



International Best Practices: Estimating tax subsidies for fossil fuels in Canada

REPORT





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Executive Summary

Canadian governments provide financial support for fossil fuels through a variety of measures, including direct transfers to fossil fuel producers. Much of this support is provided through the tax system. Tax expenditures reduce government revenue and create incentives for the production and consumption of fossil fuels. A clear understanding of the extent of tax subsidies is necessary to assess their impacts on government budgets—particularly important in the context of the COVID-19 economic recovery—as well as on air pollution and climate change.

But the transparency of the cost of Canada’s tax subsidies for fossil fuels is poor. Of the 128 revenue foregone policies we identified in the fossil fuel sector, only 50% were quantifiable. Together, these policies accounted for around CAD 3.2 billion in foregone revenue. If the other 50% of policies could be costed, this value would be much higher.

While quantifying fossil fuel subsidies is not a precondition to debate or reform, it can help in weighing the pros and cons of specific policies. Unfortunately, there are no perfect methods that generate 100% accurate subsidy estimates; all approaches rely on interpretations, assumptions, and often incomplete data. However, there are well-established protocols and standards used by international economic and energy institutions that can help governments and other researchers develop relatively consistent and transparent estimates.

This brief outlines international best practices in defining and estimating tax subsidies and other types of foregone government revenue. It also counters common misconceptions about subsidy definitions and quantification methods. Vested interests in Canada have sought to narrow the definition of subsidies to exclude certain types of subsidies, including many tax expenditures, or argue for estimation methods that would minimize the amount of subsidies they receive. We recommend that all tax expenditures and other types of foregone revenue be measured and reported so that their costs and benefits can be carefully assessed. This approach is in line with international guidelines and best practices.



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Acronyms and Abbreviations

ASCM	Agreement on Subsidies and Countervailing Measures
CAPP	Canadian Association of Petroleum Producers
FY	fiscal year
G20	Group of 20
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
NPV	net present value
OECD	Organisation for Economic Co-operation and Development
SDG	Sustainable Development Goal
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
WTO	World Trade Organization



1.0 Introduction

Governments support fossil fuels through a range of mechanisms. The most basic form of subsidies are direct payments to fossil fuel producers or consumers (e.g., in the form of grants) or setting very low prices for fuel (Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ], 2019). These mechanisms are intuitive and easy to track. However, in developed countries like Canada, more complicated approaches are common; indeed, they may be favoured because they are less visible and more difficult to quantify. **Foregone government revenue is the most common type of subsidy for fossil fuels based on available data** (Organisation for Economic Co-operation and Development [OECD], 2018a). This includes tax measures (or “expenditures”)¹ that reduce business tax, excise tax, customs duties, or sales tax. Foregone revenue also includes the underpricing of government-owned goods or services, such as royalty subsidies, cheap land or water, and low-interest loans.² Tax exemptions and royalty subsidies are the most common forms of support in Canada (Corkal, Levin & Gass, 2020).

Understanding the extent of all support to fossil fuels is important for three reasons. First, subsidies **affect government budgets**, either through increased outlays or reduced income. Second, subsidies **create incentives for the production or consumption of fossil fuels, exacerbating greenhouse gas emissions and air pollution** (Erickson et al., 2020). Third, the fossil fuel industry has been a major recipient of government assistance following COVID-19 (Energy Policy Tracker, 2020), which **is not the best use of limited government resources to achieve economic recovery while also tackling the climate and biodiversity crises** (Erickson & Lazarus, 2020).

Despite these concerns, detailed financial information on subsidies is often unavailable, even for countries like Canada that have a relatively high standard of budget reporting (*Open Budget Survey Canada 2019*, n.d.). Data on direct budgetary transfers are generally well documented (Wooders et al., 2019). In 2019–2020, the International Institute for Sustainable Development (IISD) was able to quantify 12 programs providing direct transfers (Corkal, Levin & Gass, 2020) but many non-tax revenues have remained unquantified (Box 1). This brief focuses on foregone revenue as the most common form of support in Canada with a particularly low level of transparency.

A lack of information on the extent of foregone revenue creates a budget black hole. Failure to collect revenue erodes government budgets, with an impact similar to direct spending

¹ Per the Income Tax Act (Department of Finance Canada, 2020b), a tax expenditure is any type of tax measure that the government uses to achieve public policy objectives through the tax system, including preferential tax rates, exemptions, deductions, deferrals, or credits (Department of Finance Canada, 2020).

² Another type of under-pricing occurs when governments assume responsibility for risks that would otherwise be the responsibility of a private company, such as a catastrophic oil spill. Although outside the scope of this brief, these supports can slow market innovation in lower-risk energy alternatives and reduce the incentive to invest in the improved safety of operations.



(International Monetary Fund [IMF], 2019). Once established, tax expenditures and other foregone revenue tend not to be reviewed as part of the budget process and thus are not subject to annual parliamentary scrutiny or spending limits (Office of the Auditor General, 2015). Some of these measures have existed for decades without significant review. Without spending limits, foregone revenue can increase dramatically due to political changes in eligibility, tax court cases on interpreting tax statutes, entry of new production capacity, and volatile oil and gas prices.

