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Future EU Climate Policy: Challenges and Chances

A Roadmap for Reconciling Climate Action and International Competitiveness

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The EU must urgently reconcile its climate protection measures with the international competitiveness of its economy. In this respect, we dare to look into the crystal ball to shed light on key issues that will determine the future of EU climate policy: What is at stake for the EU? What are essential challenges the EU will face? What chances to overcome them could EU decision-makers seize? To answer these questions, we focus on carbon pricing by emissions trading and identify potential further developments which are already visible or should be at the top of the EU agenda 2024-2029.

- Solving the carbon leakage dilemma must be a top priority of the EU. It damages the international competitiveness of the European economy, diminishes growth, and threatens jobs, prosperity and social peace, and also undermines the EU's GHG reduction efforts by increasing overall global GHG emissions.
- In comparison to other climate instruments, cap-and-trade emissions trading is more ecologically effective, economically cost-efficient, socially acceptable, and politically resilient even in times of crisis. Therefore, it is better capable of reducing GHG emissions, securing energy supply, and providing affordable energy prices.
- On the EU level, further developments of emissions trading are visible: The EU-ETS 1 for energy production and industry could be extended. The EU-ETS 1 and the EU-ETS 2 for heating and road transport could be merged.
- On the international level, carbon pricing can serve as a basis for international cooperation of the EU with third countries. Especially promising are plans to establish international climate clubs, and to gradually link EU emissions trading with comparable system of third countries.

Preamble

Europe is facing a time of historical upheaval, a time of internal and external threats to peace and freedom, with great opportunities as well as risks from new technologies, and a time beset by the consequences of climate change and its impact on prosperity and justice. Today's Europe is the result of its eventful history, its experiences and the lessons it has learned from its scientific and cultural achievements, from its civilisational accomplishments, as well as from war, suffering and crisis. The legacy of the past has also given us a promise for the future: human dignity and freedom are inviolable. Today – in the face of major upheavals that will decide the fate and future of Europe – the question once again arises as to what solutions Europe can find to the troubles of the present and the challenges of the future. Can it preserve peace and freedom, defend its sovereignty and security, and increase prosperity and justice?

With this series of articles, the cep Network would like to draw attention to pressing issues and developments which go beyond day-to-day politics and regulation and will be of crucial importance for the EU in the run-up to a significant and game-changing European election. We aim to ask the key questions, shed light on their strategic context and provide some political answers.

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1 Introduction

When Ursula von der Leyen launched the **European Green Deal** in 2019, she called it "Europe's 'man on the moon' moment".[1] The final destination of this journey is to transform Europe into "the first climate-neutral continent in the world by 2050."[2] And indeed, it has been quite a trip so far. In pursuit of the long-term goal of the UN Paris Climate Agreement[3] to limit global warming to "well below 2° C" and, if possible, 1.5° C compared to pre-industrial levels, the European Union committed itself to reach "climate neutrality"[4] by 2050[5]. As a first stage finish, the EU tightened its climate target for the reduction of domestic[6] greenhouse gas (GHG) emissions – after the deduction of GHG removals from the atmosphere – to at least 55% by 2030 compared to 1990 levels.[7] To operationalise this 2030 climate target, the EU policy cycle 2019-2024 was characterised by an unprecedented number of legislative projects which overhauled the entire EU climate and energy *acquis* to make it fit for the next decade. The resulting "**Fit for 55" legislative framework** consists of many legal acts[8], comprising thousands of pages of utmost detailed provisions. It is complemented by legislation in other policy areas of the European Green Deal intended to contribute to the EU 2030 and 2050 climate targets.[9]

Today in the wake of the elections to the European Parliament in June 2024 and the subsequent appointment of the next European Commission for the upcoming EU policy cycle 2024-2029, the initial enthusiasm for this Herculean task is increasingly giving way to a noticeable regulation fatigue, growing scepticism and even outright rejection ("backlash"). Since 2019, external shocks – the COVID-19 pandemic as of March 2020, the Russian invasion of the Ukraine in February 2022 and the resulting economic disruptions, including the threat of an energy supply crisis, surging energy prices and persistent inflation – have not only shifted political priorities. They have also raised questions about both implementation challenges regarding specific instruments as well as the overall direction of the EU's climate policy: Is the new EU climate *acquis* threatening the international competitiveness of the European economy? Does it endanger the social welfare of citizens? Is it sufficiently resilient to survive future shocks and disruptions? And, last but not least, is it even capable of reaching its ambitious goals?

Obviously, the European "moon mission" towards climate neutrality has already run into heavy turbulences which will most likely further intensify. In the final legislative phase, several projects of the European Green Deal met with growing resistance, the most prominent being fierce farmers' protests against the Nature Restoration Law.[10] However, this was probably just a harbinger of debates and conflicts to come. When in February 2024 the outgoing European Commission presented its recommendation for an interim EU 2040 climate target, according to which the EU's net GHG emissions

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1 von der Leyen, Ursula (2019), Press Remarks of 11 December by President von der Leyen on the Occasion of the Adoption of the European Green Deal Communication.

2 von der Leyen, Ursula (2019), Opening Statement of 16 July 2019 in the European Parliament Plenary Session by Ursula von der Leyen, Candidate for President of the European Commission.

3 2015 Paris Agreement for the Implementation of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) [Paris Agreement], Article 2 (1) (a).

4 Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality ("European Climate Law"), Article 2 (1): EU-wide GHG emissions and removals regulated in EU law "shall be balanced" within the EU at the latest by 2050, "thus reducing emissions to net zero by that date," and the EU "shall aim to achieve negative emissions thereafter."

5 European Union (2023), Update of 16 October 2023 of the Nationally Determined Contribution (NDC) of the European Union and its Member States under the Paris Agreement, p. 8, No. 28.

6 The term "domestic" means without the use of international credits.

7 Regulation (EU) 2021/1119 ("European Climate Law"), Article 4 (1).

8 An overview of the content and status quo of the Fit for 55 legislative package is provided by the European Parliament's Legislative Train Schedule: https://www.europarl.europa.eu/legislative-train/package-fit-for-55.

9 Id., https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal.

10 Euractiv of 27 February 2024, Contested Nature Restoration Law passes EU Parliament, despite last-minute revolt.

should be reduced by 90% by 2040 compared to 1990 levels to finally reach climate neutrality by 2050[11], this was heavily criticised for being either much too lax or much too ambitious. It is up to the next Commission to submit specific legislative proposals for the EU 2040 climate target and the corresponding legal acts for its implementation, on which the Member States and the next European Parliament will have to decide in the EU policy cycle 2024-2029. Therefore, it is no wonder that the future of the European Green Deal and EU climate policy is a hotspot of the ongoing election campaign.

In the run-up to the European elections, this *cep**Input special*** dares to look into the crystal ball to shed light on key issues that will or should determine the future of EU climate policy: What is at stake for the EU (part 2)? What are essential challenges the EU will face (part 3)? And what chances to overcome them could EU decision-makers seize (part 4)? To answer these questions, we focus on carbon pricing by emissions trading, the recognised cornerstone of the overall architecture of EU climate policy. In this respect, we identify potential further developments of this instrument which are either already visible or likely to appear on the EU legislative agenda 2024-2029. Given that climate change is a global problem, it is also indispensable to take its international dimension into account. Challenges to internal EU climate policy can be better overcome if the opportunities offered by external climate protection measures and cooperation with third countries are utilised. Therefore, we present options for potential solutions that are either already visible or should be put at the top of the to-do list for a roadmap to reconcile climate action with international competitiveness of the European Union.

2 Future EU Climate Policy: What is at Stake?

Human-induced climate change[12] is increasingly affecting the planet and also the European continent. Globally, 2023 was the warmest year on record, the average global temperature exceeding pre-industrial levels by 1.5°C.[13] It was also the warmest year in Europe, at 2.6°C above the pre-industrial level.[14] Since the 1980s, Europe has been warming twice as fast as the global average, becoming the fastest-warming continent on Earth.[15] Climate change in Europe manifests itself in various ways both in the form of extreme weather events – e.g., heat waves, droughts, storms, heavy rainfall and flooding – as well as gradual developments – such as damage to ecosystems, loss of animal and plant species, desertification, warming and acidification of water bodies, and rising sea levels.

Since the global climate is closely linked to all elements of the atmo-, hydro-, geo-, bio- and anthroposphere by an overall system of interdependent interactions ("nexus"), the **harmful effects of climate change** can be far-reaching.[16] Climate impacts can cascade from one sphere, sector and/or region to another, including from Europe to other continents and vice versa, e.g., in the form of migration.[17] Prolonged periods of drought and resulting water scarcity (climate-water nexus) significantly reduce food production especially in Southern Europe (climate-food nexus), thereby

[11] European Commission (2024), Communication COM(2024) 63, Securing our future – Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society.

[12] Intergovernmental Panel on Climate Change IPCC (2021), IPCC Sixth Assessment Report – Working Group 1: The Physical Science Basis.

[13] European Environment Agency EEA (2024), European Climate Risk Assessment – Executive Summary, p. 3.

[14] Copernicus Climate Change Service C3S and World Meteorological Organization WMO (2024), State of the European Climate 2023, p. 5.

[15] European Environment Agency EEA (2024), European Climate Risk Assessment – Executive Summary, p. 5.

[16] Küsters, A. et al. (2023), Quo vadis, Europa? Am Scheideweg: Globale Herausforderungen, interne Defizite und dringende Handlungsoptionen, pp. 12 et seq.

