



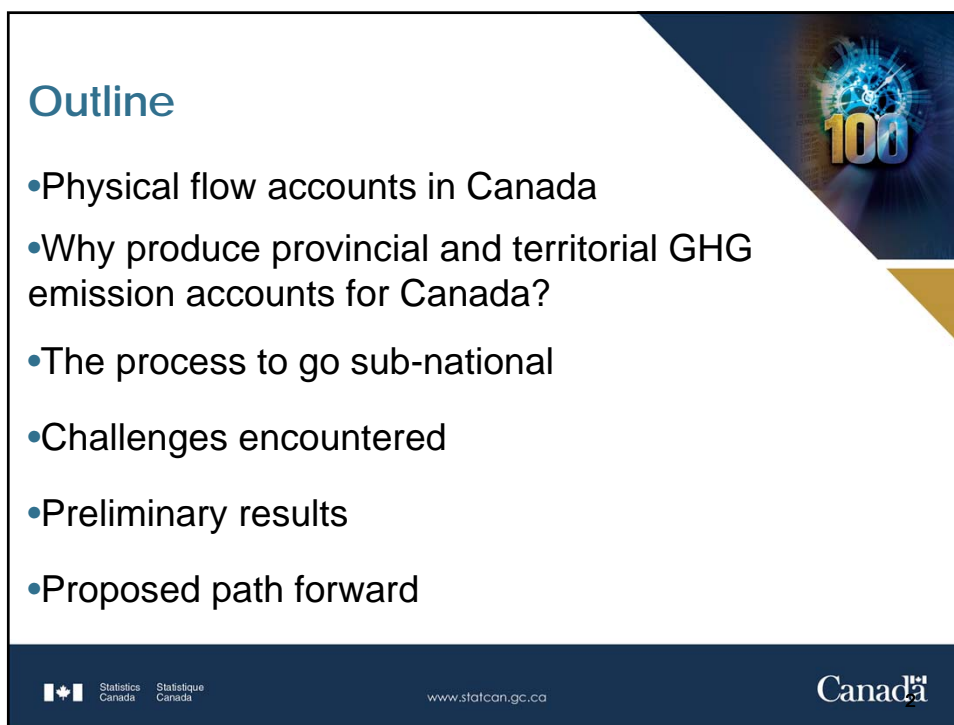
Canada: Development of provincial & territorial PFA for GHG emissions

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STATISTICS CANADA
ONE HUNDRED YEARS AND COUNTING


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Outline

- Physical flow accounts in Canada
- Why produce provincial and territorial GHG emission accounts for Canada?
- The process to go sub-national
- Challenges encountered
- Preliminary results
- Proposed path forward

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Physical flow accounts at STC



- “Statistics Canada's Physical Flow Accounts (PFA) record the annual flows of natural resources, products and residuals between the Canadian economy and the environment.”
- Canadian PFA currently cover energy use (terajoules), GHG emissions (kilotonnes CO₂_eq), and water use (m³)
- Follow UN System of Environmental-Economic Accounting (SEEA) guidelines
- Compiled using detailed industry and commodity classifications of the Canadian supply and use tables; but disseminated at a more aggregated industry level
- Currently, estimates for each account are only published at the national level**


The case for a sub-national GHG account in Canada



- Canada is **BIG**. Across provinces and territories, we see:
 - Different climates & various impacts
 - Different economies
 - Different policies
 - Introduction of carbon pricing

A glimmer of good news on the flood front as Ottawa River reached peak levels Monday morning, should start to recede

ANDREW SEYMOUR, OTTAWA CITIZEN, DYLAN C. ROBERTSON & MEGAN GILLIS Updated May 8, 2017



The Canadian Forces were called into Belleville to help with the flooding in Belleville Sunday May 7, 2017. CF members make their way along the streets. PHOTO BY AP/WIDE WORLD

A summer of fire, heat and flood puts a focus on adapting to climate change

"This is the new reality – some people like to say this is the new normal, but that implies a plateau," University of Alberta forestry scientist Mike Flannigan said of the consecutive record seasons for forest fire in B.C. "It could get worse and worse and worse."

The growing number of provinces opting out of Ottawa's carbon tax has intensified debate over how to address climate change. How ambitious should Canada be in reducing emissions? And what are the best policies for doing so?

2018 now worst fire season on record as B.C. extends state of emergency

Close to 13,000 sq km of province has burned, breaking record set in 2017

CANADA April 16, 2018 1:17 pm Updated: April 16, 2018 3:13 pm


Ice storms, blizzards and high winds in April: Did spring forget about Canada?

QUEBEC HEAT WAVE 2018


Update: 93 deaths now connected to Quebec heat wave

Heat health risk prompts change to Environment Canada warning system

One threshold for nearly all of Canada gives way to region-specific heat warnings that better capture risk





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The policy push for provincial & territorial estimates

- Big increase in demand for energy and emissions data given the provincial obligations under the *Pan Canadian Framework on Clean Growth and Climate Change*
- P/T data can address need for consistent, coherent, and comprehensive estimates of GHG emissions at that level
- Significant advantage of PFA over NIR is its direct link to economic data, allowing for robust analysis (e.g. intensities and final demand)
- **Long story, short: people are looking for this information!**





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What did we do?

