LINGO
Leave it in the Ground Initiative

Carbon Bombs Update 2025

Factsheet

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Introduction

Carbon bombs are the biggest fossil fuel (coal, oil and gas) extraction projects on a global scale, defined as projects with potential CO_2 emissions equal to or greater than 1 billion tons (a Gigaton, Gt) if fully extracted and burnt.

Our 2022 study - working with 2020 data - was the first time an academic work used this concept[1]. We identified 425 such projects, published their names and showed that they are incompatible with the Paris Agreement's temperature targets. We also showed that 40% hadn't started and could still be defused.

In October 2025, we updated the analysis and the dataset of carbon bombs projects.. Highlights are shown in this factsheet.

Overview

601 projects
176 more than in the previous revision

375 Coal Carbon Bombs
226 Oil and Gas Carbon Bombs

176 newly identified projects in 2025
145 new Coal Carbon Bombs and 31 new Oil and Gas Carbon Bombs

Total potential emissions 2025:
1322.2 Gt CO_2

50 countries
have at least one Carbon Bombs

Project status

Operating: **372 projects**
61.92%

Planned: 215 projects
35.8%

Halted (halted, stopped, disappeared): 14 projects
2.3%

38.1% (planned + halted) of the projects hadn't started and can still be defused, so it's crucial to stop them before they start.

Decreased:
192
projects show significant **reduction (<2%) from previous** estimations

Increased:
164
projects show significant **increase (>2%) from previous** estimations

176
are new

69
show insignificant or null changes.

1 Kühne et al. (2022) "Carbon Bombs" - Mapping key fossil fuel projects. Energy Policy. 166, July 2022, 112950, https://doi.org/10.1016/j.enpol.2022.112950

China and the following top ten countries by emissions (and its correspondent number of projects)

		Coal			O&G			Coal+O&G			Accumulated	
Rank	Country	Proj.	Emis.	% emis.	proj.	Emis.	% emis.	Proj.	Emis.	% emis.	%	% no China
#1	China	242	531.8	**40.2**	14	25.6	**1.9**	256	557.4	**42.2**	42.2	0.0
1	United States	7	8.3	**0.6**	25	124.0	**9.4**	32	132.3	**10.0**	52.2	10.0
2	Russia	21	38.7	**2.9**	33	52.5	**4.0**	54	91.1	**6.9**	59.1	16.9
3	Saudi Arabia				25	88.3	**6.7**	25	88.3	**6.7**	65.7	23.6
4	Australia	25	49.4	**3.7**	3	5.6	**0.4**	28	55.0	**4.2**	69.9	27.7
5	Qatar				14	41.3	**3.1**	14	41.3	**3.1**	73.0	30.9
6	Canada	5	13.3	**1.0**	9	22.9	**1.7**	14	36.2	**2.7**	75.7	33.6
7	India	24	30.3	**2.2**	2	1.4	**0.1**	26	31.7	**2.4**	78.1	36.0
8	Iraq				13	30.2	**2.3**	13	30.2	**2.3**	80.4	38.3
9	Iran				20	28.6	**2.2**	20	28.6	**2.2**	82.6	40.4
10	Indonesia	12	22.8	**1.7**	1	2.2	**0.2**	13	25.0	**1.9**	84.5	42.3
	Total dataset	375	779.5	**59.0**	226	542.7	**41.1**	601	1322.2	**100.0**		

- China accounts for 42.2% of the total emissions in the dataset. The next 10 countries on the list account for almost exactly the same amount. Between China and the next ten countries, they account for 84.5% of the total projected emissions.
- The remaining 15.5% of emissions are distributed across the other 39 countries in the dataset.



