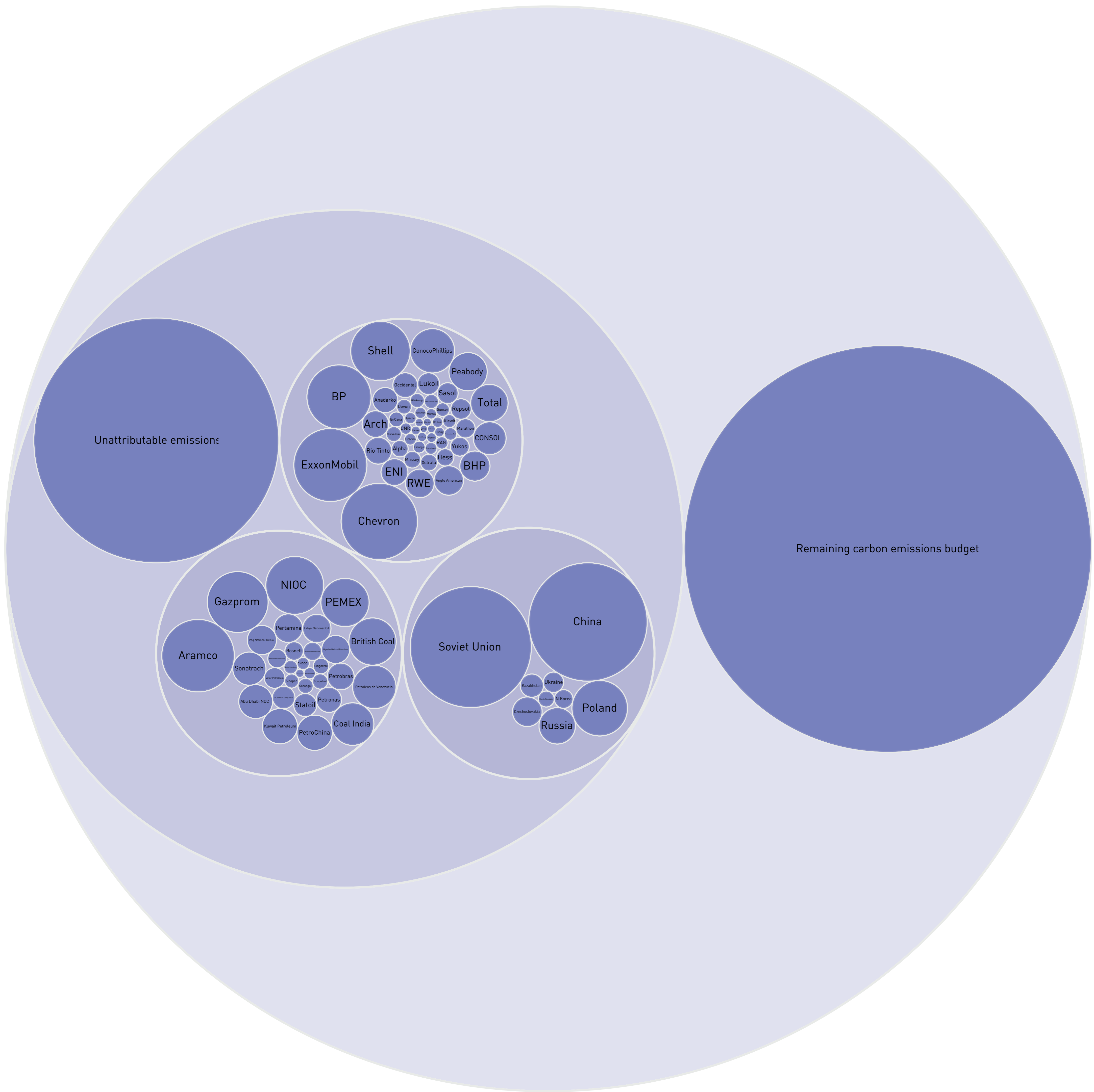


Cumulative emissions 1750 – 2010



Richard Heede's 'Carbon Majors' report* provides the most complete picture to date of who supplied the fossil fuels that caused global warming.

Rather than attribute emissions to nations, the study aggregates historical emissions according to carbon producing entities themselves. Heede concludes that nearly two-thirds (63%) of carbon dioxide emitted since the 1750s can be traced to just 90 fossil fuel and cement producers, most of which still operate.

Fifty are investor-owned companies such as Chevron, Peabody and Shell. Thirty-one are state-owned companies such as Saudi Aramco and Statoil, and nine are government-run industries in 'command economies' such as China, Poland, and the former Soviet Union.

