



**CLIMATE CHANGE AND
THE GLOBAL INEQUALITY
OF CARBON EMISSIONS
1990-2020**

SUMMARY

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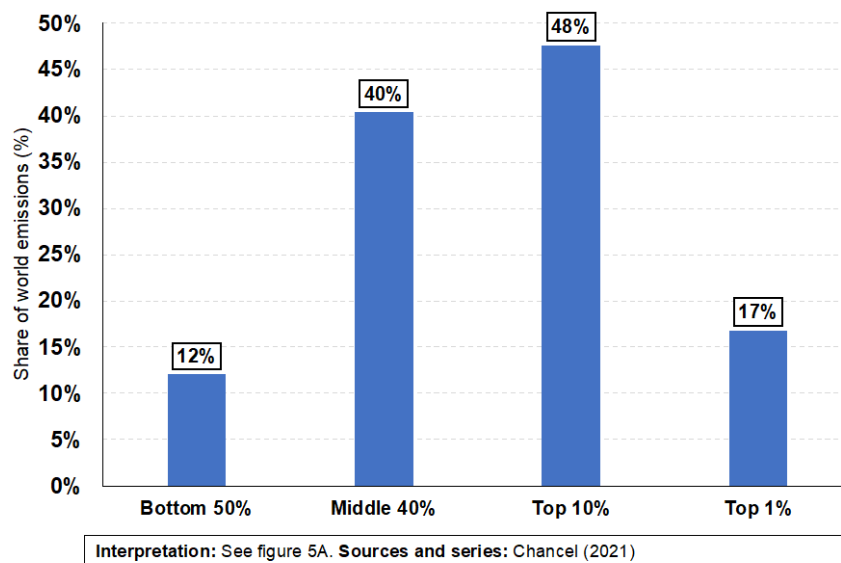
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Summary

- This study provides novel findings on carbon emissions of individuals, based on a newly assembled set of economic inequality and environmental data available on the World Inequality Database (www.wid.world).
- Global emissions of greenhouse gases reached 50 billion tonnes of carbon dioxide equivalents (CO₂) in 2019, i.e. around 6.6 tonnes of CO₂ per capita. In 2021, global emissions have almost recovered their pre-pandemic peak.
- At the global level, the top 10% of global emitters (771 million individuals) emit on average 31 tonnes of CO₂ per person per year and are responsible for about 48% of global CO₂ emissions. The bottom 50% (3.8 billion individuals) emit on average 1.6 tonnes and are responsible close to 12% of all emissions in 2019. The global top 1% emit on average 110 tonnes and contribute to 17% of all emissions in a year.

Figure A. Global carbon inequality in 2019
(Contributions of each group to global emissions)



- Global inequality in per capita emission is due to large inequalities in average emissions between countries and to even larger inequalities in emissions in each country. Currently, average emissions in Europe are close to 10 tonnes CO₂ per person and per year. In North America, the average individual emits around 20 tonnes. This value is of 8 tonnes in China, 2.6 tonnes in South & South-East Asia and 1.6 tonnes in Sub-Saharan Africa.

- Historical emissions inequality between regions are very large: North America and Europe are responsible for around half of all emissions since the Industrial Revolution. China represents about 11% of the historical total and Sub-Saharan Africa just 4%.
- Since 1990, emissions from the top 1% have risen faster than any other groups because of the rise in economic inequalities within countries and because of the carbon content of their investments.
- Per-capita emissions levels of the poorest half of the global population only moderately increased since 1990, from 1.2 tonnes to 1.6 tonnes over the period. Average emissions of the global bottom 50% remain today about 4 times below the global average and the poorest billion of individuals on earth billion emit less than one tonne CO₂ per capita per annum.
- In many rich countries, per capita emissions of the poorest half of the population have declined since 1990, contrary to that of wealthier groups. Current emissions levels of the poorest half the population are close to per-capita 2030 climate targets in the US, the UK, Germany or France. In these countries, policy efforts should therefore be largely focused on reducing emissions levels of the top half of the population and in particular of the top 10%. In low-income and emerging countries, while certain groups will see their emissions levels rise in the coming decades, urgent action is needed to curb down emissions of the wealthy.
- While governments officially report carbon emitted within their own territory, they do not produce systematic data on the carbon imported in goods and services to sustain living standards in their country. Factoring-in these emissions (as we do in this study), increases European emission levels by around 25% and reduce reported emissions in China and Sub-Saharan Africa by around 10% and 20%, respectively.
- Since the industrial revolution, around 2500 billion tonnes of CO₂ have been emitted by humankind. Based on current emissions rates, the remaining carbon budget to limit global warming to 2°C above preindustrial levels (that is, 900 billion tonnes of CO₂) will be entirely depleted in 18 years. To limit global warming to 1.5°C, the remaining budget (300 billion tCO₂) will be depleted in 6 years.

The carbon inequality estimates developed in the context this study are available online on the World Inequality Database (WID.world).

Recommendations

- **Monitoring.** Countries do not possess basic, up-to-date information to track carbon emissions inequalities. It is urgent to develop public monitoring systems to measure carbon emissions of individuals, with a particular focus on carbon emissions embedded in consumption and in investment portfolios.
- **Reporting.** Based on improved carbon inequality data, public deliberation could set clear targets in terms of emissions reductions per capita (not only in terms of national totals) and develop information systems enabling individuals to check the distance between their own emissions levels and national per capita targets. A systematic assessment of the beneficiaries and losers of climate policies should also be carried out by public authorities.
- **Taxing.** Climate policies have been disproportionately borne by low-income consumers over the past decades, in particular via carbon and energy taxes. More emphasis should be placed on wealthy polluters. This can be done via policy instruments targeting investments in polluting and fossil activities. Progressive wealth taxes on the ownership of polluting activities could accelerate divestments, reduce pollution levels of the wealthiest and generate much-needed resources to scale-up investments in low-carbon infrastructures. Ultimately, the ownership and sale of assets associated to new fossil projects should be prohibited.
- **Earmarking.** Public actors must significantly scale-up their investments in low-carbon energy production infrastructures, transport and energy efficiency in order to ensure a fair transition. Overall, additional annual investments in the energy transition of around 2% of global GDP are needed (representing an additional \$ 1800bn in 2021). A relatively modest progressive global wealth with a pollution top-up, such as the one presented in this study, could generate 1.7% of global income. A significant part of these revenues can be earmarked towards the green transition to finance climate investments without additional financial cost for low- and middle-income groups.

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