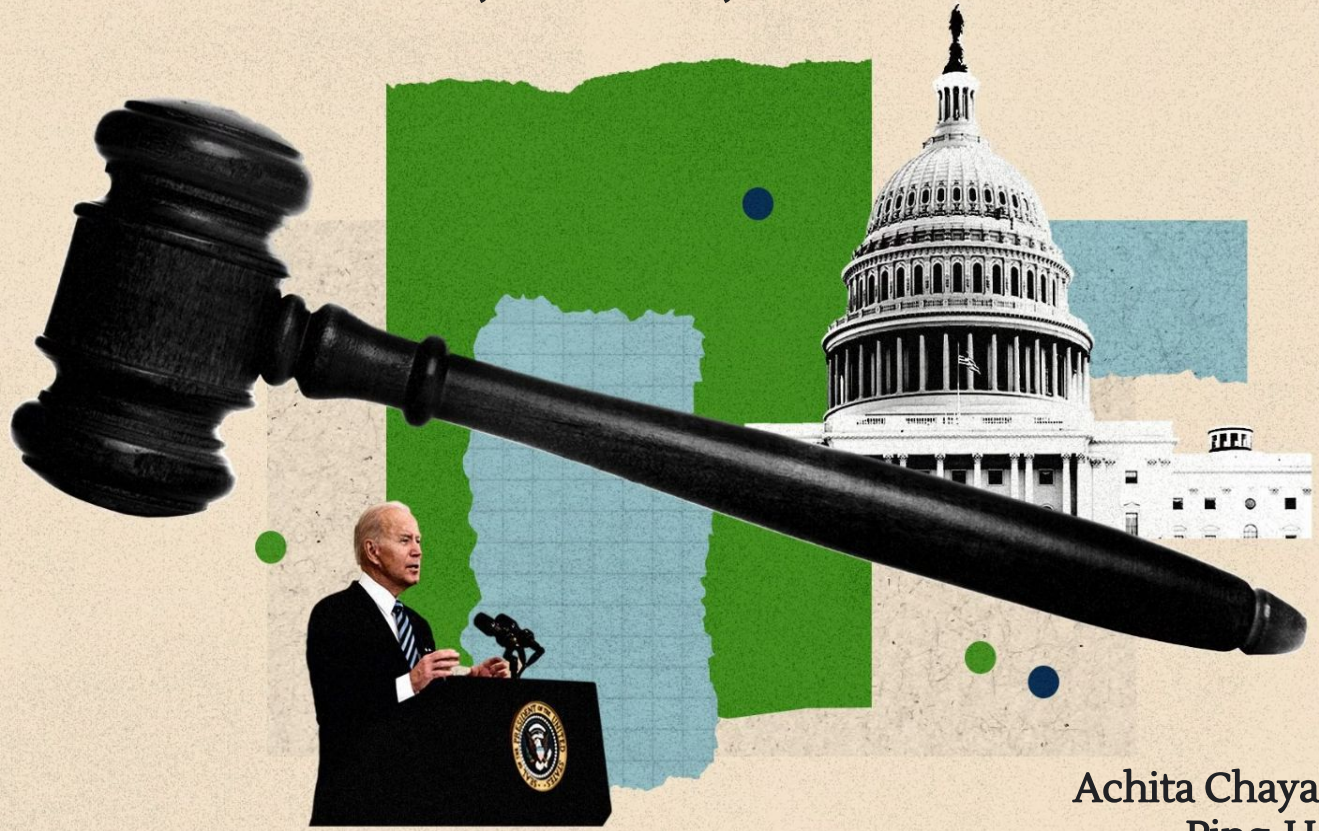
MITIGATION OF CLIMATE CHANGE
GOVERNANCE, POLICY, COLLABORATION



IPCC REPORT-6

Achita Chayasisrattanakorn
Ping-Hsuan Liu
Selen Özdemir

BACKGROUND OF CLIMATE POLICY

Actors Shaping Climate Governance

1. Governments:
- Policy-making and Regulation
- Funding and Support
- Enforcement
- International Negotiations

2. Private Sector:
- Innovation and Technology Development
- Investment
- Corporate Responsibility

3. Civil Society:
- Advocacy and Awareness
- Research and Information Dissemination

4. International Organizations:
- Global Policy Frameworks
- Technical and Financial Support
- Data Collection and Reporting

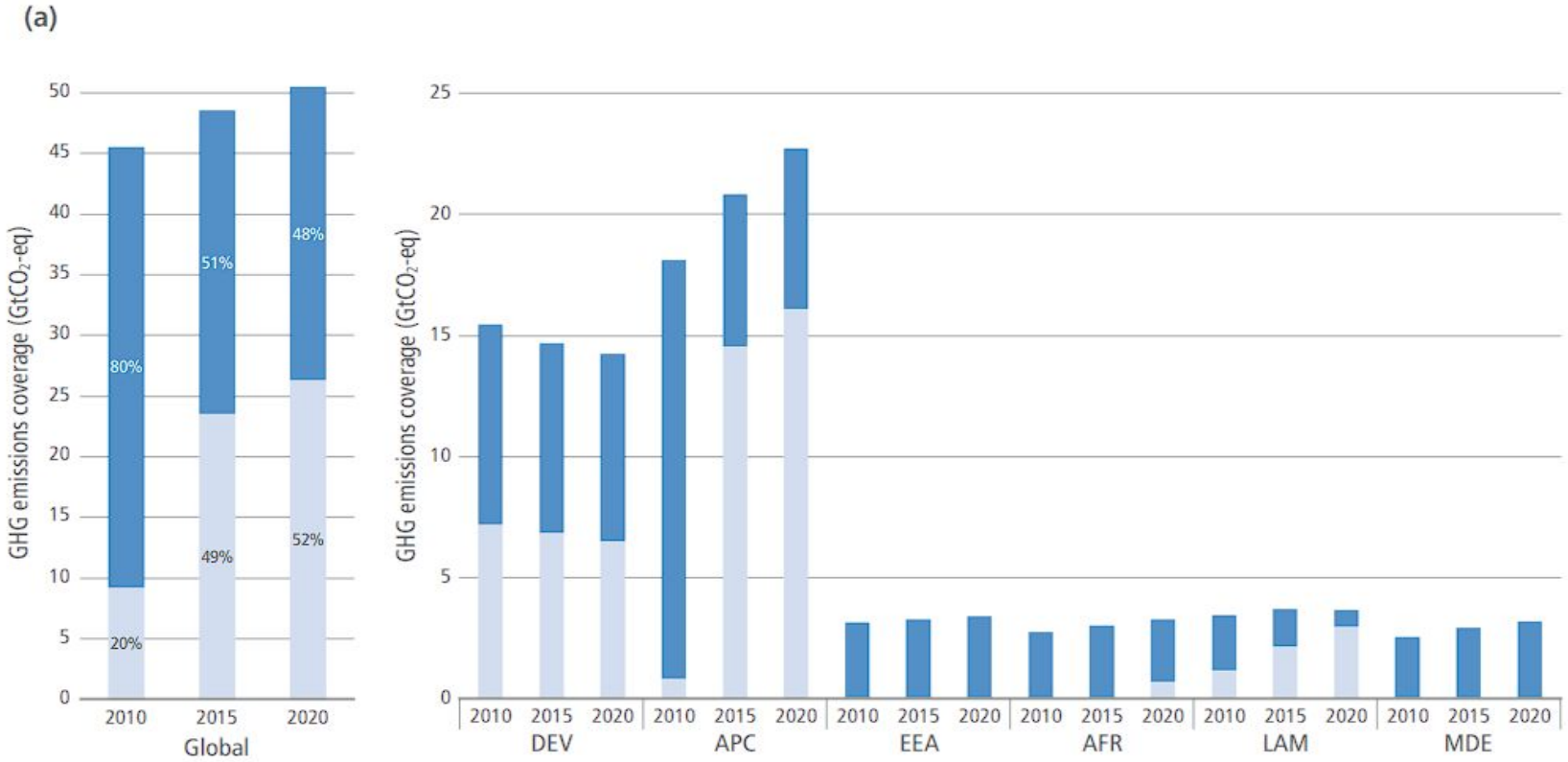
Policy-making and assessment of global progress.

5. Academic and Research Institutions:
- Scientific Research and Innovation
- Education and Capacity Building
- Policy Analysis and Recommendations

6. Media and Public Opinion:
- Information Dissemination
- Influencing Policy and Public Opinion

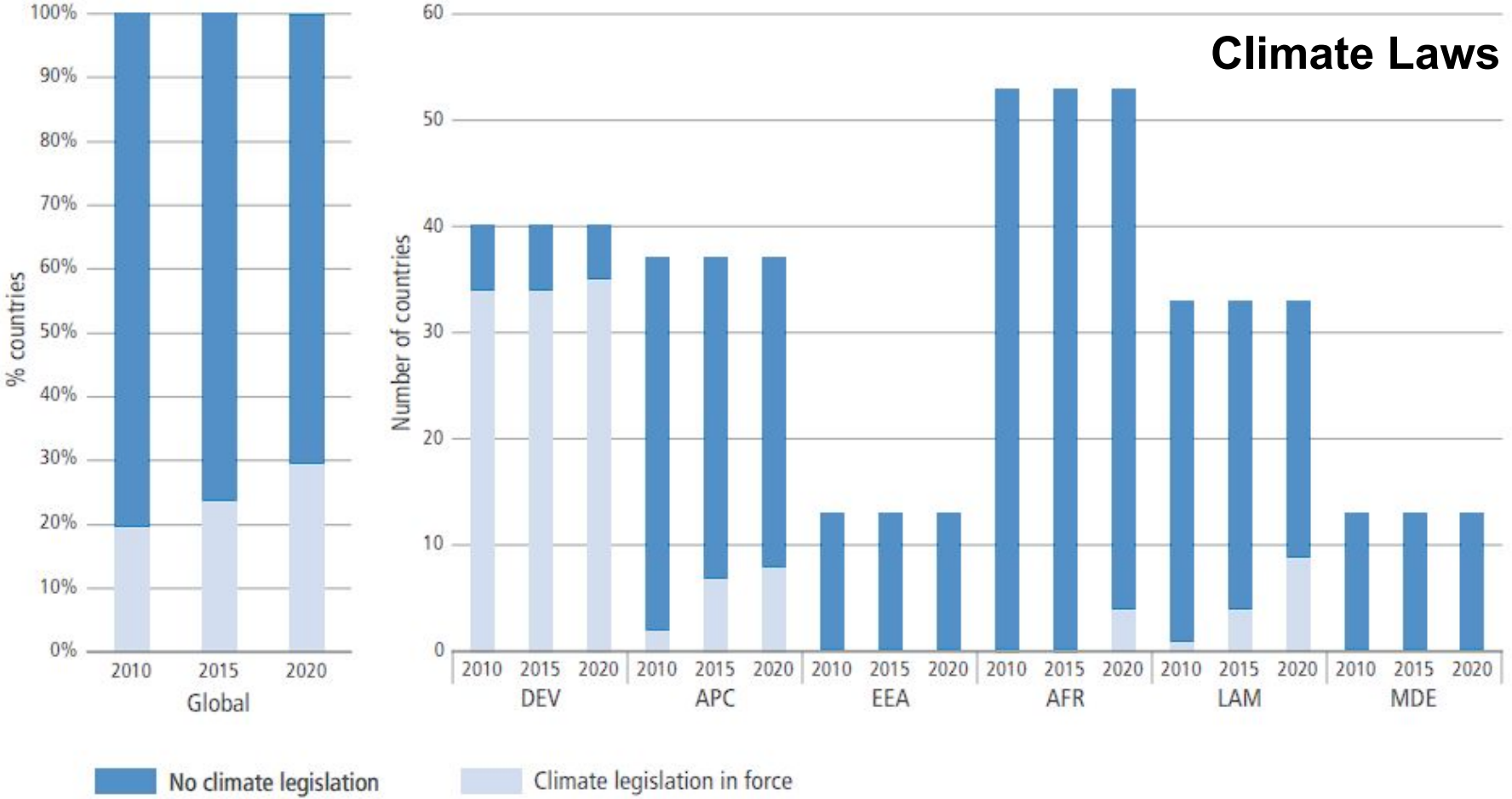
7. Local Communities and Indigenous Peoples:
- Local Adaptation Strategies
- Stakeholder Engagement

Climate Laws



DEV = Developed countries; APC = Asia and Pacific; EEA = Eastern Europe and West-Central Asia; AFR = Africa; LAM = Latin America and the Caribbean; MDE = Middle East.

