



From Kyoto to Paris and Glasgow: overview of international climate agreements and regimes, and the role on energy efficiency and sufficiency

Paolo Bertoldi

European Commission, Joint Research Centre

The Kyoto Protocol

The UNFCCC and COP

- In **1990**, the **IPCC's 1st Assessment Report** highlighted the impact of climate change and the need to have an international coordinated response.
- The United Nations in **1992** established the **United Nations Framework Convention on Climate Change (UNFCC)** and the **Conferences of the Parties (COPs)**.
- The UNFCCC objective is to stabilize the concentration of GHG in the atmosphere "*at a level that would prevent dangerous anthropogenic interference with the climate system.*"
- UNFCC recognizes that the fight against climate change must be couple with sustainable social and economic development the role of greater energy efficiency for controlling greenhouse gas emissions.

The Kyoto Protocol - 1

- The **1997 Kyoto Protocol** (KP) was an important step in international climate policy, some researchers see it as a failure other as a success.
- The KP is based on the principle of "**Common but Differentiated Responsibilities**": it put the obligation to reduce current emissions on **developed countries** (Annex I) on the basis of their historical emissions. Annex I countries had binding GHG emissions reduction targets for 2008 and 2012.
- Developing countries including large emitters such as China, India, Brazil, Korea did not have binding reduction commitments.
- Climate legally binding international agreements would not only ensure implementation by the contracting parties, but also ensure that others parties will act too, enhancing fairness of multilateralism (Winkler and Beaumont 2010).

The Kyoto Protocol - 3

- The KP introduced the flexible mechanisms: International Emissions Trading (IET); Clean Development Mechanism (CDM), and Joint Implementation (JI). The emission reductions generated by the CDM and JI mechanisms could be used by Annex I countries.
- CDM was designed to foster clean energy projects in developing countries.
- CDM projects were implemented for end-use energy efficiency projects, mainly in industry and in a smaller number in buildings, appliances and lighting

The Kyoto Protocol - 2

The Kyoto Protocol highlights the role of energy efficiency in Article 2:

*"Each Party included in Annex I, in achieving its quantified emission limitation and reduction commitments under Article 3, in order to promote sustainable development, shall: (a) Implement and/or further elaborate policies and measures in accordance with its national circumstances, such as: (i) **Enhancement of energy efficiency** in relevant sectors of the national economy".*

From Kyoto to Paris

The Bali Action Plan

- The factors that limited the impact of the KP resulted in a completely different approach of **not binding commitments** in the Copenhagen Accord, the Cancun Agreements, and the Paris Agreement.
- The Bali process, and in particular the **Bali Action Plan**, initiated a more cooperative process between Annex I and other countries based on a **bottom up** approach.
- As part of the Bali Action Plan, developing countries were requested to prepare and submit **Nationally Appropriate Mitigation Actions** (NAMAs) in the context of sustainable development. This was part of the Copenhagen Accord.

The Cancun Agreement

- The Cancun Agreement in 2010 recognised the importance **of setting global targets for maximum temperature increase** (e.g. 2°C), engaging all countries to contribute to the common target based on differentiated responsibilities; and establishing transparent mechanisms for accounting and monitoring emission reductions.
- At COP 17 in Durban (2011) it was decided to ask countries to prepare **Intended National Determined Contribution (INDC)** and submit them to the UNFCCC before the COP 21 in Paris. The INDC contains the national determined targets, plans and measures.

The Paris Agreement

The Paris Agreement - 1

- The Paris Agreement (PA) aims at reinforcing the global response to climate change, by limiting the increase of global average temperature to *"well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to **1.5°C above pre-industrial levels**"* with the *"aim to reach **global peaking** of greenhouse gas emissions **as soon as possible**"* and *"achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century"*

The Paris Agreement - 2

- The PA departs from the **top-down approach** of the Kyoto Protocol; instead of **establishing mandatory GHG reduction limits** to Annex I countries, it adopts a **bottom up approach** in line with the Cancun Agreement in which each country determines its contribution to reach the global target.
- The countries' NDCs shall be revised with the view of increasing the ambition every 5 years following a global stocktaking mechanism established by the UNFCCC.

The Paris Agreement - 4



The Paris Agreement - 3

- Revised NDCs must be more ambitious than the previous one and be based on the principles of 'highest possible ambition' as well as 'common but differentiated responsibilities and respective capabilities, in the light of different national circumstances'.
- The targets set by the individual countries are not binding and there is no way to "force" a country to set any target.
- On 12 October 2021 (UNFCCC NDCs Registry) there were **165 latest available NDCs**, representing all 192 Parties to the Paris Agreement, including the 116 new or updated NDCs communicated by 143 Parties.
- See <https://climateactiontracker.org/climate-target-update-tracker/>

The Paris Agreement - 5

- One of the key questions is whether under the PA framework, countries will **make their best efforts in domestically reducing** their emissions and contribute to the global emissions targets, or whether **countries will adopt a wait and see approach**, hoping that other parties increase their efforts. This is similar to the prisoner dilemma.
- Although the PA is a new bottom up and cooperative approach, the KP's discussions and **tensions between developed and developing countries**, which led to its ultimate failure, are still there, with the developed countries responsible for historical emissions and the developing countries claiming their right to economic development leading to increased emissions.
- As a solutions, in recent IPCC reports, **SDG compatible pathways** have been identified to overcome this dilemma.