- First, a top-down approach: spread energy use across provinces using SUT
- Determined bottom-up approach would be required to deliver quality estimates, especially where:
 - more recent reference periods not available in SUT
 - SUT are not a sufficient proxy for certain fuels (e.g. spent pulping liquor) or certain fuel use (e.g. own-account consumption)
- Little work needed on compilation methodology – the vast majority of effort involved was to update systems and working files (i.e. building an infrastructure to confidently produce 14x the number of estimates)

Challenge: Limitations of source data / collaboration with providers

- Some PFA source data are sampled to yield only national estimates
 - e.g. Industrial Consumption of Energy Survey, which provides the energy use account with detailed manufacturing fuel use data, only samples a handful of industries provincially
- Administrative data also only available at national level
 - e.g. the GHG account requires data from Environment and Climate Change Canada's UNFCCC submission to fill in gaps in non energy-based emissions
- Improving communication and collaboration with data providers and other stakeholders is a high priority

Challenge: Confidentiality



- Critical to maintain the confidentiality of survey respondents while publishing more granular data
- Don't want to put out more tables if they will be mostly suppressed
- The risk of a breach:
 - Loss of confidence in department to safeguard private information
 - Potential loss of future data
 - Reputation

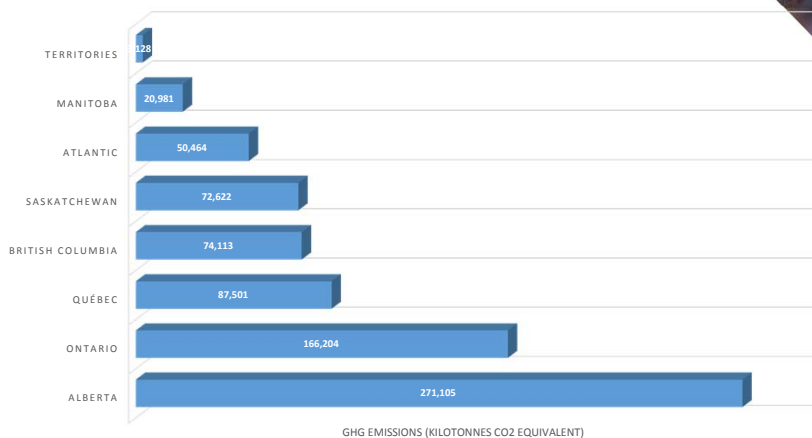
Challenge: Confidentiality (cont.)



- Approaches taken to address confidentiality:
 - Decision tree
 - Corporate tool to interpret *Statistics Act*, has allowed for full, unsuppressed release of monetary supply and use tables
 - Highly integrated nature of GHG account
 - No company is reporting emissions, estimates are derived
 - SSI Classification Tool: PFA for GHG at '0' on scale to 50

Preliminary results

CO2 EMISSIONS IN CANADA, BY PROVINCE AND REGION, 2016



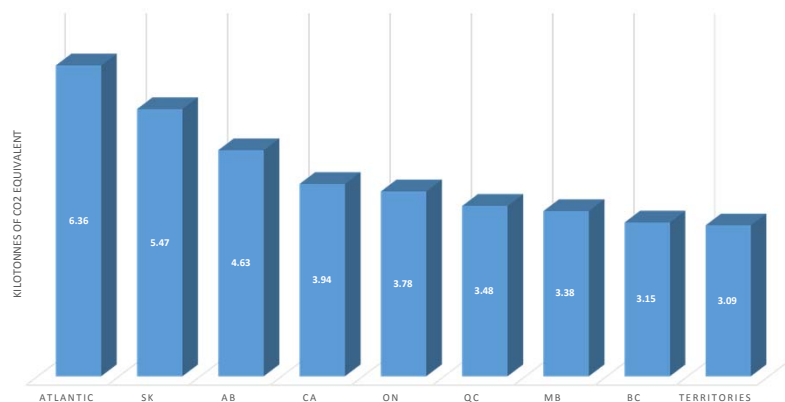
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Preliminary results

