

Tracking the Carbon Footprint of the Canadian Households from 1990

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Looking at consumers as GHG emitters is relatively new in the research literature which still focuses primarily on production. The purpose of this paper is to develop and analyze detailed time series to track the carbon footprint of Canadian households. The issue of global warming is one of the highest ranking environmental concerns. Scientific research into the effects of global warming are well documented, and clearly signal that action needs to be taken to avert an environmental disaster. The Kyoto Protocol represents an important milestone in terms setting targets for global reduction of GHG emissions. Targets were referenced to 1990 as a starting point. Statistical monitoring shows there has been little progress of reducing carbon emissions since 1990.

Canada was one of 37 industrialized nations that agreed to the Kyoto protocol to reduce greenhouse gases by 5.2 percent from 1990 levels by 2012. As of 2007 there was good news in that GHG intensities declined by about 20 percent, but total GHG emissions increased by more than 20 percent. Although the overall increase in GHG emissions was largely tied to carbon intensive exports, the consumer played a significant role. The data supporting this work brought together a number of statistical sources and modeling procedures to construct time series from 1990.

Canadian consumers are among the most affluent with expenditures generating a large carbon footprint. Statistical monitoring of GHG emissions is based on production. This research, however, is based on the consumer, the ultimate target of production. The input-output tables provided the means to link production to final demand. The Energy Flow Accounts were used to estimate GHG emissions for each the 100+ industries from 1990. GHG emissions for more than 40 consumer expenditure categories were derived. Two additional categories were added to account for direct household emissions from the combustion of fuel in the home and for private motor vehicle use. These fall outside the national accounts production boundary

Although Canadian producers supply the lion's share of consumer demand, there is a sizable remainder satisfied by foreign producers. This limitation was addressed by recent development of a multi-regional input-output table. GHG estimates were derived for direct and indirect imports for each of the 40+ consumer expenditure categories. This research found imports generate relatively higher GHG intensities compared to Canadian producers. In 2006, 84 percent of the value of percent personal expenditure was produced in Canada and accounted for 70 percent of GHG emissions. Imports representing the remaining 16 percent were responsible for 30 of the carbon footprint of the Canadian consumer. Imports from United States (by far our largest source of imports) and China (the fastest growing source of imports) make up about 60 percent of all imports feeding directly and indirectly into consumer demand.

Finally, the Social Policy Simulation Database (SPSD) was used to add household characteristics to GHG emissions, particularly income. For this paper, the focus is primarily on comparing low and high income households. Preliminary results show that households in the top income decile

emit 9 times the carbon emissions of bottom decile households. This translates into a 3 to 1 per capita ratio. The distribution of GHG emissions across the income deciles has remained relatively stable since 1990 with most variation at the extremes. Additional work is required for the import content of the carbon footprint.

In summary, this paper draws on a wide range statistical data sources and modeling structures bringing together the results of research projects over the past 5 years that look at consumers as GHG emitters.