The Glasgow Climate Pact

The Glasgow Climate Pact - 1

- Another important milestone was reached at **COP 26** in December 2021 in Glasgow whereby the 197 participating countries agreed on the **Glasgow Climate Pact**.
- The Glasgow Climate Pact consists of a range of agreed items, including strengthened efforts to build resilience to climate change, to reduce global greenhouse gas emissions and to increase the necessary finance for both adaptation and mitigation.
- The Glasgow Climate Pact is a **last call to keep the option to keep 1.5°C alive**, with temperature increase already above 1.1°C.
- The Glasgow Climate clearly indicates that *“to limiting global warming to 1.5°C requires **rapid, deep and sustained reductions** in global greenhouse gas emissions, including global carbon dioxide by **45 per cent by 2030 relative to the 2010 level** and to net zero around mid-century, as well as deep reductions in other greenhouse gases”..*

The Glasgow Climate Pact - 2

- In order to reduce the emission gap countries collectively agreed to continue their **best efforts** with urgency in order to **reduce the gap between existing emission reduction plans as in the current NDCs**, leading to a temperature increase by the end of the century well above 2°C, and what 1.5°C compatible pathways would require in terms of emission reductions.
- This translated in a **call to submit the next round of more ambitious NDCs in 2022**, instead of 2025.
- For the first time the discussions and negotiations on phasing **out coal fired power** took place, with the final agreement on “**phasing down**” coal use and to “phase out inefficient subsidies” for fossil fuels.

The Glasgow Climate Pact - 3

- At COP 26 the **PA's rulebook was finalised**. This covers the rules for market mechanisms and non-market approaches (Article 6 of the PA), fostering more investments in clean technologies in particular in developing countries.
- The **Enhanced Transparency Framework** was adopted allowing agreed formats for reporting of climate actions and progresses and ultimately creating better confidence of country contributions.
- **Loss and Damage** is enshrined in the PA (Article 8), at COP26 the Glasgow Dialogue on Loss and Damages funding was created.
- Developed countries confirmed their commitment to honour their pledge of providing **100 billion US\$ annually to developing countries** by 2023. This should have been in place since 2020.

Where we stand now?