Climate Laws



DEV = Developed countries; APC = Asia and Pacific; EEA = Eastern Europe and West-Central Asia; AFR = Africa; LAM = Latin America and the Caribbean; MDE = Middle East.

Civic Engagement: The School Strike Movement

An Example of Systemic Climate Litigation: Urgenda vs State of the Netherlands

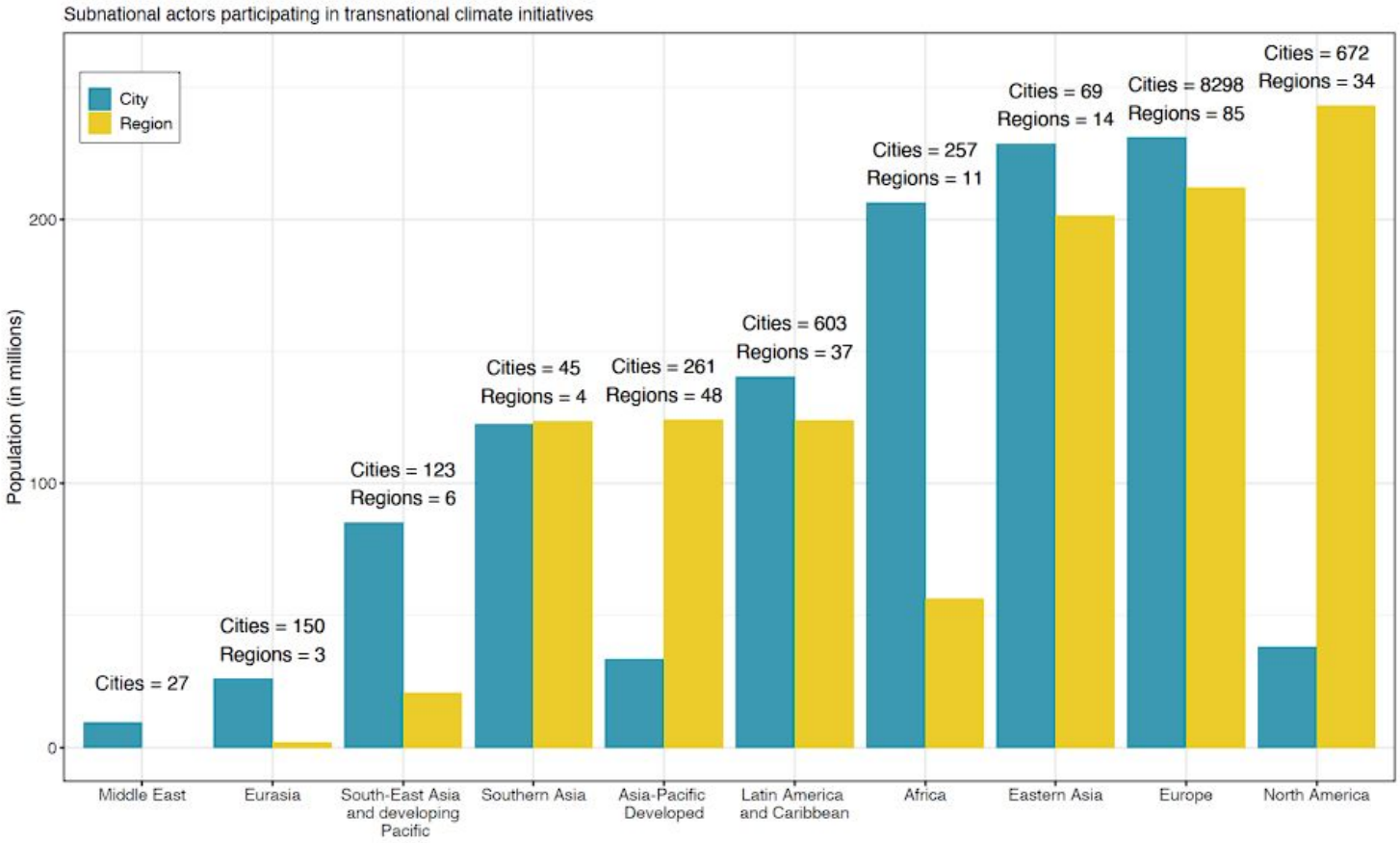
Box 13.8 | An Example of Systemic Climate Litigation: Urgenda vs State of the Netherlands

The judgement in *Urgenda vs State of the Netherlands* established the linkage between a state's international duty, domestic actions, and human rights commitments as to the recommendations of IPCC's AR5 (Burgers and Staal 2019; Antonopoulos 2020). It was the first to impose a specific emissions reduction target on a state (de Graaf and Jans 2015; Cox 2016; Loth 2016). The District Court of The Hague ordered the Dutch Government to reduce emissions by at least 25% by the end of 2020. Following the decision of the district court of The Hague in 2015 the Dutch government announced that it would adopt additional measures to achieve the 25% emissions reduction target by 2020 (Mayer 2019). The decision was upheld by the Court of Appeal in 2018 and the Supreme Court in 2019. Since the first judgment in 2015 significant changes in the climate policy environment have been reported, the results of which have included the introduction of a Climate Act and the decision to close all remaining coal fired power plants by 2030 (Verschuuren 2019; Wonneberger and Vliegenthart 2021).

Table 13.2 | Criteria for evaluation and assessment of policy instruments and packages.

Criterion	Description
Environmental effectiveness	Reducing GHG emissions is the primary goal of mitigation policies and therefore a fundamental criterion in evaluation. Environmental effectiveness has temporal and spatial dimensions.
Economic effectiveness	Climate change mitigation policies usually carry economic costs, and/or bring economic benefits other than through avoided future climate change. Economic effectiveness requires minimising costs and maximising benefits.
Distributional effects	The costs and benefits of policies are usually distributed unequally among different groups within a society (Zachmann et al. 2018), for example between industry, consumers, taxpayers; poor and rich households; different industries; different regions and countries. Policy design affects distributional effects, and equity can be taken into account in policy design in order to achieve political support for climate policies (Baranzini et al. 2017).
Co-benefits, negative side-effects	Climate change mitigation policies can have effects on other objectives, either positive co-benefits (Mayrhofer and Gupta 2016; Karlsson et al. 2020) or negative side-effects. Conversely, impacts on emissions can arise as side-effects of other policies. There can be various interactions between climate change mitigation and the Sustainable Development Goals (Liu et al. 2019).
Institutional requirements	Effective implementation of policies requires that specific institutional prerequisites are met. These include effective monitoring of activities or emissions and enforcement, and institutional structures for the design, oversight and revision and updating of policies. Requirements differ between policy instruments. a separate consideration is the overall feasibility of a policy within a jurisdiction, including political feasibility (Jewell and Cherp 2020).
Transformative potential	Transformational change is a process that involves profound change resulting in fundamentally different structures (Nalau and Handmer 2015), or a substantial shift in a system's underlying structure (Hermwille et al. 2015). Climate change mitigation policies can be seen has having transformative potential if they can fundamentally change emissions trajectories, or facilitate technologies, practices or products with far lower emissions.

Actor-networks and Policies



Subnation Adaptation and Mitigation Definition

1. Subnation:
means groups or organizations that work at a local or regional level, not the national level. These include city or town governments, regional groups, and other local authorities. They are important in climate change work because they put national policies into action in ways that fit their local area. They also often come up with new ideas for how to handle climate change.

2. Adaptation and Mitigation:
- **Adaptation:** This is about making changes to deal with the effects of climate change. **It means taking steps to lessen the damage caused by climate change or to take advantage of new situations.**

- **Mitigation: This involves actions to reduce the long-term effects of climate change**. This is done mainly by lowering the amount of greenhouse gases we put into the air or by finding ways to remove these gases from the air.

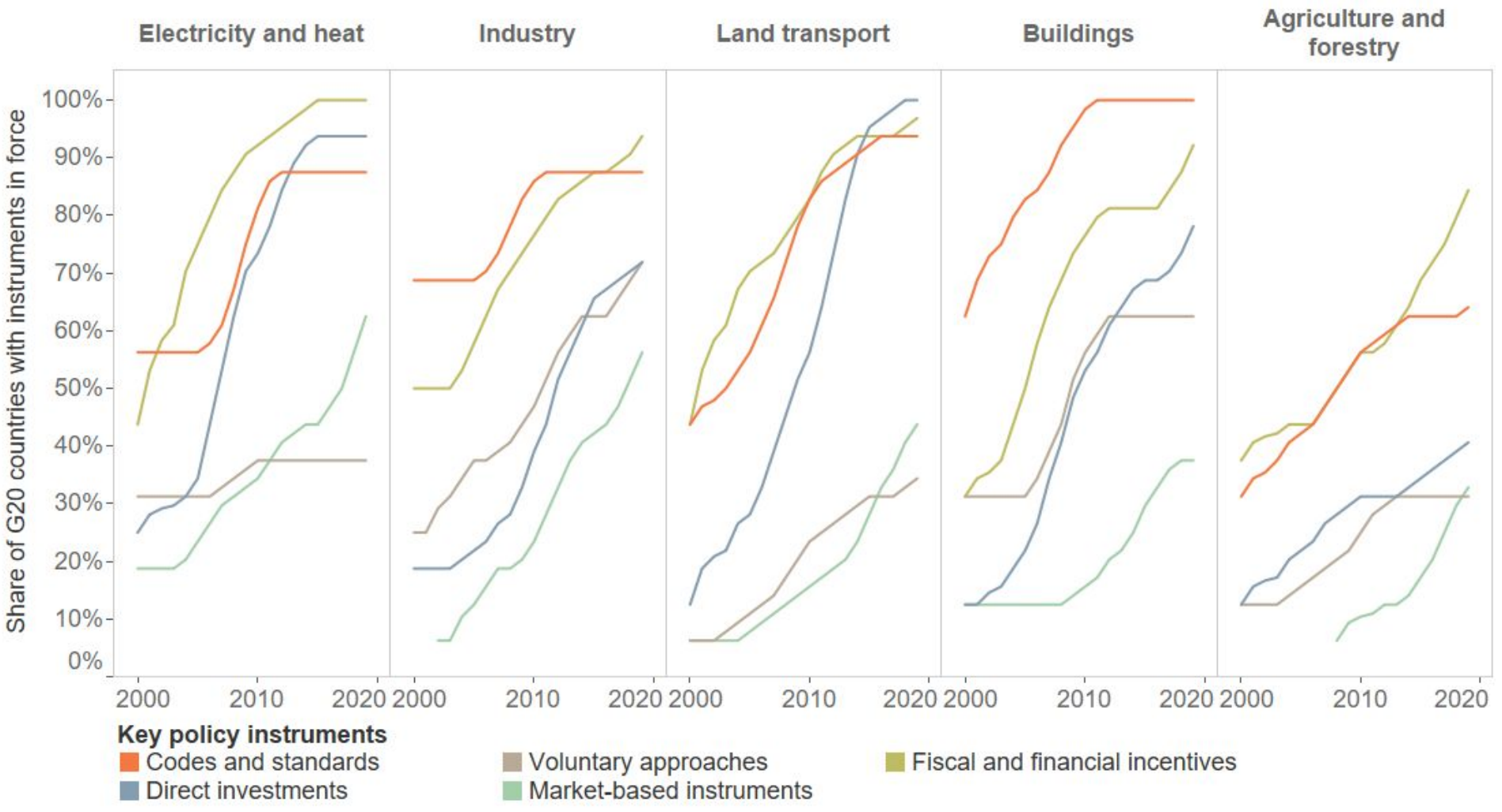
Integrated Policy Packages for Mitigation and Multiple Objec

