

Carbon Majors: 57 fossil fuel and cement producers linked to 80% of global fossil CO₂ emissions since the Paris Agreement

- 88% of global CO₂ emissions from fossil fuels and cement from 2016 through 2022 can be linked to 117 producers.
- Most fossil fuel companies produced more fossil fuels in the seven years after the Paris Agreement than in the seven years before the Agreement's adoption.
- Over 72% of fossil fuel and cement CO₂ emissions since the Industrial Revolution can be traced to the 122 entities in the Carbon Majors database.

A new report by [InfluenceMap](#) using the Carbon Majors database quantifies the contribution of the world's largest oil, gas, coal, and cement producers to global carbon emissions, which are the primary driver of climate change. This report shows that the majority of global CO₂ emissions produced since the Paris Agreement can be traced to a small group of high emitters who are failing to slow production. These 57 corporate and state entities can be linked to 80% of fossil fuel and cement CO₂ emissions from 2016 through 2022. Nation-state producers account for 38% of emissions in the database since the Paris Agreement, while state-owned entities account for 37%, and investor-owned companies for 25%.

The Carbon Majors dataset contains emissions data from 1854 through 2022. New analysis of the whole dataset reveals that over 70% of global fossil fuel and cement CO₂ emissions since the Industrial Revolution can be traced to 78 corporate and state producing entities. Over the same period, just 19 entities contributed 50% of these CO₂ emissions.

Top 10 entities historically (1854–2022)

Top 10 companies since Paris Agreement (2016–2022)¹

Entity	Total emissions (MtCO ₂ e)	Percentage of global CO ₂ emissions	Company	Total emissions (MtCO ₂ e)	Percentage of global CO ₂ emissions
China (Coal)	276,458	14.0%	Saudi Aramco	13,256	4.8%
Former Soviet Union	135,113	6.8%	Gazprom	10,127	3.3%
Saudi Aramco	68,832	3.6%	Coal India	8,509	3.0%
Chevron	57,898	3.0%	National Iranian Oil Co.	8,176	2.8%
ExxonMobil	55,105	2.8%	Rosneft	5,734	2.1%
Gazprom	50,687	2.3%	CNPC	4,966	1.7%
National Iranian Oil Co.	43,112	2.2%	Abu Dhabi National Oil Co.	4,746	1.7%
BP	42,530	2.2%	ExxonMobil	4,086	1.4%
Shell	40,674	2.1%	Iraq National Oil Co.	3,695	1.4%
Coal India	29,391	1.5%	Shell	3,621	1.2%

Carbon Majors holds global significance as the first and only provider of this comprehensive view of corporate fossil fuel producers' contributions to greenhouse gas emissions. The Carbon Majors dataset was first established in 2013 by Richard Heede of the Climate Accountability Institute² and will now be hosted by InfluenceMap on the Carbon Majors website: carbonmajors.org.

¹ Excluding nation-state actors.

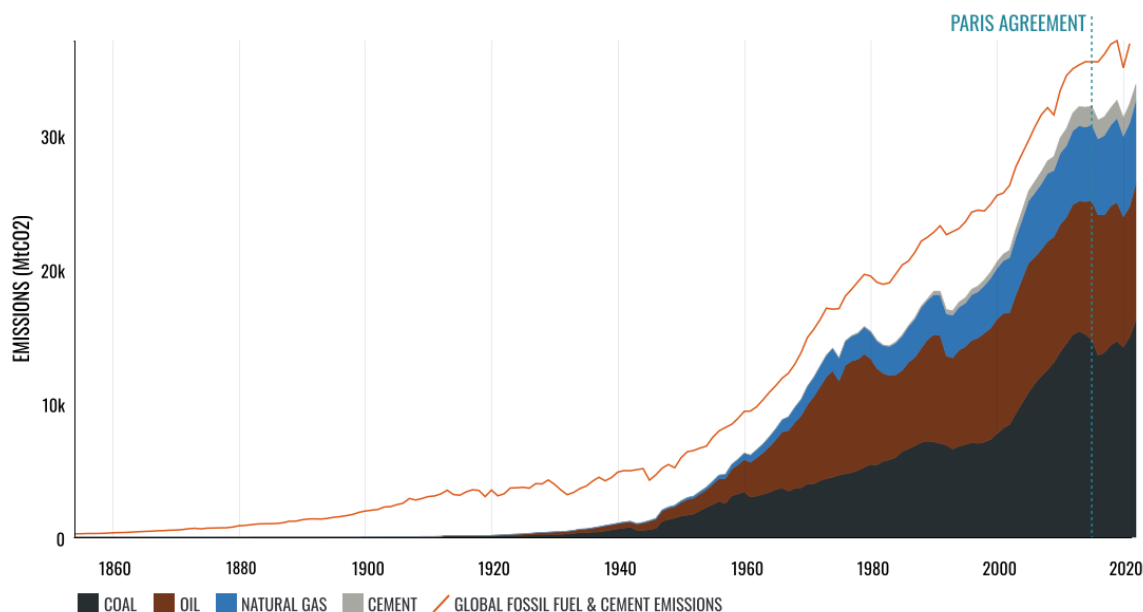
² Heede, R. [Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010](#). *Climatic Change* 122, 229–241 (2014).

Daan Van Acker, Program Manager at InfluenceMap said:

“The Carbon Majors database is a key tool in attributing responsibility for climate change to the fossil fuel producers with the most significant role in driving global CO₂ emissions. InfluenceMap’s new analysis shows that this group is not slowing down production, with most entities increasing production after the Paris Agreement. This research provides a crucial link in holding these energy giants to account on the consequences of their activities.”

