



# Oil Sands

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

## GHG Emissions

### Addressing the issue

The Government of Canada is providing national leadership by joining with the provinces and territories to take action on climate change, put a price on carbon, and reduce carbon pollution. The government has committed to working with the provinces and territories to establish a pan-Canadian framework for clean growth and climate change.

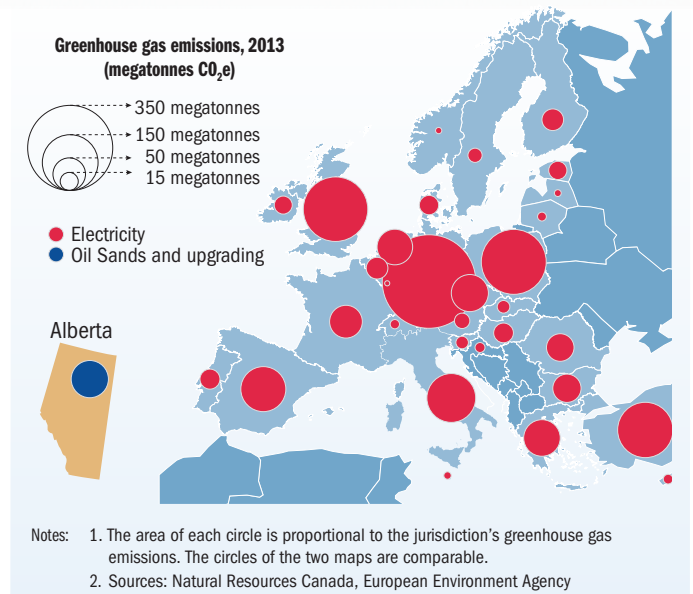
In 2007 Alberta became the first jurisdiction in North America to have mandatory GHG emission reduction targets for large emitters across all sectors. In June 2015 the reduction targets were strengthened so that facilities that emit more than 100,000 tonnes of GHG emissions per year will have to reduce their emissions intensity by 20 percent per barrel by 2017. Companies unable to comply with the target through direct emissions reductions can use recognized offsets or pay a C\$30/tonne fee by 2017 into its Climate Change and Emissions Management Fund. This fund has collected more than C\$577 million as of April 2015, which is being invested in technologies and projects that will further reduce GHG emissions. More than 61 million tonnes of GHG emissions have also been reduced, from a business-as-usual scenario, since 2007.

In November 2015 the Government of Alberta released a far-reaching climate change policy that moves towards phasing out coal-generated electricity, implementing a new carbon price on GHG pollution, placing a hard-cap on oil sands GHG emissions and reducing methane gas emissions from oil and gas operations by 45 percent.

### GHG emissions: A shared challenge

Regardless of the source, GHG emissions are a shared global challenge, requiring a global solution. All countries, governments, Indigenous peoples, as well as civil society, business and individuals will have to be mobilized in order to achieve significant reductions in global GHG emissions. To that end, Canada played an instrumental role in reaching the Paris Agreement, under which

### EU GHG Emissions From Electricity Generation vs. Oil Sands GHG Emissions



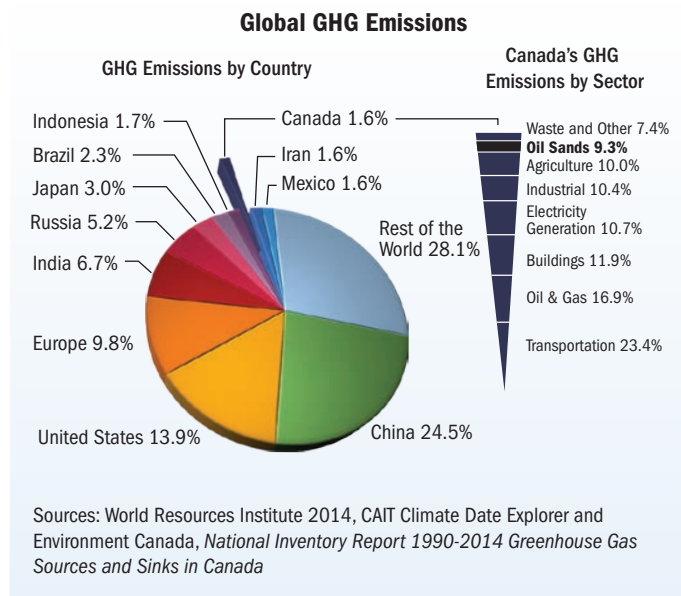
195 countries agreed to strengthen the global response to limit global warming to less than 2 degrees Celsius, and to pursue efforts to limit it to 1.5 degrees.

