



# Public Cash for Oil and Gas:

## Mapping federal fiscal support for fossil fuels



Yanick Touchette  
Philip Gass

September 2018

© 2018 International Institute for Sustainable Development  
Published by the International Institute for Sustainable Development

## **International Institute for Sustainable Development**

The International Institute for Sustainable Development (IISD) is an independent think tank championing sustainable solutions to 21st-century problems. Our mission is to promote human development and environmental sustainability. We do this through research, analysis and knowledge products that support sound policymaking. Our big-picture view allows us to address the root causes of some of the greatest challenges facing our planet today: ecological destruction, social exclusion, unfair laws and economic rules, a changing climate. IISD's staff of over 120 people, plus over 50 associates and 100 consultants, come from across the globe and from many disciplines. Our work affects lives in nearly 100 countries. Part scientist, part strategist—IISD delivers the knowledge to act.

IISD is registered as a charitable organization in Canada and has 501(c)(3) status in the United States. IISD receives core operating support from the Province of Manitoba and project funding from numerous governments inside and outside Canada, United Nations agencies, foundations, the private sector and individuals.

### **Public Cash for Oil and Gas: Mapping federal fiscal support for fossil fuels**

September 2018

Written by Yanick Touchette and Philip Gass

### **Head Office**

111 Lombard Avenue, Suite 325  
Winnipeg, Manitoba  
Canada R3B 0T4

**Tel:** +1 (204) 958-7700

**Website:** [www.iisd.org](http://www.iisd.org)

**Twitter:** [@IISD\\_news](https://twitter.com/IISD_news)



## Executive Summary

Despite some reforms in recent years, Canada is still the largest provider of subsidies to oil and gas production in the G7 per unit of GDP (Whitley, et al., 2018). This briefing note looks to shed some light on the remaining subsidies to oil and gas production in Canada and focuses on two specific types of subsidies: direct transfers and fiscal exemptions made available to fossil fuel extraction and production. This work updates past IISD estimates of fossil fuel subsidies and highlights the reforms that have been taken and where more work is needed.

The briefing note's scope is also limited to the production of fossil fuels; policies that subsidize or incentivize the consumption of fossil fuels in Canada are generally found at the provincial and territorial levels, as opposed to the federal level.

At the federal level, policies exist primarily to incentivize the fossil fuel industry to extract oil, gas and coal, or to make this extraction less greenhouse gas (GHG)-intensive. This briefing provides an inventory of several Income Tax Act provisions and income tax regulations that allow fossil fuel companies to deduct certain expenses from their income. These mechanisms are listed in Table ES1. We also list separately several programs that are designed to support the fossil fuel industry's activities by promoting a reduction in the intensity of their emissions rather than promoting carbon-neutral sources of energy.

Natural Resources Canada (NRCan) administers specific programs that support innovation in the oil and gas industry, from enhanced extraction processes to reducing GHG emissions at the extraction site. The programs originate mostly from components of the federal government's Energy Innovation Program, namely the Clean Energy Technology component's Carbon Capture, Use and Storage Stream, and the Oil and Gas Clean Technology component (NRCan, 2018a).

Besides these supports coming directly from government, Sustainable Development Technology Canada (SDTC), an arm's length government agency, also supports innovation in the fossil fuel industry, mainly through SDTC's Priority Technology Areas, one of which is unconventional oil and gas projects (SDTC, 2017a; SDTC, 2018).

The rationale for including these direct transfers and other subsidy mechanisms is that, even though they may reduce GHG intensity or other environmental impacts in some cases (for example, funding for efficiency), they are still ultimately fiscal supports for the oil and gas industry provided through public revenues. Internalization of external costs will drive industry towards higher efficiencies and obviate the need for at least some of the subsidies currently designated for efficiency. There does not appear to be a market failure in terms of information or anything else, and therefore these measures should be paid for by market participants rather than the government. Government taking on costs that should be borne by industry provides an incentive for industry to increase activities as it reduces industry's costs.

In terms of efficiency, the measures to support efficiency may contribute to positive outcomes for climate change and sustainability; however, they are fossil fuel subsidies by definition, and so are included in this inventory.

The Department of Finance (Finance Canada) also administers a number of tax provisions that are specific to the oil, gas and mining sectors (Office of the Auditor General, 2017) and that ultimately translate into the oil and gas industry reducing the share of income tax that it transfers to the federal government. Together these subsidies total several hundred million dollars over 2016–2018 based just on those that can be immediately quantified. Additionally, there are many more subsidies that cannot be quantified due to a lack of available data but could drive this figure much higher. The inability to quantify these subsidies underscores the need for greater transparency and policy coherence from the federal government as it advances its stated commitment to reduce GHG emissions.

These estimates also do not include figures regarding the recent purchase of Kinder Morgan's Trans Mountain Pipeline by the federal government. There is strong potential that there will end up being a subsidy involved in the purchase and resale due to statements regarding indemnification and the terms of the sale. The scale of the subsidy will not be known at least until (and if) a private sector buyer is identified, and the terms of sale are released.

The figure for subsidies in 2016–2018 is significantly lower than previous IISD studies (Touchette, 2015). Fundamentally there are three reasons for this:

### 1. Federal progress on subsidy reform

Canada has reformed several policies since 2011, mainly tax provisions that were both specific and preferential to the fossil fuel industry. The following tax provisions were either phased out completely or reformed. A reform usually indicates that the deduction rates for certain expenses were lowered:

- Oil sands property expenses that were treated as Canadian development expenses (CDEs) were reformed to be treated the same as all other Canadian oil and gas property expenses (COGPEs) (2011)
- Pre-production expenses of new oil sands and oil shale mines that were treated as Canadian exploration expenses (CEEs) were reformed to be treated the same as all other CDEs (2011–2016)
- The oil and gas and mining components of the Atlantic Investment Tax Credit were phased out completely (2012–2017)
- Successful CEEs will be treated as CDEs for tax purposes (for expenses incurred after 2018)
- The reclassification of a portion of CDEs into CEEs for small oil and gas corporations when renounced to flow-through share investors was reformed (for expenses incurred after 2018).

### 2. The impact of oil price fluctuations on the values of deductions.

In 2010 the International Institute for Sustainable Development (IISD) designed a methodology to estimate **the government revenue foregone** under some tax provisions accessible to fossil fuel extraction activities, including the CEE deduction claims and the CDE deduction claims (Sawyer & Stiebert, 2010, Annex 2). This methodology was replicated several times, most recently in 2017 (IISD, 2017). At the time, when added to a number of other policies, IISD found approximately CAD 1.6 billion in subsidies at the federal level going to the fossil fuel industry on an annual average for fiscal years (FYs) 2013 and 2014.

However, some of these estimates are highly sensitive to fluctuations in the oil price. As the average base price of the Western Canadian Select (WCS) barrel of crude oil declined between 2014 and 2016, this likely resulted in the oil and gas industry reporting losses of approximately CAD 54 billion and CAD 25 billion in 2015 and 2016, respectively (Statistics Canada, 2018).<sup>1</sup>

Deductions and other subsidies tend to appear high during the period of high oil prices, such as for FYs 2013 and 2014. The same subsidies appear to be zero or low when the oil price is low in individual years. As the average base price of the WCS barrel picked up again in 2017, foregone government revenue under CEE and CDE provisions could potentially increase, as could deductions that oil and gas companies claim. In short, large subsidy figures could easily re-emerge in periods of high oil prices.

