Agora Energiewende

ANALYSIS

The carbon price for buildings and road transport

A concept for the transition from national to EU emissions trading

Agora Verkehrswende

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Analysis
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A concept for the transition from national to EU emissions trading.

Written by
Agora Energiewende
Anna-Louisa-Karsch-Straße 2 | 10178 Berlin
P +49 (0)30 700 14 35-000
www.agora-energiewende.org
info@agora-energiewende.de

In cooperation with
Agora Verkehrswende
Anna-Louisa-Karsch-Straße 2 | 10178 Berlin
P +49 (0)30 700 14 35-000
www.agora-verkehrswende.de/en/
info@agora-verkehrswende.de

Contact:
Carl-Friedrich Elmer | carl-friedrich.elmer@agora-verkehrswende.de

Project lead
Lea Nesselhauf | l.nesselhauf@agora-energiewende.de

Authors
Lea Nesselhauf (Agora Energiewende)
Simon Müller (former Agora Energiewende)

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Note
This is a translated and slightly adapted version of the original German publication.
For questions, please contact Murielle Gagnebin (murielle.gagnebin@agora-energiewende.de).

Preface

Dear reader,

We find ourselves at the beginning of a new phase in climate policy. Considerable progress has been made with decarbonising the power sector in recent decades thanks to a combination of different instruments. These include in particular the introduction of various support schemes to safeguard investments in renewable energies, as well as increasingly effective carbon pricing via the European Emissions Trading System (ETS 1).

Unfortunately, such successes are rare within the buildings and road transport sectors. Yet, a new instrument for these sectors will come into force in 2027 at the European level: a second EU Emissions Trading System (ETS 2). As the expected level of carbon prices remain uncertain, policymakers must prepare the ground for its launch. This also raises the question of which role emissions trading is to play in relation to other instruments.

The study was first published in 2023 and has been updated in parts to reflect recent policy changes. It addresses the special situation in Germany, where a carbon pricing system for the buildings and transport sector already exists and makes a proposal for the transition from this system to the ETS 2. However, several insights are applicable to other member states, too. Therefore, we also hope to contribute to the European-wide debate about preparing a sound transition to the ETS 2.

I wish you a pleasant read!

Émeline Spire
Director Europe, Agora Energiewende

Key findings at a glance

1 **The EU emissions trading system for buildings and road transport (ETS 2) will replace Germany's current national carbon pricing scheme in 2027.** Since Germany accounts for a quarter of the ETS 2 emissions, accelerating emission reductions in its building and transport sectors will be crucial for keeping prices in check across Europe.

2 **Ensuring a smooth transition to the ETS 2 and establishing safeguards against CO_2 price volatility is essential to reinforce incentives to move away from fossil fuels.** The 'Climate Action Programme' that the next government is mandated to enact provides an opportunity to adjust the national carbon price corridor and establish a minimum German national carbon price of EUR 90/t CO_2. This minimum price is critical for investment certainty.

3 **A carbon price provides important incentives for decarbonisation but needs to be part of a broader policy mix.** Consumers' ability to adapt behaviour in response to a carbon price – for example by switching to more climate-friendly means of transport – depends on existing infrastructure, purchasing power and savings. Accompanying measures supporting the accessibility and affordability of clean mobility and heating solutions are thus essential for a successful ETS 2.

4 **The ETS 2 will generate revenues that can be invested in supporting households in the transition.** In Germany, for example, at an average price of EUR 110/t CO_2, carbon pricing could generate around 130 billion euros in state revenue between 2027 and 2032. This revenue should be used to offset higher fossil fuel costs and support investments in clean heating and mobility through targeted financial support to households and a socially staggered "climate bonus" *(Klimageld)* for all citizens.

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1 Summary

Emissions trading has evolved to become a key instrument of European climate policy – from 2027, a similar system will also be implemented for the buildings and road transport sectors.

The European Emissions Trading System, covering carbon emissions from energy production and energy-intensive industrial plants (ETS 1), has evolved to become a cornerstone of European climate policy. Though the prices of allowances were initially low when the scheme was introduced in 2005, they have climbed in recent years to over EUR 80/t CO_2 at times. Between 2005 and 2020, emissions in those sectors covered by the ETS 1 dropped by 41 percent. The cap on emissions has been tightened several times and is now directed clearly towards climate neutrality – the last new allowances are expected to enter the market before 2040.

Another European Emissions Trading System – the ETS 2 – will come into force from 2027 and will mainly apply to emissions from the buildings and road transport sectors. Until 2030, the cap in the ETS 2 will decline by 42 percent compared to the 2005 level and is thus in line with European climate protection targets. From 2027, according to recent legislation, the ETS 2 will largely replace the national fuel emissions trading system (*Brennstoffemissionshandel*, BEH) that was introduced in Germany in 2021. The European Effort Sharing Regulation (ESR), which obliges EU states to reduce emissions in those sectors not covered by the ETS 1, will remain in force, however.

The ETS 2 is a climate policy opportunity and creates a financial scope for social compensation.

In its agreed form, the ETS 2 is an effective instrument in helping to reach targets in the "problem sectors" of buildings and road transport. There is a serious gap in these sectors in Germany between the climate targets that have been set for 2030 and the actual extent of emission reductions; the situation is similar in many EU states. Thanks to the fixed cap, the ETS 2 will safeguard the achievement of a minimum contribution towards the European climate targets from these sectors, and thereby also make a significant contribution towards delivering national ESR and sectoral targets.

In Germany alone, the ETS 2 could generate revenue of around EUR 180 billion from 2027 to 2032, assuming an average carbon price of EUR 150/t CO_2. A key advantage of the Emissions Trading System is that it not only influences prices but also generates revenue for the state. How this revenue is used will determine the degree of support in the population, therefore all revenue generated by the ETS 2 should be redistributed to society or used for climate protection measures.

Good preparation of the ETS 2 launch will increase planning security and avoid sudden price surges.

Because the ETS 2 price level will be determined by the market, the ETS 2 price could already reach a high level by 2027. Any predictions about the level of carbon prices in emissions trading systems are fraught with considerable uncertainty. In the negotiations to create the ETS 2, a target price of EUR_{2020} 48–80/t CO_2 was aimed for based on modelling from the impact assessment accompanying the proposal. However, these price levels are not a given. Under the finally agreed rules a predefined cap for emissions under the ETS 2 means that the supply of allowances is largely fixed, so the price level will be mainly formed by the demand for allowances and determined by the market. Moreover, given the stringency of the cap for the ETS 2, prices of over EUR 200/t CO_2 cannot be ruled out by 2027 unless effective steps are taken to reduce emissions in buildings and road transport. In this case, gasoline and fossil gas prices in Germany

could rise by 38 ct/l and three ct/kWh, respectively, compared to their 2026 levels of EUR 55–65/t CO_2. Consequently, price increases would be even higher in countries without existing carbon pricing schemes in place.

To avoid a surge in prices when the ETS 2 is launched, Germany's national BEH should be adjusted without delay. The BEH was introduced before the ETS 2 was created. Though the ETS 2 will largely replace the BEH from 2027, no concept is currently in place to facilitate the transition. At present, the current fixed price of EUR 55/t CO_2 which applies in the BEH that will rise to a maximum level of EUR 65/t CO_2 by the end of 2026. This is too low to ensure a smooth transition to the ETS 2. Furthermore, not all emissions covered by the BEH will also be covered by the European system. In particular the emissions from the waste sector are set to remain under the BEH until at least 2028, after which it could be included in the ETS 1. This raises the question of the functioning of the BEH as a market with such a limited amount of emissions.

Further action may also become necessary at the European level. The ETS 2 will lead to a uniform price in all EU states, yet the economic power of the individual states differs considerably. For this reason, a Social Climate Fund was created alongside the ETS 2 that will be financed up to a maximum amount of EUR 65 billion using revenue generated by the auctioning of ETS 2 allowances, and, to a much lesser extent, ETS 1 allowances. If prices in the ETS 2 rise significantly above the original target corridor of EUR_{2020} 48–80/t CO_2, it could become necessary to adjust the Social Climate Fund in order to achieve the originally intended redistributional effect between member states.

Three priorities to ensure Germany's successful entry into the ETS 2

There are less than two years to prepare well for the launch of ETS 2, with no time to waste. Firstly, Germany's national carbon pricing system must be further developed to make it future-proof. Secondly, the use of revenue for climate and social purposes must be ensured. Thirdly, climate action in the buildings and road transport sectors must be reinforced.