[17] European Environment Agency EEA (2024), European Climate Risk Assessment, Executive Summary, p. 5 and Report, pp. 258 et seq.

increasing food prices and inflation. Climate impacts on human health and well-being (climate-health nexus) threaten human life and affect labour productivity. Floods and droughts damage critical infrastructure, e.g. for electricity generation from hydro-, nuclear and coal power plants (climate-energy nexus) or transport, thereby threatening essential supply chains (climate-transport nexus). The main risks of climate change in Europe are heat- and drought-related hazards to public health, negative impacts on ecosystems, water supply and food production as well as flood-related damage to people and infrastructure.[18] Overall, negative impacts of climate change cause significant economic damage. Between 1980 and 2022, weather- and climate-related extremes alone resulted in estimated economic losses accruing up to 650 billion Euro in the EU Member States – with growing tendency, as witnessed by the 2021 floods in Germany and Belgium (44 billion Euro) and the 2022 drought and heat waves over the whole continent (40 billion Euro).[19]

Against this background, EU climate policy is faced with the challenge not only to adapt to the negative effects of climate change[20], but also to mitigate GHGs emitted by burning fossil fuels – such as natural gas, oil and coal – as the European contribution to achieving the goals of the Paris Agreement. Consequently, climate policy and energy policy are closely interconnected.[21] Apart from promoting energy saving and energy efficiency, the reduction of GHG emissions is mainly pursued through the decarbonisation of the economy by substituting fossil fuels with new and renewable forms of energy, such as wind and solar power or biofuels. This transformation of all economic sectors in general and energy generation in particular, however, must not endanger the security of energy supply itself. Furthermore, to be economically sustainable it must also ensure affordable energy prices. The fragility of this **triangle of objectives – (1) GHG reduction by decarbonisation, (2) security of energy supply, (3) affordability of energy –** which is to be balanced by EU climate and energy policy[22], has become dramatically visible in recent years. Energy is the *sine qua non* of all activities. After energy prices in Europe had already risen in 2021, particularly due to growing energy demand at the end of the COVID-19 pandemic and dwindling deliveries of natural gas from Russia, they exploded with disruptive force as a result of the Russian invasion of Ukraine in February 2022.[23] In view of the EU's heavy dependence on imports of fossil fuels especially from Russia, suddenly all three objectives were jeopardised.[24]

Despite the rapid crisis interventions of the EU and its Member States[25], it is unlikely that in times of geopolitical shifts and disruptions energy prices will return to their pre-crisis level.[26] **High energy prices** are induced to a considerable extent by the cost of importing fossil fuels, but also by the additional cost of decarbonising the economy itself. There should be no illusions that, at least during the

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[18] Intergovernmental Panel on Climate Change IPCC (2022), Climate Change 2022: Impacts, Adaptation and Vulnerability, pp. 1817 et seq.

[19] European Environment Agency EEA (2023), Economic losses from weather- and climate-related extremes in Europe.

[20] European Commission (2024), Communication COM(2024) 91, Managing Climate Risks – Protecting People and Prosperity; European Commission (2021), Communication COM(2021) 82, Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change; see also Schwind, S. / Reichert, G. (2021), Adaptation to Climate Change, cep**PolicyBrief** 16/2021.

[21] Treaty on the Functioning of the European Union (TFEU), Articles 192 and 194.

[22] European Commission (2007), Communication COM(2007) 1, An Energy Policy for Europe; see also Bonn, M. et al. (2014), Die Klima- und Energiepolitik der EU – Stand und Perspektiven, cep**Kompass**, p. 49 et seq.

[23] Küsters, A. et al. (2023), Quo vadis, Europa? Am Scheideweg: Globale Herausforderungen, interne Defizite und dringende Handlungsoptionen, pp. 34 et seq.

[24] Reichert, G. / Menner, M. / Schwind, S. (2022), REPowerEU: Struggling for EU Energy Sovereignty – The EU Commission's Action Plan for Secure, Affordable and Sustainable Energy, cep**Input** 04/2022.

[25] European Commission (2022), Communication COM(2022) 230, REPowerEU Plan.

[26] European Commission (2024), News Announcement of 29 February 2024, Quarterly reports confirm renewed resilience and the continuation of positive structural changes in gas and electricity markets in 2023.

transition phase, EU climate policy also comes with a price tag which is not – or at least not yet – offset by potentially lower costs of renewables. Consequently, the combined high costs of energy and of decarbonising the economy constitute a burden to the **international competitiveness** of the European economy, and also reduce the availability of investment capital needed to finance the transformation.[27] Furthermore, inflation induced by high energy prices diminishes the overall income of citizens, thereby threatening the **standard of living and social well-being**. Without complementing measures to cushion the pressure on citizens and companies alike, this could reduce **public acceptance of EU climate policy**, and ultimately even undermine **confidence in the democratic system** itself.

In sum, the stakes are high for the European Union regarding its future climate policy. In the next EU policy cycle 2024-2029, EU decision-makers will have to find solutions that reconcile the long-term EU climate targets of decarbonisation and climate neutrality with the – partly antagonistic, partly mutually reinforcing – objectives of securing energy supplies at affordable energy prices for citizens and companies to protect the international competitiveness of European industries. Since failure would have far-reaching consequences, it is essential to start discussions and preparations now.

3 Challenges for Future EU Climate Policy

Given the high stakes for the European Union, in the following we highlight pivotal challenges EU climate policy is confronted with in the upcoming EU policy cycle 2024-2029. In this respect, challenges regarding the implementation of the "Fit for 55" legislative framework, the basic capability of its different instruments and its external dimension are already becoming apparent.

3.1 Implementation Challenges: Making Climate Action Work

The first challenge for EU climate policy is the implementation of the "Fit for 55" legislative framework for achieving the **tightened EU 2030 climate target** of a net domestic reduction of GHG emissions of at least 55% compared to 1990. The main building blocks of the overall architecture of EU climate policy which set **sector-specific emissions targets** are the EU Emissions Trading Directive [EU-ETS, 2003/87/EC][28], the Effort Sharing Regulation [ESR, (EU) 2018/842][29], and the Regulation on land-use related GHG emissions and removals [LULUCF, (EU) 2018/841][30]. Under **EU-ETS Directive**, the EU wants to reduce its GHG emissions caused by energy generation, energy-intensive industries, aviation and maritime transport by 62% by 2030 compared to 2005 (**EU-ETS 1**). As of 2027, the new emissions trading system for fuel combustion in road transport, buildings and additional sectors (**EU-ETS 2**) is designed to price GHG emissions to contribute to 42% emission reductions by 2030 compared to 2005. The **Effort Sharing Regulation** not only sets an EU-wide emission reduction target of 40% by 2030 compared to 2005 for domestic transport, buildings, agriculture, waste and small industries, but also

[27] See, e.g., Vöpel, H. / Wolf, Á, Reichert, G. (2023), Dekarbonisierung ohne Deindustrialisierung – Ein ordnungspolitischer Rahmen für die Transformation in eine klimaneutrale Marktwirtschaft, cep**Studie**, p. 5.

[28] Directive (EU) 2023/959 amending Directive 2003/87/EC establishing a system for GHG emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union GHG emission trading system; Regulation (EU) 2023/957 amending Regulation (EU) 2015/757 in order to provide for the inclusion of maritime transport activities in the EU Emissions Trading System and for the monitoring, reporting and verification of emissions of additional GHG and emissions from additional ship types.

[29] Regulation (EU) 2023/857 amending Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement, and Regulation (EU) 2018/1999.

[30] Regulation (EU) 2023/839 amending Regulation (EU) 2018/841 as regards the scope, simplifying the reporting and compliance rules, and setting out the targets of the Member States for 2030, and Regulation (EU) 2018/1999 as regards improvement in monitoring, reporting, tracking of progress and review.

legally binding reduction targets for each EU Member State, ranging from 10% for Bulgaria to 50% for Germany. The **LULUCF Regulation** sets an EU-wide target of net removals of GHGs in the land use sector, covering the management of crop-, grass- and wetlands, forests, settlements and including land use change such as afforestation, deforestation, and the draining or restoration of peatlands. Each Member State has a binding national target for the increase of net GHG removals by 2030, which together are intended to deliver a collective EU target of 310 Mt CO_2 net removals.

These core targets and provisions are **complemented by many specific legal acts** which pursue different approaches and regulate, for example, the promotion of **renewable energy**[31] and **energy efficiency** in different sectors[32], including buildings[33]. In this context, ambitious targets for improving energy efficiency and for increasing the share of renewables in the EU energy mix have been agreed. In line with the **REPowerEU plan**[34] to make Europe independent from Russian fossil fuels, the EU has set an enhanced target to reduce final energy consumption at EU level by 11.7% in 2030 and a new target for increasing the share of renewable energy in final energy consumption to at least 42.5% by 2030. Furthermore, **sector-specific provisions** such as CO_2 emission performance standards for new passenger cars and light commercial vehicles[35] have been set.

Given the **complexity** of the entire regulatory structure, whose many elements are often closely interlinked, the **ambitious targets, tight timetables, and multitude of highly detailed requirements** affecting all sectors of European society and economy, the implementation of the "Fit for 55" legislative framework is a daunting task that the EU, its Member States, public authorities, companies and citizens will have to tackle in the coming years. Especially innovative approaches – such as the new Carbon Border Adjustment Mechanism (CBAM)[36], which raises numerous technical questions[37] and therefore has already experienced a rocky start[38] – are prone for **implementation hiccups**. Therefore, it is anything but impossible that **deadlines could have to be postponed or even targets be loosened**.