Efforts by independent researchers to improve transparency in Canada's accounting of tax subsidies have been met by considerable opposition from Canada's oil and gas industry and the researchers they fund (Canadian Association of Petroleum Producers [CAPP], 2017; Chassin, n.d.; Jaremko, 2020; Kaplan & Milke, 2020; McKenzie & Mintz, 2011; McKittrick, 2017). **Vested interests have sought to narrow the definition of subsidies to exclude tax expenditures benefiting the sector; they have advocated estimation methods that would minimize subsidy estimates, and, in some cases, they state that subsidies to the sector simply do not exist.**

Section 2 of this brief outlines the state of reporting foregone revenue for fossil fuels in Canada and why improved reporting is necessary. Section 3 demonstrates that tax expenditures and foregone revenue clearly fall within the agreed international definition of subsidies and that these subsidies should be estimated using well-accepted protocols from international best practices. Section 4 provides six reasons why comprehensive accounting of these subsidies is vital in the fossil fuel sector. Common misconceptions about subsidy accounting are countered at the end of relevant sub-sections.



Box 1. Challenges in estimating non-tax subsidies for fossil fuels in Canada

Non-tax fossil fuel subsidies can include direct spending (grants and contributions), subsidies associated with public finance (e.g., the subsidy-equivalent value of concessional loans and loan guarantees), assumption of liability, and more. In 2019, the Auditor General found that Environment and Climate Change Canada's assessment of non-tax subsidies, including direct spending, was not comprehensive and did not properly examine certain government institutions, programs, and projects (including the Trans Mountain pipeline and expansion) (Office of the Auditor General of Canada, 2019). Additional non-tax subsidies to the oil and gas sector, including direct payments, have been provided in the wake of COVID-19. Many have no clear conditions for environmental or social outcomes (Energy Policy Tracker, 2020).

A large portion of federal non-tax fossil fuel subsidies in Canada consists of direct transfers to the fossil fuel sector. In 2019–2020, IISD was able to quantify 12 programs providing direct transfers (Corkal, Levin & Gass, 2020). Although Canada's transparency on direct transfers is better than that of tax expenditures, data analysis is still difficult. This is largely because there are programs that cover several sectors that do not disaggregate information for individual sectors or projects, making it impossible to accurately apportion expenditure to fossil fuels.

A challenge in analyzing direct payments, as with other government support, is countering industry claims that many of the payments they receive are not subsidies. Payments to help reduce emissions or improve environmental performance, including for research and development of cleaner technology, illustrate this issue. For example, in the federal government's draft assessment of non-tax measures for the G20 peer review, several programs providing funding for emission reductions in the fossil fuel sector were deemed not to be subsidies (in particular if the programs were not sector-specific, though the fossil fuel industry was the main beneficiary) (Department of Environment and Climate Change Canada, 2019). However, ultimately these payments help the industry compete with other technologies in a low-carbon world, and therefore bring a direct benefit to the industry while also facilitating and lowering the cost of continued production of fossil fuels. Therefore, they are correctly classified as subsidies to fossil fuels like other direct transfers (Wooders et al., 2019).



2.0 Foregone Revenue From Fossil Fuels in Canada

The Government of Canada reports tax expenditures annually and, starting in 2020, includes a table on tax expenditures that support the fossil fuel sector (Department of Finance Canada, 2020). Unfortunately, the information presented on fossil fuel-related expenditures is incomplete. At the federal level, Canada's 2020 *Report on Federal Tax Expenditures* lists seven tax expenditures but only provides financial data for two (Government of Canada, 2020a). At the subnational level, provinces and territories offer significant tax breaks and royalty subsidies, but many are not costed in provincial budgets.³ This lack of data also hinders assessment by other government agencies (such as auditors) and independent researchers.

In 2020, IISD identified 10 federal Canadian tax policies that benefit fossil fuels, but financial data could only be found for two of them (Corkal, Levin, & Gass, 2020). Table 1 uses non-government sources to show the current state of reporting on revenue foregone for fossil fuel subsidies in key jurisdictions: of the 128 foregone revenue policies identified, only 50% could be quantified.

Based on available data, IISD estimates that total annual fossil fuel subsidies across Canada were approximately CAD 4.8 billion per year in 2018 and 2019, of which two thirds (67%; CAD 3.2 billion) was foregone revenue (Table 2).⁴ This estimate is highly conservative because it does not include some provincial measures or most federal tax deductions or other mechanisms of subsidization to the sector. Another recent estimate found that the Canadian oil and gas industry currently has an estimated multi-year stock of tax loss carryforwards of CAD 63 billion that they can use to deduct tax payments over time (McCrea, 2020).⁵

³ See IISD's provincial fossil fuel subsidy inventories for Nunavut (Touchette et al., 2017), Quebec (Équiterre & IISD, 2018), Alberta (IISD & Environmental Defence, 2019), Ontario (Corkal & Gass, 2019b), and British Columbia (Corkal & Gass, 2019a; OECD, 2020).

⁴ Data derived from over several years (using latest data available at the time of writing) from Corkal, Levin, & Gass, 2020; Corkal & Gass, 2019a, 2019b; Équiterre & IISD, 2018; IISD & Environmental Defence, 2019; OECD, 2020; Touchette et al., 2017.

⁵ The tax loss carryforward policy allows a company to pay taxes on average profitability across years rather than incurring high taxes in boom years and no taxes (but not negative) in down years, which would drive up the multi-year effective tax rate above the statutory level. The problem arises when firms are able to continuously generate "losses" yet somehow stay in business. That is what seems to be happening here. Note that the CAD 63 billion refers to losses and expenses that have been accumulated over multiple years and can be used to deduct taxes over multiple years. The remainder of the report refers to annual revenues foregone.



