DOES THE GREEN LIGHT FROM THE GOVERNMENT REALLY MEAN “GO”?:
CHALLENGES ASSOCIATED WITH CANADIAN TAX INSTRUMENTS ON RENEWABLE
ENERGY DEVELOPMENT

by

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Abstract

Various levels of governments in Canada have introduced different types of tax instruments in order to encourage the development of renewable energy. This paper will look at the challenges that render those tax instruments inefficient and/or ineffective. For the ease of discussion, I will divide the said challenges by a hypothetical timeline of “before” and “during” the implementation of renewable energy. “Before” the implementation, some of the current tax incentives are criticized to be ineffective because there are better policy substitutes. It is also found that the inherent characteristics of renewable energy sources themselves render policy instruments inefficient. “During” the implementation, the currently existing “unlevel playing field” with the conventional oil and gas industry is found to be the strongest factor that causes tax incentives on renewable energy ineffective; the introduction of a carbon tax is recommended here. Lastly, even the most comprehensive tax measures are found unable to completely address the “exogenous” factors.
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1 Introduction

1.1 Why Does Green Energy Matter?

It would not be an exaggeration to say that virtually everyone in today’s society depends upon some sort of energy for their survival – whether it would be heating their homes, driving to work, or even cooking for their meals. Our dependency on energy is not much of a debated topic; rather, the questions that we should be asking are “what kind of energy do we really depend on? And why?” Traditionally, we have been relying substantially on fossil fuel energy that had been under enormous pressure to be more sustainable and environmentally friendly.

The issue of sustainability arises out of the fact that the fossil fuels are non-renewable energy – that is, the fossil fuels are being accumulated at a vastly slower pace than human’s extraction of it and we will never be able to recycle the same fossil fuels that were just consumed. It will be very difficult to sustain our current pattern of behaviour with this “non-renewability” simply because there isn’t much left. It is estimated that oil is going to be the first one to be depleted in 50 years, followed by natural gas in 70 years, and coal in 250 years.\(^1\) It is no secret that we need a new source of energy very quickly. The new energy must satisfy the sustainability requirement.

The issue of environmental friendliness has been another front of the battle. As a matter of fact, the fossil fuels are known to be the greatest contributor of greenhouse gas (GHG) emissions. When you burn the fossil fuels such as coal and petroleum, heavy concentration of carbon, methane, and other pollutants will be released to water and air; the entrapment of these gases in the atmosphere of the Earth then insulate the Earth and prevent it from releasing the heat energy. This will cause the average temperature of the Earth to increase – hence the name “greenhouse effect”. The harmful effects of the GHG emissions into the atmosphere can be devastating but I will refrain myself from discussing it any further.

Considering the foregoing, the governments of many countries now realize that the development of renewable energy (also known as “green energy”) production is desirable because the renewable energy is a perfect substitute of the conventional energy source; it is both sustainable and environmental friendly. These governments typically utilize their fiscal and regulatory policies in their endeavours to help develop green energy research and production; and the fiscal policies usually take the form of environmental taxation and/or tax incentives. However, although the tax measures that are aimed at encouraging development and generation of renewable energy have been in place for some time, the conventional sources of energy, such as oil and gas, continue to dominate the output of the energy market. Let us first of all take a look at how the Canadian government was grappling with the green energy policy thus far.

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3 The term such as “sustainable development” is commonly used in their endeavours and it purports to integrate economic growth, social well-being, and environmental protection. (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.
1.2 Canadian Government’s Efforts and Limitation

The Government of Canada started to be fully engaged in policies that were meant to encourage the renewable energy production as early as the 1990’s. In 1996, the government declared renewable energy and energy conservation as “the key components of the government’s climate change and sustainable development priorities.”\(^4\) In 1998, Canada signed the Kyoto Protocol to the United Nations Framework Convention on Climate Change (hereinafter “the Kyoto Protocol”) which was designed to stabilize and reduce emissions of GHG worldwide; however, no significant action took place under the Chretien government until 2002. On December 17, 2002, Canada formally ratified the Kyoto Protocol.\(^5\) Under the Kyoto Protocol, Canada committed itself to reduce its annual carbon dioxide emissions by six percent below 1990 levels by 2008-2012; this would mean reducing the current GHG emissions by 26%.\(^6\)

In 2005, a new plan entitled “Moving Forward on Climate Change: A Plan for Honouring our Kyoto Commitment” was introduced by the minority Liberal government. The plan involved allocating $97 million dollars to the “Renewable Power Production Incentive” over the next five years.


years and over $900 million dollars to the “Wind Power Production Incentives” over the next fifteen years. However, in 2006, the new minority Conservative government under Stephen Harper tried to scrap Canada’s Kyoto commitments and was going to introduce legislation that contained “made-in-Canada” targets. This move was later met strongly by the majority opposition and eventually on June 22, 2007, the Parliament of Canada enacted *Kyoto Protocol Implementation Act*, (KPIA) promising its continuing commitment towards reducing GHG emissions.

The enactment of the KPIA was a peculiar one as the KPIA embodied a legislative policy which was not in accordance with a governmental policy. In *Friends of the Earth*[^9], a non-for-profit environmental organization brought a case against the Canadian government that was alleged to have failed to comply with its duties outlined in the KPIA. The government responded by arguing that the Friends of the Earth organization did not have a right to bring such an action and/or the court did not have a jurisdiction to make a ruling. The justiciability of the KPIA was questioned before the Federal Court and it determined that the courts “had no role to play reviewing the reasonableness of the government’s response to Kyoto commitments.”[^10] This decision was affirmed by the Federal Court of Appeal and a leave to the Supreme Court of Canada had been refused. To many, this case clearly set out a dangerous precedent; it confirmed


that the government’s commitment in the internationally agreed policy instruments such as the Kyoto Protocol would not be subject to judicial scrutiny. Understandably so, the Federal Court of Appeal certainly was careful not to make a political decision but instead expected Canadians themselves to punish their government’s failure in not complying with the Kyoto Protocol in a polling station, if they wished. In early 2010, shortly after the Friends of the Earth case, Canada announced that it would reduce GHG emissions by 15% below 2005 levels, affirming its intention to meet the reduction target under the Copenhagen Accord. However, having become a majority government for the first time since 2004, it remains to be seen how the majority Conservative government in 2011 will dictate the Kyoto commitment discussions in the Parliament.

Despite the aforementioned efforts of the Canadian government [or a very inconsistent path it took partly because of a series of minority governments and also a swing in the party in power], the future is not necessarily bright for the production of green energy in Canada. The International Energy Agency (the IEA) predicts that green energy sources will account for only about 8% of Canada’s total energy production in 2020. This is indeed a disappointing figure when it is combined with the fact that the IEA also identifies Canada as one of the highest per-


capita emitters of the GHGs in the world.\textsuperscript{13} The grim outlooks raise questions regarding Canada’s ability to meet its new GHG emission reduction targets.

In this paper, I take the view that the fiscal policies, specifically tax instruments, employed by the Canadian government to encourage the sustainable development of renewable energy are desirable. However, I pose a question of whether these fiscal policies are in fact effective and efficient in achieving their goals - my answer to the question is negative. I strive to describe the ineffectiveness and inefficiency of the Canadian government’s tax instruments on renewable energy projects in terms of the theoretical shortcomings as well as the limitation of practical application. At the beginning of the paper, I provide the rationales of both tax incentive and environmental taxation and how they dictate the market and the actors within it, and, most of all, how both of them are similar in nature. On the theoretical level, I explain how some people view that the current tax incentive programs will fail even in theory. Also, I describe the unique (but problematic) characteristics of the green energy sources themselves. On the practical level, I take a look at the political and fiscal environment in Canada for the green energy developers – more particularly, the problem of the “unlevel playing field” with oil and gas industry and the desirability of a carbon tax are explained. I strive to take one step further and look at some of the factors that are completely exogenous to our debate on the renewable energy policy, such as NIMBY-ism and the Constitution.

\textsuperscript{13} Ibid.
1.2.1 “Before”, “During” the Development of Renewable Energy and “Exogenous” factors

For convenience and ease of our discussion, I divide my analysis according to the chronological order of hypothetical green energy development phases, namely, “before” and “during” the implementation of green energy projects. I admit that the segmentation of the renewable energy development made here is highly artificial because the factors that are important “before” the implementation may also be as important as “during” the implementation, or vice versa. Although the chronological segmentation is not perfect and some of the issues will overlap, I certainly hope that the way the paper is organized will single out more prominent challenges in each segment in detail and would be easier to follow.

The “before”-the-implementation phase here refers to a situation where a potential economic actor is considering to break into the renewable energy market in Canada. They will likely be surveying and canvassing the renewable energy market in order to gauge its likelihood of success. During this period, he or she will be interested in the kinds of tax incentives provided by the government and how they will help or deter the market-entrants from penetrating to the market successfully. Also important to the market-entrants would be the nature and characteristics of their product to be sold, the renewable energy itself; for example, they want to look at factors such as capital cost of developing renewable energy, investment risk involved, and market structure for the consumers.
The “during”-the-implementation phase indicates a timeline when an economic actor is in the market producing the renewable energy. During this period, it is viewed that at least in Canada, the economic actor is in a direct competition with the conventional energy producers who use oil and gas in their endeavours. As we will see, the government’s resource is not abundant and sometimes the tax incentives that are provided to both non-renewable and renewable energy producers are in direct conflict with each other. At the end of this section, I will discuss the current status of a carbon tax debate in Canada.

