

---

# Setting a Baseline: A Primer for Environmental Taxes in Canada



RESEARCH PAPER

---

*By: Pomme Arros*

*May, 2015*

## Setting a Baseline: A Primer for Environmental Taxes in Canada

© 2015 University of Ottawa

Pomme Arros

**Sustainable Prosperity**

1 Stewart St

Ottawa, ON, Canada

K1N 7M9

E-mail: [info@sustainableprosperity.ca](mailto:info@sustainableprosperity.ca) Web site: [www.sustainableprosperity.ca](http://www.sustainableprosperity.ca)

Sustainable Prosperity is a national policy and research network aimed at building a healthy environment and economy, by making markets work for the environment. Based at the University of Ottawa, it is a non-partisan, multi-stakeholder research and policy initiative that aims to build a greener and more prosperous economy for all Canadians. For more information, see: [www.sustainableprosperity.ca](http://www.sustainableprosperity.ca).

This research project was funded by Sustainable Prosperity. However, the views and findings expressed in this paper should be attributed to its authors. They do not necessarily reflect the views and positions of Sustainable Prosperity.

## Contents

Executive Summary.....	5
Introduction.....	7
Theory of Environmental Taxation.....	8
Pigouvian Taxes.....	9
Methodologies for Data Collection.....	10
Categorization of Environmental Taxes.....	10
Environmental Taxation in an International Context.....	13
Challenges with Defining and Calculating Environmental Taxes in Canada.....	14
Conflicting Definitions of Environmental Taxes.....	15
Proposed Definitions of Environmental Taxes in Canada.....	17
Gathering Data on Environmental Taxes and Fees in Canada.....	20
The Value of Environmentally Motivated Taxes in Canada.....	21
The Value of Environmentally Related Taxes in Canada.....	22
The Value of Environmental Fees in Canada.....	23
Analysis of Tax and Fee Bases.....	23
Summary of the Value of Environmentally Motivated Taxes, Environmentally Related Taxes and Environmental Fees in Canada.....	25
Conclusion.....	26
Appendix.....	27
Value of Environmentally Motivated Taxes, Environmentally Related Taxes and Environmental Fees in Canada.....	27
References.....	34

## List of Tables and Figures

Table 1. Relevant Tax Bases.....	12
Table 2. Environmental Taxes in the EU, 2012 .....	13
Figure 1. Categorization of Environmental Pricing Policies in Canada.....	17
Table 3. Categories of Environmental Taxes and Fees in Canada.....	19
Table 4. Features of Environmental Taxes and Fees in Canada.....	19
Table 5: Environmentally Motivated Taxes in Canada, 2012-2013 .....	21
Table 6: Top Environmentally Related Taxes in Canada, 2012-2013.....	22
Figure 2: Composition of Environmental Taxes in Canada .....	23
Figure 3: Composition of Environmental Taxes and Fees in Canada .....	23
Figure 4: Distribution of Total Value of Environmental Taxes and Fees by Tax Base Type.....	24
Figure 5: Distribution of Tax/Fee Value by Tax Base Type.....	24
Table 7: Estimated Value of Environmental Taxes and Fees in Canada.....	25

## Acknowledgements

Primary research and writing was conducted by Pomme Arros. Alex Wood, Michelle Brownlee, Dale Beugin, Rachel Samson, Mercedes Marcano, Vincent Thivierge and Patricia Latendresse provided review and valuable comments.

Primary responsibility for the final product and its conclusions is Sustainable Prosperity's alone and should not be assigned to any reviewer or other external party. Review of the report does not necessarily mean endorsement.

## Executive Summary

*This paper explores the concept of environmental taxation to illustrate how environmental taxation can be defined and calculated in the Canadian economy.*

*Environmental taxes are a fiscal policy tool designed to address the costs that environmental degradation imposes on society. Environmental taxes are applied to increase the price of activities and products that are harmful to the environment as a way to discourage such behaviour. Such taxes are used extensively around the world and are levied on bases as varied as energy, transportation, natural resources, and pollution. However, there is a distinction between how environmental taxes exist in theory and how they are used in practice. In theory, environmental taxes are designed to limit environmentally harmful behaviour through a price incentive, whereas in practice, many taxes referred to as environmental taxes are strictly revenue-raising instruments and are not designed to meet specific environmental objectives.*

*While environmental taxes are identified, categorized, and measured internationally, applying similar methods in a Canadian context may inaccurately portray the number and impact of environmental taxes because the definitions of environmental taxes are unclear. To help address this deficiency, this paper introduces a set of definitions to describe the components of environmental taxation in Canada.*

*This paper distinguishes environmental taxes from environmental fees. An environmental tax is a tax with a base of activities or products that have a negative impact on the environment (such as a tax on air pollution) whereas an environmental fee is a fee imposed in exchange for a service (such as recycling).*

*Using these definitions, this paper further divides environmental taxes into two categories: environmentally motivated taxes and environmentally related taxes. An environmentally motivated tax is a tax levied on activities or products that have a direct negative impact on the environment with the purpose of addressing environmental damage. An environmentally related tax is a tax levied on activities or products that have an indirect negative impact on the environment with the purpose of raising government revenue.*

*Using the definitions introduced in this paper, we estimate the total value of environmental taxes and fees in Canada for 2012-2013 to be \$15.7 billion.*

*Compounding the existing definitional challenges, the consistent and methodical collection of environmental taxation data in Canada does not occur. Further research on the objectives of individual environmental taxes and fees and their impact on both the economy and environmental outcomes would be useful additions to environmental and fiscal policy discussions in Canada.*

*The purpose of this paper is to explore the concept of environmental taxation in general, and specifically to define and calculate the value of environmental taxes and fees in the Canadian economy. This paper describes the theory of environmental taxation, introduces methods of data collection, presents the international and Canadian state of knowledge of environmental taxation, and outlines the challenges associated with calculating and defining environmental taxes. A set of definitions are introduced to classify environmental taxes and fees specifically in Canada, and a preliminary calculation of the value of environmental taxes and fees in Canada is presented.*

## Introduction

The social and environmental costs of pollution are significant and have a negative impact on Canadian society. For example, air pollution costs the Canadian economy billions of dollars every year in health care costs, missed days of work, and reduced worker productivity. A study by Environment Canada found that a small reduction of 10% in air pollution would yield a net social welfare benefit for Canadians of more than \$4 billion.<sup>1</sup> Another study conducted by the Canadian Medical Association found that the economic cost of air pollution-related illness and death in Canada is more than \$8 billion a year.<sup>2</sup> A recent estimate of the costs of pollution in Canada finds the total annual costs of pollution in terms of out-of-pocket expenses for business and governments to be a minimum of \$18.8 billion in 2014.<sup>3</sup>

The key point is that private economic activity- in the absence of policy- creates costs that are born by society at large. Without government intervention or a price on pollution, there is little incentive for firms or individuals to reduce pollution or to develop non-polluting alternatives. In addition to command-and-control regulation, there are a number of different types of environmental pricing policies that governments can impose upon polluters to reduce pollution. Such price-based policies, because they directly incent the reduction of pollution and the creation of substitutes, are generally more economically efficient than regulation.

Taxation is one form of government intervention that creates incentives to change behaviours in ways that reduce the taxed activity. **Environmental taxation is a policy mechanism applied to increase the price on activities and products that are harmful to the environment as a way to discourage such behaviour.** Generally, environmental taxes can be described as a tax legislated by government on activities or products that have a negative impact on the environment. A common definition of an environmental tax is “a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific, negative impact on the environment.”<sup>4</sup>

Many existing definitions of environmental taxes (such as from the Organization for Economic Cooperation and Development (OECD)) also include environmental fees, which are often charged to consumers or producers to cover the cost of service provision for services such as recycling programs or waste disposal.

Environmental taxes are used widely around the world, and are applied to activities such as the extraction of natural resources, the purchase of cars, the use of roads, the use of energy for electricity, and the emission of pollution into the air, land, and water.

Some taxes are specifically designed to achieve environmental outcomes. For example, the United Kingdom’s Climate Change Levy is an environmental energy tax introduced in the UK in April 2001. Charged on the business use of energy, its aim is to provide an incentive to increase energy efficiency and to reduce carbon emissions. Another example is Denmark’s tax on pesticides; the tax was introduced in 1996 with the objective of reducing household consumption of pesticides, with 100% of the proceeds earmarked for environmental purposes.

While the Canadian fiscal system does rely on the implementation and collection of environmental taxes and fees, the current number and value of such pricing policies in Canada has not been evaluated or reported. Unlike other jurisdictions such as the EU that are required by law<sup>5</sup> to collect data on environmental taxes, Canada does not have an official or consistent methodology to calculate the rate and base of environmental taxes.

Aside from the lack of a methodology, many definitional challenges exist around what is, and what is not, an environmental tax. Without either a consistent definition of an environmental tax or a methodology for calculating environmental taxes, a comprehensive list of all current federal and provincial environmental taxes and fees does not exist in Canada.

The purpose of this paper is to explore the concept of environmental taxation in general, and specifically to define and calculate the value of environmental taxes and fees in the Canadian economy. This paper describes the theory of environmental taxation, introduces methods of data collection, presents the international and Canadian state of knowledge of environmental taxation, and outlines the challenges associated with calculating and defining environmental taxes. A set of definitions is introduced to classify environmental taxes and fees specifically in Canada, and a preliminary calculation of the value of these instruments is presented.

