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Emissions trading system for road transport and buildings in the policy mix for achieving climate neutrality in the EU.

An assessment of the overarching framework and specific provisions.

Study for the Air Pollution and Climate Secretariat (AirClim) and the Life ETX Consortium

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This policy brief provides an overview of the proposals for the ETS-2 covering road transport and buildings. The amendments and guidance by the European Parliament and the Council are assessed and compared to the proposal by the European Commission. In addition, we provide recommendations for each assessed issue to enhance the effectiveness of the ETS while trying to minimise practical obstacles which would impede its introduction.

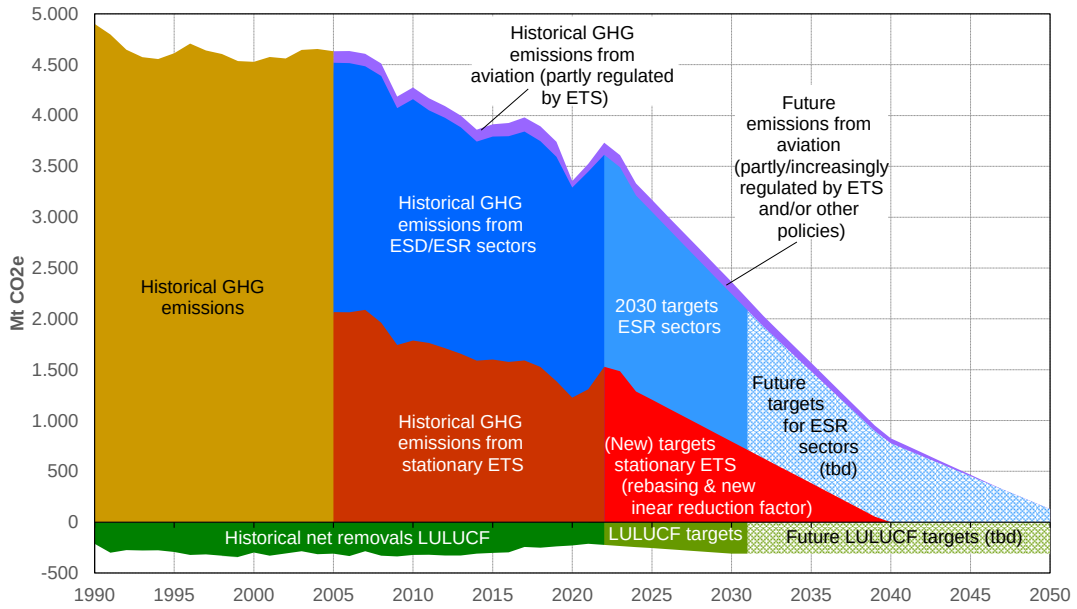
Key recommendations

- The ETS-2 can fill a policy gap providing a carbon price signal in additional sectors, helping achieve the targets under the Effort Sharing Regulation, supporting the pathway towards climate neutrality especially in low-income Member States and enhance compliance.
- The ETS-2 should start as soon as possible. In terms of sectoral coverage, a broad approach including small energy and industry installations is best. A derogation for private consumers is not practical and would significantly reduce the scope and thus the effectiveness of the scheme.
- A price management scheme is useful during the introduction of the ETS-2 due to uncertainties in the data, reactions by covered entities and the potential for social impacts. Any price management should be limited and still provide incentives to reduce emissions.
- Safeguards are necessary to ensure that energy taxes are not reduced due to the introduction of the ETS-2.
- Sectoral roadmaps and a strong role of the Scientific Advisory Board could strengthen the ETS-2

1 Introduction: The climate policy architecture of the European Union

The European Union's climate policy has a comprehensive and legally binding governance framework. This has become increasingly differentiated in recent decades and is being further developed in the course of current political developments (implementation of the European Green Deal, measures for managing the energy crisis triggered by the Russian invasion of Ukraine, etc.). This overarching governance framework must be kept in mind when discussing individual policy instruments.

Figure 1-1: Greenhouse gas emissions for the EU-27 and the EU's climate policy architecture, 1990-2050



Sources: EEA (2022a), EEA (2022b) EC (2021b), Öko-Institut calculations and estimates

The architecture of European climate policy consists of the following elements (Figure 1-1):

- The overarching legal framework is the European Climate Law. It lays down the legally binding target of climate neutrality by 2050 at the latest, and the interim target for 2030 (emission reduction of 55% compared to 1990). The European Climate Law legally implements the European Union's Nationally Determined Contribution (NDC) in the context of the Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC). The base year of the EU's NDC is 1990, and all greenhouse gas emissions released within the territory of the EU and the emissions from international aviation are subject to this commitment.

- The second element of European climate policy architecture is the EU's Emissions Trading System for greenhouse gases (EU ETS), which was introduced in 2005. This system regulates emissions from installations in the energy sector and energy-intensive industries and from intra-European aviation. The regulated entities in the system are the operators of the installations. The emissions cap set by the EU ETS applies throughout Europe and does not differentiate between Member States. Since 2013, the emissions cap has been implemented primarily via a linear reduction factor that also applies beyond the current interim target for 2030. Based on the legislative proposals on the implementation of the European Green Deal (Fit-for-55 package), no new emission allowances can be issued in the EU ETS after 2039. There are tough sanctions which enforce the obligation to surrender emission allowances.

- The third element of European climate policy architecture consists of the Member States' effort sharing obligations (Effort Sharing Directive (ESD) until 2020, Effort Sharing Regulation (ESR) from 2021 onwards). The addressees of these commitments are the Member States; the emission sources not covered by the EU ETS are covered by effort sharing. The base year for the EU-wide emission reduction target under the ESD/ESR (hereafter referred to as ESR) is 2005. Member States are responsible for implementing the necessary measures to achieve the individual targets set for each Member State (see also chapter 4). The Member States can also achieve the national effort-sharing targets by transferring emission rights to other states on a bilateral basis. To date, the effort sharing targets are only legally binding for the years up to 2030. If individual Member States fail to meet the effort sharing targets, the Member State has to submit a corrective action plan and any deficit is passed forward to the next year with an 8% penalty. If these provisions are not sufficient to ensure compliance, the EU treaty infringement procedures apply. In view of this situation, sanctions based on effort sharing obligations only become effective with relatively long delays, may be the subject of political deals and are therefore to be assessed as significantly weaker than those connected to the EU ETS.

