Government of Canada | Gouvernement du Canada

Oil Sands

A strategic resource for Canada, North America and the global market

GHG Emissions

Addressing the issue

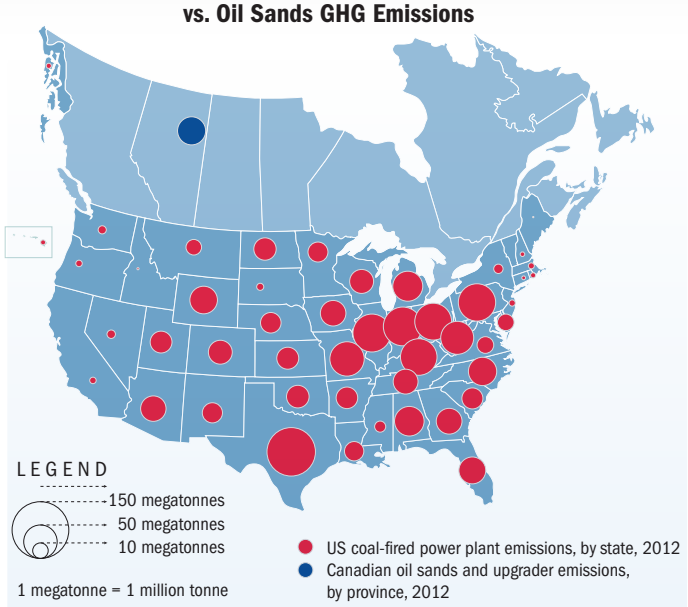
The Government of Canada is implementing a sector-by-sector approach to reducing greenhouse gas emissions (GHGs) that protects the environment and supports economic prosperity and is actively contributing to the establishment of a new, fair and effective international climate change agreement that includes commitments from all major emitters. The federal government has already taken action on two of Canada's largest sources of GHG emissions: transportation and electricity.[1]

Alberta is the first jurisdiction in North America with mandatory GHG emission reduction targets for large emitters across all sectors. As of July 2007, the Government of Alberta requires facilities that emit more than 100,000 tonnes of GHG emissions per year to reduce their emissions intensity by 12 percent. Companies unable to comply with the target through direct emissions reductions can use recognized offsets or pay a C$15/tonne fee into its Climate Change and Emissions Management Fund. This fund has collected more than C$500 million as of October 2014, which is being invested in technologies and projects that will further reduce GHG emissions. More than 51 million tonnes of GHG emissions have also been reduced, from a business-as-usual scenario, since 2007.

U.S. coal emissions are almost 27 times greater than the oil sands

Regardless of the source, GHG emissions are a shared global challenge. Coal-fired power plants make up about one-quarter of the United States' (U.S.) GHG emissions, and in 2012, these emissions were almost 27 times greater than emissions from the oil sands.[2]

U.S. GHG Emissions From Coal-fired Power Plants vs. Oil Sands GHG Emissions



Note: The area of each circle is proportional to each jurisdiction's greenhouse gas emissions from the respective source.

Source: 2012 coal GHG power generation data from the U.S. Energy Information Administration and 2012 oil sands GHG data from Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada*

8.5 percent of Canada's emissions, 0.1 percent of global emissions

Extracting bitumen and other heavy crude oil requires more energy than the production of lighter and more accessible forms of crude oil. This tends to make heavy oil production more emissions-intensive per barrel of oil produced.

The oil sands contributed about 8.5 percent of Canada's total GHG emissions in 2013, which is equal to approximately 0.1 percent of global emissions.[3]

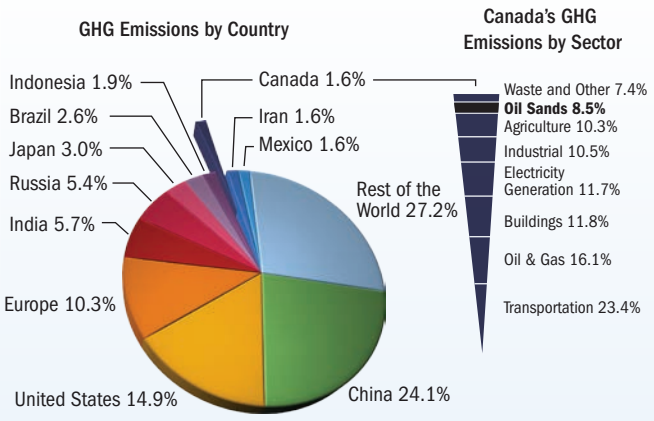
[1] Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada.*

