".[57] However, this green dynamism is limited by increased competition for investment capital from investors who seek to maximize returns on investment. Canadian investment surveys have confirmed what would reasonably be expected: energy investors prefer incumbent technologies with established track records and quicker payback periods.[58]

The inability of green energy to satisfy the investment criteria of energy investors is largely the result of six financial barriers:

1. higher capital costs;
2. market structures which divorce consumer preference and technological development choices;
3. uncertainties in respect of market subsidies
4. difficulties attracting capital given the inherently higher investment risks involved in green technology;
5. disproportionately higher financing costs as a result of these increased risks; and
6. market preference for incumbent technologies.

2.2.1) Higher Capital Costs

In respect of the first barrier, while renewable energy projects are able to tap into virtually free fuel sources, their high up-front capital costs make it difficult to access these inexpensive resources. This high capital cost translates into higher prices for green electricity. Green generation costs are generally on par with the wholesale prices charged by incumbent electricity providers (see Figure 2). Thus, in order for renewable energy projects to generate competitive retail electricity, they must be able to directly sell their electricity to customers.[59] However, the structure of electrical utilities in Canadian provinces generally prohibits this possibility. Further, insofar as market restructuring achieves its objective of lowering energy prices, the challenge for green sources to generate competitively priced electricity will only increase.[60]

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56 National Roundtable, *supra* note 24 at 55.

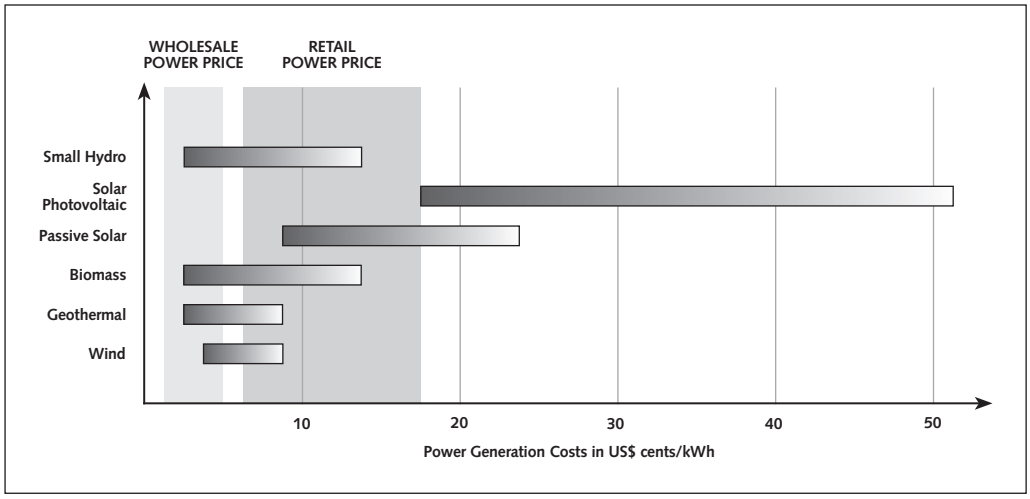
57 Organization for Economic Co-operation and Development/International Energy Agency, *Toward a Sustainable Energy Future* (Paris: OECD/IEA, 2001) 102, online: International Energy Agency – Energy Publications <http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1119> [OECD, "Energy Future"].

58 Auditor General, *supra* note 5 at 5.

59 "Except for large hydropower and combustible renewables and waste plants, the average costs of renewable electricity are not widely competitive with wholesale electricity prices. However, depending on the technology, application and site, costs are competitive with grid electricity or commercial heat production". OECD, "Energy Policies", *supra* note 7 at 61.

60 Dallas Burtraw, Karen Palmer & Martin Heintzelman, *Electricity Restructuring: Consequences and Opportunities for the Environment* (Washington: Resources for the Future, 2000) at 20, online: Resources for the Future <http://www.rff.org/Documents/RFF-DP-00-39.pdf)>.

FIGURE 2
COST COMPETITIVENESS OF RENEWABLE POWER TECHNOLOGIES – 2004 AVERAGE [b]



Note: Cost calculation is based on system investment needed (capital cost is based on discount rate of 6% and amortization period of 15-25 years and power output. Lowest cost range to optimum conditions (i.e., proven technology, optimal plant size and design, and high availability of system and resources. Source: NET Ltd. Switzerland

[b] Figure provided by Organization for Economic Co-operation and Development, *Renewable Energy: Market and Policy Trends in IEA Countries* (Paris: OECD, 2004) online: International Energy Agency <http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1263> at 62.

2.2.2) Market Structures as Barrier to Consumer Preference

The customer disincentive of higher retail prices for green energy might be offset in part by customer preferences to secure the positive externalities of green energy. However, only in Alberta and Ontario do retail customers currently have the capacity to enter into power-purchase agreements with different providers and thereby express market preference for green energy. Moreover, even in these markets, consumer choice is limited to electrical companies that have already gained access to the electrical grid. As discussed above, access remains controlled by provincially owned or regulated utilities, and thus end-use customer demand has limited ability to exert economic market influence on technology decisions in respect of grid level generation capacity. Within Canadian energy markets, the real customers of green energy are in effect the provincial regulators and utilities. As end-use consumers are unable to exert market demand for green energy, these utilities have limited economic incentive to tender green generation when less expensive electricity can be generated from non-green technologies.[61]

2.2.3) Uncertainty with Respect to Market Subsidies

Some governments have attempted to address this issue by introducing various feed-in subsidizations to utilities, whereby governments subsidize the difference between the market price of non-green and green energy thereby enabling publicly owned or regulated utilities to efficiently tender green energy (these mechanisms are discussed below). Such was the case with the WPPI of the previous federal government and the proposed ecoEnergy Renewable Initiative of the current government. However, where the duration and application of such mechanisms cannot be guaranteed, these subsidizations may introduce additional uncertainty and increased investment risk for green investment.

