# Environmental Tax Statistics in Canada
## (experimental)
## Challenge: Carbon tax disaggregation per industry

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# 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

# 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 | Energy products for transport or stationary purposes, including 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. |
| Natural resources taxes | 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 ozone-depleting substances.

**Use, federal gas tax**

**Canada**

Thousands of dollars

| | | Input | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Industries* | | Crop production (except cannabis, greenhouse, nursery and floriculture | Greenhouse, nursery and floriculture production (except cannabis) | Cannabis production (licensed) | Cannabis production (unlicensed) | Animal production (except aquaculture) | Aquaculture | Forestry and logging |
| *Products* | | BS111A00 | BS1114A0 | BS111CL0 | BS111CU0 | BS112A00 | BS112500 | BS113000 |
| MPG323001 | Printed products | . | . | . | . | . | . | . |
| MPS323002 | Printing support services | . | . | . | . | . | . | . |
| MPS323003 | Contract printing services for publish | . | . | . | . | . | . | . |
| ENE324111 | Motor gasoline | 76,960 | 2,178 | 1,819 | . | 23,838 | 560 | 52,893 |
| ENE324112 | Diesel and biodiesel fuels | 47,890 | 1,857 | 1,259 | 1,011 | 13,363 | 414 | 34,092 |
| ENE324113 | Light fuel oils | . | . | . | . | . | . | . |
| ENE324114 | Aviation fuel | . | . | . | . | . | . | . |
| ENE324115 | Heavy fuel oils | . | . | . | . | . | . | . |
| MPG3241A8 | Lubricants and other petroleum refi | . | . | . | . | . | . | . |

# 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. Use table at purchasers' prices**

**Ontario**

Thousands of dollars

| | | Input | | | | |
|---|---|---|---|---|---|---|
| *Products* / *Industries* | | Crop production (except cannabis, greenhouse, nursery and floriculture | Greenhouse, nursery and floriculture production (except cannabis) | Cannabis production (licensed) | Cannabis production (unlicensed) | Animal production (except aquaculture) |
| | | BS111A00 | BS1114A0 | BS111CL0 | BS111CU0 | BS112A00 |
| NGS913000 | Other municipal government service | . | . | . | . | . |
| NGS914000 | Other aboriginal government servic | . | . | . | . | . |
| 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 | Gross mixed income | 1,014,677 | 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 in-scope 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

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

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

| Environmental Tax Base Category |
|---|
| Tax base: Tires |
| Total, Energy Taxes |
| Energy and fuel for transport taxes |
| Carbon taxes |
| Emission trading permits |
| Transportation taxes |
| ***Pollution taxes*** |
| Natural resources taxes |

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.
- Carbon tax is then reported under the line **taxes on products**, embedded with other items.

**Table 2. Use table at purchasers' prices**

**Ontario**

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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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- Canadian Federal Government Statistics

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