Top ten oil and gas carbon bombs by potential emissions

Project name	Country	Potential emissions (Gt CO_2)	Status	Global ranking
Permian Delaware Tight	United States	29.71	Operating	1
Marcellus Shale	United States	25.74	Operating	2
Permian Midland Tight	United States	17.31	Operating	3
Safaniya	Saudi Arabia	12.62	Operating	4
Montney Play	Canada	12.39	Operating	5
Vaca Muerta Shale	Argentina	12.12	Operating	6
North Field	Qatar	11.56	Planned	7
Ghawar Uthmaniyah	Saudi Arabia	10.75	Operating	9
Haynesville/Bossier Shale	United States	8.99	Operating	12
Yolotan (Iolotan) South	Turkmenistan	8.78	Operating	13

Top ten coal carbon bombs by potential emissions

Project name	Country	Potential emissions (Gt CO_2)	Status	Global ranking
Xinjiang Hongshaquan No. 2 Surface Mine	China	11.00	Planned	8
Carmichael Coal Project	Australia	10.59	Operating	10
Tavan Tolgoi Coal Mine	Mongolia	9.63	Operating	11
Hongshaquan No. 1 Surface Mine	China	8.69	Operating	14
Murray River Coal Mine	Canada	8.48	Planned	15
Dahaize Coal Mine	China	7.99	Operating	17
Hebei Xingtai Coal Mine West Shaft	China	7.59	Operating	19
PTBA Coal Mines	Indonesia	7.37	Operating	20
Xinjiang Jijihu West Coal Mine	China	7.31	Planned	22
Wucaiwan No. 4 Coal Mine	China	7.22	Planned	24

Urgent: projects starting until 2030, priority issue

- 23 projects, supposed to have started between 2021 and 2025, are still reported as planned by the information source. Further investigation is required to determine the specific situation of each of these cases.
- Accumulating 52.9 Gt of emissions
- 5 in China, 2 in Australia, 2 in Russia, and 1 in Canada, Iran, laos and Saudi Arabia
- 21 projects are expected to start between 2026 and 2030
- They accumulate 28.8 Gt of emissions in total, around twice China's annual emissions or 10 times the USA's annual emissions.
- 4 in Australia, 4 in China, 3 in india, 3 in Qatar, 2 in Colombia an 1 in Iran, Mozambique, Russia, Saudi Arabia and the United Arab Emirates.

Top 5 of oil and gas projects with highest future emissions until 2030

Project name	Country	∑ (2026/30) Gt CO_2
Permian Delaware Tight	United States	4.4
Permian Midland Tight	United States	3.2
Marcellus Shale	United States	3.1
Haynesville/Bossier Shale	United States	1.7
Montney Play	Canada	1.6

Increasing O&G projects: Exceptional case of Vaca Muerta

The only oil and gas project that has experienced a booming expansion in the 5 years analyzed period is the Vaca Muerta fracking project in Argentina.

Experiencing a growth of 140.4%, after going from 5.2 Gt to 12.1 and having emitted 0.4 Gt of CO_2 in that period.

The Abquiq project (2.7 Gt, Saudi Arabia), which has seen an increase of 87.5%, and the Qurna West-2 project (2.4 Gt, Iraq), which has seen an increase of 68.8%, are the ones which, whilst considerably smaller in scale, lag far behind Vaca Muerta in terms of expansion between the two versions of the dataset.

Top 5 fastest-growing mines

Project name	Country	Emis. V2	Emis. V1	% increase
Hutton Coal Mine	Australia	**7.0**	0.8	775%
Taldinsky Coal Mine	Russia	**3.4**	1.1	219.2%
Elginskiy Coal Mine	Russia	**5.9**	2.2	183.7%
Chirodzi Coal Mine	Mozambique	**3.4**	1.4	160.7%
Yangchangwan Coal Mine	China	2.4	1.1	140.9%

The exceptional case of Chinese carbon bombs

China has gone from having 130 coal carbon bombs in 2022 to 242 in 2025. Emissions from China's coal carbon bombs alone account for 40.2% of the total emissions in the dataset (see the table in the section "China and the following top ten countries").

https://www.leave-it-in-the-ground.org

https://carbonbombs.org