61 Auditor General, *supra* note 5 at 3–21.

2.2.4) Higher Investment Risk

Even where such subsidization mechanisms are secure and result in utility demand for green energy, investors in green generation projects will remain concerned with "the profitability of the investment against the risk to the capital employed".[62] These risks differ with various electrical generation technologies (see Table 1).[63] In respect of newer commercially unproven technologies, investors will face increased risks concerning "product quality, process reliability, maintenance needs and general uncertainty about the performance of a new technology".[64] Commercially proven green technology such as solar and wind generation has "some very attractive low-risk characteristics, including very short lead times, no fuel costs or emissions, and low operating costs (hence little effect should these costs escalate)".[65] However, these risks must be balanced against the uncertainty of open market electricity prices, which will have an increased adverse effect on capital-intensive green projects.[66]

> Technologies which have a higher specific investment for capacity even though they may have relatively low fuel costs (wind, nuclear) are more greatly affected by this risk because there is less they can do to respond [compared to fossil fuel generation projects]. Thus, although high capital cost and low fuel cost technologies will likely be competitive in the short-run and therefore produce electricity, they will be more exposed to cover capital employed. A firm reliant on such technologies may find itself in financial difficulties if prices slump for a prolonged period.[67]

TABLE 1
COMPARISON OF RISK CHARACTERISTICS BY GENERATING TECHNOLOGY [c]

TECHNOLOGY	UNIT SIZE	LEAD TIME	CAPITAL COST/KW	OPERATING COST	FUEL COST	CO_2 EMISSIONS	REGULATORY RISK
Clean Coal & Gas Turbines	Medium	Short	Low	Low	High	Medium	Low
Coal	Large	Long	High	Medium	Medium	High	High
Nuclear	V. Large	Long	High	Medium	Low	Nil	High
Hydro	V. Large	Long	V. High	V. Low	Nil	Nil	High
Wind	Small	Short	High	V. Low	Nil	Nil	Medium
Solar	V. Small	V. Short	V. High	V. Low	Nil	Nil	Low
Fuel Cells	Small	V. Short	V. High	Medium	High	Medium	Low

[c] Table provided by Organization for Economic Co-operation and Development/International Energy Agency, *Energy Market Reform: Power Generation Investment in Electricity Markets* (Paris: OECD/IEA, 2003) online: International Energy Agency – Energy Publications <http://www.iea.org/dbtw-wpd/Textbase/publications/free_new_Desc.asp?PUBS_ID=1202> at 32.

2.2.5) Higher Financing Costs

These increased risks and cost-disincentives result in green project financing disadvantages "by the contracting and financing structures expected in a world of vigorous retail competition".[68]

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62 OECD, "Energy Market Reform", *supra* note 1 at 35.

63 *Ibid.* at 12.

64 National Roundtable, *supra* note 24 at 36.

65 OECD, "Energy Market Reform", *supra* note 1 at 33.

66 National Roundtable, *supra* note 24 at 55.

67 OECD, "Energy Market Reform", *supra* note 1 at 28–9.

68 Leanne Sereda, "Renewable Energy — Tax Developments and Opportunities" (2000) 13 *Petroleum Tax Journal 1* para. 38 [Sereda].

> [I]ncreased investment risks and a scarcity of long-term contracts will probably result in shortened investment horizons, reductions in debt maturity, increased equity requirements, and larger debt and equity risk premiums. Although these changes will affect all electric generating sources, they will have a differentially large impact on technologies, such as RETs [renewable energy technologies], that have high capital costs (and therefore larger financing requirements).[69]

2.2.6) Market Preference for Incumbent Technologies

Finally, with respect to the sixth barrier, existing energy developers may prefer incumbent technologies over new technology, as investment in developing the latter carries "learning" risks. Investors will be uncertain as to the return on learning investments and that "some or all of the benefits of its learning investments can end up being captured by its competitors".[70]

In summary, even where an energy market provides an even playing field between competing technologies and efficiently allocates externalities, the above six financial barriers will likely create market inertia with respect to green investment growth. Effective market deployment tax instruments will thereby need to do more than create a level playing field, but ensure that the above six financial barriers are mitigated so as to provide sufficient incentive for developers to invest in green growth.

2.3) MARKET TRANSFORMATION PERSPECTIVE

In contrast to the market deployment perspective, the market transformation perspective "focuses on the outcome to be achieved and then runs the logic back through all the factors that would be necessary to attain that outcome".[71] Accordingly, the market transformation perspective shares the same tax rationale as the RD&D perspective—to encourage market participants to adopt more environmentally sensitive alternatives. However, under a transformation perspective, policy instruments are designed through a private-sector business perspective which

> focuses on what needs to be done in practical terms to build markets for new energy technologies. It is concerned with the behaviour and roles of market actors, how their attitudes guide decisions and how these attitudes can be influenced … [and] considers the distribution chain from producer to user, focuses on the role of the actors in this chain in developing markets for new energy technologies, and applies the tools of the management sciences.[72]

This objective-oriented approach will likely result in different economic instruments than those employed by a market deployment economist seeking to balance market transformation with economic efficiency. "The straight forward principle is first to develop an understanding of the buyer-relevant characteristics … of the technologies being promoted and the workings of the markets that will potentially be transformed; and then to identify strategies that would help to boost the positive attributes … and overcome the negative ones".[73]

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69 *Ibid.* at 38.

70 OECD, "Creating Markets", *supra* note 31 at 58.

71 *Ibid.* at 12–3, 19.

72 *Ibid.* at 12.

