

09 Conceptions, conferences and agreements concerning climate change

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Content of the lecture

1. Intergovernmental Panel on Climate Change
2. Conferences and agreements on climate change

Who deals with climate change?

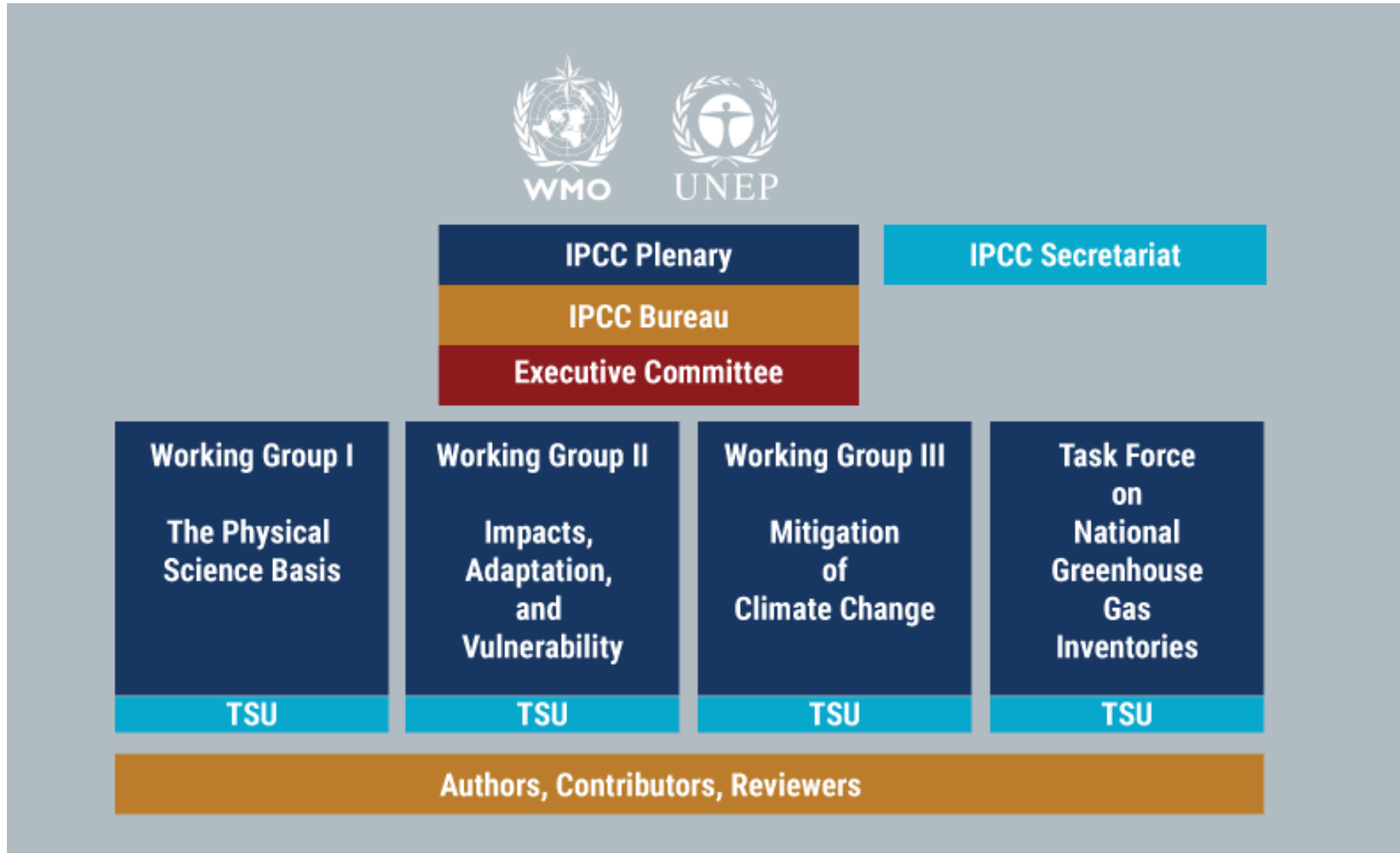
- **UN and WMO**
 - Intergovernmental Panel on Climate Change (IPCC)
- **UN**
 - United Nations Framework Convention on Climate Change 1992 (UNFCCC)
 - Kyoto Protocol (1997)
 - Paris Agreement (2015)
- **European Union**
 - Green deal, Fit for 55
- Governments, universities, industrial companies, think tanks (institutions), national security councils, the Pope, amateurs...

Intergovernmental Panel on Climate Change

Intergovernmental Panel on Climate Change

- A scientific intergovernmental body created by the WMO and the United Nations Environment Programme (UNEP) in 1988
- The aim: **scientific assessment** of all available information on the **threats associated with climate change**
- Publishing **assessment reports** (6): summaries of published scientific papers
- Nobel Peace Prize winner with Al Gore (2007)

Intergovernmental Panel on Climate Change



IPCC: Climate assessment reports (1990–2014)

- **1990**

- anthropogenic GHG emissions increase natural GHG concentrations
- the basis for the creation of the UN Framework Convention on Climate Change (1992)

- **1995**

- detectable human influence on climate through fossil fuel combustion

IPCC: Climate assessment reports (1990–2014)

- **2001**

- consensus on the existence of global warming, impacts of climate change on the planet

- **2007**

- undoubted warming of the climate due to the increase in anthropogenic GHG emissions

- **2013–2014**

- obvious influence of humanity on climate, need to control future developments

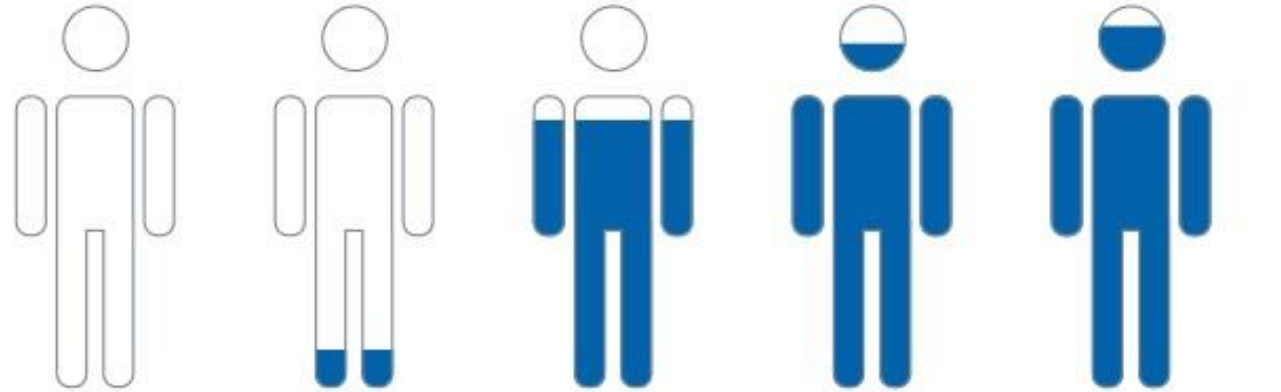
Developing certainty about humanity's impact on climate change in assessment reports

ipcc

The Intergovernmental Panel on Climate Change

Q: How have the IPCC reports changed through time?
(1990-2013)

■ Amount of Human-caused Warming



1990

The report did not quantify the human contribution to global warming.