Table 1. Number of foregone revenue policies for fossil fuels offered by identified governments in Canada and the proportion that could be quantified (various dates)

Jurisdiction	Active tax expenditure and revenue subsidy programs	No. quantified	% quantified	Data year	Source
Federal	10	2	20%	2020	Corkal, Levin, & Gass, 2020
Alberta	18	16	89%	2019	IISD & Environmental Defence, 2019
British Columbia	48	9	19%	FY 2016/17; FY 2017/18	Corkal & Gass, 2019a
Manitoba	4	3	75%	2019	OECD, 2020
Nunavut	2	0	0%		
New Brunswick	3	2	67%		
Newfoundland	10	10	100%		
Nova Scotia	2	1	50%		
Ontario	9	9	100%	2019	Corkal & Gass, 2019b
Prince Edward Island	2	1	50%	2019	OECD, 2020
Quebec	10	7	70%		
Saskatchewan	9	3	33%		
Yukon	1	1	100%		
Total	128	64	50%		

Note: Includes royalty exemptions in Alberta and British Columbia. Where two sources were available, data were used from the source that identified the most measures.

**Table 2. Estimates of quantifiable federal and provincial subsidies and foregone revenue**

Jurisdiction	Total subsidy estimate (CAD million)	Foregone revenue (CAD million)	% of quantified subsidies that are foregone revenue ⁶	Data year and source
Federal	600	32	5%	Fiscal year (FY) 2018/19 tax figures (OECD, 2020), compared to 2019/20 total subsidy figures (Corkal, Levin, & Gass, 2020)
Alberta	2,000	1,274	64%	FY 2018/19 tax figures, total subsidy figure (IISD & Environmental Defence, 2019)
British Columbia	830	707	85%	FY 2018/19, total subsidy figure (Corkal & Gass, 2019a)
Ontario	700	585	84%	FY 2018/19 tax figures, total subsidy figure (Corkal & Gass, 2019b)
Quebec	300	276	92%	FY 2018/19 tax figures, compared to average total subsidies Équiterre & IISD, 2018
Saskatchewan	205	205	100%	FY 2018/19 figures (OECD, 2020)
All other provinces	144	100	70%	FY 2018/19 figures (OECD, 2020)
Total Canada	4,779	3179	67%	

Numbers have been rounded.

2.1 Better Reporting Needed

Canada needs to improve reporting of its fossil fuel subsidies, including tax expenditures and other policies reducing government revenue, for domestic and international audiences. In 2015, the Auditor General found that information provided by the Department of Finance on tax expenditures was not sufficient to allow adequate parliamentary oversight (Office of the Auditor General of Canada, 2015). In 2019, the Auditor General found that the Department of Finance's assessment of subsidies for fossil fuels was incomplete, resulting in inadequate advice to the minister (Office of the Auditor General of Canada, 2019). Decision-makers should also take

⁶ On average, only 50% of foregone revenue measures could be quantified for all Canadian jurisdictions; at the federal level, only 20% (2/10) could be quantified (see Table 2).



into account the externality costs of fossil fuels (such as the quantifiable costs associated with air pollution and greenhouse gas emissions) (Parry et al., 2014).

Canada has undertaken to report fossil fuel subsidies as part of its international commitments. In 2009, the Group of 20 (G20) leaders agreed to phase out inefficient fossil fuel subsidies (G20, 2009). Canada committed to achieving this goal by 2025 at the 2016 North American Leaders Summit (Leaders' Statement, 2016) and re-stated this commitment in the Group of Seven (Asmelash, 2016). Like other governments in the G20, Canada's use of the word "inefficient" clouds reform of some fossil fuel subsidies. However, the Canadian Auditor General has stated that "inefficient" has not been adequately defined by the Canadian federal government (Office of the Auditor General of Canada, 2019).

Under the G20 process, Canada agreed to a voluntary peer review of its fossil fuel subsidies with Argentina in 2019, which is currently behind schedule (Lim, 2019; Rabson, 2019). The precedent has been for countries to report tax expenditures in these reviews. For example, Germany, Italy, and the United States quantified tax and foregone revenue policies in their reviews (Government of Italy, 2018; Government of the Federal Republic of Germany, 2017; Government of the United States, 2020). Assuming no change in practice from the previous G20 peer reviews, it is unlikely that provincial subsidies would be included in the review.

The need to rationalize inefficient fossil fuel subsidies is also stated in United Nations (UN) Sustainable Development Goal (SDG) 12.c as part of the broader goal to ensure sustainable consumption and production patterns (UN, n.d., p. 12). Measurable indicators for tracking progress on the SDGs were agreed in 2017 (UN, 2017). Indicator 12.c.1 is the "Amount of fossil fuel subsidies per unit of GDP." All members, including Canada, have agreed to report against the indicator from 2020.⁷

Canada's international obligations and domestic watchdog require a significant step up in reporting of fossil fuel subsidies. This contrasts with calls from the oil and gas industry and the researchers they fund to minimize subsidy reporting and even claims that tax measures are not subsidies (CAPP, 2017; Kaplan & Milke, 2020).

Misconception	Correction
The Minister of Infrastructure and Communities, Catherine McKenna, said that the Government of Canada reformed ALL of its fossil fuel subsidies (Canada's Energy Citizens, 2020; Pall, 2020).	The Canadian government has reformed some federal fossil fuel subsidies (which, it may argue, are the only inefficient ones), but many remain in place.

⁷ To allow countries time to gather the necessary data, reporting tax expenditures and foregone revenue for fossil fuels is optional until at least 2025.



