Global Greenhouse Gas Emissions

Data Visualisation Exercise

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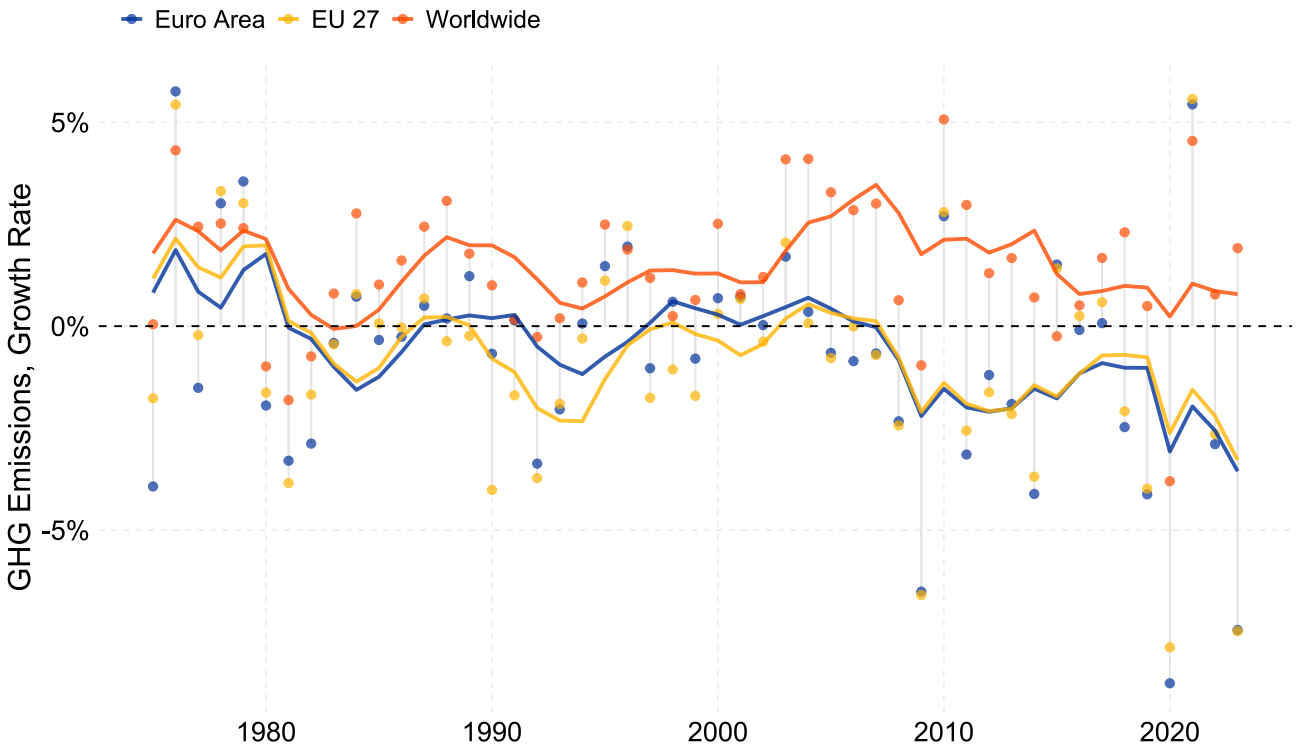
This report analyzes global greenhouse gas (GHG) emissions using data from the Emissions Database for Global Atmospheric Research (EDGAR) GHG emissions files[1,2]. Information on countries' income-groups was obtained from the World Bank API[3].

The analysis was conducted in R version 4.4.2[4], using a number of additional packages for data preparation and visualisation[5–14], and compiled into a reproducible PDF report with Quarto. The code to reproduce this PDF document, together with all required files, is available for download here.