		Framing of outcome	
		Enhancing mitigation	**Addressing multiple objectives of mitigation and development**
Approach to policymaking	**Shifting incentives**	'Direct mitigation focus' *(Section 13.6; 2.8)* *Objective:* reduce GHG emissions now *Literature:* how to design and implement policy instruments, with attention to distributional and other concerns *Examples:* carbon tax, cap and trade, border carbon adjustment, disclosure policies	'Co-benefits' *(Sections 17.3; 5.6.2; 12.4.4)* *Objective:* synergies between mitigation and development *Literature:* scope for and policies to realise synergies and avoid trade-offs across climate and development objectives *Examples:* appliance standards, fuel taxes, community forest management, sustainable dietary guidelines, green building codes, packages for air pollution, packages for public transport
	Enabling transition	'Socio-technical transitions' *(Sections 1.7.3; 5.5; 10.8; 6.7; Cross-Chapter Box 12 in Chapter 16)* *Objective:* accelerate low-carbon shifts in socio-technical systems *Literature:* understand socio-technical transition processes, integrated policies for different stages of a technology 'S-curve' and explore structural, social and political elements of transitions *Examples:* packages for renewable energy transition and coal phase-out; diffusion of electric vehicles, process and fuel switching in key industries	'System transitions to shift development pathways' *(Sections 11.6.6; 7.4.5; 13.9; 17.3.3; Cross-Chapter Box 5 in Chapter 4; Cross-Chapter Box 9 in Chapter 13)* *Objective:* accelerate system transitions and shift development pathways to expand mitigation options and meet other development goals *Literature:* examines how structural development patterns and broad cross-sector and economy-wide measures drive ability to mitigate while achieving development goals through integrated policies and aligning enabling conditions *Examples:* packages for sustainable urbanisation, land-energy-water nexus approaches, green industrial policy, regional just transition plans

Synergies Between Adaptation and Mitigation Synergies

Renewable Energy for Water Management

Coastal Ecosystem Restoration


Electricity and heat
Industry
Land transport
Buildings
Agriculture and forestry
Share of G20 countries with instruments in force
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
Key policy instruments
Codes and standards
Direct investments
Voluntary approaches
Market-based instruments
Fiscal and financial incentives

Economic Instrument aim at Mitigating Climate Change

01	Carbon Taxes	• Impose charges on carbon emission, include 27 countries • Tax rates vary widely, and the revenue usage varies by jurisdiction. • Less public support compared to other mitigation policy options.
02	Emission Trading Systems (ETS)	• Cap-and-trade ETSs, in place in 38 countries • Set limits on aggregate emissions • ETSs aim to cover emissions from large industrial and electricity facilities • The EU ETS was recently surpassed by China's national ETS
03	Fossil Fuel Subsidy Removal	• Highlighted as a crucial step to lower CO2 emissions • Increase government revenues • Yield environmental and sustainable development benefits

Regulatory Instruments in Adapting Climate Change

01	Performance standards	• Set general objectives (e.g., emissions intensity). • Allow flexibility in compliance methods. • Examples: Vehicle emissions standards, Low-Carbon Fuel Standards. • Less economically efficient than carbon pricing
02	Technology Standards (CAC Regulation)	• Prescriptive regulations mandating specific technologies, processes, or products. • Example: Energy-efficient appliances • Less economically efficient, risk of path dependency, potential innovation stifling

May enjoy greater political backing compared to pricing policies

- Visibility and Tangibility
- Immediate Action
- Avoidance of Taxation Opposition

UNFCCC (1994)

United Nations
Framework Convention on
Climate Change

"Preventing "dangerous" human interference with the climate system"

"Stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"

- Signed at the 1992 'Earth Summit' in Rio de Janeiro, Brazil
- First international treaty concerning climate changes - call for action
- Currently 198 ratified parties (countries)
- Creates rules for climate policy
- Aims to return 1990's emission level by 2000 (Annex I Parties)

- Sets the generic objective of stabilizing GHG
- Uncertainty towards climate changes
- No clearly binding obligations

UNFCCC - Conference of the Parties (COP)

*Supreme decision-making body of the Convention (UNFCCC)

*The key task for the COP is to review the national communications and emission inventories submitted by Parties.

*The COP meets every year, unless the Parties decide otherwise.

*The first COP meeting was held in Berlin, Germany in March, 1995, the latest COP meeting was held in Dubai, United Arab Emirates, 2023. The next one will be held in Baku, Azerbaijan, 2024.

COP inefficiency?

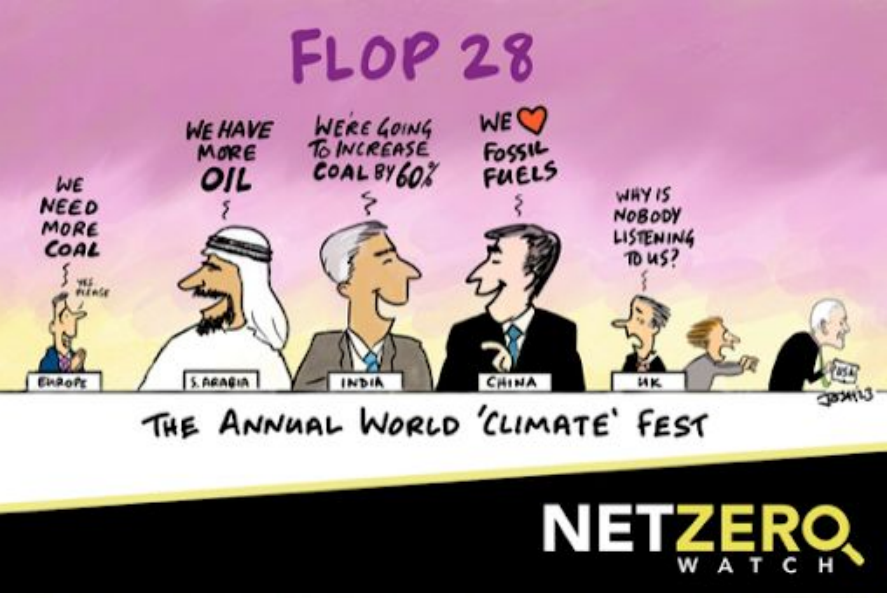
General Critics

Pace of Progress
Lack of Binding Commitments
Corporate Influence
Lack of Transparency
Technological Solutions vs. Systemic Change

Global North vs South

Climate change vs. Economic Growth

Picture source:https://www.forbes.com/sites/tilakdoshi/2023/12/08/cop28-and-fossil-fuels-showdown-between-alarmists-and-pragmatists/



Why COP 28 Controversial

COP28 President Sultan al-Jaber is facing a backlash over his claim that there is “no science” behind calls for a phase out of fossil fuels.

Greenwashing accusations
Treatment of migrant workers
Alleged fossil fuel deals
Carbon footprint
Suppression of protests

Huge Progress

COP28 all countries of the world would agree to recognise the need to transition away from fossil fuels.
Beginning of the end” of the fossil fuel era by laying the ground for a swift

Picture source:hhttp://www.ageu-die-realisten.com/archives/6875 and https://www.lopinion.fr/economie/cop-28-lessentiel-se-passe-ailleurs

KYOTO PROTOCOL (2005)

- Extend UNFCCC
- Legally binding international treaty on climate change
- Adopted in 1997 (COP3) - entered into force in 2005
- Committing 37 industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets
- Reducing GHG emissions by an average of 5% against 1990 levels, over the 2008-2012 period