---

<sup>1</sup> Based on "net difference, natural resources expenses."

### **3. How companies use tax deductions**

There are four tax provisions that are worthy of scrutiny in this brief that share a common feature: they are all expenses deductible from income tax that companies are allowed to pool and claim in future years, rather than be required to deduct them in the year they are incurred. These are the CEE, CDE, COGPE and the foreign resource expenses.

This means that in FYs 2013 and 2014, the oil and gas industry as a whole claimed more in expense deductions than what it actually spent during these two years (explaining why subsidies exist for that period) (Statistics Canada, 2018). Conversely, in FYs 2015 and 2016, the industry claimed less in expense deductions than what it had actually spent, potentially due to a number of companies not being profitable, or not profitable enough, to benefit from the incentives of being able to further reduce their tax liability during these two years. Instead, these companies are choosing to accumulate the expenses in their account for future years (explaining why subsidies appear non-existent in FYs 2015 and 2016). In 2017, 2018 and future years, the industry will still be able to write off these expenses incurred in the years of low oil prices, resulting in further foregone revenue for the federal government.

There have been efforts made and progress accomplished on fossil fuel subsidy reform in Canada. That being said, the rationale for certain tax provisions is worth questioning in light of the oil and gas industry's direct role in causing climate change.

Canada has announced that it will go through a peer review of its fossil fuel subsidies alongside Argentina following a voluntary G20 process, which is commendable (NRCan, 2018d). The scope of this review should include all federal policies that directly or indirectly incentivize fossil fuel production, including government programs listed in this brief that intend to reduce the GHG intensity of the industry rather than focusing on switching Canada's energy supply from fossil fuels to renewable sources of energy. This peer review has the potential to set the stage for the federal government to compile and regularly release a complete inventory of such policies, which could include estimates of the value of deductions claimed annually by the industry.

# Table of Contents

- 1.0 Introduction ..... 1**
- 2.0 Is Canada’s Fossil Fuel Sector Profitable without Subsidies? .....2**
- 3.0 Current Inventory .....3**
- 4.0 Why Fossil Fuel Subsidies Are Lower now than They Were in 2013 and 2014  
(Hint: it’s not because Canada has eliminated all fossil fuel subsidies) ..... 12**
  - 4.1 Some Federal Improvements on Subsidy Policy.....12
  - 4.2 The Impact of Oil Price Fluctuations on the Values of Deductions .....13
  - 4.3 Is the System “Rigged” in Favour of Companies?.....13
  - 4.4 The Need for a Review of Tax Provisions in Light of the Current Understanding  
of Externalities ..... 14
  - 4.5 Implications for Workers and the Need for a Just Transition .....15
- 5.0 Conclusion ..... 16**
- References .....17**

## Abbreviations and Acronyms

<b>CDE</b>	Canadian development expenses
<b>CEE</b>	Canadian exploration expenses
<b>COGPE</b>	Canadian oil and gas property expenses
<b>FRE</b>	foreign resource expenses
<b>FY</b>	fiscal year
<b>G20</b>	Group of 20
<b>GHG</b>	greenhouse gas
<b>NRCan</b>	Natural Resources Canada
<b>OAG</b>	Office of the Auditor General
<b>PT</b>	provincial and territorial
<b>SDTC</b>	Sustainable Development Technology Canada
<b>WCS</b>	Western Canadian Select
<b>WTO</b>	World Trade Organization

## 1.0 Introduction

The future of fossil fuel subsidies and their associated impact on greenhouse gas (GHG) emissions presents a dilemma for Canada. On the one hand, Canada's federal government has claimed climate leadership at the international level and adopted GHG emissions reduction plans such as the Pan-Canadian Framework on Clean Growth and Climate Change, which includes a commitment to national carbon pricing, and a series of programs and policies to move in the direction of Canada's 2030 climate targets.

On the other, the federal government has been at the forefront of promoting specific fossil fuel expansion projects, considering these to be in the national interest and supporting the industry as it experienced financial difficulties during times of low oil prices. Canada currently provides numerous subsidies to the sector at the same time that it works to reduce GHG emissions.

This briefing note focuses on two specific types of subsidy: direct transfers and fiscal policies specific to fossil fuel extraction and production. The focus of this note is limited to the federal government; similar overviews at the provincial and territorial (PT) levels<sup>1</sup> were released early in 2018, and other provincial analyses will be undertaken as the year progresses. The note's scope is also limited to the production of fossil fuels; policies that subsidize or incentivize the consumption of fossil fuels in Canada are generally found at the PT level of jurisdiction and are addressed accordingly in specific PT overviews.

The government's support for fossil fuel extraction in Canada is analyzed within a broader context of the industry's economic competitiveness. It also considers the opportunity cost of subsidizing the fossil fuel industry instead of alternative economic development and energy transition paths for workers, communities and provinces.

---

<sup>1</sup> For an overview of Québec, see Équiterre, 2018; for Nunavut, see WWF-Canada, 2018.



## 2.0 Is Canada's Fossil Fuel Sector Profitable without Subsidies?

The economics of most Canadian oil and gas projects are viable only when the price of oil is high. A recent analysis by the Stockholm Environment Institute suggests that the break-even cost for currently producing projects in Canada is USD 40 per barrel based on a weighted average, and USD 58 per barrel for projects under development, also based on a weighted average (Erickson, 2018). These break-even costs are calculated for the lifetime of projects and are exclusive of forthcoming and steadily increasing carbon prices in Canada. Thus, ad hoc instances of oil prices going above these thresholds do not mean that the industry returns to profitability for potential new and under-development projects. Rather, Canadian oil requires high oil prices sustained over a long time frame for expansion. All other factors kept equal, the cost of oil production should also increase as the Canadian carbon prices take effect and their cost is embedded in the product.

The average base price of a Western Canadian Select (WCS) barrel of crude oil plummeted between 2014 and 2016, falling from an average of USD 72 in 2014 to an average of USD 30 in 2016 (Alberta Energy Regulator, 2018). This contributed to the oil and gas industry reporting losses of approximately CAD 54 billion and CAD 25 billion in 2015 and 2016, respectively (Statistics Canada, 2018).<sup>2</sup> The average base price of the WCS barrel rose again in 2017 to reach USD 39 and peaked at almost USD 60 in mid-May 2018 (OilPrice.com, 2018), close to 50 per cent above forecast prices for 2018 (Alberta Energy Regulator, 2018), before falling again closer to USD 50 by the end of May 2018 (OilPrice.com, 2018). Nevertheless, the economic situation for Canada's oil sector will only become more precarious over time as easier-to-exploit reserves are exhausted and exploration becomes more expensive; as clean energy technologies become ever more cost competitive and displace fossil fuels; and as a rising price on carbon drives down consumer demand for GHG-emitting fossil fuels.

Since oil prices are volatile, fossil fuel taxation systems in most countries, including Canada, incorporate provisions that allow companies to plan their cash flow over longer project timelines. These systems also allow for deductions of exploration and development expenses at the early stages of capital-intensive project developments, such as oil sands projects, as well as carrying over losses in future periods.

In many cases, such flexible tax provisions have been designed to support the industry during short- and mid-term periods of low oil prices. But for extractive projects with high break-even prices, these provisions are not intended to sustain the high-cost, capital-intensive industry over long-term periods of low oil prices. Combined with the switch from fossil fuels to renewable energy and electric vehicles as well as the implementation of carbon pricing in Canada and internationally, fossil fuel extraction faces the risk of being stranded. The value of oil and gas assets at risk of stranding in Canada is estimated at up to USD 110 billion (Financial Times, 2018).

