

Climate change – international climate régime and politics

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Climate change as a public policy problem

Is uniquely global

- Environmental problems usually regional (Beijing's smog, waste from EU's industry).
- Climate change - impacts may be regional, but phenomenon is global.
- Impact of climate change is not evenly distributed among regions and countries. Different vulnerability.
- That all complicates any sensible climate policy. It is tough to get voters to enact pollution limits on themselves, when those limits benefit them and only them, but it is tougher to get voters to enact pollution limits on themselves if the costs are felt domestically, but the benefits are global = a planetary free riding problem.

Climate change as a public policy problem

Is uniquely long-term

- The past decade was the warmest in human history. The one before was the second-warmest. The one before was the third-warmest.
- Changes are evident. Arctic sea ice has lost half of its mass, three-quarters of this volume in only the past thirty years.
- But the worst consequences of climate change are still remote. The worst effects are still far off – but avoiding these predictions would entail acting now.

Climate change as a public policy problem

Is uniquely irreversible

- Stopping emitting carbon now we still would have decades of warming and centuries of sea-level rise locked in. Full melting of large West Antarctic ice sheets may be unstoppable.
- Over 2/3 of the excess CO₂ in the atmosphere that wasn't there when humans started burning fossil fuels will still be present a hundred years from now. Over 1/3 will be there in 1000 years.

Climate change as a public policy problem

Is uniquely uncertain.

- Last time concentration of CO₂ were as high as they are today, at 400 ppm, at Pliocene (3 million years ago). Average temperatures back then were around 1-2,5°C warmer than today, sea levels were up to 20 meters higher, and camels lived in Canada.
- We wouldn't expect any of these dramatic changes today. The greenhouse effect needs decades to centuries to come into full force, ice sheets need decades to centuries to melt, global sea levels take decades to centuries to adjust accordingly. CO₂ concentrations may have been at 400 ppm 3 million years ago, whereas rising sea levels lagged decades or centuries behind.

Climate change as a public policy problem

It is uniquely expensive

- Around current climates massive investments and industrial infrastructures is build, that makes temperature increases costly.
- The current models estimates that warming of 1°C will cost 0,5% of global GDP, 2°C around 1% GDP, 4°C around 4% GDP.
- We could think about damages as a percentage of output in any given year. At a 3 percent annual growth rate, global economic output will increase almost twenty-fold in a hundred years
- Or lets assume that damages affect output growth rates faster than output levels. Climate change clearly affects labor productivity, esp. in already hot countries. Then the cumulative effects of damages could be much worse over time.

International (UN) regime to fight climate change

- Intergovernmental Panel on Climate Change – 1988. (Last report 10/2018)
- Rio Summit on Earth – 1992 (UN conference on environment and development)
 - UNFCCC (UN Framework convention on Climate Change) - consensus vs. 180 parties.
 - Existence of a generally accepted consensus on the climate change as well as the contribution of human activities to this change.
 - Common but differentiated responsibility
- Kyoto Protocol – approved in 1997, in force 2005.