Lastly, the “exogenous” factors look at the problems that may not be addressed by the current tax policy instruments alone. The concerns arising out of these exogenous factors are likely to be highly relevant both “before” and “during” the implementation. The identified problems here tend to be more focused on the end-users of such implementation, especially those of people who were living in the vicinity of the renewable energy projects.

The following question in this introductory portion of the paper is meant to make the clarifications that may be necessary to understand the posed question of whether the Canadian government’s tax policy on renewable energy is efficient and effective.

1.2.2 What does being efficient mean?

In discussing the efficiency (or inefficiency) of the tax instruments generally, I need to establish exactly what kind of efficiency is at issue. There are largely three different kinds of efficiency:
cost-effectiveness, dynamic efficiency, and administrative efficiency. (Sometime these efficiencies collectively are described as “economic efficiency” as suggested by Professors Duff and Green in their paper entitled Market-Based Policies for Renewable Energy Source Electricity.\(^{14}\) First of all, cost-effectiveness refers to the situation where the pollution reduction is achieved “as cheaply as possible.”\(^{15}\) The efficiency in this sense can be used to assess whether the government was successful in introducing some kinds of fiscal policy and reducing the level of carbon emissions while using the least amount of resources possible. The following examples are the situations where some fiscal policies are not cost-effective: some tax schemes may have tax rates that are too low so that the behaviour of polluters are never affected; variable tax rates to different economic actors may not encourage but deter the carbon reducing activities; finally, tax incentives towards two competing groups may offset the efficacy of each other. This concept of “cost-effectiveness” is mostly associated with the common understanding of the word, “efficient”, and this is what I am referring to whenever the word “efficient” is used throughout this paper.

Secondly, dynamic efficiency captures “the search for and adoption of new, environmentally friendly technology.”\(^{16}\) The more something is dynamically efficient, the more aggressively it promotes new environmental technology. This concept frequently comes out in the

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\(^{16}\) Ibid.
environmental taxation (‘carbon tax’) discussion – as part of the ‘the Porter Hypothesis’. In this paper, it will be briefly mentioned in Rationale for Taxation section below and more in-depth during the discussion on a carbon tax. Lastly, administrative efficiency refers to the level of administrative costs that are involved in imposing taxes as well as paying taxes. This paper will not deal with the administrative efficiency unless specifically stated.

Other than the obvious answer of an unstable politics mentioned previously, what could be the Canadian government’s biggest challenges in helping implement renewable energy projects in Canada via fiscal policy instruments such as environmental taxation and tax incentives? I will try to address this question after we first look at the rationales for both environmental taxation and tax incentives.

1.3 Rationale for Environmental Taxation

Some scholars view both environmental taxation and tax incentives as undesirable because they believe that such fiscal instruments unduly distort market signals, (thus reducing market efficiency) and reduce aggregate welfare. However, our discussion in this paper assumes that although tax is unwanted, it is a necessary measure; and I would refrain from discussing how desirable taxation is in general, whether it would be environmental tax or else. In other words,

the necessity of environmental taxation is assumed for the purpose of this paper. \(^{18}\) In particular, the desirability of a carbon tax in Canada will be discussed further in the latter part of the paper.

Professor Duff provides that there are largely two types of fiscal intervention that can be employed by a government to encourage green energy development: environmental *taxation* and environmental *tax incentives*. \(^{19}\) The general idea is that when you are trying to replace something old with something new, you would either try to *discourage* use of the old one (i.e. by imposing a tax) or *encourage* the use of the new (i.e. by providing tax incentives) or do both at the same time.

Rationales for environmental taxation are as follows: first, based on the economic rationale, taxes are expected to internalize negative externalities, also known as the “Pigouvian tax”; second, justice and morality principles dictate that polluters must pay for their ‘wrongdoing’ (polluter-pays principle); and third, taxation serves an educative and transformative role. I will talk about each of them in turn.

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\(^{18}\) For example, Edward Zelinsky argues that tax incentives are generally better than direct expenditure program because of lesser transactional costs. (Supra note 17 at 975-976); It is true that almost every country of the IEA developed some sort of tax systems to improve green energy markets, including Canada. These tax measures are believed to provide a comprehensive approach to achieving multiple objectives (Ron Dueck, “Generating a Green Tax Policy for Renewable Electricity in Canada” (2007) 12 Appeal 90-111 at 94); An inherent advantage of tax measures also include leaving market choices to participants and avoiding instruments that favour the winners. (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 Economy <http://www.nrtee-trnee.ca/eng/programs/current_programs/EFR-Energy/EFR-SOD-Report/Full-Report/200507EFR-SOD-FullReport_introduction_e.htm> at 16-9.

\(^{19}\) Duff, *supra* note 5.
The first rationale, internalizing negative externalities, stipulates that to the extent that production, distribution, and consumption of energy have negative impacts on the environment, there needs to be a mechanism to ensure that the costs of these impacts are incurred by the economic actors. Without any restrictions, these economic actors would act in accordance with the optimal point given by their individual marginal benefit and marginal cost curves.\(^\text{20}\) By imposing an environmental tax on this group (and thus changing the marginal cost curve), the equilibrium price will then reflect the ‘truer’ price of the good; it is expected that the economic actor’s current environmentally harmful activities may be deterred or at least allow the government to recoup the cost of “undoing” the harm done by them. Ultimately, the economic rationale explains that such environmental taxes may achieve efficiency by allowing the economic actors to “confront the full costs of their actions” and by achieving a new equilibrium price, in other words by internalizing the externalities.\(^\text{21}\)

However, the negative externalities here will be very difficult to quantify. Professor Duff points out that due to inevitable value judgments and incomplete information on environmental impact, the tax that purports to internalize negative externalities will be difficult to implement – for instance, an economic analysis will not be able to resolve whether any impacts on the future generation should be included or not.\(^\text{22}\) He further posits that when trying to estimate the cost of

\(^{20}\) Duff, \textit{supra} note 5 at 2069.

\(^{21}\) \textit{Ibid.} at 2069.

\(^{22}\) \textit{Ibid.} at 2071.
negative externalities, there is confusion as to whether we should assume the polluter’s right to pollute\textsuperscript{23}, (thereby calculating the costs that the people are \textit{willing to pay} to be free from environmental harm), or assume public’s basic right to be free from pollution, (thereby calculating the cost that the general public is \textit{willing to accept} while suffering from the harm.)\textsuperscript{24}

Some scholars have looked at how the economic rationale for environmental taxation fares with other policy instruments such as regulation and voluntary agreements, tax incentives, subsidies, and tradable permits. Generally speaking, environmental taxation is regarded to be better than regulatory and voluntary approaches at internalizing negative externalities because the latter provide no more incentive to reduce harm beyond the stipulated limit.\textsuperscript{25} In particular, because the voluntary approach here refers to negotiated agreements between the government and the economic actors, it is often criticised for a weak control. As a matter of fact, the OECD report concludes that there is limited evidence that voluntary approaches are effective in abating environmental harm.\textsuperscript{26} In addition, the economic rationale is not supportive of tax incentives or direct grants because these subsidies are thought to alter price signals.\textsuperscript{27} However, as we shall see later in this paper, the imposition of environmental tax to the conventional energy producers

\textsuperscript{23} As much as it may sound absurd, by imposing tax on the polluters via environmental taxation, the polluters’ activities are now “legitimized”.

\textsuperscript{24} \textit{Supra} note 5 at 2071.


\textsuperscript{27} Zelinsky, \textit{supra} note 17 at 975-976.
and the provision of tax incentives to renewable energy developments, when applied simultaneously, may reach the optimal efficiency.

Finally, the economic rationale is considered compatible with tradable permits because tradable permits ensure that at least some of the external costs such as environmental costs are internalized.\(^{28}\) However, this point can be further argued that tradable permits do not generate tax revenues for the state; hence, it is an inferior alternative.\(^{29}\) One study reveals that there is a potential problem with combining a tax and trade system. The study stipulates that if the major point emitter is outside of the trading scheme, then the differential between marginal costs of abating environmental harm could be substantial between inside and outside of the system, which will result in inefficiency in it of itself.\(^{30}\)

### Table 1.1 Compatibility of Different Taxation Rationales with Other Policy Instruments

<table>
<thead>
<tr>
<th>Economic Rationale</th>
<th>Regulation</th>
<th>Voluntary Agreements</th>
<th>Tax Incentives (or Subsidies)</th>
<th>Tradable Permits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxation is more effective</td>
<td>Taxation is more effective</td>
<td>Not compatible</td>
<td>Very compatible</td>
<td></td>
</tr>
</tbody>
</table>

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\(^{28}\) OECD tax, *supra* note 26 at 22-24.

\(^{29}\) *Ibid.* at 43.