1995

"The balance of evidence suggests a **discernible** human influence on climate."

2001

Human-emitted greenhouse gases are **likely** (67-90% chance) responsible for more than half of Earth's temperature increase since 1951.

2007

Human-emitted greenhouse gases are **very likely** (at least 90% chance) responsible for more than half of Earth's temperature increase since 1951.

2013

Human-emitted greenhouse gases are **extremely likely** (at least 95% chance) responsible for more than half of Earth's temperature increase since 1951.

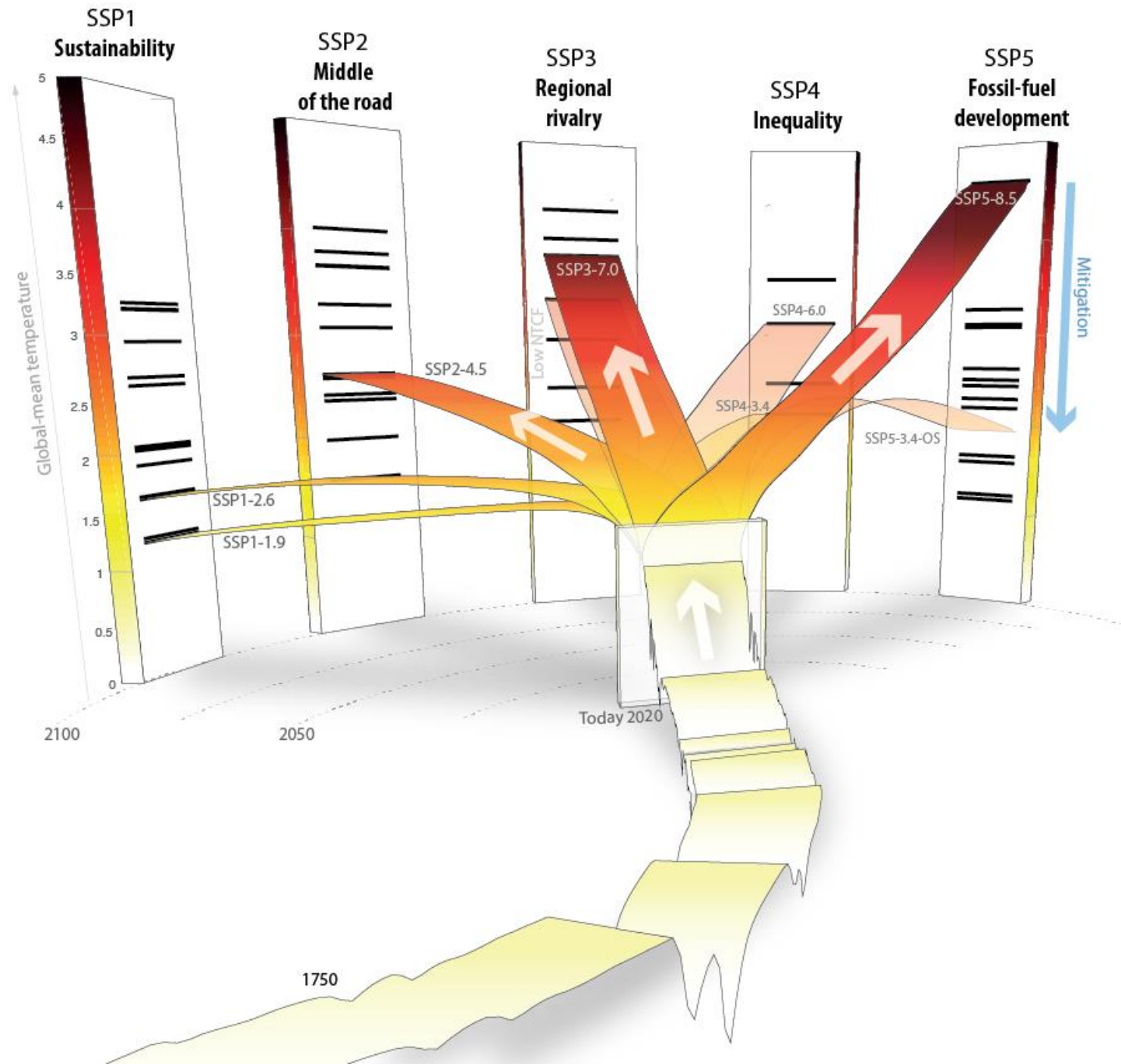
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INTERGOVERNMENTAL PANEL ON
climate change



Nobel Peace Prize
Winner, 2007

IPCC Sixth Assessment Report (2021–2)

- **20–30% increase in the rate of warming** compared to the last IPCC report (2013)
- **New emissions scenarios (SSP)**, earlier onset of more intense natural disasters, **need for higher commitments**
- **Insufficient** pace of GHG emission reductions
- New projection of **warming** by 2100:
 - an increase of **3.2°C** compared to the period 1850–1900
 - worst case scenario: warming of up to 8°C



IPCC Sixth Assessment Report (2021–2)

- **High certainty:**
 - in **rise of mean global temperature** in recent decades as well as in future, regardless of the GHG emissions scenario
 - in **increase** in frequency and intensity of **extreme heatwaves** (including marine heatwaves)
 - that **fire weather** will become **more frequent** in some areas as global warming intensifies
 - crossing of a **critical threshold of >2°C**: negative impacts for ecosystems and humans

Final Summary of the IPCC Sixth Assessment Report (2021–2022)

- Humanity's responsibility for almost all global warming for the last **200 years**
- Rate of air temperature rise **highest** in the last **50 years** for the last **2000 years**
- **CO₂ concentration** highest in at least **2 million years**
- Message as a guide to avoiding warming of more than 1.5°C through already available technologies



Conferences and agreements on climate change

United Nations Conference on the Environment (1972)

- Declaration of the United Nations Conference on the Environment, Stockholm (**Stockholm Declaration**)
- The first document of international significance granting humanity the **right to a healthy environment**
- Response to previous environmental disasters and pesticide pollution
- Clear articulation of formulations, visions and principles (26)
- The basis of the idea of **sustainable development**

Conference on the Human Environment (1972)



Document 1

DECLARATION OF THE UNITED NATIONS CONFERENCE ON THE HUMAN ENVIRONMENT, 1972*

On June 16, 1972, the United Nations Conference on the Human Environment adopted a Declaration on the human environment consisting of a preamble and 26 principles.

By the preamble, the Conference proclaimed that the defence and improvement of the human environment—both natural and man-made—had become an imperative goal for mankind, to be pursued together with the fundamental goals of peace and of world-wide economic and social development. The achievement of this goal was the responsibility of citizens, communities, enterprises and institutions at every level. Although local and national governments would bear the greatest burden for large-scale environmental policy and action within their jurisdictions, international cooperation was also needed, both to raise resources to support the developing countries in carrying out their responsibilities in this field, and because a growing class of environmental problems were regional or global in extent.

By the preamble, the conference also, among other things, affirmed that in the developing countries most environmental problems were caused by underdevelopment, whereas in the industrialized countries they were generally related to industrialization and technological development. The Conference also declared that the natural growth of population continuously presented problems on the preservation of the environment and required the adoption, as appropriate, of adequate policies and measures.

