

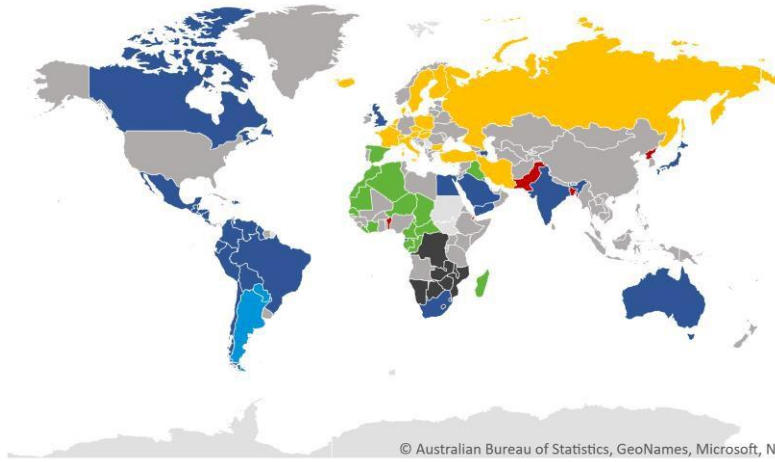
Alaska Senate Resources Committee

George David Banks

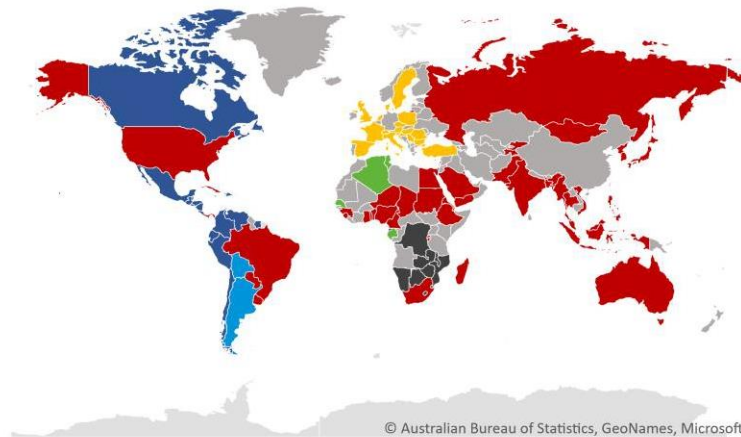
April 24, 2023

TOP IMPORTER BY COUNTRY IN 2000

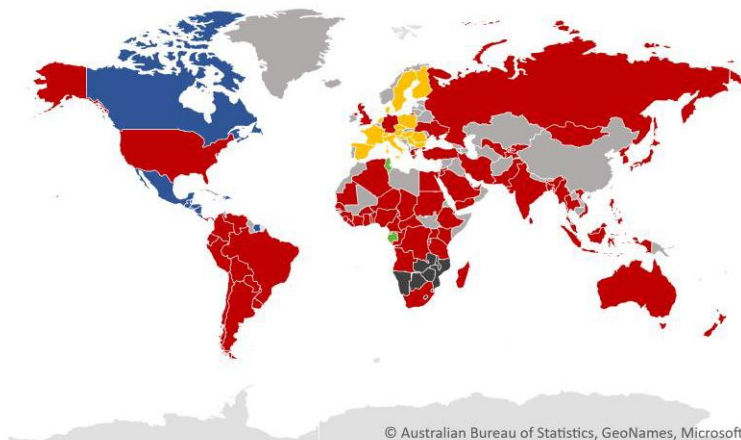
■ China ■ United States ■ Germany ■ South Africa ■ Brazil ■ France ■ Other



TOP IMPORTER BY COUNTRY IN 2013



TOP IMPORTER BY COUNTRY IN 2021



Data Source: BACI HS92 (1995-2021) and BACI HS17 (2017-2021)