## Theory of Environmental Taxation

The economic impacts of pollution can be explained by simple economic theory. An externality is an economic concept used to describe a cost or benefit not transmitted through prices.<sup>6</sup> Externalities can have either positive (benefit) or negative (cost) impacts.<sup>7</sup> When negative externalities are present, there are costs imposed on society that are not covered by the private costs of a market activity. Pollution is an example of a negative externality, because it imposes a cost on all members of society even if a specific actor or actors cause the pollution.

The implementation of environmental taxes can help to reduce the effects of negative externalities caused by pollution. Specifically, environmental taxes ensure that consumers or producers pay prices for products and services that reflect the environmental costs they generate.<sup>8</sup>

Negative externalities will absorb resources that should be directed to other parts of the economy. The presence of environmental taxes in the economy can help to ensure those who impose costs to society from polluting or from direct destruction of the environment are financially responsible for those costs. Environmental taxes can help to ensure that externalities caused by pollution are internalized, which ultimately leads to a more efficient economy.<sup>9</sup>

Increased levels of environmental taxes, and more broadly environmental tax reform, can have positive environmental impacts.<sup>10</sup> For example, taxes on greenhouse gas emissions are an effective way to reduce pollution while encouraging technological innovation.<sup>11</sup> Some newly established organizations in Canada (such as Canada's Ecofiscal Commission<sup>12</sup> and Canadians for Clean Prosperity<sup>13</sup>) advocate for eco-fiscal



reform and tax shifting, which includes a shift in the burden of taxation from economic “goods,” such as labour, to economic “bads,” such as pollution.<sup>14</sup>

## Pigouvian Taxes

In the 1930s, the economist A.C. Pigou studied negative externalities and how taxes could be used to address them. Since then, the concept of Pigouvian taxes has been a fundamental topic in economic theory.<sup>15</sup>

Some environmental taxes are examples of Pigouvian taxes. A Pigouvian tax is a tax levied on a market activity that generates negative externalities, but has a distinguishing feature: the rate at which it is set represents the costs that the externality causes society. For example, pollution can have negative impacts on society and the environment, but often those who cause the pollution are not those who pay for it. This discrepancy creates a gap between the social and private costs because the impacts of pollution caused by private activities are felt by society as a whole. When society has to pay the full cost for the activities that a private firm or individual takes, the market becomes inefficient. A Pigouvian tax can correct this inefficiency by being set to a rate equal to the costs that pollution creates for society. In essence, a Pigouvian tax is intended to correct the market inefficiency and ensure that the gap between the social and private costs is lessened by placing the burden of pollution onto those who cause it.<sup>16</sup>

However, while Pigouvian taxes may appear to be an efficient way to reduce environmental externalities, Pigouvian taxes are not common in tax policy. This is because it is difficult to calculate external costs accurately.<sup>17</sup>

The design of Pigouvian taxes requires an understanding of the correct tax rate value. For example, if the tax rate is too low, the tax will not force polluters to internalize the environmental damages. On the other hand, if the tax is too high, the tax will penalize market players at a greater than necessary cost, which leads to losses in welfare.<sup>18</sup> From an environmental and economic perspective, sometimes a low level of pollution is beneficial. This is because there is an optimum level of pollution where society’s wellbeing is maximized. The design of Pigouvian taxes focus on this optimal tax rate.

The difficulty with designing Pigouvian taxes arises when environmental indicators, benchmarks or measurement are missing. In this case, policy makers have difficulty quantifying environmental effects and translating these effects into appropriate tax rates or other environmental targets.<sup>19</sup> Therefore, while it may be easy to measure the amount of revenue collected through the tax instrument, it is more difficult to determine the environmental benefit resulting from the tax. Like any policy change, it is difficult to determine after the fact how much of the change in behaviour can be attributed to the tax itself rather than to some other factors or policy.<sup>20</sup>

Aside from an appropriate calculation of the tax rate, the implementation of Pigouvian taxes requires political will. Even if a theoretically correct tax rate for a particular policy issue is achieved, gathering support through the political process can be difficult.<sup>21</sup> The recent repeal of the Australian carbon tax<sup>22</sup> or the political tension over the British Columbia carbon tax<sup>23</sup> are examples of the political challenges specific to pricing carbon.

## Methodologies for Data Collection

The global authorities on environmental taxation are Eurostat (the pan-European statistical agency) and the OECD. In collaboration with the European Environment Agency (EEA), the OECD maintains a database of instruments used for environmental policy and natural resource management that includes information on the rules and revenue data of each environmental tax for all member countries. The information in this database has been provided by ministries of finance and ministries of environment of OECD countries.

Along with compiling statistics on environmental taxes, Eurostat publishes a statistical guide (*Environmental Taxes – Revised Statistical Guide 2013*) which is a comprehensive methodology for implementing the concepts found in the System of Environmental-Economic Accounting (SEEA). The SEEA framework<sup>24</sup> is the internationally recognized system of environmental accounting, which describes the interactions between the economy and the environment. In particular, Chapter 4 of the framework outlines how environmental taxes should be defined and calculated.

Most national statistical offices that incorporate environmental accounting follow the SEEA framework, and countries at the forefront of SEEA implementation include Australia, Mexico, Canada and a number of countries in the EU.<sup>25</sup> Canada is exploring further use of the framework through its ecosystem goods and services accounts, and continues to make an important contribution to the field of environmental accounting on an international scale.<sup>26</sup> Statistics Canada has been successful in including natural capital in national balance sheets, and now publishes annual values for Canadian energy, mineral, timber and land assets.<sup>27</sup> Statistics Canada also aims to publish these numbers on a quarterly basis in the future.<sup>28</sup> The collection of this data shows the extent of Canada's natural resource wealth and provides a platform for the design and implementation of environmental policy.<sup>29</sup>

## Categorization of Environmental Taxes

Environmental taxes are identified by the characteristics of their tax base. The identification of the tax base allows for a systematic categorization that separates environmental taxes from non-environmental taxes. The most common categorization of tax bases is a set of criteria developed by Eurostat.<sup>30</sup> Eurostat identifies the general method of collecting environmental taxes to include levying taxes on four general areas of an economy: natural resources, transportation, pollution and energy. These categories have been adopted in the SEEA framework and are used by the OECD.

### **Categories of Environmental Taxes**

#### **Natural resource tax:**

This category includes taxes on the extraction or use of natural resources, such as water, forests, and other ecosystem components. However, rents for the use of land and natural resources are excluded from this category, as are taxes on oil and gas extraction (mostly because of issues of a lack of comparability between countries and the volatility of oil and gas prices).<sup>31</sup>

#### **Transport tax:**

Transport taxes refer primarily to taxes relating to the ownership and use of motor vehicles. This category can also include one-off taxes such as imports, sale of equipment, or road taxes. Also included are other taxes such as transportation equipment and related transportation services, railway rolling stock, public transportation, electric vehicles taxes, and vehicle insurance. Transportation fuels are included in the energy category described below.

#### **Pollution tax:**

This category includes taxes on measured or estimated emissions to air and water, the management of solid waste, and noise.

Unlike taxes on other emissions to air, taxes on carbon dioxide (CO<sub>2</sub>) emissions are not included in the pollution category. Taxes on CO<sub>2</sub> are included in the energy category described below. Taxes on CO<sub>2</sub> are included in the energy category because they are often integrated with other energy taxes and thus difficult to separate from general energy taxes. Furthermore, listing CO<sub>2</sub> taxes as pollution taxes would distort international comparisons between countries with and without CO<sub>2</sub> taxes, because CO<sub>2</sub> revenues are often considerably larger than revenues from other pollution taxes.

#### **Energy tax:**

Energy taxes include taxes on energy products used for both transport and stationary purposes. Energy products for stationary use include fuel oils, natural gas, coal and electricity, and energy products for transportation include petrol and diesel. Taxes on biofuels and on any other form of energy from renewable sources are included in this category, as are taxes on stocks of energy products. (The EU also includes revenues from the EU Trading Scheme in this category).

As described above, CO<sub>2</sub> taxes are also included in the energy taxes category.

These four categories are used frequently in the calculation of environmental taxes. Often, pollution and resource tax categories are combined and reported as one category as these are often the smallest categories. In the European context, most environmental taxes are levied on energy and transportation.<sup>32</sup> As the analysis in a later section of this paper will show, this is also the case in Canada.

Eurostat, the European Commission's Directorate General Environment and Directorate General Taxation and Customs Union, the OECD, and the International Energy Agency have agreed upon a list of environmentally relevant taxes based on these four categories.<sup>33</sup> These taxes are listed in Table 1.