The Conference then laid down the following 26 principles:

1. Man had the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permitted a life of dignity and well-being, and he bore a solemn responsibility to protect and improve the environment for present and future generations. In this respect, policies promoting or perpetuating *apartheid*, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stood condemned and had to be eliminated.
2. The natural resources of the earth, including the air, water, land, flora and fauna and, especially, representative samples of natural ecosystems, were to be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.
3. The capacity of the earth to produce vital renewable resources was to be maintained and, wherever practicable, restored or improved.
4. Man had a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat which were now gravely imperilled by a combination of adverse factors. Nature conservation, including wildlife, was therefore to receive importance in planning for economic development.

* Extracts from Yearbook of the United Nations, 1972, Vol. 26, p. 319-21 and 330-31.

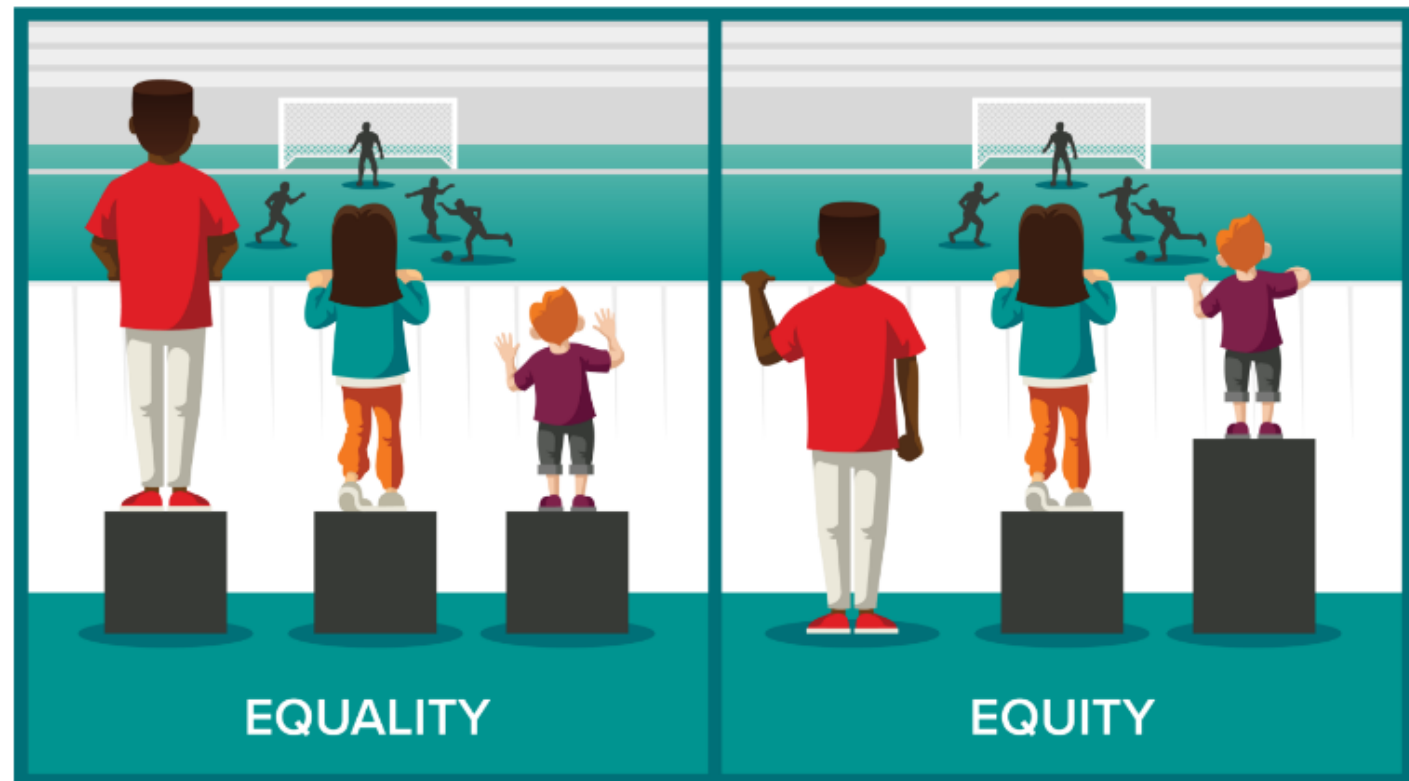
UN Framework Convention on Climate Change (1992)

- Accepted at the **United Nations Conference on Environment and Development in Rio de Janeiro in 1992** (in force since 1994)
- **Framework for** international negotiations on possible solutions to climate change-related issues (reducing greenhouse gas emissions, mitigating the impacts of climate change, etc.)
- Results:
 - **Kyoto Protocol (1997)**
 - **Paris Agreement (2015)**



UN Framework Convention on Climate Change (1992)

- **Four main principles:**
 - the principle of **intergenerational equity**
 - to protect the climate system for the benefit of present and future generations



UN Framework Convention on Climate Change (1992)

- **Four main principles:**

- the principle of **common but differentiated responsibilities**

- economically developed countries bear the main responsibility for rising concentrations of greenhouse gases in the atmosphere, while they also have a duty to provide assistance to developing countries

- the principle of the **need to protect**

- in particular those parts of the planet that are more vulnerable to the negative impacts of changes in the climate system

UN Framework Convention on Climate Change (1992)

