Absolute Greenhouse Gas Emissions from Canadian Oil Sands Did Not Increase in 2022 Even as Production Grew

Initial findings indicate that a peak in absolute emissions—expected to begin later this decade—could occur sooner than previously estimated

CALGARY, AB, Aug. 9, 2023 /PRNewswire/ -- Absolute greenhouse gas emissions from Canadian oil sands production were flat in 2022 even as total production grew, according to an initial analysis by S&P Global Commodity Insights. The finding marks the first time since 2009—the earliest year that S&P Global Commodity Insights estimates such data—that absolute emissions did not rise absent a major market disruption and decline in overall production.

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Absolute emissions held steady at 81 million metric tons of carbon dioxide (MMTCO2) in 2022 while total production topped 3.1 million barrels per day (b/d), a gain of more than 50,000 b/d.*

"The Canadian oil sands have demonstrated a consistent trend of reductions in GHG intensity for the past decade," said Kevin Birn, Vice President, Canadian Oil Markets Chief Analyst, S&P Global Commodity Insights. "The pace of production growth has historically outstripped the intensity improvements. That emissions held steady even as production grew is a significant first."

The S&P Global Commodity Insights Oil Sands Dialogue analysis finds that the GHG intensity of oil sands production fell to 67 kilograms of "carbon dioxide equivalent" per barrel (kgCO2e/bbl) in 2022, the most recent year that S&P Global Commodity Insights estimates are available. Since 2009 the average GHG intensity of oil sands production has declined 20 kgCO2e/bbl or 23%—an average decline of just over 1.5 kgCO2e/bbl per year or about 1.8%.

The flattening of absolute emissions in 2022 amid rising production came from industry-wide GHG intensity improvements. This was also supported by production growth coming from oil sands operations with intensity that were below the sector average (such as Steam Assisted Gravity Drainage and Mined dilbit). At the same time, some of the more GHG intensive forms of production (such as Mined SCO) saw modest declines in output. The net effect was able to keep emissions flat even with the rise in overall production.

S&P Global Commodity Insights expects the trend of oil sands GHG intensity reductions to continue and even accelerate in coming years.

A previous Oil Sands Dialogue analysis estimated that absolute emissions would likely peak and begin to decline by the middle of this decade as GHG intensity improvements combine with slowing production. Absolute emissions are still expected to rise in the near term on account of more pronounced production additions expected in the next few years. However, the new findings indicate the potential for the peak to occur sooner and at a lower level than previously estimated. Moreover, with near term production growth expected to come from optimization and not new additions, those barrels could come at even lower intensity than anticipated.

"We do not believe that absolute emissions from the Canadian oil sands have peaked, but it may be close," said Birn. "The potential stalling of emissions growth in 2022 is a clear signal that oil sands absolute emissions will indeed peak and begin to decline, perhaps sooner than previously expected."

The new analysis was conducted in collaboration with the S&P Global Commodity Insights Center of Emissions Excellence which is focused on the expansion and advancement of emission estimation capabilities across all S&P Global Commodity

Insights areas of research.

* S&P Global Commodity Insights has developed its own independent model and estimate of Canadian oil sands GHG emissions. S&P Global Commodity Insight's estimate does not include emissions from the Sturgeon Refinery (also often referred to as the North West Redwater refinery) or the Bi-provincial upgrader. We believe this is why our estimates for absolute oil sands emissions are approximately 3 MMTCO2e per year lower compared to the Canada National Inventory Report.

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