- The fourth element of the European climate policy architecture is the governance of emission sources and sinks in the areas of land use, land use change and forestry (LULUCF) by the LULUCF Regulation. An EU-wide target for a net emission sink of 310 Mt CO_2 by 2030 is in the legislative process. This EU target is to be achieved by the individual Member States in a relatively complex procedure. To date, the targets of the LULUCF Regulation are only legally binding for the years up to 2030. With regard to sanction procedures, the same assessments apply as for the effort-sharing commitments. As a special feature, it must be taken into account that the net emission sink from LULUCF can only be counted towards the fulfilment of the NDC target of 55% up to a level of 225 Mt CO_2. This is in order to limit the incentives for substituting emission reductions by expanding net emission sinks. Meeting the net sink target in the LULUCF sectors can thus lead to an overachievement of the 55% target for 2030.

In addition to these four pillars of the EU's climate policy architecture, the design of the EU ETS in particular provides for the inclusion of emission sources not covered by the NDC, such as international shipping.

In summary, the architecture of EU climate policy currently is based on a combination of an overarching Climate Law with the very strong instrument of the EU ETS for the energy sector and energy-intensive industries, and legally binding targets for the individual Member States with regard to emissions not covered by the EU ETS (ESR sectors) and the expansion of net sinks in the LULUCF sectors.

The EU ETS is both a pillar of the climate architecture and a powerful implementation tool. Emission reductions within the scope of the EU ETS are supported by a variety of accompanying measures (at EU and Member State level) to close the impact gaps of CO_2 pricing.

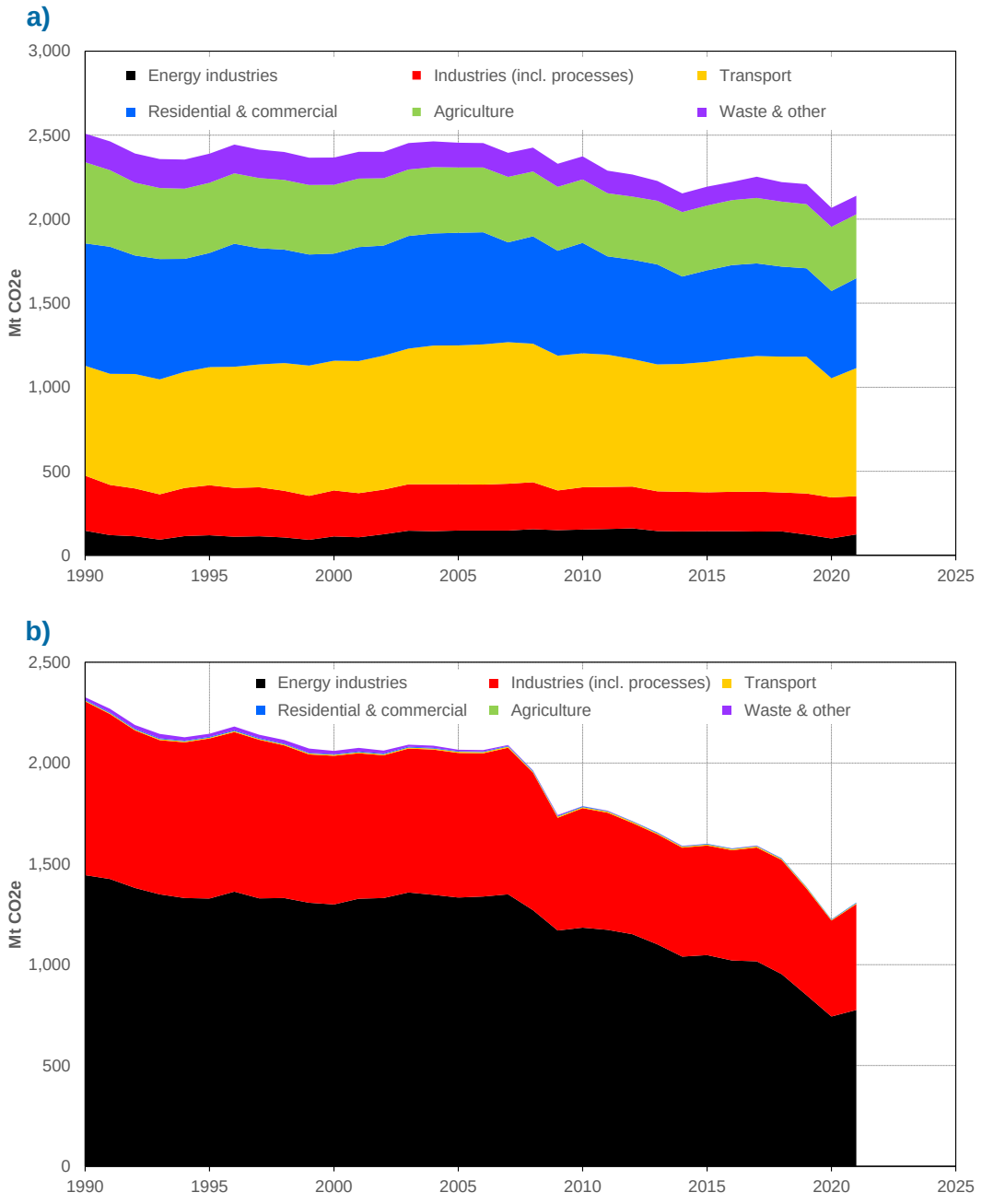
The implementation of the ESR and LULUCF commitments necessarily requires specific policies and measures (at EU and Member State level) that primarily trigger the corresponding required emission reductions and thus go beyond the status of accompanying instruments.

In the context of these implementation instruments for the ESR commitment, current legislative processes are also considering establishing a second emissions trading system for the EU (ETS-2), which would complement the other policies and measures in these sectors with an additional EU-wide CO_2 pricing component.

2 Greenhouse gas emission trends for ETS and ESD/ETS

The development of greenhouse gas emissions in the EU shows very different trends, in terms of the trends in the individual sectors and regulatory scopes and the developments over time (Figure 2-1).