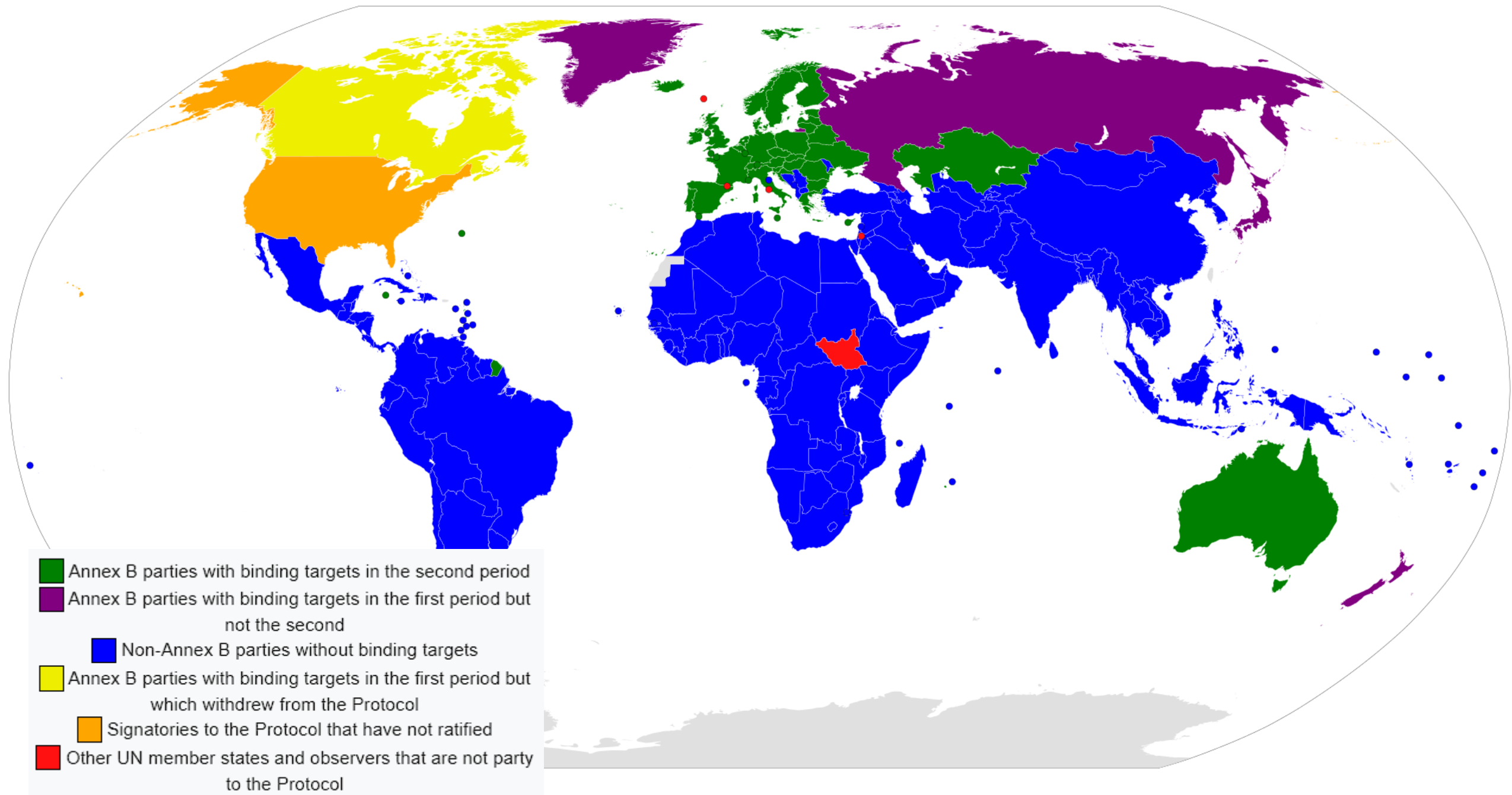
- **Four main principles:**
 - **the precautionary principle**
 - not to delay addressing the problem, even if some of the consequences of climate change cannot yet be quantified precisely.



The Precautionary Principle

Kyoto Protocol (1997)

- Adopted at the 3rd Conference of the Parties to the UN Framework Convention, Kyoto (in force since 2005)
- **The first** legally binding **global agreement to** reduce greenhouse gas emissions
- GHG reduction **commitments** 2008–2012 (compared to 1990):
 - **World**: up 5.2%
 - **EU15** and **Australia**: up 8%
 - **USA**: 7%

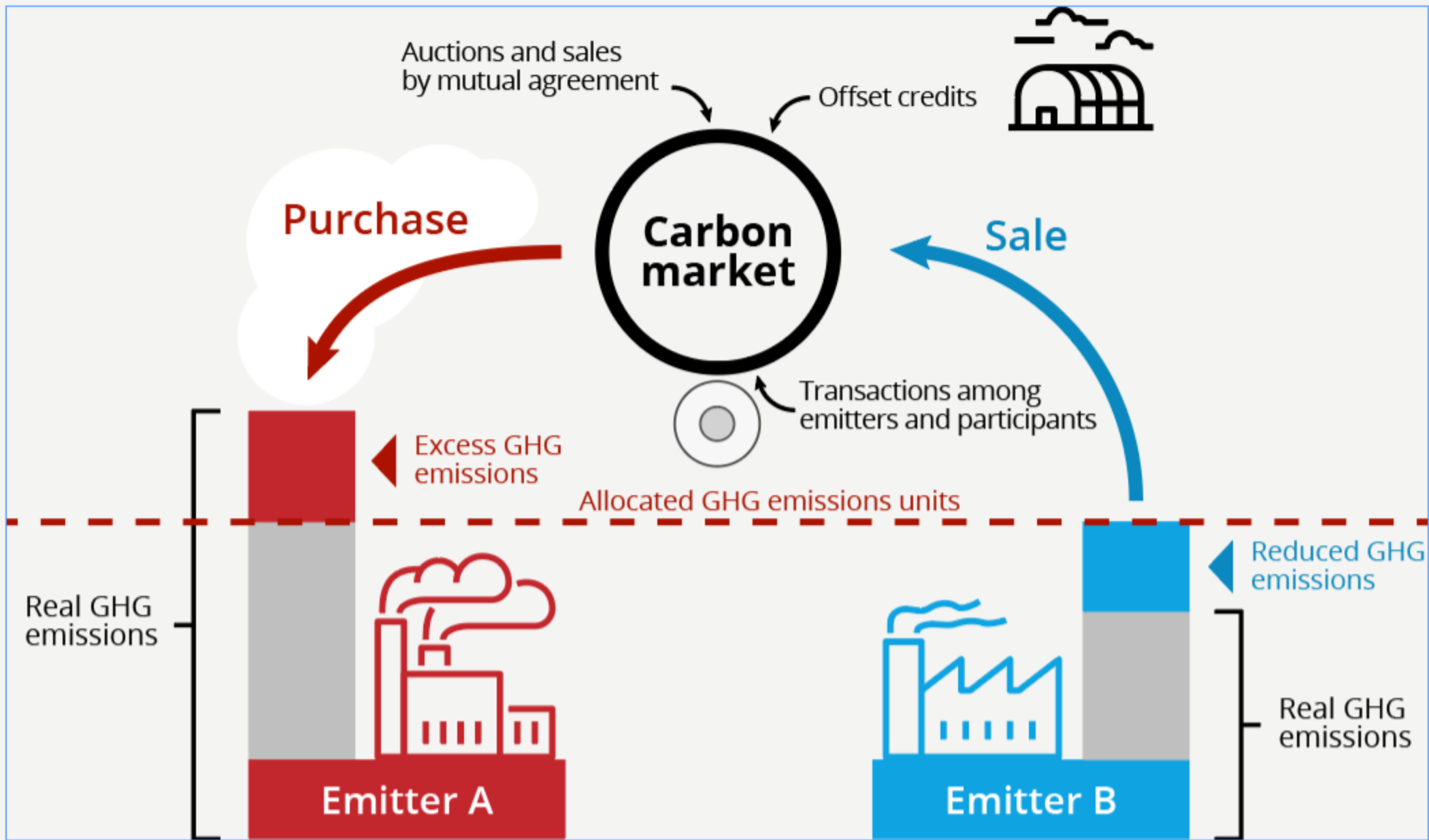


Kyoto Protocol (1997)

- **Market mechanisms:**
 - **carbon emission trading**
 - **Clean Development Mechanism** (possibility for a country reducing its own emissions to implement a project in a developing country, e.g. electrification)
 - the **principle of joint implementation** (the possibility for a country reducing its own emissions to invest in emission reductions in a foreign country and to attribute the reduction to itself)

Carbon emission trading

- A tool to **reduce GHG emissions** (mainly CO₂) in the EU
- Determination of CO₂ **emission allowances** by member states
- **1 permit = 1 tonne CO₂** (approx. 20–90 EUR)
- If a company exceeds its quota, it will have to purchase additional allowances
 - the possibility of trading allowances for unproduced CO₂
- Duty to **monitor CO₂ emissions** by factories and its reporting