3.2 Capability Challenges: Effectiveness, Efficiency, Acceptability and Resilience

However, even if these rather technical implementation challenges for EU climate policy can finally be overcome, the "Fit for 55" legislative framework in general and its specific instruments in particular still have to pass the reality test of whether they are actually capable of fulfilling their objectives. The **capability of the various regulatory approaches and the respective types of instruments** applied in climate policy have long been the subject of lively debate among politicians and scientist. If regulatory deficiencies and failures should become more and more apparent in the next years, this debate will certainly intensify. In general, three main regulatory approaches and respective types of instruments can be discerned in EU climate policy: (1) "command-and-control" requirements, (2) subsidies and (3) carbon pricing:[39]

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[31] Directive (EU) 2023/2413 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652.

[32] Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

[33] Directive (EU) 2024/1275 on the energy performance of buildings (recast).

[34] European Commission (2022), Communication COM(2022) 230, REPowerEU Plan.

[35] Regulation (EU) 2023/851 amending Regulation (EU) 2019/631 as regards strengthening the CO_2 emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition.

[36] Regulation (EU) 2023/956 establishing a carbon border adjustment mechanism.

[37] See, e.g., Abedinaj, D. (2023), RIFS, Three Challenges for the CBAM's Transitional Phase.

[38] European Commission (2024), News Article of 29 January 2024, Update: Technical issues related to the CBAM Transitional Registry and Import Control System 2 (ICS2).

[39] For the following see generally Menner, M. / Reichert, G. / Voßwinkel, J. S. (2019), Wirksame CO_2-Bepreisung, cep**Studie**, pp. 5 et seq.; Menner, M. / Reichert, G. (2019), CO_2-Steuer oder Emissionshandel?, cep**Adhoc**, pp. 4 et seq.

(1) **Command-and-control requirements ("sticks")** impose obligations directly on potential emitters of GHGs or the manufacturers of corresponding products. Breaches of requirements are usually sanctioned by fines. A prominent example of this type of instrument at the EU level are the CO_2 emission performance standards for new passenger cars and light commercial vehicles with their factual ban of the internal combustion engine by 2035.

(2) **Subsidies ("carrots")** are an attempt to steer the conduct of potential GHG emitters, not directly by command-and-control requirements, but indirectly by financial incentives promoting low-carbon alternatives. At EU level, for example, the EU Innovations Fund[40] is estimated to provide 40 billion Euro of support for the demonstration of innovative low-carbon technologies between 2020 and 2030. On the national level, the EU Member States run extensive funding programmes, e.g., for promoting the deployment of renewable energy or incentivising the purchase of low-carbon technologies like heat pumps or electric vehicles.

(3) **Carbon pricing** is implemented either through carbon taxes or an emissions trading system (ETS) by putting a price on GHG emissions. In line with the polluter pays principle[41], GHG emitters are held financially responsible for the negative effects of climate change on third parties, so that they incorporate related costs in their calculations ("internalisation of external costs").

In the case of a **carbon tax**, the carbon price is set by the state. Given that taxation remains at the core of national sovereignty, the EU has very limited competences in this sensitive policy area. This is confirmed by the fact that the European Commission's proposal[42] for the revision of the **Energy Taxation Directive** [ETD, 2003/96/EC][43] remains the only piece of legislation of the "Fit for 55" package the EU legislators still have not agreed on. According to the plans of the Commission, fuels would have to be taxed by their energy content rather than their volume, thereby also taxing GHG emissions more effectively. It remains to be seen whether the legislative deadlock can be resolved in the years to come.

Within a **cap-and-trade ETS**, the carbon price is determined by, firstly, setting an overall **cap** on the maximum amount of allowed GHG emissions, which is gradually reduced to finally achieve the targeted emissions reduction, and secondly, by the interplay of demand and supply of **trading** the increasingly scarce emission allowances on the market.

In the cases of a carbon tax and of an ETS, the price signal aims to give GHG emitters a financial incentive for changing their conduct. This may be the reduction of GHG emitting activities – such as driving cars or heating buildings with fossil fuels – as the carbon price will make carbon-intensive goods and services relatively more expensive. Furthermore, carbon pricing can increase the demand for low-carbon technologies and carbon-reducing measures – e.g., fuel-efficient engines, heating of buildings with renewable energy – and thus stimulate corresponding investments which, due to the carbon price, will also be profitable without the need for expensive subsidies. In contrast to subsidies, carbon pricing does not require public funds, but generates revenue.

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40 European Commission (2024), Innovation Fund – Deploying innovative net-zero technologies for climate neutrality.

41 TFEU, Article 191 (2).

42 European Commission, Proposal COM(2021) 563 for a Council Directive restructuring the Union framework for the taxation of energy products and electricity (recast).

43 Council Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity.

A well-designed and balanced mix of different types of instruments can be suitable in certain cases to foster enabling conditions for the transformation[44], e.g., to subsidise research and development of innovative low-carbon technology or to overcome the chicken-and-egg problem to synchronise the roll-out of new technologies with the needed infrastructure or to address social impacts. Overall, however, we argue that **carbon pricing in general and emissions trading in particular has proven to be the superior approach in EU climate policy and therefore should be further developed in the future**. This notion is supported by the experience made since 2005 regarding the attainment of the EU 2020 climate target of 20% GHG emissions reductions compared to 1990. The target could only be achieved due to the fact that sectors under the EU-ETS 1 – including energy production and energy-intensive industries – were capable to deliver much stronger GHG emissions cuts than the underperforming other sectors regulated under the Effort Sharing Directive – including transport, buildings, and agriculture.[45] In the latter sectors, national reduction targets had been pursued less successfully with command-and-control requirements and subsidies as the dominating instruments. Given this experience with the different regulatory approaches, we stipulate that to be capable of achieving all three objectives of EU climate policy – (1) reducing GHG emissions by decarbonisation, (2) securing energy supply, and (3) providing affordable energy prices – climate instruments should be simultaneously **(1) ecologically effective** by actually reducing GHG emission, **(2) economically cost-efficient**, **(3) socially acceptable**, and also **(4) politically resilient** even in times of crisis. Measured against these criteria, we argue that carbon pricing has significant advantages over command-and-control requirements and subsidies:

(1) Firstly, carbon pricing is better suited for effectively reducing GHG emissions (**ecological effectiveness**), the very purpose of climate policy. This is because the carbon price signal is directly aimed at the GHG-emitting behaviour itself and – if it is strong enough – can fully develop its steering effect on the emitter ("sticks"). For example, carbon pricing in road transport directly targets the actual fuel consumption and the associated GHG emissions of cars by increasing the price of fossil fuels, thus encouraging drivers to drive in a more fuel-efficient and therefore less carbon-intensive manner. In contrast, CO_2 emission performance standards for new cars are only aimed at their potential fuel efficiency, regardless of actual mileage, but have no influence on their actual use and therefore their actual CO_2 emissions. Consequently, they cannot ensure that CO_2 emissions from road transport are reduced to the desired extent. In addition, carbon pricing automatically covers all motor vehicles by making fossil fuels more expensive. In contrast, CO_2 emission performance standards are only binding for new cars. Subsidies do not affect the behaviour of consumers who do not switch to low-carbon cars, so that they do not contribute to GHG reduction. This is because, in contrast to carbon pricing, it is not the GHG emissions reduction that is incentivised, but only the change in technology. If carbon pricing is implemented by a cap-and-trade ETS, an overall cap on the maximum amount of allowed GHG emissions is set which is gradually reduced. This is ecologically the most effective way to achieve the targeted emissions reduction for entire sectors in comparison to command-and-control requirements, subsidies and also carbon taxes.

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[44] See, e.g., Vöpel, H. / Wolf, Á, Reichert, G. (2023), Dekarbonisierung ohne Deindustrialisierung – Ein ordnungspolitischer Rahmen für die Transformation in eine klimaneutrale Marktwirtschaft, cep**Studie**, p. 28.

[45] European Environment Agency EEA (2021), News Article of 26 October 2021, EU achieves 20-20-20 climate targets. EEA (2021), Trends and Projections in 2021, pp. 14 et seq., p. 21: "Achievements in emission reductions since 2005 are diverse at the sectoral level. The highest reductions are observed in the energy supply sector, where emissions decreased by 43% between 2005 and 2020. Considerably greater efforts are needed in the transport and agricultural sectors, where emissions fell by only 14% and 2%, respectively."

Furthermore, carbon pricing counteracts undesirable "rebound effects". These can arise when technical efficiency improvements in GHG-emitting activities – e.g., in the form of lower fuel consumption per kilometre due to CO_2 emission performance standards for cars[46] – reduce usage costs. This is because these efficiency gains can, in turn, lead to an increase in the now cheaper utilisation and thus to GHG emissions not decreasing to the desired extent or even increasing. This is counterproductive in terms of ecological effectiveness and economically inefficient. In contrast, a carbon price is based on the actual utilisation as well the associated GHG emissions and increases their costs. Efficiency gains then only lead to a reduction in the relative additional costs, but not to an overall reduction in the cost of utilisation. In this way, the carbon price signal can continue to exert its steering effect and counteract rebound effects. For example, in the case of carbon pricing of fossil fuels, even with more fuel-efficient cars, those who drive more or faster and therefore cause more GHG emissions will always have to pay more. Moreover, in a cap- and-trade ETS any overall rebound effect is prevented by the cap.[47]

(2) Secondly, reducing GHG as cost-efficiently as possible is crucial for measuring the capability of climate instruments. **Economic cost-efficiency** is determining the international competitiveness of the European economy regarding the additional cost of climate protection in comparison to the competitors from third countries both in world markets and in the domestic EU internal market. Ultimately, reducing GHG emissions at the lowest possible cost and a flourishing European economy are crucial to securing social prosperity and peace.

