

Global

CO₂, Methane, Energy, Temperature Deviation and Population Dataset

1980-2021

Data Sources Utilized

Data	Organization	Source
CO ₂ Emissions	CERN	Kaggle / Zenodo
Energy Production	U.S. Energy Information Administration	EIA.gov
Methane Emissions	European Commission	EDGAR - Emissions Database for Global Atmospheric Research
Population Totals ¹	The World Bank Group	Worldbank.org
Temperature Deviations	International Monetary Fund	IMF.org

Table 1: Data Sources

¹ The World Bank Group does not recognize Taiwan at the time of this publication. Macrotrends was utilized for Taiwan's population data, and Taiwan's population was removed from China's population total.

Descriptive Statistics

```
> skimr::skim_without_charts(df)
```

```
— Data Summary —
```

Name	Values
Number of rows	df
Number of columns	8862
	20

```
Column type frequency:
```

character	2
numeric	18

```
Group variables
```

```
None
```

```
— Variable type: character —
```

	skim_variable	n_missing	complete_rate	min	max	empty	n_unique	whitespace
1	Country	0	1	4	32	0	211	0
2	ISO.alpha.3	0	1	3	3	0	211	0

```
> stargazer(df, type="text")
```

Statistic	N	Mean	St. Dev.	Min	Max
Year	8,862	2,000.500	12.122	1,980	2,021
Total.CO2	8,862	126.406	603.628	0.000	11,472.370
Coal.CO2	8,862	51.269	354.402	0.000	7,955.985
Oil.CO2	8,862	44.868	183.417	0.000	2,644.237
Gas.CO2	8,862	23.628	104.449	0.000	1,673.999
Cement.CO2	8,862	4.248	32.702	0.000	858.233
Flaring.CO2	8,862	1.416	5.352	0.000	88.383
Other.CO2	8,862	0.978	7.972	0.000	177.257
Per.Capita.CO2	8,862	4.607	6.151	0.000	66.818
Total.Energy.Production	8,862	2.049	8.576	0.000	134.964
Coal.Energy	8,862	0.570	4.162	0.000	93.964
Gas.Energy	8,862	0.455	2.282	0.000	35.795
Petroleum.and.other.liquids.Energy	8,862	0.736	2.710	0.000	31.964
Nuclear.Energy	8,862	0.107	0.602	0.000	8.459
Renewables.and.other.Energy	8,862	0.181	0.861	-0.000	20.733
CH4	8,862	1,501.978	4,965.422	0.000	71,142.200
Population	8,862	29,154,875.000	116,371,627.000	0	1,407,563,842
Temp_Change	8,862	0.665	0.620	-2.062	3.691

Unit Measurements

<i>Features</i>	<i>Unit Measurement</i>
<i>Year</i>	Individual (1980-2021)
<i>CO2 Data (excluding Per Capita)</i>	Millions of Tonnes of CO2
<i>Per Capita CO2</i>	Tonnes of CO2
<i>Energy Production Data</i>	Quadrillion BTU's
<i>CH4 (Methane)</i>	Kilotons
<i>Population</i>	Individual
<i>Temperature Change</i>	Degrees Celsius Deviation from Average Temperature baseline taken from 1951-1980