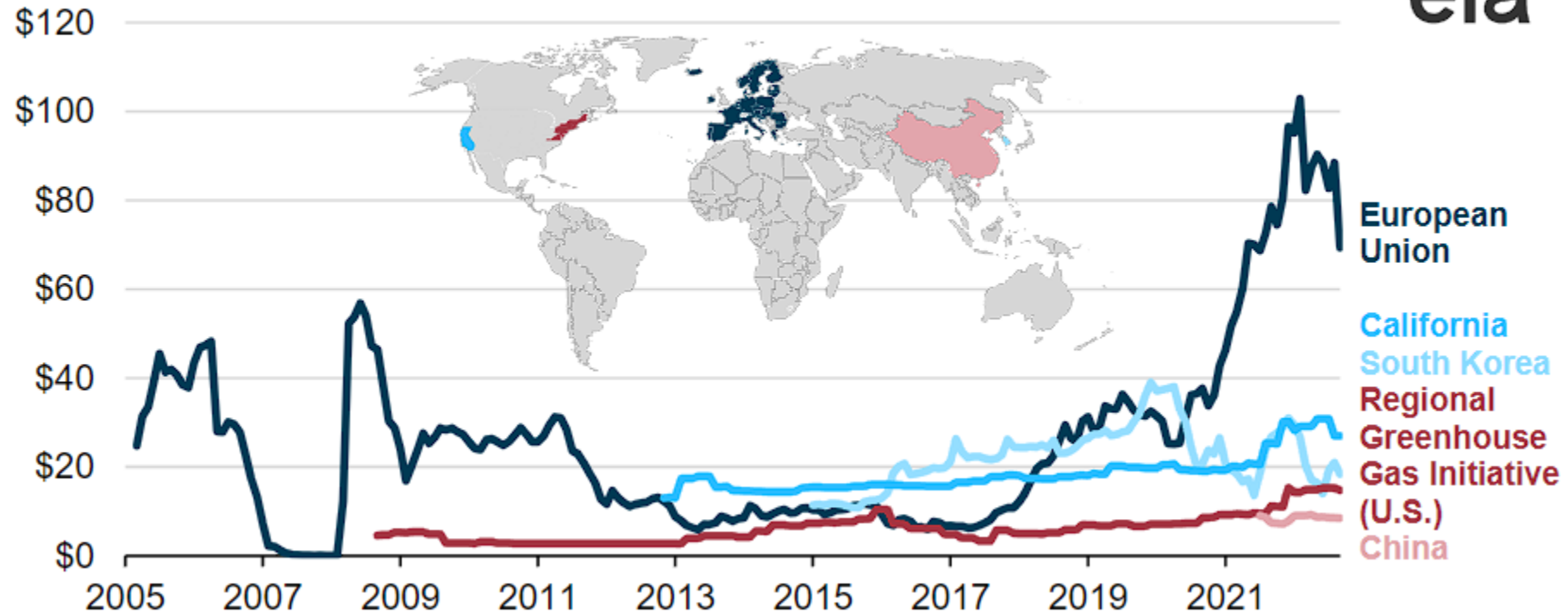
EU Carbon Permits (EUR) 68.52 +4.33 (+6.75%)



Carbon emission trading

Average monthly CO₂ allowance price in select major emissions trading programs (Jan 2005–Sep 2022)

2022 U.S. dollars per metric ton of CO₂



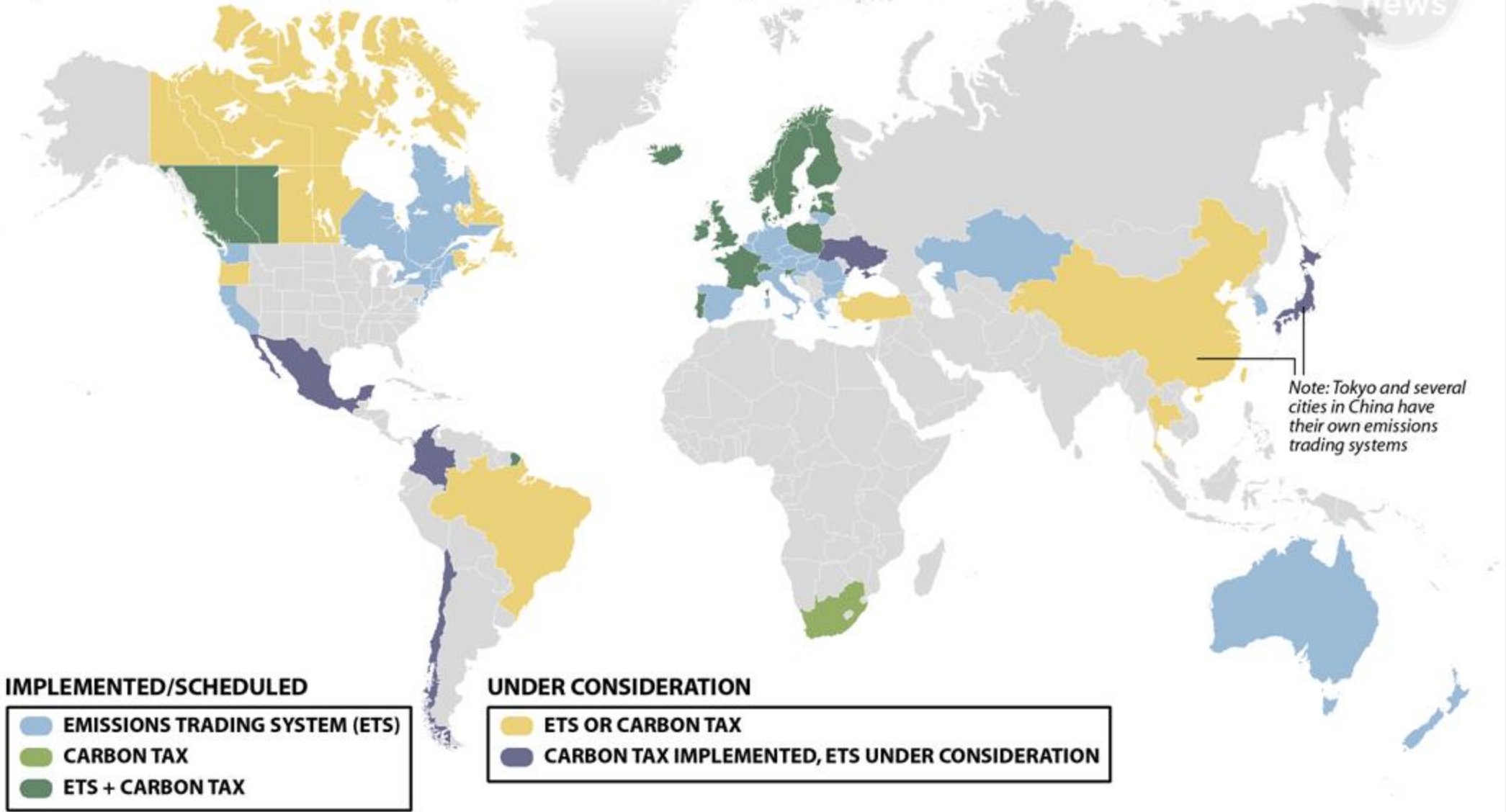
Data source: [International Carbon Action Partnership](#)



Which Countries Have a Price on Carbon?