1. Continued future-proof development of national carbon pricing

Thanks to the existing BEH, Germany is in principle well positioned to prepare for a successful transition to ETS 2. In order for this to be optimised, the fixed price corridor in the BEH needs to be set more ambitiously and the trading phase has to begin sooner. This would entail a two-fold advantage: for one, emission reductions would be brought about more quickly, thereby dampening the launch price in the ETS 2. Second, the rise in CO_2 prices would be more gradual. This would likely make for higher acceptance levels, enhance planning security for citizens and businesses and help avoid misinvestments. The BEH could be adjusted as follows:

- → **The national carbon price corridor foreseen for 2026 should be extended from EUR 55–65/t CO_2 up to EUR 55–75 t/CO_2.** In this regard, the "Climate Action Programme" the new Government is obliged to enact offers an opportunity to prepare for potentially higher prices and bring down emissions.
- → **If the climate targets appear not to be achieved by 2030, prices increase by an additional EUR 10/t CO_2 for 2026.** If the 2025 projection report shows that total emissions would by 2030 exceed the level permitted in line with the national climate change obligations under the ESR, the upper limit of the price corridor could be raised by an additional EUR 10/t CO_2 to EUR 85/t CO_2 in 2026.
- → **A national minimum carbon price could come into force from 1 January 2027.**[1] This secures the price path with a view to preventing any retrograde step in climate policy. The minimum price could be set at EUR 90/t CO_2 and increase by EUR 20/t CO_2 per year until 2030. The mechanism of an additonal

1 A minimum price can be implemented by adjusting the energy tax.

price mark-up of EUR 10/t CO_2 in case the climate targets for 2030 are projected to be missed should be kept in place.

2. Using additional revenue for social redistribution

Any additional revenue generated by the adjustment of the BEH can be used to cushion the impact of higher carbon prices. The proposed price path will lead to a moderate but steadily increasing financial burden on citizens and businesses. To cushion the impact on vulnerable households and prevent potential backlash, the additional revenue could be redistributed to the population as follows:

→ **A climate bonus could be introduced from 1st July 2025.** To facilitate swift payment, transfers could initially be standardised per person. Similar to assistance payments granted to German households during the energy crisis, the climate bonus could also be subject to income tax to ensure a more progressive redistribution. As state revenue increases in line with rising carbon prices, this can be redistributed in an increasingly socially staggered manner in subsequent years. If the introduction of the climate bonus is delayed for administrative reasons, a reduction in electricity taxes, levies and surcharges could be a pragmatic way to bring about relief in the short term, while further encouraging clean heating and mobility. This being said, a reduction in electricity taxes, levies and surcharges should not be implemented as a replacement of a climate bonus given that, as a redistribution option, it is not suited to providing relief that is scalable with rising carbon prices.

→ **In addition, further needs-based financial (e.g. subsidies) and regulatory (e.g. tenant protections) support measures will be necessary to ensure that nobody is left behind with excessive costs.**

3. Implementing effective climate change mitigation measures in the buildings and road transport sectors

Since the scope for consumers to respond to a higher carbon price – e.g. by switching to a more climate-friendly means of transport – is largely determined by the existing infrastructure and by their purchasing power and savings, a carbon price is not sufficient in itself to effectively implement climate change mitigation measures. Furthermore, there is a risk of very high prices if emissions trading is used as an instrument in isolation. After all, the ETS 2 guarantees merely that targets will be achieved at the European level but does not ensure that Germany's commitments under the ESR and the Climate Change Act will be met. For these reasons it is essential to embed emissions trading – as in the ETS 1 sectors – within an effective and consistent policy mix.

2 Introduction

European emissions trading (ETS 1) began in 2005 and primarily covers fossil energy production plants and energy-intensive industrial facilities. It has evolved to become a cornerstone of climate action in these areas, with allowances in the ETS 1 now costing roughly EUR 80.[2] At the beginning of 2023, another trading system at European level was adopted; from 2027 it will put a price on emissions generated mainly by the buildings and road transport sectors (ETS 2).

The ETS 2 aims to reduce emissions by 42 percent compared to the 2005 level by 2030. By setting a clear cap on the number of allowances available, it also serves as an instrument by which to achieve this goal. The ETS 2 is an important means of reducing the emission gap when it comes to meeting the German and European climate targets, especially for the buildings and road transport sectors. Though a national fuel emissions trading system (*Brennstoffemissionshandel*, BEH) is already in place for these sectors in Germany, the currently applicable fixed prices are too low to have a significant climate change mitigation effect.

Furthermore, the ETS 2 is an instrument capable of generating hundreds of billions of euros in state revenue between 2027 and 2032. This could go for example towards granting a climate bonus or paying for targeted measures to support a socially just transformation. At the same time, the ETS 2 offers an opportunity to support the transformation of small and medium-sized enterprises in particular, to avoid misinvestments and to strengthen Germany overall as a future-proof location for business and industry.

Proper preparation is necessary to ensure that the ETS 2 gets off to a successful start in 2027, however. During the negotiations on the ETS 2, a starting price of EUR_{2020} 45/t CO_2 was discussed. Though the ETS 2 in its actual form will target this price by controlling the maximum emission budgets, it is not actually a fixed price. From 2027, pricing will be freely determined by the market. Any predictions about the level of carbon prices in emissions trading systems involve considerable uncertainty. And indeed studies show a significant range of between EUR 48/t CO_2[3] and as high as EUR 300/t CO_2[4]. The actual prices will depend first and foremost on demand, meaning one key factor will be the degree to which emissions decline until 2027: if emissions in 2027 are noticeably above the target level defined in the ETS 2, there is a risk of extremely high prices that may also occur abruptly on the market.

This requires member states to take action to carefully pave the way for the ETS 2 by already implementing effective measures to reduce emissions in the ETS 2 sector on the one hand and to further develop the national carbon pricing systems on the other in order to facilitate a steady transition to the ETS 2 in 2027. Germany has a special responsibility in this context because it accounts for nearly a quarter of the Europe-wide emissions covered by the ETS 2. Germany's climate policy in the buildings and road transport sectors can therefore have a major impact on demand Europe-wide and thus on the level of ETS 2 prices. Time is of the essence given that the auction phase will begin in less than three years' time.

This analysis explains how the ETS 2 functions and is intended to contribute to a discussion of how a socially and economically balanced transition to the ETS 2 might look and which aspects of the ETS 2 system still require further improvements.

2 EEX (2023).

3 European Commission (2021a).

4 IfW Kiel (2023); MCC (2023b).

3 Where we are now: facing an emission gap, a budgetary problem and weak emissions trading

Buildings and road transport sectors climate policy not on track

To date, there is no sign of a trend reversal towards climate neutrality in the buildings and road transport sectors. Even if individual indicators, such as the surge in electric mobility, may have picked up pace in recent years, both sectors are still far from getting on the desired trajectory towards climate neutrality. In both sectors, the annual emission budgets defined in Germany's Climate Change Act (*Klimaschutzgesetz*, KSG) were exceeded during the last three years. This is all the more remarkable given that crises led to special effects in 2021 and 2022: in 2021 the measures to combat the coronavirus pandemic led to a sharp decline in transport volumes, while in 2022 it was the steep rise in energy prices as a result of Russia's invasion of Ukraine that resulted in a fall in energy consumption, which in the buildings sector was further boosted by mild weather.[5] In the road transport sector, emissions actually increased slightly year-on-year in 2022 – despite higher fuel prices, which in the case of diesel for instance doubled temporarily year-on-year.[6] Emission reduction effects brought about by crises do not necessarily lead to a long-term reduction in emissions; in fact, prices of fossil energy sources have dropped again since 2022. In addition, such crisis-induced emission reductions can be caused by socially undesirable factors such as abruptly rising prices in 2022 or the restrictions on movement during the coronavirus pandemic. Consequently, Germany's Federal Government should not rely on these effects.

A look at the projected developments shows that the emissions gap in the buildings and transportation sectors will continue in the future if no additional measures are implemented. According to a 2024 evaluation by the Council of Experts on Climate Change (*Expertenrat für Klimafragen*), the slow progress in those sectors will likely have the consequence that Germany misses its overall KSG target by 2030 – even if all the currently planned measures listed in the draft Climate Action Programme were to be implemented and the energy sector overachieved its sectoral target.[7] The Council of Experts thus objected the Federal Government's statement that Germany was on track to meet its 2030 target which had been issued two months earlier based on the Government's recent projections report. The Council of Experts explained its decision by highlighting that current developments had not been considered when the projection data were compiled (e.g. the recent cuts in subsidies but also changes in market expectations for gas prices and ETS 1 allowances). Consequently, it recommended taking additional measures, especially in the buildings and transportation sectors where progress has been slow, and the sectoral targets were missed repeatedly.