Where we stand today? - 1

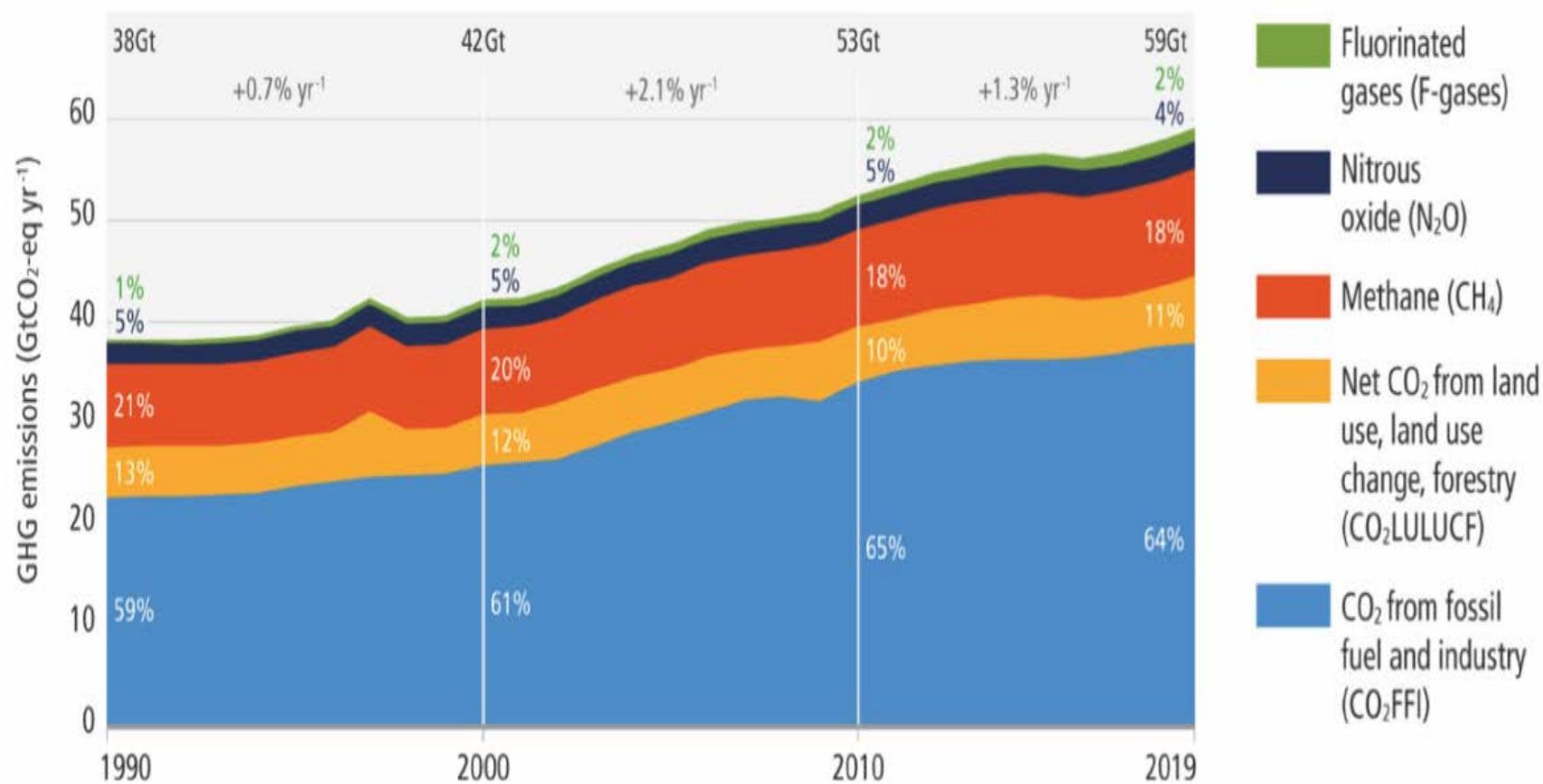


Figure 1: Global net anthropogenic GHG emissions (Source: IPCC AR 6 WG III)

Where we stand today? - 2

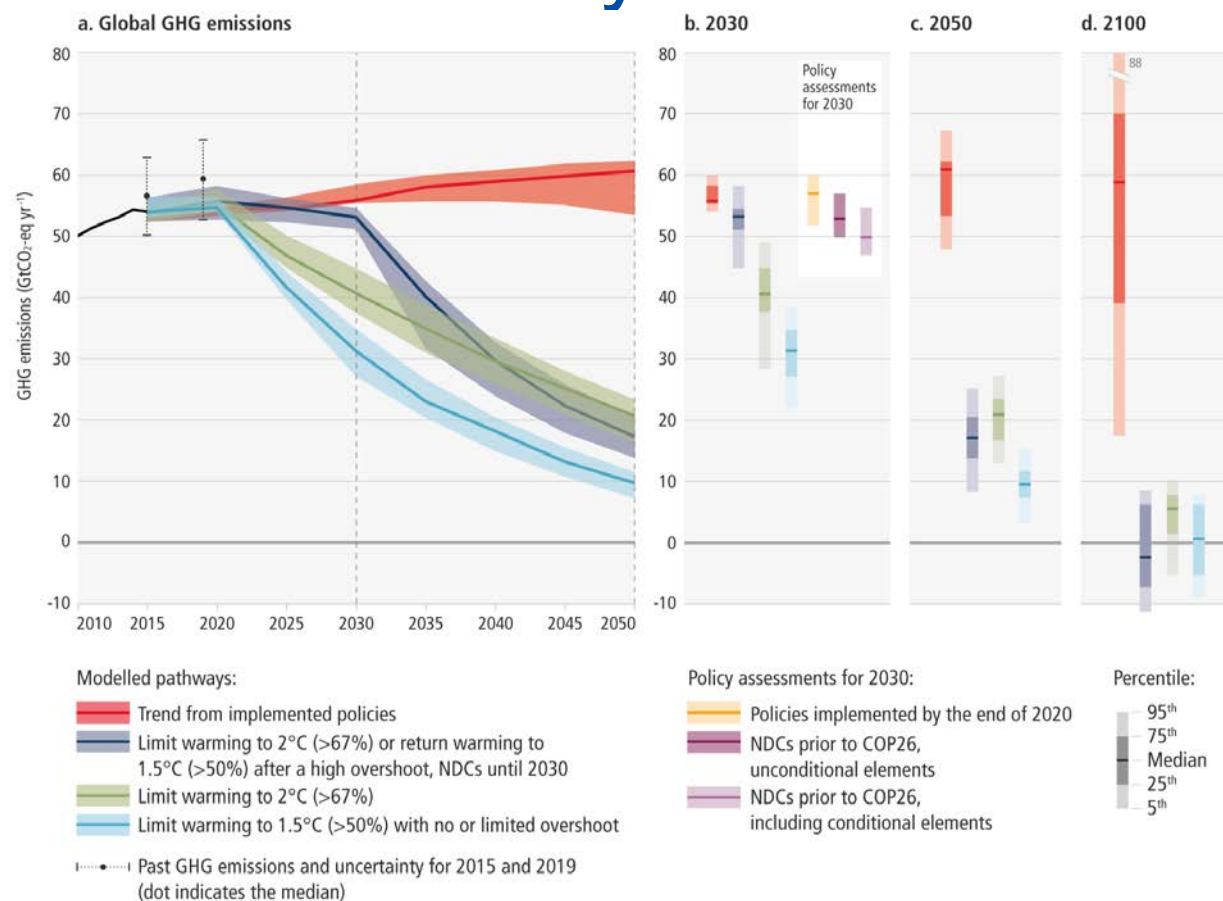


Figure 2 Comparison of global emissions under scenarios assessed in the IPCC AR 6 WG III with total global emissions according to nationally determined contributions (Source IPCC AR 6 WG III)