[2] 2012 coal GHG power generation data from the U.S. Energy Information Administration and 2012 oil sands GHG data from Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada.*

[3] Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada* and World Resources Institute's CAIT Climate Data Explorer

Canada

Global GHG Emissions

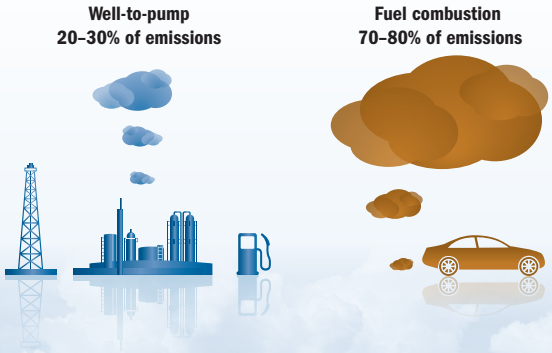


Sources: World Resources Institute 2014, CAIT Climate Date Explorer and Environment Canada, *National Inventory Report 1990-2013 Greenhouse Gas Sources and Sinks in Canada*

70 to 80 percent of life cycle emissions come from a vehicle's tailpipe

GHG emissions from oil production should be considered in their full context, taking into account the emissions produced when the oil is consumed. For example, final combustion emissions of gasoline emerging from tailpipes account for 70 to 80 percent of life cycle emissions.[4] These vehicle emissions are the same, regardless of the crude oil from which the gasoline is derived.

Life cycle emissions

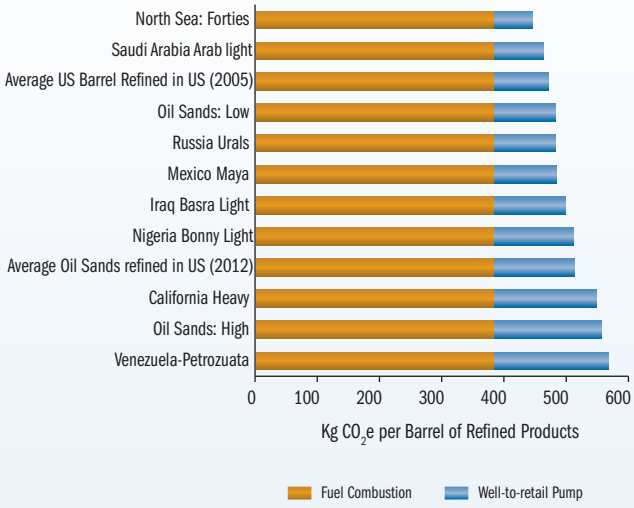


Source: IHS ENERGY, *Comparing GHG Intensity of the Oil Sands and the Average US Crude Oil*, May 2014

Oil sands emissions are within the same range as many other crude oils

Recent independent studies have shown oil sands emissions are similar to a number of crudes, both heavy and light, produced, imported and refined in the U.S., including crudes from less secure suppliers. More specifically, Canadian oil sands crudes are in the same GHG intensity range as 45 percent of U.S. crude oil consumed in the U.S.[5]

Life cycle GHG emissions for various sources of crude oil



Source: IHS ENERGY, *Comparing GHG Intensity of the Oil Sands and the Average US Crude Oil*, May 2014

30 percent reduction in GHGs per barrel

The oil sands have a long history of technological innovation that has led to improvements in energy efficiency and associated emissions reductions. Oil sands cogeneration operations, which produce electricity as a byproduct of oil sands production, are an example of this. Cogeneration operations produce approximately 2,000 megawatts of power per year. In 2013, oil sands GHG emissions per barrel were 30 percent below 1990 levels. It is expected emissions per barrel will continue to decline over the coming years.

[4] IHS ENERGY, *Comparing GHG Intensity of the Oil Sands and the Average US Crude Oil,* may 2014

[5] IHS ENERGY, *Comparing GHG Intensity of the Oil Sands and the Average US Crude Oil*, May 2014

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