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EAERE Magazine

Towards a Deep
Climate Collaboration

*Module 3:
European Union*

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EAERE

European Association
of Environmental and
Resource Economists

EAERE Magazine serves as an outlet for new research, projects, and other professional news, featuring articles that can contribute to recent policy discussions and developments in the field of environmental and natural resource economics. It is published quarterly in the Winter, Spring, Summer, and Fall. Contributions from the wider EAERE community, especially senior level researchers and practitioners, and EAERE Country Representatives, are included in the magazine.

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Artur Runge-Metzger



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Dear colleagues and friends,

Welcome to Issue 13 of our magazine, which is devoted exclusively to “Towards a Deep Climate Collaboration. Module 3: European Union”.

In his poem *Memories of the Future*, Charles Simic observes:

“There are one or two murderers in any crowd.
They do not suspect their destinies yet.
Wars are started to make it easy for them
To kill a woman pushing a baby carriage.”

Europeans have over the centuries started many wars, thereby providing murderers with many stages to fulfil their destinies. We have been slow learners. There were 10 million deaths in World War I. A further 26 million in Europe alone died in World War II including the extirpation of 6 million Jews and massive suffering and damage to assets before leaders were convinced that radical change was necessary to secure a peace that was permanent. What is now the European Union (EU) is in the first instance a French achievement. The thinker and idealist Jean Monnet developed the ideas, and Robert Schuman, then Foreign Minister in the French government acted, first by convincing his own government and then by convincing the very receptive German Chancellor Adenauer to do likewise. Monnet’s idea was to integrate key aspects of the historic rivals France and Germany such that war would be impossible and with peace assured, prosperity and democracy would follow. His vision was practical, in that it emphasized incrementalism, pragmatism and consent. His idea was “to make a breach in the ramparts of joint sovereignty which will be narrow enough to secure consent, but deep enough to open the way towards the unity that is essential to peace.”

We observe the workings of Monnet’s vision today in the evolution of the EU’s climate policy as elaborated in the four papers in this issue.

1. Climate Policy Architecture in the EU, Jos Delbeke, School of Transnational Governance, European University Institute, and Peter Vis, School of Transnational Governance, European University Institute.
2. EU Domestic Climate Policy – Looking Back, Jos Delbeke and Peter Vis
3. EU Domestic Climate Policy – Looking Forward, Jos Delbeke and Peter Vis
4. Key Strands of EU Climate Diplomacy: Past Performance and New Opportunities, Artur Runge-Metzger, former Director at the European Commission

As you read through them you will discern Monnet’s ideas in action. Member States recognized that most pollution knows no boundaries, and that there was a compelling logic to ceding some national sovereignty if emissions were to be reduced at scale. Consent required that information of quality and credibility be available, and that we find ways to distribute the burdens of effort in ways that reflect the huge disparities of income and wealth across Member States. Pragmatism required that we borrow the best ideas from others. Two of Union’s most successful climate policies – the European Union Emissions Trading Scheme (EU ETS) and its regulation of emissions from cars and vans by setting mandatory fleet average efficiencies (gCO₂/km) – were first developed and implemented in the US;

emissions trading was first applied successfully there to reduce SO₂ emissions from the power sector, and regulation of fuel efficiency and then of emissions from road transport started in California and was then applied at federal level.

For the teachers amongst you, there are three figures, each of which would provide you with talking points (what happened, why, how, when, by whom, to what effect) for a 50-minute lecture. These are: Figure 1 in the climate architecture paper which shows the greenhouse gas emissions of different sectors from 1990 through to 2018; Figure 1 in the looking back paper which shows EU ETS allowance prices 2005-2021 (for phases 1-3); and Figure 1 in the looking forward paper, which shows future EU net greenhouse gas emission pathways compared to historic reduction rates since 1990.

I am very grateful to our three authors. In a very real sense, this ‘deep collaboration’ idea was animated by them. *Towards a Climate-Neutral Europe – curbing the trend*, Routledge, 2019, 223 pages, is edited by Jos Delbeke and Peter Vis who also contribute to many of the chapters, as does Artur Runge-Metzger. When I read it, I realised that notwithstanding being involved in EU climate policies since the 1980s, there were large gaps in my knowledge about the Union’s climate policy architecture, its past performance, plans,

and its diplomacy on the world stage, and a lot of what I thought I knew was wrong. This led to the idea that if the ‘Big Four’ are to collaborate, it would help if there was a shared baseline of understanding as regards these four strands.

They are also part of an interesting and potentially very important and influential evolution, namely former Commission officials of great distinction and achievement who are taking to the public square to advance the quality of the public debate as regards climate policy in a framework that maximizes the prospects of positive impact. The European University Institute (EUI) has for some time had a climate programme that, with very limited resources, has contributed very usefully. With the recent creation there of the EIB Professorship of Climate Policy and the School of Transnational Governance, there is a step change in commitment and ambition, which I hope in time will grow to become a serious thought leader in Europe and the world. Monnet would approve.

Frank J. Convery



Section I

The EU Module

Climate Policy Architecture in the EU

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Introduction

In the 30-years since 1990, the base-year for the UN's efforts to address climate change, the EU has reduced its greenhouse gas emissions by 24% while its GDP has increased by approximately 60% (EEA, 2020). This has ensured that the EU fulfilled its commitments under the Framework Convention on Climate Change, and under the Kyoto Protocol, right up to 2020, even taking account of the UK's departure from the European Union. This is unique among developed countries. Furthermore, the EU has strengthened its commitment under the Paris Agreement to an 'at least 55%' reduction of its emissions by 2030 compared to 1990, which puts it on a pathway to become a climate-neutral continent by 2050.

One of the explanations for the steadfast delivery by Europe has been the building of a robust governance framework involving Member States and other EU institutions, as well as stakeholders such as industry, environmental NGOs and the wider public. This is the 'architecture' upon which climate-related policies have been built. Success in climate terms has been founded on principles of economic realism, of acting transparently and as a reliable partner, and of perseverance even when other countries paused their efforts – welcoming

them back when they were ready.

Decision-making as foreseen by the EU Treaty

In terms of governance between EU Member States and the EU institutions, the Treaty governing the functioning of the European Union provides for 'shared competence' between EU institutions and national governments, reflecting the EU's internal market while at the same time respecting national competences, in particular with respect to the widely varying energy mix of Member States¹. EU policymaking has been built by ensuring a balance between decisions being reached on the basis of a 'qualified majority' of Member States, and others based on unanimity, such as the adoption of negotiating positions at international conferences. Mastering these two processes of decision-making has been challenging.

On top of that, when the climate agenda developed in the 1990s, two major institutional processes were taking shape in Europe. The first was the implementation of the environment chapter that was added to the Treaty of Rome in 1987 by the 'Single European Act', establishing qualified majority and co-decision with the European Parliament on matters concerning environmental regulation. The second major change was the establishment of the EU's internal market in a context of the EU expanding from 12 Member

¹ See Article 3 of the Treaty on European Union and Articles 191 and 192 of the Treaty on the Functioning of the European Union

States (in 1994) to 28 Member States (in 2007). EU enlargement created another dynamic of decision-making due to wider economic, historical, demographic and environmental differences.

At the international level Member States continued to pursue their own diplomatic efforts but increasingly understood that cooperation strengthened the influence of Europe on the international scene. This was clearly the case in the field of climate change. While minimal at the outset, the role of the European Commissioner responsible for climate has been steadily growing and is today central to the international negotiations.

Without the European Commission's role being as strong as in international trade matters, where it has 'exclusive competence', good cooperation on climate change with Member States has been key to Europe's success. Regular and intensive coordination has become a core element of the institutional set-up. This is organised by the 6-monthly rotating EU Presidency by a Member State with the continuous active support of the European Commission. In this way, the EU has become a solid negotiating group, capable of ironing out internal differences before engaging internationally.

The EU 'bubble' and effort-sharing

Confidence has also been established between EU authorities and national governments in distributing effort equitably between States, whose relative economic wealth varies widely. Still today, GDP per capita is over 12 times higher in Luxembourg than in Bulgaria², and while differences are narrowing, there is an acceptance that the same climate effort cannot be asked of all.

This solidarity between Member States was most tangibly expressed in the creation of the EU 'bubble' as provided for by Article 4 of the Kyoto Protocol³. All UN commitments since have been made collectively, reserving the right to differentiate commitments between Europe-

an countries, as reflected in the Burden Sharing Decision of 2002⁴, and subsequently reflected in the Effort Sharing exercises for covering sectors outside the EU Emissions Trading System for 2020 (EC, 2009) and 2030 (EC, 2018a).

The setting of these differentiated contributions was informed by economic and energy modelling, which for 2020 and 2030 were led by the European Commission. Clearly modelling had to be trusted as impartial also between the Member States themselves, so no single Member State or group of Member States could undertake this exercise. Differentiation within a collective commitment led, therefore, to the European Commission assuming a central role in ensuring fairness between all Member States⁵.

EU Climate Policy Decision Making

Climate legislation is not decided by the European Commission, which only makes proposals, but rather by the Council of the European Union, where the Member States are represented, and the European Parliament, whose Members are directly elected. Preparatory work for these legal decisions is undertaken in Council working groups and Ministerial meetings, and by committees and plenary sessions of the European Parliament.

On major decisions, however, such as agreeing on targets and principles of distribution of effort, the European Council has taken a close interest. The European Council, a body that was formally established in 2009 by the Lisbon Treaty and headed by a fulltime President, is made up of the Heads of State and Government of the EU Member States. The European Council does not adopt legislation but gives political orientation in a consensual manner and has played a determinant role in opening the way for agreement on the targets for 2020, 2030 and 2050.

On top of this complicated system of decision making, legislation often provides for more technical aspects to be decided by specialised

2 Real GDP per capita for 2020: source Eurostat https://ec.europa.eu/eurostat/databrowser/view/sdg_08_10/default/table?lang=en

3 Kyoto Protocol available: <https://unfccc.int/process/the-kyoto-protocol/status-of-ratification>

4 See in particular Annex II of the Council Decision of 25 April 2002 concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder (EC, 2002).

5 See Chapters 3 and 5 of Delbeke & Vis (2019).

committees. Since 2004, a technical committee called the ‘Climate Change Committee’ was created that comprised of experts from all Member States and is chaired by the European Commission. This committee not only collects and exchanges data on the national inventories of Member States, but also serves as the decision-making body for a wide range of technical regulations (‘Implementing Acts’). In addition, Member States’ technical experts together with other technical experts from industry and civil society participate in dedicated ad-hoc expert groups that provide technical advice to the Commission (‘Delegated Acts’). These acts cover, by way of example, the monitoring and reporting obligations or the registry’s design for the EU’s Emissions Trading System. Given the technical nature of these regulations, EU institutions have agreed to delegate decisions in terms carefully laid down in EU primary law.

In practice, the regular meetings of the Climate Change Committee and of the dedicated ad-hoc expert groups have not only built trust in the European Commission but have also created a corps of experts from across the Union that have served as an essential sounding board for climate policies and has strengthened understanding between Member States.