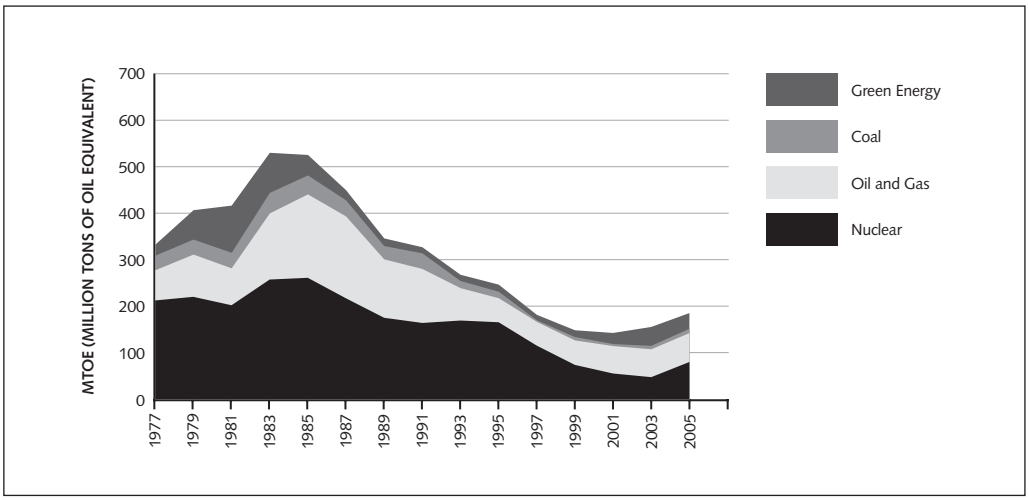
73 *Ibid.* 85–6.

PART III - Response of Canadian Tax Policy

It is beyond the scope of this paper to conduct a thorough analysis of government subsidization of Canada's energy market. However, some basic figures can help to illustrate the subsidization disparity between fossil fuel and renewable energy development. Between 1996 to 2002, the federal government provided nearly $8 billion in tax expenditures to the oil and gas industry while allocating less than $6 billion in total expenditures, tax and otherwise, for all climate change action programs.[74] The 2005 Budget projected only $295 million in tax expenditures between 2005 to 2009 towards both energy efficiency initiatives and renewable energy generation equipment.[75] It is difficult to estimate what percentage of this $6 billion was allocated through tax expenditures, however, in light of the 2005 Budget projections, the percentage is likely quite low. The imbalance of these figures has led the Pembina Institute to conclude that "the government's tax subsidies to the oil and gas industry indirectly promote GHG emissions and thereby undermine—even outweigh—its own spending to reduce those very emissions in the fight against climate change".[76]

The federal government's direct spending on energy research and development since the 1970s exhibits the same imbalance. Of the nearly US$ 8.79 billion (2002 prices and exchange rates) directed towards energy RD&D, only 7.4 per cent was directed towards renewable energy.[77] While this uneven subsidization began to level off by 2002, fossil fuels continue to receive more federal research and development investment than renewables (see Figure 3). While Figure 3 does not represent tax expenditures, tax policies must nonetheless take these expenditures into account in formulating measures that will ensure sustainable energy development.

FIGURE 3
CANADIAN GOVERNMENT RD&D EXPENDITURES, 1977–2005 [d]



[d] Derived from data supplied by the Organization for Economic Co-operation and Development/International Energy Agency, *RD&D Budgets,* online: International Energy Agency <http://www.iea.org/>.

74 Petition, *supra* note 48 at 31.

75 Canada, Department of Finance, 2005 Budget, Annex 8: Tax Measures: Supplementary Information at 1.

76 Petition, *supra* note 48 at 2.

77 OECD, "Renewable Energy", *supra* note 23 at 182.

These issues have not been lost on Finance, which, under the *Auditor General Act*, is required to develop a "Sustainable Development Strategy" ("SDS") every three years.[78] In 1997, Finance released its first SDS, stating that "the concept of sustainable development implies the desirability of moving in two basic directions: closer integration of economic, social and environmental objectives; and intergenerational equity".[79] Finance's first step in this direction was the 1996 report *Renewable Energy Strategy*, jointly released with Natural Resources Canada. The report outlined a strategy of "enhancing investment conditions, supporting technology research and development, and developing markets for renewable energy technologies".[80] In the same year, Finance introduced a number of tax measures under the *Income Tax Act* ("the Act")[81] designed to enhance investment in the renewable energy market. The two main measures introduced were (1) a new Canadian Renewable and Conservation Expenses ("CRCE") available for intangible expenses incurred during the pre-development phase of renewable energy projects, and (2) a relaxation of the specified energy rules which had limited the deduction of accelerated capital cost allowances ("ACCA") arising from renewable energy assets to the income earned from those assets.

Finance's current SDS (2007–2009) outlines a target to "[e]xamine potential changes to the tax system to assist the Government in meeting its environmental objectives, including proposals received from responsible policy departments and external stakeholders".[82]

3.1) FINANCE'S RD&D PERSPECTIVE

In developing green energy tax measures, Finance has adopted an RD&D approach, attempting to balance efficiency concerns with the need to provide incentives for green investment and consumption decisions. Finance's 2004–2006 SDS states that:

> economic instruments have the potential to change the way producers and consumers make choices in relation to investment and consumption decisions, for example. In addition, market-based mechanisms can help achieve environmental objectives at a lower cost than policies that rely strictly on regulatory approaches because decentralized decision making by affected firms, organizations and individuals will generally lead to the allocation of scarce resources in a more efficient manner.[83]

Illustrating this policy, the CRCE provisions promote market efficiency by providing a more level playing field between competing energy investments, while the ACCA provisions attempt to provide an incentive to energy developers to develop green energy projects.