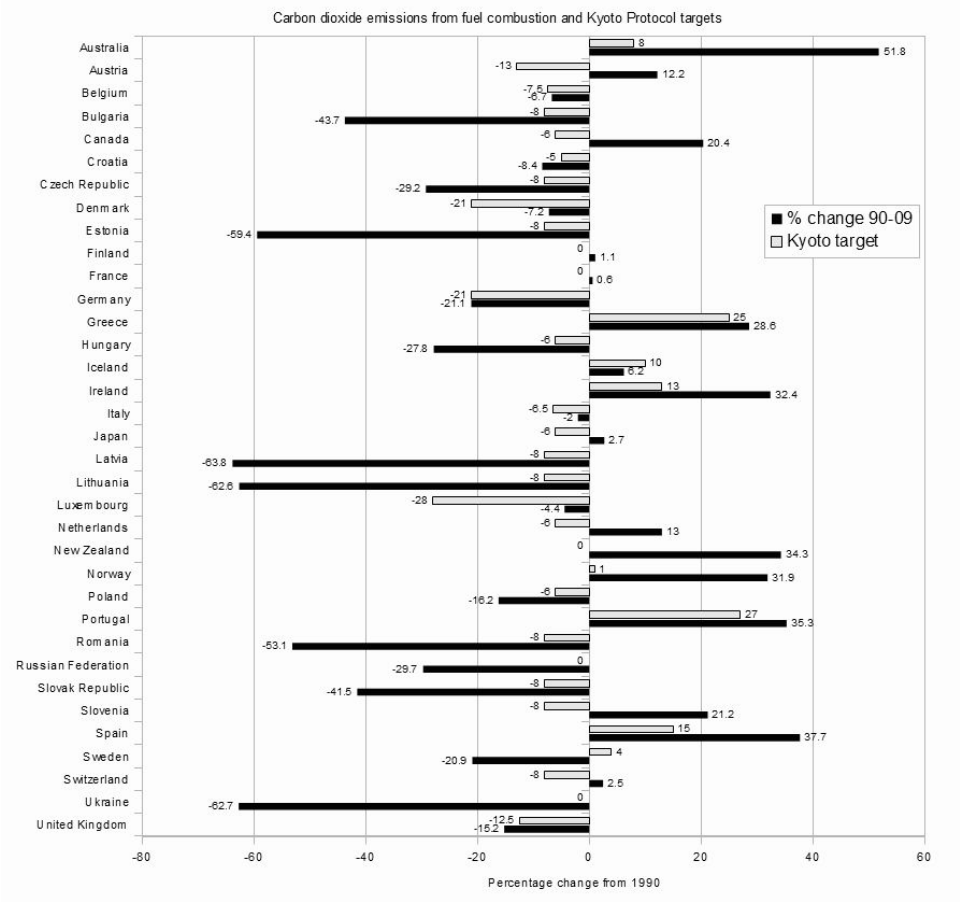
*No specific temperature objective 

*Doesn't address other pollutants, such as sulfur dioxide and nitrogen oxides

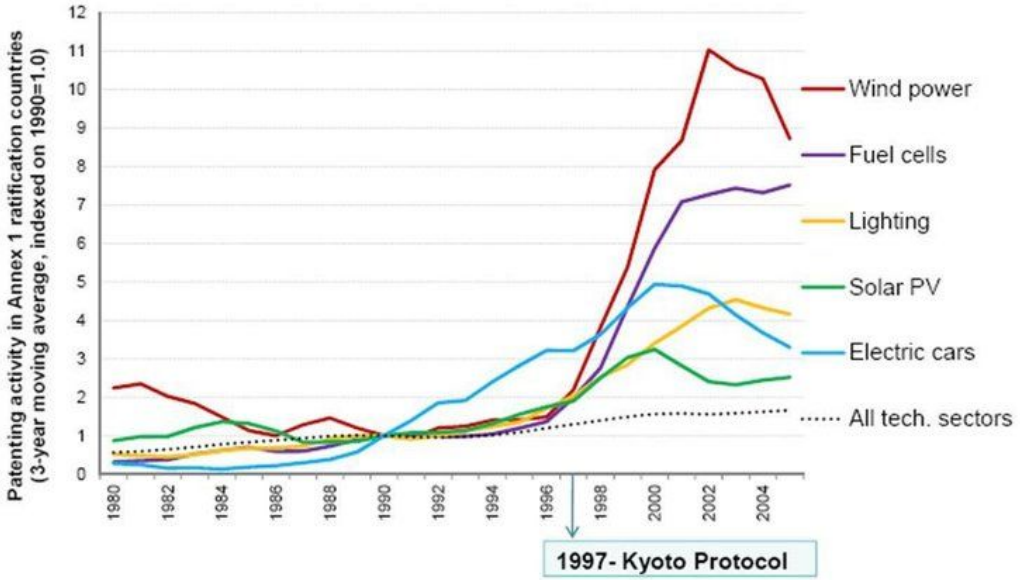
*Developing countries and emerging economies did not commit

KYOTO PROTOCOL (2005)

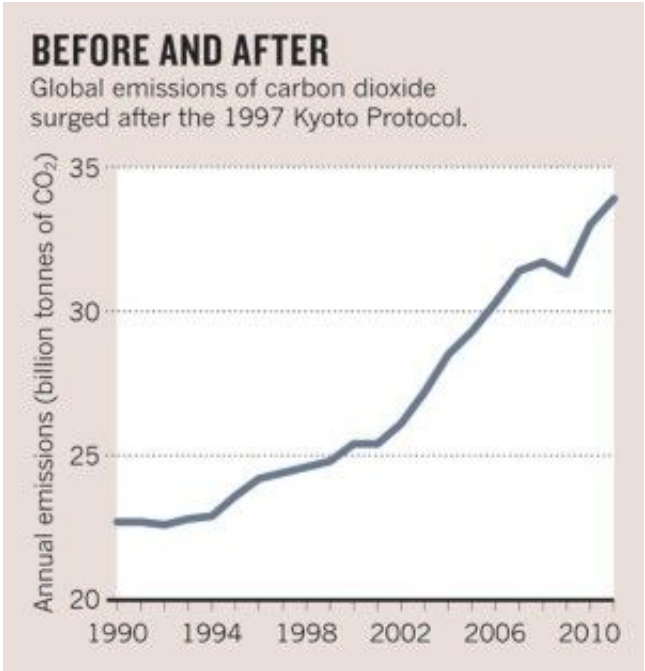
Kyoto Annex I Parties with first period (2008–12) GHG limitations targets, and the percentage change in their carbon dioxide emissions from fuel combustion between 1990-2009.



KYOTO PROTOCOL (2005)



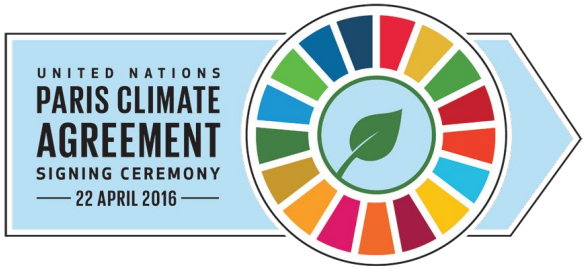
Source: OECD (2010), *The Invention and Transfer of Environmental Technologies*



PARIS AGREEMENT (2015)

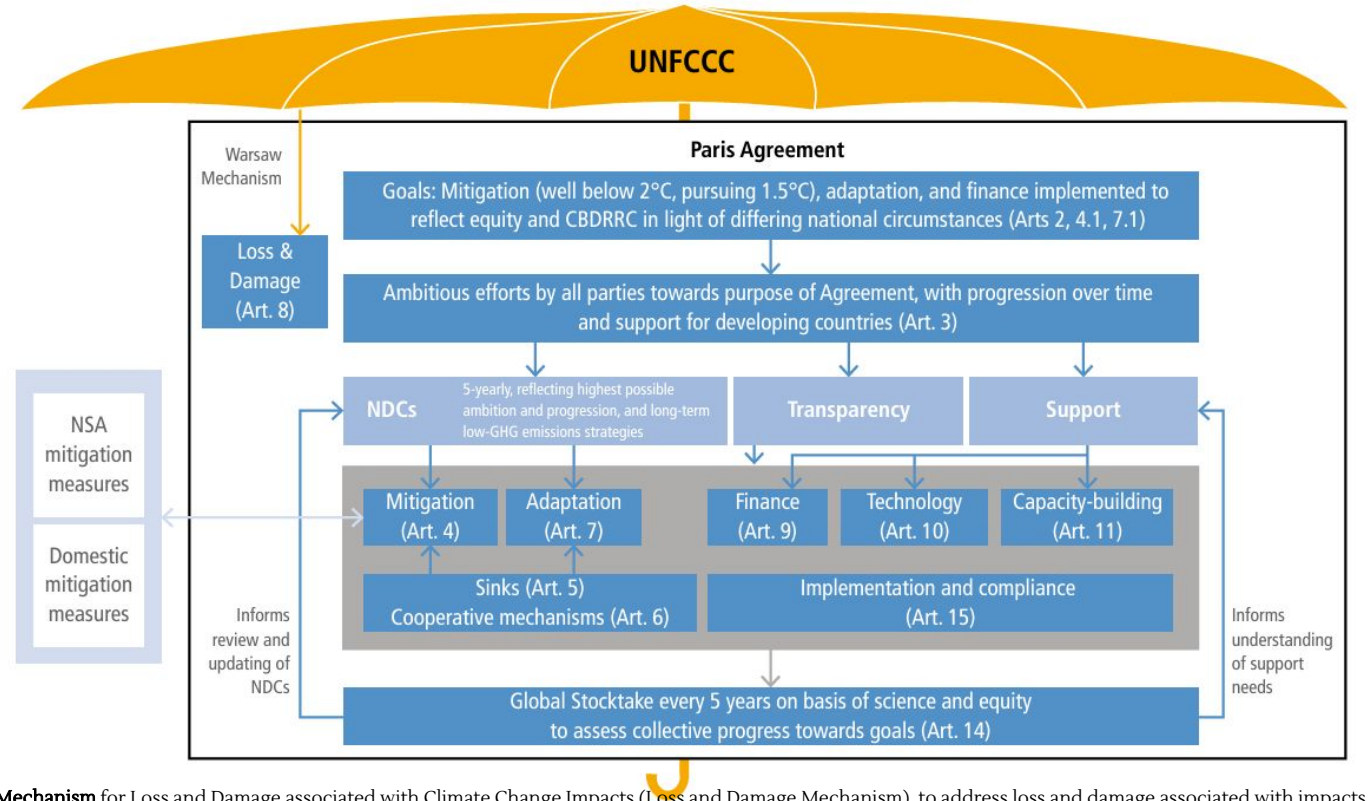
"Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing the efforts to limit the temperature increase to 1.5°C above pre-industrial levels."

- A binding international treaty on climate change
- Adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris (UNFCCC Parties)
- Adopted in 2015 - entered into force in 2016
- Covers climate change mitigation, adaptation, and finance
- On progress



"The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations together to combat climate change and adapt to its effects."

PARIS AGREEMENT (2015)

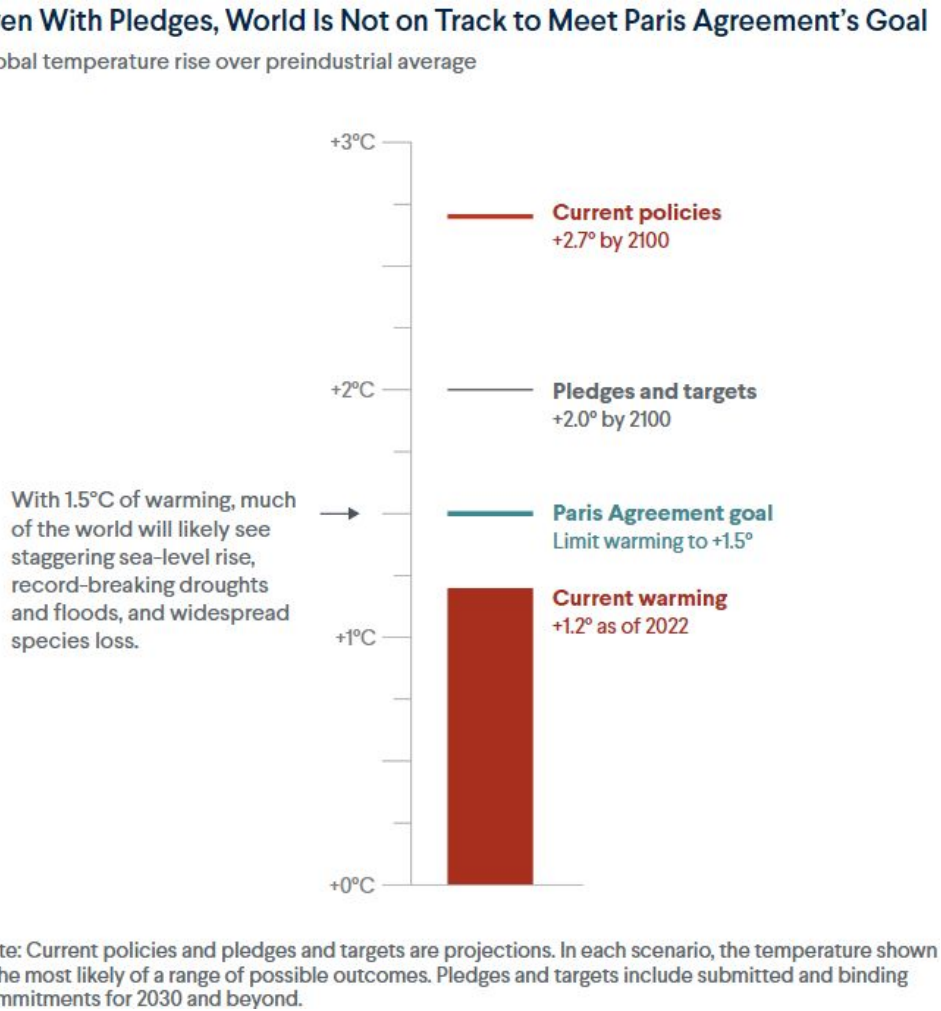


Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (Loss and Damage Mechanism), to address loss and damage associated with impacts of climate change, including extreme events (such as hurricanes, heat waves, etc.) and slow onset events (such as desertification, sea level rise, ocean acidification, etc.) in developing countries that are particularly vulnerable to the adverse effects of climate change at COP19 (2013) in Warsaw, Poland.