3.0 Best Practices

Fossil fuel subsidy accounting is a well-established field. Best practices in this field have been compiled to assist countries in reporting against the SDGs. Each SDG indicator has a custodian agency that is responsible for providing guidance about what should be reported and how. The UN Environment Programme (UNEP) is the custodian for indicator 12.c.1 on fossil fuel subsidies. In 2019, UNEP published its official guidance for reporting fossil fuel subsidies (Wooders et al., 2019), outlining a method that unites the approaches used by leading institutions⁸ and reviewed by experts from 16 countries and seven international authorities (referred to hereafter as “the SDG methodology”).

Under the SDG methodology, the indicator is classified as Tier II (UN, 2020):

- It is conceptually clear.
- It has an ***internationally established methodology***.
- Standards are available.
- But data are not regularly produced by countries.

3.1 The Definition Sets the Scope

Government payments and other financial support policies can be called interventions, incentives, concessions, or subsidies. The term “subsidy” is useful because there is an internationally agreed legal definition under the World Trade Organization (WTO) Agreement on Subsidies and Countervailing Measures (ASCM), endorsed by all 164 members, including Canada (WTO, 1994).

The WTO definition was developed to capture subsidies that distort global trade. Fossil fuel subsidies can affect the competitiveness of industries and lead to significant trade impacts (Moerenhout & Irschlinger, 2020). They can also distort energy markets and influence investor decisions at the margin, determining whether fuel is produced and how much. Even where subsidies are infra-marginal and not altering the market-clearing national price, they still affect the supply mix, often bolstering older, more highly polluting plants and mines. Further, what affects market prices can change over time as market activities or production levels shift or if subsidy reform is implemented by trading partners as well. The WTO definition is therefore highly applicable to fossil fuels.

⁸ The International Energy Agency, the OECD, and the European Commission Statistics Division.



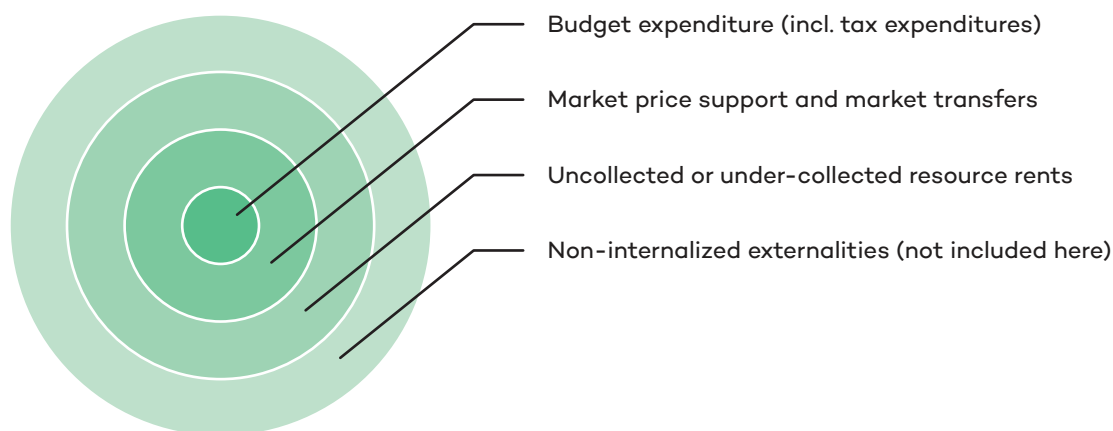
The WTO defines subsidies as:

1. Direct transfer of funds (e.g., grants, loans)
2. Government revenue foregone or not collected (e.g., fiscal incentives such as tax credits)
3. Government-provided goods or services other than general infrastructure
4. Price support (such as below-market fuel prices).

As a high-level agreement among WTO members, the ASCM definition provides broad categories, which allows for some interpretation of the types of subsidies that should be included. Intergovernmental bodies active in the field of energy subsidies have developed their own more succinct definitions that are “fit for purpose” for their particular interests and calculations. Nonetheless, the WTO definition is generally the starting point for subsidy analysis, given its legally binding nature (OECD, 2010).

The WTO definition clearly includes foregone revenue in its scope of subsidies, including fiscal incentives and tax (in the example of tax credits). Budget expenditures, including tax expenditures, are core subsidies according to the OECD (2010) (Figure 1).

Figure 1. Ever-widening definitions of "subsidy" or "support"



Source: OECD, 2010.

The WTO approach is reinforced by the International Classification of Non-Tariff Measures published by the UN Conference on Trade and Development (UNCTAD). Subsidies and other forms of support include: “Government revenue due (by a final consumer, individual or household) that is foregone or not collected (without monetary transfer); Tax and duty exemptions, reductions, other fiscal incentives reducing the burden of taxes otherwise due” (UNCTAD, 2019)



The SDG methodology unites the approaches adopted by the majority of intergovernmental organizations in defining fossil fuel subsidies.⁹ Foregone revenue is captured in one sub-indicator: tax expenditure, other revenue foregone, and underpricing of goods and services (Wooders et al., 2019). In line with best practice, we recommend an inclusive approach to identify and measure all policy instruments that can impact fossil fuel production or consumption, or the revenues of governments and relevant companies.

For consistency with Canada’s international commitments, use of the WTO definition should be adopted by federal and subnational agencies in Canada.