In addition to the costs in the form of foregone government revenue, policies and tax provisions that subsidize fossil fuel production also have high opportunity costs, as the government may be foregoing opportunities of greater support for more resilient or environmentally viable sectors of the economy, such as carbon-neutral technology and renewable energy. Further, there are significant negative externalities linked to the fossil fuel industry, as pointed out by the Office of the Auditor General (OAG) of Canada, such as the sector's negative impacts on the environment, public health and the climate (OAG, 2017). It is questionable public policy for a government to subsidize a sector that causes greater public costs.

Thus the fiscal efforts to maintain Canada's potentially unviable fossil fuel industry may lock in unproductive and environmentally harmful economic activities, enabling energy projects that would not be otherwise viable to proceed.

---

<sup>2</sup> Based on "profit before income tax."

## 3.0 Current Inventory

Fossil fuel subsidies and incentives exist at different levels of jurisdiction in Canada and take many different forms. At the federal level, policies exist primarily to incentivize the fossil fuel industry to extract fossil fuels or to make this extraction less GHG intensive. This briefing provides an inventory of several Income Tax Act provisions and income tax regulations that allow the fossil fuel industry to deduct certain expenses from their income. These mechanisms are listed in Table 1 and are further discussed in the sections below. In subsequent tables, we also list several programs that are designed to support the fossil fuel industry's activities by promoting a reduction in the intensity of their emissions rather than promoting fuel switching to carbon-neutral sources of energy.

Natural Resources Canada (NRCan) administers specific programs that support innovation in the oil and gas industry, from enhanced extraction processes to reducing GHG emissions at the extraction site. The programs originate mostly from components of the federal government's Energy Innovation Program, namely the Clean Energy Technology component's Carbon Capture, Use and Storage Stream, and the Oil and Gas Clean Technology component (NRCan, 2018a). While these programs may have positive impacts for climate change, the fact remains they are fossil fuel subsidies.

### Box 1. Is the Canadian government's purchase of the Trans Mountain Pipeline Expansion Project (also known as the Kinder Morgan Pipeline) a fossil fuel subsidy?

At the end of May 2018, the Canadian government announced that it would be purchasing the Trans Mountain pipeline system, including existing assets and the proposed expansion project (TMX), from Kinder Morgan for a sum of CAD 4.5 billion (Rabson, 2018). It is estimated that the cost of building the pipeline expansion project will be CAD 7.4 billion (Canadian Press, 2017), but increased costs and ongoing delays mean the cost of TMX could exceed CAD 9 billion (Allan, 2018). Prior to the purchase announcement, the Government of Canada had also offered to indemnify the project against delays that are "politically motivated" (Ljunggren & Schnurr, 2018) and has stated that this offer of indemnification could carry forward to future owners. The government has also stated that it does not intend to be the long-term owner of the project and would seek a private buyer.

So does this purchase amount to a fossil fuel subsidy? The answer is: very likely—there is a high risk that it might evolve into a big one over the long term. There are two central issues to determine whether there is a subsidy in this specific case.

The first is indemnification and any other financial assurances. This indemnification could be classified as a subsidy since it is a direct financial benefit to the company pushing the pipeline that allows it to avoid economic losses that may arise from what are referred to as "political delays." If this is offered to a future buyer without this value being factored into the sale price, it would amount to a subsidy. The same would go for other potential financial assurances.

The second issue is the sale itself. The government purchased the assets for CAD 4.5 billion; if it sells these assets to a private buyer for an amount that is below market value (which itself would be difficult to determine) this could also amount to a subsidy.

How big of a subsidy would these elements amount to? For now, it is impossible to determine. Once (and if) a buyer is found and if clear terms of the sale (including the valuation of the indemnification into the sale prices) are released, it might be possible to quantify the size of the subsidy.

For now, it is unclear if the project will result in a fossil fuel subsidy to the purchasing company, and it is impossible to determine the scale of what this subsidy would be without a detailed understanding of the sale transaction. **Until that point, however, there is significant concern that there will be a subsidized element of the sale, which necessitates a need for transparency around the financial aspects of this project.**

Besides these subsidies coming directly from government, Sustainable Development Technology Canada (SDTC), an arms-length government agency, also supports innovation in the fossil fuel industry, mainly through SDTC's Priority Technology Areas, one of which is unconventional oil and gas projects (SDTC, 2017a, 2018). These direct transfers and other subsidy mechanisms may reduce the GHG intensity of the oil and gas sector in some cases, but they are still ultimately fiscal supports for the development of oil and gas resources.

Internalization of external costs will drive industry towards higher efficiencies and obviate the need for at least some of the subsidies currently transferred for the purpose of efficiency. There does not appear to be a market failure in terms of information or anything else, and therefore these measures should be paid for by market participants rather than the government. Government taking on costs that should be borne by industry provides an incentive for industry to increase activities as it reduces industry's costs.

The Department of Finance (Finance Canada) also administers a number of tax provisions that are specific to the oil, gas and mining sectors<sup>3</sup> and that ultimately translate into the oil and gas industry reducing the share of income tax that it transfers to the federal government.

---

<sup>3</sup> See Office of the Auditor General, 2017

**Table 1. Oil and gas, and coal mining tax provisions (in CAD)<sup>4,5</sup>**

<b>Tax provision</b>	<b>Annual Tax Deduction Rate</b>	<b>Estimated value 2016–2018<sup>a</sup></b>	<b>Income Tax Act (A) or Regulations (R) subsection</b>
Canadian exploration expense deduction claims	100%	Not quantified by government	(B) § 66.1 (2)
Canadian development expense deduction claims	30%	Not quantified by government	(A) § 66.2(2)
Oil and gas property expense deduction claims	10%	Not quantified by government	(A) § 66.4(2)
Foreign resource expense deduction claims	10-30%	Not quantified by government	(A) § 66.21(4)
Flow-through shares	Up to 100%	265,000,000 <sup>b</sup>	(A) § 66(15)
Accelerated capital cost allowance – Liquefied Natural Gas, Eligible liquefaction equipment	30%	Not quantified by government	(R) § 1100(1)(yb)
Accelerated capital cost allowance – Liquefied Natural Gas, Related buildings	10%	Not quantified by government	(R) § 1100(1)(a.3)(ii)

<sup>a</sup> Values are in fiscal years (FY), e.g. FY 2017/18 ran from April 1, 2017 to March 31, 2018. A time period from 2016–2018 includes two FYs, not three. Most of these tax provisions are not reported on or quantified by Finance Canada, and this report wishes to address this lack of transparency as opposed to offer "in-house" estimates.

<sup>b</sup> Flow-through shares are available to investors in the oil and gas, mining and renewable energy sectors. Finance Canada does not disaggregate the tax expenditures related to flow-through shares by sectors (Finance Canada, 2018).

<sup>4</sup> Section 4 addresses the reasons why we deem these tax provisions worthy of scrutiny.

<sup>5</sup> To review the Income Tax Act provisions, see Government of Canada (2018a); to review Income Tax Regulations provisions, see Government of Canada (2018b).

