Paris Agreement

Team Energy

Angela Liang
George Alonzo
Jeremy Wang

Are we, the People, on track to meet the Paris Agreement by 2030?

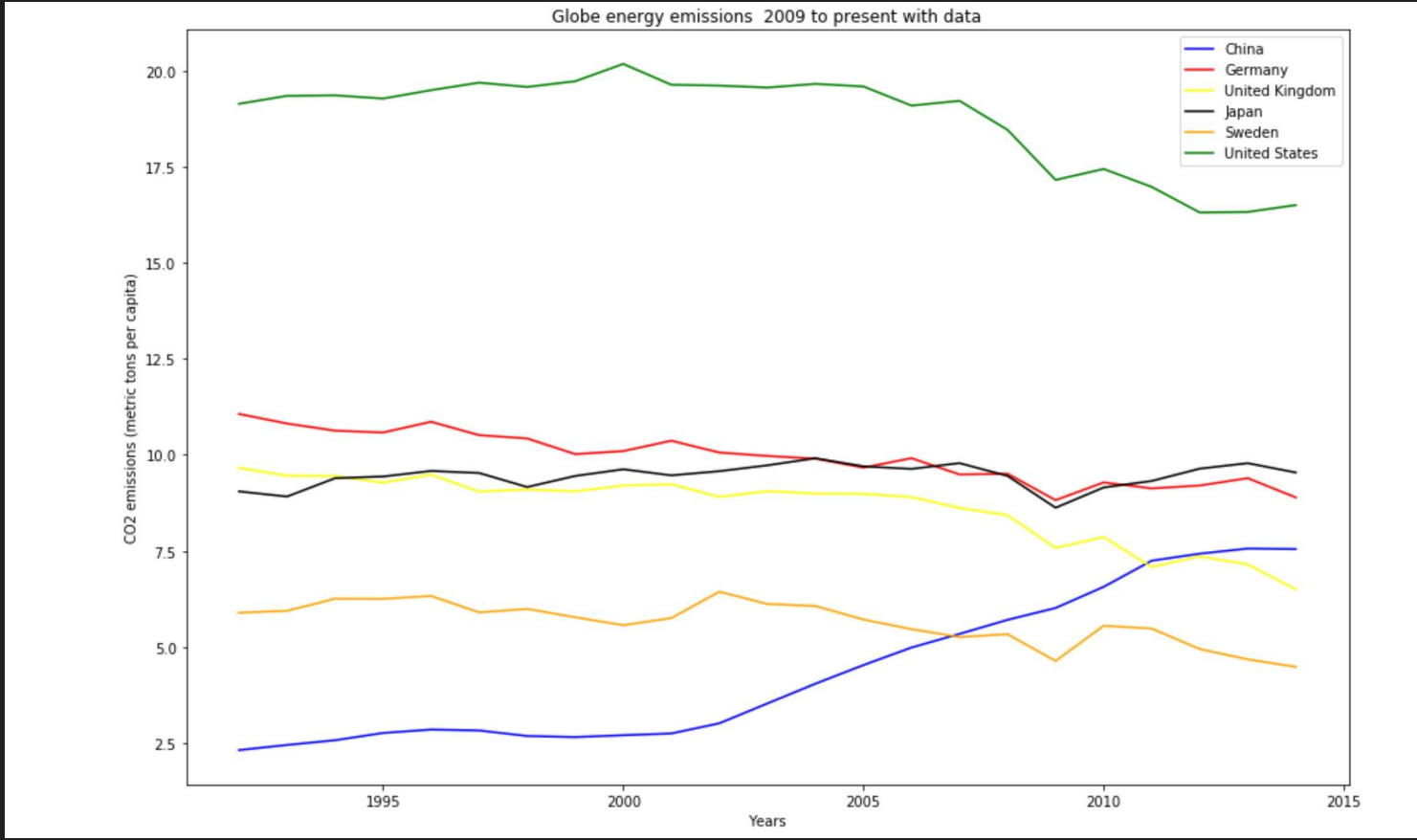
Overview

- Introductions and Project Rationale: Climate Justice (All)
- Paris Agreement Background (Angela)
- History of Global CO_2 Emissions (Jeremy)
- Global CO_2 Emission Summary (Jeremy)
- History of US CO_2 Emissions (Angela)
- History of US Energy Expenditure (George)
- 2030 Projections for US CO_2 Emissions (George)
- 2030 Projections for US Energy Expenditure (George)
- What Can We Do?