Table 3. Types of foregone revenue

Fiscal foregone revenue	
Tax expenditure	Corporate tax, petroleum profit tax, value-added tax, excise tax, and other taxes reduced or waived; acceleration of allowable deductions; special tax-favoured corporate structures primarily accessible by fossil fuel industries
Other fiscal revenues	Bonuses for oil blocks, royalties, production share, and other non-tax payments reduced or waived in upstream oil and gas
Underpricing of other goods and services, including risk	
Subsidized inputs	Subsidies to large-volume inputs to energy suppliers, including water and rail or water freight
Lending and credit	Below-market provision of loans, loan guarantees, or grants for energy-related activities
Goods and services provided by government	Underpricing of access to land and other goods and services
Permits	Underpricing of permits and licences
Shifting of risk burdens	Government assumption of price, safety, and other risks; consumer or resident assumption of risks through limits on commercial liability
Special treatment of state-owned enterprises	Undue risk-taking, soft budget constraints leading to contingent liabilities, debt cancellations, tax-exempt operating status

Source: Kojima & Koplow, 2015.

⁹ The notable exception being the IMF, which includes non-internalized externalities in its estimates of “post-tax” subsidies (e.g., the health or environmental costs of fossil fuel use). The SDG methodology does not include these as subsidies.



Misconception	Correction
The WTO definition is not fit for purpose for measuring fossil fuel subsidies (Kaplan & Milke, 2020; McKenzie & Mintz, 2011).	The WTO definition is well suited because: <ul style="list-style-type: none"> • Like trade subsidies, energy subsidies can distort markets, influence decisions at the margin, and impact trade • It is internationally accepted for energy subsidies.
Tax expenditures are not subsidies (CAPP, 2017)	Tax expenditures clearly fall within the WTO definition of “revenue foregone or not collected” and “fiscal incentives.”

3.2 The “Revenue Foregone” Method

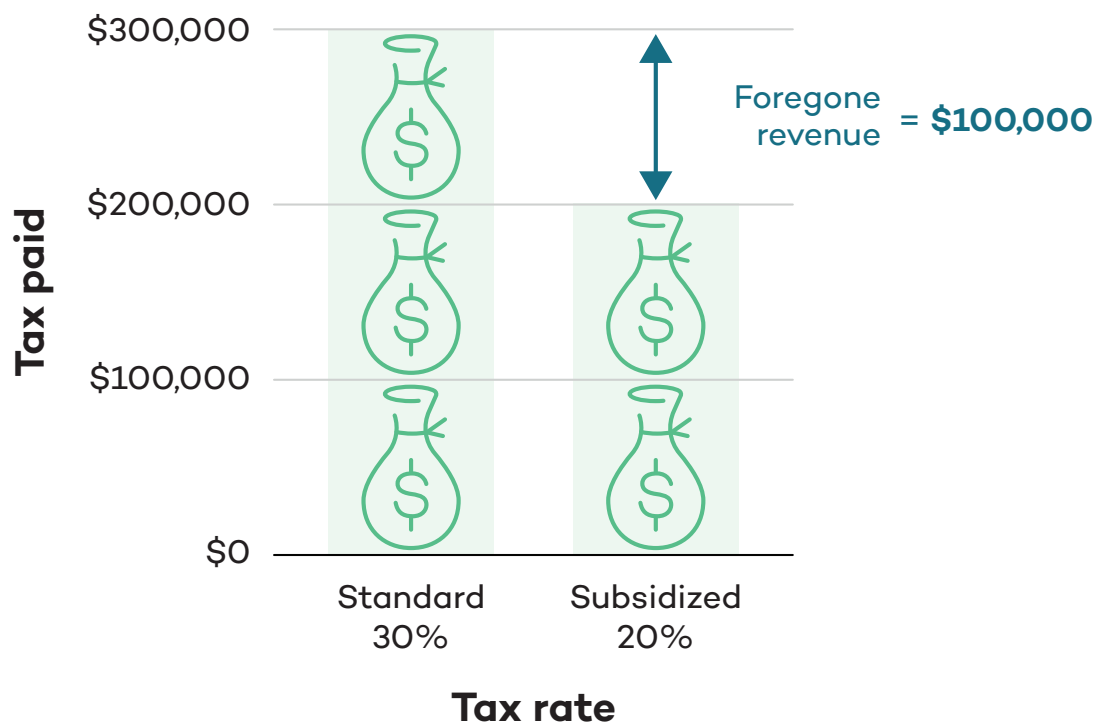
The most straightforward and commonly used approach to measuring tax expenditure and goods and services provided at a discount is the “revenue foregone method.” This is the approach recommended by the SDG methodology and the IMF and is the method used by almost all countries that publish tax expenditure statements as part of the budget process, including Canada (Department of Finance Canada, 2020; IMF, 2019; Wooders et al., 2019).

The revenue foregone approach simply asks what financial benefit the government would receive if the measure were not in place. In the case of tax, it is the difference between the amount of tax paid *with* the tax concession and the amount that would have otherwise been due. In the case of government-provided goods or services, it is the difference between the subsidized price and the market price (or interest rate, in the case of loans).

Calculating the revenue foregone therefore requires a benchmark: the market price, interest rate, or standard tax level. The difference between the subsidized rate and the benchmark provides the discount rate. The base or uptake is also needed. For example, a tax break of 10% on taxable income of CAD 1 million will result in revenue foregone of CAD 100,000 (see Figure 2).



Figure 2. Revenue foregone for a tax reduction of 10% on income of CAD 1 million



Source: Authors.

The principle is simple. But calculations become complex when summing tax concessions across a whole industry, with more complex types of tax concessions (e.g., accelerated depreciation) or when the benchmark is not apparent.