At least 42 countries and 25 subnational governments have or will soon implement some form of carbon pricing, either through a straight tax or a trading system that caps emissions and allows companies to buy and sell allowances on an open market.

inside
climate
news



Kyoto Protocol (1997)

- **Weaknesses of the Kyoto Protocol:**
 - **withdrawal of the largest GHG emitters (USA - 2001, Canada - 2011)**
 - **failure of the largest GHG emitters (USA, Canada) to meet their commitments**
 - **not including developing countries with low GHG emissions (80% of the world) and emissions from aviation and shipping**
 - the impact of the **financial crisis (2008)**
 - **shifting sources of GHG emissions to developing countries**

The Paris Agreement (2015)



- Accepted in December 2015 (in force since 2016, for the Czech Republic since 4.11.2017)
- Part of the UN Framework Convention on Climate Change
- **2020**: replacement of the existing (but ineffective) Kyoto Protocol
- **Objectives:**
 - keep the increase in global mean temperature well **below 2°C** compared to pre-industrial levels (1750), **aiming for a limit of 1.5°C**
 - **reduce** greenhouse gas emissions by **40%** by **2030** compared to **1990 levels**

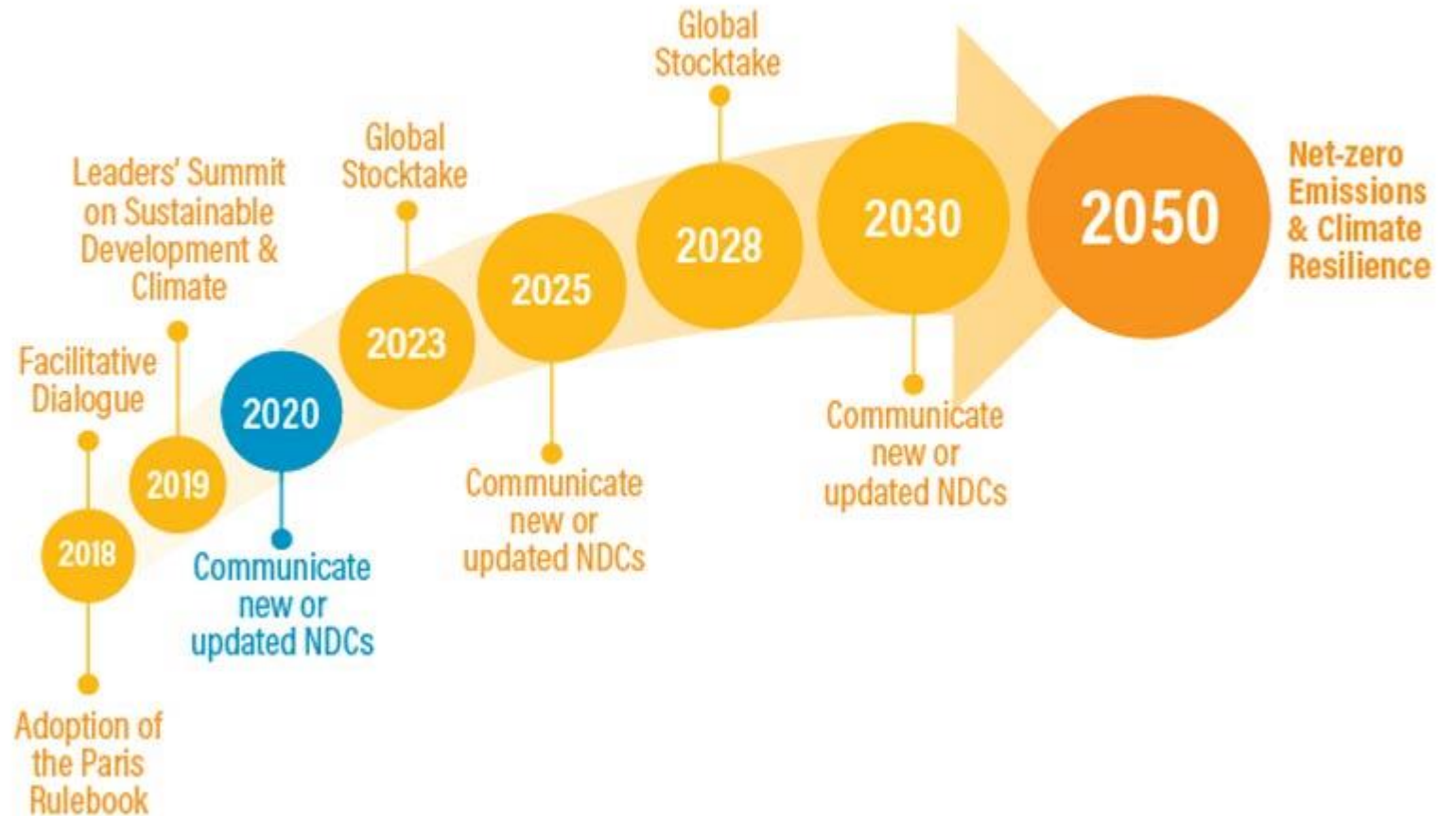
The Paris Agreement (2015)



- **Performance procedure:**
 - Nationally Determined Contribution with emission reduction commitments (check every 5 years)
 - decarbonisation of the energy sector and carbon neutrality by 2050
 - creation of an adaptation fund (USD 100 billion/year)

Paris Agreement (2015) - Implementation process

Ambition Mechanism in the Paris Agreement



Source: wri.org/publication/NDC-enhancement-by-2020

The Paris Agreement (2015)



- **Achievements of the Paris Agreement:**
 - **impulse for** many countries to solve climate change
 - Nationally Determined Contribution to achieve **carbon neutrality** (2050 - EU, Canada, South Korea, Japan, South Africa, UK, USA; 2060 - China, 2070 - India)
 - a slow but increasing trend of fulfilment of commitments
 - the expected **reduction in global air temperature increase** by 2100 (pre-2015: 3.5°C; post-2015: 3.2°C) as a result of political, economic and technological changes (decrease in the price of solar panels, decrease in economic growth)

The Paris Agreement (2015)



- **Weaknesses of the Paris Agreement:**
 - **non-enforceability of** national commitments (absence of sanctions)
 - **failing to fulfil** the commitments by countries
 - **insufficient speed in** reducing greenhouse gas emissions
 - **non-replenishment of** the Adaptation Fund
 - projected damage from CC in 2030: USD 300 billion
 - not including the terms 'fossil fuels' and 'decarbonisation' in the agreement
 - temporary **US withdrawal from the** agreement (2017)

Conference of the Parties (COP27, Egypt, 2022)

- Approval of the creation of a **Loss and Damage Fund** to cover the losses caused by **natural disasters** and other **impacts of climate change** in the developing countries
 - acceptance of the consequences of climate change and the need to compensate for them
- Commitment to a global **methane reduction of at least 30%** by 2030 (compared to 2020)

COP28 (Dubai, 2023)