Table 1. Relevant Tax Bases

Category	Description	Tax Base
Energy	Energy products for transport purposes	<ul style="list-style-type: none"> <li>- Unleaded petrol</li> <li>- Leaded petrol</li> <li>- Diesel</li> <li>- Other energy products for transport purposes</li> </ul>
	Energy products for stationary purposes	<ul style="list-style-type: none"> <li>- Light fuel oil</li> <li>- Heavy fuel oil</li> <li>- Natural gas</li> <li>- Coal</li> <li>- Coke</li> <li>- Biofuels</li> <li>- Electricity consumption and production</li> <li>- District heat consumption and production</li> <li>- Other energy products for stationary use</li> </ul>
	Greenhouse gases	<ul style="list-style-type: none"> <li>- Carbon content of fuels</li> <li>- Emissions of greenhouse gases (including proceeds from emission permits recorded as taxes in the national accounts)</li> </ul>
Transport	<ul style="list-style-type: none"> <li>- Motor vehicles import or sale (one-off taxes)</li> <li>- Registration or use of motor vehicles, recurrent (e.g. yearly taxes)</li> <li>- Road use</li> <li>- Congestion charges and city tolls</li> <li>- Other means of transport (ships, airplanes, railways, etc.)</li> <li>- Flights and flight tickets</li> <li>- Vehicle insurance (excludes general insurance taxes)</li> </ul>	
Pollution	Measured or estimated emissions to air	<ul style="list-style-type: none"> <li>- Measured or estimated NOx emissions</li> <li>- Measured or estimated SOx emissions</li> <li>- Other measured or estimated emissions to air (excluding CO<sub>2</sub>)</li> </ul>
	Ozone depleting substances (e.g. CFCs or halons)	
	Measured or estimated effluents to water	<ul style="list-style-type: none"> <li>- Measured or estimated effluents of oxidizable matter</li> <li>- Other measured or estimated effluents to water</li> <li>- Effluent collection and treatment, fixed annual taxes</li> </ul>
	Non-point sources of water pollution	<ul style="list-style-type: none"> <li>- Pesticides (based on e.g. chemical content, price or volume)</li> <li>- Artificial fertilisers</li> <li>- Manure</li> </ul>
	Waste management	<ul style="list-style-type: none"> <li>- Collection, treatment or disposal</li> <li>- Individual products (e.g. packaging, beverage containers, batteries, tires, lubricants)</li> </ul>
	Noise (e.g. aircraft take-off and landings)	
Resources	<ul style="list-style-type: none"> <li>- Water withdrawal</li> <li>- Harvesting of biological resources (e.g. timber, hunted and fished species)</li> <li>- Extraction of raw materials (e.g. minerals, oil and gas)</li> <li>- Landscape changes and cutting of trees</li> </ul>	

## Environmental Taxation in an International Context

Environmental taxes are applied in economies around the world. The use of environmental taxes is expanding in OECD countries, and some examples can be found in emerging economies as well.

Environmental taxation began appearing in European policy in the 1990s, and today Europe remains a world leader in this area. Statistical bodies such as Eurostat and the OECD (which is global in scope but whose members are majority European) prepare the majority of data on environmental taxation. Eurostat and the European Commission’s Directorate General identify environmental taxes for the Taxation and Customs Union together with country delegates for each member state.

Until recently, the collection and reporting of data on environmental taxation by member states was voluntary. However, a relatively new directive (Regulation 691/2011) from Eurostat requires that all EU member states compile data on environmental taxes and, as of September 2013, annual reporting is obligatory. Common examples of environmental taxes in the EU include levies on electricity consumption, CO<sub>2</sub> emissions, greenhouse gases, pesticides, fertilisers, vehicles and road travel. The collection of these revenues has been directed towards research and development to increase energy efficiency, reduce emissions intensities and encourage alternative energy use.<sup>34</sup>

The total revenue from environmental taxes in the EU-28 in 2012 was about €312 billion (~\$443 billion CAD); this figure equates to 2.4% of gross domestic product (GDP) and to 6.05% of the total revenues derived from all taxes and social contributions.<sup>35</sup> Table 2 shows the tax revenues of environmental taxes in EU countries.

Table 2. Environmental Taxes in the EU, 2012

Country	Total Environmental Tax Revenue (Millions of euro)	~CAD (Millions)	% of GDP	Percentage of total revenues from taxes and social contributions
European Union	311,682.78	442,589.55	2.4	6.05
Austria	7,483.98	10,627.25	2.44	5.66
Belgium	8,121.90	11,534.10	2.16	4.76
Bulgaria	1,119.49	1,589.68	2.82	10.11
Croatia	1,389.73	1,973.42	3.18	8.86
Cyprus	477.10	677.48	2.67	7.63
Czech Republic	3,595.61	5,105.77	2.35	6.72
Denmark	9,502.79	13,493.96	3.87	8.05
Estonia	484.20	687.56	2.78	8.56
Finland	5,909.00	8,390.78	3.07	6.96
France	37,241.00	52,882.22	1.83	4.08
Germany	58,004.00	82,365.68	2.18	5.56
Greece	5,523.00	7,842.66	2.85	8.45
Hungary	2,470.93	3,508.72	2.55	6.50
Iceland	219.90	312.26	2.08	5.66
Ireland	4,082.11	5,796.60	2.49	8.68
Italy	47,257.00	67,104.94	3.02	6.86
Latvia	537.61	763.41	2.42	8.65
Liechtenstein	NA	NA	NA	NA

Lithuania	548.13	778.34	1.66	6.12
Luxembourg	1,038.56	1,474.76	2.42	6.16
Malta	204.22	289.99	2.98	8.86
Netherlands	21,319.00	30,272.98	3.56	9.12
Norway	9,243.76	13,126.14	2.38	5.63
Poland	9,605.47	13,639.77	2.52	7.75
Portugal	3,596.09	5,106.45	2.18	6.73
Romania	2,550.56	3,621.80	1.94	6.84
Slovakia	1,244.81	1,767.63	1.75	6.18
Slovenia	1,348.04	1,914.22	3.82	10.15
Spain	16,152.00	22,935.84	1.57	4.82
Sweden	10,167.97	14,438.52	2.49	5.64
United Kingdom	50,708.50	72,006.07	2.62	7.42

Retrieved from Eurostat. (2013). *Environmental Tax Statistics*. Retrieved from [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_ac\\_tax&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_ac_tax&lang=en) and <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>

The total revenue of environmental taxes in 2012 is an increase from the rate of €304 billion in 2011. In 2012, Denmark displayed the highest level of environmental taxes as a percentage of GDP (3.87%), followed by Slovenia (3.82%) and the Netherlands (3.56%).

## Challenges with Defining and Calculating Environmental Taxes in Canada

Canada's environmental taxation policies and data collection methods differ significantly from those of the European Union. Canadian policy employs relatively few environmental taxes, and there is no official or consistent methodology to calculate the rate and base of environmental taxes on a yearly basis.

The primary source for environmental tax information in Canada is from the Paris-based OECD and the Brussels-based EEA. In cooperation, the OECD and the EEA collect information on the instruments of environmental policy and natural resources management of many countries (including Canada) and compile a database of such instruments (which includes environmental taxes). According to statistics in the database, the value of Canada's environmental taxes in 2010 was just over \$4 billion, which contributed to less than half a percentage point of GDP at the time.<sup>36</sup>

Despite the information contained in the OECD and EEA database, accurately identifying and calculating environmental taxes in Canada are difficult tasks. This is for two reasons:

1. The OECD/EEA database categorises environmental taxes based on the tax base (that is, what is being taxed) rather than the tax objective (the intention of the tax). Categorizing a tax as environmental based solely on the tax's base is problematic; the tax base may not represent an environmentally beneficial base as economic theory would suggest it should. This issue is discussed more thoroughly in the section below.

2. While environmental tax data is collected at national and provincial levels, the tax data in the OECD/EEA database is not updated to reflect the most recent environmental tax revenues. For example, the most recent data for Canada in the database is from 2011, whereas data for other countries is reported for dates as recent as 2013.

Given these concerns, the rest of this paper follows the assumption that the OECD/EEA database is not a comprehensive representation of the environmental tax base in Canada.

As described above, a large concern with existing definitions of environmental taxes is that the definitions used by statistical agencies are not consistent with definitions of environmental taxes as they exist in theory or in practice.

These definitional challenges occur throughout the literature on environmental taxation, and are also apparent in the applied categorization of taxes as either environmentally beneficial or general revenue-raising taxes. For example, some taxes are designed purely for fiscal reasons, whereas some taxes are designed for environmental reasons.

Nevertheless, in practice, the motivation for the tax (as either fiscal or environmental) does not factor into the decision to categorize an environmental tax as such. The calculation of environmental taxes can be easily misinterpreted because official statistics apply to a wide base of the economy (including the four categories of energy, transportation, pollution, and resources described previously), but do not necessarily distinguish between revenue-raising or environmentally motivated taxes. The definitional concerns with environmental taxation are debated in the literature, and some of these concerns are discussed below.

## **Conflicting Definitions of Environmental Taxes**

The most widely used definition of an environmental tax is the definition found in the SEEA: “an environmental tax is a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific, negative impact on the environment”.<sup>37</sup> This definition has also been adopted by other statistical agencies such as Eurostat and the OECD.

The official SEEA definition however, has been criticized for not considering the motivation for the policy’s design and intent.<sup>38</sup> That is, a tax may be identified as an environmental tax simply based on *what* is being taxed, and not based on *why* it is being taxed. This means that a tax can be called an environmental tax though the tax itself may not produce positive environmental outcomes.

Economics literature refers to environmental taxes as those that tax negative externalities (i.e. a Pigouvian tax), and as such are designed to have an impact on the polluting activity.<sup>39</sup>

However, under the SEEA definition, even a tax that is specifically designed to raise revenue rather than raise environmental outcomes can still be defined as an environmental tax if, in the end, it has a positive environmental impact. For example, the SEEA definition covers resource taxes. However, resource taxes are usually imposed to tax economic rents on the extraction of natural resources and are not directed

towards externalities. The resource tax is not designed to affect the extraction of natural resources.<sup>40</sup> Therefore, calling a resource base tax an environmental tax is misleading if the tax is not designed with an environmental purpose.