Energy Efficiency in NDCs

Energy Efficiency in NDCs - 1

Energy Efficiency policies and measures are part of the national climate strategies and are **included in many countries NDCs**. The 2021 Synthesis Report prepared by the UNFCCC Secretariat in September 2021 indicated that **energy efficiency measures were second after renewable energy measures**, with energy efficiency seen as the key area of action to reduce energy demand in the different sectors (and in particular **in building, where it is the first decarbonisation option**).

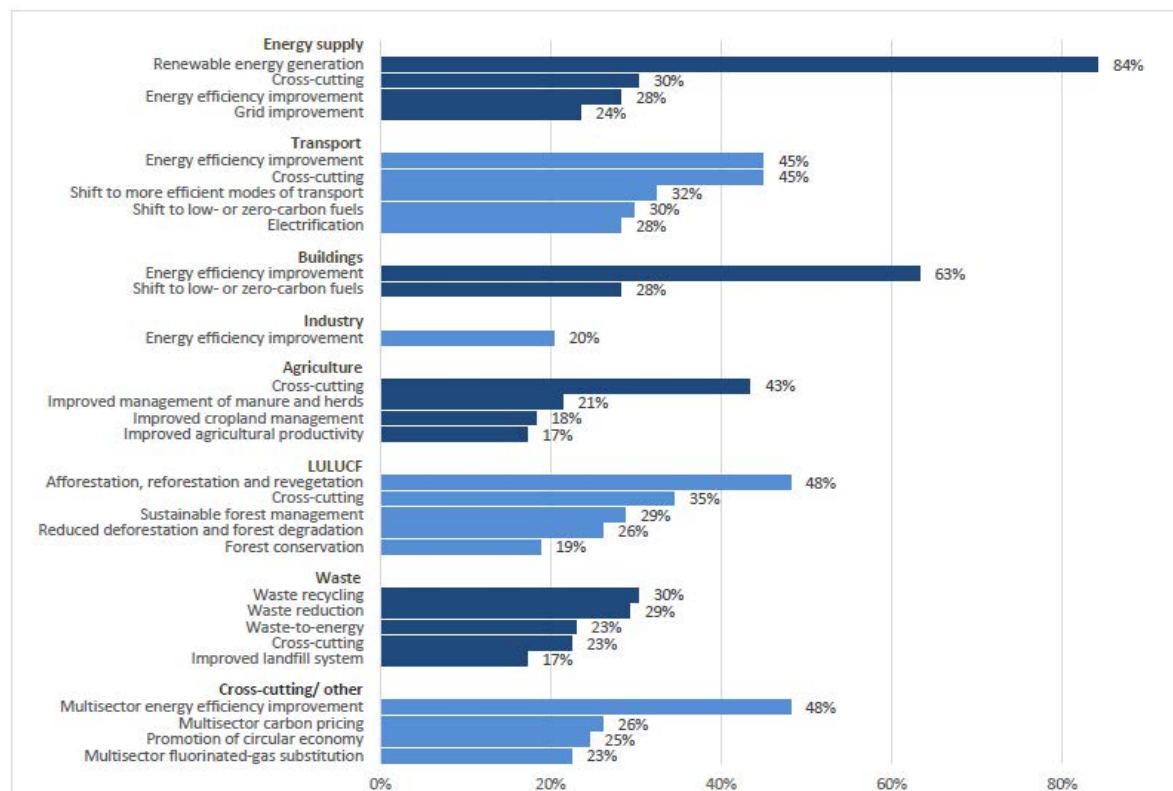


Figure 3 Share of Parties referring to the frequently indicated mitigation options in nationally determined contributions (source UNFCCC 2021)

Energy Efficiency in NEEAPs - 1

In the NDCs several countries provided information on measures for raising public awareness, such as developing communication strategies, disseminating knowledge through traditional and new media, and implementing awareness-raising campaigns for specific sectors including energy efficiency. **NDCs reports on measures for improving energy efficiency in particular through regulatory measures, pricing signals and technology deployment in the industry and buildings sectors.**

