

The Political Economy of the Climate Crisis

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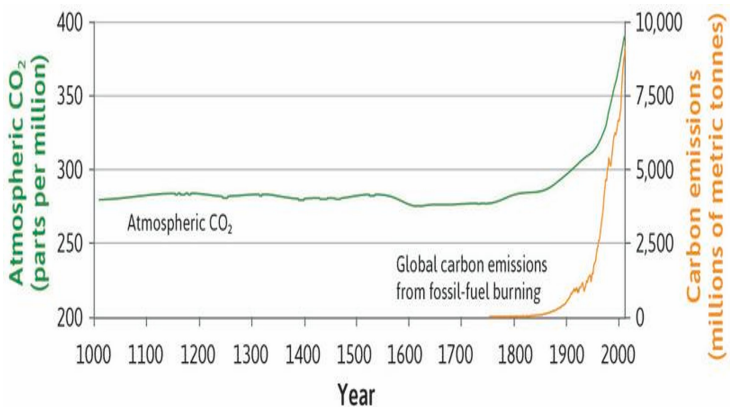
IDEAs Workshop

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Outline

- The Science of Climate Change
- Unequal Contributions and Impacts
- Climate Mitigation
- Climate Adaptation
- Climate Finance

History's Hockey Stick



Source: CORE Econ

The Science of Climate Change

- In steady state, the sunlight that makes it to the Earth's surface is absorbed and then re-radiated to space as an equal quantity of heat. The accumulation of greenhouse gases in the atmosphere blocks some of this re-radiation, redirecting energy back toward the Earth's surface. This greenhouse effect has allowed the planet to support life.
- But with industrial capitalism, burning coal and other fossil fuels to power factories and steam engines added excessive greenhouse gases to the atmosphere.

The Science of Climate Change

- The idea that human activity could alter the climate goes back to the 1890s. There is now scientific consensus that the planet is warming and that human activity is the primary cause ([IPCC, 2018](#)).
- At the base of global warming is human interference with the carbon cycle through the combustion of coal, oil, and gas. Other anthropogenic factors, such as urbanisation and land use changes, compound these effects. Causing and compounding the biophysical problem is an economic system characterised by rising inequalities in incomes and wealth.

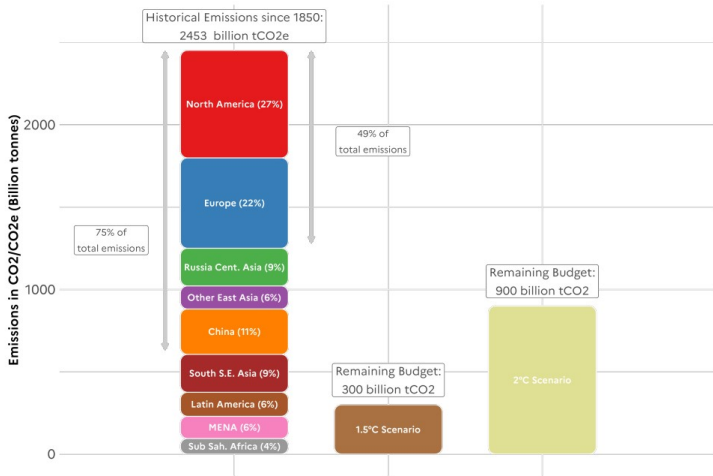
Climatic Changes

- Average global temperatures have increased by at least 1.2°C since 1880, with the greatest changes happening in the late 20th century.
- 1°C is not a very big change in the weather, but it is in the climate. Relatively small long-term changes in climate averages also significantly shift extremes.
- Heat waves, droughts, floods, and wildfires have become more frequent and more extreme. Ice sheets and glaciers are melting, and sea levels are rising. Animals are moving to higher elevations and latitudes to find cooler conditions. Around 1 million flora and fauna species face extinction, many within decades.

Historical Responsibility for Climate Change

- At a global level, fossil-fuel emissions have doubled over the past 30 years.
- CO2 emissions from hundreds of years ago continue to contribute to the heating of the planet. Current warming is determined by the cumulative CO2 emissions over time.
- This is the scientific basis for the carbon budget, the total amount of CO2 that can be emitted to stay below any given limit on global temperatures.