In this respect, carbon pricing is more cost-efficient than command-and-control requirements and subsidies. This is because the uniform carbon price in the sectors covered tends to equalise the costs of avoiding additional GHG emissions ("marginal avoidance costs") and the most cost-efficient GHG avoidance options are realised ("carrots"): On the one hand, those who can avoid GHG emissions at a lower cost than the carbon price will try to reduce their GHG emissions in order to avoid having to pay the carbon price. On the other hand, those whose avoidance costs are higher than the carbon price will be willing to pay it. In this way, the most cost-efficient GHG avoidance options are automatically identified, thus overall avoiding GHG emissions at the lowest cost.

Command-and-control requirements and subsidies do not have this cost-reducing effect because they do not generate a uniform carbon price. They are therefore not cost-efficient and unnecessarily expensive. This ultimately leads to less GHG emissions being avoided with the resources used than would be possible. This in turn is counterproductive regarding the very aim of climate policy to reduce GHG emissions.

Furthermore, carbon pricing eliminates the need for many additional – ecologically ineffective and economically inefficient – command-and-control requirements and subsidies. This is because the higher prices for fossil fuels already make lower-carbon energies and technologies relatively cheaper and behavioural changes more lucrative. In contrast, double regulation generates unnecessary additional costs.

(3) Thirdly, putting a price on GHG emissions through the EU-ETS 1 to produce energy and carbon-intensive goods or through the future EU-ETS 2 for heating buildings or driving cars undeniably is

[46] On the rebound effect in German road transport, see Frondel, M. et al. (2009), Fuel Efficiency and Automobile Travel in Germany: The Rebound Effect, in: Hering, H. et al. (eds.), Energieeffizienz und nachhaltiger Konsum – Der Rebound-Effekt, pp. 47-66.

[47] See Menner, M. / Reichert, G. (2022), Fit for 55: Climate and Road Transport, cep**PolicyBrief** 06/2022, p. 15.

a significant financial burden which finally must be paid by the consumer. This certainly raises the question of **social acceptability**.

Indeed, carbon pricing makes the cost of climate protection measures very transparent. However, this does not mean that other climate instruments do not come without a big price-tag – quite to the contrary. As demonstrated above, command-and-control requirements and subsidies are both less ecologically effective and economically cost-efficient than carbon pricing, which by itself already raises the question of whether the unnecessary cost they cause to society are acceptable. While subsidies – like all "carrots" – are understandably more popular, because superficially they seem to be less painful to individuals than the "stick" of having to pay a carbon price, in the end the respective bill still must be paid by society as a whole. What about the social acceptability of subsidies, e.g., for insulating buildings from which only already well-off house-owners can benefit? What about the social acceptability of "windfall profits" for consumers, who unnecessarily benefit from subsidised goods they would have bought anyway? After all, subsidies are government expenditure that must be counter-financed by making debts or increasing government revenue, e.g., by the taxation of labour, both of which finally reduce the overall prosperity of a society.

In contrast to subsidies, carbon pricing does not require public funds, but actually generates revenue. This could be redistributed to the population – e.g., in the form of a "climate dividend"[48] – to cushion the financial burden of climate protection measures in general and carbon pricing in particular. which could contribute to sustain public acceptance and support for EU climate policy.

(4) Fourthly, continued public support is essential for EU climate policy to be **politically resilient**. Political instability is toxic in a policy field which is pursuing long-term targets, and which is therefore inherently dependent on the credibility and foreseeability of the corresponding legal framework and its implementation by the EU and its Member States. In today's European policy discourse, "resilience" refers to the ability to withstand and cope with shocks and persistent structural changes, and also to adapt if necessary.[49] Only if EU climate policy provides such political resilience in the form of regulatory stability and the provision of sufficient planning security for companies, investors and consumers alike, combined with a certain degree of adaptability especially in times of crisis, it will be capable of pursuing its long-term objectives.[50]

A climate instrument provides **planning security** if companies, investors, and consumers can count on its continued existence in their production, investment and buying decisions. Furthermore, as an element of inherent **adaptability** to changing circumstances, an instrument should **smooth out economic fluctuations ("counter-cyclical effect")**. This is the case if the costs associated with the instrument for companies and consumers see a higher-than-average fall during an economic downturn and a higher-than-average rise during an upturn. The pressure for counterproductive modifications to a climate instrument will then be less than in the case of an instrument that does not respond appropriately to cyclical crises.

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[48] See, e.g., Menner, M. / Voßwinkel, J. S. / Reichert, G. (2023), Das Klimageld als Chance für einen klimapolitischen Neuanfang – Optionen für eine wirksame Ausgestaltung und EU-konforme Finanzierung, cep**Input** 15/2023.

[49] European Commission (2020), 2020 Strategic Foresight Report – Charting the Course Towards a More Resilient Europe, pp. 5 et seq.; European Commission / Joint Research Centre (2017), Building a Scientific Narrative Towards a More Resilient EU Society – Part 1: A Conceptual Framework, p. 5.

[50] For the following see Menner, M. / Reichert, G. (2020), EU Climate Policy in Light of the Corona Crisis – Which climate-policy instruments are crisis-resistant, and which are not?, cep**Input** 18/2020, pp. 6 et seq.

At first sight, command-and-control requirements seem to offer the highest degree planning security. However, **if strict provisions clash with harsh economic realities – leading to sinking profits, lower wages or even the closing of production plants – political pressure on EU decision-makers could grow to loosen even already enacted legislation**. In recent months the potential force of such pressure became most apparent in the context of the European Green Deal when the EU legislators gave in to fierce farmers' protests by considerably relaxing requirements proposed for soil protection[51] and nature restoration[52], culminating in the European Commission's withdrawal of its proposal for reducing the use of pesticides altogether[53]. These developments may just have been harbingers of future conflicts on EU climate policy.

While it may not be surprising that unpopular command-and-control requirements are watered-down or even abolished to give in to significant public pressure, popular **subsidies do not offer more planning security**. Often EU Member States can finance subsidies for climate measures only through increasing public debt. In view of the tense budgetary situation in many Member States for the foreseeable future it is unlikely that subsidies will be widely available for climate policy. Consequently, they do not offer any planning security in the medium and long term. Furthermore, this can even be the case in the short term, as recent events in Germany have shown: After the German constitutional court had ruled that it was unconstitutional to reallocate 60 billion Euro in unused debt unlocked during the COVID-19 pandemic to a Climate and Transition Fund[54], in December 2023 the German government abruptly stopped subsidies for the purchase of new electric cars.[55]

Regarding **carbon pricing**, the picture is mixed. In December 2018, the "yellow vest protests" forced the French government to withdraw the planned increase of the carbon price on fuels.[56] In October 2022 in the midst of the energy crisis and soaring energy prices following the Russian invasion of the Ukraine, the German government temporarily suspended the 2023 increase of the carbon price for fossil fuels in the heating and transport sectors (BEHG).[57] Obviously, **carbon taxes are the first unpopular measures to be put on hold in times of economic crisis**. In contrast to command-and-control requirements, subsidies and carbon taxes, however, a **cap-and-trade ETS provides a comparatively high degree of foreseeability and planning security**.[58] First of all, since by its very nature an ETS is a rule-based system designed for the attainment of a long-term goal, it is inherently less vulnerable to abrupt regulatory interventions. Given that the desired GHG reduction target is effectively and automatically achieved by gradually reducing the cap of tradeable emission allowances, there is no ecological need for adjustments even in an economic

[51] European Commission (2023), Proposal COM(2023) 416 for a directive on soil monitoring an resilience; European Environmental Bureau of 10 April 2024, European Parliament vote places soil health on shaky ground.

[52] European Commission (2022), Proposal COM(2022) 304 for a regulation on nature restoration; The Guardian of 26 April 2024, New EU nature law will fail without farmers, scientists warn.

[53] European Commission (2022), Proposal COM(2022) 305 for a regulation on the sustainable use of plant protection products and amending Regulation (EU) 2021/2115; Euronews of 6 February 2024, Von der Leyen withdraws contentious pesticide law amid right-wing backlash and farmer protests.

[54] Politico of 15 November 2023, Top court blows €60B hole in Germany's climate financing plans.

[55] Clean Energy Wire of 18 December 2023, Abrupt end to German electric car subsidies fuels doubts about green mobility target.

[56] The Guardian of 5 December 2018, Macron scraps fuel tax rise in face of gilets jaunes protests; Hanafi, O. et al. (2019), Carbon Pricing in France and Germany – Differences, Similarities and Perspectives, cepInput 11/2019, p. 9.

[57] Bundesministerium für Wirtschaft und Klimaschutz BMWK (2022), Press Release of 28 October 2022, Erhöhung des CO_2-Preises wird 2023 ausgesetzt.