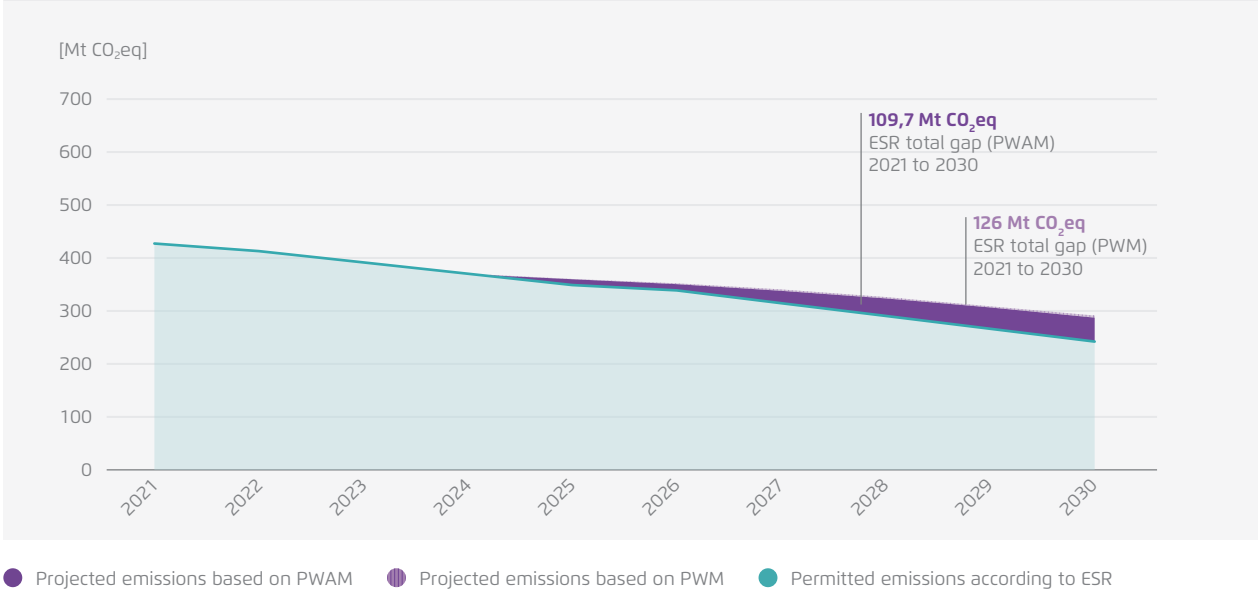
Falling short of climate targets poses a budgetary risk

The slow progress in the buildings and transportation sectors also means that Germany is set to fall short of the European climate targets. Irrespective of the KSG, Germany is required to comply with its national targets set by the EU Regulation 2018/842 (also known as the Effort Sharing Regulation, ESR). It stipulates that Germany must reduce all national emissions not covered by the ETS 1, except for those in the land use sector, by 50 percent compared to 2005 levels by 2030. Based on the expected exceedances in the buildings and road transport sectors, Germany will

5 Umweltbundesamt (2023a).
6 Statista (2023).
7 Council of Experts on Climate Change (2024).

Projected shortfall on ESR targets

→ Fig. 1



Agora Energiewende (2024) based on Umweltbundesamt projection report (2024)

exceed the defined targets by roughly 126 Mt CO_2eq during the period from 2021 to 2030 and thus, rather than meeting the targets of its own accord, will only be able to do so by purchasing annual emission allocations (AEAs) from other EU member states. Though this way of achieving the goals is possible in principle, it is doubtful whether emission allowances will in fact be available at all given the current emission projections of the member states and the fact that the national targets have been increased for all states. In this scenario, Germany could face infringement proceedings and fines. Even if allowances were available, supply could be very tight and thus associated with high payment expectations. In any case, this poses a budgetary risk that could run into the billions. This risk is avoidable, though only if a logical overall climate policy concept is put in place to cut emissions in the buildings and road transport sectors.

The climate budget is shrinking

No such overall concept with a balanced instrument mix exists yet. For 20 years, German climate policy has been characterised by a pronounced emphasis on funding programmes, whereas regulatory requirements, education and economic incentives play more of a subordinate role.[8] Besides its effectiveness, the main question concerns the financial viability of this approach given that the revenue from carbon pricing was not sufficient in 2023 to cover even half of the planned expenditure from the Climate and Transformation Fund (CTF), from which a large proportion of the funding comes.[9] Until 2023, the CTF was supplied mainly by rededicating unused credit authorisations that had originally been approved for the coronavirus pandemic response. However, a Constitutional Court's ruling declared the transfer of EUR 60 billion invalid in November 2023, thereby shaking the main financing basis for climate protection measures. Even before the ruling, the expenditure plan for the CTF showed overbookings of around EUR 2 billion in 2026 and was EUR 8 billion short in 2027.[10] The situation has become even more urgent. Unable to agree on a budget for 2025, the Government coalition broke apart in November 2024. Consequently, the challenge to adopt a budget remains for the next Government; not to

8 Council of Experts on Climate Change (2023).
9 For more details, see MCC (2023a).
10 Id.

mention financing the enormous public investments and funding needs for the energy transition in the coming years. Thus, it appears questionable if there will be financial scope for the climate bonus, which the former coalition parties had repeatedly committed to introducing – at least not without reshuffling planned expenditure or tapping an additional source of revenue.

As a result Germany faces a two-fold climate policy problem: the gap between climate targets for the transport and buildings sector and emission trends remains significant, while the climate policy approach that has been followed to date is nearing its financial limits.

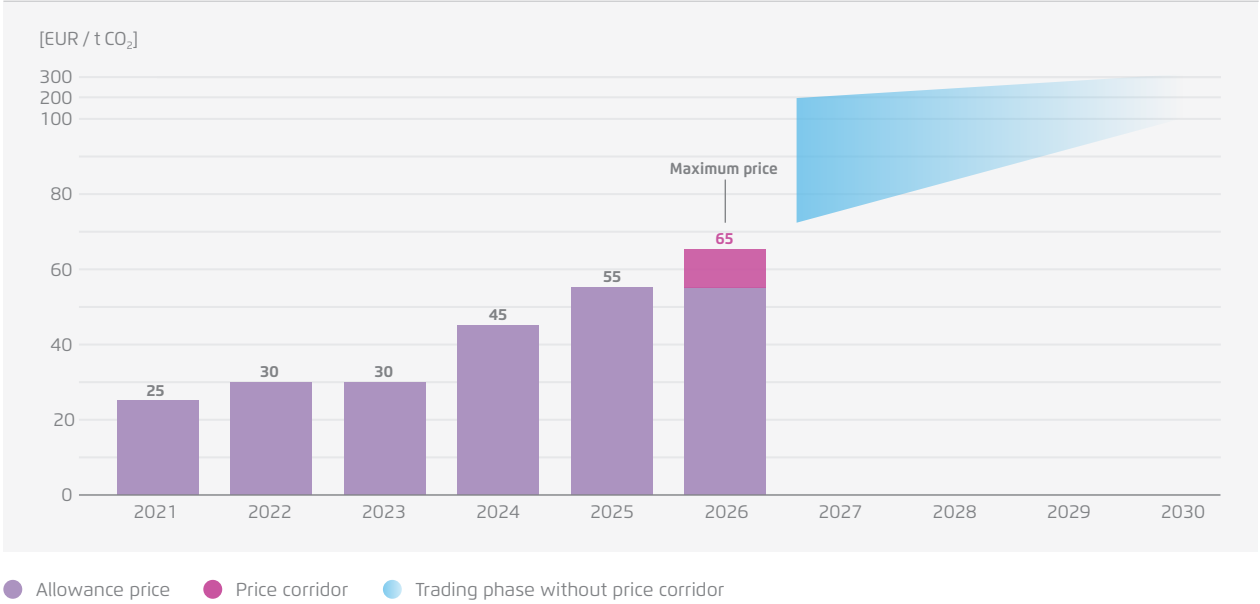
The potential of national fuel emissions trading is not being fully realised

A national instrument has been in place since 2021 that could be used to improve both the fiscal situation and the emission balance in the buildings and road traffic sectors: the national fuel emissions trading system (BEH). However, its potential is not currently being realised.

The BEH primarily covers emissions from the buildings and road traffic sectors, though it also includes some industrial emissions. It is those who place the fuels on the market – suppliers, for the most part – who are obliged to purchase allowances. In view of the system's current form, it is misleading to describe it as emissions trading because allowances, rather than being auctioned, are sold at an annually rising fixed price during the introductory phase (2021–2025). Because the prices are fixed, the capping of the number of allowances provided for in Section 4 of the Fuel Emissions Trading Act (*Brennstoffemissionshandelsgesetz*, BEHG) in line with the ESR requirements is overruled. There is no limit on the emission levels and any number of allowances may be purchased at the fixed price. The demand for cheap allowances determines the number sold, which may also exceed the emission budget permitted in accordance with the ESR targets.

The original plan had been to raise the fixed price from EUR 25/t CO_2 in 2021 to EUR 55/t CO_2 in 2025 and for auctioning to begin from 2026 with a price corridor of EUR 55 to EUR 65/t CO_2. During the energy price crisis, the Federal Government decided in 2022 to suspend the planned increase from EUR 30

Carbon price path in the BEHG according to Federal Government plans → Fig. 2



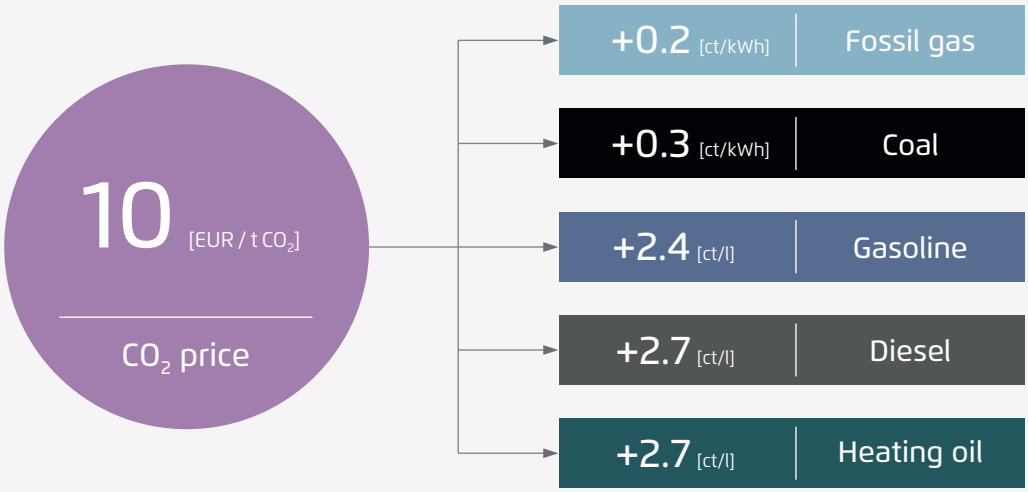
Agora Energiewende (2023) based on Federal Government (2023)

to EUR 35/t CO_2 for the following year but returned to the original price path of EUR 45/t CO_2 to stabilise the budget after the Constitutional Court ruling in December 2023. Currently, in 2025, the carbon price is at the level of EUR 55/t CO_2. From 2027, the BEHG envisages a complete transition from fixed prices to a genuine trading phase in which the annual number of allowances would be capped in line with the ESR requirements. In light of recent legislative changes, this is not going to happen given the introduction of the ETS 2 at European level (for further details, see Section 5.1).