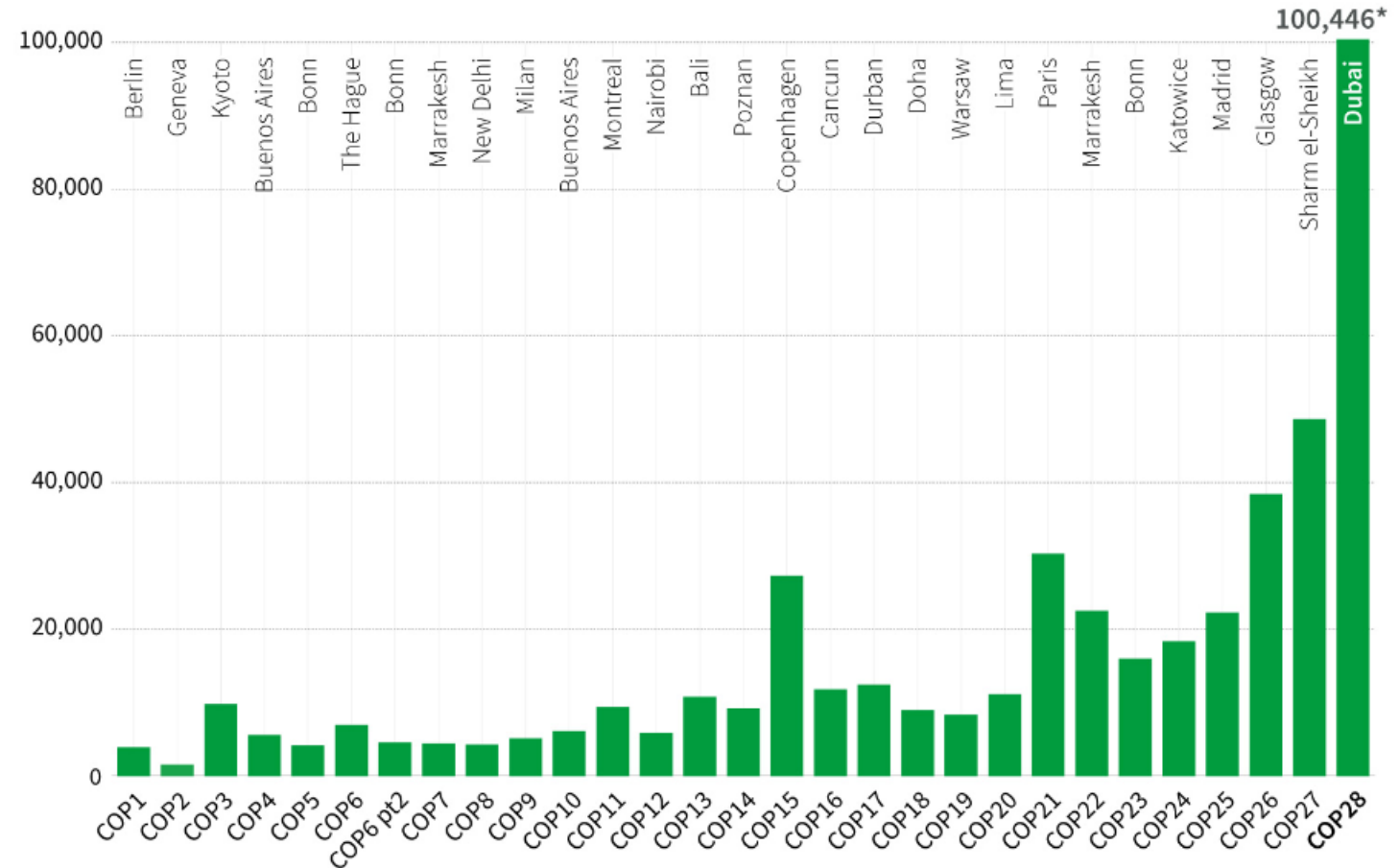
- Creation of a **Loss and Damage Fund** for developing countries most affected by climate change
- Gradual **phasing out** the **extraction** and **combustion of all fossil fuels**
- A call to **triple capacity of renewable sources by 2030**
- Efforts to **accelerate technologies** such as carbon capture and storage

COP28 (Dubai, 2023)

- **Largest COP** to date (number of participants >100,000)
- The rise of **the fossil lobby**

COP28 in Dubai hits record number of participants

Total attendance (delegates from parties, observers and the media) per COP, according to the UNFCCC



Sources: United Nations Framework Convention on Climate Change, CarbonBrief

*Provisional figure, includes 3,074 attending virtually



Pope Francis' Encyclical *Laudato si'* (2015)

- **A critique of contemporary consumerism and irresponsible living**
- Pope Francis on the role of mankind:
 - "Go and be the steward of all things on Earth."
- **Problems of the contemporary world:**
 - mental pollution of society, uneven distribution, loss of biodiversity, loss of drinking water, paralysis by data, ecological debt, devastation of the environment, loss of ecological merit...



Green Deal (2019)

- A comprehensive proposal from the European Commission (not legally binding) to:
 - achieving **carbon neutrality by 2050**
 - achieving **sustainable** agricultural **production**
 - reducing **air, soil and water pollution**
 - achieving **sustainable consumption**
 - transition to a **circular economy** under conditions of a fair national transition through the European Climate Act

Green Deal (2019)

- **Forms of achieving the objectives:**
 - reduction of air pollution, sustainable agriculture (reduction of pesticides), increased biodiversity in the landscape, longer product functionality and reparability (2021)
- **EU GHG emissions fall by 31%** between 1990 and 2020, economy grows by 62%
- Acquiring **legislative support** through the **Fit for 55** package



Become climate-neutral by 2050



Smarter, more sustainable transport



Striving for greener industry



Eliminating pollution



Financing green projects



Ensuring a just transition for all



Making homes energy efficient



Leading the green change globally



From farm to fork



Protecting nature



Promoting clean energy



The 2030 Climate target/Fit for 55 (2020)

- A non-binding **European Commission** document proposing a new pathway for **reducing greenhouse gas emissions** in the EU by 2030
- The **EU's current plan to reduce greenhouse gas emissions** by 2030 compared to 1990:
 - 40% (Paris Agreement, 2015)
 - new EU plan: **55%** (compared to 1990)
- To achieve a 1.5°C increase in T_{max.}, the EU needs to reduce GHGs 65% by 2030 compared to 1990