The justice and moral rationale for environmental taxation requires that remediation costs are incurred by the polluter, hence the popular name, ‘polluter-pays principle’. It is argued that it would be morally fit for the person who does the harm to be responsible for the costs that will be needed to remedy the current environmental harm as well as the costs that will minimize the future harm. More specifically, the moral rationale explains that environmental taxation is necessary in order to "finance the costs of regulation, monitoring, cleanup, and compensation to injured parties.”\(^{31}\)

The moral rationale may seem to be very similar to the economic rationale as it also strives to capture the externalities; however, the moral rationale is known to be capable of "fairly allocating environmental control and remediation costs" whereas the economic rationale is only concerned with internalizing the costs.\(^{32}\) Moreover, the moral rationale, in its most narrow reading, prevents direct governmental subsidies of environmental compliance costs as it purports

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\(^{31}\) Duff, *supra* note 5 at 2071.

that such costs should be borne by the polluters, not the governments (and taxpayers); and ultimately, it stipulates that the allocation of costs of pollution should be made from the taxpayer to the polluter.  

On the other hand, the economic rationale argues that such costs should be reflected in the price of products.

The justice and moral rationale for environmental taxation requires that remediation costs are incurred by the polluter. In many ways, this rationale possesses similar characteristics as the economic rationale because it too generally speaking does not favour voluntary approaches and tax incentives.34 According to the moral rationale, both voluntary approaches and tax incentives are believed to be ineffective. Voluntary approach is thought to have the inherent problem of “free-riding” as there is a chance of parties not complying to their own agreement in absence of monitoring and sanctions.35 As well, the tax incentives are in conflict with the morale rationale because they provide the parties who are responsible for the environmental damages with favourable subsidies, instead of punishing them. (This is not to be confused with tax incentives on renewable energy as we will discuss next.) However, the moral rationale is well-matched with regulatory approaches because in a regulatory scheme, only the party who is responsible for the damage will be liable for the cost. Tradable permits are also compatible with the moral rationale as long as the permits are not distributed for free.36

34 Duff, supra note 5 at 2073-5.
35 OECD tax, supra note 26 at 41.
36 Ibid.
Finally, the transformative rationale for environmental taxation is the most overarching category of all. It is concerned with “most fundamental changes involving environmentally sensitive attitudes and practices and technological advances that reduce the costs of environmental protection over time.”37 Therefore, the transformative rationale will intend to educate people about environmentally harmful activities and their extent so that people will eventually alter their behaviour to adapt to alternative activities. In addition, unlike other two rationales, the transformative rationale is not keen on imposing penalties or assigning blame for environmental damages but rather encourages learning and shared responsibility for better environment.

Because of its emphasis on changing people’s attitudes on environmental protection, it is generally suited well with other policy instruments as long as they foster positive impacts on the environment or leave less harm. Therefore, it is compatible with all of voluntary agreements, regulatory approaches, tradable permits, direct grants, and tax incentives. The transformative rationale is proved to be especially valid when one considers the fact that not everyone acts only according to the law of marginal costs and marginal benefits; the transformative rationale will be able to capture what is not readily computable to economic analysis. The proponents of this rationale view that environmental taxation will serve a role of an educator because in the presence of such taxation, the general public would be able to realize the environmental harm their activities are causing.

1.4 Rationale for Tax Incentives

In contrast to environmental taxation, tax incentives provide financial motive and not a penalty for prospective taxpayers. As will be discussed later, this kind of fiscal policy could work well with environmental taxation if the incentives are provided for a new alternative energy source such as renewable energy while more taxes are imposed on production and consumption of conventional energy sources. What is remarkable is that the rationales for tax incentives are very similar to the rationales for environmental taxation although the two systems work exactly the opposite way – put in the simplest terms, one gives you the money when the other takes your money.

The economic rationale for tax incentives stipulates that it is desirable to internalize positive externalities – as opposed to the negative externalities as in the case of environmental taxation. Positive externalities here refer to the public benefits caused by the activities that are beneficial to the environment. In this regard, the government would subsidize any efforts to research and develop environmentally friendlier projects such as renewable energy projects.

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38 Zelinsky, supra note 17 at 1005-8.
The second rationale for tax incentives is also an economic reason as well: encouraging efficiencies in producing environmentally friendlier products.\textsuperscript{39} The idea is that subsidies will allow the producers of the new product (renewable energy) to lower the market price, made possible by the decrease in their cost of production via tax incentives. The producer, then, will be able to produce more of the same good and increase its efficiency by reaching the economies of scale.\textsuperscript{40} Therefore, some scholars point to the fact that close attention to price elasticity is crucial here because the increase in demand depends on how much the market reacts to the same price change.\textsuperscript{41}

The third rationale is again similar to what we have looked at before – the educational and transformative rationale. It is expected that tax incentives will be able to convey “information about environmentally preferred products and activities, fostering different attitudes toward (them) … and encouraging environmentally sensitive behavioural changes.”\textsuperscript{42}

As mentioned, what is important after looking closely at the rationales for both environmental taxation and tax incentives is their similarities to each other. With the exception of the polluter-pays principle as a rationale for taxation, and increased efficiency as a reason for tax incentives, the rationales behind both systems are identical. Perhaps, the polluter-pays principle and the

\textsuperscript{39} Duff, supra note 5 at 2078-9.

\textsuperscript{40} Ibid.

\textsuperscript{41} Ibid.

\textsuperscript{42} Ibid. at 2080.
efficiency argument could also be treated as ‘two sides of the same coin’ in a sense that they both intentionally apply solely to the suppliers’ cost of production. For instance, with the polluter-pays principle, the cost of producing will increase as long as the polluter continues to stay in the business because the government will tax them to pay for the environmental damage done by the polluter. On the other hand, with the improved efficiency rationale, the cost of production would decrease as long as the producer remains in the industry because the producer will now receive tax incentives from the government and be able to produce the same output with less cost. In this way, the two rationales operate identically, just in an opposite direction.

The lesson to be learned here is that environmental taxation and tax incentives serve the same policy purposes. Also, it is reiterated that in order for any fiscal policies to work effectively, it is prudent to have them all work harmoniously; otherwise, the rationales behind them will start to conflict with each other. For instance, when the government decides to impose tax on any process or development of energy that produces carbon dioxide, it will be much more desirable for it to also consider tax incentive program aimed at developing renewable energy, making them work together to help eliminate emission of carbon dioxide more effectively. Similarly, if the government decides to provide producers of green energy with direct grants on their research and development, it would be foolish of the government to offer a similar program to a producer that still relies on fossil fuel.
A researcher at OECD identifies that there are three problems of policy mix. He argues that “policy mixes” can be ended up being one or more of the followings: 43

- “inefficient” (if keeping an inflexible instrument in place prevents the efficient reallocation of abatement efforts);
- “unnecessary” (if only one instrument actually is effective); and thus
- “wasteful” (if using more than one instrument leads to additional administrative costs to be borne either by the government or the regulated emitters).”

This point should not be regarded lightly because many people may falsely believe that mere introduction of certain fiscal policy by the government is good enough as long as its intention is at a right place. However, the good intention may be interfering with the overall efficiency of the combined fiscal policies, and not supplementary to, or even undermining it. Having looked at the rationales for both environmental taxation and tax incentives, I will now discuss the current tax incentives provided by the Canadian government (with closer look at the Province of Ontario).

2 Current Tax Incentives

The current types of the tax incentives for encouraging the development of renewable energy can be either indirect or direct. Tax incentives on clean-fuel vehicles is an example of an indirect

43 OECD tax, supra note 26 at 30.
measure because it does not provide incentives directly to renewable energy projects but indirectly encourages consumers to buy vehicles that run on cleaner energy source.

2.1 Tax Incentive on Clean-fuel Vehicles

It is estimated that the transportation sector alone accounts for approximately 25% of the GHG emissions in Canada.\(^{44}\) Therefore, tax incentives on fuel-efficient vehicles are probably the most intuitive device to decrease the level of the GHG emissions. In theory, this kind of incentive motivates people to drive a vehicle that uses clean fuels such as natural gas, liquefied natural gas, liquefied petroleum gas, hydrogen and electricity because it would be cheaper to do so. In the end, the government would hope to see the after-tax price of these clean-fuel vehicles decrease so that more people are encouraged to buy these kinds of vehicles as opposed to the vehicles that run on conventional gas. The incentive could be implemented at the manufacturer level by lowering the tax rate on developing or producing the clean-fuel vehicles. Or, it could also be done at the consumer level - the government could simply provide consumers with some kind of rebate after the clean-fuel vehicles were purchased in the open market. Over time, the market for these vehicles could expand, thus resulting in a gradual shift to clean-fuel vehicles.\(^{45}\) In Ontario, there used to be rebates available against provincial sales tax to those who purchased vehicles that were powered by electricity, propane, natural gas, or other clean-burning fuels.\(^{46}\) However, with the introduction of new HST (Harmonized Sales Tax) the old program ceased to exist. The

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\(^{45}\) Duff, *supra* note 5.

\(^{46}\) *Retail Sales Tax Act*, R.S.O. 1990, c. R.31, paras. 48(3)(g), (h).
new program now provides a rebate between $5,000 and $8,500 to the first 10,000 individuals or businesses that purchase or lease a new plug-in hybrid electric or battery electric vehicle.\textsuperscript{47}

2.2 Tax Incentives on Clean and Renewable Energy

The first type of incentive was an indirect way of encouraging use and development of renewable energy. Tax incentives on clean and renewable energy are more direct because it goes to the \textit{production} stage, not to the stage where the energy is ultimately consumed by end-users. It provides tax exemptions or rebates on \textit{generating} renewable energy. Some countries provide tax incentives even for direct investments in equipment used to generate renewable energy.\textsuperscript{48}

2.2.1 Accelerated Capital Cost Allowance

In Canada, the government introduced a system that allows taxpayers to apply an accelerated depreciation rate to equipment used in renewable energy such as solar heating systems, small-scale hydroelectric generating equipment, and equipment for wind or biomass energy.\textsuperscript{49} The list of equipment that enjoys the accelerated depreciation rate later expanded to include investments in geothermal energy equipment, fuel cell generating equipment, and biomass-to-bio-oil converting equipment.\textsuperscript{50} By applying the accelerated appreciation rate on these pieces of


\textsuperscript{48} Duff, \textit{supra} note 5.