The OECD uses a second term to further describe environmental taxes as they exist in practice. The term “environmentally related tax” is defined as “any compulsory, unrequited payment to general government levied on tax-bases deemed to be of particular environmental relevance”.<sup>41</sup>

Despite the narrower scope, this OECD definition also does not consider environmental motivation or intent. Those taxes defined as environmentally related taxes in the OECD/EEA database are just as broad as those considered under the SEEA definition. For example, environmentally related taxes have been described as primarily revenue raising instruments that happen to be imposed on environmental goods or services and may have non-environmental objectives.<sup>42</sup>

The concern is that taxes that have a fiscal incentive only meet environmental goals indirectly. This is because taxes may be described and incorrectly categorized as environmental despite their inability to address an existing environmental externality.<sup>43</sup> For example, while the OECD/EEA database and SEEA definition identify fees such as hunting licenses or mining royalties as environmental or environmentally related taxes, the basis for these fees may simply be for general revenue purposes, and may not represent an environmentally defined intention. A high ratio of environmental tax revenue to total taxation does not necessarily represent an indication of a high priority being attributed to environmental protection.<sup>44</sup>

Put simply, all taxes designed to achieve environmental goals can and should be considered environmental taxes, but many taxes defined as environmental – as currently defined by OECD and EuroStat – are not environmental in defined objective or goal. Therefore, a problem exists as the international statistics developed by Eurostat and the OECD are not based on a theoretical definition of environmental taxes.

Research conducted in Norway helps illustrate this point. A significant difference in the total tax base was observed when comparing calculations of theoretical environmental taxes with that of the SEEA definition. A theoretical definition of environmental taxes calculated the total tax base in Norway to be €1,700 million, while the taxes following the SEEA definition and reported to the OECD/EEA database amount to €8,200 million.<sup>45</sup>

The collection of taxation data can also be misleading in the Canadian context. For example, the main environmentally related federal tax is the gas tax. This tax began in 1975 as a way to increase revenues and to reduce reliance on imported oil. While there may have been associated environmental benefits from consumers changing their behaviour due to increases in prices, the intention of the tax was not specifically for environmental benefit.<sup>46</sup> Therefore, categorizing such a tax as an environmental tax may cause distortions in data collection and may not provide an accurate description of the environmental tax base in Canada.



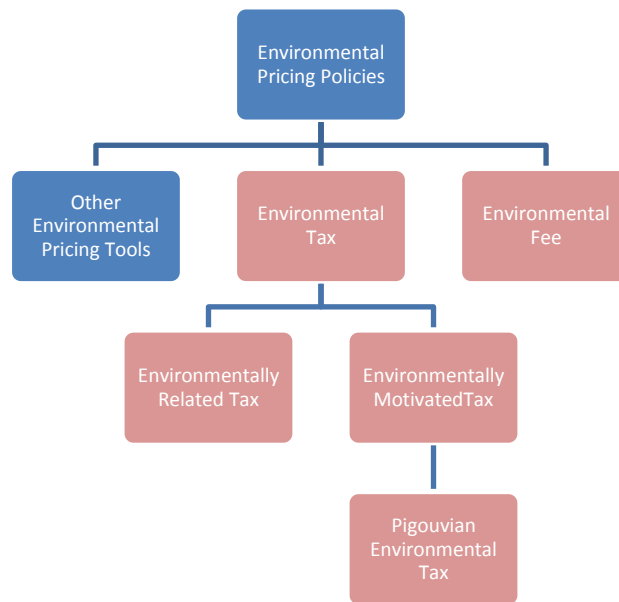
## Proposed Definitions of Environmental Taxes in Canada

The previous discussion demonstrates that the value of environmental taxation as presented by the OECD/EEA database is not necessarily a precise representation of the total tax base of environmental taxes in Canada.

To this end, this paper proposes a set of definitions to categorize environmental taxes in Canada. This paper separates environmental taxes into two categories: **environmentally motivated taxes** and **environmentally related taxes**. **Environmental fees** exist in their own category and are separate from environmental taxes. These definitions are unique in that they are more specific than some existing definitions used by other organizations.

Environmental pricing is a broad category of fiscal policy and includes a number of different instruments to address environmental externalities. The span of environmental pricing policies includes instruments such as subsidies, markets for environmental services, tradable permits, and environmental taxes and fees. Figure 1 below shows the relationship between categories of environmental pricing policies across the Canadian economy.<sup>47</sup> Given this paper’s focus on environmental taxes and fees specifically, the boxes in red in the diagram represent the instruments discussed in this paper. Each instrument is defined below.

Figure 1. Categorization of Environmental Pricing Policies in Canada



An **environmental tax** is defined as a tax legislated by governments on activities or products that have a negative impact on the environment. Environmental taxes include a broad array of taxes and are levied on the four environmental tax bases of energy, transportation, pollution, and resources. In line with

discussions in the literature regarding the differences between the theoretical and practical applications of environmental taxes, in this paper the category of environmental taxes is further divided into two categories: environmentally motivated taxes and environmentally related taxes.

For the purposes of this paper, an **environmentally motivated tax** is a tax levied on activities or products that have a *direct* negative impact on the environment with the purpose of addressing environmental damage. An environmentally motivated tax aims to fulfill precise environmental objectives through a change in behaviour. This category includes taxes designed to reduce environmental externalities by pricing pollution<sup>48</sup> directly. Revenues are either earmarked for environmental activities, or are collected for redistribution to ensure revenue neutrality. As pollution is taxed directly, environmental taxes have the potential to be designed such that the rate can be set to offset as closely as possible the damage that pollution causes society.

A subset of an environmentally motivated tax is a **Pigouvian tax**, whose tax rate is set to equal the environmental and social damage caused by the pollutant. As mentioned previously, Pigouvian environmental taxes are difficult to implement in practice and the British Columbia (BC) carbon tax is the closest example of a Pigouvian environmental tax.

Established in 2008, the BC carbon tax is levied on the purchase of many carbon-containing fuels in the province. As of July 1, 2012, the tax rate is \$30 per tonne of CO<sub>2</sub> equivalent emissions. The \$30/tonne value is consistent with Canadian estimates of the social cost of carbon, which is the economic value of avoided climate change damages for current and future generations as a result of reducing greenhouse gas emissions. Environment Canada has calculated the social cost of carbon value in a Canadian context, and as of 2013, the value is \$28.15/tonne of CO<sub>2</sub>e.<sup>49</sup>

During the first five years of the tax, income tax levels decreased while fuel consumption also decreased.<sup>50</sup> The tax has been called an environmental and economic success because its implementation is correlated with positive environmental outcomes (from decreased fuel use) at no detriment to the economy.<sup>51</sup>

An **environmentally related tax** is a tax levied on activities or products that have an *indirect* negative impact on the environment with the purpose of raising government revenue. Often, these taxes are not environmentally motivated and do not always consider the environmental benefits achieved from the imposition of the tax. However, some exceptions include taxes that have an environmental purpose but only tax the environmental externality indirectly (for example, the federal Green Levy taxes fuel inefficient vehicles). Environmentally related taxes include a broad array of taxes (and sometimes fees<sup>52</sup>) on various environmental bases. An example of an environmentally related tax is the federal gas tax that collects revenue on a base identified as environmental (transportation) but is not environmentally motivated.<sup>53</sup>

An **environmental fee** is defined as a payment in return for the provision of services that are directly linked to the payment and charged by either government or a private entity. In most cases these are not taxes at all, but rather service provision fees because the revenues are not collected by government (though waste-disposal legislation exists at federal and provincial levels). Environmental fees are also known as eco-fees, which fund recycling programs for certain consumer products by charging a fee at the

point of purchase. Environmental fees are included in the calculation of environmentally related taxes by the OECD and Eurostat, but they have been assigned their own category in this paper. An example of an environmental fee is the provincial beverage container deposit-refund systems. Table 3 outlines the distinctions between each instrument.

Table 3. Categories of Environmental Taxes and Fees in Canada

ENVIRONMENTAL TAXES		ENVIRONMENTAL FEES
Environmentally motivated tax	Environmentally related tax	Environmental fee
An environmentally motivated tax is a tax levied on activities or products that have a direct negative impact on the environment with the purpose of addressing environmental damage. A Pigouvian environmental tax is a tax whose tax rate is set to equal the environmental and social damage caused by the pollutant.	An environmentally related tax is a tax or fee levied on activities or products that have an indirect negative impact on the environment with the purpose of raising general government revenue.	An environmental fee is a fee on a physical unit and charged for the provision of a service in relation to that unit.
E.g. BC carbon tax	E.g. Federal gas tax	E.g. Beverage container disposal fees

The primary differences between environmental taxes and environmental fees can be made using two distinct considerations i) the goal of the tax and ii) how the revenues are used. Table 4 categorises each instrument according to each consideration.

Table 4. Features of Environmental Taxes and Fees in Canada

	ENVIRONMENTAL TAXES		ENVIRONMENTAL FEES
	Environmentally motivated tax	Environmentally related tax	Environmental fee
Goal	To address environmental damage	To tax environmental bases with a goal of raising general government revenue	To raise funds to cover the cost of service provision
Objective of Revenues	To provide funds for environmental objectives or raise general government revenue for tax neutrality	To raise general government revenue	To cover the cost of service provision

The distinction between each definition is important as this information can better equip policy makers to decide where to direct efforts to improve environmental outcomes through the tax system.

## Gathering Data on Environmental Taxes and Fees in Canada

A calculation of the total tax and fee revenue collected by federal and provincial governments in Canada is difficult due primarily to the challenge of identifying environmental taxes and fees as separate from other taxes and fees in the economy.