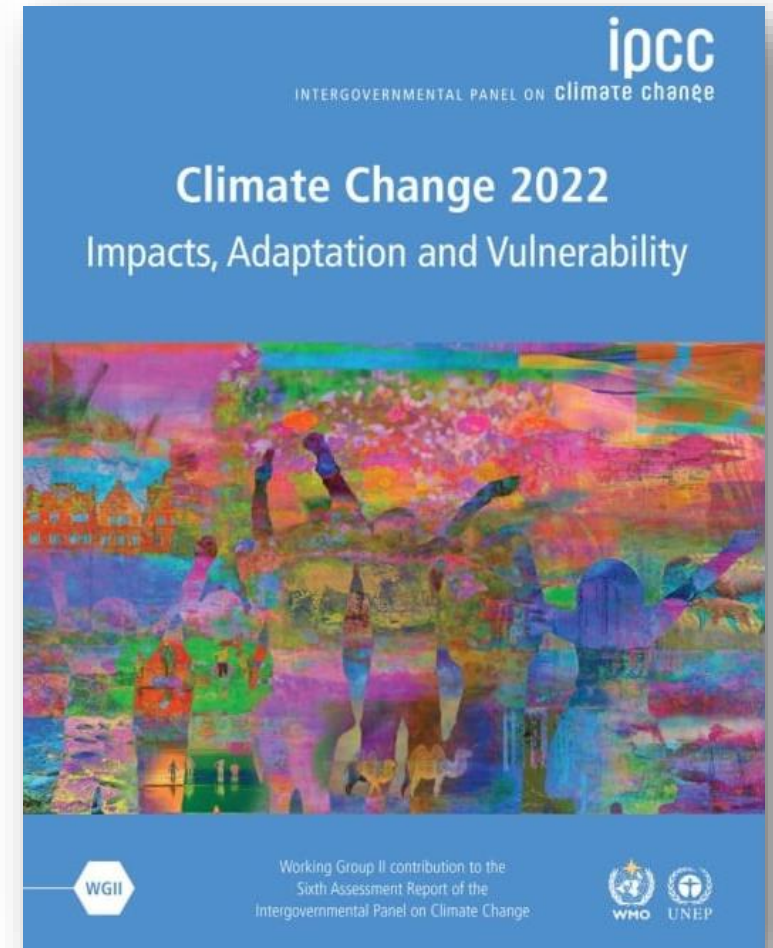
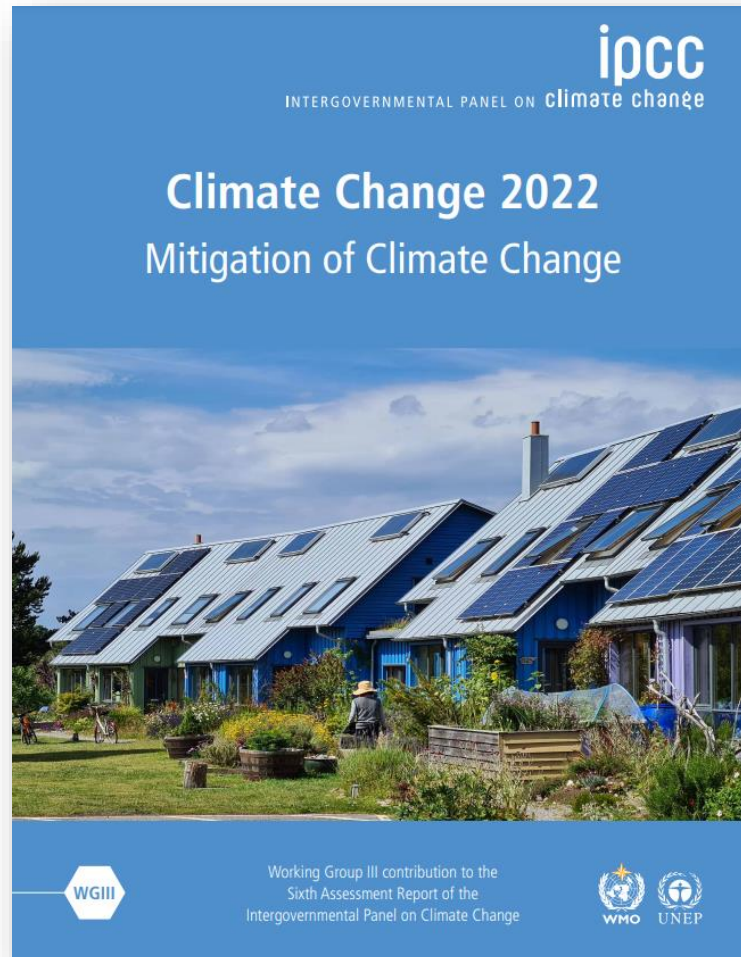
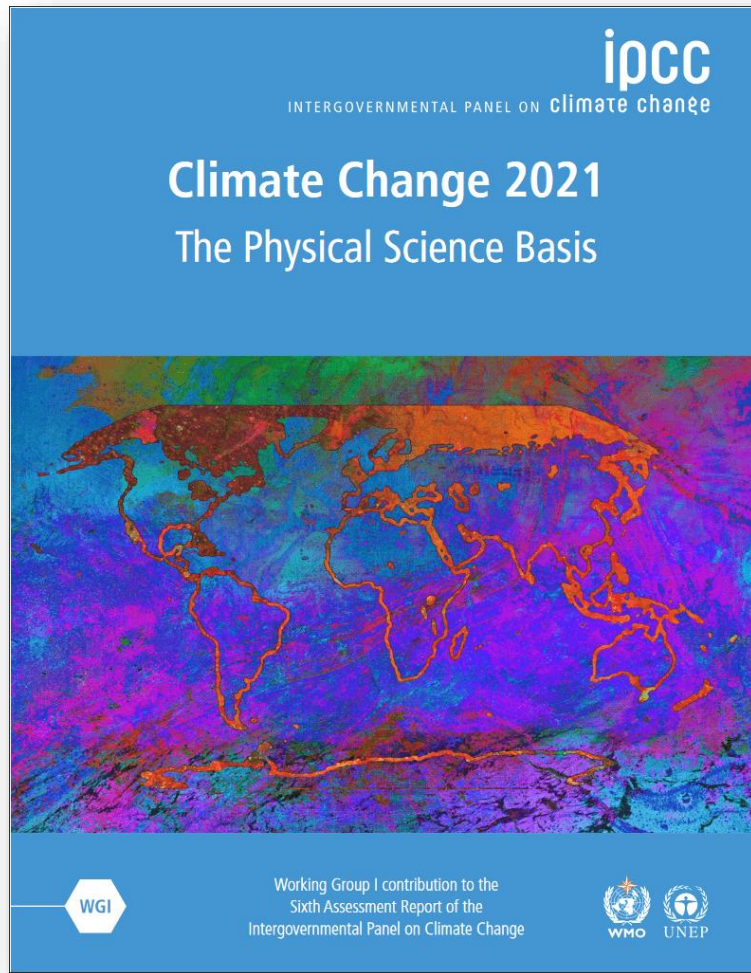
The 2030 Climate target/Fit for 55 (2020)

- **Tools to reduce emissions:**
 - rising prices of emission permits
 - reduction of exhaust gasses from cars
 - preference for electromobility instead of hybrids
 - prioritisation of rail and river transport
 - transformation to a carbon neutral economy

World Meteorological Organization Report (2023)

- **2023** set to be **warmest year on record**
- **Greenhouse gas** levels continue to **increase**
- Record **sea surface temperatures** and **sea level rise**
- Record **low Antarctic sea ice** extent
- **Increase of renewable source energy capacity** by 10% (in 2022)

Recommended literature



Literature and resources

- Maslin, M. (2021): Climate change: a very short introduction. Fourth edition. Oxford: Oxford University Press, 166 p.
- Masson-Delmotte, V. et al. (2021): Climate Change 2021. The Physical Science Basis. Summary for Policymakers. Cambridge, Cambridge University Press, 41 p.

Thank you for your attention