

# The Impact of the Federal Carbon Tax on the Competitiveness of Canadian Industries

by Ross McKittrick, Elmira Aliakbari, and Ashley Stedman

With Canada's federal carbon tax set to reach \$50 per tonne in 2022 it is often argued that Canadian businesses will become less competitive as a result of higher energy costs. For this reason, firms may relocate to countries where climate-change policies are less stringent—a phenomenon known as carbon leakage. This report examines the extent to which concerns over competitiveness pressures from the carbon tax are valid for Canadian industries and which sectors are at the greatest risk of experiencing carbon leakage.

This analysis uses the latest Input-Output (IO) tables from Statistics Canada for 2015 to estimate the short-term impacts of an economy-wide \$50 carbon tax on domestic commodity prices and the production costs of different sectors of the economy in Canada. Full cost pass-through is assumed along the value chain. We find that as a result of a \$50-per-tonne carbon tax four industries—petroleum and coal product manufacturing; agricultural chemical manufacturing (pesticide, fertilizer and others); electric power generation, transmission and distribution; and basic chemical manufacturing—will face unit production cost increases of more than 5% in the short-run. These four sectors account for 3% of the national output.

Forty industries including oil and gas extraction, cement and concrete product manufacturing and primary metal manufacturing, which account for nearly 20% of Canada's output, would see their production costs increase by more than 1%. The cost increase for the remaining 71 sectors of the economy is, on average, 0.6%. We estimate the production cost increase for the whole economy (all industries combined) in the short run would be 2.4%.

In the second part of the analysis, we measure trade exposure for industries to help identify the sectors that will face the most competitiveness pressures from the added costs resulting from the carbon tax. Trade exposure influences the extent to which sectors are (or are not) able to pass cost increases on to their customers. The aerospace product and parts manufacturing sector, which accounts for approximately 0.6% of the national output in 2015, is the most trade-exposed sector.

This means that firms in this sector are unable to easily pass the added carbon-tax costs on to their customers. Electronic product manufacturing is the second most trade-exposed sector, followed by motor vehicle manufacturing, coal mining, and pulp, paper and paperboard mills.

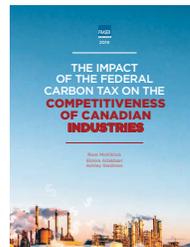
In the third section, we combine these two dimensions—cost increases from the carbon tax and trade exposure—to identify the sectors that may face the most competitiveness pressures as a result of the carbon tax. We find that 13 industries accounting for 7.3% of national output are exposed to competitiveness pressures in the short run. Specifically, the petroleum and coal product manufacturing sector, which accounts for approximately 0.8% of the national output, will see an estimated cost increase of 25% from a \$50 carbon tax and is very exposed to competitiveness pressures. Agriculture and chemical manufacturing (pesticide, fertilizer, and others) is another sector that may be affected by the imposition of a carbon tax. Similarly, many manufacturing sectors including basic chemical manufacturing, primary metal manufacturing, cement and concrete product manufacturing, miscellaneous chemical product manufacturing, and non-metallic mineral product manufacturing will be negatively affected. For instance, the tradable basic chemical manufacturing sector would see a production cost increase of 5.7% in the short term. Similarly, a highly tradable primary metal manufacturing would face a 3.6% increase in production cost. Competitiveness pressures will also be significant for oil and gas extraction and pulp, paper, and paperboard

mills, among others. It should be noted that the effect upon competitiveness will be mitigated in the long run as a result of adjustments caused by technological progress and the evolution of the industrial structure.

In response to these concerns, the federal government has designed an output-based pricing system (OBPS) with the intent of limiting the harm to sectors exposed to trade and competitiveness pressures. However, whether it succeeds in doing so will depend on how firms respond, and whether the compensation scheme is sufficiently sensitive to trade exposure. While the cost pass-through as a result of the carbon tax will be mitigated for sectors under the federal OBPS, we show that the reduction in competitiveness pressures will not be as large as the tax rebate, and for some firms it may not be reduced by much at all. We also note that additional research on the OBPS is needed once data becomes available.

Overall, the impact of the carbon tax will vary by sector. Sectors that are more trade exposed are less likely to pass

cost increases to consumers. These sectors (and the firms within them) have to absorb the added cost, which results in lower profits, undermined competitiveness, and loss of investment. Consequently, the carbon tax would likely have a significant impact on the decisions about locating facilities by tradable carbon-intensive sectors in Canada. Policy makers need to recognize that a \$50-per-tonne carbon tax comes with serious competitiveness risks for many energy-intensive and trade-exposed Canadian industries.



*The Impact of the Federal Carbon Tax on the Competitiveness of Canadian Industries*

by Ross McKittrick, Elmira Aliakbari, and Ashley Stedman

[Click here to read the full report](#)