Compounding the definitional challenges described previously, Canada simply does not have many examples of environmentally motivated taxes at the federal and provincial levels. More importantly, it is often not clear what the goal of the tax or fee may be which makes the categorization of environmental taxes and fees challenging.

While federal and provincial budget documents report revenues from various instruments, often these documents do not provide the detail required to identify the revenues from each type of tax/fee. Therefore, obtaining data on specific financial instruments in each province is an onerous task. This task requires examining regulatory statements to determine what the objective of the instrument may be. However, even with a clear objective of a tax/fee, obtaining revenue data for individual instruments is difficult.

This paper identifies and calculates environmental taxes and environmental fees in Canada by consulting three primary sources:

- the OECD/EEA database of environmental taxes,<sup>54</sup>
- Federal and provincial budget documents and Ministry of Environment websites, and
- The Environment Canada Extended Producer Responsibility and Product Stewardship inventory of Programs.<sup>55</sup>

Data were collected for the year 2012-2013. Two indicators specific to each tax, the tax base and the tax objective, are also significant in this assessment. The identification of the tax base allows for a systematic categorization that separates environmental taxes from general taxes, while the identification of the tax's objective will identify the instrument as either a tax or a fee.

The instrument base is identified by following the categorization of environmental taxes from Eurostat. Given that the EU actively reports on the four categories of environmental taxes (energy, transportation, natural resources and pollution) and that Canada collects information within these categories to some extent, this paper presents taxation/fee data in these categories.

Federal or provincial governments set most environmental taxes or fees in Canada. While some regional or municipal taxes or fees certainly fall into the category of environmental taxes or fees, they are not included in this paper due to data collection difficulties.

## The Value of Environmentally Motivated Taxes in Canada

As environmentally related taxes do not consider the potential environmental benefit from their implementation, environmentally motivated taxes are a more accurate measurement of the rate of environmental taxation in Canada. Table 5 below represents an approximation of the values of environmentally motivated environmental taxes in Canada. Based on the definitions used in this paper, an estimated value of these environmental taxes in 2012-2013 is \$1.4 billion (of which by far the largest component is the BC carbon tax).

Table 5: Environmentally Motivated Taxes in Canada, 2012-2013

Tax Name	Jurisdiction	Category (Base)	Goal	Objective of Revenues	Total Annual Revenue (2012-2013, Millions)
BC Carbon Tax	BC	Energy	To encourage a reduction in fossil fuel use by pricing most carbon emissions	To offset the environmental and social damage caused by carbon emissions; revenues are recycled for revenue neutrality	\$1,120
Fossil Fuel levy	QC	Energy	To raise revenue for combating climate change by pricing some fuel and fossil fuels	To fund Climate Change Action Plan programs to combat climate change	\$200
Climate Change and Emissions Management Fund	AB	Energy	To raise revenue for emissions reduction projects by pricing some carbon emissions	To contribute to the Climate Change and Emissions Management Fund that awards money to innovative projects that reduce greenhouse gas emissions	\$94
Innovative Clean Energy (ICE) Fund Tax	BC	Energy	To raise revenue for clean energy projects by pricing some fossil fuels	To fund the provincial ICE Fund which encourages the development of new sources of clean energy and technologies	\$15
Emissions taxes on coal	MB	Energy	To raise revenue for alternative energy projects by pricing emissions from coal	To fund the Biomass Energy Support Program which supports the transition to the processing and use of biomass for heating in place of coal	\$0.4
<b>Total: \$1,429</b>					

## The Value of Environmentally Related Taxes in Canada

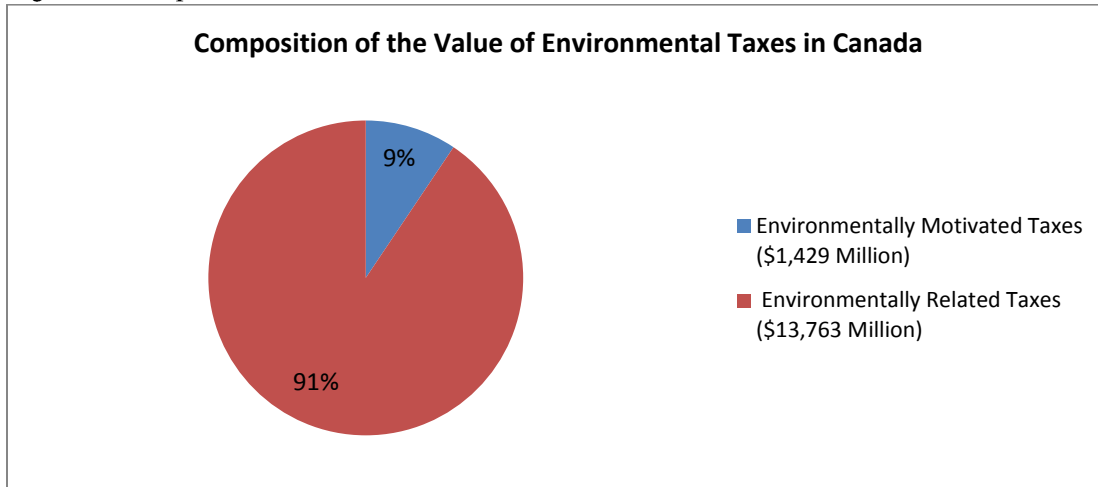
Using available data, this paper estimates the value of environmentally related taxes-based on the definition proposed above-to be approximately \$13 billion. Table 6 shows the largest environmentally related taxes by value (the entire list of environmentally related taxes is found in the appendix).

Table 6: Largest Environmentally Related Taxes in Canada, 2012-2013

Tax Name	Jurisdiction	Category (Base)	Goal	Objective	Total Annual Revenue (2012-2013)
Gas Tax	Federal	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$4,227
Fuel taxes	ON	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$3,100
Fuel taxes	QC	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$2,150
Aviation gas and diesel tax	Federal	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$1,153
Motor vehicle license	QC	Transportation	Imposes a fee on driving, thus representing an indirect impact on the environment	General government revenues	\$ 1,092

When comparing the value of environmentally related taxes to the value for environmentally motivated taxes, it appears that environmentally related taxes form the bulk of the total value of environmental taxes in Canada (Figure 2).

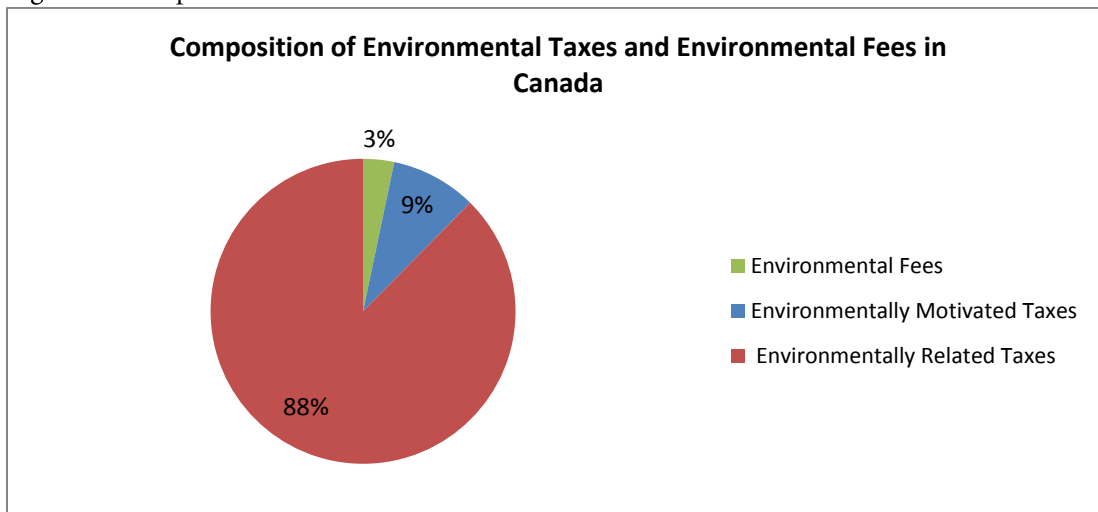
Figure 2: Composition of Environmental Taxes in Canada



### The Value of Environmental Fees in Canada

The values for environmental fees are easier to calculate, as this information is readily available in budget documents. When comparing the value of environmental fees to environmental taxes (including environmentally motivated and environmentally related taxes) it appears that the total value of environmental fees is considerably smaller (Figure 3). Using the definitions in this paper, the value of environmental fees is estimated to be approximately \$516 million in 2012-2013.