Both the CRCE and ACCA target technologies are provided for under the meaning of "prescribed energy conservation property" as set out under Class 43.1 and 43.2 in Schedule II of the Act.[84] Class 43.1 paragraph (d) includes equipment that is part of an electrical generation project whose energy source is solar, wind, geothermal, small-scale hydro (defined as less than 15 MW), and biomass (all of which are green energy sources, with the exception of biomass).

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78 *Auditor General Act*, *supra* note 2 at section 24(1).

79 Canada, Department of Finance, *Sustainable Development Strategy* (Ottawa: Department of Finance, December 1997) at 35.

80 Natural Resources Canada, "Federal Actions on Climate Change – Next Steps: Renewable Energy" *Release*, December 12, 1996 online: Natural Resources Canada <http://www.nrcan.gc.ca/media/archives/ newsreleases/1996/1996117e_e.htm>.

81 Unless otherwise stated, statutory references in this paper are to the *Income Tax Act*, RSC 1985, c. 1 (5th Supp.) as amended [the Act].

82 Canada, Department of Finance, *Sustainable Development Strategy 2004-2006* (Ottawa: Department of Finance, March 2004) online: Department of Finance Canada <http://www.fin.gc.ca/susdev/sds2007_1e.html#2.2> at 3a.1.

83 SDS 2004-2006 *supra* note 9 at 44.

84 Regulation 8200.1 provides that "For the purposes of subsection 13(18.1) and subparagraph 241(4)(d)(vi.1) of the Act, prescribed energy conservation property means property described in Class 43.1 or 43.2 in Schedule II".

The remaining paragraphs of Class 43.1 include equipment that is part of an electrical generation or co-generation system that uses fossil-fuel, biomass, or waste-fuel with a heat-rate loss of not more than 6,000 BTU per kWh of generated electricity, or 6,750 BTU in the case of combined-cycle projects. Class 43.2 includes new equipment that is acquired between February 22, 2005 and December 31, 2011 and which is part of an electrical generation project which uses either: (1) fossil fuel, biomass, or waste-fuel as provided under paragraph (b) of Class 43.1 with a high-efficiency heat-rate loss of not more than 4,750 BTU per kWh of generated electricity; or (2) green energy sources as provided for under paragraph (d) of Class 43.1.

Class 43.1 was introduced in 1994, and is continually updated by Finance in consultation with the Department of Natural Resources ("NRCAN"), who in turn conducts regular consultations with the renewable energy sector to ensure the inclusion of new and rapid advancements in technological efficiencies.[85] The prescribed energy conservation property excludes used property in order to endure that the tax instrument targets the most efficient technology available. Subsection 13(18.1) of the Act provides that the NRCAN's publication *Technical Guide to Class 43.1* shall apply conclusively with respect to engineering and scientific matters for the purpose of determining whether property meets the criteria set out in Class 43.1.

3.2) MARKET EFFICIENCY MEASURES

3.2.1) Failure to Internalize Energy Externalities

In respect of creating a more efficient market through the internalization of energy externalities, the federal government stated in 2002 that it would "promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the costs of pollution, with due regard to the public interest and without distorting international trade and investment".[86] However, Canada has not and is unlikely to adopt a broad-based energy or carbon tax in light of the fact that (1) certain energy-intensive regional economies would be disproportionately affected, and (2) higher energy costs would likely have an adverse effect on the competitiveness of Canadian manufacturers and producers on international markets.[87]

In place of such a tax, under its Climate Change Plan for Canada, the previous federal government proposed a tradable emissions permit system for Large Final Emitters ("LFE") set to commence in 2008, targeting mining and manufacturing, oil and gas, and thermal electricity sectors.[88] Under the program, LFEs would have been required to meet their individual target obligations through emission reductions, and would be liable to the government for emission units equal to any shortfall in the form of credits that will be tradable in a carbon market.[89] The value of credits was proposed to be determined by individual industries, up to a maximum of $15 per tonne of CO_2.[90] While the LFE system would likely have resulted in reduced GHG emissions, it is unlikely that it would have been as effective as a broad carbon tax imposed on energy consumers.

The current federal government has abandoned the LFE proposal, introducing instead

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85 Canada, Department of Finance, "Tax Topics: Report #1569" *Release*, April 4, 2002 at 3.

86 Public Works, "Using the Tax System", *supra* note 4 at 3–6.

87 National Roundtable, *supra* note 24 at 21.

88 Notice of intent to regulate greenhouse gas emissions by Large Final Emitters, Can. Gaz. 2005. I. online: CEPA Environmental Registry - Summary of Comments Received on the Notice of Intent to Regulate <http://www.ec.gc.ca/ceparegistry/documents/part/GHG_noi_resp/GHG_noi_resp.cfm>.

89 *Ibid.*

90 Organization for Economic Co-operation and Development/International Energy Agency, *Energy Policies of IEA Countries: Canada, 2004 Review* (Paris: OECD/IEA, 2004) online: International Energy Agency – Energy Publications <http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1468> at 62 [OECD, "Energy Policies Canada"].

"Canada's Clean Air Act", which consists of proposed amendments to the *Canadian Environmental Protection Act*, among others.[91] No carbon tax is included, nor are any firm targets or objectives provided, other than a notice of intent to discuss reducing GHGs between 45–55 per cent by 2050.[92] It is not clear how such a reduction would be accomplished.