Kyoto Protocol

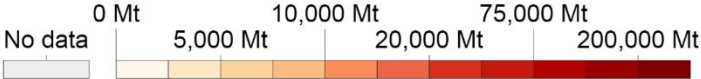
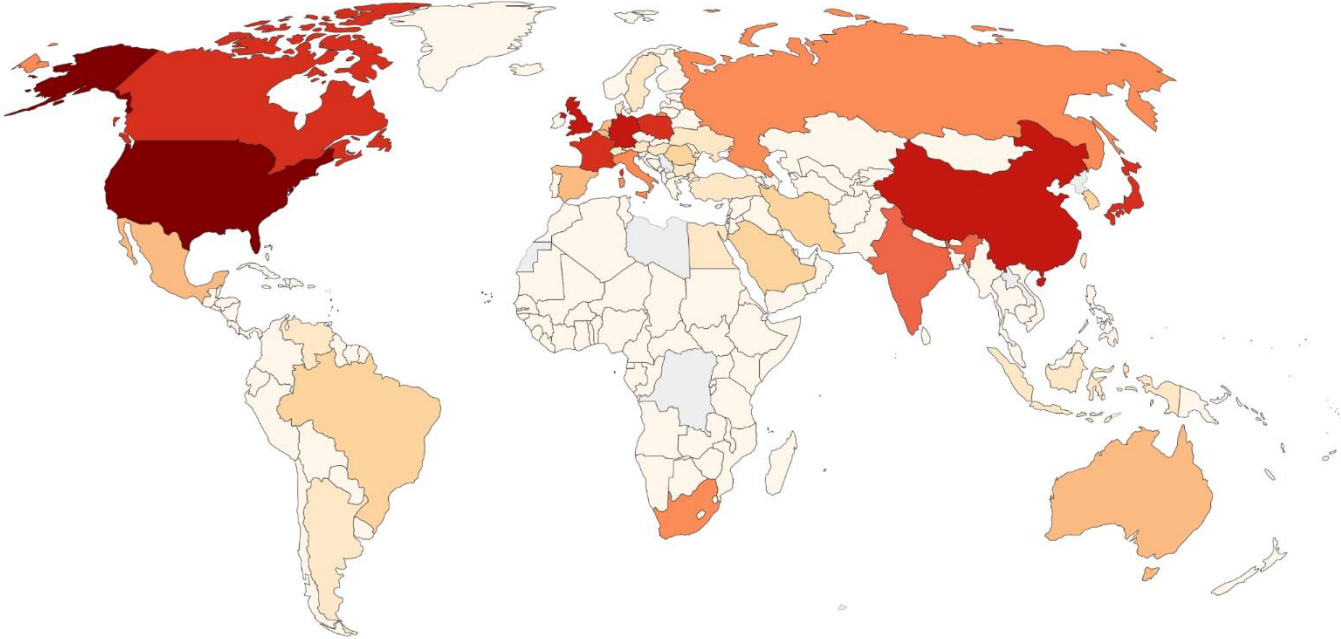
- 4 GHG (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride) + hydrofluorocarbons and perfluorocarbons.
- Annex I. countries (37 industrialized countries + EU15), Non-annex I. parties.
- Reducing of GHG emissions by 5,2 % for the first commitment period of 2008-2012. (4,2 % after USA left). Base year 1990.
- Reduction of emissions from fossil fuel combustion; reduction emission in other sectors (land-use or direct industrial emissions); flexible mechanisms – Emission trading, CDM, JI.
- First binding international treaty on climate change mitigation, with enforceable (to some extent) targets and schedule, channeling investments into low-carbon technologies.

Important Events in International Climate Change Negotiations

| Year, Location | Outcome |
|-----------------------|--|
| 1992, Rio de Janeiro | UN Framework Convention on Climate Change (UNFCCC). Countries agree to reduce emissions with “common but differentiated responsibilities.” |
| 1995, Berlin | The first annual Conference of the Parties to the framework, known as a COP. U.S. agrees to exempt developing countries from binding obligations. |
| 1997, Kyoto | At the third Conference of the Parties (COP-3) the Kyoto Protocol is approved, mandating developed countries to cut greenhouse gas emissions relative to baseline emissions by 2008-2012 period. |
| 2001, Bonn | (COP-6) reaches agreement on terms for compliance and financing. Bush administration rejects the Kyoto Protocol; U.S. is only an observer at the talks. |
| 2009, Copenhagen | COP-15 fails to produce a binding post-Kyoto agreement, but declares the importance of limiting warming to under 2°C. Developed countries pledge \$100 billion in climate aid to developing countries. |
| 2011, Durban | (COP-17) participating countries agreed to adopt a universal legal agreement on climate change as soon as possible, and no later than 2015, to take effect by 2020. |
| 2015, Paris | COP-21 195 nations sign the Paris Agreement, providing for worldwide voluntary actions (INDC's) by individual countries. |

Cumulative CO₂ emissions, 1997

Cumulative carbon dioxide (CO₂) emissions represents the total sum of CO₂ emissions since 1751, and is measured in million tonnes.

