Environmental Tax Statistics in Canada

(experimental)

Challenge: Carbon tax disaggregation per industry

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Delivering insight through data for a better Canada



Overview

- What does Statistics Canada's experimental Environmental Tax Statistics (ETS) product measure?
- Data sources
- In-scope tax bases (commodities and taxes)
- Compilation summary
- ETS data table
- Conceptual challenge industry disaggregation of carbon tax
- Questions to the LG members



Canadä

What does Statistics Canada's Environmental Tax Statistics measure?

- Quantifies aggregate federal, provincial and territorial receipts for environmental taxes received by governments.
- For this product: Environmentally related taxes are revenues where the tax base is a physical unit (or a proxy of it) of something that has a proven, specific, negative impact on the environment. SEEA2012 Section 4.150
- We follow: Environmental taxes are defined by and structured under OECD's methodological guidelines on environmentally-related tax revenue accounts:
 - in line with the System of Environmental Economic Accounting Central Framework (SEEA-CF 2012) and the SNA.



What does Statistics Canada's Environmental Tax Statistics measure?

Environmental tax amounts (revenue) are reported for:

- Four main categories: energy taxes, transportation taxes, pollution taxes, and natural resources taxes.
 - Energy taxes = Energy and fuel for transport taxes, carbon tax, and emission trading permits.
- Annually, by household and business expenditures (Industry, Households, Government and Non-profit and for Gross Fixed Capital Formation).

Environmental Tax Base Categories:

Energy and fuel for transport taxes	nergy products for transport or stationary purposes, cluding fuel or transport.					
Carbon tax	Energy-related GHG emissions/carbon content.					
Emission trading permits	Proceeds from permit schemes					
Transportation taxes	Motor vehicle production, trade or sale, registration or use, vehicle insurance, road, congestion taxes and other means of transport excluding fuel for transport.					
Pollution taxes	Non-energy related carbon content, CO2 emissions and other GHGs not related to energy, waste, noise, radiation, effluents to water, amongst others.					
	Resource extraction, abstraction and harvesting excluding oil and natural gas, including exploration activity.					



Data sources

All estimates in the ETS are derived from Statistics Canada data.

- Environmentally-related tax revenue comes from:
 - Supply and Use Tables (SUTs) Margins & Taxes tables
 - Canadian Government Finance Statistics
- Other tax revenue (non-environmentally related) comes from:
 - SUTs Use-Purchaser tables; taxes on products and taxes on production

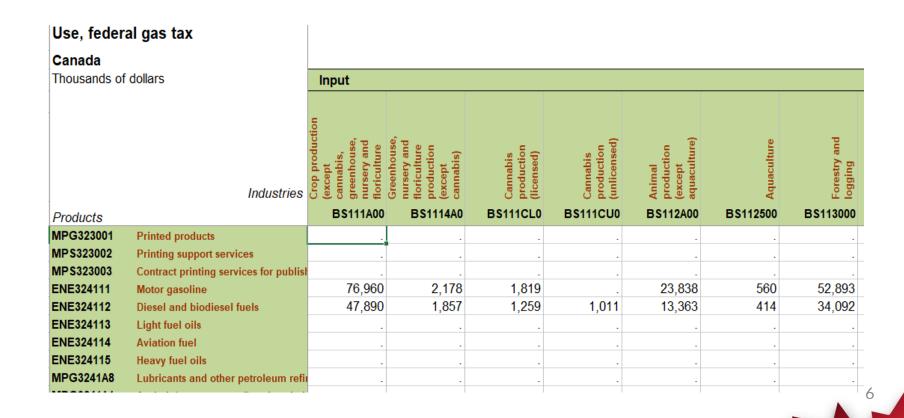
Advantages of using SUT data:

 Possibility to disaggregate data by industries and households, amenable to input-output and other industry-level analyses.



First step: Identify in-scope tax bases using Supply and Use tables

- Canada produces annual SUTs at the national and sub-national levels.
 - +490 goods and services
 - +270 final use industry breakdown
 - 19 different tax types
- Examples of in scope tax bases are:
 - Tires, paints, greenhouse gas pollutants (diesel, gasoline) and ozonedepleting substances.