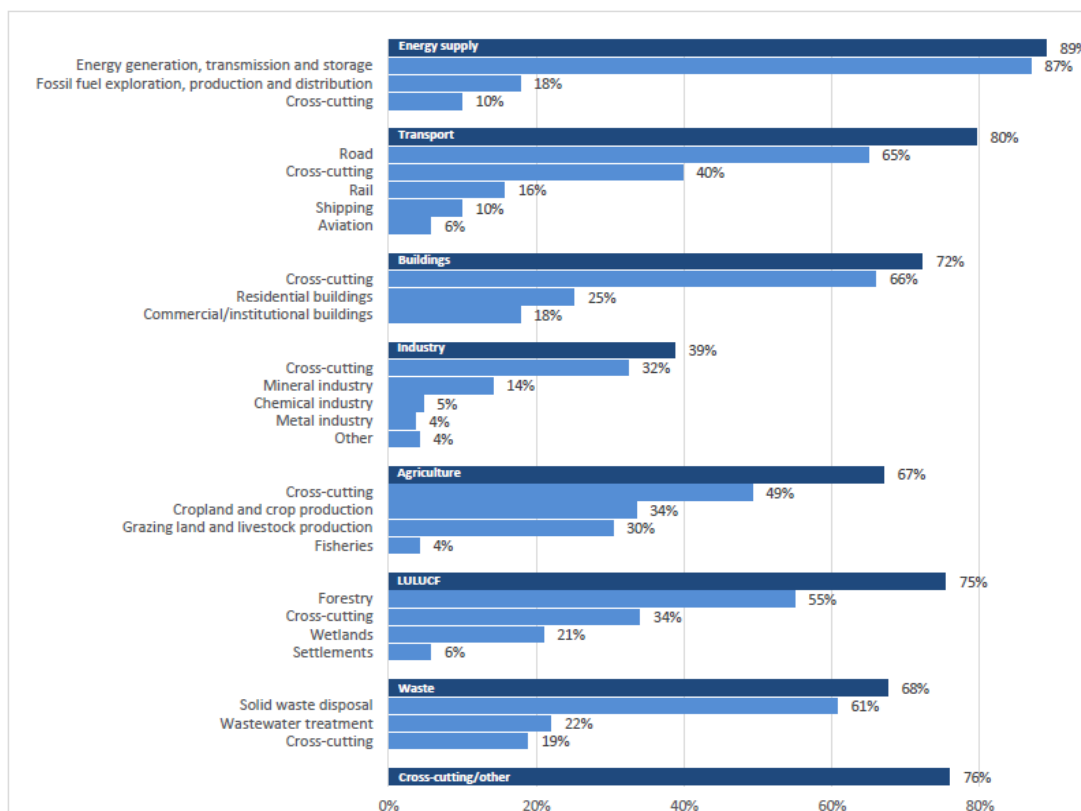
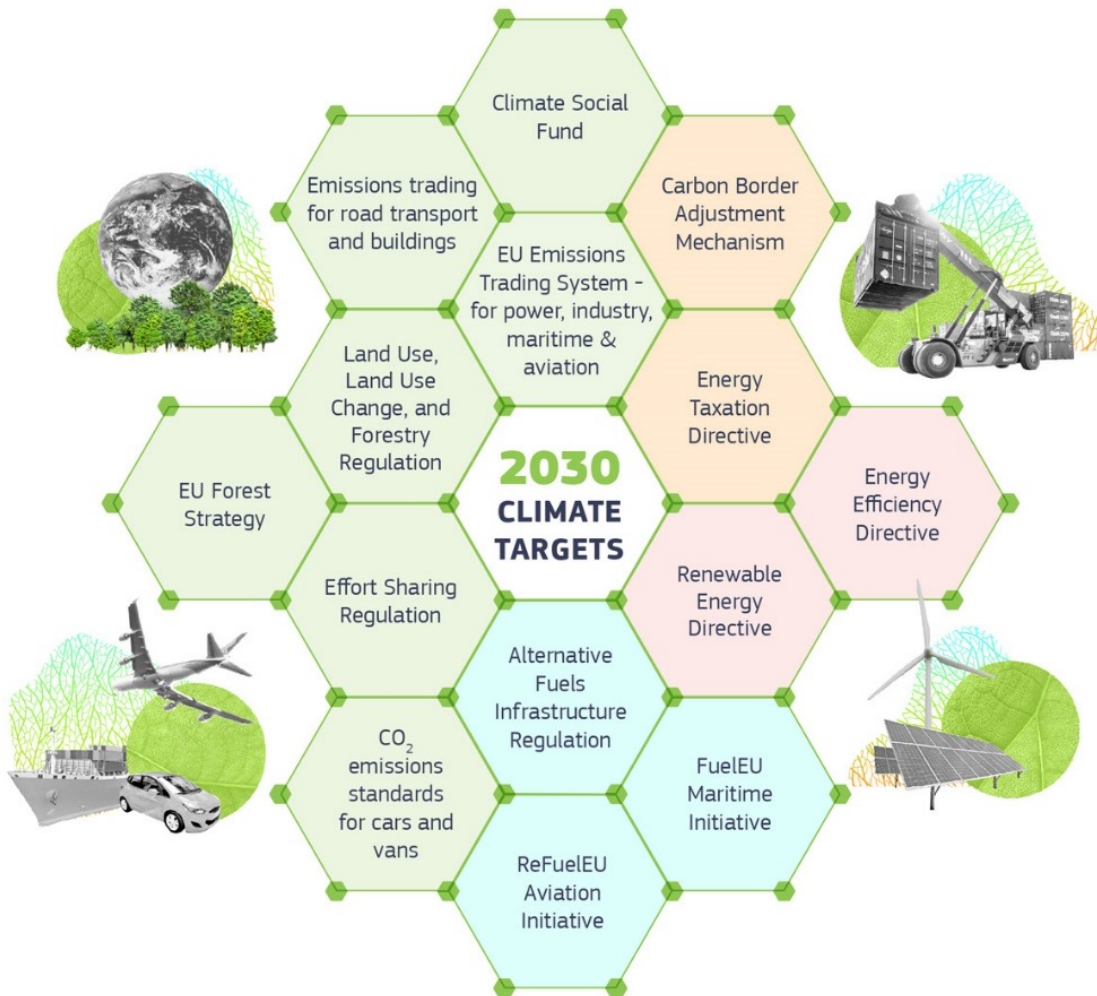