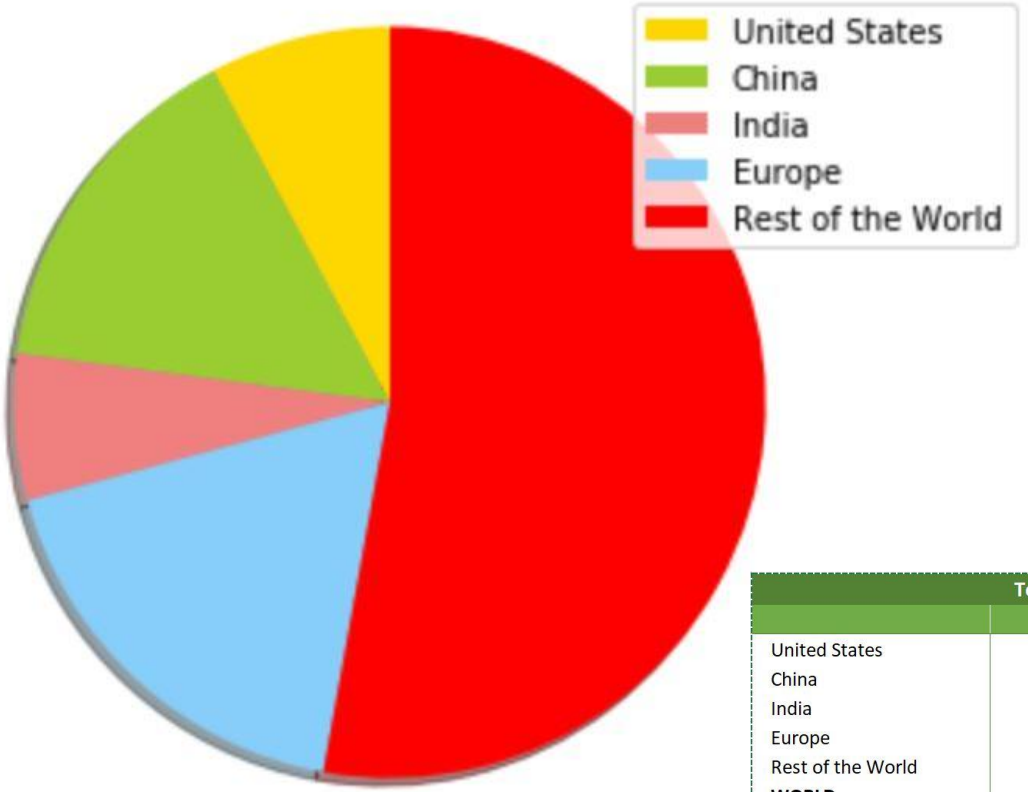
Paris Agreement & US Goal

USA	Main pledges and targets	Climate Action Tracker
PARIS AGREEMENT	Ratified	Yes, but communicated intent to withdraw
	2030 unconditional target(s)	26–28% below 2005 by 2025 incl. LULUCF [10–17% below 1990 by 2025 excl. LULUCF]
	Coverage	Economy-wide, incl. LULUCF
LONG-TERM GOAL(S)	Long-term goal(s)	Obama Administration Mid-Century Strategy: 80% below 2005 levels by 2050 incl. LULUCF [68–76% below 2005 by 2050 excl. LULUCF] 76% below 1990 incl. LULUCF

History of Global CO_2 Emissions (1990 - 2015)