[58] Menner, M. / Reichert, G. (2020), EU Climate Policy in Light of the Corona Crisis – Which climate-policy instruments are crisis-resistant, and which are not?, cepInput 18/2020, p. 11.

crisis. Furthermore, although the carbon price is volatile, it can be expected to rise in the long run as allowances will become ever scarcer. In addition, the carbon price also has an anti-cyclical effect. This is because the cost burden for GHG emissions tends to fall during an economic downturn, because fewer certificates are in demand, and rises during an upswing. This alleviates the cost and liquidity burden on companies and consequently also the cost for consumers in times of crisis, thereby contributing to making climate policy overall more cost-efficient and resilient against short-term political interventions.

In sum, we conclude that in comparison with other climate instruments such as command-and-control requirements and subsidies, carbon pricing in general and at the EU level cap-and-trade emissions trading in particular are simultaneously more ecologically effective, economically cost-efficient, socially acceptable, and politically resilient even in times of crisis. Therefore, it is better capable of achieving all three objectives of EU climate policy, namely reducing GHG emissions by decarbonisation, securing energy supply, and providing affordable energy prices.

3.3 External Challenges: Overcoming the Carbon Leakage Dilemma

The biggest challenge EU climate policy has and will be faced with, however, is the global nature of climate change itself. Given that the Earth's climate is a global system, even the best implementation of the most capable instruments for the reduction of GHG in Europe will by no means be sufficient to attain the goals of the Paris Agreement. This is not only true because the GHG emissions of the EU contribute "only" 6.7% to the worldwide GHG emissions, with a downward trend.[59] It is the international dimension of climate change that poses the main external challenge to the effectiveness of internal EU climate policy for the reduction of domestic GHG emissions.

The **earth's atmosphere**, which takes up the greenhouse gases of all countries of the planet, can only cope with a certain amount of emissions to limit global warming below 2° C or 1.5° C compared to pre-industrial levels in line with the climate goals of the Paris Agreement. This "carbon budget" represents, – transposed into economic terms – a non-excludable **common good**. Given that the negative effects of climate change affect all countries in one way or the other, it is in the **common interests** of all of them to curb GHG emissions significantly not to overdraft the shared carbon budget. However, while the GHG mitigation effort of one country benefits all of them, whether they reduce GHG emissions or not, the respective costs are borne solely by the reducing country. Therefore, countries have an incentive to rely on the GHG emissions reductions of others without implementing comparable measures themselves:[60] At least in the short term, it seems to pay off to act as a **"free rider"** by keeping one's own GHG mitigation efforts as low as possible. This is the case even if in the long-term international cooperation would lead to a more effective and efficient reduction of GHG emissions to the benefit of all countries ("**tragedy of the commons**"[61]). Apart from vastly differing ambition levels of climate targets and measures between countries, the free-rider problem becomes most apparent in significantly diverging carbon prices.[62] As a result, GHG emissions are primarily reduced in countries with ambitious climate policies and high carbon prices, rather than in countries where GHG emissions could be mitigated as effectively and cost-efficiently as possible. Consequently, **global efforts for GHG**

[59] European Commission / Joint Research Centre (2023), GHG Emissions of All World Countries – 2023, p. 4.
[60] Nordhaus, W. (2015), Climate Clubs: Overcoming Free-riding in International Climate Policy, American Economic Review 105 (4), pp. 1339–1370.
[61] Hardin, G. (1968), The Tragedy of the Commons, in: Science, New Series, Vol. 162, No. 3859, pp. 1243-1248.
[62] Carbon taxes vary from 0.75 US$ per tonne in the Ukraine to 154 US$ in Uruguay, ETS allowance prices vary from 1 US$ in Saitama/Japan, to 88 USD in the EU-ETS in 2023; see World Bank (2023), State and Trends of Carbon Pricing 2023.

mitigation are currently neither as effective nor as cost-efficient as they could be. Therefore, it comes as no surprise that worldwide GHG reduction efforts by countries – i.e. "nationally determined contributions" (NDCs) – currently do not add up to the total amount of GHG reductions which scientists deem necessary to meet the climate goals of the Paris Agreement.[63]

For European companies, rising costs due to ambitious EU climate measures in general and costs for emission allowances of the EU-ETS 1 in particular[64] represent a one-sided competitive disadvantage if their competitors in third countries do not have to bear comparable costs. This applies both to EU producers facing competition from imports on the EU market and to EU exporters on markets outside the EU. Consequently, EU products that bear carbon costs are substituted by cheaper imports which "embed" more GHG emissions caused during their manufacture. Furthermore, EU exports lose market share on world markets. The **distortion of international competition and weakening of the competitiveness** of European companies increase the risk of **"carbon leakage"**.[65] Carbon leakage is characterised by (1) the **relocation of production** from the EU to third countries with less costly climate protection requirements, and (2) the **relocation of the GHG emissions** associated with the relocated production. As a result, carbon leakage not only negatively impacts growth and employment in the EU, but also undermines the EU's GHG reduction efforts as it **increases overall global GHG emissions**.[66]

To reduce the risk of carbon leakage by trying to recreate a "level playing field" for European companies facing international competition, EU climate policy has provided for two instruments: Firstly, Member States can pay energy-intensive companies a – partial and gradually decreasing – "**electricity price compensation**" in order to ease the financial burden of the indirect cost of the EU-ETS 1 carbon price passed on to them via electricity prices.[67] Secondly, installations covered by the EU-ETS 1 which are at risk of carbon leakage receive a portion of **allowances free of charge**.[68] However, the European Commission criticised that free allocation "weakens the price signal" of the EU-ETS 1 and hence diminishes "the incentives for investment into further abatement of emissions".[69]

Based on this disputable presumption[70], the "Fit for 55" reform introduces – as a major innovation to EU climate policy – a **Carbon Border Adjustment Mechanism (CBAM)**: At first for a selection of carbon-intensive products – iron, steel, aluminium, cement, electricity, and fertilisers – free allowances will be phased-out until 2035 while at the same time the new CBAM will be phased-in for importers.[71] In order to create a level playing field, the CBAM puts a price on imports of such products by obliging importers to buy CBAM certificates equivalent to the GHG emissions released during production ("embedded emissions"). The price of those CBAM certificates directly mirrors the allowance price of the EU ETS 1 ("notional ETS"). However, a border adjustment for exports – e.g., in the form of an export rebate –

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63 UNFCCC (2023), NDC Synthesis Report of 14 November 2023, pp. 28 et seq.

64 For current EU allowance prices see: Trading Economics – EU Carbon Permits.

65 See Bonn, M. / Reichert, G. / Voßwinkel, J. S. (2019), Reform der Strompreiskompensation, cep**Studie**, p. 4.

66 See Bonn, M. / Reichert, G (2018), Climate Protection by way of the EU ETS, cep**Input** 03/2018, section 2.4.

67 EU-ETS Directive 2003/87/EC, Article 10a (6). See generally cep**Input** 03/2018, section 2.5.5; Bonn, M. / Reichert, G. / Voßwinkel, J. S. (2019), Reform der Strompreiskompensation, cep**Studie**.

68 EU-ETS Directive 2003/87/EC, Article 10a; see Bonn, M. / Reichert, G. (2018), Climate Protection By Way of the EU-ETS, cep**Input** 03/2018, section 2.4.

69 European Commission (2021), Proposal COM(2021) 571 for a Decision amending Decision (EU) 2015/1814 as regards the amount of allowances to be placed in the market stability reserve for the Union greenhouse gas emission trading scheme until 2030, Recital 10.

70 See, e.g., Jousseaume, M. / Menner, M. / Reichert, G. (2021), CBAM: Damaging to Climate Protection and EU Export Industries, cep**Study**, pp. 11 et seq.

71 EU-ETS Directive 2003/87/EC, Article 10a (1a); Regulation (EU) 2023/956 establishing a carbon border adjustment mechanism [CBAM Regulation (EU) 2023/956], Article 31.

that would relief EU exporters from ETS allowance costs is not provided for due to concerns about its compatibility with the rules of the World Trade Organization (WTO).[72]

Apart from the aforementioned challenges regarding its technical implementation, the CBAM raises fundamental questions[73]. Due to its limited scope, a unilateral introduction of a CBAM by the EU can only make a limited contribution to reducing worldwide GHG emissions. Even proponents of the CBAM concede that there is a risk that the CBAM might be circumvented by switching imports from raw materials to more refined products which are not covered.[74] Moreover, the CBAM is deemed to be "too complex and carrying real risks of commercial retaliation" by third countries[75], potentially giving rise to international trade conflicts.[76] Most prominently, India has voiced objections against the EU's CBAM at the WTO.[77] In this context it is also argued that the unilateral introduction of the CBAM by the EU is ultimately detrimental to global climate protection efforts, since it will weaken the willingness of countries to cooperate.[78] Furthermore, even if the CBAM for imports proves to be compliant with WTO rules and trade conflicts are avoided, EU export companies are not protected against carbon leakage in world markets. Since no compensation for the gradual phase-out of free allowances is envisaged, EU export companies will face increasing carbon costs in contrast to many of their competitors, thereby weakening the international competitiveness considerably.

In sum, current **EU climate policy does not provide for an effective and comprehensive system of carbon leakage protection**. The "Fit for 55" legislative framework fails to create a level playing field regarding the cost caused by EU climate measures for European companies facing international competition both in markets inside and outside the EU. Carbon leakage, however, not only damages the international competitiveness of the European economy, diminishes growth, and threatens jobs, prosperity and social peace, but also undermines the EU's GHG reduction efforts by increasing overall global GHG emissions. Therefore, **solving the carbon leakage dilemma urgently needs to be put at the top of the next EU agenda 2024-2029**.