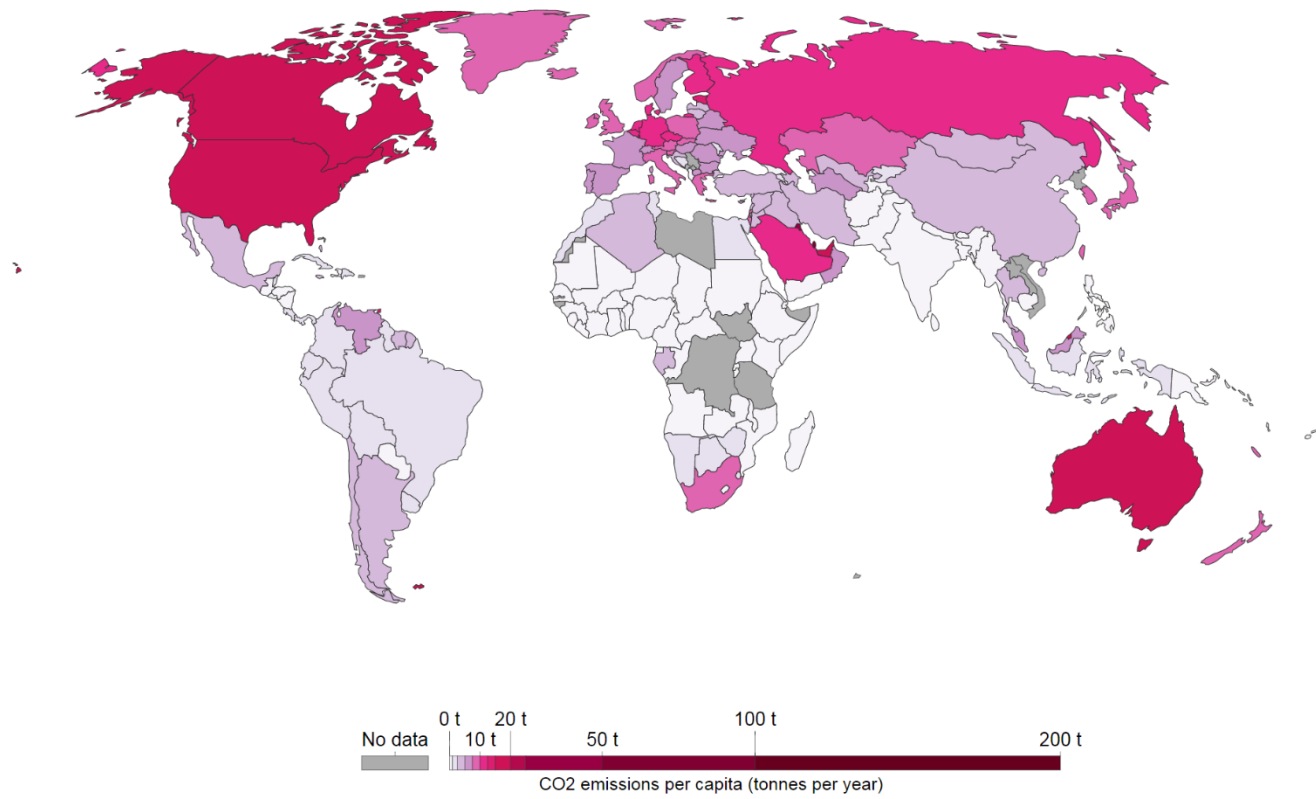


Source: Carbon Dioxide Information Analysis Centre (CDIAC)

