

The Great Recession and Canada's Energy System, 10 Years Later

Matthew Hansen, National Energy Board, 403-470-8789, matthew.hansen@neb-one.gc.ca

Mantaj Hundal, National Energy Board, 403-617-6026, mantaj.hundal@neb-one.gc.ca

Lukas Hansen, National Energy Board, 403-615-6137, Lukas.hansen@neb-one.gc.ca

Overview

The global economic recession of 2008-2009 had a significant impact on energy systems both in Canada and across the globe. According to data from the International Energy Agency, global primary demand growth grew nearly 3 percent per year from 2000-2007, but only 1.2% in 2008 and declined nearly 1% in 2009. In Canada, primary demand fell 3% from 2007 to 2008, and another 5% from 2008 to 2009. This is perhaps the most obvious linkage, but the recession and energy also cross in many other areas including energy markets, investment, and subsequent policy responses.

This paper will survey Canadian energy data over the last ten years to explore the immediate and potentially lasting impact of the recession on Canada's energy system. Overall, we find that the immediate economic impact had a clear effect on Canadian energy use in the short term, and signs point to lasting impacts across some sectors. We also find that energy use following the recession was significantly lower than pre-recession projections. However, it is difficult to assign how much of this impact is related to lingering impacts of the recession, or to policies implemented post-2009, many related to improving energy efficiency to reduce GHG emissions.

Methods

This paper surveys Canadian and international energy data, as well as relevant literature, to explore the impacts of the Great Recession on Canadian energy supply and demand trends. Specifically, we focus on:

- a) Reviewing energy use data at aggregate and disaggregated levels.
- b) Comparing NEB Energy Futures projections of energy supply and demand released prior to 2008 vs. subsequent reports.
- c) Analysing how policy changes following the Great Recession may have changed expectations on Canadian energy use as well.

The NEB Energy Futures projections are developed using the NEB's Energy Futures Modeling System. This includes a variety of modules covering various sections of the energy system based on a common set of assumptions. Modules include: Demand and electricity (using the ENERGY2020 energy systems model), crude oil and natural gas production (using NEB developed models), and macroeconomics (most recently provided by Stokes Economics).

Results

Canadian energy use trends

- Total Canadian energy use grew 3% in 2007, and then fell 3% in 2008, and another 5% in 2009. In subsequent years it has grown, but by 2016 is only 2% higher than the pre-recession levels.
- The decline is largely seen in industrial demand, particularly those categories not related to energy production. Pulp and paper, iron and steel, aluminium and non-ferrous metal, and cement manufacturing industries all experienced a 10-25% drop in energy demand between 2006 and 2009, and energy use in these sectors have not returned to 2016 levels.
- Over the same time period, energy use related to oil and gas production has experienced steady growth, following production trends. Its growth was only marginally slowed down in 2008 and 2009, and by 2016 is over 60% higher than a decade prior.

Comparison of projections

- The NEB released its 2007 Energy Futures report (EF2007) in November of 2007. EF2007 projected total energy use in Canada for 2009 was nearly 10 percent higher than the actual value.

- Going further out, the gap between the EF2007 projection and actuals grows, and by 2016 the projected level is over 12% higher than actuals.
- The difference in trajectory between projected and actuals carries forward to the longer term projections. The NEB's most recent Energy Futures projections (EF2018) are significantly lower than EF2007. In 2030, the last forecast year for EF2007, the baseline Reference Case outlook is nearly 20% lower than the EF2007 projection.
- This difference is a combination of slower economic outlook in EF2018 vs EF2017, as well as faster declines in energy intensity (energy use per unit of gross domestic product).

Impact of policies

- Beyond the immediate impact of the recession in 2008/2009, there are a variety of policy changes over the last 10 years which have influenced subsequent energy trends.
- As part of the response to the Great Recession, governments undertook expansionary fiscal and monetary policy. Reduced costs of borrowing due to lower interest rates coming out of the recession likely aided in the growth of energy developments that have seen large growth over the last decade such as crude oil, natural gas, and renewable power.
- The last decade has also seen a variety of climate policies implemented at federal and provincial levels. Many of these – such as carbon price of vehicle emission standards – put downward pressure on energy use. Therefore, it is difficult to determine how much of the gap between pre-recession expectations and actuals is due to lingering impacts of the recession, or other factors such as climate policies.

Conclusions

The recession of 2008/2009 saw one of the largest drops in Canadian energy use in the last several decades. The impact of the recession particularly affected non-oil and gas related industrial production, likely related to economic activity that did not recover in subsequent years (i.e., permanent industrial plant closures). Recovery of energy use to pre-recession levels was slow, and would likely have been slower if not for the high levels of activity associated with oil and gas production in the years following.

In many ways the recession stands out as a turning point for Canadian energy use. Demand growth has been slow in the years following, and projections of Canadian energy use following the recession have been much lower than pre-recession projections. Our analysis suggests this is in part a reflection of the severity of the economic downturn for certain sectors of the economy. It is also related to its timing with respect to climate change action. The period after the recession also saw several significant climate policy developments and provincial and federal levels that put downward pressure on actual and projected energy use trends as well.

References

International Energy Agency, "Headline Energy Data." Available: <https://www.iea.org/statistics/balances/> (Accessed December 7, 2018).

National Energy Board (2007). *Canada's Energy Future: Reference Case & Scenarios to 2030*. Available: <http://www.neb-one.gc.ca/nrg/ntgrtd/ft/archive/index-eng.html#s5>

National Energy Board (2018). *Canada's Energy Future: Energy Supply and Demand Projections to 2040*. Available: <http://www.neb-one.gc.ca/nrg/ntgrtd/ft/2018/index-eng.html>