3.2.1 The Benchmark Is Crucial

Identifying the correct benchmark is crucial, as all tax subsidies need to be measured against it. In Figure 1, the benchmark is the standard tax rate of 30%. All the benchmark tax rates together (e.g., income, corporate, GST rates) make up the benchmark system. Some researchers, particularly those funded by the oil and gas industry, argue that certain tax measures that benefit fossil fuels should be *part of* the benchmark system. They misleadingly claim that deductions on taxes and royalties merely “neutralize” the bias of the tax system against capital-intensive industries like oil and gas, which has high upfront exploration and infrastructure costs (see Section 3.3 for a refutation of this argument).



However, if taxes and other measures *are* the benchmarks, they cannot be measured. This would hide them, which prevents any quantification or review of their costs and benefits. Regardless of opinions about whether the measure is good, bad, or neutral, it should be measured to allow evaluation.

The SDG methodology recommends using a benchmark set on the fundamental structural features of the tax system (Wooders et al., 2019). This approach treats “special features,” such as higher taxes aimed at raising revenues or internalizing externalities, as deviations. Some subsidy estimates, such as those by the IMF (2019), include the non-pricing of externalities as subsidies. The SDG methodology does not recommend this approach because determining an optimal tax level for a benchmark is highly complex and will vary over time, location, and fuel (Wooders et al., 2019).

The Canadian federal government uses a benchmark tax structure that includes only the most fundamental elements of the tax system (Department of Finance Canada, 2020). The Department of Finance (2020) argues that this approach “provides greater transparency by ensuring that information is being disclosed on a wide range of tax measures, including measures that may not be considered tax preferences.” This is the correct approach. However, it has not ensured all Canada’s federal tax expenditures have been quantified (as noted in Table 1).

Quantification is possible if companies provide the necessary information. For example, the 2020 federal tax expenditure report included estimates of three accelerated capital cost allowance measures. The estimates were made possible by the provision of additional taxpayer data, including on investments and tax claims. **That is why it is critical that companies be required to report the deductions they claim against each tax measure and that governments estimate and report all foregone revenue.** In addition, the scope of the report should be expanded to cover all tax measures that benefit fossil fuels, including all depreciation allowances.

However, reporting need not be contingent on company declaration in the near-term. The Department of Finance may be able to deduce fairly accurately which asset classes are being reported on tax returns via the asset classification code selected, allowing for improved transparency if analyzed and published.



Misconception	Correction
The IMF “post-tax” subsidy approach is not recommended (Chassin, 2014; Kaplan & Milke, 2020; McKittrick, 2017)	Agreed. The benchmark recommended by the SDG methodology considers special taxes for externalities a deviation. While the SDG guidelines do not consider them subsidies, understanding the cost of these externalities is still vitally important in assessing the economic merits of fossil fuels and the social benefits of directing public support to other sectors.
Accelerated depreciation and royalty “relief” are not a subsidy; they merely neutralize the bias in the tax system against capital-intensive industries (CAPP, 2017; McKenzie & Mintz, 2011)	Both are clearly subsidies as defined by the WTO definition of “revenue foregone or not collected” and against the benchmark approaches recommended by the SDG methodology and currently used by the Department of Finance Canada.

3.3 An Inventory Is the Most Transparent Way to Catalogue Subsidies

Once identified and quantified, subsidies can be catalogued in an inventory. Such an inventory would list each policy, the revenue foregone, and other details, such as to which fuel it applies and what stage of production, transformation, transport, or consumption. This is a transparent way to assess budgetary impacts and summarize subsidies in a given jurisdiction and industry (Kojima & Koplow, 2015). It is the approach used by the OECD (2018b) and the SDG methodology (Wooders et al., 2019), recommended by the IMF (2019), and used in Canada’s federal tax expenditure report (Department of Finance Canada, 2020). All subsidies should be included in the inventory: transparency is a critical starting point.¹⁰

Summing all the subsidies in an inventory provides an *estimate* of total subsidies. This approach does not take into account dynamic effects, such as interactions between policies or impacts on the economy. For example, a subsidy that reduces royalty payments will improve the company’s profits, increasing its taxable income. This increase in tax payments would not be captured as part of the foregone revenue calculation. Also, removal of one subsidy may trigger switching to a second-best tax break, such that the full revenue foregone will not be recovered. There may be interactions with other tax provisions with similar effects. Still, summing the the measures in the inventory is a valid approach because government budgets do not include the dynamic effects of direct spending measures either (IMF 2019). Further, the ability to evaluate the relative scale, patterns of recipients, and trends over time all help governments more effectively align economic and environmental policy and use taxpayer resources wisely.

¹⁰ Policies should not be excluded because, at a particular point in time, some party argues they are inframarginal or not “inefficient”: this political strategy is often a way for subsidy incumbents to protect the status quo.



Estimating dynamic effects requires vastly more levels of data and resources than does an inventory; often, the requisite data are not available. Information (or assumptions) are required about taxpayer behaviour (including tax evasion), the elasticity of demand and supply of the good, profitability of the activity, and effects on revenues raised for other activities associated with the tax measure (IMF, 2019). In addition, the increased revenue from eliminating a tax expenditure will increase government revenue and spending, which should also be taken into account (Department of Finance Canada, 2019, p. 3). **Such interactions can only be captured through economic models, and the results will vary widely depending on underlying data and assumptions.** Unfortunately, these models are often a “black box,” leading to low transparency about the calculations. **Data and analysis of fossil fuel subsidies should be transparent and comprehensive, with calculations that are relatively simple to carry out and replicable** (Kojima & Koplow, 2015).