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/ • CC BY-SA

CO₂ emissions per capita, 1997

Average carbon dioxide (CO₂) emissions per capita measured in tonnes per year



Source: CDIAC

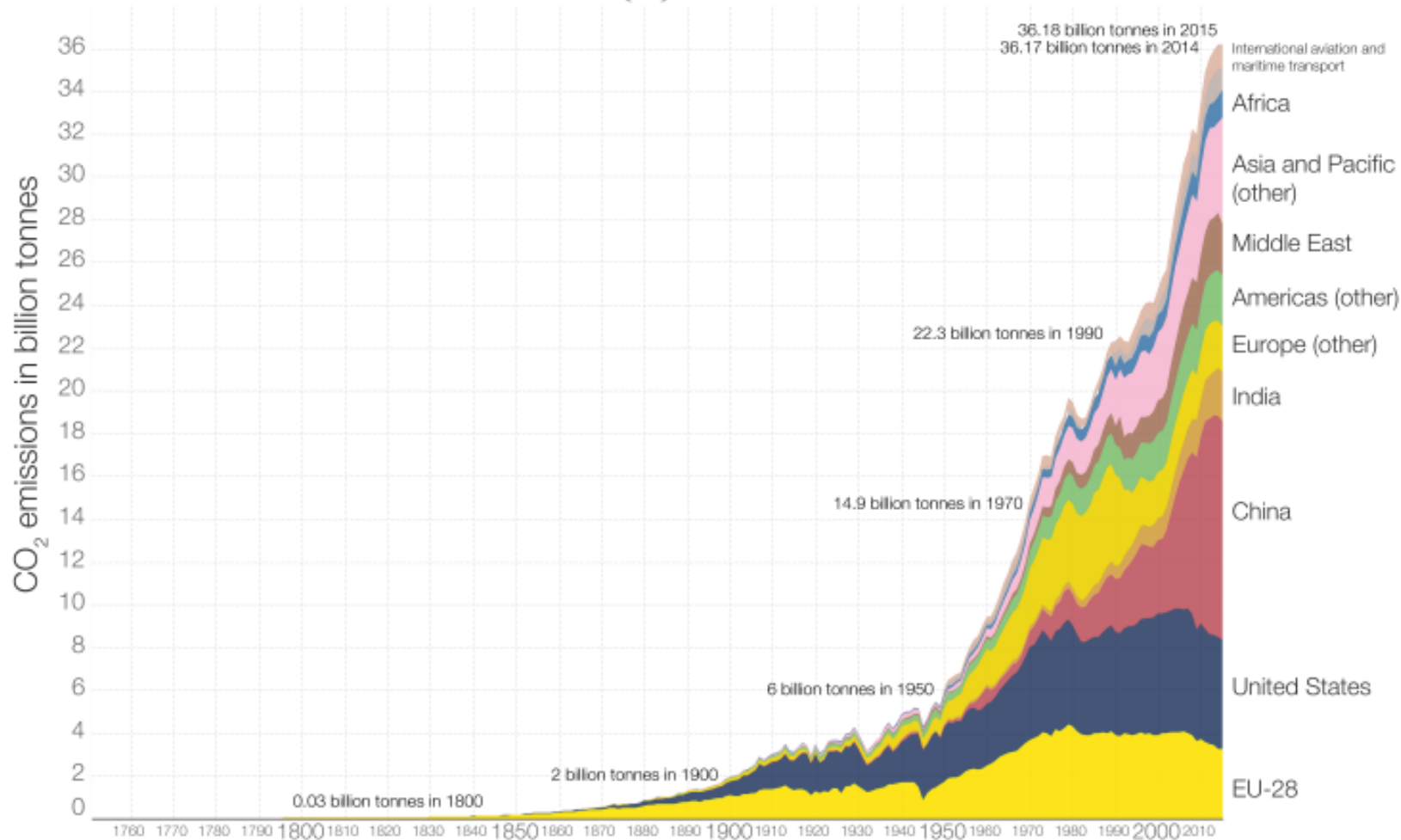
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Kyoto Protocol results

- In 2012, CO₂ emissions from fuel combustion across all Parties with KP targets were 14% below 1990 levels.
- Emissions in the EU-15 were 8% below 1990 levels.
- Some industrialised countries have seen significant increases (Australia +48%), New Zealand (+44%), Spain (+30%).
- Despite extensive participation of 192 countries the KP is limited in its potential – U.S. remains outside, developing countries do not have emission targets.
- The KP implies action on less than one-quarter of global CO₂ emissions.
- However, its flexibility mechanisms has made CO₂ a tradable commodity, and has been a driver for the development of national emission trading schemes.

Global CO₂ emissions by world region, 1751 to 2015

Annual carbon dioxide emissions in billion tonnes (Gt).



Data source: Carbon Dioxide Information Analysis Center (CDIAC); aggregation by world region by Our World In Data.
The interactive data visualization is available at OurWorldInData.org. There you find the raw data and more visualizations on this topic.

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Post-Kyoto system

- Second commitment period of KP for 2013--2020 concluded in 2012 (COP 18 in Doha). Belarus, Canada, Japan, New Zealand, Russia, USA and Ukraine missing. Others reduction commitments covering 13% of global GHG emissions at 2010 levels.

