

CANADA'S GHG EMISSIONS FROM TRANSPORTATION AND ELECTRICITY SECTORS

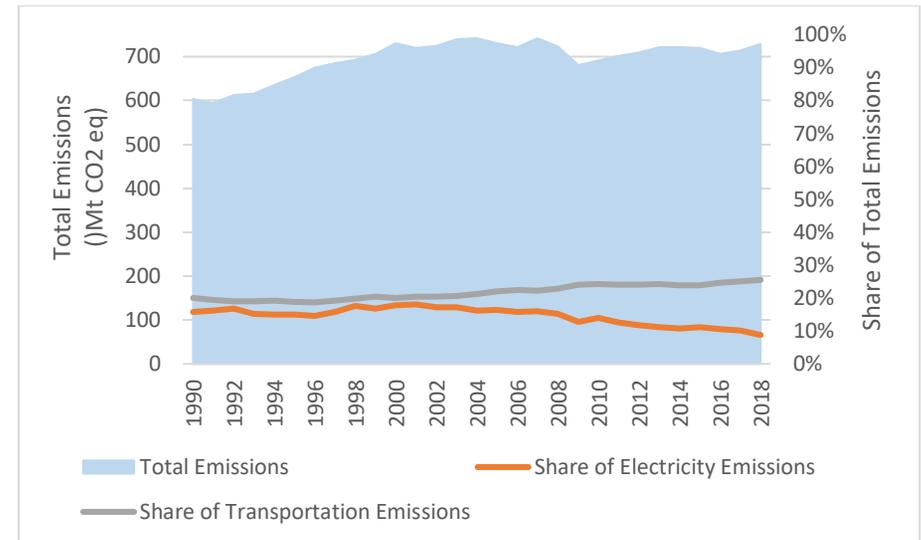
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In 1990, the electricity and transportation sectors jointly accounted for 35 percent of Canada's total greenhouse gas (GHG) emissions. Since that time, emissions from the two sectors have gone in opposite directions. Emissions from the electricity sector fell 33 percent between 1990 and 2018, largely due to reduced coal use in power generation. Emissions from transportation grew by 54 percent over the same period, mainly due to increased freight travel and a change in the mix of vehicle types from cars towards light trucks and SUVs. For Canada to achieve its long-term emissions reduction targets, transforming the transportation sector is imperative.

In 2018, Canada's total GHG emissions were 729Mt of CO₂ equivalent. The transportation sector was the second largest contributor to this figure (following the oil and gas sector with 26.5 percent of total emissions), accounting for 186Mt of CO₂ equivalent and 25.5 percent of total emissions. Together, the electricity and transportation sectors are key contributors to Canada's total emissions; approximately 35 percent of annual GHG emissions arise from these two sectors alone (Figure 1). Canada has made a lot of progress in mitigating GHGs from the electricity sector by gradually phasing out coal-fired power plants and increasing efficiency and generation from non-emitting sources like renewables between 1990 and 2018. In contrast, Canada's GHG emissions in the transportation sector have continuously increased, despite substantial changes in transportation technology such as improvements in fuel efficiency and introduction of low and zero-carbon vehicles. Between 1990 and 2018, the share of transportation emissions in Canada's total emissions grew by 25 percent.

Figure 2 plots GHG emissions from transportation and electricity sectors relative to 1990 and reveals the striking difference in emissions starting in 2004. Emissions in both sectors followed an increasing trend until 2004 and since then have moved in opposite directions. Electricity emissions were 33 percent lower in 2018 compared to 1990, while total transportation emissions increased by 54 percent during the same period. This reveals the