3.2.2) Creating a Level Playing Field – Canadian Renewable and Conservation Expenses

Developers of non-renewable energy projects have long been able to claim intangible expenses incurred in determining the existence, location and extent of mineral, oil and natural gas resources under the three categories of Canadian exploration expense ("CEE"), Canadian development expense ("CDE") and Canadian oil and gas property expense ("COGPE"). These expenses are included in the taxpayer's cumulative CEE[93] and are fully deductible in the year they are incurred, subject to certain limitations.[94] Further, a company which is a "principle-business corporation" ("PBC") may renounce its CEE pool, or a portion thereof, in favour of shareholders with whom it has entered into a flow-through share ("FTS") agreement.[95] An FTS agreement will generally obligate the corporation to incur and renounce specified CEE expenses, which the shareholder may deduct against their own income once renounced.

A PBC is defined as including a corporation whose principal business is, (1) the generation of energy using property described in Class 43.1 of Schedule II to the Income Tax Regulations,[96] or (2) the development of projects for which it is reasonable to expect that at least 50 per cent of the capital cost of the depreciable property to be used in each project would be the capital cost of property described in Class 43.1.[97] "Principal" is generally viewed to be "the most significant business activity of a corporation when considering such factors as capital invested, time spent, revenue generated, etc".[98]

The FTS mechanism was designed to benefit junior resource companies who are otherwise unable to utilize income tax deductions for exploration and development as a result of having no taxable income during development stages by making the deduction available to potential investors. This benefit is intended to ameliorate a development company's limited access to non-equity financing as a result of the high risk of resource development.[99]

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91 *An Act to Amend the Canadian Environmental Protection Act*, R.S.C. 1999, c. 33, the *Energy Efficiency Act* and the *Motor Vehicle Fuel Consumption Standards Act* [*Canada's Clean Air Act*].

92 Notice of intent to develop and implement regulations and other measures to reduce air emissions, Can. Gaz. 2006. I. 3359. Proposed elements of the regulatory approach online: Canada Gazette <http://canadagazette.gc.ca/partI/2006/20061021/pdf/g1-14042.pdf>.

93 *Income Tax Regulations*, C.R.C., c. 945 s. 66.1(6).

94 *Ibid.* s. 66.1(2) or (3).

95 Renunciation may be made under either subsection 66(12.6) or 66(12.601). The qualifications of a flow-through share, including a flow-through share agreement are provided under subsection 66(15).

96 Paragraph 66(15)(h).

97 Paragraph 66(15)(i)

98 Serada, *supra* note 68 at 18.

99 Canada, Department of Finance - 1996 Budget, Environment: Incentives to Invest in Renewable Energy at 2.

TABLE 2
NON-RENEWABLE CEE, CDE AND COGPE TAX EXPENDITURES [e]

EXPENDITURE	1996	1997	1998	1999	2000	2001	2002
CDE, CEE & COGPE (in millions)	721	568	375	703	1,052	1,144	1,035

[e] Amy Taylor, Matthew Bramley and Mark Winfield, Government Spending on Canada's Oil and Gas Industry: Undermining Canada's Kyoto Commitment (The Pembina Institute for Appropriate Development, January 31, 2005) online: Pembina Institute <http://www.pembina.org/publications_search_newsitem.asp ?id=181&section=>.

Under the 1996 Budget, the federal government introduced the CRCE as a fourth category, under which developers can claim intangible costs incurred from determining the existence, location and extent of renewable resources—which according to Finance are "similar to those incurred by junior resource companies".[100] CRCE are deemed to be a CEE, and thus enjoy a similar tax treatment.[101] Moreover, whereas junior resource companies developing conventional energy projects may not deduct CEEs to create a loss,[102] renewable energy PBCs may deduct their total CRCEs irrespective of whether or not a loss is created (unless such expenses have been renounced in favour of flow through shareholders).[103]

In order for an expense to qualify as a CRCE, at least 50 per cent of the capital cost of the cost of the depreciable property to be used in the project must fall under Class 43.1 or 43.2.[104] Subject to specified exclusions, these expenditures can include the following:[105]

- pre-feasibility and feasibility studies for suitable sites and potential markets;
- costs necessary to determine the extent and location of the energy resource, including development and maintenance costs for site access and temporary roads;
- negotiation and site approval costs, including regulatory and environmental compliance expenses;
- site preparation costs not directly related to equipment installation;
- service connection costs incurred in order to transmit power to the power purchaser; and
- the cost of acquiring and installing test wind turbines (similar to the deduction allowed for an exploratory well of a new oil field[106])

By developing the CRCE, the federal government stated that it was ensuring "that costs in the renewable energy and energy conservation sector receive tax treatment similar to costs in

100 *Ibid.* note 99 at 2. Finance stated in its Tax Expenditures Notes (2000), "The renewable energy and energy conservation sector faces difficulties in financing intangible costs. The Canadian Renewable and Conservation Expenses (CRCEs) address this concern by providing them with improved access to financing in the early stages of their operations when they may have little or no income to utilize the [class 43.1 and 43.2] income tax deductions related to these expenses". Canada, Department of Finance, Tax Expenditures: *Notes to the Estimates/Projections, 2000* (Ottawa: Department of Finance, 2000) online: Department of Finance Canada <http://www.fin.gc.ca/toce/2000/taxexpnot_e.html> at 78 [Notes to the Estimates].

101 Paragraph (g.1) of the definition of "Canadian exploration expense" in subsection 66.1(6).

102 *Ibid.* s. 66.1(2).

103 *Ibid.* s. 66.1(3); Corporations who are PBCs under paragraph (h) or (i) of the definition of "principle business corporation" in subsection 66(15) are excluded from subsection 66.1(2), and are included in subsection 66.1(3).

104 Regulation 1219. The CRA's interpretation of this definition can be found in *Income Tax Ruling* 2005-0143071E5, November 10, 2004 at 4.