Production of selected minerals

	U.S. %	Chinese %	Russian %	Other
Aluminum	1%	57%	5%	36%
Cobalt	0%	1%	4%	94%
Copper	4%	38%	4%	54%
Lithium	-	14%	-	86%
Nickel	1%	4%	9%	86%
Selenium	-	37%	10%	53%
Tellurium	-	59%	12%	29%
Zinc	6%	32%	2%	60%
REE	15%	60%	1%	24%

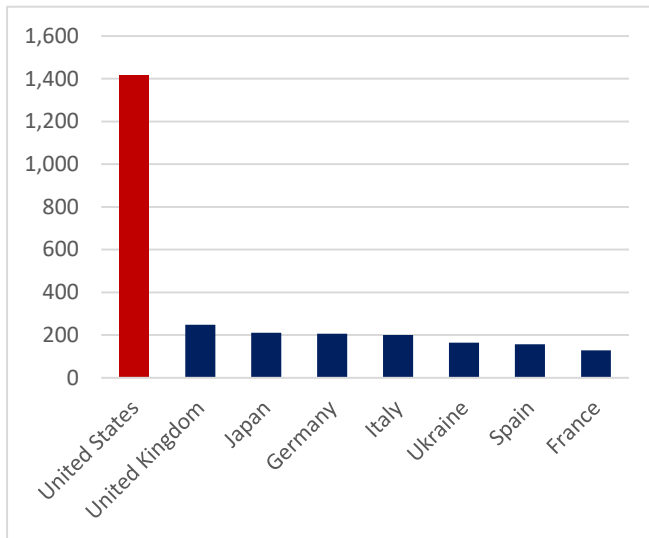
Source: USGS Mineral Commodity Summaries 2022, <https://pubs.er.usgs.gov/publication/mcs2022>.

Chinese Controlled Production of Selected Minerals in Africa (2018)

	Chinese-controlled Production in Africa (Millions of US\$)	Total African Production (Millions of US\$)	Chinese Controlled Share of African Production (%)
Copper	2,902	10,300	28
Bauxite	1,318	1,600	82
Cobalt	901	2,200	41
Gold	544	30,600	12
Zinc	226	780	29
Uranium	163	400	40

Source: RMG Consulting.

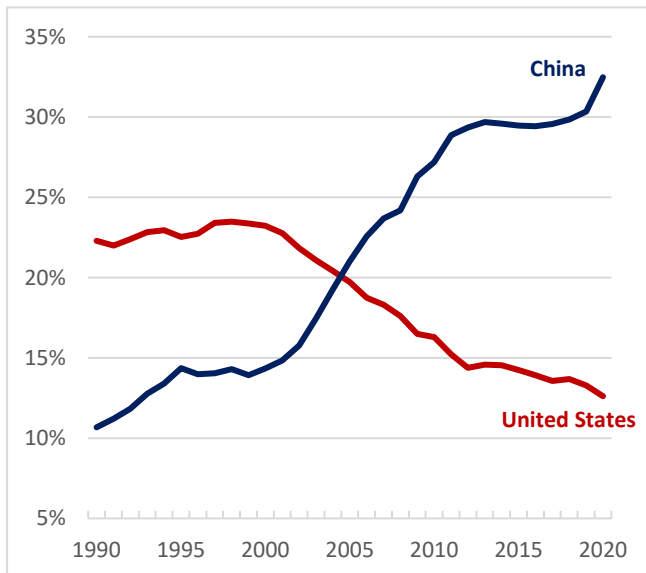
CO2 Emissions Reductions 2005 – 2020 (MMt)



