Government of Canada | Gouvernement du Canada

Oil Sands

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

GHG Emissions

Addressing the issue

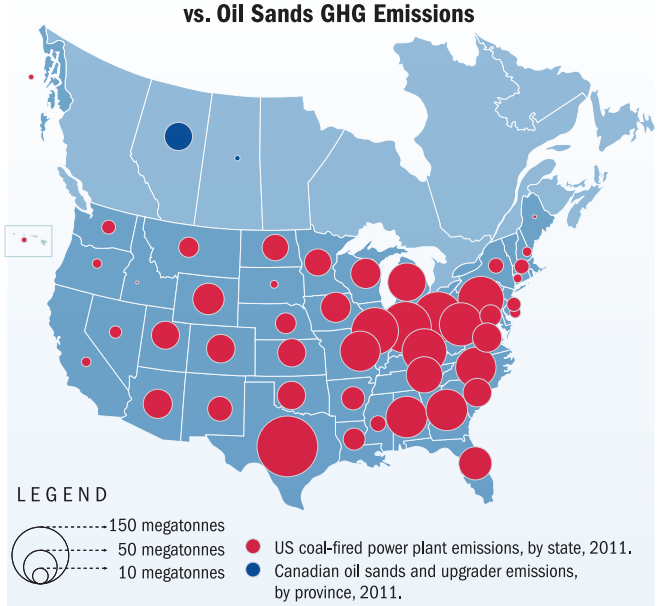
Canada is one of the few major oil-producing nations to have established an economy-wide GHG reduction target. By signing on to the Copenhagen Accord, Canada has committed to reducing GHG emissions by 17 percent below 2005 levels by 2020. Federal and provincial regulatory frameworks are currently being developed to reduce GHG emissions. Possible actions include steps to increase energy efficiency, fuel diversity, stricter tailpipe emission regulations and greener energy systems. Steps already taken bring Canada halfway to meeting its 2020 target.[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 that are unable to comply with the target through direct emissions reductions can use recognized offsets or pay a C$15 per tonne fee into a clean energy technology fund. This fund has collected more than C$300 million, as of March 2012, that is being invested in technologies and projects that will reduce GHG emissions. More than 32 million tonnes of GHG emissions have also been reduced, from a business-as-usual scenario, since 2007.[2]

U.S. coal emissions are nearly 40 times greater than oil sands

Regardless of the source, GHG emissions are a shared global challenge. Coal-fired power plants make up about a quarter of U.S. GHG emissions and in 2011, these emissions were nearly 32 times greater than emissions from the oil sands.[3]

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



Note: Circles are proportional to each jurisdiction's greenhouse gas emissions from the respective source.

7.8 percent of Canada's emissions: 0.1 percent of global emissions

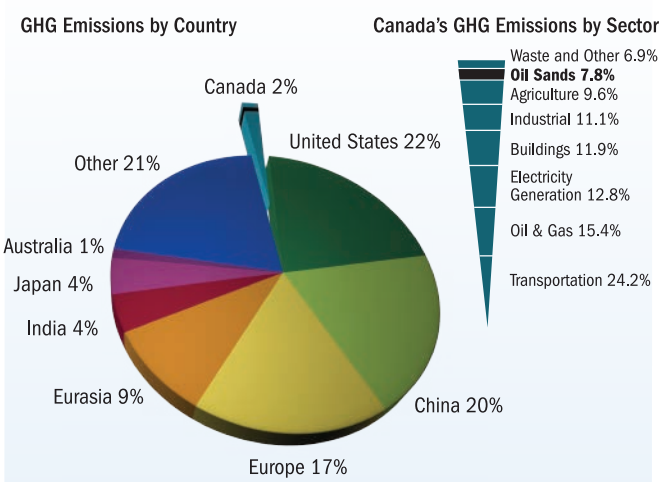
Extracting bitumen and other heavy crude oil requires more energy than the production of lighter and more accessible forms of crude oil. This tends to make heavy oil production more emissions-intensive per barrel of oil produced.

The oil sands contributed about 7.8 percent of Canada's total GHG emissions in 2011, which is equal to approximately 0.1 percent of global emissions.[4]

[1] Source: Environment Canada, 2012.
[2] Source: Government of Alberta, 2012.
[3] Based on data from the U.S. Energy Information Administration.
[4] Environment Canada (2012) *National Inventory Report, 1990–2010*, and Natural Resources Canada.

Canada

Global GHG Emissions

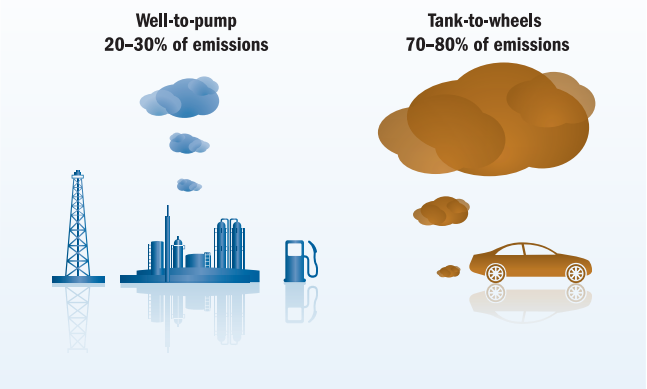


Source: Environment Canada, 2013.

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.[5] These vehicle emissions are the same, regardless of the crude oil from which the gasoline is derived.

Life-cycle emissions



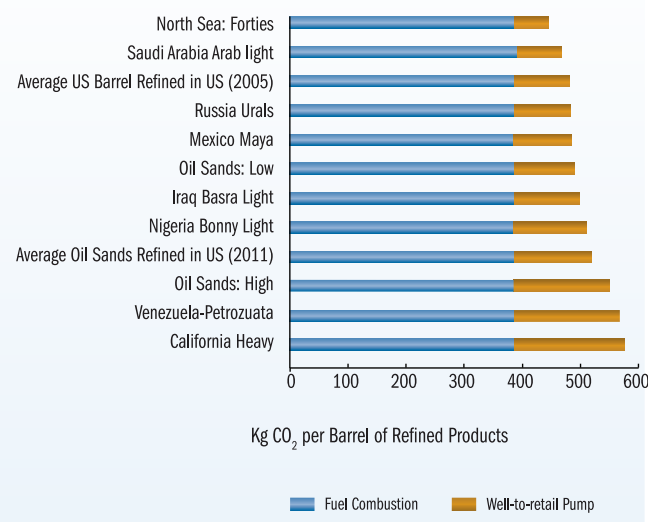
Oil sands emissions are within the same range as many other crude oils

Recent independent studies have shown that oil sands emissions are similar to a number of crudes, both heavy and light, produced, imported and refined in the US, including crudes from less secure suppliers.

26 percent reduction in GHG 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 by-product of oil sands production, are an example of this. Cogeneration operations produce approximately 2000 megawatts of power per year. Between 1990 and 2011, oil sands GHG emissions per barrel were reduced by 26 percent. It is expected that emissions per barrel will continue to decline over the coming years.

Life-cycle GHG emissions for various sources of crude oil



Source: IHS CERA (2012) *Oil Sands, Greenhouse Gases, and US Oil Supply: Getting the Numbers Right–2012 Update*.

[5] International Energy Agency (2010) *World Energy Outlook*.

PRINTED IN CANADA IMPRIMÉ AU CANADA

Recycled paper

Aussi disponible en français sous le titre : Sables bitumineux : Émissions de GES

Revised May 2013