Evidence-based policymaking

Economic, energy and emissions modelling capabilities within the European Commission have been greatly developed over the past two decades, informing both effort-sharing exercises between Member States, as already mentioned, but also informing policy design and the setting of stringency of regulations. The models are being regularly peer-reviewed by the international modelling community, and participate in international modelling comparisons, such as in the context of the work of the Inter-governmental Panel on Climate Change (IPCC).

This modelling work is done by several departments of the Commission, most notably the climate, energy and transport departments and the Joint Research Centre. Extensive input is sought on a regular basis from Member States representatives, the European Environment

Agency, business associations, think tanks and civil society. These capabilities are fundamental to EU policymaking, not just with a view to winning buy-in, but also in designing the policies themselves so as to optimise cost-efficiency. For example, this modelling work is essential for determining the optimal quantities of emissions to be regulated by the EU Emissions Trading System as opposed to the rest of the economy.

In parallel, the European Environment Agency – based in Copenhagen – has developed a high level of expertise. It is tracking the evolution of greenhouse emissions as well as the implementation of climate-relevant policies and measures, such as renewable energy, energy efficiency, vehicle efficiency, fluorinated gases, and waste, of Member States and the EU as a whole. Figure 1 illustrates the greenhouse gas emissions of different sectors from 1990 through to 2018.

The EEA has been tasked with compiling and thoroughly checking the quality of the EU’s inventory submission that the Commission submits to the UNFCCC Secretariat annually. In addition, the Agency monitors the actual emissions and projections of Member States, informed also by the Commission’s modelling, with a view to tracking the performance of Member States in relation to their targets and for the EU as a whole. These regular reports are made available in a transparent manner by the European Environment Agency⁶.

Transparency and better regulation

Increasingly, EU climate policymaking has seen the principles of better regulation applied, in particular with the carrying out of broad stakeholder consultations and of comprehensive Impact Assessments for major policy initiatives, such as amendments to the EU Emissions Trading System (EC, 2008) or for the CO₂ performance standards for passenger cars (EC, 2012). Although this has now been generalised to all policy areas of the European Commission, it was a necessity from very early on for climate policies given the fears of adversely impacting jobs and growth, as well as EU competitiveness. Indeed, the first evaluation of the effects of the

6 See climate data available in European Environment Agency’s website here: www.eea.europa.eu/themes/climate

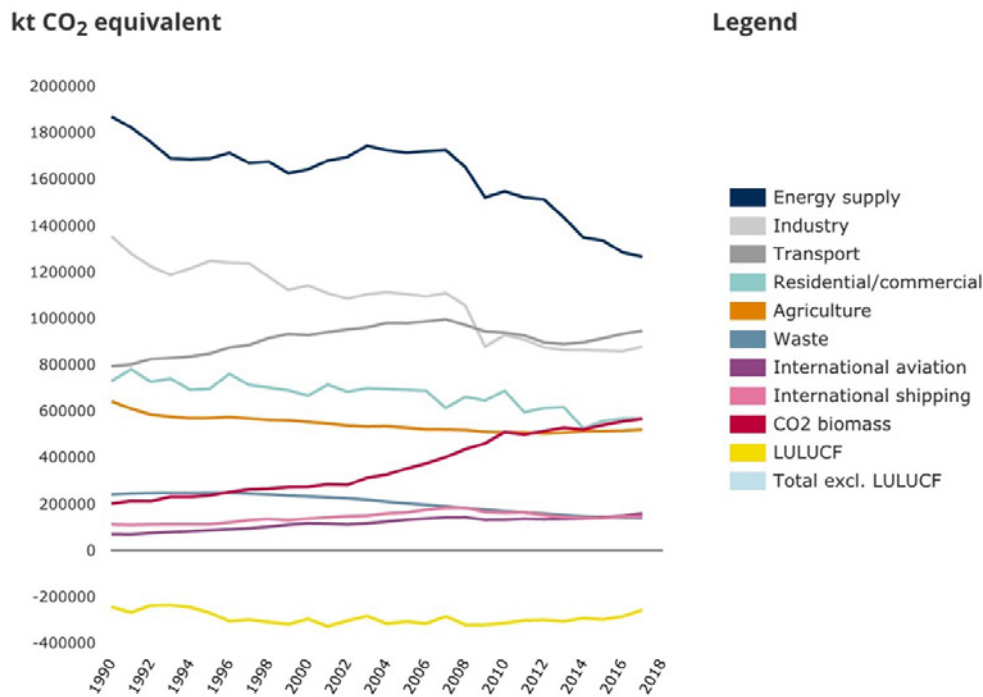


Figure 1. EU greenhouse gas emissions by aggregated sector (1990-2018). Source: European Environment Agency (EEA) 2019. For more information see European Environment Agency’s website: www.eea.europa.eu/data-and-maps/daviz/ghg-emissions-by-aggregated-sector-5#tab-dashboard-02

EU Emissions Trading System on international competitiveness dates back to 2006⁷.

Better regulation standards were also applied through the establishment of the European Climate Change Programme (ECCP), initiated in 2000 and which ran for a number of years while the first set of EU climate policies were being established. This programme was unique because it very openly brought together not only representatives from Member States but also those from industry and environmental NGOs, to sit round the table and discuss together how best to develop policies. Never was this more important than for the development of the EU Emissions Trading System, which was a new instrument in Europe and a world’s first for a ‘cap-and-trade’

system for any multi-country jurisdiction. The minutes and reports of these meetings, held 20 years ago, are still relevant and publicly available on the European Commission’s website⁸. Such public consultations are now commonplace, and provide an equal opportunity for industry, non-governmental organisations and private individuals to make their views known on forthcoming legislation.

Much attention has been paid to provide transparency to maximise buy-in and enhance public trust. For example, company-specific emissions data in the registry of the EU Emissions Trading System is made accessible after a relatively short period⁹. The new Governance Regulation relating to energy and climate policies¹⁰ requires EU

⁷ See Study commissioned by the European Commission: https://ec.europa.eu/clima/sites/default/files/ets/docs/report_int_competitiveness_20061222_en.pdf

⁸ For details of the first phase of the ECCP see: https://ec.europa.eu/clima/policies/eccp_en

⁹ Transparency underpins fairness of treatment. For emissions data per installation see: https://ec.europa.eu/clima/news/eu-ets-publication-available-emissions-data-installation_en

¹⁰ See Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action (EC, 2018b). For an in depth analysis see Kulovesi & Oberthür (2020).

Member States to submit their draft National Energy and Climate Plans every ten years (with revisions every 5 years), after “early and effective” consultation with stakeholders¹¹. The European Commission assesses these plans and may issue recommendations before their finalisation¹². Building on the Paris Agreement¹³, the Regulation also requires the Member States to prepare long-term strategies. These plans enable a coherent vision of both energy and climate policies and are made public¹⁴.

Since 2010, Member States’ progress on energy and climate policies is also assessed annually in the broader context of the ‘European Semester’ process. This process was established as part of the EU’s response to the economic and financial crisis in 2008/2009. It helps integrate and ensure policy coherence across the wide range of macro-economic, monetary, financial, sectoral and social policies. Most recently, the EU’s € 750 billion initiative to recover from the COVID-19 pandemic and to improve Europe’s resilience is being planned and rolled out as part of the ‘European Semester’ to drive investments and reforms towards a climate-neutral and digital Europe¹⁵.

Mitigation and adaptation

Europe is a heavily industrialised continent, and most of its emissions originate from power generation, transport and energy intensive industry. These sectors have been key for the economic integration of the continent. Companies in these sectors compete against each other within Europe’s internal market. Policy tools that have contributed to large companies being treated similarly, regardless of where they were based in the EU, have undoubtedly been a key driver of EU climate policy development. One has only to consider the EU’s Emissions Trading System with its common carbon price, or the CO₂ stan-

dards for new passenger cars and vans regardless of where they are sold in the EU to find examples of equating competitiveness pressures or optimising economies of scale at the European level. It is no accident, therefore, that EU’s attention been concentrated on climate policies related to these sectors.

The greater difficulties in accurately monitoring and assigning diffuse greenhouse gas emissions from the land-based sectors, such as forestry and agriculture, explains why EU climate policy has taken longer to develop in these sectors, as further detailed in the article on EU domestic policy development.

The European logic of the internal market applied less to adaptation to climate change. The EU’s approach has acknowledged the fact that measures to increase resilience are often better taken at regional and local levels, informed by the specific characteristics of an area. The European Commission has adopted successive strategies on adaptation to climate change, most recently in February 2021 (EC, 2021), with a view to highlighting again the importance of adaptation and facilitating the exchange of good practices. Furthermore, it has developed with the European Environmental Agency a platform – Climate-ADAPT – precisely to inform, share data, showcase projects and highlight possible sources of funding¹⁶.

Conclusion

Despite the EU’s complex institutional set-up and the remarkable enlargement to as many as 28 Member States¹⁷, climate change emerged as a new policy area in which tangible results have been achieved. Greenhouse gas emissions have been reduced by 24% compared to 1990 while the EU economy has continued to expand and become one of the most energy efficient in the

11 See Article 10 of Regulation (EU) 2018/1999 (EC, 2018b).

12 For details see: https://ec.europa.eu/info/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en

13 Article 4(19) of the Paris Agreement that “All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies...”.

14 Latest versions can be found on https://ec.europa.eu/info/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-long-term-strategies_en

15 https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/european-semester-2021-exceptional-cycle_en

16 Website of Climate-ADAPT: <https://climate-adapt.eea.europa.eu/>

17 The United Kingdom of Great Britain and Northern Ireland formally left the EU on 31 January 2020.

world. Ambitious decisions have recently been made to accelerate this downward trend of emissions while continuing the upward path of economic and social prosperity, and to reach climate-neutrality by 2050. Based on solid internal preparations, Europe has shown itself to be a trusted partner in the international climate negotiations. It developed a strong policy architecture at the European level that complements actions taken at national, regional and local levels. It prepares its policies through thorough analysis and consultation with all relevant stakeholders. As such, this architecture can also serve as a benchmark for other countries faced with the need to reduce emissions while addressing issues of fairness between regions, preserving the competitiveness of industry, and building public support through transparency and proactive engagement with stakeholders.

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EU Domestic Climate Policy – Looking Back

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The European dimension to climate policies during the 1990s was modest and has been strengthened over time. This process has been gradual, inspired by policy-learning of what works best, what optimises economic efficiency and what ensures greater fairness of treatment between economic actors and between EU Member States.

The monitoring of EU's emissions

The ability to monitor greenhouse gas emissions is a fundamental foundation for policy development. Even before the UN Framework Convention on Climate Change (UNFCCC) had come into force, the EU decided in 1993 to systematically track the greenhouse gases of EU Member States. It based its approach on the methodologies of the Intergovernmental Panel on Climate Change (IPCC)(EC, 1993).