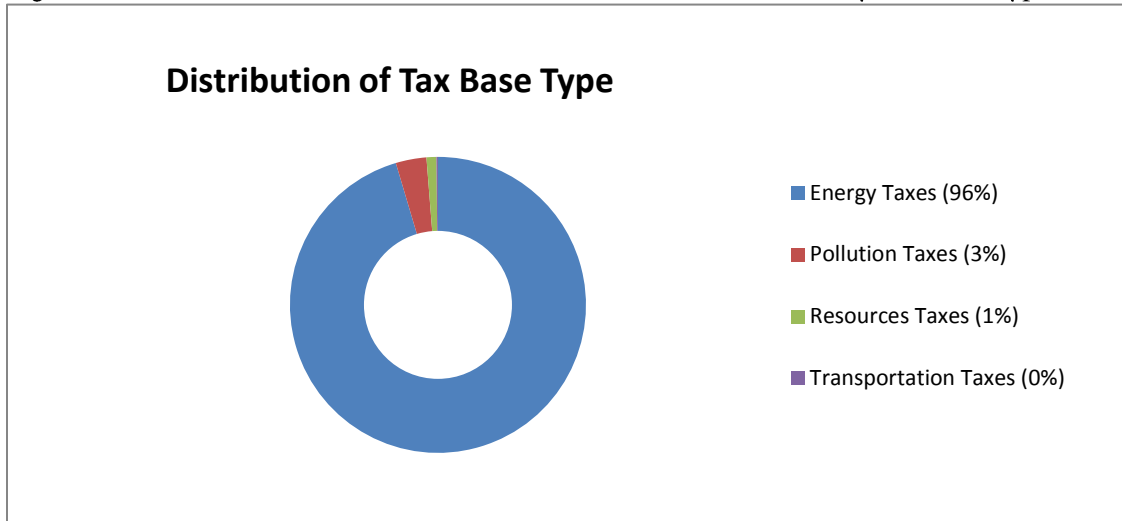
Figure 3: Composition of Environmental Taxes and Fees in Canada



### Analysis of Tax and Fee Bases

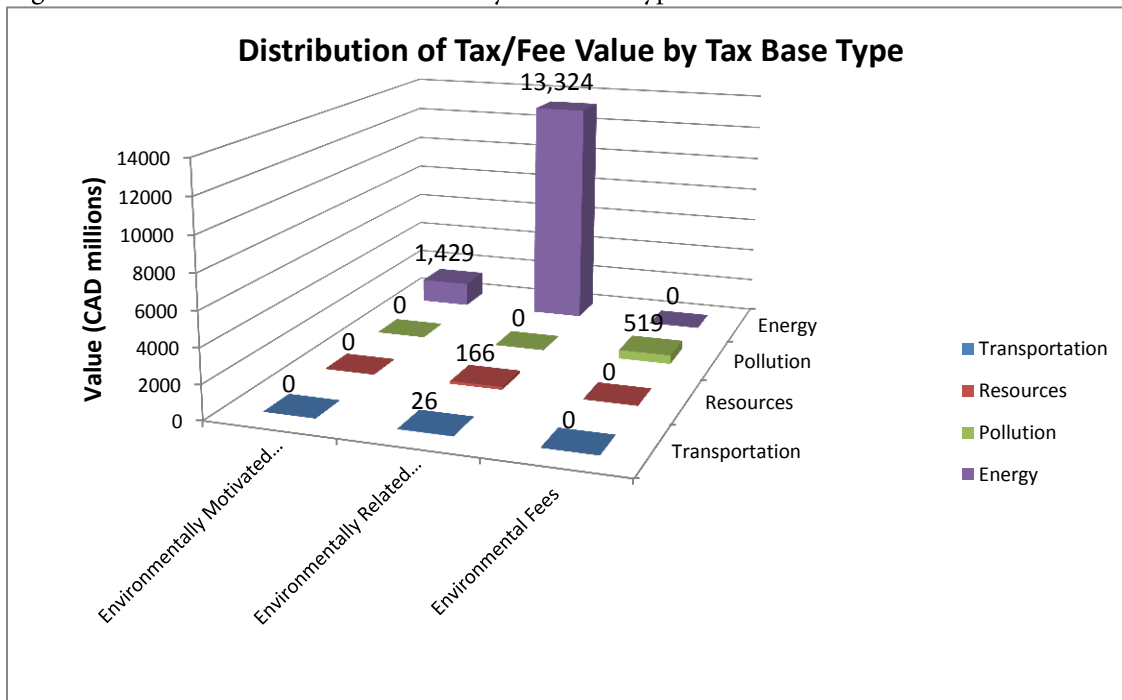
Figure 4 shows that the majority of the value of environmental taxes and fees in Canada is from taxes on energy. The values of other bases (pollution, resources and transportation) make up a very small portion of the total tax base.

Figure 4: Distribution of Total Value of Environmental Taxes and Fees by Tax Base Type



The distribution of the type of tax or fee base is varied between categories. For example, the values of the environmental fees category are composed entirely of fees on a base of pollution, while the value of the environmentally motivated tax category is composed entirely of a base on energy. Only the environmentally related tax category is composed of a variety of taxes bases, including energy, transportation and resources tax bases (Figure 5).

Figure 5: Distribution of Tax/Fee Value by Tax Base Type





## Summary of the Value of Environmentally Motivated Taxes, Environmentally Related Taxes and Environmental Fees in Canada

Given the available values for environmentally motivated taxes, environmental fees and some environmentally related taxes, a rough calculation estimates the total value of environmental taxes and environmental fees to be over \$15.7 billion per year (Table 7).

Table 7: Estimated Value of Environmental Taxes and Fees in Canada, 2012-2013

Estimated Value of Environmental Taxes and Fees in Canada (Million \$)	
Environmentally Related Taxes	\$13,763
Environmentally Motivated Taxes	\$1,429
Environmental Fees	\$516
<b>Total Value of Taxes and Fees</b>	<b>\$15,708*</b>

\*A full list of all identified environmental taxes and fees and their values (if available) are reported in the Appendix.

It is important to highlight four caveats regarding the numbers presented in this paper.

First, given the many definitional, methodological, and data collection issues raised throughout the paper, it is assumed that the total value of environmental taxes in Canada is greater than calculated in this paper. The total value in this paper represents only a current snapshot of environmental taxation in Canada. The value of environmental taxes in Canada will likely change over time to reflect evolving policy priorities that may affect the collection of environmental tax revenues.

Second, while the value of Canadian environmental taxes and fees is considerably smaller than the rate of environmental taxation in other jurisdictions, a high ratio of environmental tax revenue to total taxation does not necessarily indicate a high priority being attributed to environmental protection.<sup>56</sup> This is because environmental tax revenues are a product of both the tax rate and the level of pollution emitted. Higher environmental tax revenues can, therefore, result from either increased awareness of the value of the environment (i.e., more or higher taxes), or from the growth in emissions that are taxed.<sup>57</sup> The same is true for the values of environmental fees, as they are only collected to cover the costs of recycling and are not necessarily correlated with reducing environmental damage.

Third, while environmentally motivated taxes (and particularly Pigouvian taxes) are a more accurate measure of the rate of environmental taxation in Canada since they consider the potential environmental benefit from their implementation, the existence of environmentally motivated taxes is not necessarily an indication of improved environmental outcomes. Similar to the point above, increasing the number or amount of environmentally motivated taxes in Canada may not correlate with a greater environmental benefit.

Finally, environmentally related taxes that have a positive economic benefit (such as those that provide government revenues or recycle revenues) may not be defined by a specific environmental benefit, but they are also not defined by environmental damage either. Such revenue raising taxes then may be

beneficial from a government's economic perspective, which does not necessarily mean that the tax is detrimental to the environment.

These caveats highlight many unanswered questions regarding the identification, categorization, and calculation of environmental taxes. In particular, understanding the relationship between environmental taxes and their impact on environmental outcomes would require further analysis. These questions, while important, are beyond the scope of this paper. Determining the impact of environmental taxes and fees on both the economy and the environment requires further research.

## Conclusion

The application of environmental taxes and fees can be a useful policy response to addressing environmental externalities. However, without a consistent methodology for calculating and defining these instruments, an assessment of the current use of environmental taxes and fees is difficult in Canada.

This paper provides a rough estimate of the value of environmental taxes and fees in Canada. The estimate is a baseline measure of the extent and value of environmental taxes and fees, and represents a first step towards understanding how the design of environmental taxes can further environmental objectives in Canada.

However, this paper highlights that further study should be conducted to measure the extent of environmental taxation and the application of environmental fees in Canada. This will require obtaining revenue information of existing federal and provincial taxes or fees, categorizing this information, and providing recommendations for further improvement for tracking this data over time. Such data would highlight how environmental tax and fee rates and their associated tax bases evolve over time to reflect changing public policy concerns. Further study into the design and objectives of individual environmental taxes and fees would also be useful for policy makers to understand the impact of such fiscal instruments. Understanding the effectiveness of environmental taxes and fees to incent positive environmental behaviour would be valuable for policy makers to ensure that the design of environmental pricing policies is consistent with environmental goals.

## Appendix

### Value of Environmentally Motivated Taxes, Environmentally Related Taxes and Environmental Fees in Canada

It should be noted that this list is preliminary and is not meant to be comprehensive. The values for some instruments are very difficult to obtain from budget documents or other policy documents. Where data are available, the intention of the tax or fee has been noted. However, in many cases, it is not possible to determine the objective behind the tax or fee, and some assumptions have been made. For example, it is assumed that the goal and objective of environmental fees are synonymous (i.e. to fund recycling programs with the revenue generated from eco-fees and other charges).

The information provided below is based on best-available data. In some cases, the values for existing taxes or fees are not provided because they are not available. A value is provided where possible.