The here proposed extension of the price corridor from the originally planned price corridor of EUR 55 to 65/t CO_2 up to EUR 55 to 75/t CO_2 and additional increase of EUR 10/t CO_2 in case the projection report by the German Environment Agency (*Umweltbundesamt*) shows that the 2030 targets are likely to be missed, appears substantial at a first glance. In fact, however, even if prices were to reach the upper limit of the corridor, the additional EUR 30/t CO_2 would cause gasoline prices to rise by about 10ct/l. To contextualise, gasoline prices can fluctuate by the same amount just within a day. Even though a price increase caused by a rise in the carbon price constitutes a structural increase, economic analyses indicate that the price would still be too low to exert any noticeable climate policy impact. It is also a long way off the figure of EUR_{2020} 195/t CO_2 – the cost of economic damage caused by carbon emissions as estimated by the German Environment Agency.[11]

11 Umweltbundesamt (2020).

What effect does a carbon price increase of EUR 10 / t CO_2 have? → Fig. 3



Agora Energiewende (2018). Note: the prices quoted do not include Value Added Tax.

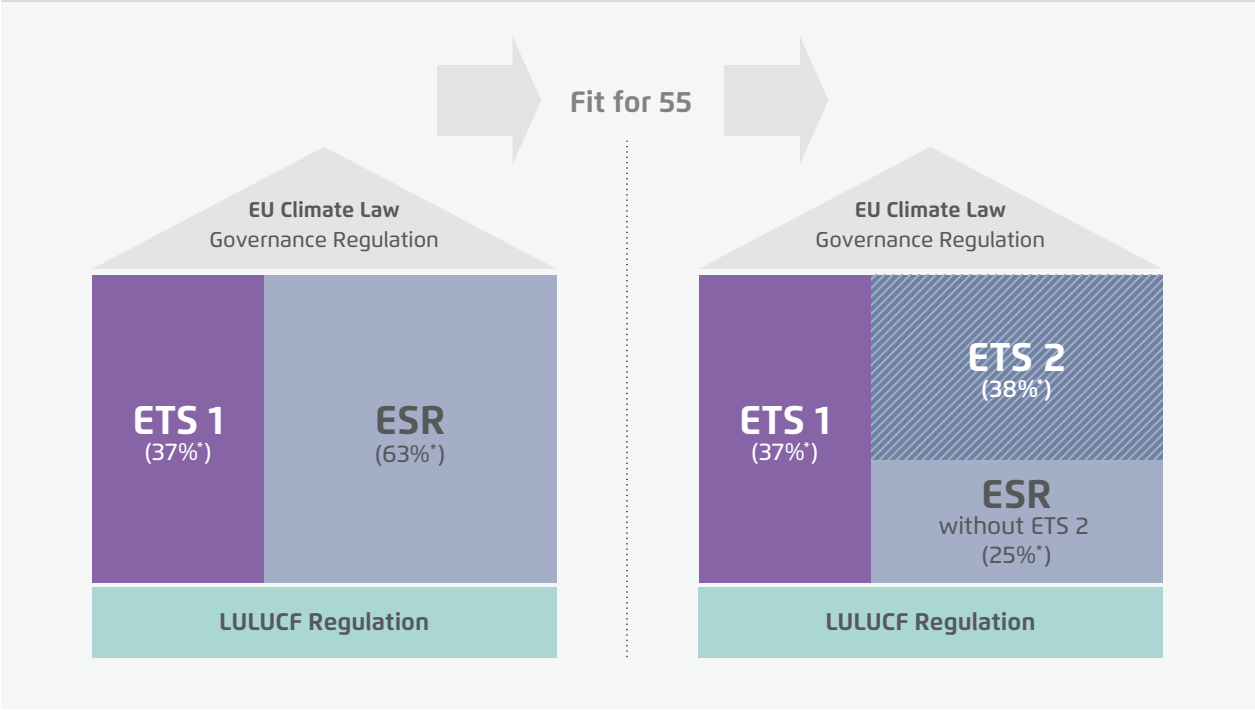
4 Where we are headed: towards a strong emissions trading system

The ETS 2 as a game changer for the architecture of European climate law

The introduction of the Emissions Trading System for the buildings and road transport sectors (ETS 2) has fundamentally changed the architecture of European climate law. Before the ETS reform there were two main governance regimes: on the one hand the ETS 1, a pan-European trading system designed to reduce emissions in the energy sector and in part of the industry sectors. On the other hand, the ESR, which was introduced in 2018 and sets national emission reduction targets for most of those emissions not covered by the ETS 1. In contrast to the ETS 1, the ESR primarily places the onus on member states to adopt appropriate measures to achieve their national targets, even if trading in AEAs between states is permissible under certain conditions in order to meet targets.[12] If the ESR targets are exceeded, one of the measures provided for in the ESR within the framework of the compliance check that will first come into force in 2027 is that the permissible emissions defined for the member state in question for the following year will be tightened by the amount of excess emissions multiplied by a factor of 1.08.[13] In addition, infringement proceedings are also possible in principle as a response to any failure to meet targets.[14]

12 See Article 5(3) of the ESR.
13 Article 9(1a) of the ESR.
14 Explicitly mentioned in Recital (29) of the ESR.

Fit for 55 package changes EU climate governance structure → Fig. 4



Agora Energiewende (2023) based on Öko-Institut (2023). *All percentages relate to the share of EU-27 emissions according to the regulatory framework in 2020.

Within this climate policy architecture emissions covered by the ETS 1 declined by 35 percent until 2021, compared to 2005 levels. By contrast, ESR emissions declined by only 17 percent Europe-wide by 2020.[15] No premature conclusions about the effectiveness of the ETS 1 should be drawn from these figures. Especially at the beginning, the financial and euro crisis in particular drove emissions down significantly amid extensive free allocations and an oversupply of allowances. The expansion of wind power and photovoltaic plants mainly took place due to long-term investment instruments such as feed-in tariffs and market premiums. Furthermore, the costs of avoiding CO_2 are comparatively low (and in some cases now even negative), especially in the power sector, allowing an early and rapid reduction of emissions. This makes it all the more necessary to now boost the transformation in the remaining sectors, too.

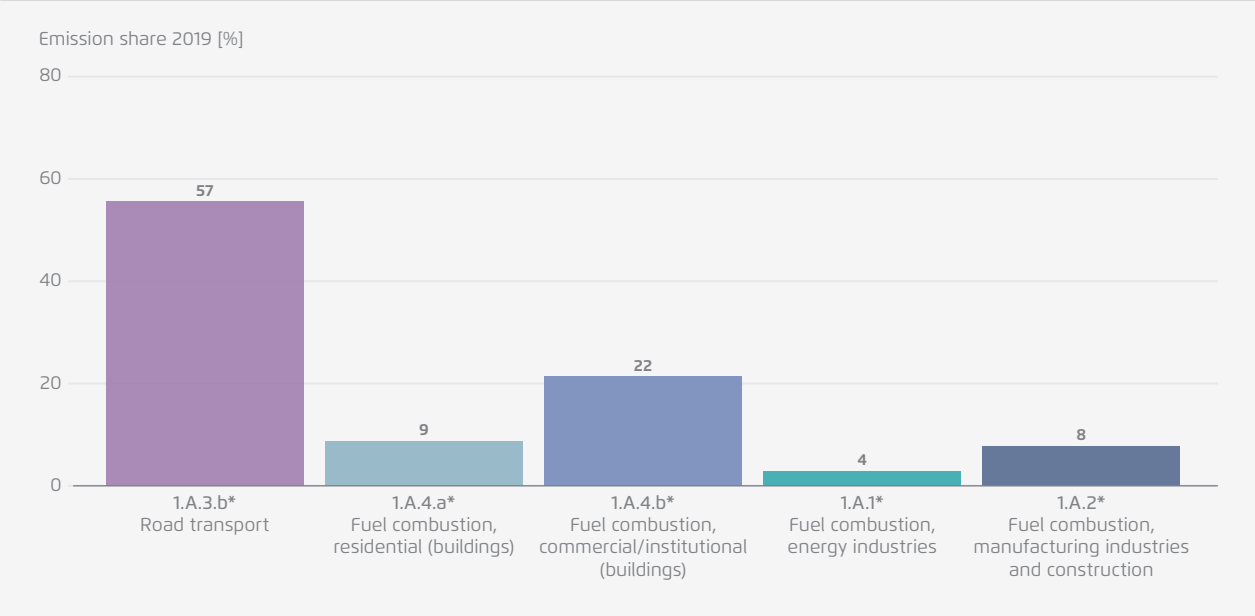
The EU Commission's response to this challenge was to propose higher standards in the buildings and road transport sectors[16] within the framework of the Fit for 55 package and to introduce a second Europe-wide emissions trading system for those sectors. Besides cutting emissions, a particular focus was on the financial impact of the ETS 2 by generating additional revenue for the transformation. The ETS 2 imposes obligations on those who place fuels on the market. Its scope of application is similar to that of the BEH:[17] it covers primarily emissions from road transport and the buildings sector. However, the combustion of fuels in the small-scale commercial sector (e.g. gas ovens in bakeries) and industrial