PARIS AGREEMENT (2015)

While **current pledges** (nationally determined contributions) under the Paris Agreement are **insufficient** for reaching the set temperature goals, there is a mechanism of increased ambition.

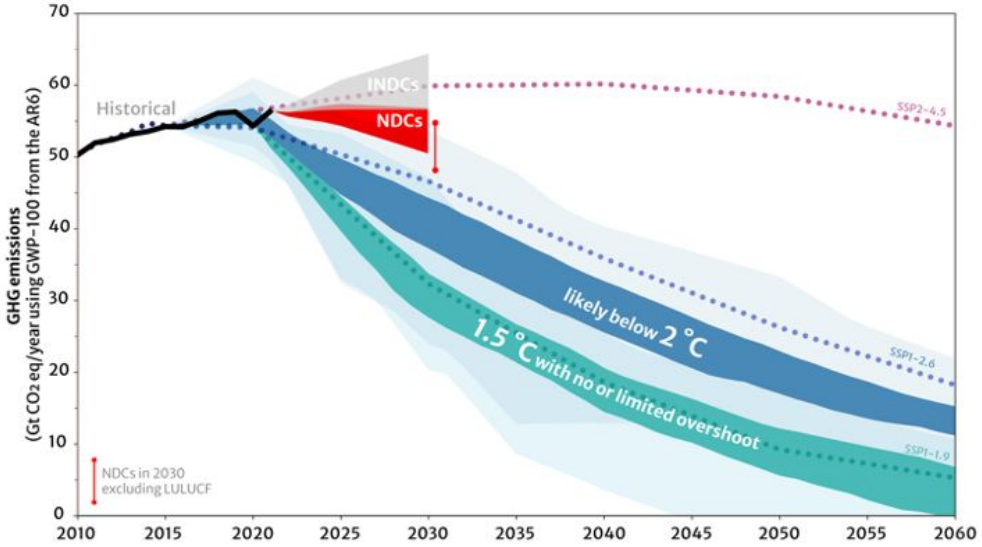
The Paris Agreement has been successfully used in climate litigation **forcing** countries and companies to **strengthen climate action. (still not enough)**

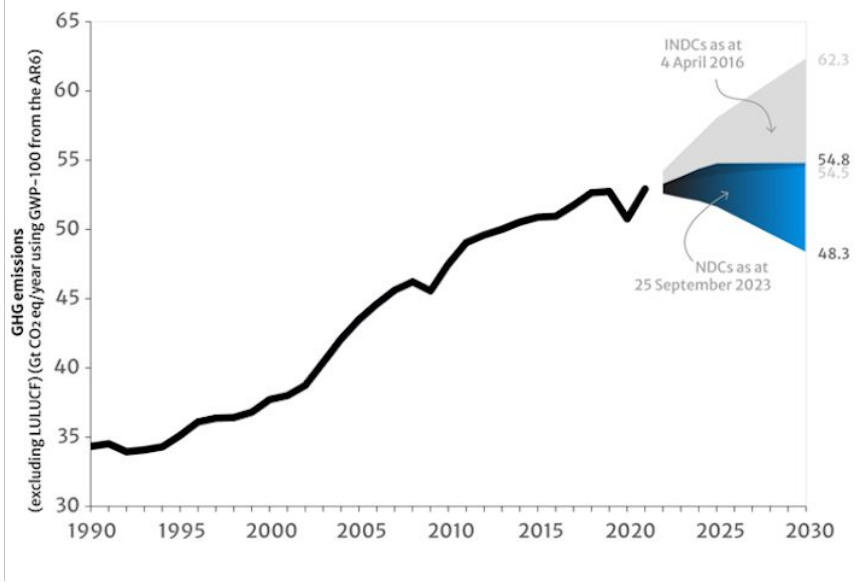


Source: Climate Action Tracker.

PARIS AGREEMENT (2015)

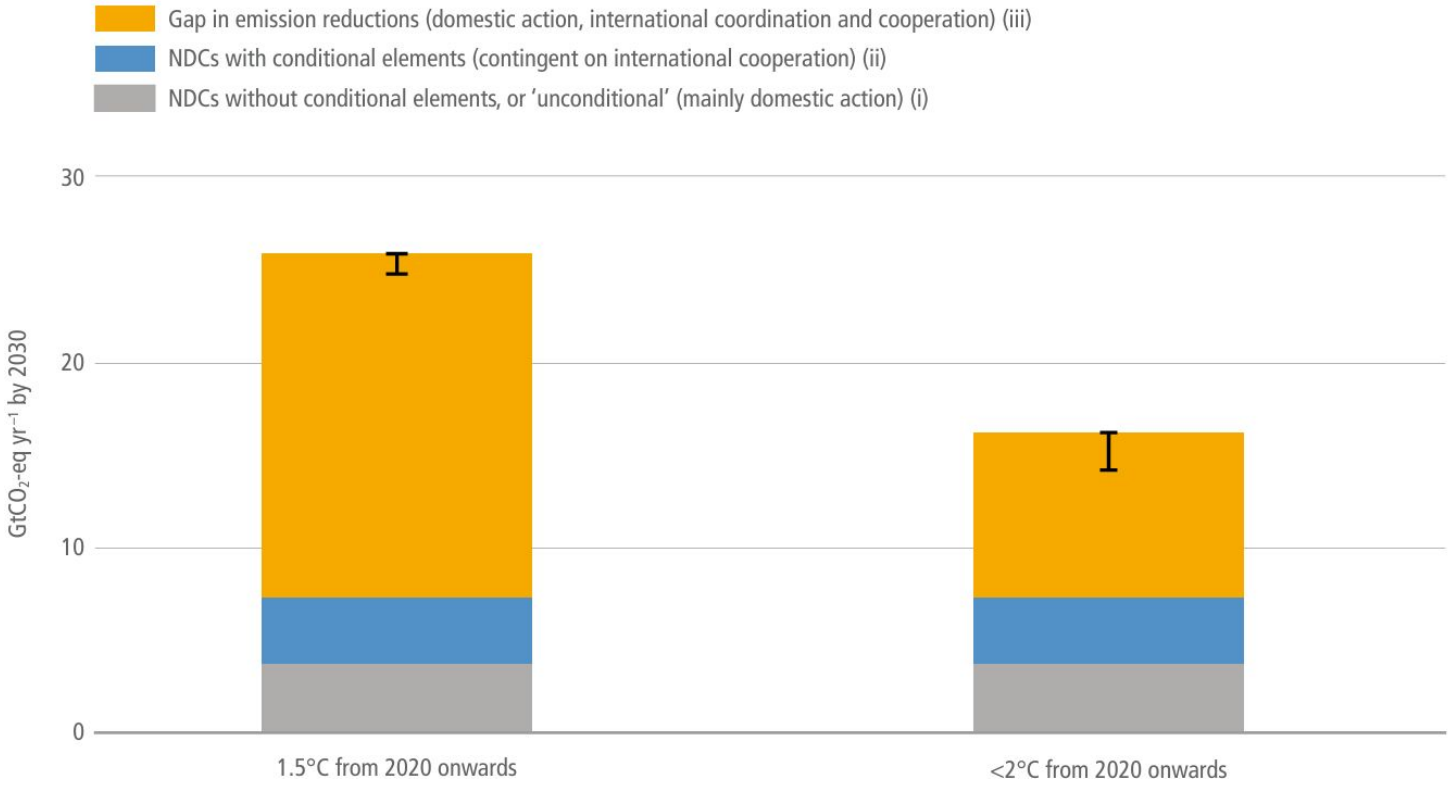
NDCs - Nationally Determined Contribution





PARIS AGREEMENT (2015) *NDCs - Nationally Determined Contribution*

The additional contribution of pledges included in the NDCs over current policies at the global level, and **the remaining gap in emissions reductions needed** to move from current policies to pathways that limit warning. (1.5 degrees and well-below 2 degrees)



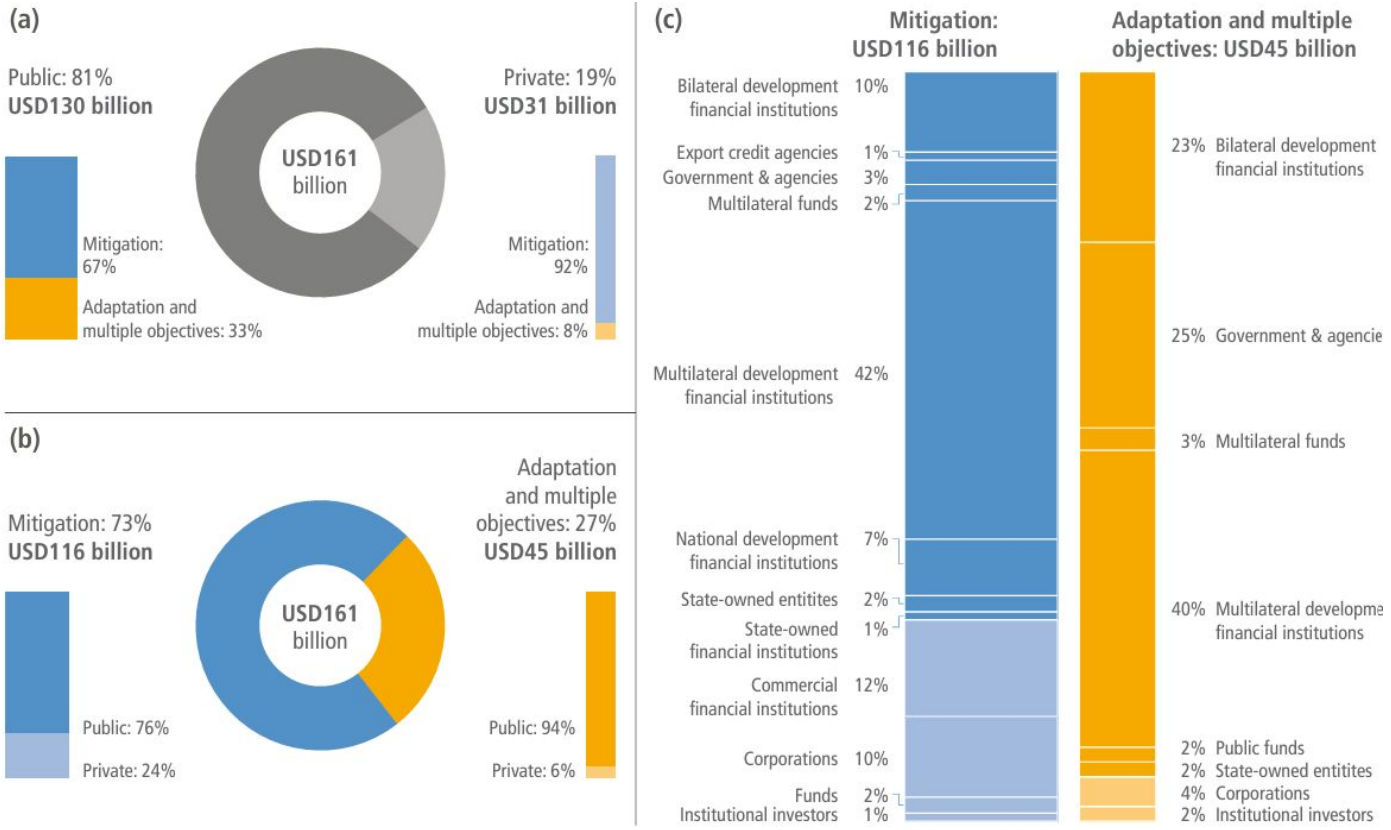
WHAT WAS THE DIFFERENCE?