Figure 2-1: Sectoral breakdown of emissions regulated by ESD/ESR (a) and ETS for stationary installations (b), 1990-2021



Sources: EEA (2022a), EEA (2022b), Öko-Institut calculations and estimates

The EU ETS mainly covers the energy sector and energy-intensive industries (incl. process-related emissions):

- The energy sector's share of total GHG emissions from stationary installations covered by the EU ETS[1] has almost always been in the range of 60% to 65% since 1990. There has been no consistent trend in the development of this share over time. After an initial phase of significant emission reductions in the first half of the 1990s, emissions from the energy industry stagnated at a level of about 8% below the 1990 baseline until around 2005. In the subsequent decade, there were significant emission reductions of about 20 percentage points, with particularly strong effects of the economic and financial crisis apparent in 2008 and 2009, but also beyond this emission reduction trends have stabilised. Even after 2015, emissions were reduced relatively steadily, with significantly stronger emission reductions in 2020 as the COVID-19 pandemic took hold. Ultimately, emission reductions of about 46% compared to 1990 were reached by 2021; compared to 2005, this corresponds to a value of about 42%.

- Over the past three decades, 35-40% of emissions regulated by the EU ETS have come from energy-intensive industry. Emission reductions in this context were much steadier than in the energy sector in the years up to 2007, but stagnated after the structural break of the 2008/2009 crisis until 2018. The subsequent years were again distinguished by the effects of the pandemic crisis in 2020 and the subsequent recovery in 2021.

- Overall, emissions from stationary installations regulated by the EU ETS have decreased by approx. 44% in the period 1990 to 2021 and by about 37% in the period 2005 to 2021. The vast majority of this emission reduction has been achieved in the energy sector, while emissions from energy-intensive industries are mostly stagnating.

A much more differentiated pattern emerges for the greenhouse gas emissions covered by the ESR commitments (Figures 2-1 and 2-2):

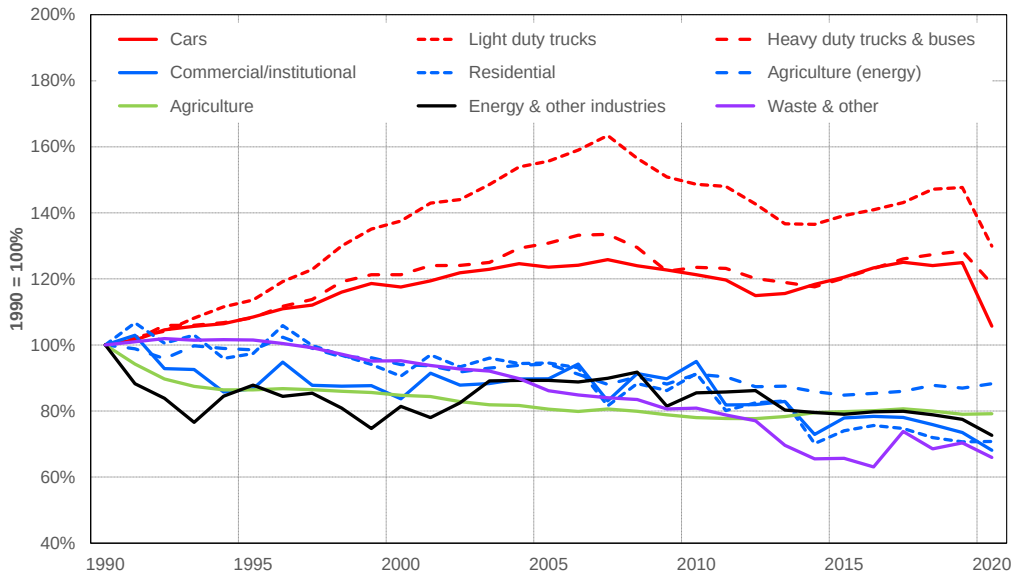
- The share of emissions from transport (excluding aviation) has increased since 1990 from 26% to a share of 34% in 2005 to almost 36% in 2021. Steadily increasing emissions were observed for the entire period from 1990 to 2007, resulting in a level that was almost 29% above the 1990 baseline in 2007. In the years up to 2015, emissions from the transport sector fell by up to 13 points, but then rose again significantly until the slump caused by the pandemic crisis in 2020. After the initial recovery from the crisis, transport emissions in 2021 were 17% above the 1990 level and 8% below the 2005 level.

- The analysis of the transport sector, which is the most important sector in terms of emissions under the ESR, provides some more detailed insights (Figure 2-2). Passenger cars have the largest share of transport emissions

[1] The emissions data regulated by the EU ETS have only been reported since the system was introduced in 2005. For better and more long-term assessment, however, data from 1990 to 2004 were also included based on corresponding estimates calculated by Öko-Institut.

(excluding aviation) with a largely constant share of about 60% over the years. Emissions in this sector also peaked in 2007 after a steady increase, then declined, but the trend was rather volatile. An almost parallel trend emerged for the segment of heavy-duty vehicles (incl. buses), which constitute about a quarter of the transport sector's emissions. A structurally similar, but much more pronounced dynamic can be observed for the emissions from light duty vehicles, which have a share of about 10% of the transport sector emissions. Here, a peak level of 63% above the 1990 level was reached in 2007. Overall, greenhouse gas emissions from passenger cars in the last year before the pandemic crisis (differentiated data for 2021 are not yet available) were 25% above the comparable 1990 level. For heavy-duty vehicles, the corresponding value is about 28% and for light-duty vehicles 48%. Compared to the base level of 2005, the percentage changes for passenger cars are +1%, for heavy commercial vehicles -2% and for light commercial vehicles -5%.

Figure 2-2: Greenhouse gas emission trends for selected ESD/ESR sectors, 1990-2020



Sources: EEA (2022a), Öko-Institut calculations and estimates

- From 1994 onwards, the second largest segment of ESR emissions is made up of private households and the service sector, the emissions of which are dominated above all by emissions from the building sector. The emissions of this segment have been declining relatively steadily; the fluctuations between the individual years mainly stem from the meteorological situation. Compared to 1990, the emissions of this sector had decreased by about 27% by 2021; in relation to the base year 2005, this results in an emission reduction of approx. 20%.

- With an average share of 17%, agriculture is the third largest source of greenhouse gas emissions in the ESR segment, with non-CO_2 emissions (methane, nitrous oxide) clearly dominating the overall trend. Emissions from agriculture fell by almost 14% by 1995, decreased again by about 5% by 2005 and have since stagnated at a level of 19% to 22% below the comparative value of 1990. Compared with the emission level of 2005, emissions could only be reduced by about 2% by 2021.