**Table 2. Energy Innovation Program – Clean energy technology component, carbon capture, use and storage stream (in CAD)<sup>6</sup>**

<b>Recipient</b>	<b>Project</b>	<b>Amount</b>	<b>Period<sup>a</sup></b>
• Inventys Thermal Technologies Inc.	VeloTherm™ CO <sub>2</sub> Capture Process Demonstration	2,600,000	2017/2018
• Carbon Upcycling Technologies Inc.	Carbon Nanoplatelet (CNP) Production from Exhaust CO <sub>2</sub> Emissions	600,000	2017/2018
• Carbon Engineering Ltd.	Air-to-Fuels Development, Feasibility, and pre-FEED Study for First Commercial-Scale Demonstration Plant	1,500,000	2017/2018
• Quantiam Technologies Inc.	CO <sub>2</sub> Conversion to Methanol	500,000	2017/2018
<b>Total</b>		<b>5,200,000</b>	<b>2017/2018</b>

<sup>a</sup> Values are in fiscal years (FY), e.g. FY 2017/18 ran from April 1, 2017 to March 31, 2018.

<sup>6</sup> See NRCan (2018a) for a full description of each project.



**Table 3. Energy Innovation Program – Oil and gas clean technology component (in CAD)<sup>7</sup>**

<b>Recipient</b>	<b>Project</b>	<b>Amount</b>	<b>Period<sup>a</sup></b>
<ul style="list-style-type: none"> <li>• InnoTech Alberta</li> <li>• Ministry of Economic Development and Trade, Government of Alberta</li> <li>• Canada's Oil Sands Innovation Alliance (COSIA)</li> <li>• Shepard Energy Centre</li> </ul>	Alberta Carbon Conversion Technology Centre	9,800,000	2017/2018
<ul style="list-style-type: none"> <li>• MEG Energy Corp.</li> <li>• Western Research Institute (WRI)</li> </ul>	Enhanced Modified VAPour EXtraction R&D Operation	9,933,000	2017/2018
<ul style="list-style-type: none"> <li>• Suncor Energy Oil Sands Limited Partnership</li> </ul>	Combined Direct Contact Steam Generation and Non-Aqueous Extraction Demonstration Project	7,800,000	2017/2018
<ul style="list-style-type: none"> <li>• Proton Technologies Canada Inc.</li> </ul>	FEED Study for HYGENERATOR – wellbore deployed hydrogen production tool	375,000	2016/2017
<ul style="list-style-type: none"> <li>• CMC Research Institutes</li> <li>• BC Research Inc.</li> <li>• University of British Columbia</li> </ul>	Pilot Facility for Scale Up and Testing Carbon Capture and Conversion Technologies	950,000	2016/2017
<ul style="list-style-type: none"> <li>• Field Upgrading Ltd.</li> <li>• Ceramatec Inc.</li> </ul> <p>Advisory Committee:</p> <ul style="list-style-type: none"> <li>• Sterling Fuels</li> <li>• Representatives from major oil and gas companies</li> </ul>	Clean Seas Feasibility Study and Front End Engineering Design (FEED) Project	3,560,000	2016/2017
<ul style="list-style-type: none"> <li>• Cenovus FCCL Ltd.</li> <li>• ConocoPhillips Canada</li> </ul>	Solvent Driven Extraction Process	7,500,000	2017/2018
<ul style="list-style-type: none"> <li>• Husky Oil Operations Ltd.</li> <li>• Alberta Sulphur Research Ltd. (ASRL)</li> <li>• BP Canada Energy</li> </ul>	Hydrogen-Donor Diluent Reduction (HDR)	9,400,000	2017/2018
<b>Total</b>		<b>49,318,000</b>	<b>2016-2018</b>

<sup>a</sup>Values are in fiscal years (FY), e.g. FY 2017/18 ran from April 1, 2017 to March 31, 2018. A time period from 2016–2018 includes two FYs, not three.

<sup>7</sup> See NRCan (2018b) to find a full description of each project.

**Table 4. Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative (in CAD)<sup>8</sup>**

<b>Recipient</b>	<b>Project</b>	<b>Amount</b>	<b>Period<sup>a</sup></b>
EBI Énergie Inc.	1 natural gas refuelling station	1,000,000	2017/2018
EBI Énergie Inc.	1 natural gas refuelling station	1,000,000	2017/2018
EBI Énergie Inc.	1 natural gas refuelling station	1,000,000	2017/2018
Enbridge Gas Distribution Inc.	1 natural gas refuelling station	502,000	2017/2018
Union Energy Solutions	1 natural gas refuelling station	1,000,000	2017/2018
Clean Energy Compression Corporation	1 natural gas refuelling station	1,000,000	2017/2018
Union Energy Solutions	1 natural gas refuelling station	1,000,000	2017/2018
HTEC Hydrogen Technology and Energy	1 hydrogen refuelling station in British Columbia	1,000,000	2017/2018
<b>Total</b>		<b>9,502,000</b>	<b>2017/2018</b>

<sup>a</sup> Values are in fiscal years (FY), e.g. FY 2017/18 ran from April 1, 2017 to March 31, 2018.

<sup>8</sup> See NRCan (2018c) for a full list of stations installed or under construction

**Table 5. SDTC, Priority Technology Area: Unconventional oil and gas projects (in CAD)<sup>9</sup>**

<b>Recipient</b>	<b>Project</b>	<b>Amount</b>	<b>Period<sup>a</sup></b>
<ul style="list-style-type: none"> <li>• Acceleware Ltd.</li> <li>• GE Global Research</li> </ul>	RF XL Heating for In Situ Bitumen Production	5,000,000	2016/2017
<ul style="list-style-type: none"> <li>• Agar Canada Corp. Ltd.</li> <li>• Luxmux Technology Corp.</li> <li>• NDT Ultrasonics</li> </ul>	Online Water Measurement Analysis	500,000	2016/2017
<ul style="list-style-type: none"> <li>• Calscan Energy Ltd.</li> <li>• Cenovus Energy Inc.</li> <li>• Husky Energy Inc.</li> <li>• Repsol Oil &amp; Gas Canada Inc.</li> <li>• SAFCell Inc.</li> </ul>	Near Zero Emission Well Control System	970,970	2016/2017
<ul style="list-style-type: none"> <li>• Forward Water Technologies</li> <li>• Imaginea Energy</li> <li>• Terrapure Environmental</li> </ul>	Mobile Pilot-Scale Forward Osmosis Wastewater Treatment Unit	500,000	2016/2017
<ul style="list-style-type: none"> <li>• Fossil Water Corp.</li> <li>• Exterran Corp.</li> </ul>	Modular Treatment of Flowback & Produced Water	475,000	2016/2017
<ul style="list-style-type: none"> <li>• Ground Effects Environmental Services Inc.</li> </ul>	Develop a new process to reuse water in oilfield operations and reduce the demand for freshwater	500,000	2017/2018
<ul style="list-style-type: none"> <li>• Purlucid Treatment Solutions Inc.</li> <li>• A.H. Lundberg Systems</li> <li>• Connacher Oil and Gas</li> <li>• David Bromley Engineering Ltd.</li> <li>• IBM</li> </ul>	Low energy water treatment for steam assisted heavy oil recovery	3,225,000	2016/2017
<ul style="list-style-type: none"> <li>• Saltworks Technologies Inc.</li> <li>• Enerplus Corp.</li> </ul>	EOR Produced Water Recycling	500,000	2016/2017
<ul style="list-style-type: none"> <li>• waterStrider Treatment Inc.</li> </ul>	Develop a new process to treat water recovered during oil and gas production	500,000	2017/2018
<ul style="list-style-type: none"> <li>• Nsoly Corp.</li> </ul>	Scale-up of B.E.S.T. pilot project	13,000,000	2017/2018
<ul style="list-style-type: none"> <li>• Smart Pipe Company Canada Inc.</li> <li>• Enbridge</li> </ul>	Application of Smartpipe® technology to larger-diameter pipelines used by oil sands producers	2,363,709	2017/2018
<b>Total</b>		<b>24,534,679</b>	<b>2016–2018</b>

<sup>a</sup> Values are in fiscal years (FY), e.g. FY 2017/18 ran from April 1, 2017 to March 31, 2018. A time period from 2016–2018 includes two FY, not three.