4 Chances for Future EU Climate Policy

Given the high stakes for the European Union (see part 2), we now examine the question which chances EU decision-makers could seize in the upcoming EU policy cycle to overcome the considerable challenges for future EU climate policy (see part 3). Based on our analysis of the basic capability of the different types of climate instruments – command-and-control measures, subsidies, and carbon pricing – (see part 3.2), we recommend that **the EU should strive for comprehensive European and international carbon pricing.** Overall, this is the most ecologically effective, economically cost-efficient, socially acceptable, and politically resilient climate instrument available for achieving all three objectives of EU climate policy – reducing GHG emissions, securing energy supply, and providing affordable energy prices – simultaneously. In this respect, we identify **potential options for further**

[72] See, e.g., Jousseaume, M. / Menner, M. / Reichert, G. (2021), CBAM: Damaging to Climate Protection and EU Export Industries, cep**Study**, pp. 24 et seq. and pp. 44 et seq.

[73] Menner, M. / Reichert, G. (2022), "Carbon Leakage-Proof" Climate Clubs, in: Ernest Gnan / Christoph Schneider / Claudia Stowasser (eds.), Schwerpunkt Außenwirtschaft 2021/2022 – Reglobalisation: Changing Patterns, pp. 285-292.

[74] European Scientific Advisory Board on Climate Change ESABCC (2024), Assessment Report 2024: Towards EU climate neutrality – Progress, policy gaps and opportunities, p. 207.

[75] Conseil d'analyse économique (2017), Trade and Climate: Towards Reconciliation, Les notes du CAE n°37, pp. 9 and 12.

[76] See, e.g., Financial Times of 12 March 2021, John Kerry warns EU against carbon border tax; Reuters of 26 July 2021, China says EU's planned carbon border tax violates trade principles.

[77] The Hindu of 26 February 2024, India expresses serious concerns in WTO meet over unilateral protectionist measures.

[78] Wissenschaftlicher Beirat beim BMWi (2021), Ein CO_2-Grenzausgleich als Baustein eines Klimaclubs, p. 32.

developments especially of emissions trading both domestically in the EU as well as internationally in cooperation with third countries that are either likely or at least highly desirable to be at the top of the EU legislative agenda 2024-2029.

4.1 Chances for European Carbon Pricing

The "Fit for 55" reforms have already led to major improvements regarding the further establishment of emissions trading as the central instrument of EU climate policy. The EU-ETS 1, which comprises energy production and energy-intensive industries since 2005 and commercial aviation since 2012, has been extended to maritime transport.[79] Accordingly, the EU-ETS 1 now also covers maritime CO_2, methane and nitrous oxide emissions from ships above 5000 gross tonnage and applies to 50% of the emissions from voyages starting or ending outside the EU, and all emissions from voyages within the EU and from ships within EU ports. The most important achievement, however, has been the establishment of the new, separate cap-and-trade EU-ETS 2 covering fuel combustion in road transport and buildings and additional sectors which will price emissions from 2027 without free allowance.[80]

For the next EU policy cycle, further potential developments of emissions trading are already visible on the horizon: Firstly, the EU-ETS 1 could be extended to cover additional emitting activities. Secondly, the EU-ETS 1 and the EU-ETS 2 could be merged. Thirdly, carbon pricing could be applied to emissions related to agricultural activities. Our assumptions are not mere theoretical deliberations or wishful thinking but based on concrete "work assignments" by the EU legislators to the European Commission laid down in the current "Fit for 55" legislative framework itself. Already, the European Commission has started preparatory inquiries.[81]

4.1.1 Extension of the EU-ETS 1

As demonstrated above (see part 3.2), extensions of the EU-ETS 1 would not only allow for reducing GHG emissions in all sectors covered effectively due to the overall cap, but also most cost-efficiently due to trading. The uniform carbon price within one unform emissions trading system equalises the costs of avoiding additional GHG emissions and, therefore, allows for the identification of the most cost-efficient GHG avoidance options, thus automatically reducing GHG emissions at the lowest cost. Against this background, the EU-ETS Directive obliges the next European Commission to examine the further extension of the EU-ETS 1 to include additional activities and associated GHG emission into its scope. If the Commission should conclude that such EU action is appropriate, it must submit respective legislative proposals:

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[79] EU-ETS Directive 2003/87/EC, Article 3a et seq.; see Menner, M. / Reichert, G. (2022), Fit for 55: Climate and Shipping, cep**PolicyBrief** 17/2022.

[80] EU-ETS Directive 2003/87/EC, Article 30a et seq.; see Menner, M. / Reichert, G. (2022), Fit for 55: Climate and Road Transport, cep**PolicyBrief** 06/2022; Menner, M. / Reichert, G. (2022), Fit for 55: Climate and Buildings, cep**PolicyBrief** 14/2022.

[81] European Commission / DG for Climate Action (2022), Call for Tenders CLIMA/2022/OP/0012: Study on Issues and Options for EU Emissions Trading after 2030.

- Accordingly, the Commission is obliged to examine the feasibility to tighten the current *de minimis* exceptions for **small sub-installations** by lowering the thresholds of 20 MW total rated thermal input for specific economic activities as from 2031.[82] In this respect, the Commission must submit a report to the European Parliament and the Council of the European Union by 31 July 2026.

- By 31 July 2026, the Commission must present a report to the European Parliament and to the Council on the feasibility of including **municipal waste incineration installations** in the EU-ETS 1 as from 2028.[83] This report must comprise an assessment of the potential need for an option for a Member State to opt out until 31 December 2030. In that regard, the Commission must consider the potential diversion of waste towards disposal by landfilling in the EU and waste exports to third countries. Furthermore, the Commission must also assess the possibility of including in the EU-ETS 1 other waste management processes, in particular landfills which create methane and nitrous oxide emissions.

- With regard to **maritime transport**, the Commission must present a report to the European Parliament and to the Council no later than 31 December 2026 in which it examines the feasibility and economic, environmental and social impacts of the inclusion GHG emissions from ships, including offshore ships, between 400 and 5 000 gross tonnage.[84] In its report the Commission must also examine how the EU-ETS 1 could best account for the uptake of renewable and low-carbon maritime fuels on a lifecycle basis.

- Due to the reduction of the EU-ETS 1 cap and the accelerated decline of GHG emissions by the "Fit for 55" reforms, the supply of emission allowances for stationary installations is expected to end sometime around 2039.[85,86] Therefore, the EU needs to develop a strategy how to prepare the carbon market and covered sectors for the scarcity of allowances and its effect on the carbon price, price volatility, and ultimately the producers and consumers concerned. In particular, the potential contribution of **carbon dioxide removal (CDR) and carbon capture and utilisation (CCU)** to solve respective challenges needs to be clarified. Regarding potential solutions, it can be argued that a very low, or net zero, cap does not require the replacement of the cap-and-trade EU-ETS 1 altogether when permits for carbon removal can compensate for residual GHG emissions. However, net negative GHG emissions might require new incentive schemes for sustainable emission removals. In this respect, the Commission is obliged to report to the European Parliament and the Council by 31 July 2026 how "negative emissions" resulting from GHG that are removed from the atmosphere and safely and permanently stored could be accounted for, and how those negative emissions could be covered by emissions trading, e.g., by incorporating them in the EU-ETS 1.[87] In particular, the Commission's examination must also provide for a clear scope and strict criteria for such coverage, and safeguards to ensure that such carbon removals do not offset necessary emission reductions.

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82 EU-ETS Directive 2003/87/EC, Article 30 (5).
83 EU-ETS Directive 2003/87/EC, Article 30 (7).
84 EU-ETS Directive 2003/87/EC, Article 30gg (5).
85 European Commission (2024), Impact Assessment Report Part 1 Accompanying the Communication „Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society" SWD(2024) 63, p. 23, Figure.3.
86 For the following see European Scientific Advisory Board on Climate Change ESABCC (2024), Assessment Report 2024: Towards EU climate neutrality – Progress, policy gaps and opportunities, pp. 207 et seq.
87 EU-ETS Directive 2003/87/EC, Article 30 (5).

4.1.2 Merging of EU-ETS 1 and EU-ETS 2

The arguments in favour of enhanced effectivity and cost-efficiency by expanding the scope of the EU-ETS 1 to additional economic activities and their associated GHG emissions also apply to the potential **merging of the EU-ETS 1 covering energy generation, energy-intensive industries, aviation and maritime transport with the EU-ETS 2 covering road transport, buildings and additional sectors**. Consequently, the European Scientific Advisory Board on Climate Change (ESABCC) has already criticised that[88] maintaining two separate EU emissions trading systems "creates distortions and perverse incentives".[89] And indeed, EU-ETS 1 and EU-ETS 2 have different carbon prices, caps and governance regimes.