EU Member States were enjoined to “*devise, publish, and implement national programmes for limiting their anthropogenic emissions of CO₂*”. The European Commission had a limited role to evaluate these programmes to determine whether the EU as a whole was on track to meet its international commitments, and otherwise served as a kind of ‘secretariat’ in consolidating data and forwarding national inventories to other Member States. The mentioning of there being European climate policies only emerged in response to

the binding quantitative legal commitments of the Kyoto Protocol¹, agreed in 1997. The Monitoring Decision, renewed and expanded in 2004 “*for implementing the Kyoto Protocol*”(EC, 2004), was changed again in 2013 (EC, 2013), incorporating new commitments agreed at consecutive meetings of Conference of the Parties (COPs) to the UNFCCC.

Pillar 1: The EU Emissions Trading System (EU ETS)

Also in the 1990s, the EU started to develop its internal market establishing policies to allow the free movement of goods, people, services and capital. In the field of the environment a debate was taking shape on the use of market-based instruments. In 1992 the Commission made a proposal for a carbon/energy tax (EC, 1992): the tax would have been partially modulated according to the energy content of a product, and partially according to the carbon content. Tax policies require unanimity, and even though the EU only had 12 Member States, that proved too difficult to reach and the proposal was eventually withdrawn (EC, 2001).

Soon after the Kyoto Protocol was agreed the European Commission floated the idea of developing a European-wide system of ‘emissions trading’, a concept mentioned in Article 17 of the Kyoto Protocol (EC, 1998, pages 17-21 in

1 Kyoto Protocol available at: <https://unfccc.int/documents/2409>

particular ; EC, 1999, Section 5 in particular). Such a system seemed justified not only on the basis of cost-efficiency but also to make all large installations emitting CO₂ subject to the same cost of carbon wherever located in the EU. It is a fact that inspiration came in part from the Acid Rain Program in the U.S. that introduced a sulphur dioxide (SO₂) trading mechanism². A Green Paper on an EU greenhouse gas emissions trading system was published in 2000 (EC, 2000), and a legal proposal for a Directive in 2001 (EC, 2002). In remarkably short time for such an innovative instrument, the Directive was adopted in 2003 (EC, 2003) and the emissions trading system started initially in the form of a pilot phase on 1 January 2005.

The Emissions Trading System became not only the major instrument of EU climate policy, by virtue of the fact that it covered then some 45% of CO₂ emissions, but also because it embodied the ‘polluter-pays principle’ as mentioned in the Treaty governing the EU³. It constituted the world’s first significant attempt to internalise the external costs of pollution across a continent. Looking back, it was a bold initiative that happened so rapidly because it was evident that

if several Member States introduced emissions trading at the national level, as was already beginning to happen before 2005⁴, the EU’s ‘single’ market would be fragmented, which was contrary to the logic of greater European economic integration. Furthermore, the economic benefits of a larger system encompassing many countries were compelling and of benefit to all.

The Emissions Trading System constitutes a first basic pillar of the EU’s climate response. It gradually evolved into a fully harmonised system applicable to the EU Member States as well as to Norway, Iceland and Liechtenstein. Today it is fully linked to the Swiss Emissions Trading System but no longer applies to the United Kingdom. It covers some 10,000 large installations in the sectors of energy and manufacturing industry, as well as airlines. Further extension of the scope is expected to be proposed by the European Commission in mid-2021.

Since the EU ETS started, the greenhouse gas emissions of the covered installations have fallen by 35% between 2005 and 2019⁵, and the EU ETS is one of the main drivers behind the decoupling of the EU’s emissions from economic

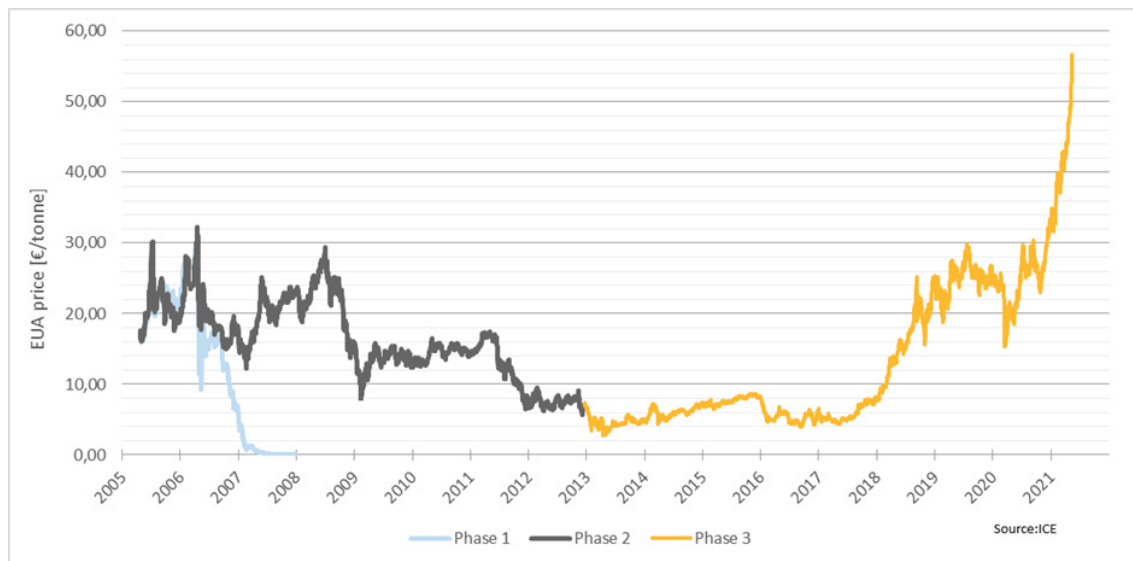


Figure 1. EU ETS allowance prices 2005-2021 (for phases 1-3). Source: European Commission and ICE

2 For more details see: <https://www.epa.gov/acidrain/acid-rain-program>

3 Article 191(2) of Treaty on the Functioning of the European Union.

4 In particular, the UK and Denmark had domestic emissions trading systems that pre-dated the EU’s.

5 See EEA (2020) page 15: “By 2019, EU ETS emissions from EU-27 Member States’ stationary installations had already fallen by 33 % since 2005. If the emissions of all countries that take part in the EU ETS (EU-27, United Kingdom, Iceland, Liechtenstein and Norway) are considered, stationary ETS emissions declined by 35 %.”

activity. Prices have fluctuated quite significantly. It took a considerable time to absorb the negative effects of the financial crisis of 2008-2010 and its economic consequences, but the creation of the Market Stability Reserve, that began operation from the beginning of 2019, redressed the situation. Since 2018 prices have been steadily increasing and they are currently around €50 per tonne of CO₂. That is within the range that economists such as Stern and Stiglitz have indicated as necessary (High-Level Commission on Carbon Prices, 2017).

Today's higher EU ETS price, coupled with the expectation of greater stringency in the future, has brought the question of carbon leakage to the fore. More than half of the EU allowances are auctioned and give rise to significant revenues that Member States report are predominantly used for climate purposes. Less than half of the allowances are being allocated for free to producers of industrial goods such as cement, steel and chemicals on the basis of technological benchmarks, in view of countering carbon leakage due to the carbon price. The EU intends to develop an external correction mechanism in the form of a 'Carbon Border Adjustment Mechanism'. The Commission made very clear that this needs to be in line with WTO rules.

Pillar 2: The Effort Sharing Regulation

Since 2013, the second pillar of the EU's climate policy is that of the 'Effort Sharing Regulation' (EC, 2018d) that covers emissions from sectors for which emissions have not been covered by emissions trading, such as transport, buildings, agriculture, waste, small and medium-size businesses. Several EU regulations with climate relevance exist for these sectors, such as those governing excise duties, waste disposal, and the Common Agricultural Policy, but these are sectors for which Member States retained considerable discretionary powers, and where they therefore retained primary responsibility for introducing climate policies. There were some areas, in particular with respect to product standards, where internal market considerations did justify EU action given that manufactured goods could freely be sold across the EU. The technical performance of new cars sold had to be accept-

ed across the internal market. This link with the free movement of goods explains why EU regulations have developed in particular with regard to standard setting, including the opening of energy markets across the EU.

The Kyoto Protocol's target of 8% reduction for the EU as a whole for the period 2008-2012 was an economy-wide commitment, including the EU ETS sectors. A burden-sharing exercise (now referred to as 'effort-sharing') was organised between the Member States to differentiate national targets, as was already understood as necessary to ensure fairness between Member States even before attending the climate conference in Kyoto, hence the EU's insistence on its 'bubble' arrangement under Article 4 of the Kyoto Protocol. After the Protocol's agreement, the burden sharing was agreed as a Council Decision (EC, 2009a). In retrospect this differentiation for the 1st Kyoto commitment period was not seen as equitable by all Member States, hence the Commission played a much more central role in establishing future effort-sharing targets.

For the second Kyoto commitment period (2013-2020) specific national targets for sectors outside of the EU ETS were set. This differentiation was based primarily on relative GDP *per capita*. It had to be revised for the EU's first Nationally Determined Contribution under the Paris agreement (2021-2030), also taking cost-efficiency into account and adding new flexibilities between the Effort Sharing sectors and the EU ETS and Land Use, Land Use Change and Forestry sectors, as illustrated in Figure 2. The effort-sharing process, once again, is one of incremental evolution of differentiation between Member States, reflecting the comparative wealth between Member States⁶. In some regard, it could be seen as the intra-European translation of the UNFCCC's concept of 'common but differentiated responsibilities and respective capabilities'.

6 For more about the modelling behind the effort-sharing exercises see: Chapters 3 and 5 of Delbeke & Vis (2019).

ESR targets and maximum one-off ETS/non-ETS and land use flexibilities

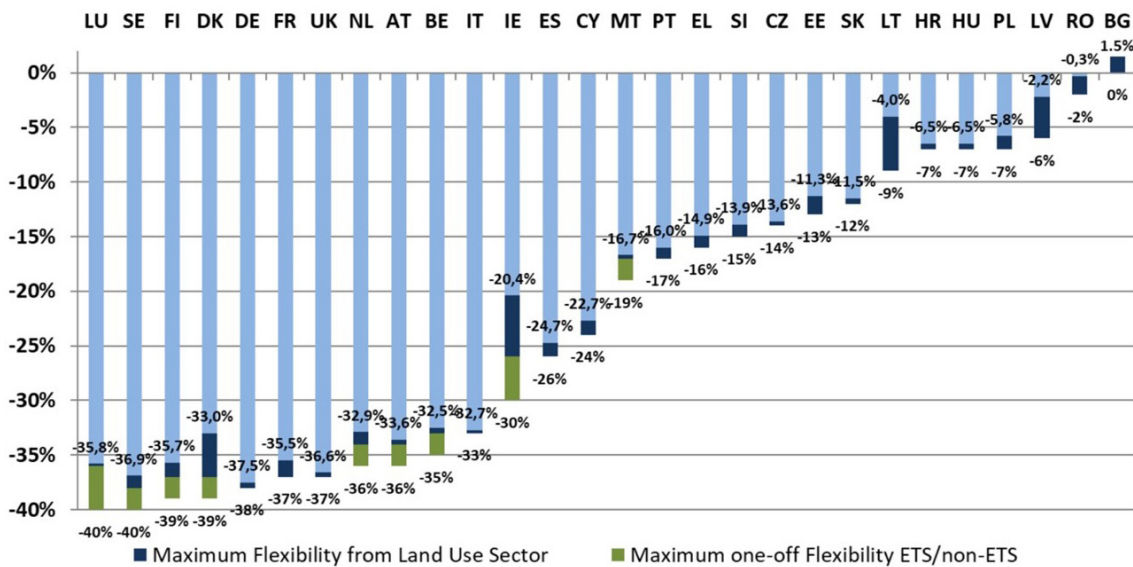


Figure 2. ETS Effort sharing 2030 targets per Member State (2030 = 40% reduction compared to 1990). Source: European Commission

Pillar 3: The Land Use, Land Use Change and Forestry (LULUCF) Regulation

As of 2020, the third and newest pillar of EU regulation regarding climate action is the Land Use, Land Use Change and Forestry (LULUCF) Regulation (EC, 2018c). The land areas used by agriculture and forestry in the EU represent a significant net removal of emissions that could be taken into account when reporting overall emissions to the UN. The LULUCF Regulation of 2018 provides for Member States to monitor emissions and removals from the land use categories covered for two accounting periods of 5-years (2021-2025, and 2026-2030), and to account for them still using the rules developed under the Kyoto Protocol. The bottom line is that EU Member States committed to ensure that accounted emissions will not exceed accounted removals of greenhouse gases over the decade, the so called ‘no debit rule’.