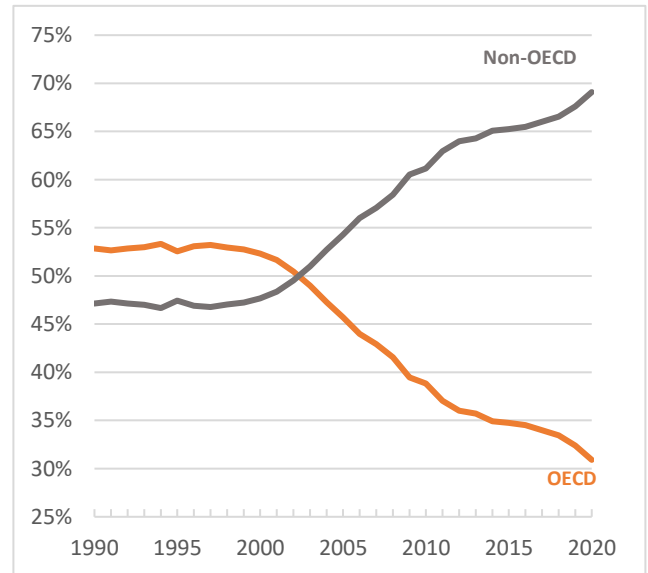
U.S. CO2 Emissions (MMt)



Global Share of CO2 Emissions, U.S. vs China



Global Share of CO2 Emissions, OECD vs non-OECD



Source of data: Olivier and Peters, and EDGAR.

America's carbon efficiency compared to select U.S. allies and China, agriculture, forestry, and mining sub-sectors

	United States	European Union	Canada	China
Agriculture, Forestry, and Fishing	1.0	1.2	1.4	1.2
Mining and Quarrying of Non-Energy Producing Products	1.0	0.8	1.6	2.2
Mining Support Services	1.0	1.9	1.5	5.2
Food Products	1.0	0.8	1.0	1.4
Wood and Products of Wood	1.0	0.9	1.3	1.8

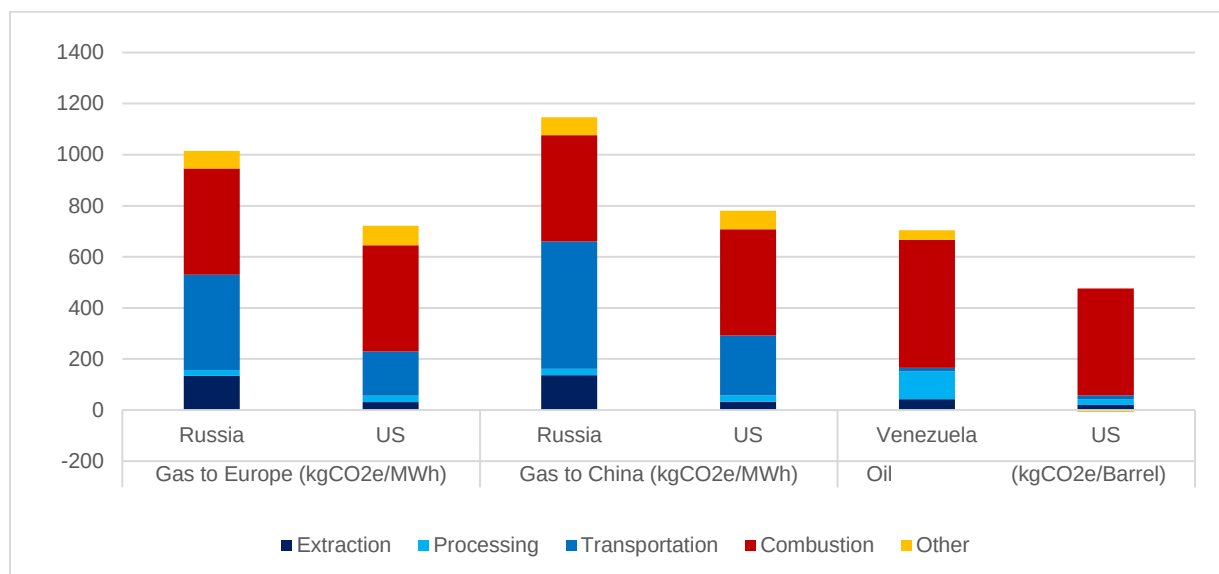
>1.0 indicates a U.S. advantage; <1.0 indicates a U.S. disadvantage. Data is from 2015. Source: Climate Leadership Council, 2020, <https://clcouncil.org/reports/americas-carbon-advantage.pdf>.