FIGURE 1: THE SHARES OF TRANSPORTATION AND ELECTRICITY EMISSIONS IN CANADA'S TOTAL GHG EMISSIONS, 1990-2018

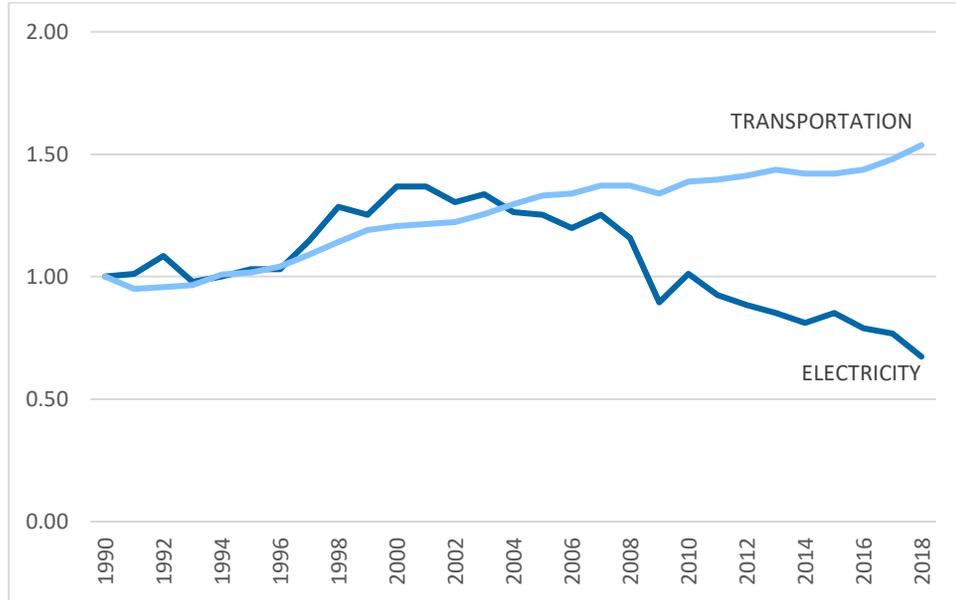


Source: Author's calculations from ECCC (2020).

relative success in decoupling changes in economic activity from GHG emissions in the electricity sector compared to transportation.

The rise in transportation emissions is from three major trends: population growth; a shift in vehicle purchases away from cars and towards more fuel-intensive trucks, SUVs and minivans; and a rise in freight traffic from increased economic activity. Between 2000 and 2018, population increased by about 20 percent and the number of registered vehicles increased by 48 percent (Statistics Canada 2019a). Consumer preferences for light trucks and SUVs over more fuel-efficient passenger cars has been changing the composition of the Canadian motor vehicle fleet since the 2000s; this has an important role in transportation emissions (Statistics Canada 2019b). Another important factor in the increase in transportation emissions is the change in freight traffic. The primary form of freight transportation in Canada is trucking. Figure 3 shows that the fastest growing sub-sector of transportation emissions is heavy-duty trucking,

FIGURE 2: GHG EMISSIONS FROM TRANSPORTATION AND ELECTRICITY, RELATIVE TO 1990

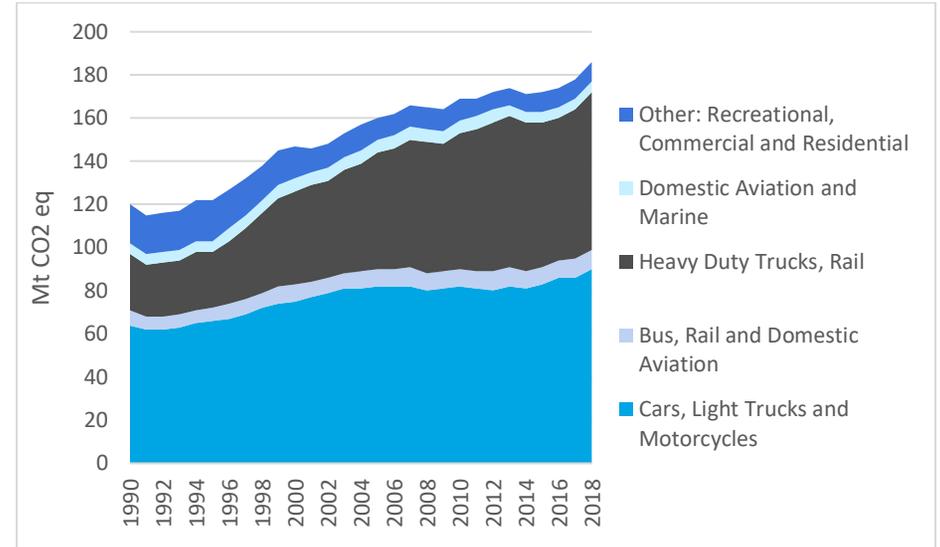


Source: Author's calculations from ECCC (2020).

which accounts for 70 percent of the total increase in transportation emissions between 1990 and 2018. In recent years, there have been steps taken to introduce stricter standards for trucking emissions. For example, 2018 amendments to the *Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations* limit emissions from new on-road heavy-duty vehicles for 2021 to 2027 models.

Canada's geography, climate and economy makes transportation a critical economic sector. Canada is a trading nation and a reliable and efficient transportation network is vital for the economy and Canadians' quality of life. In addition to responding to existing challenges like infrastructure maintenance, remote community access, and trade diversification, it is critical for policy-makers to explore solutions to decouple changes in economic activity from energy use and GHG emissions in transportation, similar to the electricity sector. This means implementing policies like carbon prices, feebates and zero-emission vehicles (ZEV) subsidies that improve the energy efficiency of transportation by reducing the total amount of energy spent per unit distance travelled and lowering energy use despite economic growth. Lowering transportation emissions is key for Canada's path to net-zero by 2050. For this, it is essential for all levels of government to implement and

FIGURE 3: GHG EMISSIONS FROM THE TRANSPORTATION SECTOR, 1990-2018



Source: ECCC (2020)

streamline policies that reduce dependency on fossil fuels in public transit, integrate new technologies and materials into the transportation sector, and incentivize the adoption of low and zero-emission passenger and heavy-duty vehicles.

References:

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