#### Value of Environmentally Motivated Taxes, Environmentally Related Taxes and Environmental Fees in Canada, 2012-2013

ENVIRONMENTAL TAXES					
ENVIRONMENTALLY MOTIVATED TAXES					
Tax/fee name	Jurisdiction	Category	Goal	Objective of Revenues	Total Annual Revenue
BC Carbon Tax	BC	Energy	To encourage a reduction in fossil fuel use by pricing most carbon emissions	To offset the environmental and social damage caused by carbon emissions; revenues are recycled for revenue neutrality	\$1,120,000,000
Climate Change and Emissions Management Fund	AB	Energy	To raise revenue for emissions reduction projects by pricing some carbon emissions	To contribute to the Climate Change and Emissions Management Fund that awards money to innovative projects that reduce greenhouse gas emissions	\$94,000,000
Emissions Tax on Coal	MB	Energy	To raise revenue for alternative energy projects by pricing emissions from coal	To fund the Biomass Energy Support Program which supports the transition to the processing and use of biomass for heating in place of coal	\$400,000
Fossil Fuel levy	QC	Energy	To raise revenue for combating climate change by pricing some fuel and fossil fuels	To fund Climate Change Action Plan programs to combat climate change	\$200,000,000

Innovative Clean Energy (ICE) Fund Tax	BC	Energy	To raise revenue for clean energy projects by pricing some fossil fuels	To fund the provincial ICE Fund which encourages the development of new sources of clean energy and technologies	\$14,947,000
<b>Total Environmentally Motivated Taxes</b>					<b>\$1,429,347,000</b>
<b>ENVIRONMENTALLY RELATED TAXES</b>					
<b>Tax/fee name</b>	<b>Jurisdiction</b>	<b>Category</b>	<b>Goal</b>	<b>Objective of Revenues</b>	<b>Total Annual Revenue</b>
Air Conditioner Tax ( in vehicles)	Federal	Energy	Established to deter the wasteful consumption of energy through the taxation on vehicle air conditioners that have an indirect negative impact on the environment (through increased use of fuel)	General government revenues	\$157,647,329
Aviation gas and diesel tax	Federal	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$1,153,008,000
Fee on animal trapping	AB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Freehold Mineral Tax	AB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Freehold Production Tax	BC	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Fuel taxes	MB	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$240,600,000
Fuel taxes	NB	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$246,599,500
Fuel taxes	NFL	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$168,566,000
Fuel taxes	NS	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$250,186,000
Fuel taxes	NU	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$3,100,000

Fuel taxes	NWT	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$18,851,000
Fuel taxes	ON	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$3,100,000,000
Fuel taxes	PEI	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$41,787,000
Fuel taxes	QC	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$2,150,000,000
Fuel taxes	SK	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$495,955,000
Fuel taxes	YT	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$8,809,000
Fuel taxes	AB	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$897,000,000
Fuel taxes	BC	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$472,000,000
Gas Tax	Federal	Energy	Imposes a tax on emissions indirectly and does not have a specific environmental objective	General government revenues	\$4,227,505,000
Green Levy	Federal	Transportation	Imposes a tax on pollution indirectly (by putting a price on fuel inefficient vehicles)	General government revenues	\$22,286,577
Hunting licenses	AB; BC	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Inland Fish and Game Licenses	NFL	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Logging Tax	BC	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	\$16,000,000
Logging tax/royalties	AB; NB; NFL; QC	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Metallic Minerals Tax	NB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the	General government revenues	NA

			environment		
Mineral Land Tax	BC	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Mineral/Mining Tax	BC; AB; MB; NB; NFL; QC; ON; SK; YT; NWT; NU	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Mining and Mineral Rights Tax	NFL	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Mining Claim Lease Tax	MB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Mining Permits and Fees	NFL	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Mining Tax	BC	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	\$150,000,000
Motor vehicle license	All	Transportation	Imposes a fee on driving, thus representing an indirect impact on the environment	General government revenues	NA
Motor vehicle license	QC	Transportation	Imposes a fee on driving, thus representing an indirect impact on the environment	General government revenues	\$ 1,092,000,000
Motor vehicle license	YT	Transportation	Imposes a fee on driving, thus representing an indirect impact on the environment	General government revenues	\$3,591,000
Oil and Gas Commission Levy	BC	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Oil and Gas Levies/Rents/Royalties	BC; AB; MB; SK; NS; YT	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Oil and gas, land royalties	YT	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	\$265,000
Oil and Natural Gas Tax	MB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Petroleum royalties	NS	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA

Royalties	AB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Royalties and Stumpage on Timber	NB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Timber dues	AB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Water fees	BC; MB; NFL; SK	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Water power licensing	MB	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
Water power rentals	NFL	Resources	Imposes a tax on resource use, thus representing an indirect impact on the environment	General government revenues	NA
<b>Total Environmentally related taxes</b>					<b>\$13,763,118,406</b>
<b>TOTAL ENVIRONMENTAL TAXES</b>					<b>\$15,192,465,406</b>
<b>ENVIRONMENTAL FEES</b>					
<b>Tax/fee name</b>	<b>Jurisdiction</b>	<b>Category</b>	<b>Goal</b>	<b>Objective of Revenues</b>	<b>Total Annual Revenue</b>
Beer bottle recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$59,709,307
Beer bottle recycling program	ON	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$3,242,000
Beverage container recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$52,600,000
Beverage container recycling program	AB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$2,332,312
Beverage container recycling program	SK	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$438,655
Beverage container recycling program	MB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$7,688,786
Beverage container recycling program	QC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$5,050,500.00
Beverage container recycling program	NS	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$37,874,628
Beverage container recycling program	NFL	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$24,312,183
Beverage container recycling program	PEI	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$6,234,548
Beverage container recycling program	YT	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$2,645,199
Beverage container recycling program	NWT	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$5,335,763

Electronics recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$16,644,653
Electronics recycling program	AB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$12,157,711
Electronics recycling program	MB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$3,388,486
Electronics recycling program	ON	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$58,282,533
Electronics recycling program	QC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$12,974,079
Electronics recycling program	NS	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$3,412,346
Electronics recycling program	PEI	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$446,427
Environmental Protection Tax	MB	Pollution	Revenues to Sustainable Innovation Fund, then distributed to municipalities to fund recycling program	Revenues used to fund recycling program	\$2,193,000
Household hazardous waste recycling program	MB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$175,367
Household hazardous waste recycling program	NFL	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$36,872
Lightbulb recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$2,577,322
Lightbulb recycling program	MB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$124,828
Lightbulb recycling program	QC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$1,073,683
Outdoor Power equipment recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$230,235
Paint recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$5,259,933
Paint recycling program	AB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$4,508,938
Paint recycling program	SK	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$992,000
Paint recycling program	MB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$587,232
Paint recycling program	NB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$124,632
Paint recycling program	NFL	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$873,218
Small electrical appliance recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$11,284,559
Smoke alarm recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$378,054
Tire recycling program	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$17,566,546
Tire recycling program	AB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$24,830,397
Tire recycling program	SK	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$7,909,788



Tire recycling program	MB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$5,764,017
Tire recycling program	ON	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$67,908,202
Tire recycling program	NS	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$3,604,676
Tire recycling program	NB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$4,190,306
Tire recycling program	PEI	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$833,176
Tire recycling program	YT	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$256,787
Used oil recycling fee	BC	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$13,455,029
Used oil recycling fee	AB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$16,490,477
Used oil recycling fee	SK	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$4,930,409
Used oil recycling fee	MB	Pollution	Revenues used to fund recycling program	Revenues used to fund recycling program	\$4,040,991
<b>Total Environmental Fees</b>					<b>\$516,279,466</b>
<b>Grand Total (Taxes and Fees)</b>					<b>\$15,708,744,872</b>