Accumulated Historical CO2 Emissions vs. Remaining Carbon Budgets in 2020



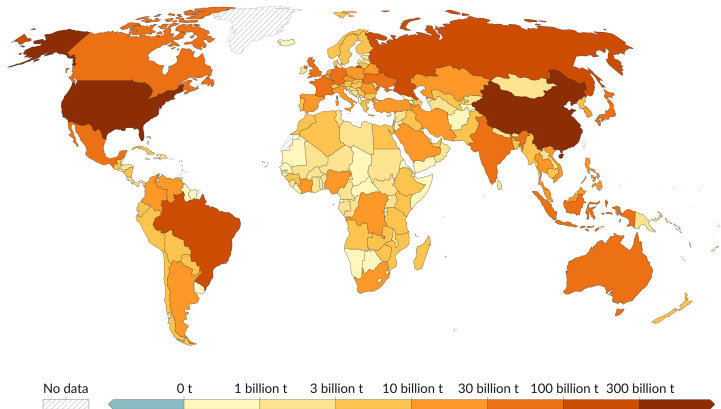
Source: [Climate Inequality Report 2023](#)

Historical Responsibility for Climate Change

- North America and Europe created half of all the accumulated global GHG emissions since 1850, and have contributed as much to anthropogenic climate change as all the other countries put together, despite having a small fraction of the global population.
- In the early decades of the timeline from 1850, global CO₂ emissions were dominated by land-use change and forestry in the US, Russia, and China, and coal-fuelled industrialisation in France, Germany, and the UK. These countries remain among the largest contributors to historical warming today.
- In Brazil and Indonesia, deforestation surged from around 1950, for cattle ranching, logging, and palm-oil plantations.

Cumulative CO₂ emissions including land-use change, 2022

Emissions include those from fossil fuels and industry¹, and land-use change. They are measured as the cumulative total since 1850, in tonnes.



Data source: Global Carbon Budget (2023)

OurWorldInData.org/co2-and-greenhouse-gas-emissions | CC BY

Note: Emissions from land-use change can be positive or negative depending on whether carbon is emitted or sequestered.

1. **Fossil emissions:** Fossil emissions measure the quantity of carbon dioxide (CO₂) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO₂ includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

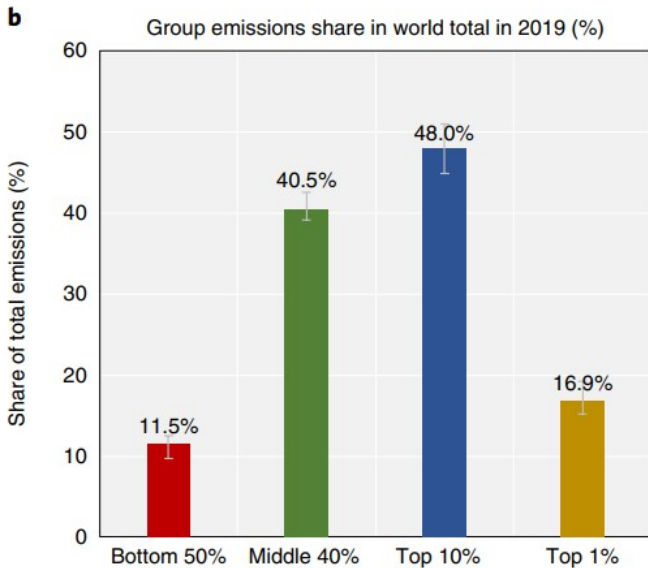
Historical Responsibility for Climate Change

- At 21.6% of the global total, the US has the largest share in cumulative CO2 emissions.
- China caused 12.6% of cumulative CO2 emissions. Since 2000, China's CO2 output has more than tripled, and it has become the world's largest annual emitter.
- Other countries include Russia (8.8%), Brazil (5.2%), India (3.9%), and Indonesia (3.7%).
- Responsibility for emissions is linked to investments in carbon-intensive activities. Private capital ownership and investment decisions are very unequally distributed, and this has resulted in strikingly unequal distribution of carbon emissions.