Figure 4 Share of Parties referring to specific priority areas and sub-areas for domestic mitigation measures in nationally determined contributions (source UNFCCC 2021)

The EU Climate Targets

The Fit for 55 Package – Overview



The package aims to make the EU **'fit for 55'** and **deliver the transformational change** needed in a

- **fair,**
- **cost-efficient and**
- **competitive way.**

It **cements the EU's global leadership** by action and by example in the **fight against climate change**

EU Policy mix at a glance

| Pricing | Targets | Rules |
|--|---|--|
| <ul style="list-style-type: none">• Stronger ETS including in aviation• Extending the ETS to maritime, road transport, and buildings• Updated Energy Taxation Directive• Carbon Border Adjustment Mechanism | <ul style="list-style-type: none">• Updated Effort Sharing Regulation• Updated LULUCF Regulation• Updated Renewable Energy Directive• Updated Energy Efficiency Directive and EPBD | <ul style="list-style-type: none">• Stricter CO₂ performance for cars & vans• New infrastructure for alternative fuels• ReFuelEU: More sustainable aviation fuels• FuelEU: Cleaner maritime fuels |
| Support measures | | |
| Using revenues and regulations to promote innovation, build solidarity and mitigate impacts for the vulnerable, notably through the new Social Climate Fund and enhanced Modernisation and Innovation Funds | | |

The Fit for 55 Package consists of a set of **inter-connected proposals that strike a careful balance** between pricing, targets, standards and support measures.

EU Climate and Energy Governance

- The **Regulation on the Governance of the Energy Union** sets common rules for **planning, reporting and monitoring**. The Regulation also ensures that EU planning and reporting are synchronised with the ambition cycles under the PA.
- Member States had to submit their 2021-2030 **draft plans** by the end of 2018 and **final plans** by the end of 2019. The Commission has assessed these both plans.
- Member States will need to update their national energy and climate plans by the end of **June 2023** in a draft form and by end of **June 2024** in a final form in order to reflect an increased ambition.
- Member States national plans cover the five dimensions of the Energy Union including **energy efficiency** (replacing the **NEEAPs** under the EED).
- Member States can adapt national policies and measures at any time, provided such changes are included in the biennial integrated national energy and climate progress reports to the Commission, which were due in **April 2020**.

EU Climate Law

- The European Climate Law sets a legally binding target of **net zero greenhouse gas emissions by 2050** with clarity on the contribution of emission reductions and removals by enhancing the EU's carbon sink through a more ambitious LULUCF regulation setting in stone the European Green Deal target for the EU to become **climate-neutral by 2050**.
- The law also sets the intermediate target of reducing net greenhouse gas emissions by at **least 55% by 2030**, compared to 1990 levels.
- The law aims to ensure that **all EU policies contribute to this goal** and that all sectors of the economy and society play their part.
- The EU Institutions and the Member States are bound to take the necessary measures at EU and national level to meet the target, taking into account the importance of promoting fairness and solidarity among Member States.
- Progress will be reviewed every five years, in line with the global stocktake exercise under the PA Agreement.
- The Law also includes a process for setting a 2040 climate target and foresees the establishment of European Scientific Advisory Board on Climate Change, that will provide independent scientific advice.