First step: Identify in-scope tax bases using Supply and Use tables

 However, some tax bases are embedded into a single line in the SUTs such as taxes on products and taxes on production.

 For tax bases falling under these categories, data is extracted from the Canadian Government Finance Statistics.

	Table 2. Us	e table at purchasers' pr	ices						
	Ontario								
	Thousands of d	lollars	Input						
			ion						
			Crop production except cannabis, greenhouse, nursery and loriculture	use, and re on	" 5 <u> </u>	on (pead)	on ure)		
			Crop produce except cannabis, greenhouse nursery and	Greenhouse nursery and Toriculture production except	Cannabis production (licensed)	Cannabis production unlicensed)	Animal production (except aquaculture)		
		Industries	Crop pi (except cannab greenh nursery	Greenh nursery floricult product (except cannab	Canr prod (lice	Canr prod (unli	Animal product (except aquacul		
	Products		BS111A00	BS1114A0	BS111CL0	BS111CU0	BS112A00		
\	NGS913000	Other municipal government service							
	NGS914000	Other aboriginal government service							
	PRM100000	Taxes on products				-	-		
	PRM200000	Subsidies on products	-78,166	-3,585			-8,965		
	GVA	Gross value-added at basic prices	2,831,423	1,217,170	580,997	370,500	1,823,792		
	PRM300000	Subsidies on production	-150,625	-670	-	-	-85,129		
	PRM400000	Taxes on production	205,317	15,576	522	-	43,386		
	PRM500000	Wages and salaries	688,278	724,026	308,205		393,989		
	PRM600000	Employers' social contributions	34,758	31,099	28,036	_	17,369		
	PRM700000	RM700000 Gross mixed income		218,902		370,500	711,426		
	PRM800000 Gross operating surplus		1,039,018	228,237	244,234	-	742,751		
	TOTAL	Total	6,386,318	2,391,385	1,135,342	562,419	6,957,731		

Identifying in-scope tax bases using the Canadian Government Finance Statistics

- For in-scope taxes embedded within Taxes on Products or Taxes on Production, data is extracted from the Canadian Government Finance Statistics, as they are itemized:
 - Emission trading permits;
 - Personal motor vehicle registration revenues;
 - Commercial motor vehicle registration revenues;
 - Hunting and fishing licenses at the provincial level.
- Data are available nationally and by provinces and territories.



Second step: Identify in-scope taxes

In-scope taxes:

- -Federal air transportation tax (FATT)
- -Federal custom import duties (FCID)
- -Federal excise tax (FEX)
- -Federal gas tax (FGS)
- -Provincial environment tax (PENV)
- -Provincial gas tax (PGS)
- -Federal environment tax (FENV) new in 2019

Out-of-scope taxes:

- -Retail sales taxes (ex: VAT and goods and services taxes GST, PST, HST).
- -Amusement taxes and other taxes not linked to environmental protection.



Last step: compilation of environmental tax revenue

• First: Extract in-scope taxes amount

Sum the amounts of the in-scope taxes for each inscope commodity

Ex: tires
The import tax and the provincial environmental tax are in-scope.

SUCC_code	SUCC_name	Tax Type applicable to the commodity.			
MPG326201	Tires	FCID	Import tax		
MPG326201	Tires	FST	Federal GST		
MPG326201	Tires	PENV	Provincial environmental tax		
MPG326201	Tires	PHST	Provincial sales tax		
MPG326201	Tires	PST	Provincial sales tax (B.C. only)		

Ex: Tires env. taxes = \$3,000,000



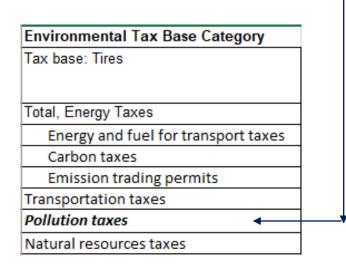


Last step: compilation of environmental tax revenue

 Second: Assign the extracted tax amount into the appropriate tax base category

Ex: Tires env. taxes = \$3,000,000

- Consult SUTs tax experts to define each tax type rationale;
- 2. Follow OECD guidelines to correctly assign tax base category.



SUTs: The environmental component of taxes on tires is related to the waste aspect as a source of pollution after the useful life of the product.

OECD: Pollution category includes "waste management" sub-category to include individual products such as batteries, tires or lubricants.