\textsuperscript{49} \textit{Income Tax Regulations}, C.R.C. 1978, c. 945, Schedule II.

\textsuperscript{50} \textit{Ibid.}
equipment, manufacturers or developers of renewable energy are now be able to deduct much more of their expense at the relatively early phase of development so that more capital could be re-invested back into the corporation. Similar tax incentive can be applied to the end-users via tax rebates. Unfortunately, the Ontario government does not provide sales tax rebates any more for purchases of renewable energy-related products such as solar energy systems or building materials related to such system; this rebate is no longer available under the new HST regime.\footnote{Ontario, \textit{Solar Energy Systems Rebate Program}, online: Ministry of Revenue <http://www.rev.gov.on.ca/en/refund/sesr/index.html>.
}

2.2.2 Tax Holidays

In Ontario, there is a 10-year corporate income tax holiday for renewable energy generating activities if the company is considered to be a “bioeconomy business” along with other very stringent requirements. A “bioeconomy business” is defined as one primarily engaged in (a) the production of biofuel, biogas or bioplastics, or (b) the development of technology or processes that enable the use of wind, water, a biomass resource, hydrogen, biofuel, biogas, landfill gas, solar energy, geothermal energy, tidal forces or thermal waste as a source of energy.\footnote{Ideas for the Future Act, S.O. 2008, C.24.} These types of incentives encourage the supply of investment capital because the tax saved during the tax holidays can be reverted back to the company. It can provide a tax saving of 12\% (as of June 1, 2011).

2.2.3 Canadian Renewable and Conservation Expenses (CRCE)

Canadian Renewable and Conservation Expense (CRCE) is another incentive for developing renewable energy projects. It allows the taxpayer to deduct certain expenses related to getting a
project started, such as expenses related to building an access road, clearing land, and [creating a] service connection. Its scope is quite expansive because CRCE is allowed as long as at least 50% of the expenses fall within the category of qualifying equipment.\(^{53}\) Again, by allowing deductions, the taxable income is reduced and thus benefit is directly transferred to shareholders of the developing corporation.

The list of government incentives for developing renewable energy is expansive and those mentioned above are only some of the more distinguished Federal and Provincial programs. There are more tax-related incentives as well as plain subsidies from provincial and municipal governments and some of the aforementioned programs date back as far as the 1970’s.

The government programs are surely helpful. However, it will be naïve to think that our current pattern of behaviour would be changed overnight to the point where we would solely depend on the renewable energy. Undoubtedly, the humankind will be heavily relying upon the conventional energy source for some time until it is absolutely necessary to change the way things are. At this point in time, what we are seeing in these governmental programs is the process of a transition. In this regard, the question as to why the IEA provided such dismal prediction on Canadian renewable energy development should not be overlooked. What could be the biggest challenges the Canadian federal and provincial tax policy makers are facing in

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\(^{53}\) *Income Tax Act*, R.S.C. 1985, c.1 at ss. 65(15) under the definition of “principal-business corporation”. 
encouraging greater use of green energy going forward in spite of these well-intentioned programs in place?

3 Challenges in Implementing Renewable Energy

It is generally believed that any government incentives for renewable energy would be more effective if they are combined with other environmental taxes and measures harmoniously.\(^{54}\) And because there are many different factors that will determine the success or failure of any tax measures, it would be extremely difficult to pinpoint exactly what is the source of the biggest challenge. In this section, I will try to analyse what makes the tax measures ineffective and insufficient in each of the implementation phases of the renewable energy: before and during. Then, I will look at the factors that are exogenous.

3.1 Before the Implementation

As mentioned in the introductory part of the paper, this is a phase when an economic actor, a renewable energy developer is looking at the market and trying to determine his or her likelihood of success before they start producing green energy. Among others, they will definitely look at the current tax incentives and see whether they would be able to enjoy the benefits fully. After

\(^{54}\) Duff, supra note 5.
the canvassing of the tax incentives are done, they will also study their ‘product’ carefully, the renewable energy sources themselves.

3.1.1 The Theoretical Shortcomings of Tax Incentives

3.1.2 Incentives on Clean-fuel Vehicles

Some people suggest that the incentives on hybrid cars would be more effective if they are combined with general increase of general fuel taxes altogether. However, it remains doubtful how much of an increase in general fuel tax will actually shift people’s preference in choosing their next vehicle.\(^\text{55}\) In addition, a sharp increase in fuel tax will cause other related problems of inflation, increased commodity prices, and increased public transportation costs, too. What is commonly agreed is that the success of incentives on clean-fuel vehicles will depend on two factors: the price differential between the vehicles run on clean-fuel and the vehicles that do not; and the amount of incentives themselves.

Because the current market price of hybrid vehicles is available at 20% to 25% higher than the traditional models, the incentive must be substantial to be effective.\(^\text{56}\) One study in the U.S. shows that the amount of incentives of this type proved to be ineffective because they were


\(^{56}\) *Ibid.* at 32.
insufficient to curve the consumers’ purchasing behaviour.\textsuperscript{57} As mentioned previously, the current Ontario program provides a rebate between $5,000 and $8,500 to the first 10,000 individuals. Obviously, the rebates alone do not account for the 20% to 25% difference in higher costs in most hybrid vehicles; combined with lack of infrastructure, experts argue that one should not feel incentivized by the current program.\textsuperscript{58} As well, the current rebates in Ontario are only available for first 10,000 individuals, which is also a limiting factor.

In terms of the form of the incentive, some scholars suggest that an exemption from applicable sales tax or value-added tax would be more effective than a deduction or non-refundable credit because people in general like to benefit from purchasing the clean-fuel vehicles right away than to hold on to the receipt and claim it in their tax return.\textsuperscript{59} However, as mentioned, the current Ontario program allows a rebate rather than a sales tax exemption.

\subsection*{3.1.3 Accelerated CCA}

The current income tax regime will give taxpayers non-refundable credits for the accelerated CCA’s. Although it is generally accepted that these tax incentives are somewhat effective, the equity and administrative simplicity dictate that these incentives be better used if delivered in the


\textsuperscript{59} Duff, \textit{supra} note 5.
form of refundable tax credits. The equitable reason is that the refundable tax credits do not vary with the investor’s level of income. And the administrative reason is that if refundable, there is no need for an elaborate ownership structure to ensure that non-refundable credits and deductions be claimed in the taxation years in which they are available. In other words, with the refundable tax credits, the government does not have to worry about taxpayer’s income being distorted by claiming the deduction in the year in which a taxpayer’s behaviour was not worthy of receiving tax credits or deductions, or where there has been a change in ownership. For a similar reason, income tax holidays are criticized to be inequitable because its worth depends on the level of income; it therefore creates more benefits to the high-income earners.

3.1.4 Canadian Renewable and Conservation Expenses (CRCE)

The criticism of the CRCE stems from the fact that this kind of incentive is only effective in the relatively initial project stage, and not during the actual development stage. It is easily conceivable that there would be more burdensome financing costs in the latter part of the project development than the beginning. Therefore, any benefits that CRCE provides at the initial stage will be offset by other factors such as much larger financing costs and risks later.

60 Canada, Economic Instruments for Environmental Protection: Discussion Paper (Ottawa: Supply and Services, 1992) at 60-63.
61 Ibid. at 64-65.
63 Ibid.
3.1.5 “Internal” Problems of Implementation

The implementation of the renewable energy projects has challenges of their own. I will refer them to “internal problems” because the kinds of problems here are inherent in a sense that they stem from endogenous factors of the renewable energy sources themselves – such as, the technological advancement or market sentiments. These problems are specifically pertaining to the pre-implementation stage.

3.1.6 Higher capital cost and investment risk

Even though it is true that renewable energy is generated from the sources that are free and abundant, it requires much capital to implement. This is true especially because the renewable energy projects usually deals with the technology that is relatively new and unproven. In addition, there may be unpredictability associated with transmission access, lack of technical or commercial skills and information.64 Inevitably, the development of renewable energy will suffer from the higher initial capital cost. As a result, in order to recoup this type of cost, the price of the renewable energy subsequently will be set high. This, in turn, would mean decreased demand; and, therefore, it becomes more difficult for potential investors to be profitable.