- The energy sector and industries not covered by the EU ETS make up the fourth largest share of ESR emissions, with a share of about 17%. These emissions decreased by approx. 20% between 1990 and 2000; since then, emissions have been uneven and have fluctuated at approx. 20% below the 1990 baseline. Thus, emissions reductions have been in a long-term stagnation phase.

- Emissions from the waste sector have fallen relatively steadily in recent years and accounted for only 5% of total ESR emissions in 2021. The relative inertia and the relative steadiness of the emission reduction are mainly due to the gas release from landfills dominating the sectoral emissions. By 2021, an emission reduction of approx. 36% could be achieved in the waste management sector; compared to the base year 2005, the corresponding value is 25%.

The differentiated analysis of the emission trends in the sectors covered by the ESR shows that the emissions of the transport sector are by far the most critical situation. The challenging emission trends arise both for the predominantly privately used passenger cars (with the largest share of emissions) and the different segments of commercial vehicles.

Considerable challenges also arise for the energy sector and industry, which are not covered by the EU ETS. Here, the largely stagnating emission reductions observed in recent years are particularly noteworthy.

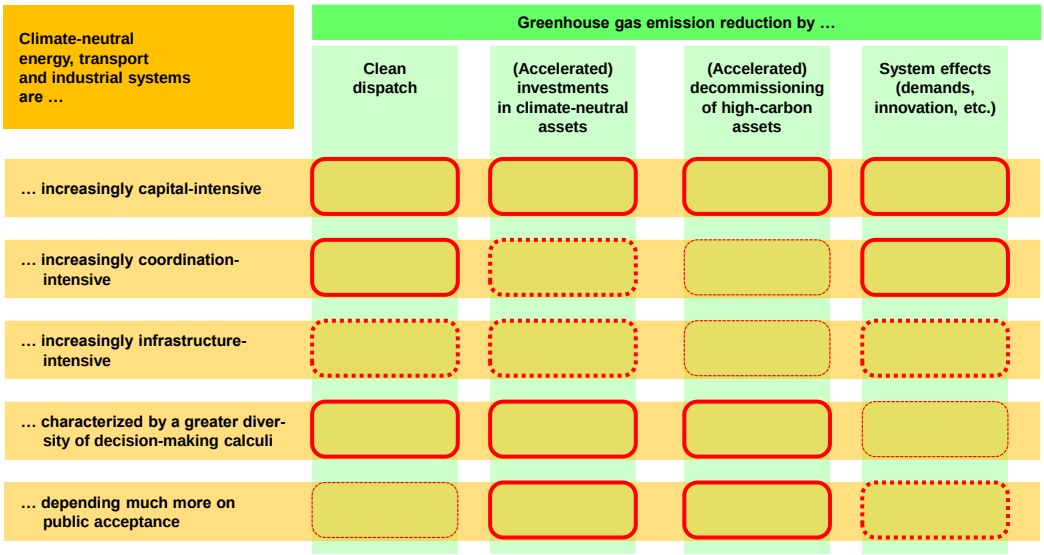
A similar problem situation arises with regard to agriculture. Here, too, the extensive stagnation in emissions reduction must be overcome in order to meet the ESR targets. The challenges in this context relate above all to the need for structural adaptation measures in a very specific policy field.

For buildings in the private household and service sectors, a relatively steady reduction in emissions can be observed, but this has not yet reached the momentum necessary to achieve the target. In view of the very lengthy adjustment processes and the strong inertia in the buildings sector, there are particularly complex challenges in this context.

3 Carbon pricing and emissions trading as a multi-dimensional emission mitigation mechanism

The pricing of greenhouse gas emissions (hereafter referred to as carbon pricing) is not the only policy mechanism for achieving emission reductions. However, it can play an important role in the broader policy mix of the transformation strategy towards climate neutrality. A differentiated assessment of the possibilities and limits of carbon pricing instruments is a central prerequisite for the design of effective and efficient policy mix packages.

Figure 3-1: Emission mitigation levers and the climate policy mix



Note: The lines mark the relevance of the different levers with regard to the respective system characteristics (thick - highly relevant, dashed - less relevant, thin - not relevant).

Source: Öko-Institut

To enable a sector-specific assessment of carbon pricing instruments, it is necessary to combine the fundamental structures of target systems for climate neutrality in the energy, transport and industry sectors with the central emission reduction levers (Figure 3-1).

- For highly price-sensitive and flexible systems in the energy sector and industry, carbon pricing is a central lever for achieving significant emission reductions through clean dispatch, especially system-wide fuel switching. In other sectors (buildings, transport), the system-wide clean dispatch and the carbon pricing that is effective in this regard can play only a very limited role.
- Carbon pricing can play a significant role with a view to accelerating the decommissioning of high-carbon installations, vehicles and equipment. The foresight periods relevant for decommissioning decisions often correspond to the periods in which the effects of carbon pricing can be assessed. Targeted instruments for organising the market exit of carbon-intensive assets

will be necessary in many areas (e.g. for very homogeneous assets), but ultimately carbon pricing will very often have to be the decisive mechanism.

- Carbon pricing can play a role in accelerating investments in climate-friendly technologies if the effects of CO_2 pricing are accountable and predictable for periods relevant for new investment decisions, which can vary greatly in the different sectors. Especially in the case of very long-lived or very capital-intensive assets, other instruments, especially investment incentives, will have to play a central role and CO_2 pricing will play more of a supplementary role.
- System effects of CO_2 pricing (via price pass-through, etc.) can play a significant role in reducing emissions, especially in the area of energy efficiency and transport demand.
- In the infrastructure sector, carbon pricing will ultimately not be able to play a decisive role; in this context, planning and regulatory policies and measures are usually decisive.
- A differentiated picture emerges for the development of consumer- and citizen-oriented emission reduction potentials. On the one hand, well-designed carbon pricing models can send signals to the market that go beyond price effects in the narrower sense and influence decisions in favour of climate-friendly investments or purchases. On the other hand, the very transparent distributional effects of carbon pricing mechanisms can hugely damage the acceptance of climate protection measures. Here, the redistribution of the revenue from carbon pricing plays a special role.