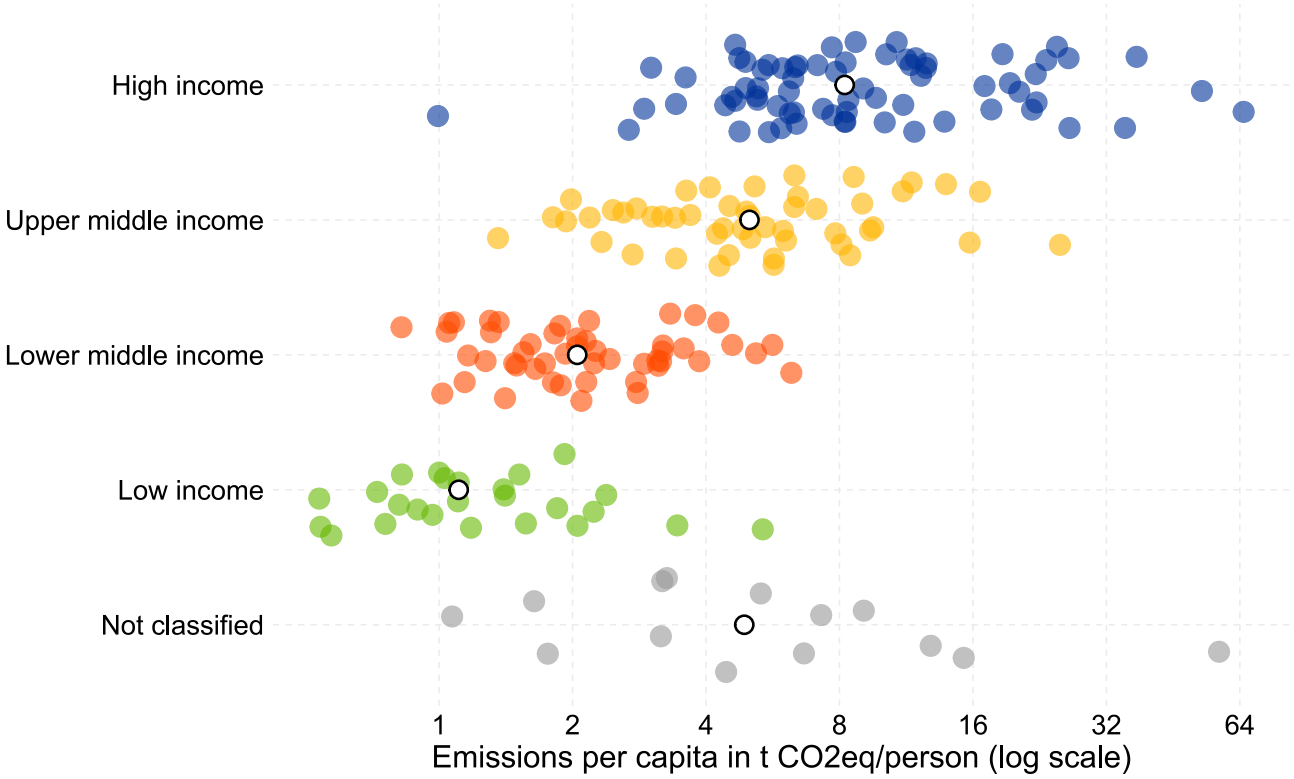
Chart 1: **Evolution of GHG growth in the euro area, European Union (EU27) and worldwide.**



Notes: Growth rate of GHG emissions over time, in percent. Each lines shows the 5-year leading moving average, colored by region, with points indicating the underlying year-on-year growth rates. GHG emissions include CO2 (fossil only), CH4, N2O and F-gases.
Sources: EDGAR[2] and own calculations.

- Last 15 years show Deceleration in all regions
- 5-year MA for EU and EA negative since… also decelerating but Still growing globally
- Substantial global reductions are only observed following the global financial crisis and the COVID-19 pandemic: In 2020, GHG emissions decreased by -3.8% worldwide and -8.8% in the Euro Area.

Chart 2: **Comparison of countries' GHG emissions per capita aggregated according to the World Bank income groups.**



Notes: Emissions per capita in 2023, in tons of CO2eq/person (log scale). Individual countries are sorted and colored by income group, with black circles denoting the median value for each group. GHG emissions include CO2 (fossil only), CH4, N2O and F-gases.
Sources: EDGAR[2], World Bank[3], and own calculations.

- Per capita emissions are notably higher in high-income countries:
- While there is substantial overlap, for all low and lower-middle income countries, per-capita emissions are below the high-income median of 8.2 t CO2-eq per person.
- More variation the in upper-middle and high-income groups

Chart 3: **Contribution of individual countries and continents to total world GHG emissions.**

Notes: Contributions of countries to total global GHG emissions in 2023. The size of each rectangle, relative to the full area, reflects each country's contribution, sorted and colored by continent.
Sources: EDGAR[2] and own calculations.

- Asia contributes with 59.6% most to global GHG emissions in 2023.

Europe (13.1%)

Americas (19.7%)

and Africa 6.2%

Oceania 1.3%

- China alone contributes 30.8%, followed by the USA with 11.5%, India 8%, Russia 5.2%, and Brasil 2.5%.
- African countries contribute very little
- On the country level, China and USA dominate the picture, followed.

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