One of the ways to solve this problem would be to sell the product of renewable energy, usually referred to as “Renewable Energy Source – Electricity” (RES-E), directly to the consumers from the wholesale level. However, as will be discussed under the market structure discussion, the way in which the Canadian electrical utilities are set up will not allow of this possibility.65

Higher investment risk is another challenge. One study conducted by the OECD finds that for the majority of investors, the factor that is the most relevant in their investment decision is the “inherent uncertainty about electricity prices in electricity markets.”66 Furthermore, although renewable energy such as solar and wind energy enjoy relatively low level of operating costs involved, such energy will be more vulnerable to high investment risk because its electricity production depends on uncontrollable variables – for instance, a wind energy system will not be able to generate much electricity on a calm day and a solar system will not be able to operate efficiently on a dark or cloudy day.67 On this point, Professor Trebilcock asserted that because of the need to be supported by the back-up generators, the renewable energy production such as wind mills emit more GHG in the atmosphere.68 This allegation was under much disparagement by people in support of the renewable energy and there are actually some documents that question the validity of Professor Trebilcock’s comments. For example, Professor Pedersen in Denmark replied back on the same Financial Post newspaper stating that “Mr. Trebilcock’s

65 Dueck, supra note 62 at 98.
67 Ibid at 33.
68 Michael Trebilcock “Windpower is a Complete Disaster” Financial Post (April 9, 2009).
argument rests on the unspoken assumption that electricity must be available to consumers always. It cannot be and it never will be.”69 He further went on to contradict some of the specific facts that Professor Trebilcock relied. On the issue of back-up generators, it can be concluded that the number of back-up generators is really a preference as to how much of *reliable* energy one requires and how you define reliability.

Further on the cost issue, it is imperative to understand that for many renewable energy sources, efficiency of technologies is not as consistent as the fossil fuels. As well, it is very site-specific. Therefore, it is sometimes very difficult to measure exactly how much it will cost to generate certain amount of energy. Additionally, the costs that are dealt with in this sub-section are only pertaining to the *financial costs*, however, it is reminded that there also exist the external costs - costs of damages to health of people and viability of the environment as well as the costs of negative climate impact caused by GHG emissions of the renewable technology themselves. Such external costs should never be ignored.

### 3.1.7 Market Structure and Market Sentiments

The market structure of the electricity distribution may be a hurdle for many renewable energy projects. In Canada where end-consumers do not have the ability to enter into purchase

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agreement with different retail electricity providers (except Alberta and Ontario), there is little room for the environmentally conscious consumers to exercise their discretion in choosing the source of their electricity. This may be a big blow for the renewable energy industry one of the advantages of which is the fact that the renewable energy leaves a positive impact on the environment (so-called “positive externalities”). If the consumers are unable to choose, the market will be driven solely by who is the most cost-effective (not environmentally friendly); and in this regard the renewable energy is at a disadvantage because of the aforementioned inherent costs. In the end, the consumers will have no choice but to receive whatever the type of energy their electrical companies may have chosen for them.70 Additionally, even in the provinces like Alberta and Ontario, it is still debatable as to how much of a choice the end-users have because there are only a limited number of electricity providers.

In addition, another study done by the OECD introduces a concept of the “learning risk” – that is, when new technology is first introduced, there would be cost of learning new technology initially. Consequently, as technology progresses and operational experience accumulates, the cost will fall.71 Thus, the study argues that if producers of electricity are given a choice between two different technologies, they will choose the one that had already progressed substantially.72 By virtue of utilizing a newer technology, renewable energy projects will suffer from the

70 Dueck, supra note 62 at 99.
72 Ibid at 57.
learning risk – an example of an internal (inherent) challenge that is difficult to overcome. Similarly, because people are generally dealing with the information that is not readily available due to the recent development of renewable energy, renewable energy projects are said to require more time and attention in terms of transaction costs as well. These transaction costs could be found in the areas of “resource assessment, sitting, permitting, planning, developing project proposals, assembling financing packages, and negotiating power-purchase contacts with utilities.”

Some scholars go little further to argue that government’s incentives towards environmentally friendly projects may inadvertently change the individuals’ attitudes towards the environment in the long run – another internal challenge. Professor Green in his paper warns that people may start to view the subsidies as a price to pay rather than a responsibility. For instance, as long as someone pays a higher price (and forego a subsidized product) to buy a vehicle that is run on a conventional source than on cleaner hydrogen gas, he or she may start to believe that they do not owe any further responsibility because they “paid the price”. Reversely, if someone receives a government incentive in relation to the renewable energy generation, he or she may lose their satisfaction in helping the environment because they are now compensated for it. If these claims are in fact true, then there is no guarantee that government’s tax incentives will continue to be effective as previously intended. This kind of change in behaviour – or developing of the new

73 Mendonca, supra note 64 at 5.
“environmental ethics” – should be something that the government must consider in making future policy decisions.

3.1.8 Ontario’s Feed-In Tariff System

In response to the previously identified risks associated with development of renewable energy projects, the Province of Ontario has introduced the FIT (Feed-In Tariff) program that guarantees pricing structure for renewable electricity production. It was the second province in Canada to enact a FIT program, followed by Nova Scotia. Basically, with the FIT program, the government guarantees the rates (unit in ¢/kWh) paid to the producers of RES-E, thereby eliminating or reducing the aforementioned risks such as investment risk, learning risk and risks associated with market sentiments. The FIT program is said to not only eliminate risks associated with uncertain price of electricity but also attract more investors as the price is usually set at a premium.75

However, since the inception of the program, the FIT program in Ontario has been criticised sharply of the lack of transparency in determining the FIT pricing. The Ontario Power Authority’s defence has been that it had held numerous public consultation sessions prior to the

75 Miguel argues that such rate should be scientifically calculated to guarantee profitable operation and the period should cover a “significant proportion of the working life of the installation.” Mendonca, supra note 64 at 8.
launch of the FIT program so that more transparency is not warranted. The political debacle also evolves around high costs of the said program. Very recently, Mr. Tim Hudak, the province’s Conservative party leader indicated in a press-release that once his party is elected in the upcoming provincial election, he is going to scrap the FIT contracts as well as the multi-billion dollar wind energy deal that the present Ontario government had reached with Samsung, an international conglomerate. This is another prime example of uncertainty surrounding the renewable energy projects and it is deeply concerning to both investors and economic actors involved in the renewable industry. If the trend continues, there will not be much of a solution to eliminate inherent risks (and ultimately the high cost) associated with developing renewable energy in this country. The aforementioned problems that were said to be prevalent “before the implementation” will remain as unsolved problems.

3.2 During the Implementation

“During” the implementation, the economic actor had decided to enter into a market after considering some of the issues that were present before the implementation, as we have seen in the previous section. Our hypothetical renewable energy project will be operating at a full capacity now. What is the most concerning to the economic actor here is the fact that the fiscal policy instruments, especially the tax incentives, provided to the renewable energy projects are

not operating at their full efficiency partly because of the notion of the “unlevel playing field” vis-a-vis the conventional oil and gas industry. This notion of “unlevel playing field” will be explained now.

3.2.1 Power Imbalance (Unlevel Playing Field with Oil and Gas Industry)

As mentioned previously, the development of renewable energy relies on two different methods: encouraging development of renewable energy or discouraging continuation of usage of conventional energy. The argument made in the context of the “unlevel playing field” is that as long as the government’s policy financially helps the conventional oil and gas industry, the efficiency of the similar good-will incentives to the renewable energy industry will be limited. The Pembina Institute suggests that “[the current] tax subsidies to the oil and gas industry [will] cancel out the government’s spending on climate change by promoting the very emissions it is trying to curtail.”78 For example, a study done by the OECD indicates that between 1977 and 2005, out of the approximately $8.79 billion dollars spent in energy research, development, and deployment, only about 7.4% was spent on renewable energy.79 This result shows the extent to which the incentives provided to the renewable energy industry are overwhelmed by their counterpart.

78 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.oag-bvg.gc.ca/internet/English/pet_158_e_28892.html> at para. 155.

The “unlevel playing field” is also exemplified in the low level taxation imposed on the mining companies as well. A corporate income tax rate for mining has been gradually reduced from 28% in 2003, 21% in 2007, and further down to 18.5% by 2011.80 In addition, the conventional energy producers also enjoy certain favourable expenses and deductions. Currently, these mining corporations can reduce their net income by using Canadian Exploration Expenses (CEE) and Canadian Development Expenses (CDE). These will allow for expenses incurred for the purpose of determining the “existence, location, extent, or quantity of a mineral recourse” (CEE) and for excavating “a mineshaft, acquiring new resource properties, and building underground workings prior to the commencement of production of the resource in reasonable commercial quantities” (CDE).81 Because of these allowed expenses as well as deductions with carry-forward provisions, the income tax payable for mining companies is reduced significantly. They are also able to convert their losses into future mining taxes and get credits on them as “tax assets.”82

This kind of tax breaks potentially could be doubly burdensome to the end-users because a substantial amount of tax revenue that could have been collected is foregone, and, at the same time, the general population would continue to support the tax incentives for research,  

81 Ibid. at 490.
82 Ibid. at 488.
development, and deployment of both conventional and renewable energy.\textsuperscript{83} Realizing this, many European countries had introduced environmental taxation in the form of a carbon tax in order to provide the “level playing field” and they are found to be quite successful. We will look at these results more closely later in this paper; however, I intend to briefly look at the theoretical debate on this topic. These arguments in favour of the environmental taxation touch upon the rationales that were discussed at the beginning of this paper.

3.2.2 Arguments for Environmental Taxation

Harvard Professor Michael Porter largely argues that environmental taxation will encourage innovation and ultimately competitiveness of an economic actor, especially when such taxation is expanded internationally.\textsuperscript{84} This claim made by Porter is now known as ‘the Porter Hypothesis’ and basically predicts that environmental taxation would create a market for new and greener products by providing pressures and challenges for the conventional energy market to innovate and upgrade. Porter argues that through these domestic pressures and challenges within a state, the lead companies would ultimately be able to be efficient and achieve advantages over world competitors.\textsuperscript{85}

\textsuperscript{83} Ibid. at 159.


