Energy use in Canadian mining and manufacturing industries (NAICS 212, 31-33) fell by 2.3% in 2015 relative to the year before. This puts total energy use at over 10% below 1990 and 18% below the peak in 2004. The decrease continues the trend of the last half-decade where total energy use has decreased while value added (GDP) has increased. This has led to an overall improvement in the energy intensity of Canada’s manufacturing GDP. The lower energy use has been accompanied by a commensurate reduction in GHG emissions (at least since 2011). GHGs in 2015 are down 2.6% from the year before and almost 23% from 1990 and 18% from 2005. The GHG intensity of industry has also declined to be almost 40% less than it was in 1990. Both energy and GHG intensity are at their lowest respective points in the last 25 years.

This energy intensity is not a measure of energy efficiency in physical production. Value added in manufacturing industries is related not only to physical production, but also to monetary changes (e.g. product and input prices). This can obscure the actual change in energy efficiency. Additionally, shifts in industry structure where decreases in energy intense industries (e.g. steel or cement) are replaced by less intense ones (e.g. auto or furniture manufacturing) will cause energy intensity to drop.

While CIEEDAC did not attempt to analyse the extent of the shift over time from energy-intense industries to those using less energy, there is evidence of a change from more GHG-intense fuels to less intense. Since 1990, the share of fuels high in carbon (e.g. coal, coke, heavy fuel oil) have decreased. Lighter fuels, like natural gas and light fuel oil, along with electricity, have increased.

\[\text{Equation} \]

1 These data do not include energy or emissions from coal mining and upstream oil and gas (including bitumen) or indirect emissions from electricity.

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**enerInfo Industrial** is a newsletter about the development, management and analysis of data on the end-uses of energy and emissions in the industrial sector.

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This type of fuel switching can be due to either a change within an industry or the structural change of industries that make up the manufacturing sector. The main changes in energy using sectors are the decline of pulp & paper and wood products, and the increases of primary metals and chemicals. While pulp & paper’s share of total energy has decreased, this industry has shifted strongly toward electricity and biomass as fuel sources helping to keep those fuel sources stable in the energy mix. Iron and steel production has had a decreasing overall energy use, but has increased its share of natural gas steadily, especially in the past five years. Chemical manufacturing’s fuel mix has remained largely unchanged.

While there have been important changes in the main energy using sectors and industry fuel mix, the de-coupling of GHG intensity and energy intensity has not changed much since large improvements were made in the late 1990s. Since then, the two indicators have moved mostly in unison. If industry in Canada is to continue its contribution to lower GHGs, this parallel trend is not necessarily a problem; decreased energy use including fossil fuels will lead to lower emissions. However, there are limits to the amount of energy efficiency possible in industry, and beyond this fuel switching to low- or non-emitting energy and/or carbon capture with fossil fuels will be required to meet our GHG reduction commitments.

National Inventory Report 2016

Environment and Climate Change Canada (ECCC) released an update report for the National Inventory Report on greenhouse gases last year (https://www.ec.gc.ca/ges-ghg/). Normally, this report is an annual update, but nothing was published in 2015. CIEEDAC uses this report for many of its non-CO2 emission factors and to compare physical production of several commodities with other sources (e.g. other government agencies, industry associations, and international organisations). We’re pleased to see this publication is once again being regularly updated and have used the latest data in our analyses.

What’s Going On?

Petroleum Refining Survey distributed

CIEEDAC has sent out its 23rd annual survey to all Canadian petroleum refiners. The data on energy use that CIEEDAC collects from refiners is used by the industry internally, Statistics Canada for data validation, and CIEEDAC in its reports.

All NAICS Energy and GHG data online

Statistics Canada recently released their revised Industrial Consumption of Energy (ICE) data. CIEEDAC has accordingly updated its own online NAICS energy database to include the 2015 data year. The database contains information starting in 1990 on physical production of industrial goods, energy use, and GHG emissions for over 130 industry sectors in Canada. (www.sfu.ca/cieedac/databases)

Discussions of a national energy organisation

CIEEDAC recently participated in a workshop focused on the proper design of a potential Canadian Energy Information Organisation. The workshop, organised by the Canadian Energy Research Institute (CERI), looked at the costs, benefits, and difficulties in creating such an agency. Brad Griffin presented on the challenges already facing public energy data providers, like CIEEDAC, due to changing standards and increasing confidentiality. CIEEDAC certainly supports the development of more access to coherent, consistent, and credible energy information in Canada.