Table 2: Unit Measurements

Countries Represented



*Countries in Green are represented

```
> unique(df$Country)
[1] "Afghanistan"
[5] "Antarctica"
[9] "Aruba"
[13] "Bahamas"
[17] "Belarus"
[21] "Bermuda"
[25] "Botswana"
[29] "Bulgaria"
[33] "Cambodia"
[37] "Chad"
[41] "Comoros"
[45] "Côte d'Ivoire"
[49] "Czechia"
[53] "Dominica"
[57] "El Salvador"
[61] "Eswatini"
[65] "Finland"
[69] "Gabon"
[73] "Ghana"
[77] "Guadeloupe"
[81] "Guyana"
[85] "Hungary"
[89] "Iran"
[93] "Italy"
[97] "Kazakhstan"
[101] "Kuwait"
[105] "Lebanon"
[109] "Lithuania"
[113] "Malawi"
[117] "Malta"
[121] "Mexico"
[125] "Montenegro"
[129] "Myanmar"
[133] "Netherlands"
[137] "Niger"
[141] "North Macedonia"
[145] "Palestinian Territories"
[149] "Peru"
[153] "Puerto Rico"
[157] "Russia"
[161] "Saint Lucia"
[165] "Sao Tome and Principe"
[169] "Seychelles"
[173] "Slovenia"
[177] "South Korea"
[181] "Sudan"
[185] "Syria"
[189] "Taiwan"
[193] "Trinidad and Tobago"
[197] "Turks and Caicos Islands"
[201] "United Arab Emirates"
[205] "Uzbekistan"
[209] "Yemen"

"Albania"
"Antigua and Barbuda"
"Australia"
"Bahrain"
"Belgium"
"Bhutan"
"Brazil"
"Burkina Faso"
"Cameroon"
"Chile"
"Congo"
"Croatia"
"Democratic Republic of the Congo"
"Dominican Republic"
"Equatorial Guinea"
"Ethiopia"
"France"
"Gambia"
"Greece"
"Guatemala"
"Haiti"
"Iceland"
"Iraq"
"Jamaica"
"Kenya"
"Kyrgyzstan"
"Lesotho"
"Luxembourg"
"Malaysia"
"Martinique"
"Micronesia"
"Montserrat"
"Namibia"
"New Caledonia"
"Nigeria"
"Norway"
"Pakistan"
"Panama"
"Philippines"
"Qatar"
"Rwanda"
"Saint Pierre and Miquelon"
"Saudi Arabia"
"Sierra Leone"
"Solomon Islands"
"South Sudan"
"Suriname"
"Taiwan"
"Timor-Leste"
"Trinidad and Tobago"
"Tuvalu"
"United Kingdom"
"Vanuatu"
"Zambia"

"Algeria"
"Argentina"
"Austria"
"Bangladesh"
"Belize"
"Bolivia"
"British Virgin Islands"
"Burundi"
"Canada"
"China"
"Cook Islands"
"Cuba"
"Denmark"
"Ecuador"
"Eritrea"
"Faroe Islands"
"French Guiana"
"Georgia"
"Greenland"
"Guinea"
"Honduras"
"India"
"Ireland"
"Japan"
"Kiribati"
"Laos"
"Liberia"
"Macao"
"Maldives"
"Mauritania"
"Moldova"
"Morocco"
"Nauru"
"New Zealand"
"Niue"
"Oman"
"Papua New Guinea"
"Poland"
"Réunion"
"Saint Helena"
"Saint Vincent and the Grenadines"
"Senegal"
"Singapore"
"Somalia"
"Spain"
"Sweden"
"Tajikistan"
"Togo"
"Turkey"
"Uganda"
"United States"
"Venezuela"
"Zimbabwe"

"Angola"
"Armenia"
"Azerbaijan"
"Barbados"
"Benin"
"Bosnia and Herzegovina"
"Brunei"
"Cabo Verde"
"Central African Republic"
"Colombia"
"Costa Rica"
"Cyprus"
"Djibouti"
"Egypt"
"Estonia"
"Fiji"
"French Polynesia"
"Germany"
"Grenada"
"Guinea-Bissau"
"Hong Kong"
"Indonesia"
"Israel"
"Jordan"
"Kosovo"
"Latvia"
"Libya"
"Madagascar"
"Mali"
"Mauritius"
"Mongolia"
"Mozambique"
"Nepal"
"Nicaragua"
"North Korea"
"Pakistan"
"Paraguay"
"Portugal"
"Romania"
"Saint Kitts and Nevis"
"Samoa"
"Serbia"
"Slovakia"
"South Africa"
"Sri Lanka"
"Switzerland"
"Tanzania"
"Tonga"
"Turkmenistan"
"Ukraine"
"Uruguay"
"Vietnam"
```

Exclusions and Changes

country!= 'American Samoa'
country!= 'Anguilla'
country!= 'Bonaire, Saint Eustatius and Saba'
country!= 'Andorra'
country!= 'Cayman Islands'
country!= 'Christmas Island'
country!= 'Curaçao'
country!= 'Falkland Islands'
country!= 'French Equatorial Africa'
country!= 'French West Africa'
country!= 'Gibraltar'
country!= 'Guam'
country!= 'Hawaiian Trade Zone'
country!= 'International Transport'
country!= 'Kuwaiti Oil Fires'
country!= 'Leeward Islands'
country!= 'Liechtenstein'
country!= 'Marshall Islands'
country!= 'Mayotte'
country!= 'Netherlands Antilles'
country!= 'Northern Mariana Islands'
country!= 'Panama Canal Zone'
country!= 'Ryukyu Islands'
country!= 'St. Kitts-Nevis-Anguilla'
country!= 'U.S. Pacific Islands'
country!= 'U.S. Territories'
country!= 'U.S. Virgin Islands'
country!= 'Wake Island'
country!= 'Wallis and Futuna Islands'
country!= 'Western Sahara'

Myanmar=Burma

Swaziland=Eswatini

Bahamas=the Bahamas

Cape Verde = Cabo Verde

Democratic Republic of the Congo = Congo Kinshasa

Congo = Congo Brazzaville

Former Czechoslovakia gave to Czech

Former Serbia and Montenegro gave to Montenegro

Former U.S.S.R. gave to Russia

Former Yugoslavia gave to Montenegro

Combine Germany East & West