With regard to the design of CO_2 pricing mechanisms, three different dimensions need to be considered against this background:

- the economic incentive effects from CO_2 pricing (economic function);
- the accountable announcement effects on the long-term development of the regulatory framework (informational function);
- the effects that can be achieved through the redistribution of the revenue generated (redistributive function).

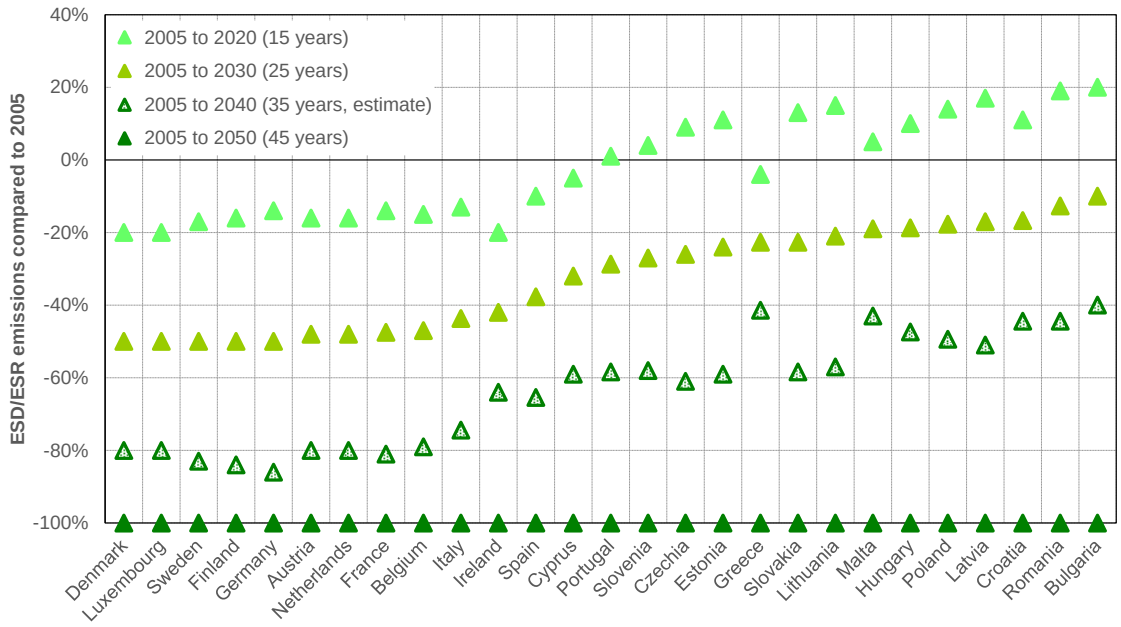
While in the EU ETS the economic as well as the informational function are to the fore, the redistributive function will be strongly in the foreground for the ESR sectors in addition to the informational function, and the effects achievable from the economic incentives will often play a less prominent role.

Against this background, the ETS-2 as an instrument of quantity control with a long-term cap and full auctioning of emission allowances is a favourable approach. However, it will be important during implementation not to damage the informational function of the instrument through individual regulations (price management, allowance reserves, etc.) and to pursue target-oriented approaches in the redistribution of the revenue from CO_2 pricing, especially with a view to public acceptance.

4 The proposed ETS-2 as a crucial compliance mechanism for implementation of EU climate targets

In addition to its role as an economic incentive instrument, its informational role and its assessment from the perspective of revenue redistribution, the planned ETS-2 can also play an important role with regard to the governance of EU climate policy.

Figure 4-1: ESR targets for the 27 EU Member States, 2020 and 2030, and projections for 2040 and 2050



Sources: EEA (2022c), Öko-Institut calculations and estimates

While the EU ETS has already envisaged a clear climate neutrality path for the regulated installations or sectors legally binding for the entire European Union with its cap, the obligations of the ESR for the individual Member States do not yet describe consistent interim targets for all countries on a transformation path to climate neutrality (Figure 4-1).

For a number of Member States, the ESR targets are consistent with the transformation towards climate neutrality. If the logic of emission reductions for the target years 2020 and 2030 are continued and further interim targets for 2040 are estimated on this basis, consistent target paths towards climate neutrality emerge for those states for which the ESR provides emission reduction targets of 40% to 50% (compared to 2005) for 2030. For all other Member States, and especially so for countries with ESR commitments of 20% or less, it seems very difficult that, without a huge overachievement of the 2030 targets, the transition to climate neutrality can be sufficiently continuous. Although the ESR regulations provide for the possibility of overfulfilling targets and transferring emission allowances to other countries, real incentives for the use of such flexibility potentials do not exist to the necessary extent, especially on the part of the potential supply countries.

Against this background, EU-wide policies and measures can and must also stimulate additional emission reductions in countries with low ESR targets. This applies to the entire range of the instrument set, but especially to an instrument such as the ETS-2, because this instrument makes a longer-term emission reduction perspective beyond 2030 legally binding. However, it can shift part of the compliance responsibility under the ESR to the individual companies. This also makes it possible to use direct, effective and faster sanction mechanisms. With this approach and the emission reductions that can be achieved with it, the incentives to use the flexibility mechanisms of the ESR will also increase.

The results of first, indicative modelling analyses show two important findings in this context:

- The effects of an ETS-2 in the transport sector only lead to minor differences in emission reduction effects and cost burdens for the transport sector. This is owing to the comparatively homogeneous structures of the status quo in the area of (road) transport and the likewise relatively homogeneous structure of the mitigation options (especially with regard to electric mobility).
- The effects of an ETS-2 for the building sector lead to a significantly higher mitigation performance and cost burdens to vulnerable consumer groups in those Member States in which coal and other carbon-intensive energy sources make up a disproportionate share of the energy supply in the building sector.

The passing-on of part of the direct compliance responsibility to companies (and citizens) is therefore also accompanied by the possibility of a direct and very transparent passing-on of costs to companies and citizens. This aspect should definitely be taken into account on the use side of the ETS-2 and with regard to complementary instruments to the ETS-2.

5 Assessment of crucial design features of the proposed ETS-2

In the following, we discuss some crucial design elements, with regard to which the position by Member States (Council 2022) and/or the European Parliament (EP 2022) differs substantially from the Commission's proposal (EC 2021c).