America's carbon efficiency compared to select U.S. allies and China, agriculture, forestry, and mining sub-sectors

	United States	European Union	Canada	China
Paper Products	1.0	0.8	1.0	1.7
Fabricated Metal Products	1.0	0.9	0.9	3.1
Computer, Electronic, and Optical Products	1.0	2.1	2.3	5.7
Machinery and Equipment	1.0	0.8	0.9	2.8
Motor Vehicles	1.0	0.7	1.0	2.4

>1.0 indicates a U.S. advantage; <1.0 indicates a U.S. disadvantage. Data is from 2015. Source: Climate Leadership Council, 2020, <https://clcouncil.org/reports/americas-carbon-advantage.pdf>.

20-year life-cycle emissions from fossil fuels, U.S. vs competitors



Source of data: Selina Roman-White et al., "Life Cycle GHG Perspective on Exporting LNG From the U.S. 2019 Update," *National Energy Technology Laboratory*, (September 2019). <https://www.energy.gov/sites/prod/files/2019/09/f66/2019%20NETL%20LCA-GHG%20Report.pdf> and Deborah Gordon et al., "Know Your Oil: Creating a Global Oil-Climate Index," *Carnegie Endowment for International Peace*, (March 2015). <http://oci.carnegieendowment.org/>

Comparison of methane emissions relative to coal production, 2015

	Russia	China	Australia	U.S.	World
Methane from Coal Mining Activities (MtCO2e)	61.3	665.1	25.4	67.6	966.9
Coal Production (million tonnes oil equivalent)	184.5	1,827	275	455.2	3,830.1
Methane emissions per tonne of coal production (MtCO2e)	0.332	0.364	0.092	0.149	0.252
Mining Emissions Relative to U.S. Production	123%	144%	-38%	N/A	69%

Source of data: Global Methane Initiative (GMI), <https://www.globalmethane.org/methane-emissions-data.aspx>, <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.globalmethane.org%2Fgmi-methane-data-epa.xlsx&wdOrigin=BROWSELINK>; and BP Statistical Review of World Energy, July 2021, <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>.

U.S. Strategic Goals

There are multiple strategic goals that the United States could pursue in merging climate and trade policy. Importantly, the following objectives are not mutually exclusive, meaning that a trade mechanism could be designed that could achieve all of them.

1. Capturing Market Share:

Of all the goods the United States imports, 75% come from less carbon-efficient countries. Implementing a pollution fee at the border would make these imports less competitive by effectively taxing them for their higher pollution intensity, increasing demand for lower-carbon, domestically produced goods. At the same time, creating an international club of countries with similar trading policies would increase demand for U.S. exports.

2. Improving Supply Chain Security:

A climate and trade policy should help recapture strategic components of the supply chain, including those related to critical and strategic minerals. We've already noted the carbon advantage U.S. mining has over Chinese activities. A fee on less efficient Chinese critical minerals and technologies made with those sources would encourage investments in cleaner U.S. production, assuming domestic permitting and regulatory reforms and the availability of domestic resources.

3. Preventing Job Leakage:

A trade mechanism that rewards U.S. environmental performance would improve the competitiveness of domestic producers. Doing so would create a disincentive for U.S. companies to offshore to less efficient economies and would bolster job growth here in America.

4. Reducing Global Emissions:

Forming a club with a critical mass of economies should be a U.S. priority. Alone, America only has a 17% share of total global imports, but a G7-plus grouping would account for roughly 50% of worldwide imports, which would create market leverage over China and other adversaries, potentially strong enough to encourage greening of global supply chains.

5. Resurrecting U.S. Manufacturing:

By creating an international market that monetizes the U.S. carbon advantage, demand for U.S. exports should increase within the carbon club. At the same time, dirty imports from China and elsewhere would be displaced by domestic production and cleaner imports from U.S. partners in the club.