UN Climate Conferences

- 1992 Rio Earth Summit: “Common but differentiated responsibilities and respective capabilities” acknowledges that different countries have different levels of responsibility in contributing to and capacities to address climate change.
- 2015 Paris Agreement: Unlike past accords, it required countries to set emissions reduction goals. However, countries can choose their own targets and there are no enforcement mechanisms.

[Timeline: UN Climate Talks, 1992-2023](#)



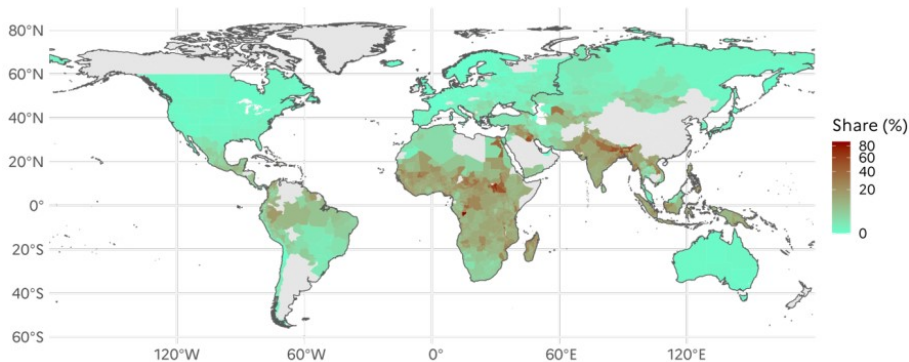
Source: Chancel (2022)

Inequality in Emissions

- The top 10% of emitters are responsible for almost half of all global carbon emissions. The top 1% exceeds the emissions of the bottom half of the global population.
- The consumption and investment choices of a fraction of the population are contributing substantially more to the climate crisis than the bottom half combined.
- In 1990, around two-thirds of global carbon inequality was due to between-country inequalities, while it is now accounted for by differences in the emission levels of population groups within countries ([Chancel, 2022](#)).

Impacts of Climate Change

Population Share Exposed to Significant Flood Risk and Poverty in 2020



Source: Rentschler, et al., 2022/ Climate Inequality Report 2023

Unequal Impacts of Climate Change

- By 2050, many small islands and coastal areas will be exposed to annual flooding that was previously expected to occur only once in a century. Roughly 23% of the world population are exposed to serious flood risk. Of these people, roughly 43% live below the US\$5.50 poverty line (Rentschler, et al., 2022).
- Climate damages have been estimated between 5% and 23% of global GDP by the end of the century with current warming trends.
- Low-income countries will be hit hardest, even though they have historically emitted only a fraction of the greenhouse gases that cause warming. These countries also often have greater vulnerabilities, such as people living in insecure housing that is easily damaged in extreme weather. And they have fewer resources to adapt. Even within wealthy countries, people with more resources have more buffers.

Mitigation and Adaptation

- Mitigation strategies try to limit damage by limiting emissions that cause the impacts, while adaptation aims to limit damage caused by the impacts that do occur.
- Adaptation strategies are necessarily targeted at problems in specific geographic areas, whereas mitigation strategies have broader, global damage-reduction effects. Unlike mitigation strategies, adaptation strategies need to be location- and context-specific.

Climate Change Mitigation

- Mitigation is defined as “an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases” (IPCC, 2018).
- The conventional approach is to extend the theory of externalities to greenhouse gas emissions. Environmental damages are seen as a disconnection between the social cost and private cost, or a negative externality. This situation is referred to as a “market failure”.
- Markets are thought to fail when prices do not send the right messages, or because markets do not even exist in some cases, and this results in a misallocation of resources.
- To “internalise” an externality is to give it a price so that it is accounted for by rational economic agents.

Climate Change Mitigation

- Arthur C. Pigou took the case of sparks created by railway engines that can set surrounding cultivated fields on fire. Pigou considers that a tax on the damage would encourage the installation of devices that limit the damage.
- Ronald Coase advanced the idea that with well-defined property rights, private bargaining over external effects and a negotiated settlement between the two private parties involved is more likely to achieve an efficient allocation of resources than government intervention.