<sup>9</sup> See SDTC (2017a; 2017b; 2018) for full description of each project.

**Table 6. Other budgetary transfers (in CAD)**

<b>Recipient</b>	<b>Project</b>	<b>Amount</b>	<b>Period<sup>a</sup></b>
• Government of Alberta	One-time payment: Supporting Jobs in the Resource Sector <sup>b</sup>	30,000,000	2017/2018
• Programs-based	Petroleum Technology Research Centre (PTRC) <sup>c</sup>	3,370,000	2016/2017
<b>Total</b>		<b>33,370,000</b>	<b>2017/2018</b>

<sup>a</sup> Values are in fiscal years (FY), e.g. FY 2017/18 ran from April 1, 2017 to March 31, 2018.

<sup>b</sup> Government of Canada (2017)

<sup>c</sup> The estimates reported were retrieved from the Organisation for Economic Development and Co-operation (2018) database on Fossil Fuel Support for Canada. The Petroleum Technology Research Centre no longer includes its audited financial statements in its Annual Report and did not respond to an email request to share the statements ([https://ptrc.ca/+pub/image/AQ\\_Annual%20Report\\_2015-16%20Final.pdf](https://ptrc.ca/+pub/image/AQ_Annual%20Report_2015-16%20Final.pdf)).

**Table 7. Energy Innovation Program – Clean Energy Technology Innovation component, methane and volatile organic compounds emissions projects (in CAD)<sup>10,11</sup>**

Recipient	Project	Amount	Period <sup>a</sup>
<ul style="list-style-type: none"> <li>• Clearstone Engineering Ltd.</li> <li>• GreenPath Energy Ltd.</li> <li>• Carleton University</li> </ul>	Greenhouse Gas Inventory System for the Upstream Oil and Gas Industry	730,000	2017/2018
<ul style="list-style-type: none"> <li>• Clearstone Engineering Ltd.</li> </ul>	A Tool for Design and Analysis of Vapour Collection and Control Systems	430,000	2017/2018
<ul style="list-style-type: none"> <li>• Alberta Energy Regulator (AER)</li> <li>• Government of Alberta</li> </ul> Collaborators: <ul style="list-style-type: none"> <li>• Clearstone Engineering</li> </ul>	Harmonized Methane Emission Platform	1,270,000	2017/2018
<ul style="list-style-type: none"> <li>• University of British Columbia, Earth, Ocean and Atmospheric Sciences</li> <li>• University of Calgary</li> <li>• Geoscience BC</li> </ul>	Field Assessment of Subsurface Migration, Groundwater Impacts and Fate of Fugitive Methane from Energy Resource Development in a Northeastern British Columbia Setting	1,616,717	2017/2018
<ul style="list-style-type: none"> <li>• Petroleum Technology Alliance Canada (PTAC)</li> <li>• University of Calgary</li> <li>• Encana</li> <li>• GE Canada</li> <li>• Cap Op Energy</li> <li>• Process Ecology</li> <li>• LCO Technologies</li> <li>• Husky Energy</li> <li>• St. Francis Xavier University</li> <li>• Calscan Solutions</li> </ul>	Advanced Methane Detection, Analytics and Mitigation Project	668,000	2017/2018
<ul style="list-style-type: none"> <li>• Petroleum Technology Alliance Canada (PTAC)</li> <li>• Encana</li> <li>• mAIRSure (Sensit Technologies)</li> </ul>	Area Methane Detection Using Work Trucks	300,000	2017/2018
<ul style="list-style-type: none"> <li>• University of Calgary</li> <li>• Ventus Geospatial</li> <li>• Boreal Laser</li> </ul>	Mobile Methane Sensing Analytics for Emissions Reduction	300,000	2017/2018
<b>Total</b>		<b>5,796,917</b>	<b>2017/2018</b>

<sup>a</sup> Values are in fiscal years (FY), e.g. FY 2017/18 ran from April 1, 2017 to March 31, 2018.

<sup>10</sup> See NRCan (2018a) to find a full description of each project.

<sup>11</sup> Research and Development (R&D) subsidies are included in this report for transparency purposes. However, we recognize that methane emissions management can also be treated as a public service. The amount allocated to these projects is not included in the total presented in this report for this reason.



## 4.0 Why Fossil Fuel Subsidies Are Lower now than They Were in 2013 and 2014

Most tax provisions listed in Table 1 did not result in financial benefits for oil and gas companies in 2015 and 2016. They are still listed as provisions that are worthy of scrutiny for reasons discussed both in this and the next section (Sections 4 and 5).

This section explains why the policies in Table 1 can lead to subsidies in the billions of dollars in some years that can effectively disappear in others. A small part of it can be explained by progress made by the federal government in reforming its subsidies to the fossil fuel industry. But the main story appears to originate from low international oil market prices in 2015 and 2016, and from how the income tax and the deductions are designed. **The other key point to note is that just because the value of these subsidies has been low in recent years does not mean that the government has taken adequate action to eliminate them. They could re-emerge, and they perpetuate write-offs from federal revenue in future years.**

### 4.1 Some Federal Improvements on Subsidy Policy

In 2009, member countries of the Group of 20 (G20) committed to “phase out and rationalize over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest” (G20 Information Centre, 2009). Accordingly, Canada has reformed several policies since 2011, mainly tax provisions that were both specific and preferential to the fossil fuel industry. The following tax provisions were either phased out completely or “rationalized,” meaning that the tax provisions are still in place but the deduction rates at which they can be claimed were brought down to a level that Finance Canada considers to be in accordance with Canada’s benchmark income tax system.<sup>12</sup> Table 1 indicates the rates for each provision. A reform usually indicates that the deduction rates for certain expenses were lowered:

- Oil sands property expenses that were treated as Canadian development expenses (CDEs) were reformed to be treated the same as all other Canadian oil and gas property expenses (COGPEs) (2011)
- Pre-production expenses of new oil sands and oil shale mines that were treated as Canadian exploration expenses (CEEs) were reformed to be treated the same as all other CDEs (2011–2016)
- The oil and gas and mining components of the Atlantic Investment Tax Credit were phased out completely (2012–2017)
- Successful CEEs will be treated as CDEs for tax purposes (for expenses incurred after 2018)
- The reclassification of a portion of CDEs into CEEs for small oil and gas corporations when renounced to flow-through share investors was reformed (for expenses incurred after 2018).

Finance Canada considers only one tax provision to be categorized as a subsidy, or tax expenditure, specific to the fossil fuel production industry, namely the Accelerated Capital Cost Allowance for Liquefied Natural Gas, which is scheduled to expire by 2025.<sup>13</sup> Section 5 explains why a more holistic approach is needed in determining Canada’s subsidies for fossil fuels. In addition, the Energy Innovation Program’s Oil and Gas Clean Technology program has now been sunsetted (Government of Canada, 2018c, p. 121). Finance Canada also considers flow-through shares as a fiscal instrument that deviates from Canada’s benchmark tax system, although flow-through shares are not specific to the fossil fuel industry as they are also available to other mining activities and to renewable energy investors (Finance Canada, 2018).