Special rules for Land Use, Land Use Change and Forestry reflect the fact that biomass can remove carbon from the atmosphere, storing it

for a certain time, and then give rise to emissions when harvested. When trees are cut, they are accounted as an emission. If, however, the cutting of a tree does not necessarily give rise to emissions immediately, such as if a tree is incorporated as timber in buildings or furniture, the wood may continue to store carbon for some time, and the stored carbon will be temporarily accounted for as a removal under the category of harvested wood product. On the contrary, in the case that biomass is combusted, emissions do occur, but these are assumed to equal the carbon absorbed by the biomass when growing⁷. Under the monitoring rules of the EU ETS, sustainable biomass or sustainable biofuels are deemed to have ‘zero-emissions’ when combusted because emissions are being fully accounted for when the biomass is harvested⁸.

The reporting requirements for Land Use, Land Use Change and Forestry are essentially ‘net’ quantities of ‘stored’ carbon, taking into account both removals and emissions. The net removal that well-managed forest and land use sectors provide are referred to as ‘sinks’. It is true that

⁷ Subject to biomass sustainability criteria being observed, as laid down in Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (EC, 2018a).

⁸ See Camia et al. (2021) page 9: “Bioenergy is not accounted for in the energy sector because these emissions are already counted in the LULUCF sector (Regulation 2018/841) as a change in carbon stocks.”

an implementation mechanism that works to deliver emissions reductions and carbon dioxide removals at scale have still not been developed at either EU or Member State level. It is thought by many that increased harvesting of biomass for renewable energy purposes has contributed to a depletion of the forest ‘sink’, even if it could be assumed that increase demand for biomass would trigger increased supply and incentivise better forest management. Future legislation is likely to strengthen this ambition, as already envisaged in the recently adopted European Climate Law, in order to ensure the enhancement of removals by forest and land use sinks.

The monitoring and reporting of emissions is therefore different between the EU ETS and Effort Sharing ‘pillars’ on the one hand, and the LULUCF Regulation’s approach on the other: the former is about emissions released into the atmosphere⁹, the latter about the net greenhouse gas emissions and removals of carbon in sinks. The important thing is to note the consistency of this method of reporting with the UN methodology for national inventories.

Energy policies

Despite the history of the European Union having its roots in the 1952 Treaty establishing the European Coal and Steel Community, only in the late 1990s did an alignment begin between energy and environmental policies. Given that fossil fuels are the primary source of greenhouse gas emissions, energy policies have obviously played a crucial role in addressing climate change. This contribution extends not only to the promotion of renewable energy, but also to the ‘liberalisation’ of energy markets, that have removed price controls, opened grid access, and have enabled price differentiation between different fuels in accordance with their greenhouse gas emissions. The EU ETS would never have been as important as it has been without carbon pricing being reflected in relative prices of electricity and passed through to consumers.

Because markets have been liberalised, renewable energy has benefitted from the fact that it is not covered by the EU ETS. While this may seem obvious in Europe, it is not to be overlooked how important it has been to have liberalised energy markets for carbon pricing to be effective.

Renewable Energy

As late as 2007¹⁰, the European Council agreed the 2020 renewable energy target of 20% for the EU as a whole would be differentiated between Member States and also be legally binding. These were embodied in the Renewable Energy Directive of 2009 that represented a step-change in the deployment of renewable energy in the EU. Led by Germany in particular, subsidies were put in place across Europe that increased deployment and brought technology costs down. In a matter of 10 years, renewable energy evolved from being mostly based on hydropower, to seeing rapid growth of both wind and solar. What had previously been prohibitively expensive technologies, such as offshore wind, became normalised in seas around Europe.

For the period 2021-2030, a new renewable energy target of 32% has been set at the EU level. Member States in their National Energy and Climate Plans are clarifying their national contributions (EC, 2020, pg. 2).

Preliminary estimates by the EEA indicate that a renewable energy share of 19.5 % was reached in the EU-27 in 2019, and the share in electricity specifically is estimated to have been 34% of electricity consumed¹¹. As renewable energy supplied an ever-increasing share of the electricity mix, the emissions from the power sector fell steadily, also due to the EU ETS. It is difficult to apportion the contribution of the EU ETS and that of renewable energy to the reduction of greenhouse emissions from the power sector. Both have been instrumental, and they needed each other. Success was down to the combina-

⁹ Burned fossil CO₂ that is safely and permanently removed through carbon capture and storage technologies does not reach the atmosphere and is therefore not counted as an emission.

¹⁰ See European Council Conclusions of 8-9 March 2007, in particular Annex 1: https://ec.europa.eu/growth/content/presidency-conclusions-spring-european-council-8-9-march-2007-0_is

¹¹ The EEA considers that the EU is on-track to meet its 20% renewable energy share in 2020. For more details see Chapter 3 of ‘Trends and projections in Europe 2020’ (EEA, 2020).

tion of two powerful drivers that were aligned.

Energy Efficiency

Europe has set itself energy efficiency goals of a 20% and 32.5% reduction in energy consumption in 2020 and 2030 respectively¹². Despite efforts at both national and European levels, the EU as a whole is not on track to meet these objectives, although meeting the 2020 target may have been helped by the temporary effects of the COVID-19 epidemic¹³. The EEA concludes that “to meet the 2030 target, annual reductions in energy consumption will have to more than double the average rate of reductions achieved between 2005 and 2018” (EEA, 2020). The Energy Efficiency Directive (EC, 2018b), combined with other efficiency instruments such as the Energy Performance of Buildings Directive (EC, 2010) or the Ecodesign Directive (EC, 2009b) are so important as the energy mix is still inextricably linked to greenhouse gas emissions. Using less energy will reduce greenhouse gas emissions, as well as provide co-benefits in terms of energy cost savings and air quality improvements. Even in a ‘net-zero’ world, minimising the resources needed for supplying emissions-free energy, including from renewable energy and nuclear, are worthwhile.

Integrated National Energy and Climate Plans

This interplay between climate and energy policies is clear, with enormous potential benefit in terms of reducing greenhouse gas emissions. Coherence between policies is crucial, and in recognition of this, Integrated National Energy and Climate Plans are now required¹⁴ to be prepared by Member States every 10 years, with revisions every 5 years. These plans require the integration of climate policies not only into the energy sector but also cover non-energy related

greenhouse gas emissions from industry, agriculture, forestry, and waste. The Commission is mandated to evaluate these to ensure sufficient ambition and coherence. More is said on this in the separate article on Climate Policy Architecture in the European Union in this same issue. However, the close interlinkages between energy and climate policies are now well understood at the European level, and the only surprise is how long it took to put integration at the heart of Europe’s climate ambitions.

In fact, the mainstreaming of climate policies is also mandatory into other planning instruments like the EU’s annual budget, the Strategic Plans foreseen under the Common Agricultural Policy¹⁵, the programming of the Cohesion Policy Funds¹⁶, the National Recovery and Resilience Plans as part of the EU’s COVID-19 response¹⁷. These include minimum spending targets for climate actions, such as earmarking at least 30% of the entire EU budget between 2021-2027.

Keeping the metrics right

The coherent and comprehensive tracking of emissions is a critical and fundamental challenge. As a Party, the EU implemented the detailed provisions of Articles 5, 7 and 8 of the Kyoto Protocol, based on the IPCC’s methodology. This methodology is a ‘direct’ emissions approach whereby Parties are responsible for combustion and process emissions originating on their territory. This is not only the most feasible monitoring methodology to implement, but it also runs the lowest risk of double-counting emissions across sectors of one Party or by more than one Party. The Paris Agreement re-confirmed the

12 The 2020 EU-28 target represents energy savings of 20 % from levels projected for 2020 in the Commission’s 2007 energy baseline scenario. The EU-27 energy efficiency target for 2030 represents an improved energy efficiency of at least 32.5 % compared with 2030 projections using the same energy baseline scenario.

13 Quotation from EEA (2020) ‘Trends and projections in Europe 2020’: “Although not yet quantified, there are strong indications that the economic downturn in 2020 has sharply reduced emissions and overall energy consumption this year...”.

14 See Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action (EC, 2018e).

15 https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key_policies/documents/cap-specific-objectives-brief-4-agriculture-and-climate-mitigation_en.pdf

16 https://ec.europa.eu/regional_policy/en/2021_2027/

17 https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en#national-recovery-and-resilience-plans

IPCC methodology.

The direct emissions approach does not monitor the flow of carbon between national jurisdictions. However, the cooperative approaches of Article 6 of the Paris Agreement, like the flexible mechanisms of the Kyoto Protocol, allow for reductions of emissions in one territory to be paid for by emitters in other territories, thereby enabling and framing extra-territorial collaboration between States in order to implement their Nationally Determined Contributions (NDCs)¹⁸. Corresponding adjustments ought then be made to national carbon accounts, to record the transfer of reductions or removals between national jurisdictions¹⁹. Such corrections are being made by the EU for cross-border transfers of emission reductions between its Member States as part of its ‘EU bubble’ arrangements under the Kyoto Protocol and Paris Agreement.

The UN’s monitoring methodologies for national inventories basically do not follow a ‘life-cycle approach’. However, there are a number of initiatives being developed by Member States and the Commission, such as the European framework for sustainable buildings²⁰, that advocate the use of life-cycle analysis. Life-cycle analysis works out the carbon balance of goods from the stage of extraction of raw materials, through the production and consumption or use phases, to the end-of-life emissions of products that are disposed of or recycled. Not only are life-cycle analyses intrinsically much more complex, but they are also prone to double-counting, as many emissions will have been or will be monitored and reported at earlier or later stages in the production and consumption chain.