Feature	UNFCCC	Kyoto Protocol	Paris Agreement
Objective	To stabilise GHGs in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, in a timeframe to protect food security, enable natural ecosystem adaptability and permit economic development in a sustainable manner	Primarily mitigation-focused (although in pursuit of the UNFCCC objective)	Mitigation in line with a long-term temperature goal, adaptation and finance goals, as well as sustainable development and equity (also, in pursuit of the UNFCCC objective)
Architecture	'Framework' agreement with agreement on principles such as 'common but differentiated responsibilities and respective capabilities'), division of countries into Annexes, with different groups of countries with differentiated commitments	Differentiated targets, based on national offers submitted to the multilateral negotiation process, and multilaterally negotiated common metrics	Nationally Determined Contributions subject to transparency, multilateral consideration of progress, common metrics in inventories and accounting
Coverage of mitigation-related commitments	Annex I Parties with a GHG stabilisation goal, all Parties to take policies and measures	UNFCCC Annex I/Kyoto Annex B Parties only	All Parties
Targets	GHG stabilisation goal for Annex I Parties ('quasi target')	Legally-binding, differentiated mitigation targets inscribed in treaty	Non-binding (in terms of results) contributions incorporated in Parties' NDCs, and provisions including those relating to highest possible ambition, progression and 'common but differentiated responsibilities and respective capabilities', in light of different national circumstances
Timetable	Aim to return to 1990 levels of GHGs by 2000	Two commitment periods (2008–2012; 2013–2020)	Initial NDCs for timeframes from 2020 running through to 2025 or 2030 with new or updated NDCs every five years, and encouragement to submit long-term low-GHG emission development strategies
Adaptation	Parties to cooperate in preparing for adaptation to the impacts of climate change	Parties to formulate and implement national adaptation measures, share of proceeds from CDM to fund adaptation	Qualitative global goal on adaptation to enhance adaptative capacity and resilience, and reduce vulnerability, Parties to undertake national adaptation planning and implementation

WHAT WAS THE DIFFERENCE?

Feature	UNFCCC	Kyoto Protocol	Paris Agreement
Loss and Damage	Not covered	Not covered	Cooperation and facilitation to enhance understanding, action and support for loss and damage, including through the Warsaw International Mechanism on Loss and Damage under the UNFCCC
Transparency	National communications from Parties, with differing content and set to differing timeframes for different categories of Parties	Reporting and review – Annex B Parties only	Enhanced transparency framework and five-yearly global stocktake for a collective assessment of progress towards goals – all Parties
Support	Annex II commitments relating to provision of finance, development and transfer of technology to developing countries	Advances UNFCCC Annex II commitments relating to provision of finance, development and transfer of technology to developing countries	Enhances reporting in relation to support, expands the base of donors, and tailors support to the needs and capacities of developing countries
Implementation	National implementation, communication on implementation	Market mechanisms (International Emissions Trading, Joint Implementation, CDM)	Voluntary cooperation on mitigation (through market-based and non-market approaches); encouragement of REDD+ (guidance and rules under negotiation)
Compliance	Multilateral consultative process, never adopted	Compliance committee with facilitative and enforcement branches; sanctions for non-compliance	Committee to promote compliance and facilitate implementation; no sanctions

International Climate Financial Flows (2020)



EU Current Climate Target and Policy

2020

- **20 %** GHG emissions reductions (from 1990 levels)
- **20 %** energy from renewables
- **20 %** improvement in energy efficiency

2030

- at least **50 %** and towards 55 % GHG emissions reductions (from 1990 levels)
- at least **32 %** energy from renewables
- at least **32.5 %** improvement in energy efficiency

2050

- **0** net GHG emissions

The European Green Deal

EU ETS

FIT FOR 55

Source: Special Report 18/2020 - Emissions Trading System: targeting free allocation of allowances Picture source: Applia PL, sustainableship.org

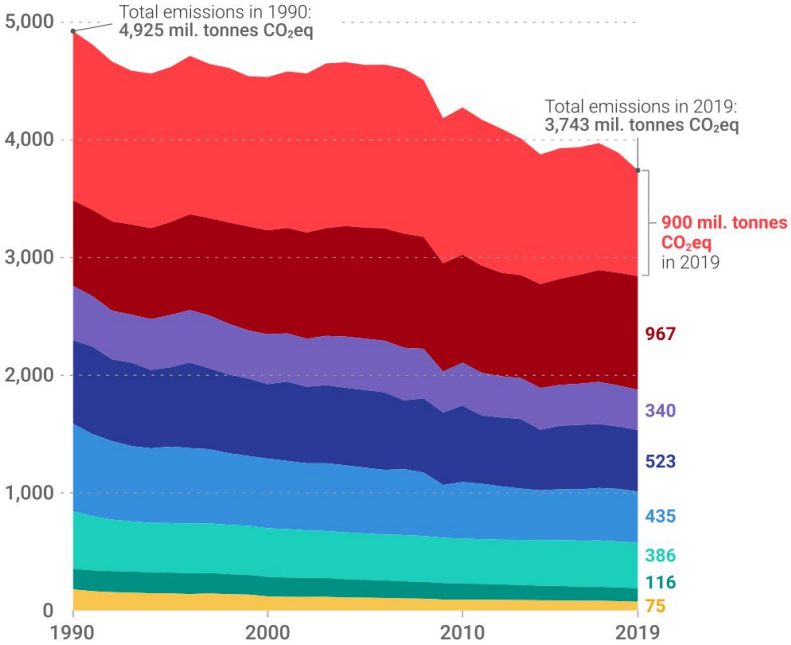
EU EMISSIONS IN 1990–2019

Fakta o klimatu

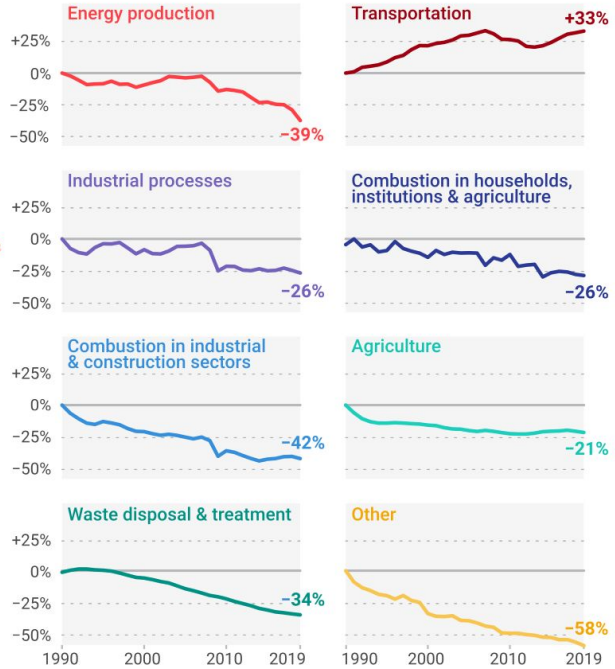
The EU* emissions **have dropped by 24% since 1990**. Only emissions from transportation are rising.

Energy production | Transportation | Industrial processes | Combustion in households, institutions & agriculture | Combustion in industry & construction sector | Agriculture | Waste disposal & treatment | Other

TOTAL EMISSIONS TREND IN 1990–2019



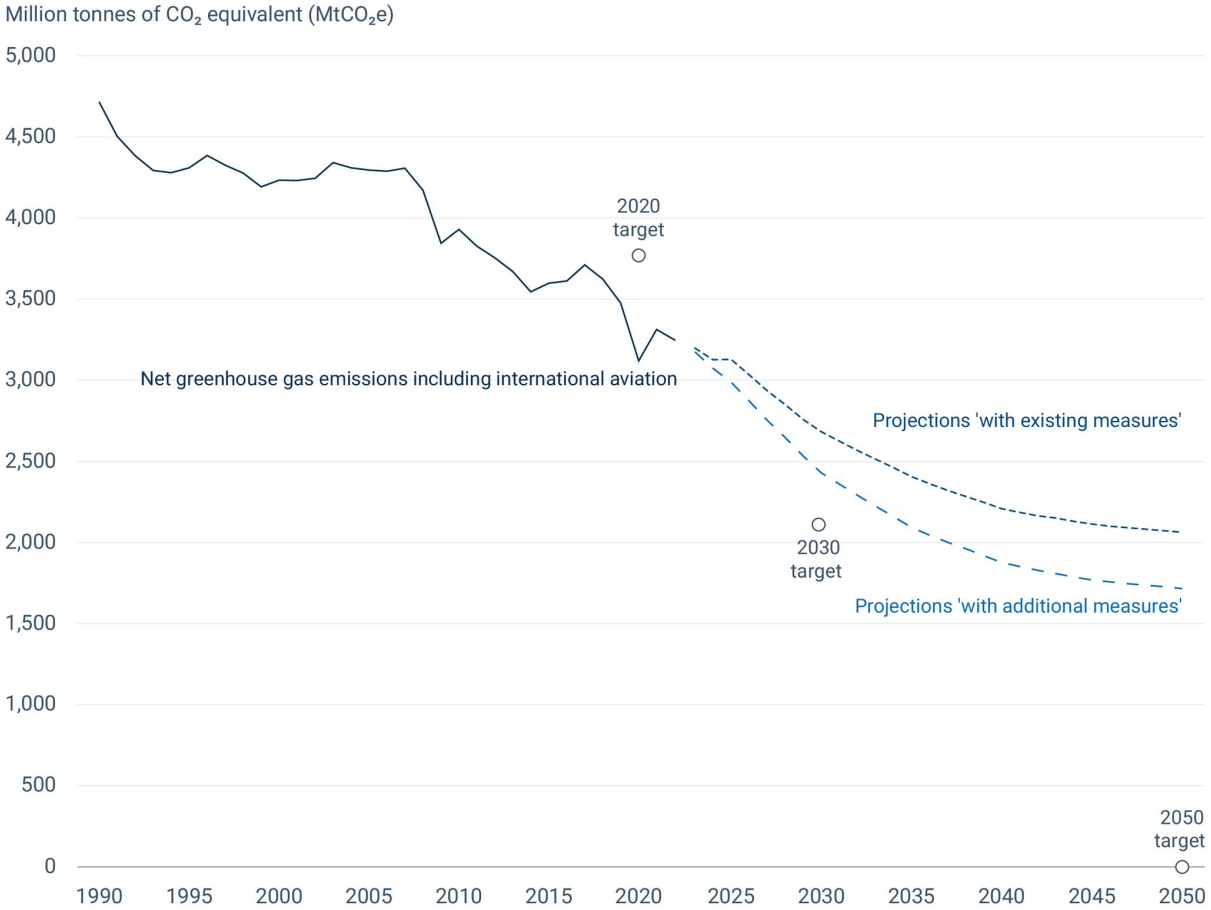
EMISSIONS TRENDS PER SECTOR (AS COMPARED TO 1990)



Read more at **factsonclimate.org**/emissions-eu-trends

* These are emissions of the EU-27, i.e. countries which were in the EU in 2021.