105 This summary list is provided in Sereda, supra note 68 at 17.

106 OECD, "Renewable Energy", *supra* note 23 at 193.

the non-renewable energy sector".[107]

> This initiative will help level the playing field between energy investments. It will provide Canada's renewable energy sector with better access to capital which will in turn help the industry attain its potential for jobs and growth. In addition, new investment in renewable energy will expand domestic and international markets for wind, solar, small hydro and other renewable energy products and expertise.[108]

The conclusion that the CRCE helped create a level playing field was in large part based on the findings of the Department of Natural Resources 1996 report *The Level Playing Field: The Tax Treatment of Competing Energy Investments*.[109] Prior to the introduction of CRCE, the report concluded that,

> while the playing field is not level, the variations, with the exception of the ethanol and energy efficiency projects, are not large. The level of tax support provided to energy supply investments (i.e., oil and gas and renewable energy projects) varies relatively narrowly, between 5 and 20 per cent of capital costs. The initiatives announced in the 1996 Budget will assist in a further leveling of the field.[110]

This conclusion was reached based on a strict analysis of the financial uplift provided by tax incentives to various types of energy projects. The uplift was calculated by analyzing energy projects according to energy source, and measuring each project's relative tax burden "under the current system when compared with a neutral tax system (absent any incentives)".[111]

Using a different methodology, a subsequent report from the Commissioner of the Environment and Sustainable Development ("CESD") supported the conclusions of the Department of Natural Resources. Its *2000 Report on Energy Investment* examined how the tax system treats marginal investments, which are "investments that just meet the investor's acceptable rate of return" likewise concluding that the difference in tax treatment was relatively narrow.[112]

However, neither of these reports addressed the fact that investment limitations imposed by the alternative minimum tax ("AMT") fundamentally prevents the CRCE from leveling the playing field. In calculating a taxpayer's AMT, a flow-through shareholder may only deduct CRCE expenses which have been renounced in their favour against income "that can reasonably be considered as attributable to the production of petroleum, natural gas and minerals".[113] In other words, since flow-through CRCEs may only be deducted by investors against income derived from fossil fuel production, the CRCE FTS mechanism prevents investors from making fully green investment choices. Insofar as investment in green energy mandates investors to invest in non-renewable energy, it is difficult to view the CRCE as having leveled the playing field. One can imagine that a far more effective green tax mechanism would be to limit the deduction of CEE expenses from income derived from the production of green energy.

Further, it should be noted that the introduction of the CRCE did not aim to immediately

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107 Canada, Department of Finance, "Enhancements to Renewable Energy Tax Incentives," *Release*, no. 2002-063 and backgrounder, July 26, 2002 at 2.

108 Canada, Department of Finance, "New Tax Measures for Renewables and Energy Conservation" *Release*, June 27, 1996 at 1.

109 NRCan, "The Level Playing Field", *supra* note 46.

110 *Ibid.* at 4.

111 Auditor General, *supra* note 5 at 3–18.

112 *Ibid.* at 3–18,19.

113 Subsection 127.52.(1)(e), (e.1). This interpretation has been affirmed by the CRA in *Income Tax Ruling* 2002-0166845, January 28, 2003.

level the playing fields, as the FTS "look-back" rule only became applicable to the CRCE in 2002, long after it had been introduced for other CEEs and six years after CRCE was introduced. The "look-back" rule treats certain CEEs renounced in the first sixty days of a calendar year as having been renounced on the last day of the preceding year.[114] This rule provides for flexible financing, as a PBC may renounce the look-back expense before actually incurring it (although any amount renounced and not incurred before year end will be subject to a Part XII.6 tax).[115] Finance has not given a reason as to why the look-back rule was not extended to CRCE, despite the fact that the CRCE was introduced as a means to level the playing field by improving renewable projects' access to capital.

3.3) MARKET DEPLOYMENT INCENTIVES

3.3.1) Canadian Renewable and Conservation Expenses

While the CRCE was introduced to ostensibly level the playing fields between conventional and renewable energy sources, it is more properly understood as a market deployment incentive for green electricity generation. However, the effectiveness of the CRCE as a market deployment instrument is also limited. First, the CRCE only addresses the financing costs and barriers associated with the relatively minor initial project development stage, and not the more burdensome financing costs and barriers associated with project development (as discussed above). Any resulting investment advantage for renewable developers is heavily outweighed by the much larger financing costs and risks that the renewable project will incur during project development. Insofar as project development financing costs remain a market barrier to renewable projects, they will continue to increase investment risks in renewable development companies and make renewable projects less profitable, more than offsetting the benefit that the flow-through CRCE achieves. The extent to which the ACCA deals with these remaining barriers will be discussed below.

Second, by limiting the issuance of FTS to PBCs, the measure will not apply to corporations who wish to develop onsite renewable energy projects to supply their energy needs. The unique capacity of renewable technology to provide end-use onsite electricity generation provides recognized environmental benefits that should be included within the CRCE. This is particularly the case in light of the fact that on-site green installation is often the only way that end-use consumers can exercise a green energy market choice in Canadian markets.

3.3.2) Accelerated Capital Cost Allowance

The capital cost allowances (CCA) for most capital classes are determined according to an accounting concept of depreciation, whereby the base rate of depreciation is determined in respect of the asset's usable life.[116] The default classes for most electrical generation equipment are generally classes 1, 2, or 17, which provide for a maximum CCA rate of 8 per cent.[117] Certain end-use consumer generation equipment enjoys a 20 per cent CCA under Class 8.

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114 Subsection 66(12.66); An excellent summary of the mechanical application of FTS is provided by Angelo F. Toselli, "Flow-Through Shares: An Update" (1997) 10 *Petroleum Tax Journal* 1.

115 This tax will be deductible by the PBC corporation under paragraph 20(1)(nn) in the taxation year it becomes payable. Thus, the Part XII.6 tax effectively functions as a "quasi-interest charge". Serada, *supra* note 68.