The UN methodology for measuring greenhouse gases has been criticised as not accurately reflecting the flows of emissions attributed to goods that cross national boundaries. As part of its European Green Deal, the European Commission is likely to propose a Carbon Border Adjustment Mechanism (CBAM) based on the flow of carbon into the EU via certain categories of imported goods, notwithstanding that emissions related to the production of these

goods would normally be attributable to the country of production. Europe’s CBAM would not assume that inventories need to be adjusted, but that the costs of climate regulation in different jurisdictions do need to be approximated in order to mitigate the risk of ‘carbon leakage’.

New climate policy instruments are now emerging, such as CBAM or approaches based on Life-Cycle Analysis methodologies for the purposes of standard setting. Such specific instruments have merit in their own right but in so far as they take a different approach to accountability implied by the IPCC’s ‘direct’ emissions method of carbon accounting, careful consideration should be given to avoid duplication, omission or perverse effects. Mitigation efforts cannot be weakened by the loss of clear responsibility for emissions and by over-complicated carbon accounting for both countries and companies.

Conclusion

Since the 1990s European climate policy has developed in a gradual and coherent manner (Delbeke & Vis, 2019). Not only have policies multiplied, but their effectiveness has been improved over time, in the light of experience and rising ambition. Integration between policy instruments has been strengthened, and tools put in place to closely monitor performance in terms of results.

The role of the European Union has increased significantly, reflecting both the depth of the EU’s internal market, but also recognition of the need for fairness and solidarity between Member States. The European Commission’s role has become central to this process, though ultimately power rests in the hands of Member States and the European Parliament, without whom legislation cannot be decided.

The overall result is that the EU has reduced its emissions by 24% compared to 1990 not accounting for carbon removals from land use, land use change and forestry. When these removals are included, the overall reduction

18 See Article 6 of the Paris Agreement: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

19 The implementing rules for Article 6 of the Paris Agreement have not yet been finalised and will be the subject of further negotiations at COP-26 in November 2021.

20 For more information see: https://ec.europa.eu/environment/topics/circular-economy/levels_en

amounts to 25.9% (EEA, 2020). Over the same period, the EU has grown its economy by more than 60%. This was achieved through a successful combination of policies based on carbon pricing, the deployment of new low-carbon technologies such as renewables, technical standards and information provision. Clearly, a great deal remains to be done to bring Europe into line with the goals of the Paris Agreement and to ensure a truly sustainable, climate-neutral economy. The next round of policy revision is now underway to meet much higher ambition levels in 2030 and beyond. Enormous challenges lie ahead, but there are sound foundations on which to build.

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EU Domestic Climate Policy – Looking Forward

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Introduction

With its ‘Climate Law’¹, the EU has decided to be climate neutral by 2050 and to reduce net greenhouse gas emissions by ‘at least 55%’ by 2030 compared to 1990. This high-level of ambition will entail the mobilisation of all economic, social, and political forces. The annual average

reductions will have to double from 1.3% per year during 2005-2019 to between 2.3% to 2.7% per year in the period 2020-2050. This is an immense challenge, all the more so when recalling the difficult past negotiations on climate legislation and taking into account the economic and social repercussions of the COVID-19 pandemic. This is the context in which this article

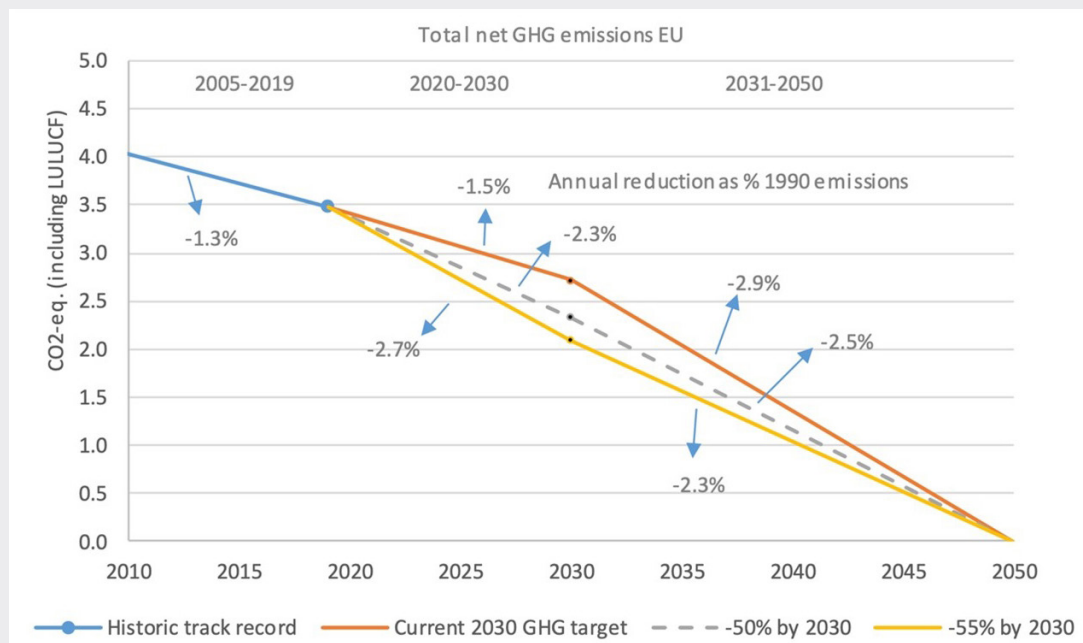


Figure 1. Stylised representation of future EU net greenhouse gas emission pathways compared to historic reduction rates since 1990. Source: European Commission (2020b, figure 1)

1 www.consilium.europa.eu/en/press/press-releases/2021/05/05/european-climate-law-council-and-parliament-reach-provisional-agreement/

reviews the main challenges for the future of EU policymaking.

The effort will have to be transformative and will imply policy strengthening at all levels of governance, not just at EU-level, and a close monitoring of progress. The EU will have to build further on the current climate policy infrastructure, strengthen existing measures and introduce new measures, especially in areas where climate has not been a primary policy-driver, such as in the context of the Common Agriculture Policy, or energy taxation or trade.

So far, emissions reductions have been predominantly achieved in the electricity and heat generation sectors, where renewable energy technologies have increased, and fuel switching away from fossil fuels has occurred. These developments need to continue much further, and the EU Commission estimates that compared to the last decade at least €350bn additional investment is needed every year until 2030 to achieve the full transformation of the power sector and to significantly accelerate the pace of modernisation of industry, buildings, and transport (EC, 2020a, pg. 12). New ways of financing these investments are needed, in combination with policies that incentivise making such investments. The transformation of these sectors will need to be followed by similar deep transformations in all sectors of the economy, in particular, hard or very-costly-to-abate industrial processes, aviation, and food production.

The Paris Agreement of 2015 will remain the framework for setting levels of ambition, but there is urgent need for more focus on implementing pledges. It is policies and measures that limit and reduce emissions, and policies are invariably difficult to agree and sometimes fail to deliver. Globally, much greater emphasis is needed on effective policy implementation. Europe's continued leadership is conditional upon its strengthened climate policies reducing emissions in line with its ambitious targets.

It is important that the EU continues to share its policy experience with other countries in the world, and it is likely that Europe will increasingly learn from climate action taking place in other jurisdictions.

Five key building blocks of Europe's future climate efforts

1. *Continue and expand the pricing of carbon*

The area in which the EU has been and is likely to remain a pioneer is carbon pricing. The EU's Emissions Trading System (EU ETS) has been successful and must continue to play a central role in the EU's decarbonisation plans. The carbon price is now in the range advocated by economists such as Stern and Stiglitz². The scope of the EU ETS is likely to be extended to further sectors, such as shipping, and other greenhouse gases such as methane from certain sources. At the same time the model might also be developed further by a complementary 'upstream' inclusion of sectors, such as transport and heating, where monitoring and reporting is difficult or administratively too burdensome for downstream actors. As scarcity increases over the decades to 2050, the carbon price will rise and the revenues generated over the coming three decades will be substantial.

However, other methods of carbon pricing should also be expanded in the coming decades, where they do not already exist, most notably carbon taxes based on the potency of the greenhouse gas in question. Taxes are particularly appropriate when monitoring and reporting uncertainties exist, but where taxes could still be levied on the basis of standardised emission factors or quantities supplied³. At European level, CO₂ taxes have been obstructed in the past, and while the logic for applying them equally across the EU's internal market remains strong, the revenues do not need to accrue to the EU. Value Added Tax and excise duties are levied according to EU frameworks, but Member States have

2 Report of the High-Level Commission on Carbon Prices: <https://www.carbonpricingleadership.org/report-of-the-highlevel-commission-on-carbon-prices>

3 The Paris Agreement refers to greenhouse gases as defined in the Convention, which in turn defines greenhouse gases as 'gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation'. Anthropogenic greenhouse gases are most commonly considered to be Carbon dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O) Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur Hexafluoride (SF₆).

some flexibility to fix rates, and the revenues are collected nationally⁴. To object to EU-level taxes on grounds of fiscal sovereignty or national determination of the energy mix need not entail rejection of taxation as a valuable policy instrument at the national level.

Fears of carbon leakage and distributive impacts will only increase as climate regulation becomes more stringent, and carbon pricing instruments are no exception. They are unique, however, in contrast to standard-setting and the imposition of emission limits, in that they generate revenues that can be used to attenuate distributional impacts, finance innovation and early-stage deployment, and fund adaptation.

2. *Make the EU a champion of low-carbon technology*

The European Green Deal narrative centres on stepping up the innovative capability of the EU in the 'green' and digital sectors. This indicates that the EU is determined to use the scale of its internal market and funding capabilities to develop breakthroughs in low-carbon technologies. The carbon price is a key element for this, but it will have to be complemented with proactive innovation and deployment policies, and demand-side measures.

Even if the decision on the energy mix remained a national matter for Member States, the EU succeeded in opening up the national energy markets and in realising a spectacular development of its renewable electricity production over the last decade. The joint EU-wide approach created economies of scale and opened a large market, even if some Member States invested more money at the outset than others. The dynamism brought down the costs, especially of solar and wind energy, to the point where market forces in conjunction with carbon pricing are largely taking over. In many other places across the world, renewable energy has become the most cost-effective way of producing electricity and is pushing fossil fuels, in particular coal and lignite, out of the market. These developments are being helped by developments in the digital sector, in energy storage and by policies to reduce fossil fuel subsidies and instead to price carbon.

The EU played a decisive role in this development, knowing that it is not innovation alone that is important to bring forward clean technologies, but that the creation of lead markets for low-carbon products matters too. Such market creation allows for a massive deployment of new technologies that creates the jobs and incomes of the future. A similar experience is now taking place with respect to battery production and could be replicated again in areas such as hydrogen, carbon capture and storage (CCS), biochemicals and resource recovery as integral components of a circular economy.