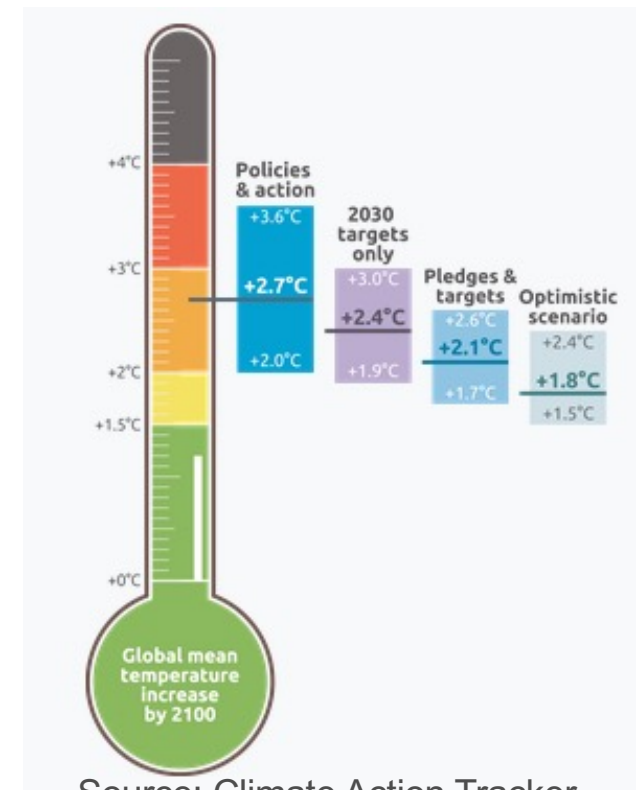
Conclusions

Conclusions

- Global average temperature has already reached **1.1°C**. Emissions need to rapidly decrease. The rate of the emission descent after peaking will determine the possible temperature overshoot and the possible needs for carbon removal options (e.g. CDRs, BECCs, etc.).
- The remaining carbon budget from 2020 onwards for limiting warming to 1.5°C with a probability of 50% has been estimated at **500 Gt CO₂**, this means that at current emissions level it will be depleted in **10 to 15 years**.
- The PA is the major international framework and it is widely supported by most nations. It is based on a **bottom up approach** where countries establish their own targets and their own strategies to reach their NDC target. It is important to highlight that the PA calls for **voluntary action**, without any sanctions or obligations for contributing to the global efforts.
- In 2018 the facilitative dialogue and the first stock taking helped in reinforcing the national pledges made in the NDCs, **however not all NDCs have been revised, strengthened or resubmitted and many still lack ambition.**

Conclusions

- The sum of current and recently revised **NDCs** targets at 2030, nation state net zero emissions pledges and current policies adopted are not be enough to limit the temperature increase.
- The **Glasgow Climate Pact** is the **Last Call** and will help in the adoption of more ambitious climate targets in particular in developing country and the implementation of effective policies and measures including energy efficiency.
- The adoption of the **Paris Rule Book** will increase the transparency of the PA reporting and assessment mechanisms, creating more trust among countries and it will trigger additional investments in developing countries, including those from the private sector.
- The **NDCs** will be reviewed more frequently, starting from **2022** and targets dates will be harmonised among countries.



Source: Climate Action Tracker

Conclusions

- **Energy efficiency** will continue to be an important component of the decarbonisation package as there is the need to decrease the global energy consumption (IPCC SR 1.5 2018; IPCC AR 6 WG III 2022) along with the decarbonisation of the energy supply.
- To this end it is necessary to reinforce current energy efficiency policies mainly focusing on regulation and price signals, and complement them with policies enabling an effective change in **behaviour and life style** of energy end-users by limiting the demand for energy services through **energy conservation and sufficiency measures**.
- The **combination of efficiency, conservation and sufficiency** will help in delivering energy savings, enabling citizens, organisations, communities, cities and economies at large to gradually reduce their energy consumption according to a trajectory compatible with the PA target.

Thank you

paolo.bertoldi@ec.europa.eu



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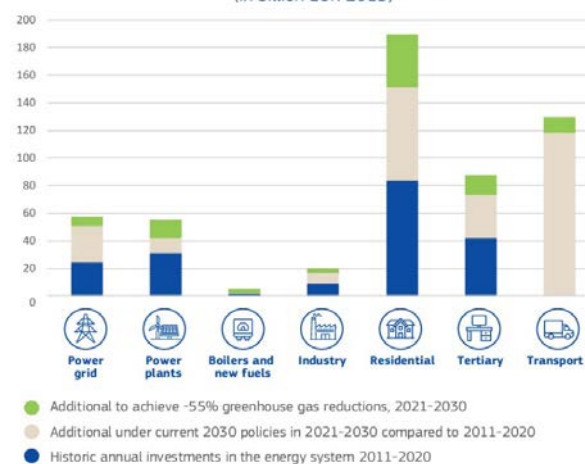
[EU Spotify](https://open.spotify.com/eu-spotify)

Climate Target Plan

The **Climate Target Plan** published in **September 2020** shows that “at least 55% target” by 2030:

- 1) is feasible;
- 2) will put us on the right trajectory towards climate neutrality;
- 3) requires more effort and contribution of all sectors of economy.