15 European Commission (2023a).

16 See Regulation (EU) 2023/851 of the European Parliament and of the Council of 19 April 2023 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; Proposal for a Directive of the European Parliament and of the Council on the energy performance of buildings (recast) (COM/2021/802 final).

17 Additionally covered in the BEH but not in the ETS 2: waste incineration to the extent that this is not already covered in the ETS 1 (these emissions are to be included in the ETS 1 from 2028), transport: rail transport (diesel locomotives), other transport (e.g. construction, port traffic, airport traffic) and other: energy consumption in agriculture and forestry and other (especially military emissions).

Share of emissions covered by the ETS 2 by sub-sector → Fig. 5



Agora Energiewende (2023), based on Öko-Institut (2023). Note: *CRF categories

plants below the ETS 1 threshold are also subject to carbon pricing (see Figure 5).

The ETS 2 is independent of the ETS 1, which makes sense given that CO_2 avoidance costs are higher in buildings and road transport than in the energy and industrial sectors[18] and the different ways in which the two systems function (upstream vs. downstream). In future, around 75 percent of European emissions will thus be covered by one of the two emissions trading systems.

The ETS 2 covers roughly 38 percent of total emissions and 60 percent of ESR emissions (see Figure 4). The ESR scope of application will remain unchanged, however, meaning that a kind of dual regime will be in place from 2027 for some emissions – especially those from the buildings and road transport sectors. The ETS 2 will thus not release member states from their obligation to meet their national ESR emission reduction targets. This also reflects the will of the European Commission, which regards the ETS 2 as being merely complementary to other measures.[19] In concrete terms, this means that a member state in which more ETS 2 emissions are generated than permissible according to the share of its national ESR target will be required to compensate these additional emissions. This can be done for example by making additional emission savings in sectors not covered by the ETS 2 or by using the flexibility mechanisms provided for by the ESR (purchasing the AEAs of other states or bringing forward the AEAs of future years). This form of dual regime is new and adds additional complexity to the architecture of climate law (see below).

In its agreed form, the ETS 2 has considerable potential for reducing emissions

The -42 percent target set for the ETS 2 sectors in 2030 compared to 2005 levels is somewhat more ambitious with respect to the covered emissions than the general ESR target of -40 percent.[20] Unlike Germany's current fuel emissions trading system, the ETS 2 is a genuine system of emissions trading, the cap being lowered by a constant amount each year. To calculate the starting level in 2027, the proportion of total ESR emissions accounted for by the emissions covered by the ETS 2 in the years 2016 to 2018 is multiplied by the ESR target for 2024 and then continued along a linear reduction trajectory between 2024 and 2027. The linear reduction factor will be 5.15 percent at first, meaning that the number of new allowances placed on the market will decrease by 5.15 percent each year compared to the 2024 level. For 2028, the emissions from those sectors within the scope of the ETS 2 in the years 2024 to 2026 will serve as the basis for calculating a new cap. Subsequently, the annual emission cap will fall by 5.38 percent of the figure calculated for 2024 to 2026.

Consequently, allowances will be withdrawn from circulation at unprecedented speed. By way of comparison, a linear reduction factor of -2.2 percent is currently applied in the ETS 1. It should be noted that these reduction requirements apply specifically to those sectors that have so far achieved comparatively low emission reductions. On average, overall emissions were reduced by a mere 17 percent from 2005 to 2020.

The price-dampening mechanisms in the ETS 2 have only limited effect

The considerable speed at which the emission caps are to be lowered and the fact that the target for 2030 is more ambitious than that set in the higher-level ESR point clearly to a tight supply of allowances in the ETS 2 and thus to high carbon prices. The following mechanisms are supposed to dampen prices:

→ **Frontloading for a smooth start:** When the ETS 2 is introduced in 2027, the cap will be raised by 30 percent. This additional auction volume will be

18 Ariadne (2021).
19 European Commission (2021a).
20 The Commission's will is for this to be achieved not only by the ETS but also by a policy mix, however, see European Commission (2021a).

deducted from the auction volumes defined for the period 2029 to 2031 so that the auction volume will not increase overall in the period 2027 to 2032.

→ **Market stability reserve to control allowance volume:** A market stability reserve of 600 million allowances will be created. With 5.3 billion allowances set to be auctioned between 2027 and 2032, the market stability reserve could increase the total amount by 11 percent. If the total number of allowances in circulation falls below the threshold of 210 million, 100 million additional allowances will be released.

→ **Price control if specific thresholds are reached:** Additional allowances will be released from the market stability reserve onto the market:
- 20 million allowances if the allowance price exceeds EUR_{2020} 45 (about EUR 56 in 2027)[21] for a period of three months,
- 50 million allowances if the price doubles within three months,
- 150 million allowances if the price triples within six months.

In any twelve-month period, only one of these three price triggers can take effect. However, the Commission can already suspend the application of this temporal restriction after six months via an implementing act, with the result that a renewed application of the price trigger mechanism is already possible after just half a year.

The price-dampening effect that these mechanisms are expected to have could turn out to be small, however:

→ In the ETS 1, allowance prices never doubled (let alone tripled) within a period of six months. Though this does not rule out the possibility of such price surges in the ETS 2, it does suggest that these trigger mechanisms are of relatively little relevance in practice. In addition, the triggers based on price rises no longer apply in any case once a very high price level has been reached long-term.

→ By contrast, the (repeated) release of 20 million allowances seems to be a much more likely scenario if the price rises above EUR 56/t CO_2. Even if this happened every six months, it would only increase the annual number of allowances by just shy of four percent in 2027 and by five percent in 2030.

→ Frontloading will ensure that the supply of allowances exceeds the expected level of emissions when the scheme is launched in 2027. The market will be liquid, in other words. Since the additional auction volume will be deducted from the auction volumes during the period 2029 to 2031, however, there will be an undersupply of allowances from 2030 at the latest. Because allowances can be traded over the course of several years and buyers will be aware of this future undersupply, allowances may be held back in the early years with the result that the frontloading may ultimately have little impact.

→ It is likely that not all of the 600 million allowances from the market stability reserve will be released onto the market because they will expire on 1 January 2031.
- Even if 20 million allowances are released twice per year in response to a price increase, this would only result in 160 million additional allowances being released onto the market in total from 2027 to 2030.
- Because of the frontloading, the MSR volume control function will probably not be triggered until 2029 at the earliest. In this case, a maximum of 130 million additional allowances would be placed on the market in the period to 2030.

21 Pursuant to Article 30h(2) the release will be triggered where an upper price limit of EUR_{2020} 45 is exceeded; indexation based on the European index of consumer prices for 2020 will apply, however. Based on inflation from 2020 to 2023 and an assumed inflation rate of 2 percent from 2024 on, this results in a trigger value of roughly EUR 56 for 2027.

The carbon price could significantly exceed EUR 45/t CO_2

In its impact assessment, the EU Commission assumed a real ETS 2 price of EUR 48 to 80/t CO_2, depending on the measures taken by member states.[22] The additional release of allowances in the event of the real price threshold of EUR 45/t CO_2 being exceeded, and the fact that this price is mentioned in the recitals of the EU Parliament decision[23], suggest that this was the politically intended price. This does not make it legally binding or indeed enforceable, however: because the ETS 2 is designed as an emissions trading system, the allowance prices will ultimately be set by the market.[24]

Any predictions about the expected level of carbon prices are thus fraught with considerable uncertainty. In this context, the key question is whether and to what extent the member states will quickly deploy additional instruments to lower the emissions covered by the ETS 2. If so, they would reduce demand for allowances at the same time, thereby releasing some of the pressure from the system.

Unless additional effective measures are implemented to reduce emissions, some studies expect to see Europe-wide carbon prices in excess of EUR 200/t CO_2 in 2030.[25] In the road transport sector, this would increase gasoline and diesel prices by 38 and 43 ct/l respectively, compared to the national carbon price level currently planned for 2026.

