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Stratas' Energy Demand Model Projects Global CO₂ Emissions to Grow 2 Billion Tonnes by 2025

Stratas Advisors

This excerpt is from a report that is available to subscribers of Stratas Advisors' Energy Demand Model and the Automobile Interactive Model.

Stratas Advisors' modeling of energy markets, transportation and macroeconomic conditions shows global greenhouse gas (GHG) emissions from energy-related sources are likely to increase by an average of 280 million tonnes of CO₂-equivalent annually from 2018 to 2025.

This compares favorably with recent estimates of 600-900 million tonnes of GHG emissions growth for the year 2018, but still represents an acceleration over several recent years (2014-2016), when global annual CO₂ emissions had been relatively stable and grew only at about 00 million tonnes per year.

Stratas Advisors estimates 2018 energy-related GHG emissions (including biomass) at about 36.0 GtCO₂e, and expects this to grow by 5.5% to 38.0 GtCO₂e in 2025. This projection includes a notable acceleration in emissions growth in the years 2021-2025, which will see average increases of more than 300 million tonnes. Emissions increases in 2019 and 2020 are expected to average 220 million tonnes.

The acceleration in the first half of the 2020s is largely due to higher projected economic growth in emerging markets, including India, the Middle East, Africa, South America and CIS.

The anticipated GHG emissions growth comes at an inopportune time from a climate change mitigation perspective. Many observers, including the UN Intergovernmental Panel on Climate Change (IPCC), see a need for global annual GHG emissions to peak in the year 2020 to meet the temperature rise target of 1.5-degrees Celsius set under the Paris Agreement and avoid the worst potential impacts of climate change.

In order to shift from Stratas Advisors' projected GHG emissions baseline to a trajectory consistent with the Paris Agreement target, global emissions growth would need to be drastically reversed, from a net increase of 2 billion tonnes to roughly a net decrease of 2 billion tonnes. Accomplishing this would be an incredibly tall order, equivalent to replacing 100% of coal demand in the OECD and just over 40% of coal demand in non-OECD countries with natural gas by 2025.

Over the long term, Stratas Advisors' baseline projection shows global annual energy-related GHG emissions continuing to grow, though at a slower pace starting around 2030, and reaching about 43 GtCO₂e by 2050. This emissions track is roughly consistent with a temperature rise of 3-5 degrees Celsius by 2100, well in excess of the Paris Agreement target.

The two models Stratas Advisors used to develop its GHG emissions outlook are both available for license to clients. The first model is the Automotive Interactive Model (AIM) which forecasts light-, medium-, and heavy-duty vehicle sales and fleet volumes by powertrain using projections of total cost of ownership, regulatory incentives, scrappage curves, and major macro-level drivers at the country level.

The outputs from the AIM model, along with other macro-level drivers, are used in the Energy Demand Model, which forecasts global energy demand for 38 energy types at the sector-level within countries (120 countries broken out, each further subdivided into 21 economic sectors). The model uses statistical relationships between key drivers and sector-level energy demand, along with price relationships and regulatory constraints, to create a comprehensive energy consumption forecast. Vehicle outputs from the AIM model forecast demand in the road sector, along with fuel demand modeling broken down for 20 light- and heavy-duty vehicle types. Both models include Stratas Advisors' baseline assumptions and forecasts, and are highly customizable. For more information, [contact](#) Stratas Advisors.

The rest of this report is available to subscribers of the [Energy Demand Model](#) and the [Automobile Interactive Model](#). Not a subscriber? [Create an account](#).