Models can supplement inventories and can benefit from the information inventories contain. But the modelling needs to be carried out in an open-source context, so bias and data gaps can be seen, and embedded data and assumptions are visible.

In any case, the inventory approach tends to result in highly conservative subsidy estimates, given that totals do not include many subsidies that could not be quantified due to lack of data (Wooders et al., 2019). But governments and researchers do need to keep in mind that these dynamic effects are absent; therefore, actual foregone revenue might differ from estimates (IMF 2019).

Misconception	Correction
<p>“Tax expenditure” and revenue foregone concepts are not valid (McKenzie & Mintz, 2011)</p>	<p>Almost all countries that publish tax expenditure statements as part of their budget process use the revenue foregone method, including Canada. It is also the approach recommended by the IMF and the SDG methodology (IMF, 2019; Wooders et al., 2019).</p>
<p>The revenue foregone and inventory methods do not take into account dynamic effects or interactions (McKenzie & Mintz, 2011)</p>	<p>This is correct, though diversionary. The IISD approach remains valid because:</p> <ul style="list-style-type: none"> • Interactions can only be captured through economic models, and the modelling results will vary widely depending on underlying data and assumptions, which are subject to dispute: models are often a “black box.” • Inventories are more transparent. • Governments do not include dynamic effects of direct spending in their budgets either.
<p>An economic model should be used to estimate subsidies (McKenzie & Mintz, 2011)</p>	<p>The inventory approach is more transparent and replicable. It is the approach used by the OECD and most countries reporting tax expenditures. Where models supplement inventories, they should be open source.</p>



4.0 Why a Comprehensive Inventory of Foregone Revenue to Fossil Fuels Is Vital

Foregone revenue for all sectors should be comprehensively identified and quantified, but there are strong reasons why this is particularly important for fossil fuels. These reasons are outlined below. Where necessary, this section also counters some of the oil and gas industry's arguments about fossil fuel subsidy accounting.

4.1 Fossil Fuels Create Negative Externalities

Fossil fuels cause greenhouse gas emissions and air pollution. In 2017, global health costs arising from outdoor pollution generated by fossil fuel use were estimated to be around USD 2,260 billion and the costs associated with climate change an additional USD 370 billion (Taylor, 2020). Future climate change-related costs, from extreme weather events to slow onset events like sea-level rise, are only expected to increase. An efficient pricing system would incorporate these costs into the price of fossil fuels. Instead, tax expenditures and other foregone revenue lower the cost of fossil fuels at a significant cost to taxpayers. **Removing these subsidies would therefore be price-correcting.**

4.2 Large Amounts of Government Revenue Are in Play

The COVID-19 economic crisis requires governments to provide unprecedented levels of financial support to at-risk industries. To fund this support, governments will need to review all revenue options and make careful judgements about the most effective ways to spend limited resources. Governments should keep in mind that calls for additional support for Canada's oil and gas industry is in the context of a large existing suite of subsidies, *many of which are not costed*. Reforming foregone revenue from fossil fuels represents a large potential source of post-COVID-19 recovery funding.

Calls for additional subsidies to ensure the future of Canada's oil and gas industry should be viewed in the context of the industry's poor long-term fundamentals as a driver of economic growth and employment in Canada. Canada's oil and gas industry is high cost and therefore especially vulnerable to drops in demand and price (Erickson & Lazarus, 2020). This makes new investments in unconventional oil and gas projects highly risky. In addition, ongoing support of the fossil fuel industry is inconsistent with Canada's long-term greenhouse gas strategy (Erickson & Lazarus, 2020). Instead, the government must ensure a just transition for oil and gas-dependent workers and communities whose livelihoods are adversely affected by COVID-19, the energy transition, digitalization, and more.¹¹

¹¹ For more information on supporting workers, see Principle 3 of Corkal, Gass, & Cosbey (2020).



4.3 Tax Breaks and Royalty Subsidies Affect Investment Decisions

Most tax subsidies in the oil and gas sector target the early stages of fossil fuel projects: exploration and capital investment. Royalty subsidies or tax policies, such as accelerated depreciation or tax credits, put more money into the company's hands than they would have otherwise had at this stage (Erickson et al., 2020). These benefits are enhanced because of the time value of money (see Section 4.6). The additional resources can be used to invest in new projects or to fund media campaigns or lobbying and therefore “lock in” fossil fuel production and a continuation of subsidies (Erickson et al., 2020).

Some commentators have argued that the presence of caps on royalty subsidies (i.e., a lower royalty rate applied to a given volume of production) means that these policies do not influence decisions at the margin (i.e., whether to produce one more unit of product) (McKenzie & Mintz, 2011). This misses the point. **The presence of subsidies that allow companies to recoup investments in exploration and capital expenditures before they have to pay full royalties or taxes provides a strong incentive to keep investing in new oil and gas ventures in the first place.** It does not necessarily incentivize an *additional* unit of production but rather all units of production.

Capping subsidies reduces the total value of the subsidy (though it is still front-loaded to the early years of production, boosting its value on a net present value [NPV] basis). But, in both cases, the subsidy will affect decisions on whether to open a new well, which wells to open or shut, or how much to produce.

In addition, tax subsidies for capital-intensive industries are not necessarily desirable. Markets should direct investment toward the lowest-risk, lowest-investment mechanisms available to provide a similar or identical good or service. Thus, if one can provide energy services with less infrastructure, exploration, and capital, it is a benefit, not a bias.