Carbon Pricing

- The theory of externalities is extended to greenhouse gas emissions – the problem is to set the ‘right price’ for carbon.
- This can be either through a tax on carbon (Pigovian solution) or a permit-based emissions trading system (Coasean principles).
- For the carbon tax, the government sets the price, and the market determines the resulting level of emissions. In emissions trading, the government issues permits to the extent of the allowed aggregate amount of emissions, and the market determines the price that will achieve that level.

Carbon Taxes

- Raising the price of fossil fuels is expected to incentivise energy users to change behaviour, by reducing fossil fuel consumption, increasing efficiency, or switching to alternative energy sources such as renewables.
- Carbon taxes can be regressive. Poor people often spend a larger proportion of their income on energy-intensive products to meet basic needs (Callan et al., 2009; Hassett et al., 2009; Bureau, 2011).
- “Pigovian taxes can restore an efficient allocation of resources without requiring a heavy-handed government intervention. Second, they raise revenue that the government can use to reduce other taxes, such as income taxes, which distort incentives” (Mankiw, 2009).

Carbon Dividends

- Returning the money to the people would adhere to the ethical principle that natural resources belong to all.
- Some revenue from carbon pricing could also be devoted to public investment, particularly for communities that have suffered disproportionate environmental harm.
- The clean energy transition can be framed as something that will benefit working people here and now.

Article: [J. K. Boyce \(2020\)](#)

Emissions Trading

- The government determines the maximum emissions allowed in the emissions trading system (the 'cap'). The cap is to be in line with the jurisdiction's overall emissions reduction target.
- Tradable allowances are allocated, with one allowance representing one tonne of carbon (or equivalent) emissions.
- At the end of the trading period, each entity must reduce their emissions to match their available allowances or buy extra allowances from other entities.
- From the experience of the EU ETS, permit prices can fluctuate wildly.

Article: [C. P. Chandrasekhar \(2024\)](#) on COP29 and carbon markets

Carbon Offsets

- Offsetting environmental services is a variation of emissions trading. Carbon offsets or tradable “rights” are usually calculated as a tonne of CO₂-equivalent.
- One criterion is that the project must be “additional” – the reductions in GHG emissions would not have occurred otherwise.
- There cannot be any double-counting, in that the underlying emissions reduction should not also be claimed by any other entity.

Carbon Offsets

- The Clean Development Mechanism (CDM) was intended to reduce emissions at cheaper cost and channel climate finance to developing nations. Large emitters can claim other countries' climate action as their own through carbon offsets rather than requiring them to pay up and phase out fossil fuels at home.
- However, 85% of CDM projects are likely to have overestimated their emissions reductions and supported no “additional” low-carbon capacity in developing countries (Cames, et al., 2016).
- Land conflicts and human rights abuses often characterise such projects.

Emissions Trading

- Since the aim is to limit the global level of greenhouse gases, what difference does it make which places on the planet send less carbon?
- It does make a political difference. It creates loopholes that enable wealthy countries to evade their obligations by buying excess credits from countries that are reducing their emissions, and counting them toward meeting their own obligations.
- Turning emissions into a commodity to be bought and sold removes the moral stigma that is properly associated with it. A fee rather than a fine makes emissions just another cost of doing business.
- It also undermines the sense of shared responsibility that increased global cooperation requires.

Article: [M. J. Sandel \(1997\)](#)

Case study: The Great Nicobar Project

- The Great Nicobar project plans the development of a transshipment terminal, an international airport, a power plant, and a township on the island.
- The project is set to procure 15% of the land including forests, which will lead to cutting around 1 million trees.
- The island is inhabited by the particularly vulnerable tribal group, the Shompens, who have followed a semi-nomadic hunter-gatherer way of life for centuries with minimal contact with outsiders, as well as by the Nicobarese tribal people.