In addition, Porter argues that a well-designed, market-based environmental regulation can serve the following purposes: directing attention to resource inefficiencies; raising corporate awareness and information gathering; providing more certainty to green innovators; overcoming organizational inertia and fostering creative thinking; improved learning; and inducing innovation-based solutions.\textsuperscript{86} Clearly, these points refer back to the rationales of environmental taxation discussed previously, especially the transformative and educational rationale. Also, they seem to give solutions to the various risks of the renewable energy sources that were noted “before” the implementation.

Another argument for a carbon tax is made on the economic rationale of the environmental taxation; Professors Duff and Green point out that in the absence of a carbon tax, the tax incentives or subsidies to the renewable energy producers would be less efficient. They argue that without a carbon tax, the tax incentives or subsidies to the renewable energy source electricity (RES-E) may be “crowded out”. The reason is quite simple and straightforward. In the absence of a carbon tax, the increased production and consumption of electricity that was caused by the tax incentives to the renewable energy producers will also increase the production of electricity from the conventional sources of oil and gas. This will, in turn, “crowd out” or negate the efficiency of the tax incentives to the renewable energy.\textsuperscript{87} Referring to the economic rationale of tax incentives that was mentioned at the beginning of this paper, Professors Duff and Green further postulate that “an optimal environmental tax [such as carbon tax] is theoretically

\textsuperscript{86} Ibid.

\textsuperscript{87} Duff and Green, supra note 14 at 843.
most efficient … [as it] requires market participants to account for the negative environmental externalities.” As such, without imposing any checks and balances such as carbon tax on conventional sources of oil and gas, the effectiveness of tax incentives to the renewable energy producers will deteriorate.

Shortly after the Porter Hypothesis, the new idea of ‘double dividend’ was introduced by Professor David Pearce. He explained that environmental taxation would bring the first dividend of pollution control benefits by slowing down the robust development of carbon creating activities and deterring future market entrance; the second dividend was argued to come from the increased social welfare where a typical source on income and labour would be replaced with environmental tax which would internalize externalities. In this argument, the conventional tax on income and labour was presumed to have distorting effects to the market so that the environmental tax, which at least to some degree strives to internalize some of the externalities, would always be preferred over the conventional tax; this notion is also called ‘revenue recycling’. The double dividend theory is perceived to be a “tone-down” of the Porter Hypothesis because the market competitive argument of the Porter Hypothesis is replaced with the social welfare argument. Therefore, it is not difficult to imagine that the critics were more easily accepting the double dividend theory than the Porter Hypothesis. However, the double dividend theory is not criticism-proof, either.

88 Ibid. at 846.
89 Carbon Tax, supra note 85 at 8.
90 Ibid.
The opposition of the double dividend argues that it would be very difficult to gauge the potential existence and the extent of the pollution control benefits because it would require a long time horizon to capture any environmental benefits, if at all.\(^91\) Indeed, because of the extended time frame requirement, there is not much of a debate either way on the first dividend because the idea of double dividend has not been around long enough to monitor the change in environment and render a meaningful suggestion one way or another. However, there are much more discussion in regards to the second dividend, the notion of revenue recycling. In these arguments, the unemployment rate is used as one indicator that may tell the story whether it is economically viable to impose carbon tax on carbon gas emitters.

Theoretically, the proponents of double dividend would argue that by shifting the source of tax from a conventional income source (labour and income) to the environment by way of the environmental tax, there would be an increase in productivity.\(^92\) Further, it is argued that the increased productivity is often reflected in the decreased unemployment rate. Conversely, some scholars would actually take the neutral ground or argue that the environmental taxation would actually have not much of an impact at all. I have compiled very short sketches of the argument against a carbon tax.

\(^91\) Carbon Tax, supra note 85 at 7.

\(^92\) This argument is, in fact, what the general public would be mostly exposed to as it is typically the political message that many politicians try to convey and emphasize - the message that what double dividend is really about is a transfer of wealth from high income earning corporations to individuals.
Nielsen et al. concluded that the unemployment rate will be actually decreased if environmental taxation is introduced; however, the overall rate of economic growth was found to have a potential to go down. In other study, Goodstein completely disproved the basic assumption that higher labour price caused by environmental tax will cause a decrease in labour supply. In his paper, he argued that a shift in the source of taxation (i.e. from labour (or income) to environmental, or vice versa) will not have much of an impact on the labour supply because there is no correlation between the increase in labour cost and the decrease in labour supply. He argued that workers themselves may increase labour supply even when the cost of labour goes up because workers tend to overestimate the reduction in family income. In other words, he predicted that as more and more people fear of losing jobs in the face of an increased cost due to environmental tax, more and more people will actually join the labour force.

In a completely Canadian context, the Canadian Centre for Policy Studies (hereinafter “Canadian Centre”) published eight arguments against a carbon tax. In a highly partisan-like publication, it argues largely that there is better policy substitute of a cap-and-trade system; this point can be

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95 Ibid.
96 Canadian Centre for Policy Studies, Eight Arguments against a Carbon Tax, online: Canadian Centre for Policy Studies <http://www.policystudies.ca/documents/Eight_Arguments_against_a_Carbon_Tax.pdf>.
arguable but I will not get into this discussion here. Additionally, it suggests that a carbon tax would deter exports, which is completely contrary to the Porter Hypothesis; on this point, the Canadian Centre seems to be overly concerned about the current U.S. economic woes and it led to the unfounded concern over Canadian economy’s reduced ability to export if a carbon tax were to be imposed. Next, they put some blames of increased GHG emissions on emerging countries such as China and India although doing so does not really address the viability of a carbon tax. Overall, this particular publication does not add much weight on our theoretical debate (except for the cap-and-trade system) because, as mentioned, their discussion would merely serve a role of the political propaganda more than anything. As we will see under the **Carbon Tax in Canada** section below, the politics sometime gets in the way of a meaningful discussion of a carbon tax on its merits.

In the end, there seems to be no consensus found in the theoretical debate on desirability of a carbon tax. Now, let us now look at how other European countries fared with the carbon tax in practice.
3.2.3 Carbon Tax outside of Canada

First of all, I will take a look at Germany.\(^{97}\) The German government introduced the environmental tax reform that saw the increased marginal tax rates on energy use and CO\(_2\) emissions in 2003. According to Kohlhaas and Bach, the impact of a carbon tax on GDP and employment was found to be negative at first but it gradually increased until it became positive after four years.\(^{98}\) The emissions were reduced during those years, however, it was insignificant. They argued that such tax reform “did not affect the economy nor the environmental substantially. Neither did the fears that it might impair the competitiveness of the German economy nor the expectation that it will substantially contribute to a reduction of CO\(_2\) emissions become true.”\(^{99}\) In other words, the carbon tax was found to have had no impact either way. This conclusion is obviously insufficient to check the validity of the aforementioned theories. However, we have more positive information from the Scandinavian Peninsula where a carbon tax has been introduced as early as 1970’s.

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\(^{99}\) Ibid.
According to the Swedish Energy Agency, the Swedish level of emissions in 1994 was 3-5% lower by than otherwise expected level had the carbon tax not been imposed. In a follow-up study by the Swedish EPA (Environmental Protection Agency), the emissions decreased by 19% from 1987 to 1994 because of the carbon tax. Furthermore, lowering of the carbon tax rate in 1993 was shown to have caused 54% increase in industrial CO2 emissions in Älvsborg, one of the regions in Sweden, and about two-thirds of the increase was concluded to be explained by the decrease in tax rate.

In Denmark, a slightly different method of valuation (ex-post studies) was used. After introduction of the carbon tax, researchers conducted thorough interviews with a small sample of companies and found that energy consumption reduced by more than 20% without any negative impacts on employment, echoing the theoretical prediction made by the Porter Hypothesis and double dividend. Another group compiled a database of more than 5,000 companies representing 90% of industrial energy consumption and found that the energy consumption was decreased by 13% when it was expected to have reduced by 8% in absence of the carbon tax. In other words, the carbon tax achieved the original intention of reduced energy consumption.

100 Mikael Skou Andersen et al., “CO2 Taxation in the Nordic Countries: Results and Methodological Caveats” in J. Milne et al., eds., Critical Issues in Environmental Taxation (Richmond: Richmond Law & Tax, 2003) 163.
101 Ibid. at 165.
102 Ibid.
103 Ibid. at 166.
104 Ibid. at 167.
Despite these positive results, these ex-post studies are thought to be inadequate to provide a complete picture, especially due to a sampling problem. Some studies were done only in a specific industry or region and only within a few years after the tax reform. As mentioned above, the first dividend received from environmental taxation may span over a long period of time; therefore, having the time frame of a few years is a clearly limiting factor. There is an inherent problem in economic modelling as well - notably with the assumption of ‘economic rational agents.’ The economic rational agent refers to an economic actor who is rational both pre- and post-introduction of the carbon tax regime. Having a rational agent means that when the carbon tax directs rational economic actors’ attention to an area in which they were not too concerned in achieving an efficient use previously, their economic outputs both pre- and post-taxation may not be directly comparable. They would be doing completely different things as a rational agent in both time frames. Thus, the result of a study may not be entirely reliable.