4.4 Fossil Fuel Subsidies Deplete Public Resources

Fossil fuel industries—unlike renewables and many others—extract a publicly owned resource. Therefore it is appropriate that they pay competitive royalties, company taxes, and also fees for any non-energy public resources, such as land or water, affected by production. **If royalty subsidies are needed to allow projects with high costs (such as non-conventional wells) and low production to be viable, then it is appropriate to question whether such projects should go ahead.**

The fossil fuel industry claims that, because it contributes significant revenue to governments (through taxes above the benchmark, sometimes referred to as “negative tax expenditures”), it does not receive net subsidies. This argument ignores costs the industry may shift onto governments (such as the full cost of road damage and long-term cleanup costs) as well as the



fact that other industries not receiving subsidies are also generating taxes to support government activities. Indeed, revenue and subsidies are two different things and should be accounted separately.

For example, cigarettes are taxed at a high rate to discourage purchase by consumers. If the government were to provide specific subsidies that encourage the production of cigarettes, these would not be cancelled out by the high excise and sales taxes. The public would need to know the cost and impact of the production subsidies even if there were net revenues from tobacco.

Caution is needed when viewing comparisons provided by the oil and gas industry of subsidies provided to different sectors. Some researchers have compared fossil fuel subsidies with government support for social assistance and public transport, which clearly provide public benefits (Kaplan & Milke, 2020). While some fossil fuel subsidies can create economic benefits, including employment, they also deliver profits to private companies while depleting public resources, creating pollution, and contributing to climate change and its rising costs. Other industries receiving subsidies should also be monitored and reviewed, but the analysis should take into account the depletion of public resources and the generation of harmful externalities. Comparing subsidies for these industries is not comparing apples to apples. As tax expenditures and other fossil fuel subsidies are reformed, governments in Canada must also ensure a just transition that assists workers and communities who are reliant on the fossil fuel sector.

4.5 Tax Deductions Can Be Carried Forward for Many Years

Tax benefits can be accumulated over time. Deductions arising from exploration expenses and capital investment, usually incurred in the early stages of project development, can be pooled to reduce corporate tax payments over many years. The Canadian oil and gas industry currently has an estimated pool of CAD 63 billion worth of tax deductions (McCrea, 2020).

This presents two main problems. First, if international oil and gas prices are low, royalties are low (given royalties are a proportion of the market price). Low international prices will also lower profitability, reducing corporate tax payments. Deductions can be used to further reduce taxable profits. As a consequence, the public receives low or no return for its resources being depleted during times of low oil prices.

Second, the value of money changes over time: the present value of money is greater than its future value. For example, if someone asked whether you would like a million dollars now or in 10 years, you would likely choose now. This is because inflation will reduce its value in 10 years but also because you can invest the money now and get interest or a return. Different discount rates are applied to factor in the NPV of money (commonly 10% to 20% in the oil and gas industry) (Erickson et al., 2020). Accelerating the ability to write off capital expenses (e.g., expensing of intangible drilling costs) or increasing the amount that can be written off above the actual cost incurred (e.g., excess of percentage over cost depletion) both reduce near-term tax liabilities. This increases short-term net cash to firms and investors, generating value on an NPV basis. Such



policies put more money into company pockets now, allowing them to potentially invest more in exploration and establishment costs, locking in fossil fuel supply.

Misconception	Correction
Caps on royalty “relief” mean these subsidies do not affect decisions at the margin, i.e., whether to produce one more unit of product (McKenzie & Mintz, 2011)	This may be true, but the subsidies do affect company decisions on whether or not to invest at all; therefore, they incentivize further oil and gas exploration and development, locking in fossil fuel production.
Tax deductions for exploration and development are not subsidies because, though they reduce revenue initially, they mean projects can go ahead that result in lots of revenue for governments (Chassin, 2014)	Tax expenditures are recognized as subsidies by the Canadian federal government and standard international practice. Subsidies and revenue are different things and need to be separately quantified in order to gauge policy impacts and efficacy. While fossil fuel extraction generates revenues (often the result of a sale of a public asset), it also generates quantifiable costs in the form of air pollution (with associated health impacts), climate change, and environmental destruction. These costs should be weighed against revenue and other economic benefits.



5.0 Conclusions

Canada's tax exemptions and royalty subsidies programs incentivize the production and consumption of fossil fuels and are a significant source of revenue leakage. Understanding these subsidies is therefore critical at a time when Canada is facing a difficult economic recovery and the mounting costs of air pollution and climate change. Yet half of the revenue foregone measures identified in this study could not be quantified (Table 1). While quantification is not a prerequisite to reform, it can be helpful to better understand the costs, benefits, and impacts of these subsidies on government budgets, the economy, and the environment.

Calculations of subsidies generate estimates rather than definitive answers. Where there is some scope for interpretation, the field of subsidy research has a long history and well-established practice. Inherent uncertainty in subsidy estimation can be reduced by governments and other researchers using standard internationally agreed definitions and accounting methods to ensure consistency, replicability, and reporting against international obligations. Such tools are available in the form of the WTO definition of subsidies and guidance for reporting against SDG indicator 12.c.1. Following international best practices will help improve transparency regarding Canada's fossil fuel subsidies, which is highly worthwhile given the large sums involved and the urgency with which we must reduce fossil fuel emissions that cause climate change.

Following international best practices will help improve transparency regarding Canada's fossil fuel subsidies, which is highly worthwhile given the large sums involved and the urgency with which we must reduce fossil fuel emissions that cause climate change and help communities transition to a low-carbon economy.



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