Data source: Eurostat



Source:European Environment Agency
https://www.eea.europa.eu/en/analysis/indicators/total-greenhouse-gas-emission-trends?activeAccordion=546a7c35-9188-4d23-94ee-005d97c26f2b

Climate ambition	Energy	Industry	Transportation	Agriculture and Food	Environment	Finance	Global Leader
Climate neutrality by 2050	Renovation Wave	Industrial Strategy	Sustainable and Smart Mobility Strategy	Recommendations on CAP National Strategic Plant	Biodiversity Strategy	Just Transition Mechanism	Green Deal Diplomacy
European Climate Pact	Offshore Renewable energy strategy	New Circular Economy Action Plan	Funding for Public Recharging and Refueling Points	Farm to Fork Strategy	8th Environmental Action Plan	Green Deal Investment Plan	EU-US Transatlantic Agenda for Global Change
Less than 55% emission by 2030	Review of the TEN-E Regulation	European Bauhaus	Stricter Air Pollution Standards for Combustion Engines	Carbon Farming	Sustainable Chemicals Strategy	Taxonomy	
Climate Change Adaptation Strategy	Methane Strategy	Carbon Border Adjustment	Alternative Fuels Infrastructure and TEN-T Revisions	Biological Pesticides Regulation	Sustainable Batteries Regulation	Revised Energy Taxation Directive	
Fit for 55	Hydrogen Strategy	Zero Carbon Steel Making	Increased Capacity for Railways and Inland Waterways	Organic Farming Action	Sustainable Product Policy initiative	Sustainable Finance Strategy	
	Action Plan on Critical Raw Materials				Zero Pollution Action Plan		
					EU Forest Strategy		
					Blue Economy Strategy		

The European Green Deal

Chart recreating from The “Greening” of Empire: The European Green Deal as the EU first agenda,Political Geography, V 105, 2023,102925, ISSN 0962-6298

Central component of the EU's efforts to reduce GHG emissions from major industries.

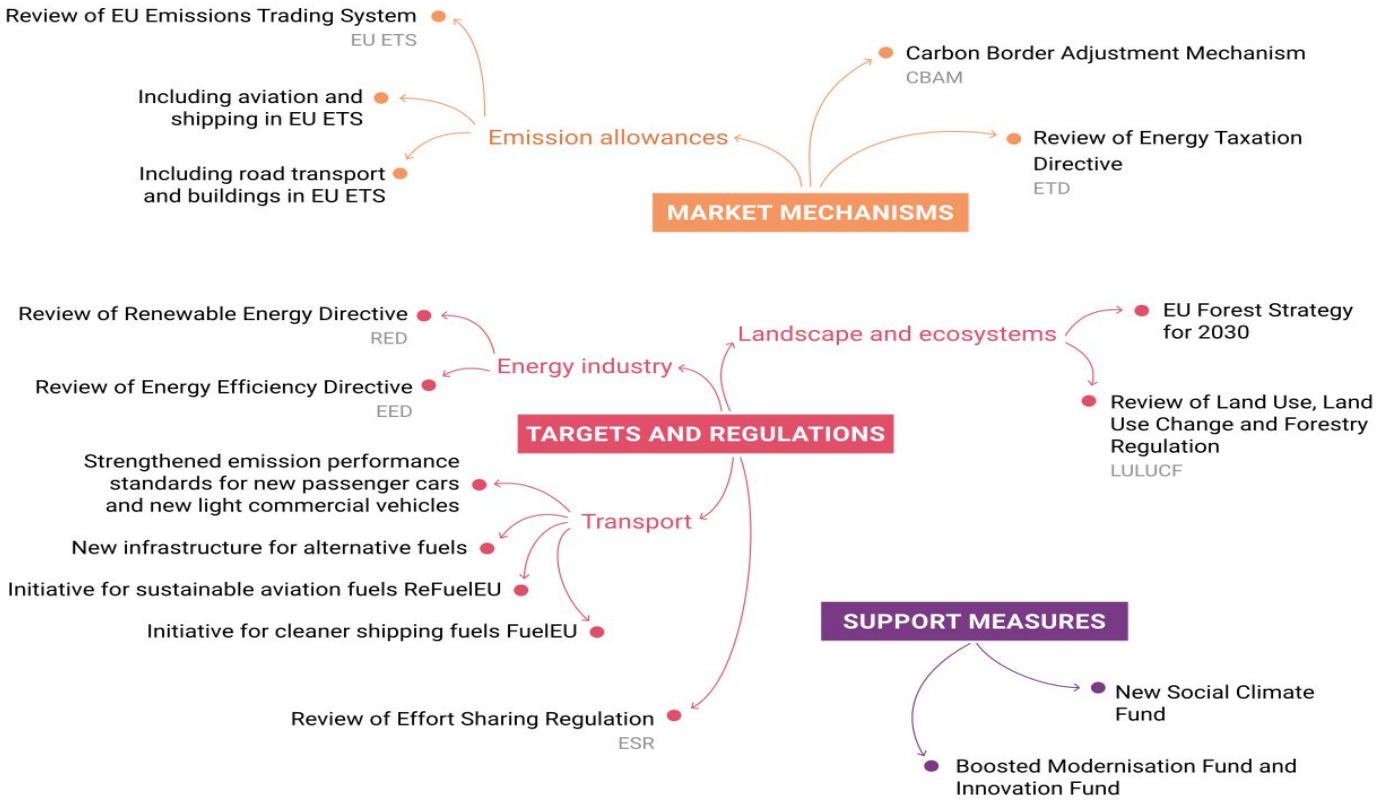
Cap-and-trade system

Allocation and Auctioning:
Free allocation by government authorities or sold through auctions.

Phase I (2005-2007)	PHASE II (2008-2012)	PHASE III (2013-2020)	FIT FOR 55' PACKAGE (2021 AND BEYOND)
Focus on the power sector and energy-intensive industries.	**Introduction of emission allowance auctioning.**	**Expand coverage to include aviation and more sectors.**	**Significant revisions to EU ETS, including new sectors.**
Challenges due to over allocation of allowances, drop in carbon prices.	**Improved market efficiency, tighter overall cap, expanded sector coverage.**	Introduction of Market Stability Reserve in 2015, further emissions reductions.	Extension to shipping, separate system for road transport and buildings.

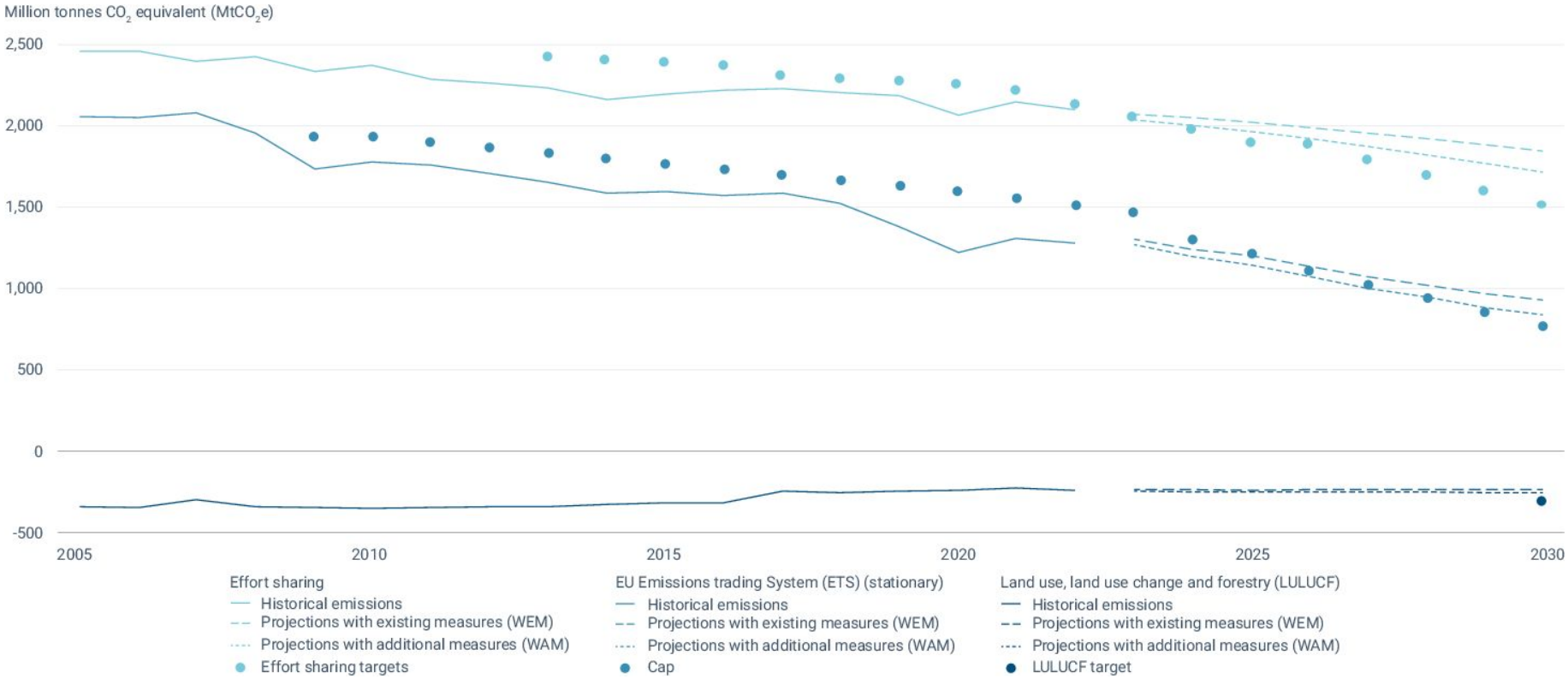
Fit for 55 is a package of **legislation proposals** designed by the European Commission to cut the EU's net greenhouse gas emissions by 55% below 1990 levels by 2030.