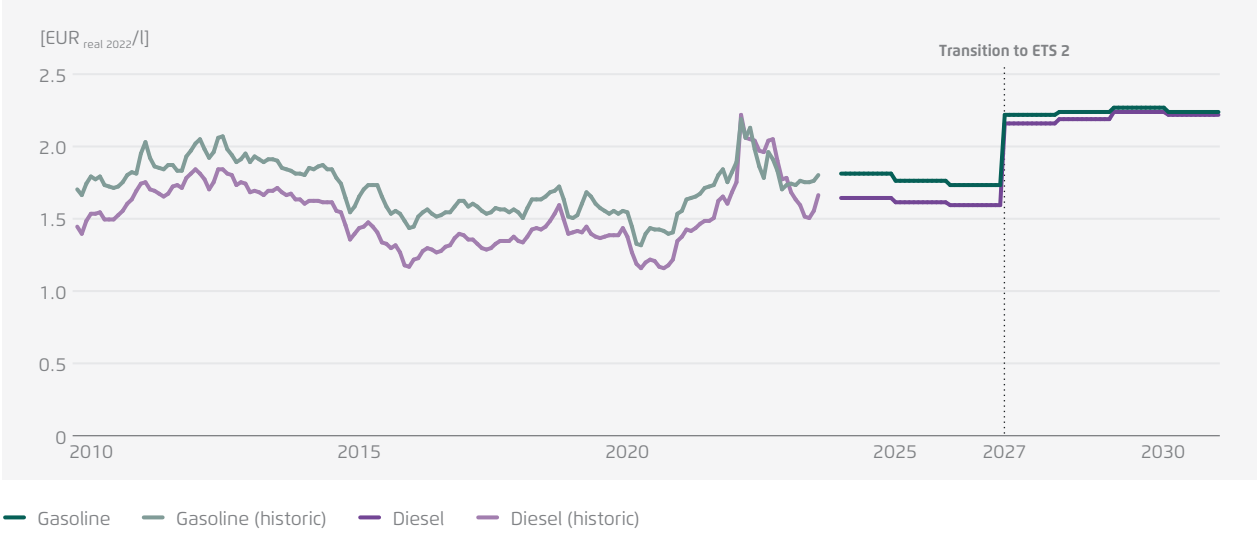
In the buildings sector, the price of heating oil would rise by 43 ct/l, while the price of fossil gas would increase by 3 ct/kWh. Though it is true that other studies anticipate considerably lower prices in some cases (see information box on page 18), careful steps should also be taken to prepare a transition to unexpectedly high prices.[26]

22 European Commission (2021a).
23 Cf. recital 91 of Directive (EU) 2023/959.
24 As described above, the effect of the price-dampening mechanisms is limited. Additionally, they would otherwise undermine the achievement of targets and thus the major advantage of an emissions trading system.

25 MCC (2023b); IfW Kiel (2023).
26 European Commission (2023b).

Gasoline and diesel price development in event of price surge to EUR 200 / t CO_2 in 2027

→ Fig. 6



Calculations based on data from Bloomberg (2023), Destatis (2023), en2x (2023), European Commission (2023b). Note: forecast for consumer price index 2023. Assumption: projection of petroleum stockholding levy and energy tax remaining constant. Methodology: projection of procurement costs based on forward market prices for ICE Brent.

Infobox 1: Why do projections about the level of carbon prices in the buildings and road transport sectors differ so greatly?

Prices in emissions trading systems are determined by the market, i.e. by supply and demand. In "genuine" emissions trading systems with a defined cap, the supply of allowances is fixed. The price level is thus determined by the level of demand – in other words, the price is a measure of the desirability of using fossil energy sources, especially in road transport and for heating purposes.

In turn, this is influenced by the following factors, among others:

- **Which climate policy measures have been put in place besides emissions trading?** Additional climate protection measures that encourage a switch to climate-neutral technologies reduce demand for allowances (for further details, see Section 6.4.). The EU Commission arrived at a real ETS 2 price of EUR 48 to EUR 80/t CO_2, because it assumed in its ex-ante projection that all of the measures in the Fit for 55 package would be implemented in the form it proposed. This has not happened so far (e.g. revision of the Energy Performance of Buildings Directive and of the Energy Taxation Directive). By contrast, calculations that assume that the carbon price will be the sole instrument tend to predict figures of EUR 200 to EUR 300/t CO_2.
- **How will higher prices change behaviour?** Most analyses assume that carbon prices will play a role above all in investment decisions, especially in the heating sector, and that in the transport sector they will additionally influence the choice of transport mode and to some extent the demand for transport. By contrast, neither the projection report nor the Ariadne model expect the mechanisms to lead to a reduction in heating demand. The experience of last year's energy price crisis, during which people did reduce their heating consumption, casts doubt on this assumption.
- **To what extent do people act in an economically rational manner?** Perfect foresight models assume that people will base their behaviour solely on the carbon avoidance costs and will have a perfect overview of a technology's lifecycle costs. Consequently, they would decide against a gas heating system and opt for a heat pump if they saw that the heat pump, though expensive in terms of initial outlay, would pay for itself over its lifetime as carbon costs rise. Behavioural economics have proven that this does not reflect reality, however. Purchasing decisions are influenced not only by the price, but also by numerous other factors, and people have a tendency to underestimate the costs that will incur during the course of a product's lifetime. That is why carbon prices in perfect foresight calculations are regularly lower than those in models that take such behavioural economic aspects into consideration.[1]
- **Are other obstacles taken into account?** Even if human behaviour is assumed in accordance with the perfect foresight model, further obstacles may contribute to carbon prices that significantly exceed the costs of carbon avoidance. This applies in particular to the buildings sector, where the landlord-tenant dilemma, a shortage of skilled workers and heritage preservation stipulations can result in demand remaining high despite a general willingness to implement energy efficiency measures. In the road transport sector, distortive fiscal incentives such as the German taxation on company cars can for example hinder the effectiveness of the carbon price mechanism. That said, it is difficult to quantify the impact of such obstacles and not all models take them into account.

1 Cf. e.g. UBA (2022c).

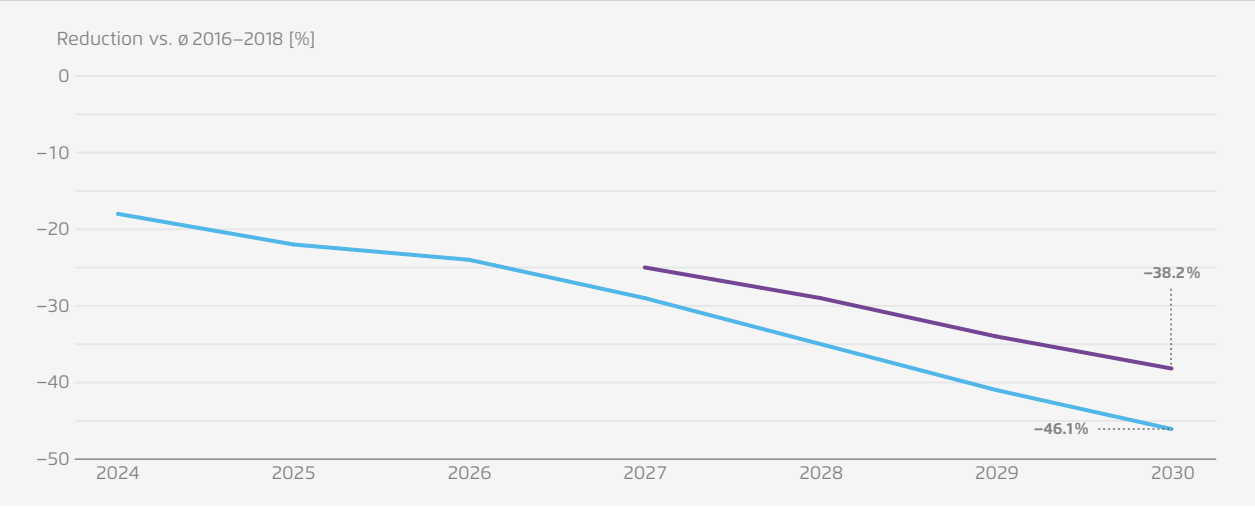
5 What is missing just now: a concept for the transition to the ETS 2

5.1 The lack of transition concept is causing unequal burdens within Germany

From the perspective of European climate protection as a whole, the introduction of the ETS 2 is good news. In Germany, however, it is likely to result in lower emission reductions than had been targeted from 2027 by the BEH. This is because

- → the fixed prices in the BEH, which are currently low and have virtually no effect, are to be replaced from 2027 by a trading system in which the annually available emission budget will correspond to the share of the ESR emissions covered by the BEH (cf. Section 4 Subsection 1 Sentence 2 of the BEHG). This is intended to ensure compliance with the national ESR target (Section 4 Subsection 1 Sentence 1 of the BEHG). The emission budget in the BEHG is based on the German ESR target of -50 percent compared to the 2005 level, whereas the emission budget in the ETS 2 is based on the EU-wide target of "only" -40 percent. Consequently, the reduction that the ETS 2 can be expected to bring about in Germany is lower than that specified by the BEHG.
- → the reduction in demand will be caused mainly by changes in behaviour in the short term (e.g. reducing the room temperature or using alternative means of transport rather than a car). In a Europe-wide emissions trading system, this will happen to a greater extent in poorer member states because the increase in price by comparison with income levels will be noticeably higher there. As a result, emissions in those countries will fall more sharply than the EU average, while those in Germany will decline by less than the EU average.
- → the scope of application is somewhat broader in the BEH. Of particular relevance here is the price put on emissions from waste incineration from

Development of the cap in the BEHG and ETS 2 → Fig. 7



Öko-Institut based on Jörß et al. (2023). Notes: the cap in the BEHG for 2026–2029 is determined by the ESR emissions in 2021–2023, while the ETS 2 cap in 2028–2030 is dictated by the ETS 2 emissions in 2024–2026. Consequently, the trajectories may change slightly but not fundamentally.