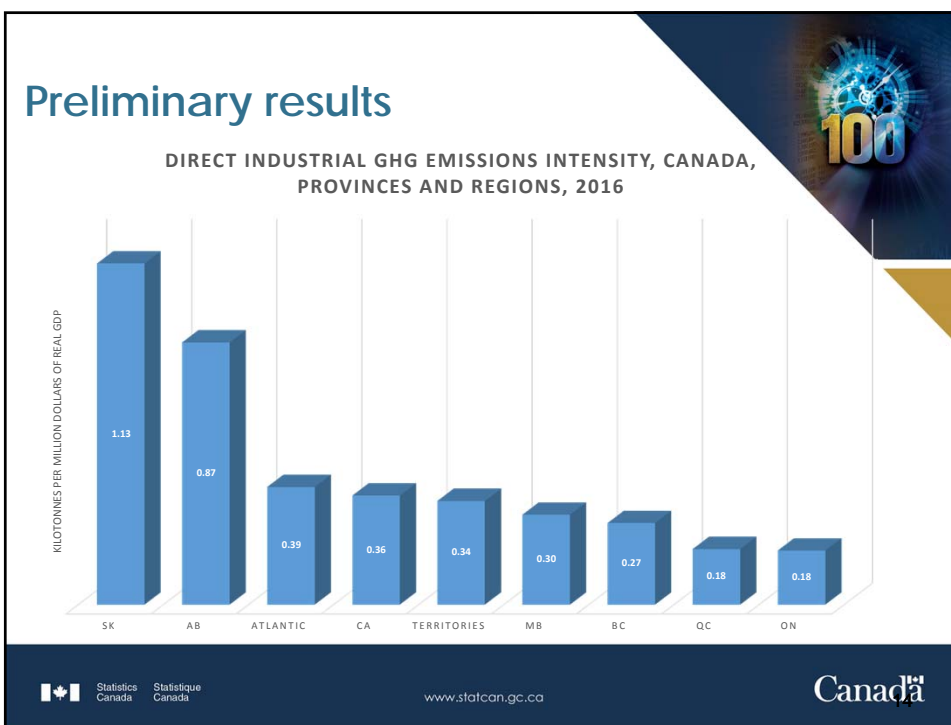
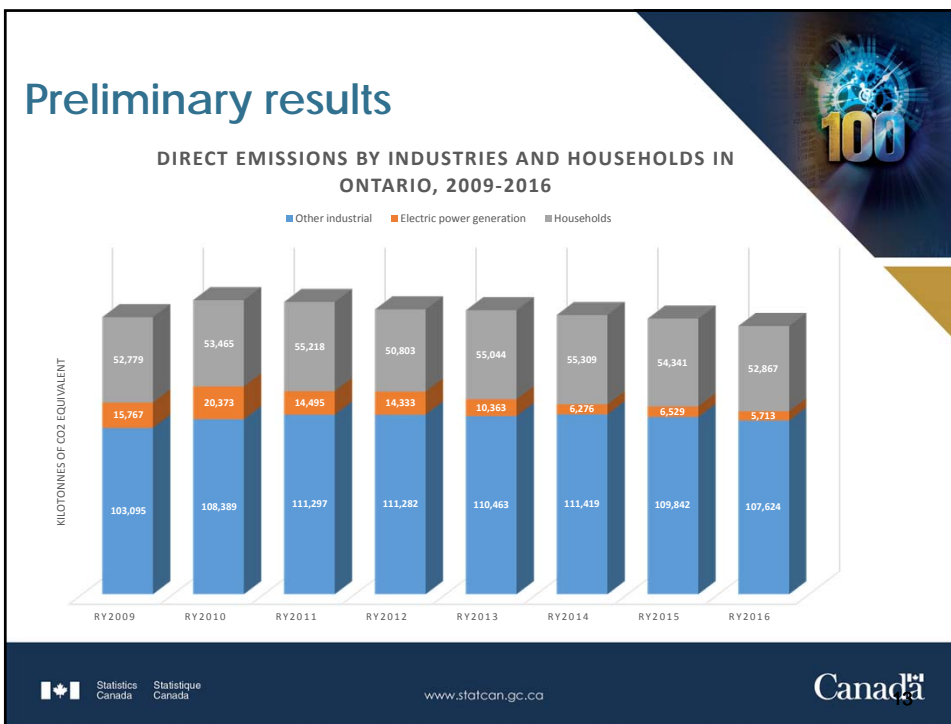
DIRECT HOUSEHOLD GHG EMISSIONS PER CAPITA IN CANADA, PROVINCES AND REGIONS, 2016



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Reducing suppression - GHG account a good place to start

- Relevance: This topic has the greatest demand from stakeholders
- The GHG estimates are an aggregation of:
 - 12 fuels from the energy use account
 - 5 fuels from the non-energy account (which is not published)
 - Petrochemical feedstock, naphtha, lubricants allocated using SUT
 - “Plugins” data covering industrial process and fugitive emissions
- Energy and non-energy data get converted to GHG emissions through emission factors
- The above are summed by industry in CO2 equivalents

Proposed new approach: GHG

- Lift current confidentiality at the total GHG level since these emissions are a multi-factor combination of fuel types and emissions factors.
- Publish provincial/territorial GHG emissions (kilotonnes of CO₂ equivalents) in fall 2018.
 - Follow-suit with energy use in 2019, then water use
- For any custom tabulations requiring the reporting emissions by fuel type, determine and follow the energy use pattern.
- Pursue further analytical work on PT accounts
 - e.g. intensity and final demand measures at PT level

Thank you!



- Questions/comments?

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