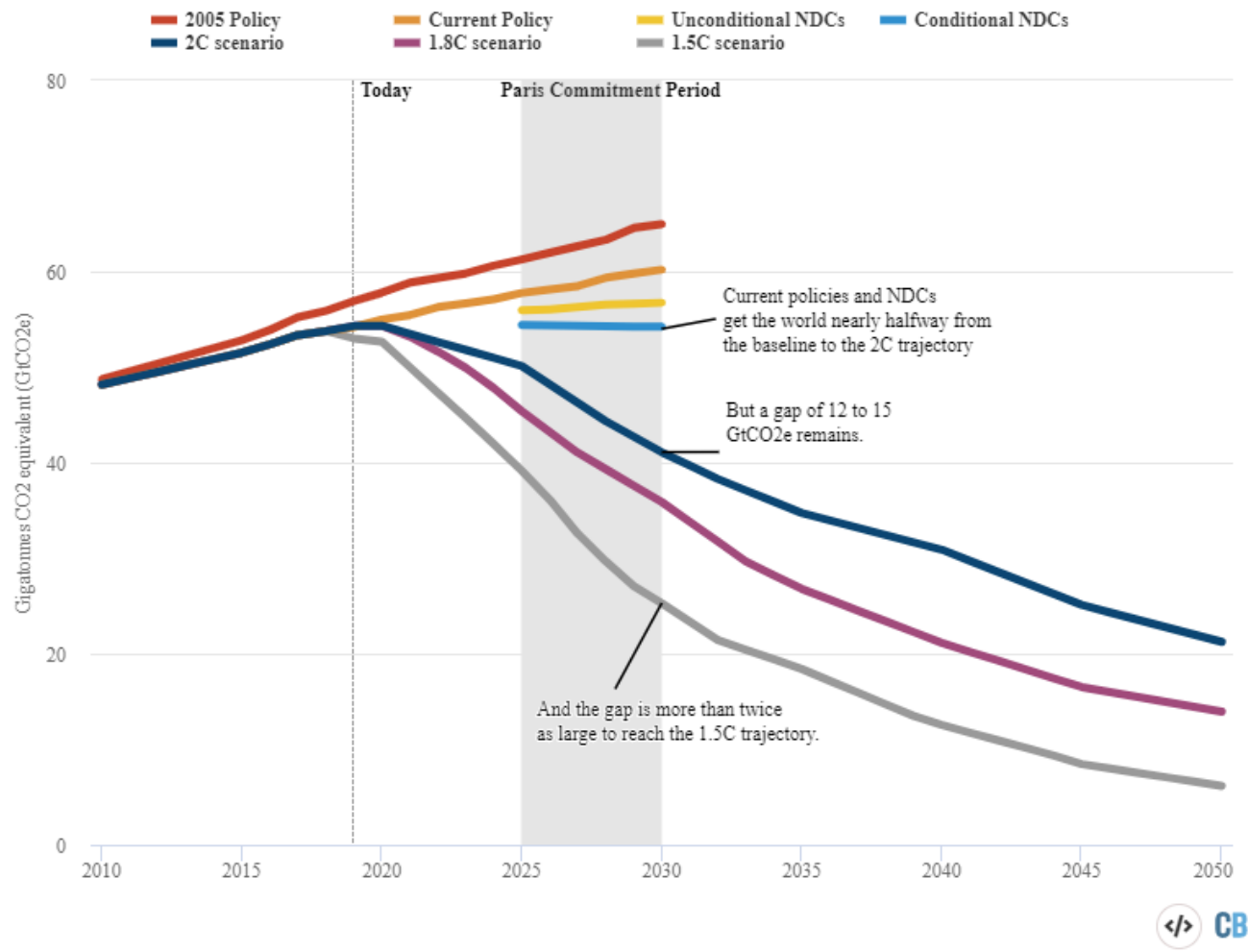
Paris agreement (COP21)

- Legally binding treaty with reduction commitments from 187 countries starting in 2020. Again, 55 countries covering 55% of global emissions needed to enter the force. It:
- Reaffirms the goal of limiting global temperature increase below 2 degrees, while urging efforts to limit the increase to 1.5 degrees.
- Establishes binding commitments by all parties to make “nationally determined contributions” (NDCs), and to pursue domestic measures aimed at achieving them.
- Commits all countries to report regularly on their emissions and “progress made in implementing and achieving” their NDCs, and to undergo international review.
- Commits all countries to submit new NDCs every five years, with the clear expectation that they will “represent a progression” beyond previous ones.

Paris agreement (COP21)

- Reaffirms the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too.
- Extends the current goal of mobilizing \$100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025.
- Extends a mechanism to address “loss and damage” resulting from climate change, which explicitly will not “involve or provide a basis for any liability or compensation”.
- Requires parties engaging in international emissions trading to avoid “double counting”.
- Calls for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country’s NDC.

COP21 pledges vs. BaU scenario



Major issues

- How much aid (if any) to provide to help countries adapt to climate change? (Green Climate Fund)
- Should compensation be given to developing countries for the damage caused by climate change? ('loss and damage').
- Mitigation vs. adaptation (related to climate justice).
- UNFCCC regime vs. individual, regional, national, or business initiatives.
- Role of key (hesitating) emmitents – US, Australia, Brazil, Saudi Arabia...

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