Especially in 'hard-to-abate' sectors, many more low-carbon technologies will be needed to produce goods for which there is considerable demand in affluent societies. These include shipping and aviation, but also steel, glass, non-ferrous metals, cement, and chemicals that allow the construction of sustainable cities and infrastructure. Ultimately the EU can mandate standards for these essential products that both EU producers and importers will have to respect, ramping up demand for such goods. Such standards have often served as the basis for standards in other jurisdictions, also because all countries want to produce products that can be sold in the large EU market. Climate and environment policies have certainly helped to establish a so-called 'Brussels-effect' (Bradford, 2020) regarding product standards. If the ambition of the European Green Deal is followed through over the coming decades, this effect is likely to become even more significant.

3. *Develop CO₂ removal solutions, both technological and nature-based*

The EU's net zero commitment in 2050 and the reference in the Paris Agreement '*to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of the century*' both underline the important role that removals must play in the future. Emissions related to human activity will be impossible to reduce to zero within these timeframes. There will be legacy emissions of greenhouse gases,

⁴ An EU 'Own resource' is levied on the harmonised Value Added Tax base, which is distinct from the rates and revenues collected nationally, which need not be the case for taxes levied on greenhouse gases.

whether from livestock rearing or international aviation, to give two likely examples. Such legacy emissions, wherever in the world, will have to be matched by removals.

In the coming decades, starting immediately, Europe needs to scale up efforts to develop carbon dioxide removals, using both technological and nature-based techniques. Greenhouse gas emissions have been produced at an industrial scale since the Industrial revolution, and removals are also going to have to be deployed at industrial scale in future to limit climate change to the 2°C, or if possible 1.5°C, average global temperature increase. It would be a grave mistake to hang all efforts on reducing emissions, and not to put equal efforts into ramping up removals.

There is ambivalence about removals, as some environmentalists fear that they serve as a pretext for continuing to emit, and their development reduces pressure to reduce emissions to their absolute minimum. In order to maintain pressure, the recently agreed EU Climate Law limits the magnitude of nature-based removals to be counted against the -55% target by 2030 to 225 million tonnes CO₂⁵. Some prefer nature-based solutions for their potential environmental co-benefits, but these too can have perverse effects if not carefully framed. The biggest drawback of nature-based solutions is that they are often temporary, keep needing to be renewed to prolong the store of carbon, and can be reversed. By contrast, emissions into the atmosphere of some greenhouse gases will persist for a century or more (and for some gases for thousands of years). A temporary removal hardly counts as a match for emissions that will contribute to global warming for a century or more. Thus, nature-based solutions will work best if combined with permanent storage solutions.

Direct Air Capture is the most comprehensible removal of carbon dioxide from the atmosphere, which if stored permanently, is putting 'right' the 'wrong' created by anthropogenic carbon dioxide emissions. The other type of removal combines the natural process of photosynthesis with carbon capture and storage technology,

which is referred to as Bioenergy with Carbon Capture and Storage (BECCS). There is a belief that CCS is untested as a technology, whereas Norway has been doing it successfully for 25 years. CCS is thought of as too expensive, but carbon prices will go up and costs will come down in the future. Energy used to capture emissions does impose an efficiency loss penalty. However, all these doubts can be adequately answered and are anyway dwarfed by the greater risks posed by climate change.

There is great importance in the announced regulatory framework for carbon dioxide removals foreseen by the European Commission in 2023. Such a framework will enable legacy emissions to be compensated for. Whether these removal certificates are retained by the agriculture and land-use sectors or allowed to be used within the emissions trading system can be decided later, when there is a better idea of their potential supply. What is essential is that removals can be incentivised by having a value that can be realised.

The rapid expansion of technological and nature-based removals needs to start now so as to reach climate neutrality in Europe by mid-century, and prepare for achieving net removals in the second half of the century. It is in Europe's interest to develop carbon removals so as to be ready to meet the global temperature goals of the Paris Agreement⁶.

4. *Address the social dimension of the transformation process*

The comprehensive low-carbon transformation of the European economy will undoubtedly encounter social hesitation and inertia, and hence will have to cope with resistance. Many if not most economic activities related to fossil fuels will be under pressure and destined to disappear, as will the jobs related to these. Other economic activities will take their place, but these may not be necessarily located in the same places or sectors. Social and political support are key for the low-carbon transformation to succeed, so facilitating this transition

5 See Art. 4.1 of the European Climate Law: <https://data.consilium.europa.eu/doc/document/PE-27-2021-INIT/en/pdf>

6 As part of the agreement on the EU Climate Law the European Commission stated that the net sink will have to be increased to at least 300 million tonnes CO₂: www.europarl.europa.eu/news/en/press-room/20210419IPR02302/meps-reach-deal-with-council-on-obligation-for-eu-to-be-climate-neutral-by-2050

will become one of the most important factors in meeting the goals of the Paris Agreement.

The first signs are already clear in coal-mining regions but other major changes in the field of oil and gas are already looming. Similar changes will happen in the field of manufacturing. The transformation that car manufacturing is going through with respect to electrification is such an example. Fears for unemployment, also due to automatization of entire manufacturing processes, will hinder the process even if the overall requirement for labour will not be any less. Workers may face temporary unemployment and will have to be re-trained and re-skilled for other jobs. For that reason, the EU has established a Just transition Fund the importance of which will surely have to grow over the decades to come.

The regional impact of the low-carbon transformation has already led the EU to develop a specific initiative towards regions heavily dependent on coal mining as part of its regional policy. Equally, several climate policy regulations incorporate the differentiated regional impact in their design. The EU ETS reserves more allowances for Member States likely to bear a more significant economic impact, and transition arrangements are foreseen for the fossil-fuel based power sector. The Modernisation Fund reserves part of the EU ETS revenues for deploying a low-carbon transition in lower income Member States. The Effort Sharing Regulation (EC, 2018) has differentiated targets for Member States in line with differences in wealth between Member States. In addition, new funds are likely to be needed to counter social impacts on more vulnerable groups and regions.

An increased awareness by the consumer and a willingness to change habits is important for the uptake of new technologies and low-carbon behaviours. Climate policies will have to foresee convincing and transparent explanations to the public, who may not be well versed in the impacts and consequences of the changes ahead. Consumers will be confronted with relative price increases of many goods and services. The example of the protest of the so-called '*gilets jaunes*', or 'yellow jackets', in France is to be kept in mind. All this pleads

in favour of gradual changes while the climate change reality tells us there is no time to lose.

A crucial field is food where meat consumption, in particular of red meat, has a major climate and environmental impact. The EU's Common Agricultural Policy needs a substantial overhaul as neither its way of producing food, nor the consumption patterns that it implicitly encourages, can be sustained. Consumers as well as the farmers will be confronted with significant change in the decades ahead. A successful handling of it will depend on solid explanation as well as significant support in terms of re-orienting skills and investments.

5. *The EU as a pioneer in Sustainable Finance*

Finance needs will be enormous, for mitigation, new infrastructure, as well as adaptation. The low-carbon transformation therefore requires a solid and supportive financial system. While EU funds are in high demand at present, particularly so in the aftermath of the coronavirus global pandemic, private finance has an even larger role to play, and must be aligned with the public interest in addressing the climate crisis in time.

The EU has been a pioneer in the rapidly growing market of Green Bonds and is now the biggest sustainable finance market in the world. The disclosure of climate and sustainability risks by financial companies of their products and policies have been made mandatory (EC, 2019). In addition, new regulations related to the sustainable finance taxonomy defines 'sustainable' activities (EC, 2020c). The EU is also moving forward with a new corporate sustainability reporting Directive, extending well beyond financial companies (EC, 2021). It will be crucial in the coming years to implement these new regulations rigorously and to establish practical tools and benchmarks.

In addition to carbon pricing, the EU has chosen a mandatory approach to the disclosure of climate risks by financial companies and corporates, and is the first major economy to do so. This underlines the EU's determination to strengthen its market-based approaches. The purpose is to ensure that high quality and transparent information is provided to market

participants, that facilitates capital allocation and pricing, and avoids stranded assets. It should also be able to prevent ‘greenwashing’ and to re-assure the public.

The multitude of net-zero and carbon-neutral announcements that major companies have recently been announcing will have to be reported on in a standardised and transparent manner. So far, the EU has not engaged deeply in voluntary carbon markets but has preferred the development of compliance markets, transparency and consistency. The EU has also opted for a comprehensive approach, framed to avoid backtracking by a ‘do no harm principle’ that takes account of more dimensions of sustainability than climate change alone. In choosing the regulatory approach, Europe has moved faster than all voluntary initiatives and has created global benchmarks against which other standards will be compared and may be inspired by.

Conclusion

To become a climate neutral continent by 2050, Europe has to brace itself for radical change, both reducing its emissions to net-zero and in adapting to the inevitable impacts of climate change. Only if it does both will resilience be assured, and even then, Europe needs the rest of the world to act. Essential will be the steering of market forces and the EU has already decided a regulatory framework on two essential measures: carbon pricing and disclosure of climate and sustainability risks by private companies. While the former has a history of 16 years, the latter is just now starting. Removing carbon from the atmosphere must start now with a view of undertaking this at scale by 2050. Breakthrough low-carbon technologies will have to be deployed massively, and if well managed could lead to a reinforcing of the so-called ‘Brussels effect’, setting *de facto* standards for global markets. The transformation process should not be delayed but rather strengthened through addressing distributive impacts and through appropriate action in the field of regional policy and the re-skilling of workers. In conclusion, while foundations have been laid, so much more needs to be done to adequately address the climate crisis, and there is no time to lose.

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Key Strands of EU Climate Diplomacy: Past Performance and New Opportunities

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Introduction

The EU's¹ carbon dioxide emissions from fossil fuels peaked in 1979, and its share of global carbon dioxide emissions has dropped by more than half from 16% in 1990 to less than 8 % in 2019 (Crippa et al., 2020). During the same period, global greenhouse gas emissions continued to grow and, year on year, atmospheric concentrations of carbon dioxide have reached new highs². The European Commission has starkly warned that:

“Economic losses from more frequent climate-related extreme events are increasing. In the EU, these losses already average over EUR 12 billion per year. Conservative, lower bound estimates show that exposing today’s EU economy to global warming of 3°C above pre-industrial levels would result in an annual loss of at least EUR 170 billion or 1.36% of EU GDP” (EC, 2021, pg. 1).

More severe effects will be felt in many other parts of the world, such as neighbouring regions like the Middle East, Northern and Sub-Saharan Africa that experienced a significant growth in their populations. Agricultural yields will be under greater pressure, with impacts on food availability and prices. A changing climate will lead to increased security concerns, exacerbating local and regional conflicts, thereby contributing to increased migrant flows to the EU.

As early as 1996, EU Environment Ministers decided that global average temperature increase should not exceed 2 degrees Celsius above pre-industrial levels³. Climate change moved to the top of the policy agenda of EU Heads of

State, and most recently, the EU has committed to become climate neutral by 2050. The European Green Deal details concrete steps of implementation for the coming decade. In parallel, EU Foreign Ministers regularly address climate change, often in conjunction with security issues, including energy security. Over the years, the EU and its Member States have engaged very actively in climate diplomacy in order to reach out to partners worldwide. The combined strength of the diplomatic services of the EU and its Member States is unparalleled. The European External Action Service alone, set up in 2010, is present in more than 140 countries worldwide. In a few Delegations in major G20 countries, there are Attaches specialised on climate, energy and the environment.