116 "In computing income from a business or property, no deduction is permitted on account of capital and no allowance is permitted in respect of depreciation except as expressly permitted by part I of the Act. …Paragraph 20(1)(a) permits a discretionary deduction of a portion of the capital cost of property, as is allowed by regulation. The type of property and the portion of its cost that can be deducted is prescribed under part XI of the regulations. The maximum rate of CCA for each class of property is prescribed by regulation 1100(1)". Stephen J. Fyfe, Craig J. Webster & Laura M. White "The New Electricity Market: Financing Options," in *Report of Proceedings of Fiftieth Tax Conference*, 1998 Conference Report (Toronto: Canadian Tax Foundation, 1999), 10:1–39 [Fyfe, Webster & White].

117 Notes to the Estimates, *supra* note 100 at 77.

From 1972 to 1993, certain renewable energy technologies enjoyed an ACCA of 50 per cent under Class 34. In 1988 Class 34 deductions became subject to "specified property energy" rules[118] which limited deductions to the amount of income generated from Class 34 property[119] except where such property was used by taxpayers to produce energy for the purpose of gaining income from their business.[120] This mechanism provided an incentive for the development of renewable energy projects, both as an electricity generation business and as an onsite energy supply for existing businesses.[121]

In 1994, Finance replaced Class 34 with Class 43.1, which reduced the ACCA to 30 per cent but expanded the range of qualifying specified energy property.[122] In 1996, concurrent with the introduction of the CRCE, the specified property energy rules were amended to exclude mining, manufacturing, and processing businesses from its application.[123] This amendment created "a significant planning opportunity in the deregulated electricity market where industrial users of electricity may take an equity position in new projects".[124]

In December of 2005, Finance introduced CCA Class 43.2, under which certain high-efficiency technologies otherwise included under Class 43.1 will again enjoy an ACCA of 50 per cent.[125] Class 43.2 is currently scheduled to apply only to assets acquired on or before December 31, 2011, after which time all specified renewable energy will again fall under Class 43.1.

Many observers have noted that the ACCA provides "a clear tax incentive to building, owning, and operating a project that qualifies under class 43.1".[126] However, the extent to which this is the case is unclear.[127] Class 43.2 does not provide for a greater ACCA than was provided under Class 34 between 1972 to 1993. Moreover, the current specified energy property restrictions, though relaxed, remain more restrictive than the restrictions applicable between 1972 to 1988. Accordingly, there is little evidence to suggest that the current ACCA mechanism would be any more effective as a market deployment incentive than the previous mechanism under Class 34.

It might be argued that the recent decentralization of certain provincial electricity markets, which now allow for greater private investment in green generation equipment, will result

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118 Subsection 1100(24); Subsection 1100(26) of the Regulations provided that corporations whose principal business was the sale, distribution or production of electricity and various other energy products were exempt form the application of subsection 1100(24).

119 "The specified energy property rules were introduced in 1988 in response to certain capital market transactions that used leverage financing for power projects and passed through the 50 per cent class 34 CCA deduction to passive investors who would recover the cost of their investment in a very short time". *Income Tax Ruling,* supra note 113 at 11. See also OECD, "Creating Markets", *supra* note 31 at 19; Public Works, "Using the Tax System," *supra* note 4 at 1.

120 Subsection 1100(25).

121 Regulation 1219, *supra* 104 at 3. This interpretation has been affirmed by the CRA.

122 Class 34 was amended effective February 21, 1994 to apply only to assets purchased or subject to an agreement to purchase before that date. The specified energy rules were concurrently amended to include Class 43.1 in their application. Sereda, *supra* 68 at 8.

123 Subsection 1100(24).

124 Fyfe, Webster & White, s*upra* note 116.

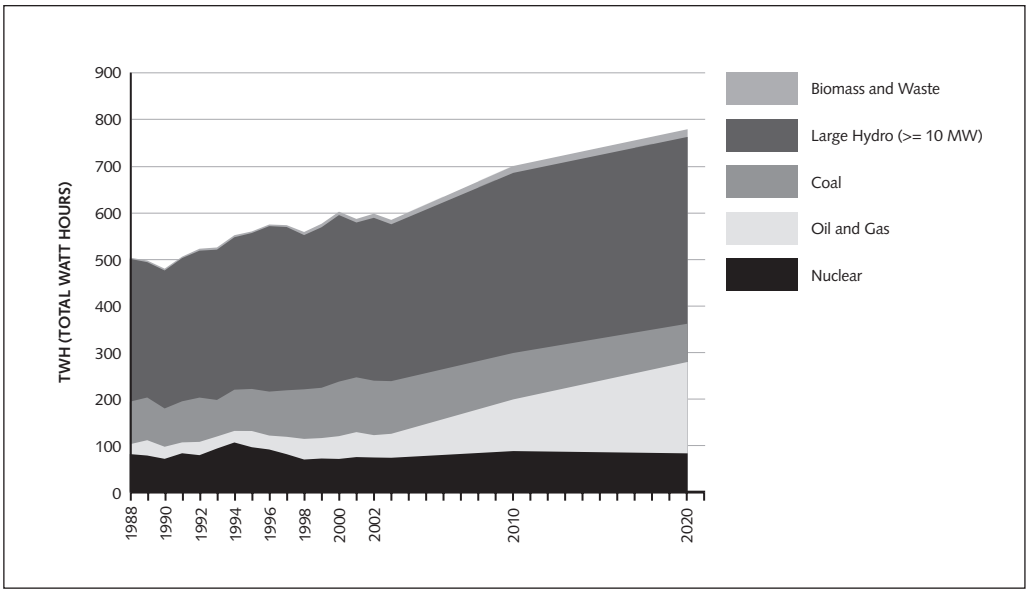
125 Depreciation under Class 43.1 and 43.2 is calculated on a decline-balance basis, subject to the 50 per cent rule in subsection 1100(2), whereby only half of the asset cost is available in the year the asset is acquired. Accordingly, the effective CCA rates for Class 43.1 and 43.2 assets in the year they are acquired is 15 per cent and 25 per cent.