<sup>12</sup> In the 2001 working paper *Oil Sands Tax Expenditures*, Finance Canada noted that: “Tax provisions that provide for the deduction of current costs incurred to earn income are considered to be part of the benchmark system” (Ketchum, Lavigne & Plummer, 2001, p.7).

<sup>13</sup> See subsection 1104(2) of the Income Tax Regulations, definitions of “eligible liquefaction building” and “eligible liquefaction equipment.”

In terms of the remaining tax provisions listed in Table 1 that are worthy of scrutiny, the following excerpt from Canada's OAG (2017) is instructive of Finance Canada's standpoint:

[The Department of Finance Canada] has clearly defined the scope of potential fossil fuel subsidies in the tax system by consistently identifying and analyzing all federal tax expenditures (tax measures deviating from Canada's baseline tax treatment) that are specific to the production or consumption of fossil fuels (as contrasted with provisions of general application), and that provide preferential treatment to those affected relative to other taxpayers.

[...] As a result of these actions, there is only one remaining tax expenditure potentially relevant to the G20 commitment.

## 4.2 The Impact of Oil Price Fluctuations on the Values of Deductions

In 2010, the International Institute for Sustainable Development (IISD) designed a methodology to estimate **the government revenue foregone** under some tax provisions accessible to fossil fuel extraction activities, including the CEE deduction claims and the CDE deduction claims (Sawyer & Stiebert, 2010, Annex 2). This methodology was replicated several times, most recently in 2017 (IISD, 2017). At the time, when added to a number of other policies, IISD found approximately CAD 1.6 billion in subsidies at the federal level going to the fossil fuel industry on an annual average for FYs 2013 and 2014.

However, some of these estimates are highly sensitive to fluctuations in the oil price, as described above. As the average base price of the WCS barrel of crude oil declined between 2014 and 2016, this was a main driver, resulting in the oil and gas industry reporting losses of approximately CAD 54 billion and CAD 25 billion in 2015 and 2016, respectively (Statistics Canada, 2018).<sup>14</sup>

To determine the tax liability of a company, the government considers two key elements: the company's gross revenues from the sale of goods and services and the expenses incurred to earn the income which are deducted from the revenues (Finance Canada, 2003).

**Deductions and other subsidies tend to appear high during a period of high oil prices, such as for FYs 2013 and 2014. The same subsidies appear to be zero or low when the oil price is low in individual years. But this is an illusion—in reality, the write-offs are just carried over to future periods when oil prices are higher and companies are liable for taxes on higher profits. When oil prices are high, companies write off expenses incurred in both past and current periods, which leads to larger amounts in foregone government revenue. As the average base price of the WCS barrel picked up again in 2017, the foregone government revenue under CEE and CDE provisions could potentially increase accordingly, as might the deductions claimed by oil and gas companies.**

## 4.3 Is the System “Rigged” in Favour of Companies?

There are four tax provisions that are worthy of scrutiny in this briefing note that share a common feature: they are all expenses deductible from income tax that companies are allowed to pool and claim in future years, rather than be required to deduct them in the year they are incurred. These are the CEEs, CDEs, COGPEs and the foreign resource expenses (FREs).

This accounting practice means that intangible expenses such as CEEs, CDEs, COGPEs and FREs can be deducted at various rates. Exploration is uncertain and can be unsuccessful, in which case exploration expenses are akin to start-up costs and can be fully deducted. Development expenses (including successful CEE as of 2019) and

<sup>14</sup> Based on “net difference, natural resources expenses.”

property expenses (e.g., leases) are related to economic activities such as production that are undertaken with the expectation of eventually leading to profits. Their tax treatment is therefore considered to reflect the “economic life of the asset” to which they are related (Government of Canada, 2017).

Companies are further incentivized by being able to accumulate these expenses in “pools,” known as the cumulative Canadian exploration expense account, the cumulative Canadian development expense, the cumulative Canadian oil and gas property expense account, and the cumulative foreign resource expense account. These accounts can be carried forward indefinitely or as long as companies want. Deduction of expenses can be claimed at the moment that they appear to be the most beneficial for the companies to reduce their tax liability.

This means that **in FY 2013 and 2014, the oil and gas industry as a whole claimed more in expense deductions than what it actually spent during these two years (explaining why higher subsidies exist for that period) (Statistics Canada, 2018). Conversely, in FY 2015 and 2016, the industry claimed less in expense deductions than what it had actually spent, potentially due to a number of companies not being profitable, or not profitable enough, to benefit from the incentives of being able to reduce further their tax liability during these two years. Instead, these companies are choosing to accumulate the expenses in their account for future years (explaining why subsidies appear non-existent in FY 2015 and 2016).** In 2017, 2018 and future years, the industry will still be able to write off these expenses incurred in the years of low oil prices, resulting in further delayed revenue for the federal government.

#### 4.4 The Need for a Review of Tax Provisions in Light of the Current Understanding of Externalities

In its work, IISD relies on the subsidy definition adopted by 164 countries, including Canada, under the World Trade Organization (WTO) Agreement on Subsidies and Countervailing Measures. **By making fossil fuel extraction and production financially attractive, these policies undermine the attractiveness to and competitiveness of investors in renewable energy alternatives and tip the scales in favour of the energy sources that are driving climate change.** In the meantime, the fossil fuel industry tends to think of the fiscal treatment of the sector more in terms of “incentives” and natural resource economics rather than the WTO definition or knowledge about the external costs of fossil fuels such as economic costs to the environment or public health.

In 2007, the Government of Canada announced that it would reduce the corporate income tax rate in the country to 15 per cent, with the aim of making it the lowest overall national tax rate among the member states of the Group of Seven (G7) (Government of Canada, 2007). Tax provisions allowing for deduction of expenses also reflect the objective of making a fiscal environment attractive and competitive to investors, including in the fossil fuel industry.

In the case of CEEs, CDEs and COGPEs for instance, the design of these provisions reflects that these expenses are most likely incurred at a time when companies are not yet profitable. Thus, deducting these expenses would not lead to reduced tax liability. **By being allowed to pool their expenses and carry them forward indefinitely to minimize their tax liability, companies are ensured that the tax benefits of exploration and development will accrue in the future in the form of deductions. However, these policies focus on a costs and benefits matrix that is limited to a single industry, or a company’s bottom line, and is likely not cognizant of the industry’s or companies’ direct or indirect impact on their environment.**

The OAG of Canada conducted an independent audit report on fossil fuel subsidies that it submitted to the Parliament of Canada in Spring 2017 (OAG, 2017). In the report, the OAG highlighted the negative impact of fossil fuels on the environment (OAG, 2017), mostly stemming from the industry’s emissions being the main cause of global climate change (United States Environmental Protection Agency, 2017), and on the health of Canadians (Environment and Climate Change Canada, 2017).

With regards to benchmark tax provisions, the OAG highlighted that many of these “have been in place for decades” and that it remains unclear whether Finance Canada reviewed them under current understandings of negative environmental and health externalities (for example, the release of greenhouse gas emissions) that can be directly linked to the activities of an industry that benefit from the existence of those benchmark tax provisions. Finance Canada does assert that tax expenditures are analyzed “in terms of their efficiency and other relevant aspects, such as relevance, effectiveness, equity, simplicity, fiscal implications, and environmental impact.” However, it is not clear if the same level of scrutiny is routinely applied to tax provisions that provide deduction of expenses at benchmark rates to find out whether these are still appropriate in light of scientific findings on the externalities of industry activities.