A similar carbon tax was imposed on emission producers in Finland, as well. However, one Finish scholar cries that it would not be always possible to “base the claims and comments on empirical evidence.” He attributes the challenges to several practical difficulties, namely, complex energy tax system, where the carbon tax is not the only energy-related tax (the difficulty here is to isolate the impacts of the carbon tax only); and volatile change in carbon tax rate (it is

\[105\] Ibid.

\[106\] Ibid. at 168.

predicted that any democratic state would have to deal with a frequent political change within a
country.) \(^{108}\)

Based on the brief and selective studies that were mentioned, it is safe to conclude that there is
positive evidence that suggests that a carbon tax would achieve the intended benefits of reducing
carbon emissions and raising tax revenues in an efficient and effective way. However, the
problem arose regarding the accuracy and reliability of the said conclusions. It was found that
some drawn conclusions will vary significantly by the method of modelling. If the empirical
evidence in Europe provided an inconclusive answer to our inquiry, how would the carbon tax
work in Canada?

3.2.4 Carbon Tax in Canada

In Canada, there is no nation-wide carbon tax regime as was the case in some of the European
countries as we have seen. Although Canadian federal government’s history of dealing with the
issue of reducing the GHG emissions was briefly mentioned in the introductory part of this
paper, the currently “stalled” status of carbon tax policy in Canada is believed to be partly
responsible by the federal government’s own shortcomings – namely, lack of initiative and
strong leadership to coordinate a national endeavour. \(^{109}\) As a direct result of this, uncoordinated

\(^{108}\) Ibid.

\(^{109}\) Thomas Courchene & John Allan, “Introduction and Overview” in Thomas Courchene and John Allan, eds.,
efforts had been tried out by different provinces. For example, the Province of British Columbia imposes a simple carbon tax at a flat rate on energy consumption, proportional to the emissions of the GHG. As well, although not specifically a carbon tax regime, the Provinces of Quebec, Ontario, Manitoba, and British Columbia joined the Western Climate Initiative which promotes a voluntary international cap-and-trade system.

To state the conclusion first, the adaptation of carbon tax in Canada can easily be described as more being argued over the “politics” surrounding the stakeholders (especially the different levels of governments) than being argued over its “substance” – i.e. the pros and cons of carbon tax *per se*. More specifically, there seems to be a clash between the Western provinces (especially Alberta) which are the energy producers in Canada and the Eastern provinces that are seen a little bit more conservative in this regard.\(^{110}\) Obviously, as more tax burdens are imposed on production of energy, the energy producers in the West would inevitably be impacted the most and therefore would resist any changes the most.

The questions such as how much of the tax revenue would be distributed among the provinces are considered to be a very sensitive topic to talk about in Canada. One suggests that the National Energy Program of 1980’s paved the way for a hostile adversity between the Albertan

government and the Federal one. As quite nicely put by the same scholar, “many in the east do not trust Alberta to manage environmental regulation given the province’s financial state in the outcome, which many in Alberta see the deferral policy on Kyoto as a new Trojan horse to extend Ottawa’s jurisdiction in the oil patch.” Dr. Sahi predicts that a carbon tax at a rate of $65 per tonne would result in $16 billion dollars a year of tax revenue escaping Alberta and Saskatchewan, which represents approximately 40% of the total national tax revenue. Surely, there is a lot to gain or lose, depends on which side of spectrum you are in.

Different financial interest of different governments may be one problem but not all. Quite uniquely in Canada, we have the Constitutional ambiguity surrounding the issue of imposing carbon tax, especially when the federal government binds the provincial governments by singing an international treaty like the Kyoto Protocol. The Supreme Court of Canada decision of Canada (A.G.) v. Ontario (A.G.) (Labour Conventions case of 1937) supports the premise that the federal government cannot extend its domestic scope just by being able to sign international instrument. In addition, section 92A of the Constitution Act, 1982, confers the provincial authorities to pass law for the “development, conservation, and management of non-renewable natural resources and forestry resources in the provinces.” One smart way of getting around this was to declare CO₂ as “toxic substance” and try to govern the carbon tax under the criminal code powers of the Constitution as Prime Minister Harper successfully had done.


Despite the Constitutional support in favour of the provinces, the bottom line is that the efficacy of a carbon tax imposed by a province would be extremely limited as provinces would not be able to constitutionally apply border taxes to imports nor provide rebates on exports, or even to inter-provincial trades.\footnote{Thomas Courchene & John Allan, “Carbon Pricing and Federalism” in Thomas Courchene and John Allan, eds., \textit{Carbon Pricing and Environmental Federalism} (Montreal and Kingston: McGill-Queen’s University Press, 2010) 75 at 80.} In other words, the effectiveness of carbon tax imposed by one province would be limited as people would find a way of getting around it by, for example, setting the plants in a province of no carbon tax and simply transfer the products to the carbon-tax-imposing province. Not only the provincial carbon tax would be ineffective in terms of successful enforcement but it would also be futile in terms of the effectiveness in results. As one can easily imagine, the GHG emissions are capable of roaming freely without any regards to man-made boundaries. One really effective carbon tax system in one province may not be able to yield any positive results if it lies adjacent to a province of no such tax system at all. A harmonized and federally coordinated tax regime would be the most effective and efficient mean to adopt carbon tax in Canada.

In light of the fact that a former Liberal leader, Stephane Dion, did not earn many votes with the \textit{Green Shift} – a revenue-neutral carbon tax at a $40/tonne on all fossil-fuel emissions - perhaps, the politicians are simply too risk-averse to make a bold move on carbon tax, unless he or she works for the Green Party. The unfortunate part is that all of these political shenanigans are actually preventing a forum where the efficacy of the carbon tax on the environment should be
discussed. Instead, the topic of carbon tax is halted at its political implication, not any further. It is actually quite discouraging to see that many viable arguments in favour of a carbon tax are buried under unnecessary partisan debates.

This sense of being unsatisfied leads us nicely into my next section where I will talk about the things that are completely external to the fiscal policy of renewable energy itself. My argument here is that no matter how effective and efficient your fiscal policy may be to combat GHG emissions; there will be things that may be never addressed by the fiscal policy only.

3.3 Exogenous factors

Going back to our hypothetical renewable energy project, we are now exploring the “exogenous” factors. These factors could be significant “before” and “during” the implementation of renewable energy projects, or even “after.” Thus, I will deal with these factors without putting them in such stringent timeline. The tax incentives towards the renewable energy projects now have very “external” or “exogenous” source of challenges, namely, NIMBY-ism, the Constitutional requirement, and science.

3.3.1 Not in my back yard

NIMBY-ism is an interesting phenomenon in development of the renewable energy. At the crux of the movement towards more production from the renewable energy lies the concept of
‘benefits to the environment, therefore, to the people’ in general terms; however, what ostensibly is beneficial for the people is now resisted by a certain group of people that is directly affected by the actual development of the renewable energy nearby. These are the people who live at vicinity of the said projects. This type of social opposition, “ranging from spontaneous neighbourhood protests to professional campaigns and legal suits at national level have been mentioned as an increasingly severe barrier by stakeholders from both emerging and mature markets.”114 The opposition seems to be cross-cultural and happens without much regard to specific nationalism or ethnicity. It does not matter where the renewable project is taking place; it simply must be “not in my back yard.”

In some cases, sufficient amount of compensation had to be paid in order to keep the original plan intact. Some stakeholders were “forced” to invite the community members so that they could share the wealth created by the project. 115 If a financial participation is not an option, open talk with the community members from the inception of the plan was found to be helpful.116 However, the empirical evidence also suggests that some kinds of “deliberate” opposition of local authority may be difficult to reconcile if the influence is coming from “conventional energy pressure groups, (or) opposition of the local population and fear of

115 Ibid at 29.
116 Ibid.
negative impact on tourism." In spite of the experience from various cultures and countries, one thing seems to be certain: “without political and administrative good will, nothing goes.”

This kind of conclusion made by Europa clearly emphasises that having the co-operative and mutually-understanding relationship with the nearby community is vital to the success of the renewable energy projects. The issue of the NIMBY-ism surely falls outside of the fiscal policy context that was discussed earlier and it has a potential of rendering both environmental taxation and incentives ineffective and inefficient. On this issue, Canadian must bear in mind that we have an additional consideration stemming from the Constitution as well.

### 3.3.2 Consultation issue and the case of Thunder Bay

In Ontario, the Renewable Energy Approval (REA) provides potential renewable energy developers with a streamline system of developing their projects, paying close attention to the environment and health of community members. Most renewable energy projects in the province will be subject to the approvals. And upon successful approval, the Ontario Power Authority will issue contracts under the FIT program. What is interesting in this process is the requirement for consultation.

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117 Ibid.
118 Ibid.
In addition to the public notice requirement in which the applicant must make a notice to the Environmental Registry so that the general member of public would be able to review and provide their inputs, the applicant must notify landowners within 120 metres of the proposed project location and place a notice in a local newspaper.\textsuperscript{119} As well, the applicant must hold at least two community consultation meetings at the beginning of the process.\textsuperscript{120} If there are aboriginal communities involved, they must be consulted as of a constitutional duty. As found in \textit{Haida}\textsuperscript{121} and \textit{Taku River}\textsuperscript{122}, both the federal and provincial Crown has a duty to consult Aboriginal peoples and to accommodate their concerns. Usually, the Ministry of Environment will provide the list of Aboriginal communities that must be consulted in a potential development area.