Fakta o klimatu



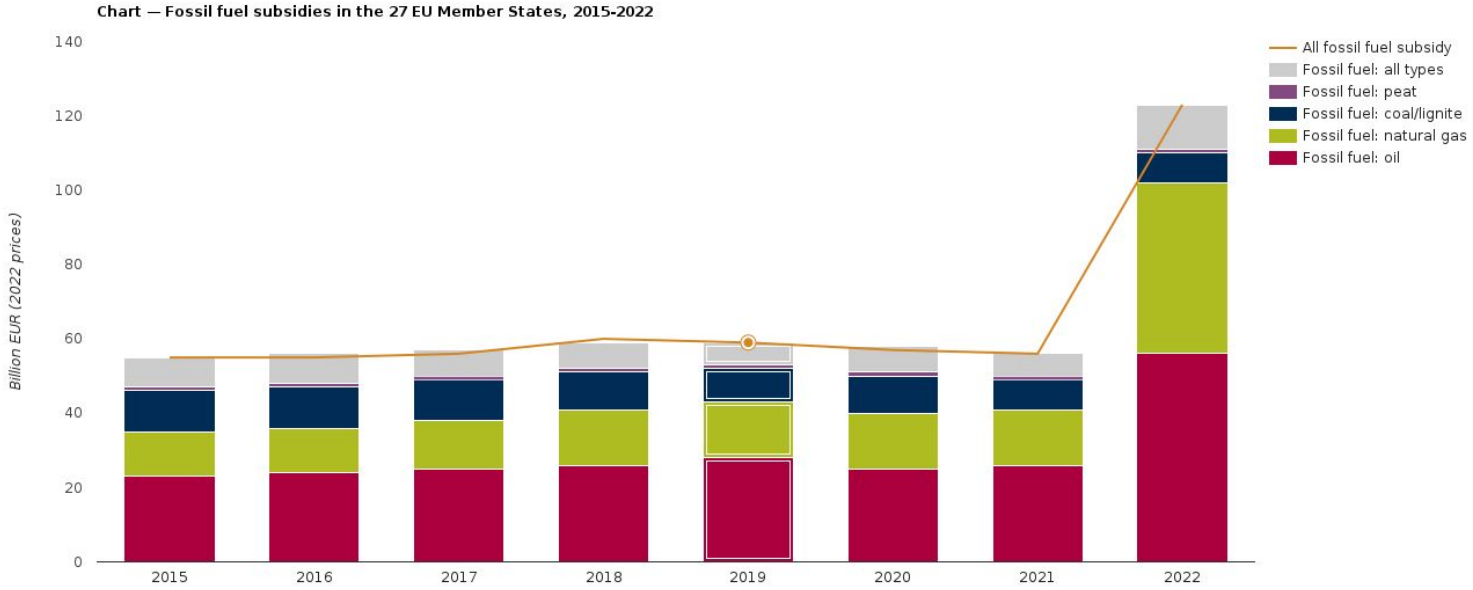
Data source: European Comission

EU ETS



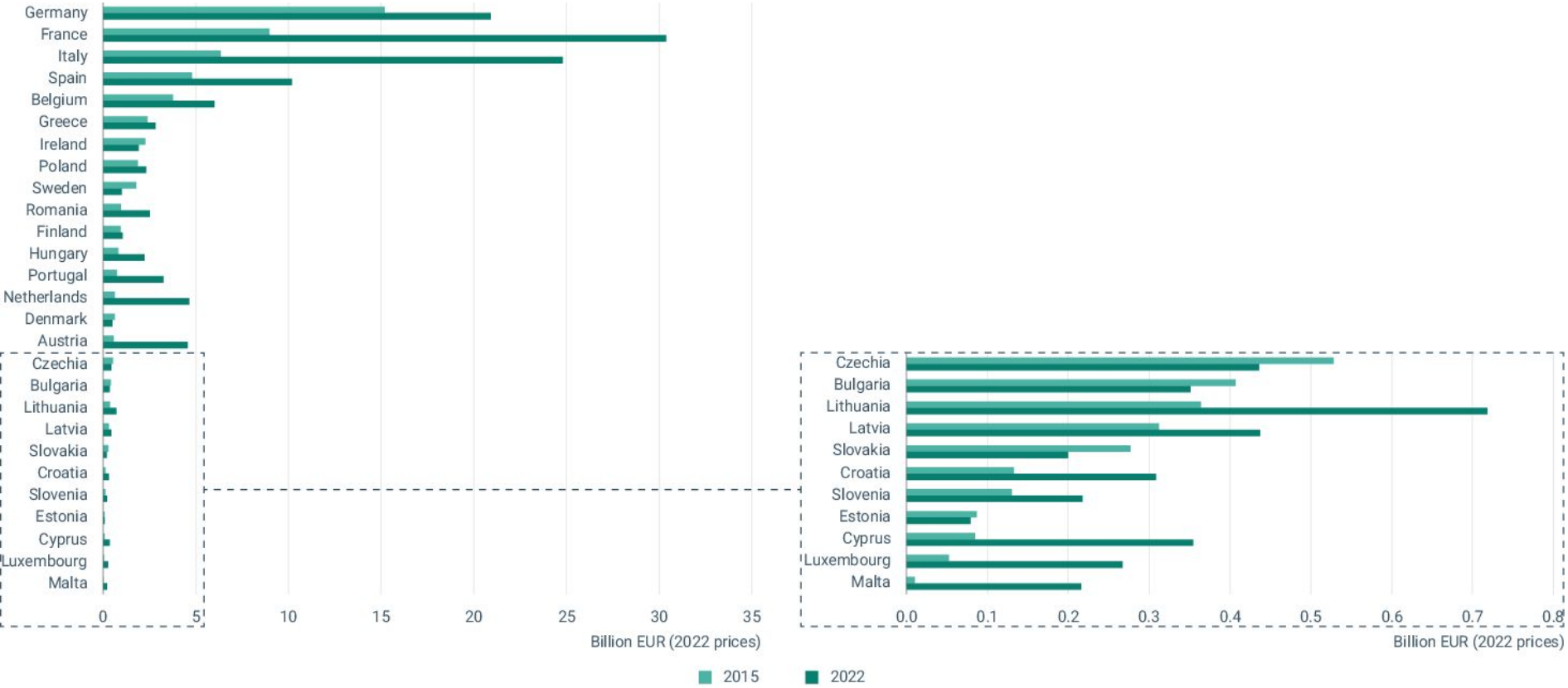
Source:European Environment Agency https://www.eea.europa.eu/data-and-maps/figures/eu-27-effort-sharing-ets-3

Fossil fuel subsidies in the 27 EU Member States, 2015-2022



Source:European Environment Agency
https://www.eea.europa.eu/en/analysis/indicators/fossil-fuel-subsidies#:~:text=The%20EU's%20Eighth%20Environment%20Action,EUR%20123%20billion%20in%202022.

Fossil fuel subsidies in EU Member States, 2015 and 2022 (in 2022 prices)



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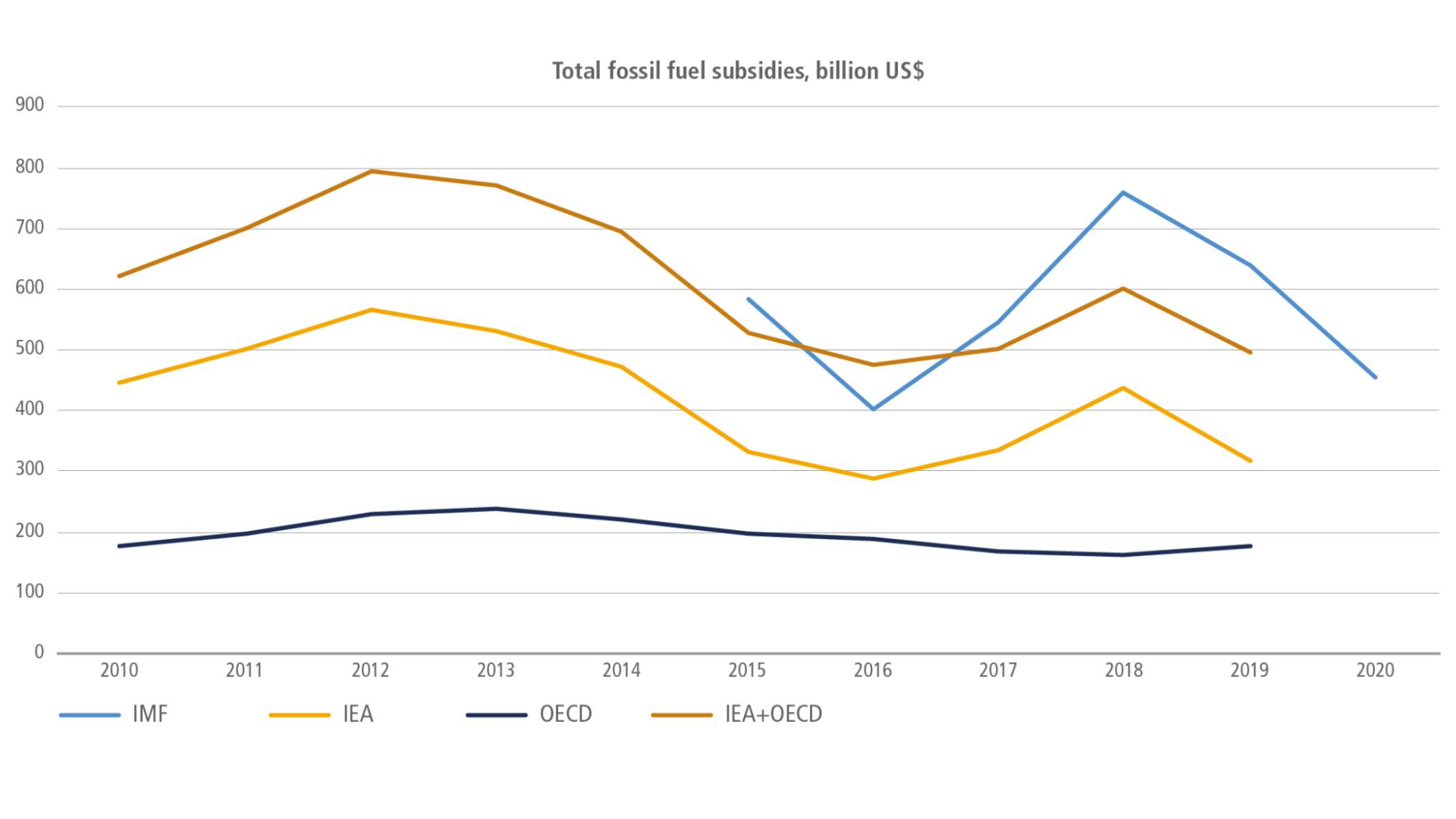

Total fossil fuel subsidies, billion US$
900
800
700
600
500
400
300
200
100
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
IMF
IEA
OECD
IEA+OECD

COAL PHASE-OUT IN THE EU COUNTRIES

Fakta o klimatu

Coal plants produce 1/4 of world's CO_2 emissions. The EU countries plan to **replace coal by cleaner sources of energy.** We compare their plans to their **electricity production from coal.**

■ Offical phase-out discussion missing ■ Date announced ■ Phase-out finished ■ Negligible coal capacity

PER CAPITA ELECTRICITY PRODUCTION FROM COAL IN 2019

DATE FOR COAL PHASE-OUT

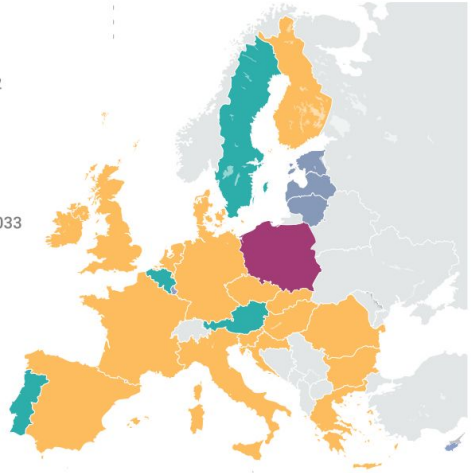
			Cyprus	
			Lithuania	
			Latvia	
			Luxembourg	
			Malta	
			Estonia	
43%	3,452	Czechia	2033	
74%	3,152	Poland		
42%	2,554	Bulgaria	2038–2040	
28%	2,166	Slovenia	2033	
28%	2,066	Germany	2030	
24%	1,177	Greece	2025	
14%	955	Netherlands	2029	
7%	847	Finland	2029	
15%	793	Denmark	2028	
22%	690	Romania	2032	
12%	607	Portugal	2021	
14%	467	Hungary	2025	
8%	429	Slovakia	2023	
7%	424	Ireland	2025	
11%	378	Croatia	2033	
6%	336	Italy	2025	
5%	304	Spain	2030	
2%	279	Austria	2020	
2%	181	United Kingdom	2024	
<1%	61	France	2022	
<1%	32	Sweden	2020	
<0,1%	8	Belgium	2016	

3,000 2,000 1,000 kWh/cap.

2020 2030 2040

EU average

Share of coal in the national energy mix



* In 2019, the UK was still an EU member

Read more at **factsonclimate.org**/coal-phase-out-eu

Data source: Ember, Europe Beyond Coal, United Nations