**These tax provisions incentivize a business model that can be directly linked to global negative externalities that differ from other extractive, processing and manufacturing industries, and there should be an effort to review and reform them as a result.**

## 4.5 Implications for Workers and the Need for a Just Transition

Canada has already recognized that the era of coal is coming to an end and has determined the need for a just transition for the sector by launching the Task Force on Just Transition for Canadian Coal Power Workers and Communities (Government of Canada, 2018d). This task force has been given the mandate to provide knowledge, options and recommendations on how to undertake a *Just Transition* in Canada for workers and communities that will be affected by the phase out of coal-fired electricity in Canada.

While it may be a slightly longer timeline, the economic and policy dynamics of the oil and gas sector will be similar. **The risk of asset stranding is high for Canadian oil and gas, and asset stranding means the loss of jobs and negative social and economic impacts on communities and provinces. As a result, it is critical that a just transition approach be taken in the oil and gas sector as well. This can ensure that the workers and communities that currently rely on the sector are included in a long-term plan to ensure their security as the global economy trends towards decarbonization by mid-century.** The same economic dynamics that are reducing emissions, improving cost-competitive clean energy and electric vehicles, and pricing negative externalities will ultimately drive the decline of the oil and gas sector. It is critical that those who will be affected are part of the planning. Canada cannot restrict its commitment to a just transition to the coal sector. Oil and gas are also fossil fuels, and Canada must acknowledge that the sector will transition as well.

Reforming broad fossil fuel subsidies can remove distortion from the markets and prevent the creation of oil and gas projects that will become increasingly reliant on government support to remain viable. The fiscal space created by removing subsidies can also be utilized to fund a just transition that takes care of the workers and communities that will be most affected when Canada’s energy sector evolves towards clean energy alternatives.

## 5.0 Conclusion

Efforts have been made and progress achieved on fossil fuel subsidy reform in Canada. That being said, the rationale for certain tax provisions in light of the oil and gas industry's direct role in causing climate change is worth questioning. CEEs and CDEs have existed for decades, since the 1970s (Finance Canada, 2018). Climate change science hit a turning point in 1992 with the United Nations Framework Convention on Climate Change. The Intergovernmental Panel on Climate Change published five assessment reports and an array of targeted reports over the past three decades (Intergovernmental Panel on Climate Change, 2018) that made the sources and impacts of climate change well known and understood. GHG emissions from human activity drive climate change, and fossil-fuel-based products and energy sources are at the forefront of these emissions (United States Environmental Protection Agency, 2017). In Canada, the oil and gas sector accounted for more than a quarter of national emissions in 2016 (Environment and Climate Change Canada, 2018). Since 1990, the sector's emissions have increased by 70 per cent. When considering oil sands production alone, the increase is 367 per cent during the same period.

The federal government introduced legislation implementing a nationwide carbon price and a comprehensive plan to meet Canada's 2030 climate targets. However, a carbon price is limited as a behavioural policy as it mostly targets the demand for fossil fuel products and allows for the fossil fuel industry to fully pass on the embedded carbon cost of their activities to the end users. **Furthermore, there is strong evidence that the federal government's plan to meet Canada's 2030 climate target is "highly inefficient" (Climate Action Tracker, 2018), necessitating greater efforts in the oil and gas sector.**

**On the supply side, fossil fuel companies are most likely to react to international market price signals, such as the current upward trend in the value of WCS, and to the option to claim deductions of several of their current and past expenses now and in the future as long as their activities are profitable. Subsidies serve to promote the production of fuels at the same time that carbon pricing and climate action programs and policies are designed to reduce demand. To put it another way, combining carbon pricing and fossil fuel subsidies is like trying to bail water out of a leaky boat. If you don't fix the leak (the subsidies) you are never going to fix the problem (growing GHG emissions from the oil and gas sector).**

These estimates also do not include figures regarding the recent purchase of Kinder Morgan's Trans Mountain pipeline by the federal government. There is strong potential that there will end up being a large subsidy involved in this purchase due to statements regarding indemnification and the terms of the sale. The scale of the subsidy will not be known at least until (and if) a private sector buyer is identified and the terms of sale are released. This new and additional subsidy is inconsistent with Canada's commitment to phase out fossil fuel subsidies by 2025.

Canada has announced that it will go through a peer review of its fossil fuel subsidies alongside Argentina following a voluntary G20 process, which is commendable (NRCAN, 2018d). **This peer review can be the start of a process of greater transparency for government information about the subsidies supporting the fossil fuel industry in Canada. The scope of this review should include all federal policies that directly or indirectly incentivize fossil fuel production, including government programs listed in this brief that intend to reduce the GHG intensity of the industry rather than focusing on switching Canada's energy supply from fossil fuels to renewable sources of energy. This peer review has the potential to set the stage for the federal government to compile and regularly release a complete inventory of such policies, which could include estimates of the value of deductions claimed annually by the industry.**



## References

- Alberta Energy Regulator. (2018, March). Figure 1.5 Price of Western Canadian Select. Retrieved from [https://www2.aer.ca/t/Production/views/CommodityPricesFigure1\\_5PriceofWCS/CommodityPricesFigure1\\_5PriceofWCS?embed=y&:showShareOptions=true&:display\\_count=no&:showVizHome=no](https://www2.aer.ca/t/Production/views/CommodityPricesFigure1_5PriceofWCS/CommodityPricesFigure1_5PriceofWCS?embed=y&:showShareOptions=true&:display_count=no&:showVizHome=no)
- Allan, R. (2018, May 15). What's behind Kinder Morgan's May 31 ultimatum? Follow the money. Retrieved from <https://www.nationalobserver.com/2018/05/15/opinion/whats-behind-kinder-morgans-may-31-ultimatum-follow-money>
- Canadian Press. (2017, March 9). Cost of Trans Mountain pipeline rises to \$7.4 billion. *Maclean's*. Retrieved from <https://www.macleans.ca/economy/cost-of-trans-mountain-pipeline-rises-to-7-4-billion/>
- Climate Action Tracker. (2018). Canada country summary. Retrieved from <https://climateactiontracker.org/countries/canada/>
- Environment and Climate Change Canada. (2017, April 13). Greenhouse gas emissions: Drivers and impacts. Retrieved from <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions-drivers-impacts.html>
- Environment and Climate Change Canada. (2018, April 19). *Greenhouse gas emissions*. Greenhouse gas emissions by economic sector. Retrieved from <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html>
- Équiterre. (2018). Les subventions du gouvernement à la consommation et au développement d'hydrocarbures au Québec. English Summary. Retrieved from <https://equiterre.org/publication/nouveau-rapport-subventions-aux-hydrocarbures-au-quebec>
- Erickson, P. (2018). *Confronting carbon lock-in: Canada's oil sands*. Stockholm Environment Institute. Retrieved from <https://www.sei.org/publications/confronting-carbon-lock-canadas-oil-sands/>
- Finance Canada. (2003, March). *Improving the income taxation of the resource sector in Canada*. Retrieved from [https://fin.gc.ca/activty/pubs/rsc\\_e.pdf](https://fin.gc.ca/activty/pubs/rsc_e.pdf)
- Finance Canada. (2018, April 16). *Report on federal tax expenditures: Concepts, estimates and evaluations 2018*. Retrieved from <https://www.fin.gc.ca/purl/taxexp-eng.asp>
- Financial Times. (2018, March 8). Fossil fuel groups risk wasting \$1.6tn on projects. Retrieved from <https://www.ft.com/content/23173a9e-2209-11e8-9a70-08f715791301>
- G20 Information Centre. (2009). G20 Leaders Statement: The Pittsburgh Summit. Retrieved from <http://www.g20.utoronto.ca/2009/2009communique0925.html>
- Government of Canada. (2007, October 30). Economic Statement. Retrieved from <https://www.fin.gc.ca/ec2007/pdf/speeche.pdf>
- Government of Canada. (2017). *Tax Measures: Supplementary Information. Budget 2017*. Retrieved from <https://www.budget.gc.ca/2017/docs/tm-mf/tax-measures-mesures-fiscales-2017-en.pdf>
- Government of Canada. (2018a, June 20). *Income Tax Act*. Retrieved from <http://laws-lois.justice.gc.ca/PDF/I-3.3.pdf>
- Government of Canada. (2018b, June 20). *Income Tax Regulations*. Retrieved from [http://laws.justice.gc.ca/PDF/C.R.C.,\\_c.\\_945.pdf](http://laws.justice.gc.ca/PDF/C.R.C.,_c._945.pdf)