2024, which provides an important incentive for boosting a circular economy. According to the recent Act transposing the ETS Directive, waste incineration is set to be kept under the BEH in 2027, when the rest of emissions will have been moved under the ETS 2, solving the problem for the time being. These emissions are expected to be covered by the ETS 1 from 2028, though this is not yet certain.

→ in addition, some member states are very weary the ETS 2 prices might rise significantly above the targeted price of EUR_{2020} 45/t CO_2. Political interventions to lower the ETS 2 price and thus weaken the ETS 2 could, however, even lead to a step backwards in Germany compared with the planned level of EUR 65 t/CO_2 for 2026.

In overall terms, if the BEH is superseded by the ETS 2 without further climate change mitigation measures being adopted, Germany will fall even further short of meeting its national and European climate targets because the ETS 2 focuses merely on European emissions and ignores compliance with national ESR targets to which Germany has committed at the European level.

Rising prices necessitate compensatory mechanisms

Higher carbon prices are a useful instrument to incentivise the necessary transformation. They can play an important role in helping to close the

Infobox 2: Effects of the ETS 2 on commercial and industrial firms

The BEH and the ETS 2 cover not only the carbon emissions in the buildings and road transport sectors, but also those generated by the use of fossil energy sources in commercial and small-scale industrial firms (e.g. combustion plants below 20 MW). This analysis concentrates mainly on how the ETS 2 will affect the situation of consumers in the buildings and road transport sectors because these areas are responsible for roughly three quarters of the emissions covered by the ETS 2 (see Figure 5).

Commercial and small industrial firms will also be affected by a rise in fossil prices as a result of the ETS 2 from 2027. That said, their situation is structurally different to that of private consumers when it comes to the transition from the BEH to the ETS 2. Most of them can pass the additional costs on to consumers without incurring any excessively high competitive risk. This also applies to crafts businesses. Industrial firms covered by the BEHG are also generally less exposed to this risk than those covered by the European Emissions Trading System.[1] In addition, carbon leakage protection is in place at least until 2027 thanks to Germany's Carbon Leakage Regulation (*Verordnung über Maßnahmen zur Vermeidung von Carbon-Leakage durch den nationalen Brennstoffemissionshandel*, BECV), which provides commercial and industrial consumers in the BEH with financial compensation for a large part of the carbon costs. With the transition to EU-wide emissions trading from 2027, the risk should diminish further because the inner-European competitive disadvantage will be further reduced.

Nonetheless, it can make sense to provide targeted financial relief for individual commercial and industrial firms that do face any economic risk and to incentivise companies to invest in climate-neutral technologies, thereby boosting their economic efficiency and accelerating the transformation. Furthermore, this could reduce overall demand for ETS 2 allowances, which would in turn have a price-dampening effect. One conceivable option here would be to increase investment funding for climate-neutral technologies to make it easier for companies to switch to renewables that are not subject to carbon pricing.

1 Umweltbundesamt (2022a).

current emission gap in terms of meeting the 2030 climate targets.

The financial burden on society that carbon prices pose has to be cushioned, however. In absolute terms, the emissions generated by well-off members of society are on average significantly higher than those generated by people on low incomes. It is important to consider however that carbon prices weigh more heavily in relative terms on the latter because they have to spend a greater percentage of their net income on meeting their basic needs, and thus on heating, electricity and fuel.[27] The additional state revenue generated should therefore be used to fund financial support measures and services with a structural impact so that precisely people on low incomes are not left alone with high costs.

Even a lump-sum redistribution of the revenue (in the form of a climate bonus) will have a progressive impact because (per capita) carbon emissions increase in line with income. The higher per capita carbon emissions in high-income households are due first and foremost to higher fuel consumption. By consuming gasoline and diesel, the ten percent richest households generate carbon emissions that are on average four times as high as those from the ten percent poorest households.[28] The larger occurrence of heavier cars and longer journeys both contribute to the high fuel consumption of high-income households. Furthermore, the carbon emissions caused by electricity and heating consumption in households in the upper income deciles are higher than in other households. One of the primary causes of the higher heating energy consumption of high-income households is their larger per capita living area.[29]

Though the former Federal Government (before the election of February 2025) agreed on it in its coalition treaty, there is no sign of the climate bonus being introduced anytime soon. This applies in particular after the Constitutional Court ruling regarding the CTF in 2023. The Federal Government raised carbon prices to be able to close the general budget gap – not for redistributing the state revenue.

In addition, there is a lack of a nuanced government concept to provide targeted measures, above and beyond the climate bonus, for people who face a particular burden as a result of carbon pricing due to where they live and the type of heating system they use but do not have the financial resources necessary to afford the transformation. Some ideas of this kind do already exist, such as including an income-staggered component in heat pump grants and the Carbon Dioxide Cost Sharing Act (*CO_2-Kostenaufteilungsgesetz*). However, this does not yet result in a comprehensive concept. This, in combination with the surge in prices that the Federal Government risks seeing in 2027 if no transition concept from the BEH to the ETS 2 is put in place, could cause lasting damage to the acceptance of climate action within the population.

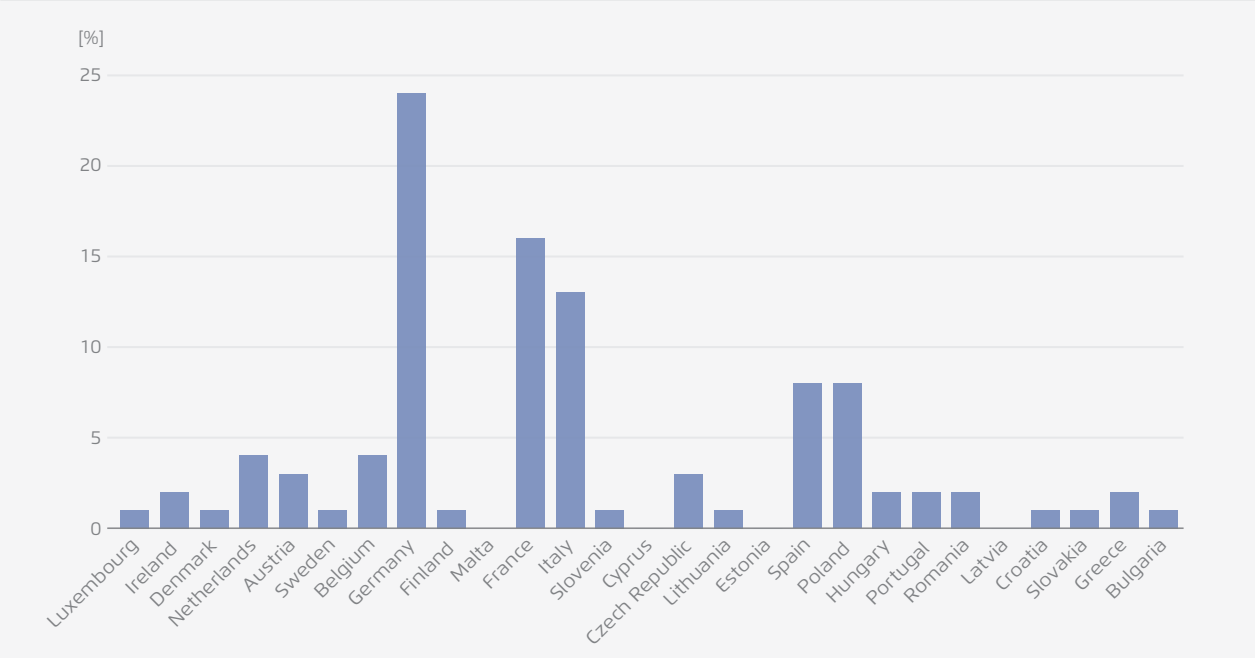
5.2 The lack of a transition concept is causing unequal burdens on individual EU member states

High carbon prices weigh more heavily on poorer member states

Purchasing power (the disposable income of private households for consumption purposes, after taxes and social security contributions and including welfare benefits) varies greatly from one European member state to another. In Liechtenstein, which in 2022 held the top spot, this amounted to more than EUR 66 000 per year and inhabitant that year, while Romania brought up the rear with EUR 8 000.[30] At just under EUR 25 000 per year and inhabitant, Germany was also well above the average of EUR 16 300.[31]

27 Öko-Institut (2022).
28 Agora Energiewende / Agora Verkehrswende (2019).
29 Id.
30 GfK (2022).
31 It should be noted however that this average figure also included non-EU member states.