In the short term this can be justified at least temporarily for the following reasons: Within a uniform EU-ETS, the higher abatement costs for GHG emissions in the road transport and buildings sectors would make these sectors net buyers of emissions allowances and drive up the allowance prices considerably, which industrial installations would then be faced with.[90] Where these installations are faced with international competition with companies that do not have to bear comparable carbon reduction costs, the higher allowance prices in the EU-ETS would increase the risk of carbon leakage. This is avoided by maintaining two separate emissions trading systems. Furthermore, while the EU ETS has evolved continuously since 2005, the EU-ETS 2 is to start only as of 2027 at the earliest. From a pragmatic point of view, it therefore makes sense to allow actors in the road transport and buildings sectors initially to gain some experience with this new instrument.[91]

In the mid- to long-term, however, maintaining separate emissions trading systems weakens the cost-effectiveness of carbon pricing to incentivise emission reductions where they are least expensive. One such inefficiency lies in the fact that the cap for the EU-ETS 1 will reach zero by 2039 while the cap of the EU-ETS 2 will approach zero many years later.[92] Furthermore, separate systems and multiple carbon prices can create perverse incentives. A conceivable example for such effects is the electrification of the transport and buildings sectors, which is "both encouraged by subjecting fossil fuels in road transport and heating to the EU-ETS 2 carbon price and discouraged by subjecting electricity to a (higher) carbon price under the EU ETS."[93]

Consequently, we recommend that options for at least converging the EU-ETS 1 and EU-ETS 2 should be examined. These could include the creation of a uniform emissions trading system by merging the EU-ETS 1 with the EU-ETS 2 with a single emissions cap, carbon price and governance system, or more gradual options, e.g., allowing trading between the EU-ETS 1 and EU-ETS 2 so that their prices can gradually converge over time.[94] In this respect, the European Commission is already obliged to assess by 31 October 2031 the feasibility of integrating the sectors covered by the EU-ETS 2 into the EU-ETS 1.

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88 The ESABCC is an independent body providing the EU with scientific knowledge, expertise and advice relating to climate change. It was established in 2021 by the European Climate Law [Regulation (EU) 2021/1119, Article 3] and consists of 15 independent senior scientific experts covering a broad range of relevant disciplines.

89 ESABCC (2024), Assessment Report 2024: Towards EU climate neutrality – Progress, policy gaps and opportunities, p. 210.

90 EU-ETS Directive 2003/87/EC, Article 30a et seq.; see Menner, M. / Reichert, G. (2022), Fit for 55: Climate and Road Transport, cep**PolicyBrief** 06/2022; Menner, M. / Reichert, G. (2022), Fit for 55: Climate and Buildings, cep**PolicyBrief** 14/2022; Menner, M. / Reichert, G. / Voßwinkel, J. S. (2019), Wirksame CO_2-Bepreisung, cep**Studie**, p. 21.

91 ESABCC (2024), Assessment Report 2024: Towards EU climate neutrality – Progress, policy gaps and opportunities, p. 210.

92 European Commission (2024), Impact Assessment Report Part 1 Accompanying the Communication „Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society" SWD(2024) 63, p. 23, Figure.3.

93 ESABCC (2024), Assessment Report 2024: Towards EU climate neutrality – Progress, policy gaps and opportunities, p. 210.

94 Id.

4.1.3 Application of Carbon Pricing to Agriculture/LULUCF

In agriculture and the "land use, land use change and forestry" (LULUCF) sectors, efforts to reduce GHG emissions and to increase carbon removals suffer from an overall lack of incentives.[95] While the introduction of carbon pricing in these sectors is desirable, there are major political and technical obstacles to overcome. The political sensitivity of this issue became apparent when fierce farmer's protest in early 2024 prompted the European Commission to withdraw any reference to its deliberations for the potential application of carbon pricing to agriculture[96] in its Communication on the EU's future climate target for 2040.[97] Furthermore, carbon pricing in these sectors is technically highly complex, since it requires measuring GHG emissions – e.g. methane emissions from cattle and soils – a and removals, and attributing them to land management and mitigation measures, as well as taking differences in the permanence of various natural removals into account. Nevertheless, given the insufficient progress on climate action in agriculture and the LULUCF sectors and the proven advantages of carbon pricing (see part 3.2), we recommend that the EU should further examine and develop options for incentivising GHG emissions reductions and carbon removals in this respect.

4.2 Chances for International Carbon Pricing

Finally, we are convinced that **the global problem of climate change requires a global solution**. In this respect, **carbon pricing can serve as basis for international cooperation** of the EU with third countries.[98] In this context, we believe that **unilateral approaches of the EU** for extending carbon pricing to activities of a transboundary nature **are – if at all – merely "second best" solutions or could even turn out to be counterproductive**. Therefore, the EU should avoid, if possible, the unilateral extension of the EU-ETS 1 (1) to cover flights departing from the EU and other countries of the European Economic Area (EEA) to third countries if the Carbon Offsetting and Reduction Scheme for International Aviation of the International Civil Aviation Organization (CORSIA) should be deemed insufficient[99], and (2) to cover more than 50% of the emissions caused by ship voyages between ports in the EU and in third countries if the International Maritime Organization (IMO) does not adopt a global market-based measure to reduce GHG emissions from maritime transport in line with the objectives of the Paris Agreement and at least to a level comparable to EU measures[100]. Our sceptical stance to unilateral approaches specifically applies to the CBAM, which is basically an attempt by the EU to extend carbon pricing to the imports of certain carbon-intensive products, thereby potentially giving rise to international trade conflicts and exposing the EU export industry to the risk of carbon leakage (see part 3.3).

In the face of growing unease about confrontational approaches, calls to step up diplomatic efforts of the EU and its Member States to promote international cooperation on climate protection in general

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95 For the following see ESABCC (2024), Assessment Report 2024: Towards EU climate neutrality – Progress, policy gaps and opportunities, pp. 151 et seq., pp. 181 et seq. and p. 211.

96 Euractiv of 9 February 2024, EU Commission backtracks on agricultural emissions cuts.

97 European Commission (2024), Communication COM(2024) 63, Securing our future – Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society.

98 Cramton, P. et al. (eds., 2017), Global Carbon Pricing: The Path to Climate Cooperation; Bonn, M. / Menner, M. / Voßwinkel, J. S. (2017), Globalisierung des Klimaschutzes – Wege zu einer weltweiten Angleichung der CO_2-Bepreisung, cep**Input** 07/2017.

99 EU-ETS Directive 2003/87/EC, Article 28b.

100 EU-ETS Directive 2003/87/EC, Article 3gg (2).

and carbon pricing in particular are increasing.[101] In September 2023, the President of the outgoing European Commission, Ursula von der Leyen, specifically assigned the newly appointed Commissioner for Climate Action Wopke Hoekstra with the task "to lead international climate negotiations" to take forward "work on a global carbon pricing system".[102] Against this background, the next European Commission can and should be expected to continue diplomatic efforts in this respect. Indeed, instead of pursuing confrontational approaches like unilaterally extending the scope of the EU-ETS 1 to transboundary activities or establishing a CBAM, the **EU should rather strive for multilateral cooperative solutions that foster higher global GHG reduction efforts and prevent carbon leakage**.

In this respect, **Article 6 of the Paris Agreement** provides for various options for countries that "choose to pursue voluntary cooperation in the implementation of their nationally determined contributions [NDCs] to allow for higher ambition in their mitigation and adaptation actions".[103] First[104], countries can either cooperate through "internationally transferred mitigation outcomes" (ITMOs) towards NDCS, whereby the Paris Agreement leaves them significant leeway what to do specifically.[105] Second[106], the Paris Agreement regulates a multi-scope mechanism under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) to produce GHG emission reductions that can be used to fulfil the NDC of another country and support sustainable development. The CMA has the role of setting standards, including approval processes, technical aspects for quality and quantity of what is being transferred, and avoidance of double counting. Third[107], the Paris Agreement also establishes a framework for non-market cooperative approaches.

However, **it is currently unrealistic to introduce all-encompassing global carbon pricing through a global emissions trading system or a global carbon tax by all countries of this planet** within the framework of the Paris Agreement **in the near future**. Therefore, **striving for a gradual expansion of international carbon pricing by "willing countries" would be a good start** for the time being. While a multitude of potential options for such international cooperation on carbon pricing in general and by emissions trading in particular to pursue the goals of the Paris Agreement collectively are already discussed[108], we want to focus on two especially promising approaches: (1) international climate clubs, and (2) the linking of EU emissions trading with comparable system of third countries.

4.2.1 Climate Clubs

Scepticism of some EU Member States – most notably Germany – against potentially confrontational EU climate measures in general and the unilateral introduction of the CBAM in particular is actually echoed in the CBAM Regulation itself, according to which the *"establishment of the CBAM calls for the*

[101] See, e.g., ESABCC (2024), Assessment Report 2024: Towards EU climate neutrality – Progress, policy gaps and opportunities, p. 209; Fuest, C. / Marcu. A. / Mehling, M. (2024), Climate Policy Priorities for the Next European Commission, pp. 14 et seq.

[102] European Commission (2023), Mission Letter by Ursula von der Leyen to Wopke Hoekstra of 1 September 2023, p. 4.

[103] Paris Agreement, Article 6 (1). See generally Verde, S. / Borghese, S. (2002), The International Dimension of the EU Emissions Trading System: Bringing the Pieces Together, in: Environmental and Resource Economics (2022) 83, pp. 23-46 at pp. 28 et seq.

[104] Paris Agreement, Article 6 (2) and (3).

[105] Verde, S. / Borghese, S. (2002), The International Dimension of the EU Emissions Trading System: Bringing the Pieces Together, in: Environmental and Resource Economics (2022) 83, pp. 23 et seq. at 29.

[106] Paris Agreement, Article 6 (4)-(7).

[107] Paris Agreement, Article 6 (8) and (9).