Government of Canada. (2018c). *2018–19 Estimates*. Retrieved from <https://www.canada.ca/content/dam/tbs-sct/documents/planned-government-spending/main-estimates/2018-19/me-bpd-eng.pdf>

Government of Canada. (2018d, April 28). *Task Force: Just Transition for Canadian coal power workers and communities*. Retrieved from <https://www.canada.ca/en/environment-climate-change/services/climate-change/task-force-just-transition.html>

Intergovernmental Panel on Climate Change. (2018). Publications and data. Retrieved from [www.worldenergyoutlook.org/resources/](http://www.worldenergyoutlook.org/resources/)

International Institute for Sustainable Development. (2017). Unpacking Canada's fossil fuel subsidies. Retrieved from <https://www.iisd.org/faq/unpacking-canadas-fossil-fuel-subsidies/>

Ketchum, K., Lavigne, R., Plummer, R. (2001). *Oil Sands Tax Expenditures*. Department of Finance Working Paper 2001-17. Retrieved from [http://publications.gc.ca/collections/collection\\_2008/fin/F21-8-2001-17E.pdf](http://publications.gc.ca/collections/collection_2008/fin/F21-8-2001-17E.pdf)

Ljunggren, D. & Schnurr, L. (2018, May 16). Canada ready to cover Kinder Morgan loss, sees outside interest. *Reuters*. Retrieved from <https://www.reuters.com/article/us-kinder-morgan-cn-pipeline/canada-ready-to-cover-kinder-morgan-loss-sees-outside-interest-idUSKCN1IH1PU>

Natural Resources Canada. (2018a, May 3). Clean Energy Innovation Projects. Retrieved from <https://www.nrcan.gc.ca/energy/funding/icg/19750>

Natural Resources Canada. (2018b, May 1). Oil and Gas Clean Tech Projects. Retrieved from <http://www.nrcan.gc.ca/energy/funding/icg/1930>

Natural Resources Canada. (2018c, May 9). Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative: Successful Applicants. Retrieved from <http://www.nrcan.gc.ca/energy/alternative-fuels/fuel-facts/ecoenergy/19464>

Natural Resources Canada. (2018d, June 14). Canada and Argentina to undergo peer reviews of inefficient fossil fuel subsidies. Retrieved from <https://www.canada.ca/en/natural-resources-canada/news/2018/06/canada-and-argentina-to-undergo-peer-reviews-of-inefficient-fossil-fuel-subsidies.html>

Office of the Auditor General. (2017). *Report 7—Fossil Fuel Subsidies*. (2017 Spring Reports of the Auditor General of Canada to the Parliament of Canada). Retrieved from [http://www.oag-bvg.gc.ca/internet/English/parl\\_oag\\_201705\\_07\\_e\\_42229.html](http://www.oag-bvg.gc.ca/internet/English/parl_oag_201705_07_e_42229.html)

OilPrice.com. (2018, May 30). Oil price charts. Retrieved from <https://oilprice.com/oil-price-charts#prices>

Organisation for Economic Development and Co-operation. (2018). *OECD analysis of budgetary support and tax expenditures: Fossil Fuel Support – CAN*. Retrieved from [https://stats.oecd.org/Index.aspx?DataSetCode=FFS\\_CAN](https://stats.oecd.org/Index.aspx?DataSetCode=FFS_CAN)

Rabson, M. (2018, May 29). Canada to spend \$4.5 billion to buy Trans Mountain pipeline. *Financial Post*. Retrieved from <https://business.financialpost.com/commodities/energy/newsalert-canada-to-spend-4-5b-to-buy-trans-mountain-pipeline-b-c-terminal>

Sawyer, D. & Stiebert, S. (2010). *Fossil fuels – At what cost?* Geneva: IISD-GSI. Retrieved from [https://www.iisd.org/gsi/sites/default/files/ffs\\_awc\\_3canprovinces.pdf](https://www.iisd.org/gsi/sites/default/files/ffs_awc_3canprovinces.pdf)

Statistics Canada. (2018, July 4). Table 33-10-0006-01: Financial and taxation statistics for enterprises, by industry type. *CANSIM (database)*. Retrieved from [https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3310000601&request\\_locale=en](https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3310000601&request_locale=en)

Sustainable Development Technology Canada. (2017a). *Annual Report Supplement 2016/2017*. Retrieved from [https://www.sdtec.ca/sites/default/files/sdtec\\_2016\\_ars\\_en\\_final.pdf](https://www.sdtec.ca/sites/default/files/sdtec_2016_ars_en_final.pdf)

Sustainable Development Technology Canada. (2017b, November 3). Governments of Canada and Alberta invest in cutting-edge clean technologies to encourage clean growth. Retrieved from <https://www.sdtec.ca/en/media-release/governments-canada-and-alberta-invest-cutting-edge-clean-technologies-encourage-clean>

Sustainable Development Technology Canada. (2018). Projects. Retrieved from <https://www.sdtec.ca/en/portfolio/projects>

Touchette, Y. (2015). *G20 subsidies to oil, gas and coal production: Canada*. London: ODI. Retrieved from <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9988.pdf>

United States Environmental Protection Agency. (2017, April 13). Global greenhouse gas emissions data. Retrieved from <https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data#Gas>

Whitley, S., Chen, H., Doukas, A., Gençsü, I., Gerasimchuk, I., Touchette, Y. (2018). *G7 fossil fuel subsidy scorecard*. London: ODI. Retrieved from <https://www.odi.org/sites/odi.org.uk/files/resource-documents/12222.pdf>

WWF-Canada. (2018). *Tracking diesel fuel subsidies in Nunavut*. Retrieved from [http://assets.wwf.ca/downloads/costing\\_fossil\\_fuel\\_subsidies\\_in\\_nunavut.pdf?\\_ga=2.83495189.2005735431.1518014994-1087595622.1504633104](http://assets.wwf.ca/downloads/costing_fossil_fuel_subsidies_in_nunavut.pdf?_ga=2.83495189.2005735431.1518014994-1087595622.1504633104)