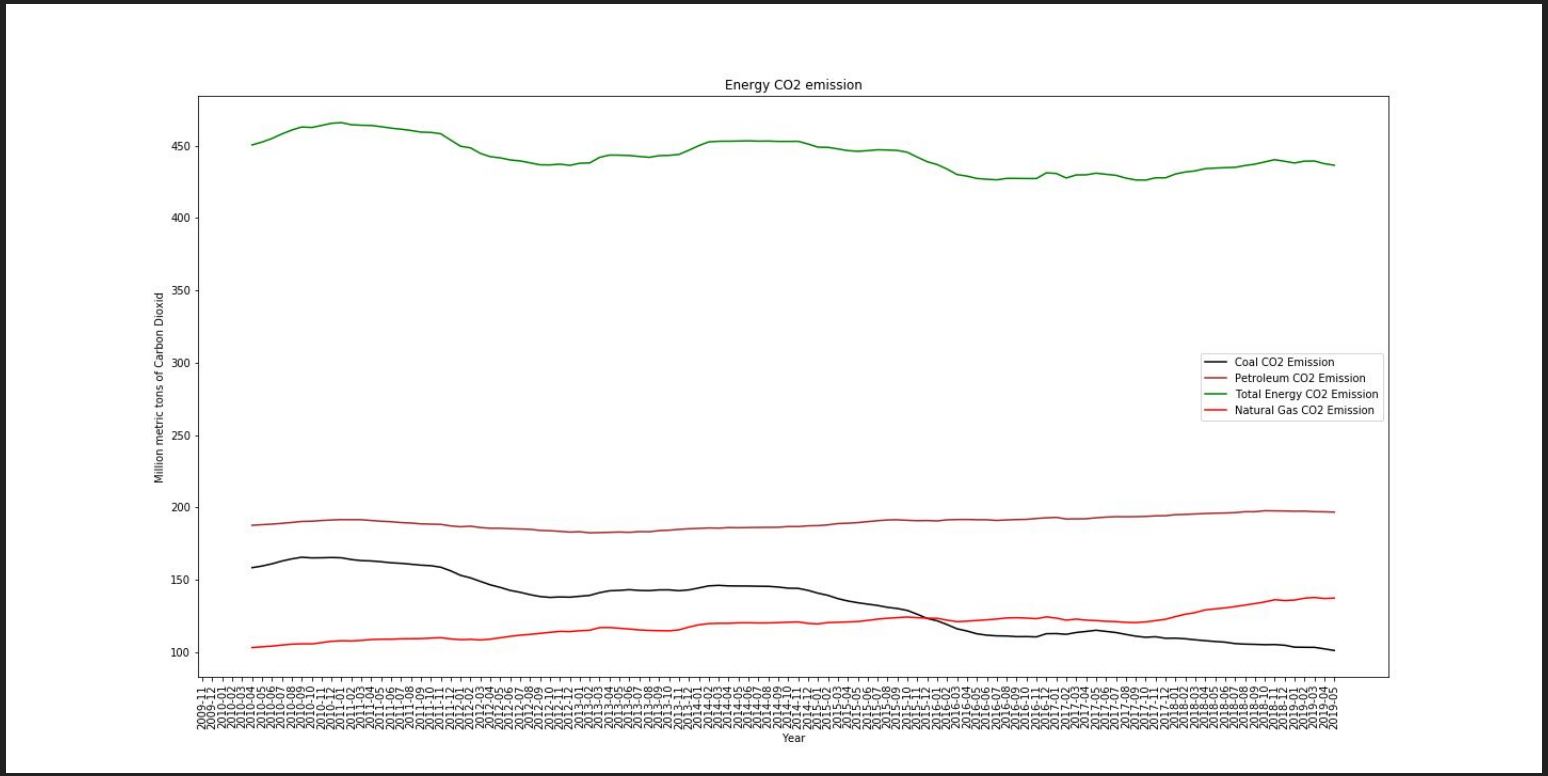


Global CO_2 Emissions

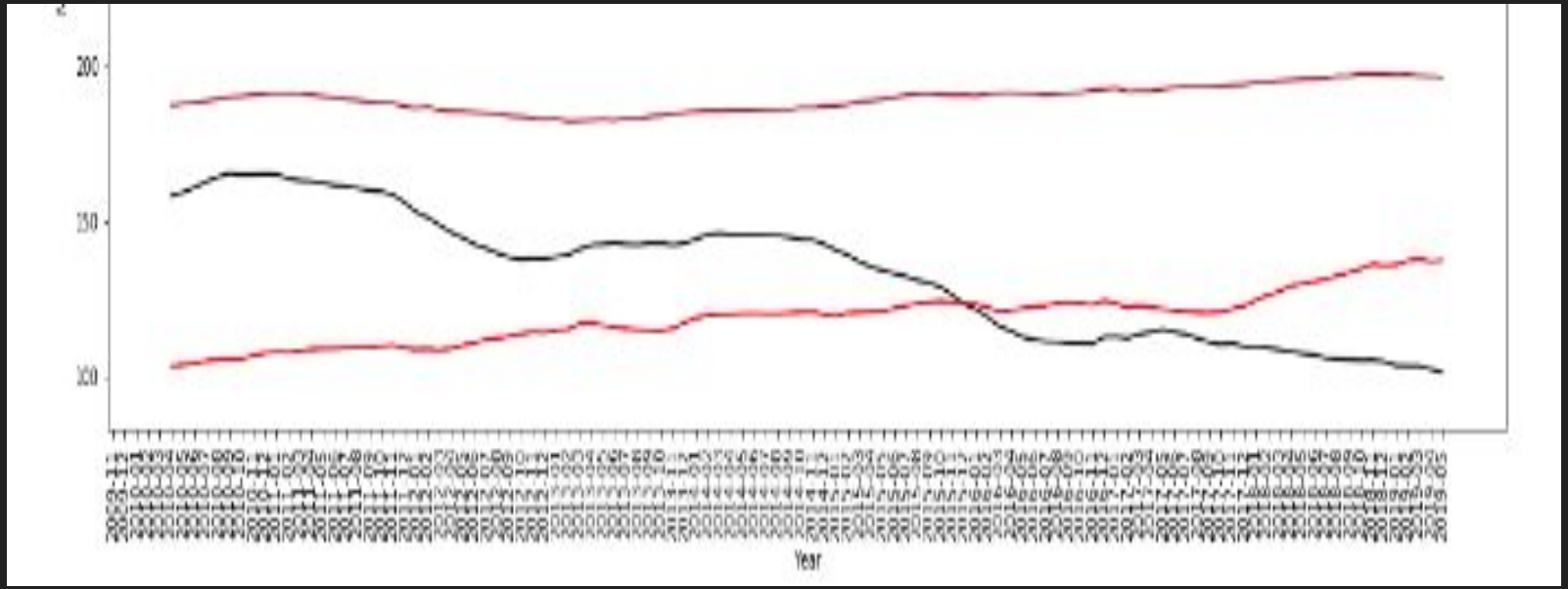


	Total CO_2 emissions (Mt CO_2)
	2018
United States	4 888
China	9 481
India	2 299
Europe	3 956
Rest of the World	11 249
WORLD	33 143

History of US CO_2 Emissions (noise-reduced)
(by Energy Source)



Cleaning Up the Data - Running into Dating Problems



Cleaning Up the Data - Date Formatting

```
EnergyDataFrame.tail()
```

	YYYYMM	Description	Value	Unit	Year	month
7531	201902	Total Primary Energy Consumption	8.355556	Quadrillion Btu	2019	02
7532	201903	Total Primary Energy Consumption	8.679429	Quadrillion Btu	2019	03
7533	201904	Total Primary Energy Consumption	7.649199	Quadrillion Btu	2019	04
7534	201905	Total Primary Energy Consumption	7.929101	Quadrillion Btu	2019	05
7535	201906	Total Primary Energy Consumption	7.913228	Quadrillion Btu	2019	06

Cleaning Up the Data - Date Formatting - Splitting the Date

```
# Split year from month and check for correct splitting.
u = EnergyDataFrame['YYYYMM'].astype(str)
EnergyDataFrame['Year'], EnergyDataFrame['month'] = u.str[:-2], u.str[-2:]
EnergyDataFrame.head()
```

	YYYYMM	Description	Value	Unit	Year	month
0	194913	Coal Consumption	11.980905	Quadrillion Btu	1949	13
1	195013	Coal Consumption	12.347109	Quadrillion Btu	1950	13
2	195113	Coal Consumption	12.552996	Quadrillion Btu	1951	13
3	195213	Coal Consumption	11.306479	Quadrillion Btu	1952	13
4	195313	Coal Consumption	11.372684	Quadrillion Btu	1953	13

Cleaning Up the Data - Getting Annual Data using Loc

```
EnergyPandaByYear = EnergyPanda.loc[EnergyPanda['month'] == 13,:]
```