Average annual investment 2011-2020 and additional investment 2021-30
under existing policies and to achieve -55% greenhouse gas emission reductions
(in billion EUR 2015)



Climate Target Plan – Investment Challenge

The Climate Target Plan prepared the ground for the necessary transformation of policies for the decarbonisation of the European economy as set out in the European Climate Law

EU ETS



- **Existing ETS**

- Increase of **18 pp** of emissions reduction (from -43% to **-61%** by 2030)
- Remove free allowances for aviation
- Review of the **Market Stability Reserve**
- Will now include maritime transport

- **New ETS**

- For road transport and buildings, operational as of 2025
- Emissions reduction of 43% by 2030
- Climate Social Fund to address possible social impacts

ESR and LULUCF

- **ESR**

- Increase of 11 pp of emissions reduction (from -29% to -40% by 2030)
- Keep existing architecture and scope: will continue to cover road transport and buildings sectors, alongside their inclusion in the new ETS

- **LULUCF**

- More powerful incentives to grow and improve natural carbon sinks
- Binding targets to increase net carbon removals from 2026 to 2030
- Significant simplification of rules
- EU-wide target of climate neutrality in land use, forestry and agriculture sector by 2035



Policy measures on transport

- Stronger CO2 emissions standards for cars and vans
- Alternative Fuels Infrastructure Regulation
- ReFuelEU Aviation Initiative
- FuelEU Maritime Initiative



Policy measures on taxation and trade

- Revision of the **Energy Taxation Directive**:
Shifting tax incentives away from fossil fuels and towards clean technologies
- New **Carbon Border Adjustment Mechanism**:
Carbon price on imports of a targeted selection of products to prevent 'carbon leakage'



Support measures for a fair transition

- The **Social Climate Fund**: 1) **support households, transport users, and micro-enterprises**; 2) **support investments** in energy efficiency, buildings renovation, clean heating and cooling, integration of renewable; 3) **provide direct income** support for vulnerable households; 4) **finance zero-and low-emission mobility**
- **Financed by the EU budget**, using an amount equivalent to **25% of the expected revenues ETS building and road transport**. It will provide **€72.2 billion** for the period **2025-2032**



The Recast EED -1

- The **Commission proposal** for a recasts the EED directive introduced a higher target for reducing **primary (39%)** and **final (36%)** energy consumption by 2030 now binding at EU level up from the current target of 32.5% (for both primary and final consumption).
- It introduces a **benchmarking system** for Member States to set their national indicative contributions to the binding EU target.
- The new directive also proposes to nearly double Member State annual **Energy Savings Obligations** in end use (ex Art.7) now set at **1.5 %** of energy sales.
- The proposal focuses on sectors with high energy-savings potential: heating and cooling, industry (including data centres).

The Recast EED - 2

- The EED introduces a new requirement on Member States to take measures to implement energy efficiency improvements for **people affected by or in risk of energy poverty, vulnerable customers and people living in social housing**. Parts of these measures are expected to be financed via revenues from ETS allowances on building and transport or from the new Social Climate Fund.
- Member States will be required to address the **split incentives** between owners and tenants over renovation. Member States will be required to establish **one-stop shops** providing technical administrative and financial advice, for facilitating the uptake the energy performance contracting.
- The EED set a legal basis for the application of the “**energy efficiency first**” principle, to ensure its practical implementation and systematically assessing possible energy efficiency solutions in policy and investment decisions.

Other EU initiatives for Energy Efficiency

- Taking up a number of elements outlined in last year's **Renovation Wave strategy**, the proposal includes measures to **boost renovation up to 2%** in a way that also benefits society in terms of addressing energy poverty and strengthening consumer empowerment.
- Given the potential for renovation to act as a springboard for economic recovery following the Covid-19 pandemic and the emphasis given to the building sector in the **EU's Recovery and Resilience Facility** – the proposal also outlines a range of changes that should increase the uptake of energy efficiency investments.
- The new **Bauhause Initiative** to design buildings and public space coupling aesthetic, sustainability and social inclusions

The Revised Renewable Energy Directive 1

- The Commission proposed **RED II revision** raises the ambition of the existing legislation to align it with EU's increased climate ambition.
- It also seeks to introduce new measures to complement the already existing **building blocks established** by the **2009 and 2018 directives**, to ensure that all potentials for the development of renewable energy are optimally.
- It seeks to convert into EU law some of the concepts outlined in the **energy system integration** and **hydrogen strategies**, published in 2020. The strategies outlined ways of creating an **integrated energy system**, based on renewable energy and fit for climate neutrality, and turning **hydrogen** into a viable solution to help reach the objectives of the European Green Deal.

The Revised Renewable Energy Directive 2

- The revised directive increases the overall renewables target (proposed to be increased to **40%**), but also strengthened measures for transport or heating and cooling.
- The Commission is also aiming at a more energy efficient and circular energy system that facilitates **renewables-based electrification**, and promotes the use of renewable and **low-carbon fuels**, including **hydrogen**, in sectors where electrification is not yet a feasible option, such as **transport**.