5.1 Scope of the ETS

Two of the main differences to be resolved in the Trilogue procedure is the sectoral scope of the proposed ETS-2 and the year in which the scheme will start. The EU Commission proposed a start in 2026; the European Parliament requested an earlier start in 2025 while the Council is in favour of a late start in 2027. In terms of sectoral scope, the Commission's original proposal supported by the Council was to include buildings and road transport. The European Parliament intends to expand the scheme to most energy consumption outside of the EU ETS but foresees a derogation for private road transport and heating until 2028 at least. The only emissions from fuel consumption not covered by either ETS would be from agriculture and some aviation

and shipping (e.g. fishing vessels and warships).[2] For private road transport and heating, the Parliament requests that the Commission publishes a study on 1 January 2026 which assesses the conditions for including these sources. The assessment should include energy poverty, the impacts of the Social Climate Fund (SCF) plans, expected mitigation impacts and the feasibility of a limit on cost pass-through. Based on this study the Commission should then propose – if appropriate – the rules for including private heating and road transport from 2029 onwards.

Table 5-1 and Figure 5-1 show the impact of the different scopes and starting dates in terms of the cap, the actual supply of allowances and the covered emissions, assuming that the scope is expanded to all heating and road transport in 2029, as per the Parliament's proposal.[3] In all cases, the initial supply is higher than the cap due to the frontloading mechanism: the auctions in the first year will be 30% higher than the cap; these allowances will be deducted from the auctions in the last three years. After the first year, the MSR will impact the actual supply. The MSR will be filled with 600 million allowances prior to the start of the ETS-2. If the cumulated supply is less than 210 million allowances above the cumulated demand in a given year, the MSR will release 100 million allowances into the market. Depending on the emission projection assumed, this might lead to a release of allowances from the second year of the ETS-2 onwards as is the case in the Parliament's proposal and our emission estimate.

Table 5-1: Overview of the start year and sectoral scope

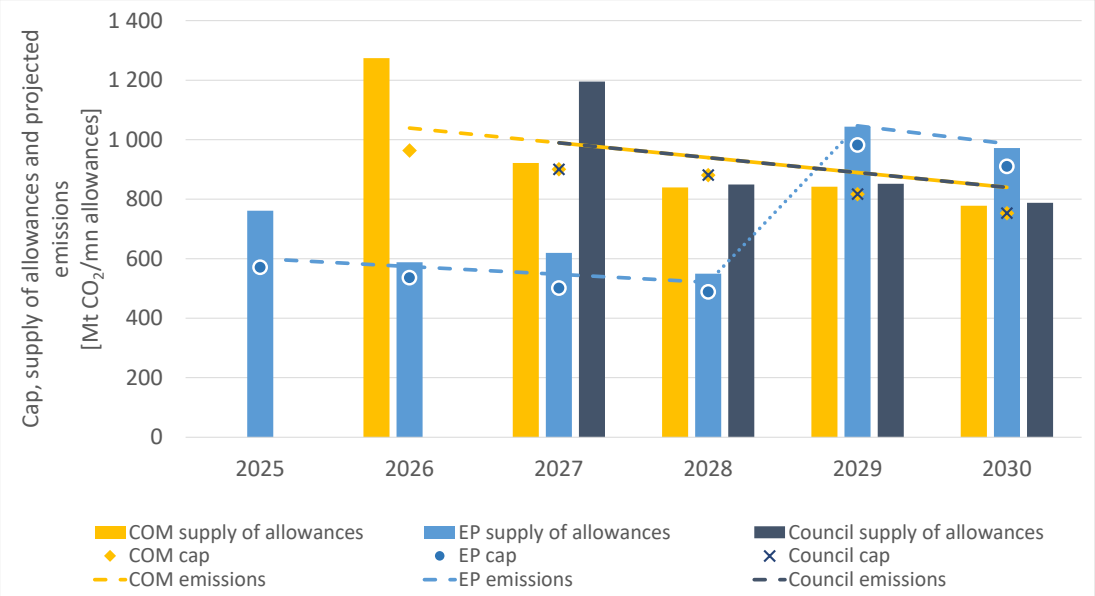
	Start year	Sectoral scope	2016 – 18 average	Total cap until 2030
COM proposal	2026	Road transport and buildings	1,225 Mt CO_2	4,315 mn EUA
European Parliament	• 2025 for commercial users • 2029 or later for private road and buildings	Most energy outside EU ETS except agriculture	• Commercial only: 682 Mt CO_2 • Incl. private 1,481 Mt CO_2	• Commercial only: 2,969 mn EUA • Incl. private: 3,989 mn EUA • Incl. private from 2025 6,441 mn EUA
Council	2027	Road transport and buildings	1,225 Mt CO_2	3,352 mn EUA

Source: Öko-Institut

[2] The Parliament has proposed the inclusion of municipal waste incineration in the EU ETS. If this is not agreed upon, these emissions could also be covered by the ETS-2. We did not include this source category in our analysis.

[3] The emission projections are based on the MIX scenario EC (2021a) but have been scaled to the scope of the different proposals.

Figure 5-1: Cap, supply of allowances and projected emissions by scope, 2025-2030



Sources: Öko-Institut calculations and estimates

Extending the scope to other energy consumption outside the current ETS would increase the environmental effectiveness. From an economic perspective, a larger scope would lead to lower overall mitigation costs for achieving the various climate targets. The main source for additional emissions is the energy consumption in small energy and industry installations falling below the scope of the EU ETS. It is unclear why the Commission's proposal did not include these emissions; the impact assessment does not provide a detailed discussion of this aspect. Without the expansion in scope, there is an incentive for installations to remain just below the minimum size thresholds for the EU ETS to avoid being covered by the EU-wide carbon pricing scheme. Emissions from these small installations have declined much more slowly than emissions from larger installations (ETC/CME 2021). This might be due to an increase in the number of such installations and/or lower economically attractive mitigation options. In both cases, a carbon price would impact emissions and bring these sectors towards climate neutrality more quickly.