Case study: The Great Nicobar Project

- Excerpts from an official report: The Great Nicobar island “needs to trade on its remoteness and exquisite beauty. Some high-net-worth individuals will appreciate the chance to have a luxury home on such an unspoilt island”. “If required, tribals can be relocated to other parts of the island”. The “strategic location presents immense opportunities to further strengthen India’s trading position.”
- The island also houses various endemic species of animals, tropical virgin forests, and over twenty thousand coral colonies.
- The project was authorised by the union government after a plan for “compensatory afforestation” was drawn up by project authorities in a different region. Later, a portion of the forest land that was set aside for this compensatory afforestation project was sold for a mining project.

Energy Transition

- Modelling studies of energy transitions to meet mitigation goals typically focus on technology solutions with an objective to minimise costs.
- It is widely believed that renewable energy needs to be cheaper than fossil fuels in order to supplant them. Between 2010 and 2020, the average lifetime cost per unit of electricity generated fell by 56%–62% for wind, and 87% for solar PV.
- This view ignores inertia and that production comes before consumption. The energy transition is about investment as determined by expected profit, and not price. While renewable energy sources may now be competitive with fossil fuels in terms of price, the evidence indicates that they are not competitive in terms of producer profits ([Christophers, 2022](#); [2024](#)).

Just Transition

- Estimates indicate that the new green jobs created in renewable energy sectors will compensate for the jobs lost in fossil-fuel sectors on the aggregate.
- Many of the jobs created through investments in the renewable energy and energy efficiency programmes will be in the same areas of employment in which people are already working, such as civil engineers and construction workers.
- But labour impact studies of clean energy transitions are usually focused on estimating the country-level aggregate labour impacts, and not as much on understanding the distribution within the country. The energy transition can produce or worsen inequities.

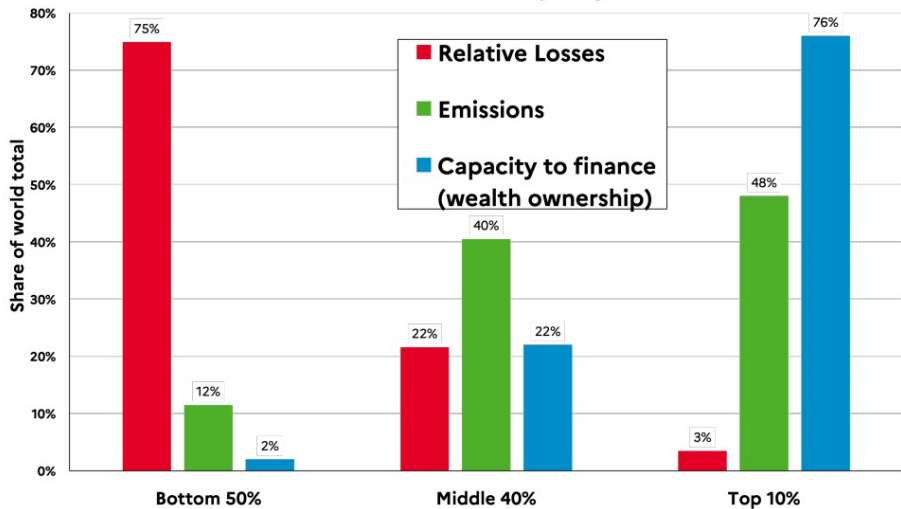
Just Transition

- The new green jobs may not be located in areas where fossil-fuels based jobs are lost. The location of new clean technology plants is decided based on natural conditions and expected economic performance (Jenniches, 2018).
- Most coal miners tend to become inactive when they lose their jobs and are unlikely to migrate due to a strong connection to their local community, and because most tend to be older and less formally skilled in other activities.
- Such companies have commonly employed generations of workers in the same family and may be a town's largest employer, source of tax revenue, and benefactor of social, cultural, and economic affairs.

Just Transition

- Even for solar, countries would need to substantially increase their current installed solar capacity (from 3 times in the US to 37 times in India) to transition the coal miners who live in suitable areas to solar jobs (Pai, et al., 2020).
- The required scale of deployment raises questions about the viability of a transition path that depends solely on local renewable jobs for coal miners. Not all coal miners may be able to transition to solar or wind jobs locally even in areas with suitable resources.
- There is a government imperative to provide transition assistance for displaced workers and support the communities and regions by developing a more sustainable, robust economic and social base.