In the past, a number of academic scholars and think tanks have analysed the changing actors and their roles within EU diplomacy, looking in particular at the internal dynamics⁴. The EU's climate diplomacy efforts go well beyond influencing the UN climate negotiations. More and more, EU climate diplomacy aims to mobilise tangible international climate action, and its elaborate diplomatic strategy has developed around key strands. This paper focuses on these key strands, the EU's past performance and future challenges linked to implementation of the Paris Agreement.

Leading by example

First and foremost, the EU's climate diplomacy is built on leading by example. In the first fifteen years of international climate negotia-

1 EU-27

2 [The Keeling Curve](#)

3 https://ec.europa.eu/commission/presscorner/detail/en/PRES_96_188

4 e.g., Biedenkopf & Petri, 2019; Torney & Davis Kross, 2018; van Schaik, 2009; Oberthür & Roche Kelly, 2009; Vogler & Stephan, 2007

tions, the general belief was that fighting climate change would impose economic burdens that would impair economic and social development. This belief was based on the observation that economic growth was strongly correlated with the use of fossil fuels. Innovative clean energy technologies, in particular renewable energy technologies, were in their infancy and were expensive. However, for reasons related to climate change but also to energy security, the EU invested strongly in developing and deploying renewable energy and energy efficiency technologies from the 1990s. In parallel, the EU brought more competition into energy markets and their functioning in the context of the EU's 'Single Market', as well as introducing carbon pricing with the EU's Emissions Trading System.

greater international significance was the fact that with the increased roll-out of renewable energy technologies, the costs of those technologies were declining much faster than was anticipated. As a result, global investment in wind and solar power took off in 2000 and 2010 respectively (BP, 2020, pg. 52). Furthermore, in EU consumer goods markets with high shares of imports, such as passenger cars and white consumer goods, EU efficiency regulations have seen strong global spill-over, or 'Brussels effects' (Bradford, 2020). Figure 1, for example, illustrates how the EU's vehicle efficiency standards since the 90's have been followed by other jurisdictions across the world. Interestingly, while in 2000, it took more than ten years for a given level of vehicle performance to spread to other

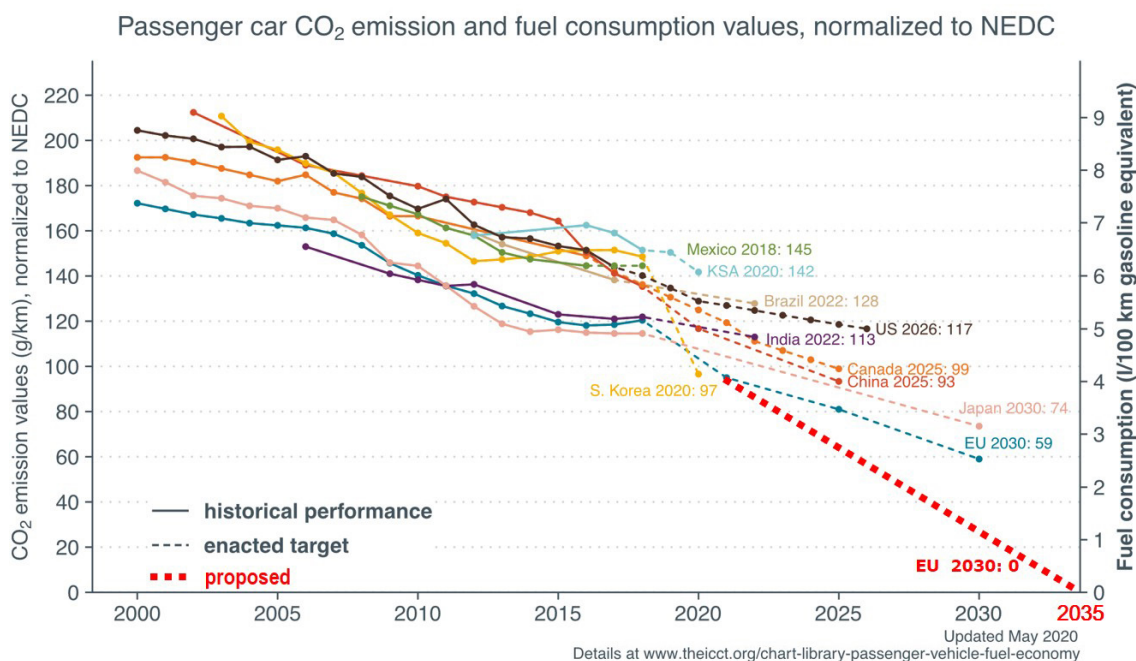


Figure 1: Passenger car CO₂ emissions and fuel consumption, normalized to New European Driving Cycle (NEDC). Source: The International Council on Clean Transportation (ICCT). Note: The New European Driving Cycle is a standardised test run for passenger vehicles in the laboratory in order to generate comparable emissions and fuel use data. It is currently being replaced by the World harmonized Light-duty vehicles Test Procedure.

Largely as a result, the EU was one of the few Parties that accomplished its international emission reduction obligations under the Kyoto Protocol between 2008 and 2020⁵. More importantly, the EU's economy continued to grow while reducing its domestic greenhouse gas emissions, demonstrating the possibility of decoupling economic growth from emissions growth. Of even

major car manufacturing countries, this period has now been narrowed to approximately five years.

It must also be recalled how much the Kyoto Protocol triggered the development of the EU's Emissions Trading System, which itself became a major market for UN credits from the Clean

5 The EU even over-achieved its reduction commitments: EC, 2014 (figure 1, pg. 4); EC, 2020

Development Mechanism. Europe was at the heart of putting the ‘flexible mechanisms’ of the Kyoto Protocol into effect, with benefits for other countries both in terms of revenue flows and also in familiarising the world with the potential of market-based mechanisms. These had some role on China’s decision to introduce its own national emissions trading system from this year (Teng, 2021, pg. 24).

Already in 2006, well ahead of the adoption of the ‘Kigali Amendment’ under the Montreal Protocol at the end of 2016, the EU started regulating the use of fluorinated gases, which are potent greenhouse gases. Since 2014, the use of these gases is being phased down progressively by 80 % by 2030 compared to 2014 (Holzleitner et al., 2019, pg. 182).

In the coming years, a similar ‘Brussels effect’ can be expected in international financial markets and in setting a regulatory framework promoting carbon dioxide removals. At present, the EU is implementing its first ‘taxonomy’ for sustainable finance, and is introducing corporate climate reporting and climate risk assessments. The power of demonstrating the opportunities that come with concrete policy measures will remain instrumental in advancing international action on climate. For instance, when UN climate talks came almost to a halt in the early 2000s, after the Bush Administration decided to leave the Kyoto Protocol, focusing on opportunities helped to re-engage the US Administration. Likewise, the prospect of being able to decouple economic growth from greenhouse gas emissions was certainly a decisive factor for key emerging economies to participate for the first time in ‘G8+5’ climate discussions at the Glen Eagles Summit in 2005.

However, there are also policy areas where particularly EU civil society continues to criticise the EU for not walking the talk, such as on the removal of fossil fuel subsidies, on global deforestation, trade, the EU’s Common Agricultural Policy, and more generally on the carbon embedded in EU imports.

Sharing, cooperating and linking

Climate science and comprehensive socio-economic impact assessments are the basic foundation of the EU’s climate action. Hence, since early days, the EU actively promotes climate science at home⁶ and abroad. It supports the Inter-Governmental Panel on Climate Change (IPCC), including the wide dissemination of its reports and findings. Furthermore, the EU fosters international peer review processes and cooperation among scientists from all relevant disciplines and all parts of the world⁷.

Designing effective, efficient and fair policy responses whether it is in order to reduce greenhouse gas emissions or to make the economy and society resilient to the effects of climate change is a complex undertaking. In practice it will require the complete overhaul and modernisation of the entire global economy within the next 30 to 40 years. As climate policy is still a relatively young policy area, there continues to be a lot of learning-by-doing, developing innovative approaches that are tailored to specific national circumstances.

Consecutive long-term strategies, climate target plans and adaptation strategies have been developed by the EU. In addition, Member States, regions, cities and municipalities across Europe have elaborated their own climate, energy, mobility and adaptation strategies. Similarly, civil society and business associations have produced their own blueprints for climate action. In this regard, two particular aspects of EU climate policy that have a clear international dimension are worth highlighting:

- **Openness:** In principle, EU climate policies have intentionally been designed to be open to regulatory cooperation with other countries or groups of other countries. Notably, the EU ETS is a system (Runge-Metzger, 2006) that other countries can be linked up with, as is already the case with Switzerland. The EU organises dialogues with other countries or regions with emissions trading systems across the world and facilitates the sharing of expertise and learning with other countries

6 e.g., CRESCENDO, Primavera [CRESCENDO – UKESM](#)

7 e.g., <https://www.cd-links.org/>; PRIMAVERA

that consider introducing the instrument. Further regulatory cooperation on climate change still has a significant potential (Golberg, 2019).

- **Fairness and equity:** EU Member States and regions are more heterogenous in their economic and social fabric than is often believed. Addressing these distributional issues are central when designing EU climate policies in order to find the support of all Member States. The way the EU is dealing internally with differentiation recognising national and regional circumstances has drawn some interest from other countries, such as from China and also the US.

For international action to be effective, similar exercises will have to be undertaken internationally. On implementing the Paris Agreement, the EU is partnering especially with other industrialised countries, also in the realm of the OECD and the IEA, and with emerging economies⁸. On adaptation, it supports its long-standing partners in the African, Caribbean and Pacific regions (ACP)⁹. In the coming years, it is envisaged to fully mainstream climate change into

all the EU’s partnership and cooperation programmes. As illustrated in Figure 2, the overall contribution of the EU and its Member States to international climate finance is steadily rising, also honouring its international commitment. Roughly one quarter of the total EU contribution is channelled via the European Commission and the European Investment Bank.

Pushing the process

For the EU, multilateralism is a ‘must’ in order to address this ‘global commons’ problem. In the international climate negotiations, the EU has always called for ambitious economy wide climate action by all. Of course, fairness reflecting the evolving spectrum of national circumstances has always been understood as essential, combined with the need for environmental integrity. Therefore, transparency, accountability and enforceability have been key axes of EU diplomacy. Unsurprisingly, these different demands are seen with different emphasis by different groups of partners around the world.