The Carbon Majors dataset has proved crucial in holding fossil fuel producers to account for their climate-related impacts in academic, regulatory, and legal contexts. Examples include quantifying the contribution these entities have made to global surface temperature, sea level, and atmospheric CO₂ rise³; and establishing corporate accountability for climate-related human rights violations in the Commission on Human Rights of the Philippines’ 2022 [National Inquiry on Climate Change](#).

Carbon Majors & Global CO₂ Emissions (1854–2022)



“Richard Heede’s landmark Carbon Majors research transformed the landscape of climate accountability by using the fossil fuel industry’s own reported production and operation figures to calculate and expose the true scale of its role in the climate crisis. By updating and extending that research—and making it more widely accessible and usable for researchers, decisionmakers, and litigators alike—InfluenceMap’s new Carbon Majors database will transform that landscape yet again. The Carbon Majors database makes it dramatically easier to document, calculate, and visually demonstrate the growing chasm between the urgent demands of climate reality and the continued reckless and intentional growth of oil and gas production. Critically, it enables us to track changes in corporate behavior and production across discrete and clearly defined timescales that will be relevant to investors, investigators, and litigators alike. It is a vital and powerful new tool in the work toward climate action and climate accountability.”

Carroll Muffett, President and CEO of the Center for International Environmental Law (CIEL)

Other key findings from this new analysis include:

- The top 5 investor-owned companies, Chevron, ExxonMobil, BP, Shell, and ConocoPhillips, are responsible for 11.1% of historical fossil fuel and cement CO₂ emissions (196 GtCO₂).
- The top 5 state-owned companies, Saudi Aramco, Gazprom, the National Iranian Oil Company, Coal India, and Pemex, are responsible for 10.9% of historical fossil fuel and cement CO₂ emissions (194 GtCO₂).
- Coal supply since 2015 has shifted from investor-owned to state-owned entities. Investor-owned coal production emissions dropped by 939 MtCO₂e, a decrease of 27.9%, from 2015 to 2022. However, emissions

³ Ekwurzel, Boneham, Dalton, et al. [The rise in global atmospheric CO₂, surface temperature, and sea level from emissions traced to major carbon producers](#). Climatic Change 144, 579–590 (2017).

from nation-state and state-owned producers grew by 2,208 MtCO₂e and 343 MtCO₂e between 2015 and 2022, increases of 19% and 29%, respectively.

- The majority of fossil fuel companies totaled higher production in the seven years after the Paris Agreement compared to the seven-year period before. 65% of state-owned companies and 55% of investor-owned companies showed higher production in 2016–2022 than in 2009–2015.
- The increase in production by state- and investor-owned companies after the Paris Agreement compared to before is most prevalent in Asia. All 5 Asian investor-owned companies and 8 out of the 10 Asian state-owned entities are linked to higher emissions in 2016–2022 compared to 2009–2015. This is primarily shaped by rising emissions from Asian coal production.

"The Carbon Majors research shows us exactly who is responsible for the lethal heat, extreme weather, and air pollution that is threatening lives and wreaking havoc on our oceans and forests. These companies have made billions of dollars in profits while denying the problem and delaying and obstructing climate policy. They are spending millions on advertising campaigns about being part of a sustainable solution, all the while continuing to invest in more fossil fuel extraction. These findings emphasize that, more than ever, we need our governments to stand up to these companies, and we need new international cooperation through a Fossil Fuel Treaty to end the expansion of fossil fuels and ensure a truly just transition."

Tzaporah Berman, International Program Director at Stand.earth and Chair at Fossil Fuel Non-Proliferation Treaty

[Full report, graphics, and quotes on this landing page.](#)

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About the methodology

Carbon Majors selects the largest fossil fuel and cement producing entities that meet a $\geq 8\text{MtC/yr}$ threshold. The assessed entities are divided into three entity types: investor-owned companies, state-owned companies, and nation-state producers. Nation-state producers are used primarily in the coal sector and are included only when investor-owned or state-owned companies haven't been established or played a minor role in the relevant country. For oil, gas, and coal producers, the earliest production records are found. The data is standardized to a common commodity (Oil & Natural Gas Liquids, Natural Gas, and Coal) and multiplied by emissions factors that estimate the carbon content of each fuel type. This results in the emissions from marketed products (Scope 3) that constitute about 90% of the database's total. Direct scope 1 emissions from the production are then also estimated using additional emission factors. This results in the total annual CO₂ equivalent emissions produced by each entity.

Cement production emissions differ, estimated as a proportion of gross emissions reported by major cement companies to the Cement Sustainability Initiative. This proportion represents process emissions from limestone calcination, excluding fuel and electricity inputs to prevent double counting of fossil fuel emissions already considered in Carbon Majors.

This research compares the emissions tracked by the Carbon Majors database to total global fossil fuel and cement CO₂ emissions since the beginning of the Industrial Revolution in 1751. Data from the Carbon Dioxide Information Analysis Center (CDIAC), and more recently the [Global Carbon Project](#), provides this total.

For a more detailed look at the methodology please refer to Rick Heede's 2014 paper "Carbon Majors: Methods & Results Report" available [here](#).

About InfluenceMap

InfluenceMap is a London-based think tank providing data driven analysis to investors, corporations and the media on issues related to energy and climate change. Our metrics for measuring corporate influence over climate policy are used by investors, including the global Climate Action 100+ investor engagement process.