According to data from the European Environment Agency, in 2013, GHG emissions from European electricity and heat production, which make up about one-quarter of European GHG emissions, were more than 20 times greater than GHG emissions from the oil sands. On a per-country basis, GHG emissions from electricity and heat production in Germany were more than five times greater than emissions from the oil sands, while in the United Kingdom and Poland, emissions were more than double.

### 9.3 percent of Canada's emissions, 0.1 percent of global emissions

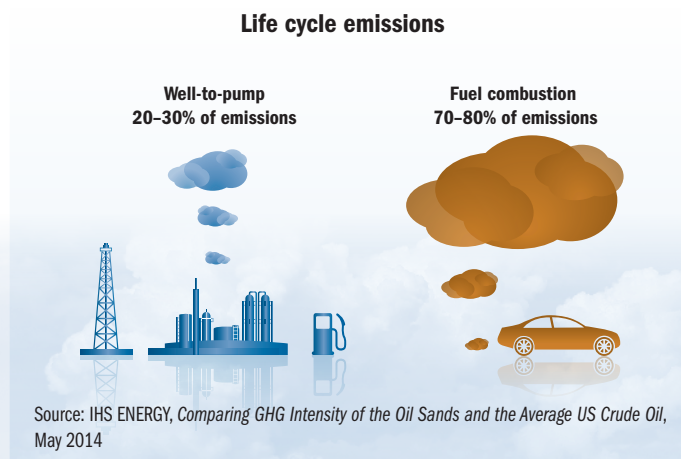
Extracting bitumen and other heavy crude oil requires more energy than the production of lighter and more accessible forms of crude oil. This tends to make heavy oil production more emissions-intensive per barrel of oil produced.

The oil sands contributed about 9.3 percent of Canada's total GHG emissions in 2014, which is equal to approximately 0.1 percent of global emissions.<sup>1</sup>



## 70–80 percent of lifecycle 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 70–80 percent of lifecycle emissions.<sup>2</sup> These vehicle emissions are the same, regardless of the crude oil from which the gasoline is derived.

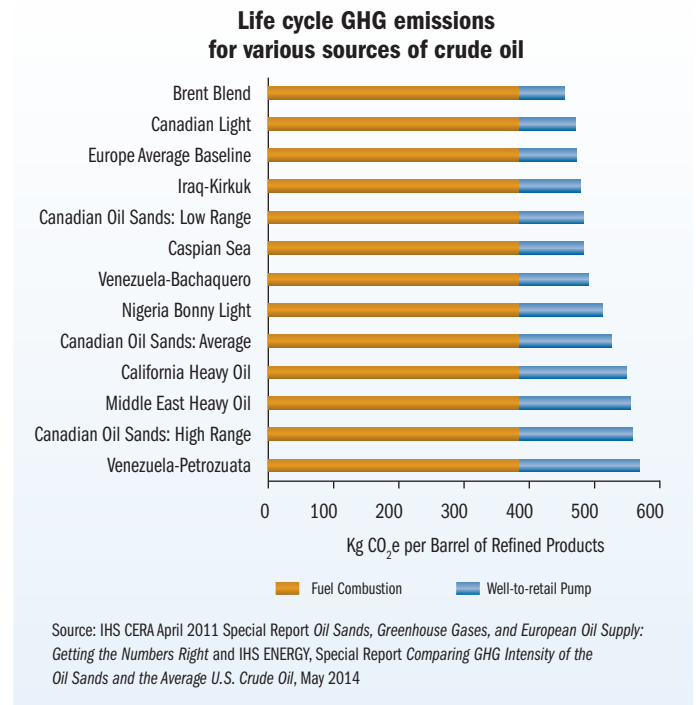


<sup>1</sup> Environment Canada *National Inventory Report (2014)* and Natural Resources Canada.

<sup>2</sup> International Energy Agency (2010) *World Energy Outlook*.

## 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, imported and refined in the EU, in particular when emissions created by flaring and venting practices are considered.



## 31 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 byproduct of oil sands production, are an example of this. Cogeneration operations produce approximately 2,200 megawatts of power per year. In 2014, oil sands GHG emissions per barrel were 31 percent below 1990 levels. It is expected emissions per barrel will continue to decline over the coming years.