ETS data table

National and sub-national

Total, sectors

- -Industry
- -Households
- -Gov. and non-profit institutions
- -Gross fixed capital formation

Environmental tax revenue reached \$28.6 billion in 2018:

-of which \$2.7 billion was carbon tax

Plan: breakdown the "Industry" sector into 110 industries.

Current challenges for carbon tax that need to be addressed.

Environmental tax collected from different economic sectors by geographic region (statcan.gc.ca)

x \$1,000,000 current dollars

Economic sector	Total, sectors										
Environmental											
tax	2010	2011	2012	2013	2014	2015	2016	2017	2018		
	Dollars										
Total, environmental taxes (x 1,000)	19,523,877	19,417,061	20,621,648	22,611,853	23,277,114	24,593,531	24,513,569	28,240,613	28,647,366		
Total, energy taxes (x 1,000)	14,156,890	14,829,564	15,273,437	16,021,102	16,354,805	17,462,014	17,521,243	20,729,820	20,736,804		
Energy and fuel for transport taxes (x 1,000)	13,225,841	13,716,194	13,983,253	14,561,166	14,750,860	15,393,694	15,730,957	15,832,626	15,736,495		
Carbon tax (x 1,000)	859,294	1,056,348	1,207,191	1,356,838	1,311,715	1,186,647	1,205,117	2,190,381	2,709,905		
Emission trading permits (x 1,000)	71,755	57,022	82,993	103,098	292,230	881,673	585,169	2,706,813	2,290,404		
Transportation taxes (x 1,000)	4,206,016	3,296,348	3,966,796	5,265,767	5,500,309	6,006,871	6,076,613	6,547,251	6,840,260		
Pollution taxes (x 1,000)	206,873	198,552	177,984	250,290	259,212	211,306	208,430	212,700	210,637		
Natural resources taxes (x 1,000)	954,098	1,092,598	1,203,431	1,074,694	1,162,789	913,340	707,282	750,842	859,665		
Total, taxes on products and production (x 1,000) ⁴	190,802,332	198,335,962	204,825,605	219,336,000	229,408,226	240,667,441	249,249,088	265,087,357	274,528,857		
	Percent										
Share of environmental taxes	10.23	9.79	10.07	10.31	10.15	10.22	9.84	10.65	10.44		

Challenge: Carbon tax breakdown by industry

Disaggregation of carbon tax paid at the industry level (110 industries) could be useful for decision makers in this climate change context.

- SUTs: CGFS carbon tax total revenue is distributed by industry using, among others, a proxy based on industry expenditure patterns.

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Т	Thousands of	dollars	Input							
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Challenge: Carbon tax breakdown by industry

- The SUTs carbon tax microdata was used in the ETS for the expanded version of the table.
- When presenting the carbon tax disaggregated estimates to policy experts at the Departments of Environment and Climate Change Canada and Finance Canada, the feedback received centered on the expenditure proxy limitation:
 - Industries that may not have had carbon tax expenditure may show as indeed having it;
 - The method does not account for specific regional/industry carbon tax exclusions.
- Work is now underway to improve this, especially the exclusion list, in collaboration with policy departments.
- LG member expertise would be appreciated on this front:



Questions for LG members

- If carbon tax revenues are collected as a total amount for sectors (industry), what method(s) are used to disaggregate by payee industry?
- It was suggested we look at the GHG emission patterns to allocate the carbon tax; we are not sure exactly how to correlate this. Do you have any experience using this method?
- Are there other methods we could look at?
- Any other comments/suggestions on the ETS product are welcomed.

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References

StatCan ETS latest release

The Daily — Environmental taxes in Canada, experimental estimates, 2010 to 2018 (statcan.gc.ca)

Environmental tax collected from different economic sectors by geographic region (statcan.gc.ca)

<u>Surveys and statistical programs - Canadian System of Environmental-Economic Accounts - Environmental tax statistics (ETS) (statcan.gc.ca)</u>

OECD guidelines

pdf (oecd.org)

Canadian Supply and Use tables

The Daily — Supply and use tables, 2019 (statcan.gc.ca)

Canadian Federal Government Statistics

Canadian Government Finance Statistics (CGFS) (statcan.gc.ca)