## References

- <sup>1</sup> Environment Canada. (2013). *Human Health Care Costs*. Retrieved from <https://www.ec.gc.ca/air/default.asp?lang=En&n=085A22B0-1>
- <sup>2</sup> Canadian Medical Association. (2008). *National Illness Cost of Air Pollution*. Retrieved from [http://www.cma.ca/multimedia/CMA/Content\\_Images/Inside\\_cma/Office\\_Public\\_Health/ICAP/CMAICAPTec\\_e-29aug.pdf](http://www.cma.ca/multimedia/CMA/Content_Images/Inside_cma/Office_Public_Health/ICAP/CMAICAPTec_e-29aug.pdf)
- <sup>3</sup> Smith, R. (2014). *Pollution in Canada: A Review of the Literature and Initial Estimate of Costs*. Retrieved from <http://www.sustainableprosperity.ca/article3899>
- <sup>4</sup> European Commission, Food and Agriculture Organization, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations, World Bank. (2012). *System of Environmental-Economic Accounting: Central Framework*. Retrieved from [http://unstats.un.org/unsd/envaccounting/White\\_cover.pdf](http://unstats.un.org/unsd/envaccounting/White_cover.pdf)
- <sup>5</sup> Until recently, the collection and reporting of data on environmental taxation by member states was voluntary. However, a new directive (Regulation 691/2011) from Eurostat requires all EU member states to compile data on environmental taxes, and as of September 2013, annual reporting is now obligatory.
- <sup>6</sup> Eurostat. (2013a). *Environmental Taxes – A Statistical Guide 2013*. Retrieved from [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-GQ-13-005/EN/KS-GQ-13-005-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-GQ-13-005/EN/KS-GQ-13-005-EN.PDF)
- <sup>7</sup> *ibid*
- <sup>8</sup> OECD. (2011). *Environmental Taxation: A Guide for Policy Makers*. Retrieved from <http://www.oecd.org/environment/tools-evaluation/48164926.pdf>
- <sup>9</sup> *ibid*
- <sup>10</sup> Bosquet, B. (2000). Environmental tax reform: does it work? A survey of the empirical evidence. *Ecological Economics*, 34 (1), pp. 19-3.; Morley, B. (2012). Empirical evidence on the effectiveness of environmental taxes. *Applied Economic Letters*, 19 (18), pp. 1817-1820.
- <sup>11</sup> OECD. (2010). *Taxation, Innovation and the Environment*. Retrieved from <http://www.oecd.org/greengrowth/tools-evaluation/46177075.pdf>
- <sup>12</sup> Canada's Ecofiscal Commission seeks to identify and promote practical fiscal solutions for Canada that spark the innovation required for increased economic and environmental prosperity.
- <sup>13</sup> Canadians for Clean Prosperity is building public and political support for polluter responsibility across Canada.
- <sup>14</sup> Daly, H. (2010). From a failed-growth economy to a steady-state economy. *Solutions*, 1, p. 37-43. Retrieved from <http://www.thesolutionsjournal.com/node/556>
- <sup>15</sup> Field, B. & Olewiler, N. (2005). *Environmental Economics* (2nd Edition). Toronto: McGraw-Hill Ryerson.
- <sup>16</sup> Eurostat, 2013a
- <sup>17</sup> Preiss, P. (2012). 'Externality research', in J.E. Milne and M.S. Andersen (Eds.), *Handbook of Research on Environmental Taxation*, Cheltenham, UK and Northampton, MA: Edward Elgar, pp. 139–57.
- <sup>18</sup> *ibid*
- <sup>19</sup> OECD, 2010
- <sup>20</sup> Joseph, S.A. (2014). 'Environmental taxes – definitional analysis: behavioural change or revenue raising', in Larry Kreiser, Soocheol Lee, Kazuhiro Ueta, Janet E. Milne and Hope Ashiabor (Eds.), *Environmental Taxation and Green Fiscal Reform: Theory and Impact*, Cheltenham, UK and Northampton, MA: Edward Elgar, pp. 187–201.
- <sup>21</sup> Milne, J.E. (2014). 'Environmental taxes and fees: wrestling with theory', in Larry Kreiser, Soocheol Lee, Kazuhiro Ueta, Janet E. Milne and Hope Ashiabor (Eds.), *Environmental Taxation and Green Fiscal Reform: Theory and Impact*, Cheltenham, UK and Northampton, MA: Edward Elgar, pp.-23.
- <sup>22</sup> For more information, see [http://www.environment.gov.au/system/files/pages/59388d77-a9b5-4e4c-87b7-d732baf7c45b/files/factsheet-how-repeal-will-work\\_2.pdf](http://www.environment.gov.au/system/files/pages/59388d77-a9b5-4e4c-87b7-d732baf7c45b/files/factsheet-how-repeal-will-work_2.pdf)
- <sup>23</sup> For more information, see [http://www.huffingtonpost.ca/2013/05/01/bc-carbon-tax\\_n\\_3196686.html](http://www.huffingtonpost.ca/2013/05/01/bc-carbon-tax_n_3196686.html)

- <sup>24</sup> European Commission, Food and Agriculture Organization, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations, World Bank, 2012
- <sup>25</sup> Statistics Canada, personal communication. February 11, 2014.
- <sup>26</sup> Statistics Canada. (2013). *Measuring ecosystem goods and services*. Retrieved from <http://www.statcan.gc.ca/daily-quotidien/131129/dq131129b-eng.pdf>
- <sup>27</sup> See *Canada's natural resource wealth, 2012*, available at <http://www.statcan.gc.ca/daily-quotidien/131206/dq131206c-eng.htm>
- <sup>28</sup> Van Rompaey, C. (2014). *Implementing Comprehensive Revisions in the Canadian SNA: Challenges and Future Directions*. Retrieved from <http://www.iariw.org/papers/2014/RompaeyPaper.pdf>
- <sup>29</sup> For information on natural capital accounting in Canada, see Sustainable Prosperity's policy brief: *The Importance of Natural Capital to Canada's Economy*. Available at <http://www.sustainableprosperity.ca/article3869>
- <sup>30</sup> Others have classified taxes into other categories. For example Maatta (Maata, K. *Environmental Taxes: An Introductory Analysis*. (2006). Cheltenham, UK: Edward Elgar publishing Limited) categorizes taxes into three categories: incentive taxes, finance taxes and fiscal taxes. Incentive environmental taxes are taxes created to change the behaviour of polluters; tax levels are set by a specified pollution reduction goal or aim to reduce the use of natural resources. Financing taxes are taxes whose primary purpose is to raise revenue for environmental protection measures. The level of the tax is set to the required funds for the intended protection activity. Fiscal taxes are also aimed at generating revenue but may also have a positive impact on the environment. Fiscal taxes are different from incentive taxes because fiscal taxes are not motivated by environmental concerns. For example, a road toll may indirectly address air pollution, but pollution reduction is not the primary goal of the tax.
- <sup>31</sup> Taxes on oil and gas extraction are discussed in more detail by the European Commission, specifically the report *Accounts for subsoil assets— Results of pilot studies in European countries*, available at [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-31-00-853/EN/KS-31-00-853-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-31-00-853/EN/KS-31-00-853-EN.PDF). In particular, see section 5.2 and Annex 3 (which uses an example of the Netherlands).
- <sup>32</sup> Eurostat. (2013b). *Taxation Trends in the European Union: Data Trends for the EU Member States, Iceland and Norway*. Retrieved from [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/gen\\_info/economic\\_analysis/tax\\_structures/2013/report.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_structures/2013/report.pdf)
- <sup>33</sup> Eurostat, 2013a
- <sup>34</sup> Taylor, A., Hornung, R. & Cairns, S. (2003). *Environmental Tax Shifting in Canada: Theory and Application*. Pembina Institute. Calgary. Retrieved from <http://www.pembina.org/pub/155>
- <sup>35</sup> Social contributions payments are made by employers for the benefit of their employees for social security funds and privately funded schemes.
- <sup>36</sup> Author's calculations using data from the OECD/EEA database, available at: [http://www2.oecd.org/ecoinst/queries/Query\\_2.aspx?QryCtx=2](http://www2.oecd.org/ecoinst/queries/Query_2.aspx?QryCtx=2)
- <sup>37</sup> European Commission, Food and Agriculture Organization, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations, World Bank, 2012
- <sup>38</sup> See Bruvoll, A. (2009). *On the measurement of environmental taxes*. Discussion Papers No. 599, December 2009. Statistics Norway, Research Department. Retrieved from <http://www.ssb.no/a/publikasjoner/pdf/DP/dp599.pdf>
- <sup>39</sup> Joseph, 2014
- <sup>40</sup> *ibid*
- <sup>41</sup> OECD. (2004). *Glossary of Statistical Terms*. Retrieved from <http://stats.oecd.org/glossary/detail.asp?ID=6270>
- <sup>42</sup> Bruvoll, 2009
- <sup>43</sup> Soares, C. (2011). *The design features of environmental taxes*. Retrieved from [http://etheses.lse.ac.uk/368/1/Dias%20Soares\\_The%20design%20features%20of%20environmental%20taxes.pdf](http://etheses.lse.ac.uk/368/1/Dias%20Soares_The%20design%20features%20of%20environmental%20taxes.pdf)
- <sup>44</sup> Eurostat, 2013b

<sup>45</sup> Næss, E. M. & Smith, T. (2009). *Environmentally related taxes in Norway*. Totals and divided by industry, Documents 5, Statistics Norway.

<sup>46</sup> Mintz, J. & Olewiler, N. (2008). *A Simple Approach for Bettering the Environment and the Economy: Restructuring the Federal Fuel Excise Tax*. Retrieved from <http://www.sustainableprosperity.ca/dl447&display>

<sup>47</sup> It should be noted that the categories above may not be discreet categories. For example, a hypothetical instrument such a hybrid cap and trade and carbon tax system could be categorized as both an environmentally motivated tax and an emissions trading system (categorized here as “other environmental pricing tools”).

<sup>48</sup> In this context, pollution refers to actions or products that have negative impacts on the environment, and is distinct from the tax base with the same name. In theory, environmental taxes can be applied to any tax base identified as environmental.

<sup>49</sup> *Order Declaring that the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations do not apply in Nova Scotia*. (2014). Canada Gazette, 148(26). Retrieved from <http://www.gazette.gc.ca/rp-pr/p1/2014/2014-06-28/html/reg3-eng.php>

<sup>50</sup> Elgie, S. & McClay, J. (2013). *BC’S carbon tax shift after five years: Results: An Environmental (and Economic) Success Story*. Retrieved from <http://www.sustainableprosperity.ca/dl1026&display>

<sup>51</sup> Beaty, R., Lipsey, R., & Elgie, S. (2014, July 9). The shocking truth about B.C.’s carbon tax: It works. *The Globe and Mail*. Retrieved from <http://www.theglobeandmail.com/globe-debate/the-insidious-truth-about-bcs-carbon-tax-it-works/article19512237/>

<sup>52</sup> The fees included in the environmentally related tax category are distinct from the fees in the environmental fee category. Environmental fees are strictly defined as payments in exchange for a service. In contrast, fees in the environmentally related tax category are collected to raise general government revenue.

<sup>53</sup> The federal gas tax was introduced as a way to increase revenues and reduce reliance on imported oil.

<sup>54</sup> OECD/EEA database, available at: <http://www2.oecd.org/eoicst/queries/index.htm>

<sup>55</sup> The Environment Canada Extended Producer Responsibility and Product Stewardship Inventory of Programs available at <http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=9FB94989-1&xsl=genericsearchrenderer%2Cresult&searchoffset=1&searchdisplaycount=75&databasematch=WSGlobal&filtername=searchname&formtype=gdd-mw&region=&product=&submit=Search#resulttop>

<sup>56</sup> Eurostat, 2013b

<sup>57</sup> Bruvoll, 2009