Limiting the scope of the ETS to commercial road transport and heating only would require a complex additional reporting, monitoring and verification scheme. In the ETS-2, the obligation to report emissions and surrender allowances lies with the fuel supplier, not the end consumer. If private consumption is excluded, the fuel supplier would need to know the purpose of each sale. Only if the buyer is a commercial entity would the fuel be covered by the ETS and included. In some cases, this will be easily identifiable, e.g. gas supply for heating a company building. In other cases, it would be more challenging, e.g. petrol stations would need to have a possibility to identify exempt purposes. In a third category of cases, it will be impossible for the fuel supplier to know how much fuel is supplied for commercial purposes, e.g. in buildings with mixed uses with commercial and residential areas all connected to the same heating system. A feasible approach to excluding private consumers might be based on

annual tax declarations. The covered entities would be the end consumers, i.e. not the fuel suppliers anymore; the obligation to surrender allowances would be linked to the annual tax declaration. Any operating expenses for energy consumption which a company wants to claim in their tax statement would need to be accompanied by a commensurate quantity of allowances. For example, if a shipping company wanted to deduct the costs for purchasing diesel from their turnover when calculating their profit, it would need to surrender sufficient allowances for the purchased quantity of fuel. While theoretically feasible, such an approach has major drawbacks: the number of covered entities would increase by several orders of magnitude[4], the risk for omissions or double counting would increase and the system would only be usable until private consumers are included in the ETS. Not all private consumers are required to submit tax declarations and most cannot claim any deductions for their energy costs, i.e. linking the obligation to surrender allowances to the tax statement would not be feasible. Instead, the obligation would have to be at the level of fuel suppliers, i.e. the whole system would only be implemented for a few years. Considering the methodological and administrative challenges including costs of such a scheme the Parliament's proposal is not recommended.

With respect to the starting date of the ETS-2, the earlier start dates will have a higher environmental impact. A late start as suggested by the Council would leave very little time for the ETS to have an impact on emissions beyond short-term changes in user behaviour. An early start as proposed by the Parliament will increase the impact of the ETS-2 for achieving Member States' ESR targets and the EU's NDC.

Conclusions

- Expand the ETS-2 to (most) energy consumption outside of the EU ETS as proposed by the European Parliament.
- Start the ETS-2 as early as possible, i.e. in 2025 if feasible as proposed by the European Parliament.
- A derogation for private road transport and heating would lead to major challenges in the implementation of the ETS-2, rendering this approach unfeasible. Instead of excluding these emission sources, any negative unintended consequences should be addressed through the SCF and other support schemes.

5.2 Price management

The initial years of a new ETS tend to be accompanied by larger uncertainties with regards to the actual demand and behaviour of market actors than in later years. This is likely to hold true for an ETS in the buildings and road transport sector as well:

- Historic emissions and projections in the scope of the proposed ETS have not been reported separately until now. There are some uncertainties especially with regard to heating (i.e. small heating facilities), but there might also

[4] In the scope proposed by the Commission, approx. 11 400 fuel suppliers would be covered by the ETS-2. Each fuel supplier will likely have hundreds or thousands of unique commercial customers.

be uncertainties in the road transport sector. The experience from the EU ETS has shown that the bottom-up data normally does not match the top-down data reported in the GHG inventories.

- Little experience has been gathered with regard to the reaction of private and commercial consumers to the new carbon price in the short and medium term.
- The price of road fuels and fuels for heating are closely linked to the global market prices for these energy carriers. A carbon price of 50 EUR/t CO_2 would increase the cost of a barrel of oil by approx. 21.5 EUR which is lower than inter- or intra-annual price fluctuations in many years. It might be that the impact of the carbon price will get "lost" against this background.

Against this backdrop, many ETS systems have had an oversupply of allowances in their first trading period (GIZ 2018). For the ETS-2, the Market Stability Reserve (MSR) will be operating from the beginning, i.e. an semi-intentional oversupply might be prevented. In addition, the cap development will require substantial emission reductions up to 2030. At the same time, regulators will want to avoid a very high carbon price especially in the first years as it might undermine public support: without a prior price signal it is unlikely that many consumers will adopt energy/emission saving measures before the start. To avoid social hardships, various price control mechanisms are proposed by all three institutions.

Under Art. 30(h), the Commission proposes a mechanism that is triggered if the average price of allowances in auctions over three months is twice/three times as high as the preceding half year period. In such a case, 50/100 million allowances will be auctioned from the MSR. The Council suggests that the lower price trigger should apply for a 50% price increase and clarifies that each mechanism can only be triggered once per 12-month period. This will allow the market to react to the new supply of allowances. The European Parliament is asking for two mechanisms: The first one is triggered if the allowance price goes above 50 EUR; in each case, an additional 10 million allowances would be auctioned from the MSR holdings unless one of the price mechanisms proposed by the Commission have been triggered already. In addition, if the price goes above 45 EUR/allowance, the Commission and Member States would be obligated to take further measures to reduce CO_2 emissions from the sectors covered by the ETS-2. The second mechanism relates to very high fuel prices. The deadline for surrendering allowances for private road transport and buildings is postponed if fuel prices are higher than those in March 2022 for six months in the year prior to the inclusion of these emissions in the ETS-2.

The soft price ceiling at 50 EUR/t CO_2 proposed by the Parliament would provide more certainty on expected prices but could potentially lead to significantly higher supply. There is no limit to how often this mechanism could be triggered, i.e. up to 120 million allowances/year could additionally enter the market. If too many additional allowances enter the market, the overall reduction impact of the ETS-2 will be greatly diminished. Such a cap would also remove any economic incentive for covered entities to take reduction measures which have a cost above this price limit. The proposal could be strengthened by increasing the price ceiling every year and limiting the number of times the mechanism can be triggered each year.

None of the proposals include a price floor. Currently, it seems unlikely that demand (i.e. emissions) will decrease so fast that this would be necessary. At the same time, a price floor would send a clear signal to covered entities about the expected minimum costs. In addition, the experience in the past has shown, that unexpected developments can lead to much stronger emission reductions than anticipated. Such a price floor should also increase over time.