The 'remaining carbon budget' refers to the figure quoted in the fifth report from the Intergovernmental Panel on Climate Change (IPCC). The total amount we can emit and still have a 66%

chance of keeping global warming below 2 °C is 2,900 GtCO₂** . By 2010, 1,450 GtCO₂ of this budget had been 'spent' (emitted).

* Richard Heede, 'Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854-2010', Climatic Change (2014) 122:229-241 DOI 10.1007/s10584-013-0986-y

** IPCC, AR5 WG1 Climate Change 2013: The Physical Science Basis - Summary for Policymakers, p 25.

Emissions attributable to Investor-owned companies	Cumulative emissions to 2010 (MtCO ₂ e)
Chevron, USA	51,096
ExxonMobil, USA	46,672
BP, UK	35,837
Royal Dutch Shell, The Netherlands	30,751
ConocoPhillips, USA	16,866
Peabody Coal Group	12,432
Total, France	11,911
CONSOL Energy, USA	9,096
BHP Billiton, Australia	7,606
Anglo American, UK	7,242
RWE, Germany	6,843
ENI, Italy	5,973
Rio Tinto, UK	5,961
Arch Coal Company, USA	5,888
Anadarko, USA	5,195
Occidental, USA	5,063
Lukoil, Russia	3,873
Sasol, South Africa	3,515
Repsol, Spain	3,381

Emissions attributable to Investor-owned companies	Cumulative emissions to 2010 (MtCO ₂ e)
Marathon, USA	2,985
Yukos, Russia	2,858
Hess, USA	2,364
Xstrata, Switzerland	2,223
Massey Energy Corporation, US	2,199
Alpha Natural Resources, USA	2,149
Cyprus Amax, USA	1,748
EnCana, Canada	1,695
Devon Energy, USA	1,690
BG Group (British Gas) UK	1,543
Westmoreland Mining, USA	1,530
Suncor, Canada	1,407
Kiewit Mining Group, USA	1,295
North American Coal, US	1,181
Ruhrkohle AG (RAG), Germany	1,138
Luminant / TXU, USA	1,049
Lafarge, France	1,044
Holcim, Switzerland	1,008
Canadian Natural Resources, Canada	958
Apache, USA	951
Talisman, Canada	925
Murray Coal Corporation, USA	796
UK Coal, UK	794
Husky, Canada	665
Nexen, Canada	651
HeidelbergCement, Germany	587
Cemex, Mexico	551
Italcementi	463
Murphy Oil, USA	418
Taihejiyo, Japan	402
OMV Group, Austria	346

State-owned companies	Cumulative emissions to 2010 (MtCO ₂ e)
Saudi Aramco, Saudi Arabia	46,033
Gazprom, Russia	32,136
National Iranian Oil Company (NIOC), Iran	29,084
Petroleos Mexicanos (PEMEX), Mexico	20,025
British Coal Corporation, UK	19,245
Petroleos de Venezuela, Venezuela	16,157
Coal India, India	15,493
PetroChina, China	10,564
Kuwait Petroleum Corp., Kuwait	10,503
Abu Dhabi NOC, United Arab Emirates	9,672
Sonatrach, Algeria	9,263
Iraq National Oil Company, Iraq	7,137
Pertamina, Indonesia	6,829
Libya National Oil Corp., Libya	6,693
Nigerian National Petroleum, Nigeria	6,540
Petroleo Brasileiro (Petrobras), Brazil	5,991
Petronas, Malaysia	5,274
Statoil, Norway	4,367
Oil and Gas Corp India, India	4,163
Qatar Petroleum, Qatar	3,410
Egyptian General Petroleum, Egypt	2,768
Rosneft, Russian Federation	2,723
Petroleum Development Oman, Oman	2,663
Singareni Collieries Company, India	1,882
Ecopetrol, Colombia	1,809
Sonangol, Angola	1,794
Sinopec, China	1,532
Syrian Petroleum, Syria	1,402
CNOOC (China National Offshore Oil Co.)	1,123
Bahrain Petroleum Corporation	931
Polish Oil & Gas Co.	473

Emissions attributable to Nation states (command economies)	Cumulative emissions to 2010 (MtCO ₂ e)
Former Soviet Union	129,717
China, Peoples Rep. (coal & cement only)	124,089
Poland	26,750
Russian Federation (not including FSU)	11,243
Czechoslovakia	7,347
Kazakhstan	4,442
Ukraine	3,370
North Korea	2,802
Czech Republic	2,000

All other sources	Cumulative emissions to 2010 (MtCO ₂ e)
Unattributable emissions	535,749