[108] See generally Verde, S. / Borghese, S. (2002), The International Dimension of the EU Emissions Trading System: Bringing the Pieces Together, in: Environmental and Resource Economics (2022) 83, pp. 23-46.

development of bilateral, multilateral and international cooperation with third countries. For that purpose, a forum of countries with carbon pricing instruments or other comparable instruments ('Climate Club') should be set up, in order to promote the implementation of ambitious climate policies in all countries and pave the way for a global carbon pricing framework".[109]

Triggered, *inter alia*, by a proposal of Nobel Laureate William Nordhaus[110], various concepts for the design of such "climate clubs" – which can only be sketched out briefly here – are discussed as an option for promoting international cooperation on climate action.[111] Depending on the relevance of the club benefits and the degree to which non-club members can be excluded from their fruition, however, "classic clubs" and "pseudo clubs" can be distinguished.[112] While "classic clubs" provide clear and readily excludable benefits, "pseudo clubs" provide benefits that are more diffuse, less readily excludable, and potentially less easily quantifiable.

Possible elements that characterise a "classic" climate club[113] comprise on a common level of ambition agreed upon by the club members – e.g., in the form of a uniform (minimum) carbon price[114] or even (linked) emissions trading systems – and provisions for incentives to join the club. The latter can take the form of club members refraining from imposing import tariffs or border adjustment measures like the CBAM on each other, while imposing such measures on non-member countries. Measures towards non-members have the additional function to reduce the risk of carbon leakage by creating a level playing field. We concede that climate clubs, while offering considerable chances, also entail major pitfalls.[115] In particular, present climate club models do not appropriately address problems regarding (1) different forms of GHG reduction measures within the club, especially if there is not a uniform method of carbon pricing, and (2) carbon leakage within the club.

The original plans of the then German minister for finance and today's chancellor Olaf Scholz for a climate club sketched in 2021[116] came close to representing a "classic club", e.g., by foreseeing a "roadmap towards the joint measurement and pricing of carbon emissions". However, the climate club which was finally established by the G7 countries under German presidency in 2022[117] – at least for now – seems to be more of a "pseudo club" or platform for joint climate action. While climate clubs are in principle a promising attempt to foster multilateral cooperation, respective attempts are still in their infancy and need to overcome several design challenges. Indeed, the European Union still has a long way to go if it wants to use the envisaged establishment of a climate club (see above) as a means to "*pave the way for a global carbon pricing framework"*.

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[109] CBAM Regulation (EU) 2023/956, Recital 72.

[110] Nordhaus, W. (2015), Climate Clubs: Overcoming Free-Riding in International Climate Policy, in: American Economic Review 105 (4), pp. 1339-1370.

[111] See, e.g., Menner, M. / Reichert, G. (2021) Climate Clubs: Chances and Pitfalls, cep**Study** 03/2021, pp. 13 et seq.

[112] Verde, S. / Borghese, S. (2002), The International Dimension of the EU Emissions Trading System: Bringing the Pieces Together, in: Environmental and Resource Economics (2022) 83, pp. 23 et seq. at 35.

[113] Menner, M. / Reichert, G. (2022), "Carbon Leakage-Proof" Climate Clubs, in: Ernest Gnan / Christoph Schneider / Claudia Stowasser (eds.), Schwerpunkt Außenwirtschaft 2021/2022 – Reglobalisation: Changing Patterns, pp. 285 et seq. at 287.

[114] See, e.g., Bonn, M. / Menner, M. / Voßwinkel, J. S. (2017), Globalisierung des Klimaschutzes – Wege zu einer weltweiten Angleichung der CO_2-Bepreisung, cep**Input** 07/2017, p. 7.

[115] See generally Menner, M. / Reichert, G. (2022), "Carbon Leakage-Proof" Climate Clubs, in: Ernest Gnan / Christoph Schneider / Claudia Stowasser (eds.), Schwerpunkt Außenwirtschaft 2021/2022 – Reglobalisation: Changing Patterns, pp. 285 et seq.; Menner, M. / Reichert, G. (2021) Climate Clubs: Chances and Pitfalls, cep**Study** 03/2021.

[116] German Federal Ministry for Finance, Presse Release of 25 August 2021, The German government wants to establish an international climate club – Joint key-issues paper presented to the federal cabinet.

[117] German Federal Government, Presse Release of 12 December 2022, G7 establishes Climate Club.

4.2.2 Linking of EU Emissions Trading with Third Country Systems

When reviewing the EU-ETS Directive 2003/87/EC, the European Commission is expressly obliged to analyse how linkages between the EU-ETS and other carbon markets can be established without impeding the achievement of the EU climate targets.[118] The linking of different emissions trading systems of is a way to equalise the costs of avoiding additional GHG emissions across borders.[119] On the one hand, this allows for the identification of the most cost-efficient GHG avoidance options, thereby reducing GHG emissions at the lowest cost within the linked systems (see parts 3.2 an 4.1.1). On the other hand, the converging carbon price in linked emissions trading systems creates a level playing field for international competition regarding carbon costs between the participating countries, thereby lowering the risk of carbon leakage considerably.

Worldwide, the application of emissions trading system as an instrument for the reduction of GHG emissions by carbon pricing is gaining momentum. Currently, 36 emissions trading systems are in force globally, with an additional 22 in various stages of development. The emissions trading systems already in force collectively cover 18% of global GHG emissions. Jurisdictions making up 58% of global GDP have an ETS in place covering roughly one-third of the global population.[120] For example, **China's national ETS**[121] began operating in 2021. It is the world's largest ETS, estimated to cover around 5 billion tCO_2 and accounting for over 40% of the country's CO_2 emissions. The China national ETS regulates more than 2,000 companies from the power sector with annual emissions of more than 26,000 tCO_2. Covered entities must surrender allowances for all their covered emissions, allocating allowances freely using benchmarks and based on actual production levels. Compliance obligations are still limited and vary between different types of power generation. The system's coverage will expand to other sectors over time. Although it remains to be seen if the China national ETS will develop to be as effective as the European EU-ETS 1, this is at least a promising development.

Against this background, the opportunities for linking emissions trading systems across borders will increase also for the EU. Already, a first success is on the record. After many years of negotiations, in 2017 the EU and **Switzerland** signed an agreement on linking their respective emissions trading systems which came into effect in 2020.[122] The linkage allows participants in the EU-ETS 1 to use allowances from the Swiss ETS to meet their respective obligations, and vice versa. It is the first agreement of this kind for the EU and also the first between two Parties to the Paris Agreement. As expected, the carbon prices of EU-ETS 1 and Swiss ETS allowances have converged, thus successfully reducing competitive distortions and the risks of carbon leakage between both jurisdictions.[123] Given this positive experience, **we recommend that the EU should pursue more linkages of its EU-ETS 1 with other the emissions trading systems of other countries**.

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[118] EU-ETS Directive 2003/87/EC, Article 30 (6).

[119] Bonn, M. / Menner, M. / Voßwinkel, J. S. (2017), Globalisierung des Klimaschutzes – Wege zu einer weltweiten Angleichung der CO_2-Bepreisung, cep**Input** 07/2017, pp. 9 et seq.

[120] International Carbon Action Partnership ICAP (2024), Emissions Trading Worldwide – Status Report 2024, p. 9.

[121] Id., p. 166.

[122] European Commission, Press Release of 9 December 2019, Agreement on linking the emissions trading systems of the EU and Switzerland.

[123] Verde, S. / Borghese, S. (2002), The International Dimension of the EU Emissions Trading System: Bringing the Pieces Together, in: Environmental and Resource Economics (2022) 83, pp. 23 et seq. at 31.

5 Conclusion

Given the high stakes for the EU, in the next EU policy cycle 2024-2029 EU decision-makers will have to find solutions that reconcile the long-term EU climate targets of decarbonisation and climate neutrality with the objectives of securing energy supplies at affordable energy prices for citizens and companies to protect the international competitiveness of European industries.

We are convinced that solving the carbon leakage dilemma urgently must be a top priority of the EU. Carbon leakage damages the international competitiveness of the European economy, diminishes growth, and threatens jobs, prosperity and social peace, and also undermines the EU's GHG reduction efforts by increasing overall global GHG emissions.

We have demonstrated that in comparison to command-and-control requirements and subsidies, carbon pricing in general and cap-and-trade emissions trading in particular is more ecologically effective, economically cost-efficient, socially acceptable, and politically resilient even in times of crisis. Therefore, it is better capable of reducing GHG emissions, securing energy supply, and providing affordable energy prices.

On the EU level, further potential developments of emissions trading are already visible on the horizon: The EU-ETS 1 for energy production and industry could be extended to cover additional activities. The EU-ETS 1 and the EU-ETS 2 for heating and road transport could be merged. Nevertheless, current EU climate policy does not provide for an effective and comprehensive system of carbon leakage protection. The "Fit for 55" legislative framework fails to create a level playing field regarding the cost caused by EU climate measures for European companies facing international competition both in markets inside and outside the EU. Therefore, solving the carbon leakage dilemma urgently needs to be at the top of the EU agenda 2024-2029.

On the international level, carbon pricing can serve as basis for international cooperation of the EU with third countries. In this context, we believe that unilateral approaches of the EU for extending carbon pricing to activities of a transboundary nature, such as the CBAM, are merely "second best" solutions or could even turn out to be counterproductive. Instead, the EU should rather strive for multilateral cooperative solutions that foster higher global GHG reduction efforts and prevent carbon leakage. Especially promising are plans to establish international climate clubs, and to gradually link EU emissions trading with comparable system of third countries.

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