Conclusions

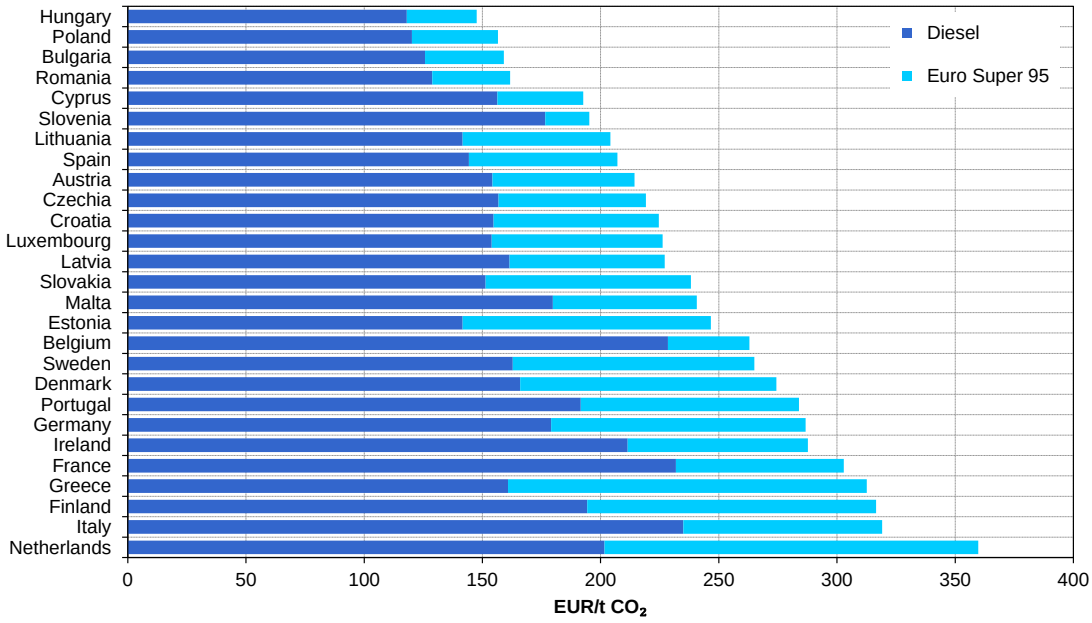
- Having a price mechanism for the ETS-2 is a way to deal with the uncertainties around setting up a new emission trading scheme.
- Limiting the price mechanisms to once per year as proposed by the Council is recommended to provide more certainty of supply and give time to absorb the additional allowances.
- If a soft price ceiling is introduced as proposed by the Parliament, the ceiling should increase each year and there should be a limit on the number of times the mechanism can be triggered.
- Including a price floor would send a clear signal to covered entities and protect against unexpected emission developments.
- Linking additional mitigation action to certain CO_2 prices is the best approach to ensure lower carbon costs in the future.

5.3 Interactions with energy taxation

Carbon pricing in the ESR sector via the ETS-2 is not the only pricing mechanism for greenhouse gas emissions. In contrast to the EU ETS, which was the first significant carbon pricing instrument (a greenfield implementation) in most Member States, the consumption of energy sources beyond industry is subject to energy taxes, some of which are significant. These energy taxes ultimately constitute implicit carbon taxes. Member States are free to define these energy taxes above minimum tax rates regulated at EU level and have made use of this flexibility with sometimes very different energy tax rates. In this context, the introduction of ETS-2 should be conducted as a brownfield implementation of a new carbon pricing mechanism.

Figure 5-2 illustrates this situation using the case of energy tax rates for gasoline and diesel fuel. Implicit carbon taxation for gasoline ranges from 148 to 360 €/t CO_2; the mean and median values are around 240 €/t CO_2. Diesel fuel is taxed much lower in all Member States, ranging from 118 to 235 €/t CO_2, with mean and median values of 168 and 161 €/t CO_2 respectively.

Figure 5-2: Implicit carbon pricing via energy taxes on gasoline and diesel fuel as of November 2021



Sources: European Commission, Öko-Institut calculations and estimates

Against this background, the introduction of the ETS-2 should be complemented by measures that prevent Member States from reducing energy taxes for some or all energy carriers in return for the introduction of the ETS-2, thus damaging both the economic incentive effects and the accountability of the ETS-2. Regulatory counter-measures could be taken on two levels:

- In the course of the EU Energy Taxation Directive, the minimum tax rates could firstly be increased, secondly aligned with regard to the CO_2 content and thirdly a provision could be included that the reduction of energy taxes is not permitted in the context of the ETS-2.
- Within the framework of the ETS-2, a mandatory use of the revenue from the ETS-2 for social compensation or new climate protection or innovation financing could be introduced. Although this would not fundamentally prevent the reduction of energy taxes, it could significantly reduce the incentives for this from the perspective of public budgets.

Conclusions

Changes in energy taxation have the potential hugely to damage both the incentive effects of the ETS-2 and the accountability and predictability and thus also the informational component of the policy mix for the transformation towards climate neutrality. Appropriate safeguards should be included in the legislation on ETS-2 and/or energy taxation.

5.4 Sectoral roadmaps and role of the European Scientific Advisory Board on Climate Change

The European Parliament is proposing a new paragraph which would require the Commission to publish sectoral roadmaps detailing how the sectors covered by the ETS-2 will contribute to the climate neutrality objective by 2050 and achieve negative emissions afterwards. The European Scientific Advisory Board on Climate Change would have a supporting role in drafting these roadmaps. The first set of roadmaps would be due in 2025 with regular updates every four years. The Advisory Board would also receive the right to provide scientific advice and publish reports on its own initiative to all issues related to the ETS-2. Such input would need to be assessed by the Commission and, if not followed, the Commission would be obligated to publish a justification for not doing so.

As discussed above in chapter 3, carbon pricing can be an effective instrument as part of a broad policy mix. Developing sectoral roadmaps especially for road transport and buildings – two large sectors with insufficient emission reduction rates – would be a good supplement to the ETS. To do so, the roadmaps would need to be specific and lead to quick additional policies and measures if necessary to achieve the climate neutrality target. At the same time, there are multiple other regular reporting requirements and reviews of existing policy (e.g. NECP progress reports and updates, review of ETS Directive, ESR and LULCUF regulation towards 2030, updated NDCs). To have an added value, the roadmaps would need to fill any gaps in these existing reports and policy proposals.

Giving the European Scientific Advisory Board on Climate Change a more active role could be a useful complement to improving the effectiveness of the EU's climate action in the ETS-2 sectors.

Conclusions

Regular sectoral roadmaps could be a useful tool that contributes to the required emission reduction rates to achieve climate neutrality by 2050. In addition, obligating the Commission to publicly react to the advice given by the European Scientific Advisory Board on Climate Change might strengthen the role of this body.

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