Global carbon inequality: Losses vs. emissions vs. capacity to finance



Source: Climate Inequality Report 2023

Global Carbon Inequality

- The bottom 50% of the world population contributes 12% of global emissions but is exposed to 75% of the relative income losses due to climate change. On the other hand, the top 10% of the world population is responsible for close to half of all emissions, but faces only 3% of the relative income losses.
- Also, the top 10% of the world population owns about three quarters of total personal wealth worldwide, while the poorest 50% owns just 2% of it. Those who pollute less face more relative losses, but also have less resources with which to adapt.

Adaptation

- Adaptation is “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (IPCC, 2018).
- Adaptation strategies can include institutional infrastructural changes, such as building sea walls to protect against sea level rise, to migration of communities.

Adaptation

- The worst affected by the effects of global warming are poor countries and poor people across countries. Although low-income countries tend to be most vulnerable, government-led adaptation interventions are predominantly in wealthy countries (Araos, et al. 2016). Well-off residents of rich countries are temporarily protected from the effects of climate change while the poorest and most vulnerable are left to fend for themselves.
- Adaptation responses can create jobs, just as with mitigation. All regions need adaptation responses, even if to different climatic risks. These need to involve local communities and can create jobs in the region itself, unlike with mitigation.
- But current responses to climatic risks do not necessarily build adaptive capacity for the future and are sometimes even maladaptive.

Case study: Adaptation in Bangladesh

- Industrial and export-led economic growth are thought to naturally support climate change adaptation. The benefits to national development of creating a workforce of people who migrate out of climate change-affected areas into urban areas, where they can participate in the industrial, export-oriented economy, are emphasised.
- The dominant view is that adaptation programmes are directed towards people in need of alternative pathways.

Case study: Adaptation in Bangladesh

- The key adaptation response to higher salinity in the Bengal Delta in Bangladesh has been the transition from agriculture to brackish water aquaculture, particularly focusing on shrimp for export.
- But shrimp farming has been available to powerful local leaders with capital.
- Governance structures and power relations shape the framing of institutional adaptation strategies on the ground, and they can reinforce longstanding processes.

Article: [K. Paprocki, 2018](#)

Climate Finance

- The current adaptation finance gap – the difference between estimated adaptation financing needs and costs (US\$215 billion to US\$387 billion) and finance flows (US\$21.3 billion) – is around US\$194-366 billion per year until 2030 (UNEP, 2023). That is, the finance needs for adaptation efforts in developing countries are likely to be 10-18 times more than current international finance flows.
- At COP15 in 2009, developed countries agreed to collectively mobilise \$100 billion per year by 2020 to support developing countries' climate action. Responsibility for meeting the goal rested with developed countries, defined in this case as the 24 countries that were OECD members when the UNFCCC was signed in 1992. This goal was met for the first time in 2022, two years after the initial deadline.

Climate Finance

- COP29 was dubbed the “Finance COP”, with the negotiations focused on adopting a new climate finance target for the first time in 15 years – a new collective quantified goal (NCQG) on climate finance.
- Developing countries need trillions of dollars of climate finance annually. The cumulative estimates amount to at least \$1 trillion per year.
- Some developed countries argue that additional nations are now capable of contributing to a global goal, and bear a responsibility to do so based on their contributions to GHG emissions.
- Many developing countries maintain that contributors are already agreed upon under the UNFCCC.

Climate Finance

- Actors are “called upon” to work toward scaling funding to \$1.3 trillion per year by 2035, without any binding commitments. Even the \$300 billion annual goal has been carefully worded to avoid any concrete obligations.
- About half of the 50 most climate-vulnerable nations are at high risk of or in debt distress.
- Wealthy historical emitters continue to evade their responsibilities to pay for climate action. While they currently spend \$378 billion yearly on fossil fuel subsidies, and fossil fuel companies made over \$1 trillion in annual profits on average over the last 10 years.

Article: [van der Burg, et al., 2024](#)