126 Fyfe, Webster & White, *supra* note 116.

127 Finance does not provide ACCA tax expenditure estimates in respect of accelerated write-offs for non-renewable or renewable energy assets for reasons of data limitations. See response of James M. Flaherty, Minister of Finance, dated May 31, 2006, to Petition No. 158 "Subsidies to the oil and gas industry and federal efforts to address climate change" brought by Mr. Albert Koehl under the Auditor General Act, online: Office of the Auditor General of Canada <http://www.oag-bvg.gc.ca/domino/petitions.nsf/viewe1.0/EF2D9AAC9909E75F852571D9005E0D68>.

in the ACCA to be more effective under Class 43.2 than under Class 34.[128] Such investment is made even more likely given the substantial decrease in renewable technology costs since 1994. However, as illustrated in Figure 4, relatively few investors have chosen to defer their taxable income through Class 43.2 ACCA deductions. Despite the fact that the current electrical capacity of Canadian wind farm installations has increased over 1,000 per cent since the year 2000, and is set to continue strong growth,[129] its overall market share is projected to decrease as a result of even greater growth in oil and gas installations. Green energy accounted for only 0.3 per cent of electricity generation in 2005[130] and is projected to account for only 0.2 per cent in 2020.[131] As with green energy's share of total energy production, this figure is too small to be displayed in Figure 4, and well below any amount needed to seriously offset GHG emissions.

FIGURE 4
CANADIAN ELECTRICITY PRODUCTION FROM 1988–2003, WITH PROJECTIONS TO 2020 [f]



[f] Derived from data supplied by the Organization for Economic Co-operation and Development/International Energy Agency, *Energy Policies of IEA Countries* (Paris: OECD/IEA, 1988 - 2005) online: International Energy Agency – Energy Publications <http://www.iea.org/dbtw-wpd/Textbase/publications/index.asp> at 431.

This suggests that the costs and risks of green investment with an ACCA tax deferral still outweigh the advantages of investing in fossil fuel energy projects without an ACCA. While the ACCA is not available to non-renewable projects, such projects have much less need for them. Accordingly, investors will generally prefer a project with lower capital expenses and thus a quicker profit turn-around.

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128 Note that while electricity companies were exempt from the specified energy property rules, and could thus deduct the ACCA amounts against income from other electricity sources, few such electricity companies existed, as most energy was generated by Crown corporations, which were exempt from tax.

129 Canadian Wind Energy Association, "Canada's Current Installed Capacity" (January 2007) online: Canada Wind Energy Association <http://www.canwea.ca/images/uploads/File/Fiche_anglais_-_January_2007.pdf>.

130 Organization for Economic Co-operation and Development/International Energy Agency, Monthly Electricity Statistics, October 2006 (Paris: OECD/IEA, 2005) online: International Energy Agency <http://www.iea.org/Textbase/stats/surveys/mes.pdf>.

131 OECD, "Energy Policy Data", *supra* note 14 at 433.

PART IV - Conclusion: The Need for a Transformation Perspective

The displacement of GHG emissions through the displacement of non-renewable energy production with green energy generation is not an option if global warming is to be decelerated. This displacement will require private capital investment, which will require market incentives. Canada's tax instruments aimed at market efficiency, level playing fields, and market deployment through the removal of investment barriers have failed to significantly alter energy consumption or investment choices, and have thus fallen short of their capacity to reduce GHG emissions.

In respect of investment choices, while the introduction of the CRCE has helped level the playing field in terms of tax expenditures relative to market share, the historical subsidies provided to the oil and gas sector have resulted in a secure market incumbency which investors are reluctant to pass over—and which, in fact, they cannot pass over if they wish to utilize flow-through CRCE deductions. Moreover, the CRCE provides an incentive only in respect of the capital expenditures of pre-development project phases, which, while high, are relatively minor to the capital requirements of green energy projects. While the ACCA provisions provide for full deductibility of development costs, this deduction serves only as a tax deferral which fails to mitigate the security risks of lenders in a capital-intensive energy project.

In respect of consumption choices, the absence of a carbon tax to internalize the negative externalities of fossil fuel consumption has resulted in the growth of actual consumer spending on fossil fuels rather than beginning to reflect stated consumer preferences for clean energy. However, given the disparate regional effects that such a tax would have, together with the limited capacity of most provincial utility markets to accommodate the exercise of green consumer choices, it is difficult to envision the implementation of a carbon tax in Canada for some time.

It is a general principle that "[q]uantifying the contribution of each policy and measure is a prerequisite for any cost-effective approach in climate change mitigation policy".[132] Contribution cannot be measured without targets to measure against. However, Canada's sustainable development policies have not set clear targets regarding renewable or green electrical generation, nor has Finance "clearly stated what it is trying to achieve with [its tax] commitments, in terms of the performance that is targeted or is expected to occur".[133] The only way in which the Canadian tax system is going to provide sufficient incentive to overcome existing financial and market barriers and achieve market share growth is to design tax measures out of a market transformation perspective that sets objective market targets for green energy.

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132 Dean Anderson, "Progress Towards Energy Sustainability in OECD Countries," (HELIO International, 1997) online: Helio International <http://www.helio-international.org/Helio/anglais/reports/ oecd.html#indicators>.

133 Public Works, "Using the Tax System," *supra* note 4 at 3–1.