As we have witnessed in the recent legal battle between Horizon Legal Energy Corporation and the City of Thunder Bay, even in the presence of what seems to be a complete streamline process of REA, the deals may get sour between the two parties.\textsuperscript{123} And we have to realize that a good number of problems stem from the “duty to consult.” In the legal battle between Horizon and

\begin{itemize}
\item \textsuperscript{120} \textit{Ibid.}
\item \textsuperscript{121} \textit{Haida Nation v. British Columbia (Minister of Forests)}, 2004 S.C.C. 73, [2004] 3 S.C.R. 511.
\item \textsuperscript{123} In this case, 14 of 18 wind turbine sites were approved by the city council. Horizon was suing the city for not honouring the entire 18 sites.
\end{itemize}
City of Thunder Bay, there is no denying that the Fort William First Nation and the Municipality of Neebing did play a significant role in the relocation of the 4 of 18 wind turbines.

These battles are costly too - the deal between the two parties was the deal that had been in talks for 5 years and was said to be worth well over $100 million dollars.\textsuperscript{124} As mentioned before, renewable energy projects generally possess higher investment costs related to uncertainty of electricity market in general and the Thunder Bay case may well be setting a bad precedent for many future renewable energy developers to come. The case clearly manifests and reminds everyone of substantial risk associated with uncertainty in developing the renewable energy. Specifically in the Canadian context, it is reminded that understanding fully of the communities’ concerns and needs is crucial in the success of the renewable energy projects. This leads nicely to our next topic: what is the rationale for these communities’ oppositions and in fact how safe is the renewable energy?

3.3.3 The rationale for the opposition and safety of renewable energy

The concerns from which the initial opposition originates seem be one of the two: either the money or health. The first kind of concern should be easy to reconcile with. As discussed above, a sufficient financial payment or an interest in the proceeds of the development project

\textsuperscript{124} Horizon Legacy Energy Corporation et al. v. The Corporation of the City of Thunder Bay [Statement of Claim] (19 October 2010), Toronto CV-10-412617 (Ont. Sup. Ct.).
should be able to soothe the loss that may incur in property value. If the money is the problem, it is easier to fix. The second kind of concern deals with entirely different issues.

It has not been too long ago since the wind turbines started to boast their formidable presence in Ontario. And we actually hear some justified concerns from the people who actually had to deal with it up-close and personal. In the past, there have been complaints regarding the level of noise the wind turbines were making. Some people compared the sound of the turbines as jets flying nearby or constant sound of a laundry machine.\textsuperscript{125} Of course, obscuring a view of the skyline, blocking sun rays, and flickering shadows at near dust and dawn are ordinary things that these people have to deal with. But how serious is the impact of the noise?

One study done by the Ministry of Environment in 2008 indicates that the minimum setback of wind turbines to the nearby residents should be in the range of 550 meters up to 1500 meters.\textsuperscript{126} In that report, depending on the number of turbines and other considerations such as turbines’ layouts, acoustic emission levels, topography of the site, and etc., the noise level varied anywhere from 102 dBA to 107 dBA within 550m and 1500m away from the turbines.\textsuperscript{127} Surprisingly, when these numbers are considered with information from other sources, one would realize how significant they are. There is one source that states that 100 dBA is

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\textsuperscript{125} Andy Comber, “Turbine Makes Lousy Neighbour” \textit{Essex Free Press} (13 October, 2010), online: Essex Free Press <essexfreepress.ca>.
\textsuperscript{127} \textit{Ibid.}
\end{flushleft}
comparable to hearing passing subway train at 10 feet\(^{128}\) (try to imagine hearing this kind of noise all day long!); there is another source that claims that 90-95 dBa is a level at which “sustained exposure may result in hearing loss.”\(^{129}\)

These outcomes contradict entirely the findings by an international panel of experts in 2009. The study, apparently the most thorough of its kind ever produced, concluded that “there is no evidence that the sounds, nor the sub-audible vibrations, emitted by wind turbines have any direct adverse physiological effects on humans”.\(^{130}\) Another publication explains that the noise level from a wind farm at 350m is around 35 to 45 dB which is comparable to a quiet room or busy road at 5 km.\(^{131}\) Both of these studies suggest the exact opposite from the findings by the Ministry of Environment in 2008. As much as the Ministry’s study could be said to be “politically influenced”, the accuracy of the latter two studies may also be questionable, too. As a matter of fact, the first study’s panel was established jointly by both American and Canadian Wind Energy Association the mission of which is to promote “development and application of all aspects of wind energy”.\(^{132}\) The latter study was done by the European Wind Energy


Associate (EWEA) which carries on a similar mandate as the North American counterpart. Therefore, some level of scepticism remains.

The opponents of the wind energy argue that it is possible that the infrasound, which is also known as the low frequency noise, could also be a contributing detrimental factor to people living in vicinity. The problem here is that no one really knows enough to conclude that the infrasound causes health problems. At this point, as the EWEA explains, the wind farm “produce[s] very low levels of infrasound, typically below the threshold of perception.”\textsuperscript{133} However, the opponents of the wind farm would argue that the fact that people are not being able to “perceive” still means that there is a chance of detrimental effects on people.

It is also noted that such health and safety concerns are still at play as they should. The Government of Ontario recently made a decision to declare a moratorium on all off-shore wind power projects in the province because there were not enough scientific studies to prove that such projects are completely safe to the environment and the people around the affected area.\textsuperscript{134} For the time being, it seems as if there still needs to be more thorough and complete and most of all independent study in order for us to gauge exactly what are the harmful effects of the

\textsuperscript{133} EWEA, \textit{supra} note 130 at 331.
renewable energy production in general. The wind power was just used as one example to showcase that.

4 Conclusion

At the beginning of this paper, we have looked at the rationales of environmental taxation and tax incentives on developing renewable energy in Canada. Interestingly, both of their rationales are quite similar to each other – I have described it as “two sides of the same coin” because although both of them work in the opposite direction, the underlying principle is identical. More specifically, the economic rationale would strive to internalize the externalities and the transformative rationale would encourage further development of more efficient and effective production. Lastly, the marginal cost of producing the same quantity of energy would increase with environmental tax and decrease with tax incentives due to economies of scale. Here, the same underlying principle is at work – both of the tax instruments would directly affect the marginal cost curves of the energy producers whether they produce non-renewable or renewable energy. Having found that both environmental taxation and tax incentives have almost identical rationales behind them, it is not surprising to conclude that any sound tax instruments must utilize both of them simultaneously in order to obtain the highest efficiency.

We have created a hypothetical timeline of implementing renewable energy project in Canada. “Before” the implementation, we have seen theoretical shortcomings of the current tax incentives. The accelerated capital cost allowance fails to address the equity and administrative
simplicity. Incentives on clean-fuel vehicles are found to be too little to have a significant impact – in fact, other policy alternatives such as tax deductions or non-refundable credits are said to be more effective. Canadian Renewable Conservation Expenses do not help the developers during the actual development stage. During this phase, we have also looked at how the renewable energy sources themselves are found to be vulnerable to investment risk due to high initial costs. Also their market structure is unstable as the end-users are reluctant to adapt to new technology right away.

“During” the implementation, the notion of “unlevel playing field” with regards to the conventional oil and gas industry is selected to be very important. In particular, it is found that providing similar tax incentives simultaneously on both renewable and non-renewable energy would negate the impacts of both. Therefore, I discussed fully both in theory and practice how a carbon tax would be beneficial to help improve the efficiency and effectiveness of the tax incentives on green energy, as seen in the empirical evidence from Europe. However, in the Canadian context, we find that there is simply too much politics at play that deters a meaningful theoretical discussion on the merits of a carbon tax.

Lastly, I have looked at the completely “exogenous” factors that would render any kind of tax policy inefficient and ineffective – NIMBY-ism, the Canadian Constitution, and the “alleged” ill-effect on people who live close to the renewable energy plants such as wind farms. With NIMBY-ism, we learn that this kind of communal behaviour is cross-national and cross-cultural, and sometimes money is not even an issue in some instances. The Canadian Constitution
invokes the ‘duty to consult’ with the aboriginals that may add one more hurdle to overcome for potential renewable energy developers. Lastly, the unknown extent to which people may be adversely affected by the windmills was also discussed here.

In the end, the Canadian tax policy on developing renewable energy can be described as ‘unexplained’ and/or ‘of unknown outcome’ or even ‘questionable.’ Certainly, it cannot be described as totally ‘efficient’ and ‘effective’ because there are clearly instances where some of the policy substitutes would work better than the current ones. In addition, as a potential green energy developer, there were many challenges “before” and “during” the actual implementation. Even completely “exogenous” factors would add more complexity in solving the present challenges. Without the federal government’s coherent leadership and initiatives, it would be very difficult to predict that the targets set by the international policy instruments such as the Kyoto Protocol could be met. The implication of not meeting its own commitment and breaking the promise that was made with many other countries around the world would be huge. Even domestically, the fine line of difference in political views between the East and the West is found to be directly responsible for Canada’s being labelled as one of the highest GHG emitters per capita in the world. Sometimes, one has to wonder whether the green light from this government really mean “Go” or otherwise.