	month	Year	Description	Value	Unit
0	13	1949	Coal Consumption	11.980905	Quadrillion Btu
1	13	1950	Coal Consumption	12.347109	Quadrillion Btu
2	13	1951	Coal Consumption	12.552996	Quadrillion Btu
3	13	1952	Coal Consumption	11.306479	Quadrillion Btu
4	13	1953	Coal Consumption	11.372684	Quadrillion Btu

Cleaning Up the Data - Using Loc to Isolate Yearly Data

```
EnergyPandaByYear.tail()
```

Year	Description	Total Energy Consumed in Quadrillion Btu
2014	Total Primary Energy Consumption	98.381746
2015	Total Primary Energy Consumption	97.484457
2016	Total Primary Energy Consumption	97.445219
2017	Total Primary Energy Consumption	97.809108
2018	Total Primary Energy Consumption	101.236302

2030 Projections for US Energy Consumption

- Coal down in 22% generation in 2030
- Gas usage with 38%
- Renewable with 24%
- Nuclear makes up the rest

** All Data are based on Projected with 2018 National Data **

What Can We Do?

If We, the People, continue with our current trend of energy consumption and CO_2 emissions, where will be in 2030?

- 100% renewable energy is needed
- Decrease carbon footprint by using carpool or public transportation
- Think about environmental impact before making any purchase
- Government/policy makers need to pay attention to climate issues, and promote incentive programs for green energy.

Source

https://climateactiontracker.org/

https://www.iea.org/statistics/?country=JAPAN&year=2016&category=Emissions&indicator=TotCO2&mode=chart&dataTable=INDICATORS

https://ec.europa.eu/eurostat/statistics-explained/index.php/Greenhouse_gas_emission_statistics
https://www.eia.gov/outlooks/ieo/