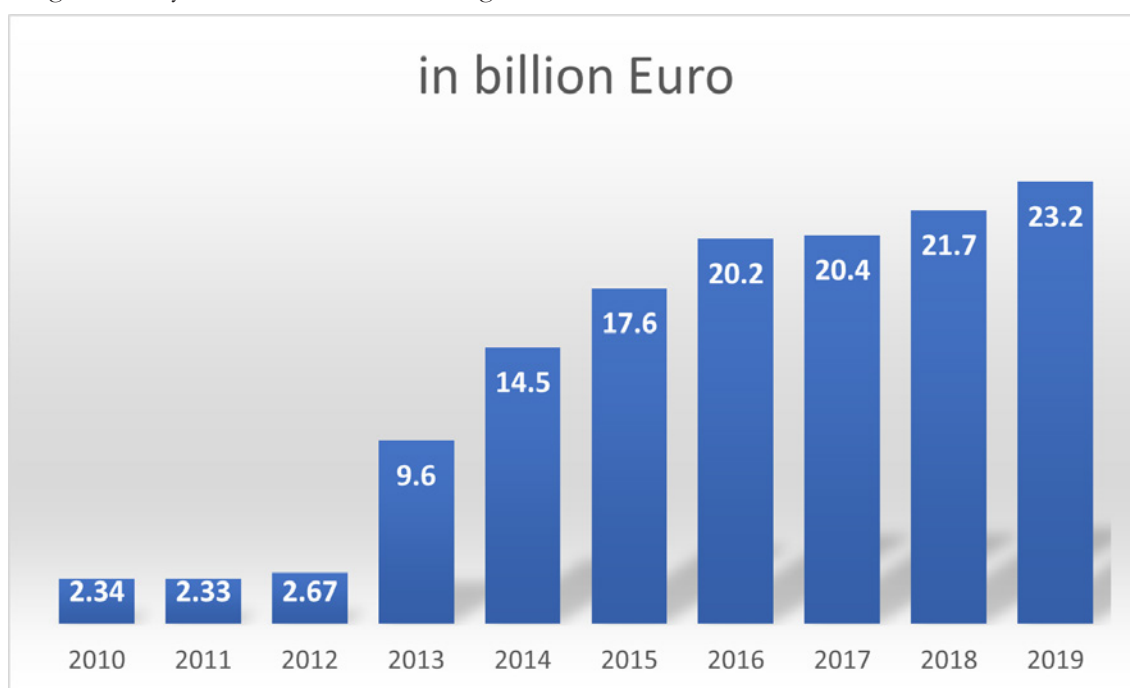


Figure 2: The development of the international climate finance contribution of the EU and its Member States and the UK, 2010-2019. Source: EU submissions to the UNFCCC, EC annual progress reports, ECOFIN Council conclusions

⁸ Strategic Partnerships for the Implementation of the Paris Agreement (SPIPA)

⁹ e.g., [Global Climate Change Alliance+](#) since 2007

EU climate diplomacy showed its stamina in supporting the international negotiation process, even while progress is sometimes painstakingly slow and at times is going backward. To date, about half of the UN climate conferences have been organised in the EU.

EU diplomacy was re-doubled at times of major setbacks, such as the failed COP in The Hague (COP6) in 2000, the subsequent US disengagement, and then to persuade the Russian Federation to ratify the Kyoto Protocol (Delbeke et al., 2019, pg. 27). When this eventually happened, in 2005, it triggered the entry into force of the Kyoto Protocol which was a *'sine qua non'* condition for developing countries to engage in any climate action.

As of 2005, in order to get substantive 'post-2012' negotiations even started, EU Leaders made climate change a core issue, inviting their counterparts from China, Brazil, India, Mexico and South Africa to join the G8 Summits when possible. Getting them on board was key to persuade the Bush Administration to start re-engaging in the multilateral climate negotiation process. The EU also pushed climate change onto the agenda of the new G20 in 2008 (where it has been maintained, even in recent years when the Trump Administration objected to climate change related parts of the Summit declarations). Eventually, COP13 in Bali in 2008 set a comprehensive mandate for long-term cooperative action which was supposed to be concluded at COP15 in Copenhagen.

In order to intensify talks, EU governments initiated new broader informal processes like the 'Greenland Dialogue' and the 'Petersberg Climate Dialogue'¹⁰, others like the 'Cartagena Dialogue' were supported for many years, and the EU played a major role in other fora, such as the 'Major Economies Forum'.

At COP15 in Copenhagen, consensus could not be reached in the final hours of the conference. But in an unprecedented diplomatic effort, only a few weeks later by the end of January 2010, more than 100 countries representing around 80

% of global emissions had submitted their 2020 pledges to the UN. As a *'quid pro quo'*, the EU agreed to continue to make its own commitment legally binding under the Kyoto Protocol.

However, the level of collective ambition of these voluntary pledges was far from what science was calling for, they only covered the medium-term, and their implementation was not legally enforceable. In setting a more ambitious mandate, the EU has been particularly successful in forging alliances with the large group of vulnerable developing countries, as well as progressive, often medium-sized emerging economies, and then to build bridges to find ambitious compromises acceptable to all¹¹. This was reinforced by promoting alliances of civil society, regions, municipalities and progressive businesses between the EU and other parts of the world. The results of this strategy were seen in the final hours of COP17 in Durban when agreement was reached on a negotiating mandate for the Paris Agreement. The EU played a similar role in the 'High Ambition Coalition' during the days prior to the Paris Agreement being reached¹².

As a result, the EU succeeded in meeting many of its objectives. First and foremost, the EU achieved the consolidation of the multilateral approach for the years - and possibly decades - to come. The Paris Agreement addressed most of the shortcomings of the Copenhagen pledges. Countries' national contributions were known well ahead of the conclusion of the Agreement. Its provisions are legally binding. It sets an overarching objective, it applies to all countries, and each country has to contribute, to follow a common reporting format, and to regularly take stock, review and progress its contributions, also in the light of the closing any gaps in the collective effort. Apart from reducing emissions, adaptation to climate change and climate finance are reflected much more appropriately compared to the Kyoto Protocol or the Copenhagen Accord.

However, some EU objectives for the international climate negotiations, such as the need for a legally binding compliance regime, crossed

¹⁰ Petersberg Climate Dialogue, Ministerial on Climate Action.

¹¹ For instance, on 'common but differentiated responsibilities and respective capabilities', see the detailed account in Petri & Biedenkopf, 2020.

¹² For a detailed account see Betts (2021)

the red lines of other major economies, like the US, China and India, when negotiating the Paris Agreement. The jury is still out whether the more voluntarist approach of the Paris Agreement will be sufficiently robust to ensure that all countries will deliver on their Nationally Determined Contributions (NDCs) and to collectively bring the global temperature increase to its stated objective of ‘well below 2°C’.

Confronting hard issues

The EU has not shied away from tackling hard issues that run against strong vested economic interests. Examples include international aviation and maritime transport that are governed by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO), respectively. Other difficult issues related to the EU’s external carbon footprint, such as the greenhouse gas emissions related to the production of imported fossil fuels and biofuels. Another example has been the poor environmental integrity of certain offset credits, especially those generated by burning fluorinated gases, under the Clean Development Mechanism. Despite earlier efforts to find internationally negotiated solutions, the EU – backed by supportive EU public opinion – pursued the second-best option of EU regulation. Therefore, from 2008 new sustainability criteria were put in place for imported biofuels and biomass taking into account greenhouse gas emissions along the full value chain, and from 2012, intra-European aviation was added to the EU Emissions Trading System.

As a result of these attempts to regulate, the EU has often found itself under fierce attack and sometimes threatened with trade sanctions. However, without the pressure from the EU, it is unlikely that ICAO would have introduced its market-based offsetting measure, known as CORSIA¹³.

One issue that currently is beginning to create strong international counter-reactions is the work of the EU on a new policy measure to avoid carbon leakage due to more stringent domestic EU climate action, i.e., the introduction of a Carbon Border Adjustment Mechanism

for selected internationally traded products like steel, cement and electricity. Clearly, carbon leakage will potentially not be limited to the EU, and could also affect other ambitious economies, but it risks rendering climate action ineffective. While the carbon leakage issue should preferably be addressed internationally through collaborative approaches (Delbeke & Vis, 2020), such as was done under the Montreal Protocol on ozone depleting substances, the EU now foresees a Carbon Border Adjustment Mechanism that is WTO compatible. While controversial, it at least has the merit of putting carbon leakage at the centre of the climate and trade debates. If the world wants Europe to be ambitious on climate action, then the risk of its efforts being rendered ineffective should be a matter of common concern.

Outlook: International challenges ahead – the next major milestones in the Paris Agreement context

Internationally, the three main challenges in the coming years will be (i) to raise emission reduction ambitions in order to close the gap to 1.5 degrees Celsius, (ii) to make the global economy and society resilient to the adverse effects of climate changes, and most importantly by far (iii) to turn this ambition into concrete global action in the coming years. With respect to the specific challenges of implementation, Delbeke and Vis (2021) highlighted the five most important specific challenges from a domestic EU perspective. In fact, these will be equally relevant in many other countries across the world providing ample opportunities for further expanding EU climate diplomacy, collaboration and cooperation. Presently, all the challenges are amplified by the economic and social consequences of the COVID-19 pandemic, which will be prolonged, particularly in least developed, low- and middle-income developing countries.

Until the next UN conference in Glasgow (COP26), especially with the re-engagement of the US under the Biden Administration, huge steps will be made in terms of intentions and domestic climate action – not least by the EU with its policy strengthening proposals planned for mid-2021. However, many countries, even

13 See International Civil Aviation Organisation (ICAO) Resolutions A38-18, A39-3, A40-19. <https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx>

among the G20, continue to struggle in identifying the best way forward to define their domestic policies, their climate compatible infrastructure or five-year plans, and to determine how it can all be solidly financed.

While there will be more climate action, it is unlikely there will be enough. In this respect, the next IPCC Assessment Report in 2022 will provide the latest scientific knowledge on the necessary scale and pace of the change required. The Paris Agreement's 'global stocktake' in 2023 will determine how far the global community has come, and what more will be required in terms of action and finance. Ideally, this should also include an open and frank assessment of the overall efficacy of international climate finance. And by 2025, at 'Paris+10', the collective actions planned and pledged must put the world on track, in the medium-term, to keep global temperature increase to below 1.5°C.

Conclusion

The EU has stayed true to the climate cause throughout the past 30 years and has delivered on its international commitments. It has engaged with partners, and occasionally pushed processes harder than some like. The EU knows that its action alone cannot deliver the outcomes that climate change needs. Europe depends on the actions by 'significant others' and eventually by all if the climate crisis is to be resolved. Just waiting for that to happen is not enough.

So, what can Europe do? Specifically, it can act proactively on all fronts. First, it has to deliver on its own commitments. That is a harder task than many appreciate, with the EU's higher 2030 goals to be met in just 9 years from now. Much more stringency needs to be added to the policy mix at all levels of governance. Second, the policy learning that the EU has gained – both of what works and what does not – can be shared with others, with particular focus on the G20 and other emerging economies, whose future actions will be crucial. Third, diplomatic engagement is needed, including working with other major players, such as the U.S., China and India. Fourth, climate finance will continue to be an essential strand of that engagement, with more vulnerable countries in particular.

Fifth, and not least importantly, the fairness of the transition must be ensured both nationally and internationally, or the political resolve will vanish. Leadership is about leading, and the EU is committed to continue providing it.

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