Member states' share of emissions under the ETS 2 (2016–2018) → Fig. 8



Agora Energiewende (2023) based on Öko-Institut (2023)

As with the ETS 1, the prices of ETS 2 allowances will be determined by the EU-wide market and will therefore result in the same surcharge being added to fossil fuels. With their lower purchasing power, consumers in Romania will be hit harder in relative terms by this additional cost because they will have to spend a higher proportion of their income to afford it. Furthermore, the relative price increase will be higher there because energy taxes are lower. Consequently, a more pronounced fall in demand can be expected there due to changes in behaviour, such as reducing the room temperature or using alternative means of transport rather than a car. Emissions will thus decline more quickly there than in the more prosperous member states.[32]

It is precisely in member states with below-average purchasing power that the proportion of the population that is already living in energy poverty today is for the most part above the EU-wide average of 9.3 percent, however (2022).[33] Energy poverty means "a household's lack of access to essential energy services that underpin a decent standard of living and health, including adequate warmth, cooling, lighting, and energy to power appliances […]."[34] People are particularly affected by energy poverty in Bulgaria (22.5 percent of the total population), Cyprus (19.2 percent), Greece (18.7 percent), Lithuania and Portugal (both 17.5 percent) Spain (17.1 percent) and Romania (15.2 percent).[35] There is a risk that high allowance prices will further increase the proportion of people in these member states who have no access to essential energy services such as heating and cooling systems.

This reveals a regressive distribution effect parallel to the one within member states if redistribution concepts are not in place (see above). On the inter-member state level, the way revenue from the ETS 2 is distributed among the member states will thus have a crucial bearing on social cohesion.

32 IfW Kiel (2023).
33 Eurostat (2023a).
34 Article 2(1) of the Regulation establishing a Social Climate Fund.
35 Eurostat (2023a). The proportion in Germany is 6.6 percent.

The distribution of revenue from the ETS 2 favours states with historically high emissions in these sectors.

As auctioning always takes place EU-wide, it makes no difference to buyers (fuel suppliers) which member state receives the revenue. In the ETS 1, allowances for (nearly) all member states are jointly auctioned by the European Energy Exchange (EEX); the ETS 2 will presumably also involve central auctioning for the most part.

Revenue will be distributed as follows:

First, a sufficient number of allowances will be siphoned off from the auction volume and auctioned in order to furnish the Social Climate Fund with a legally defined annual maximum amount – totalling EUR 65 billion over the period 2027 to 2032.

To this end,
- → 50 million ETS 1 allowances will be auctioned in 2026 to fill the Social Climate Fund before the ETS 2 even starts. At an ETS 1 price of EUR 80, this equates to revenue of roughly EUR 4 billion.
- → 150 million ETS 2 allowances in total will be auctioned between 2027 and 2032 (Article 30d(3)).
- → if this number of allowances is not sufficient to reach the total sum of EUR 65 billion, additional ETS 2 allowances will be auctioned (Article 30d(4)).

The remaining allowances (not required for the Social Climate Fund) will be auctioned by the member states which will be entitled to the generated revenue. In principle, the revenue will be subject to the same earmarking as the revenue from the ETS 1, though in this case priority is to be given to expenditure to promote the decarbonization of the heating and transport sectors and the financing of the Social Climate Plan (Article 30d(6) in conjunction with Article 10(3)). The number of allowances is distributed among member states according to the proportion of ETS 2 emissions they generated in the years 2016 to 2018. In other words, in relation to their population size states with historically high per capita emissions in the buildings and road transport sectors will be permitted to auction a particularly high number of allowances.

Germany will benefit particularly from this rule because of its historically high emissions in the buildings and road transport sectors. At 23.7 percent, its share of ETS 2 emissions – and thus of the revenue to which it is entitled – is almost a quarter of the EU total. By way of comparison, if revenue were distributed based on the size of its population as a proportion of the total EU population in 2018 rather than on its historic ETS 2 emissions, it would be entitled to only 16.2 percent.[36]

One argument for distributing auction volumes according to historic emissions, as was also the case in ETS 1, is that Germany requires a particularly large amount of financial support with the transformation on account of its starting situation. Besides the generally robust state of its public finances, however, this perspective disregards that people in Germany, are on average more likely to have the financial means to afford for example a heat pump or an electric car, because they have high purchasing power compared to people in other states.

The Social Climate Fund results in limited redistribution among EU states

To take account of the economic differences between EU member states, a Social Climate Fund was also created alongside the ETS 2. The specific objectives of this fund are to support vulnerable households, vulnerable micro-enterprises and vulnerable transport users, through temporary direct income support and through measures and investments, with implementing the heat and transport transition (cf. Article 3(2) of the Social Climate Fund Regulation (Regulation 2023/955)).[37]

36 Eurostat (2019).

37 Cf. Article 2 of the Regulation: "Vulnerable households" are in particular households in energy poverty, though also those which because of rising prices lack the means to renovate the building they occupy. "Vulnerable micro-enterprises" are firms that have a maximum annual turnover of 2 million euros, employ fewer than ten persons and lack the means either to renovate the buildings they use for the purpose of their activity or to switch to sustainable modes of transport. "Vulnerable transport users" are in particular people in transport poverty, i.e. individuals or households who lack the means to afford the costs of private or public transport or lack access to modes of transport.

Where will the revenue from the ETS 2 go? (2027–2032) → Fig. 9

ETS 2 – Total auction amount of 5.3 billion allowances (100%)
Price: EUR 50 / t CO_2 ≙ 5.3 billion allowances (100%*), **price: EUR 200 / t CO_2** ≙ 5.3 billion allowances (100%*)

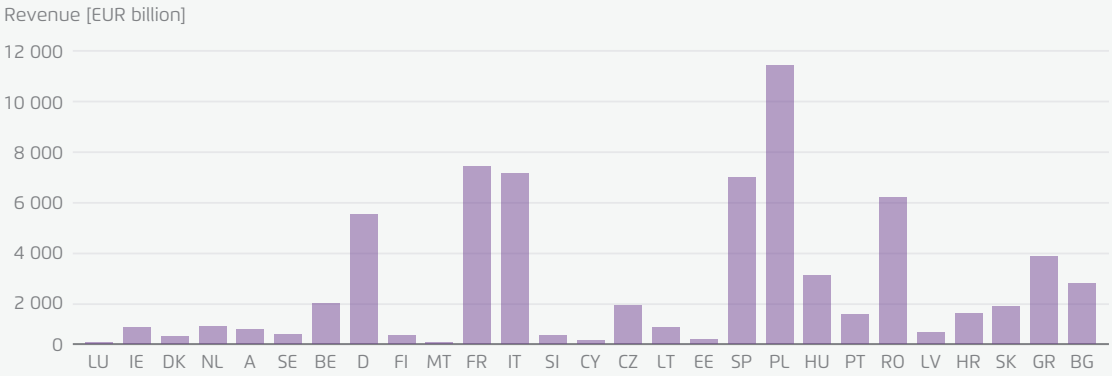
Social Climate Fund

Revenue total EUR 65 billion

ETS 1 – Auctioning of 50 million allowances
≈ EUR 4 billion
(allowance price EUR 80 / t CO_2)

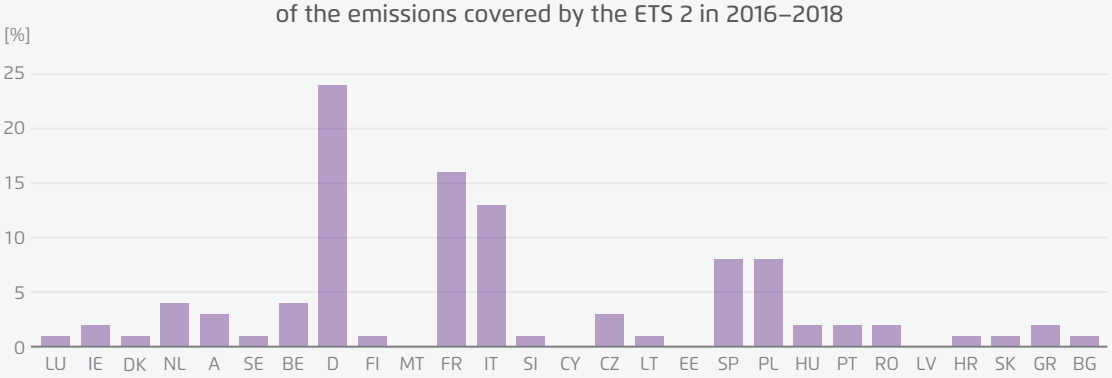
ETS 2 – Auctioning of ETS 2 allowances to reach EUR 65 billion
Price: EUR 50 / t CO_2 ≙ 1.2 billion allowances (25%*),
Price: EUR 200 / t CO_2 ≙ 0.3 billion allowances (6%*)

Solidarity-based distribution of EUR 65 billion to member states



Revenue from auctioning of remaining allowances
after deduction of allowances for Social Climate Fund
ETS 2 price: EUR 50 / t CO_2 ≙ 4.1 billion allowances (75%*), **ETS 2 price: EUR 200 / t CO_2** ≙ 5 billion allowances (94%*)

Distribution of revenue to member states according to their proportion of the emissions covered by the ETS 2 in 2016–2018

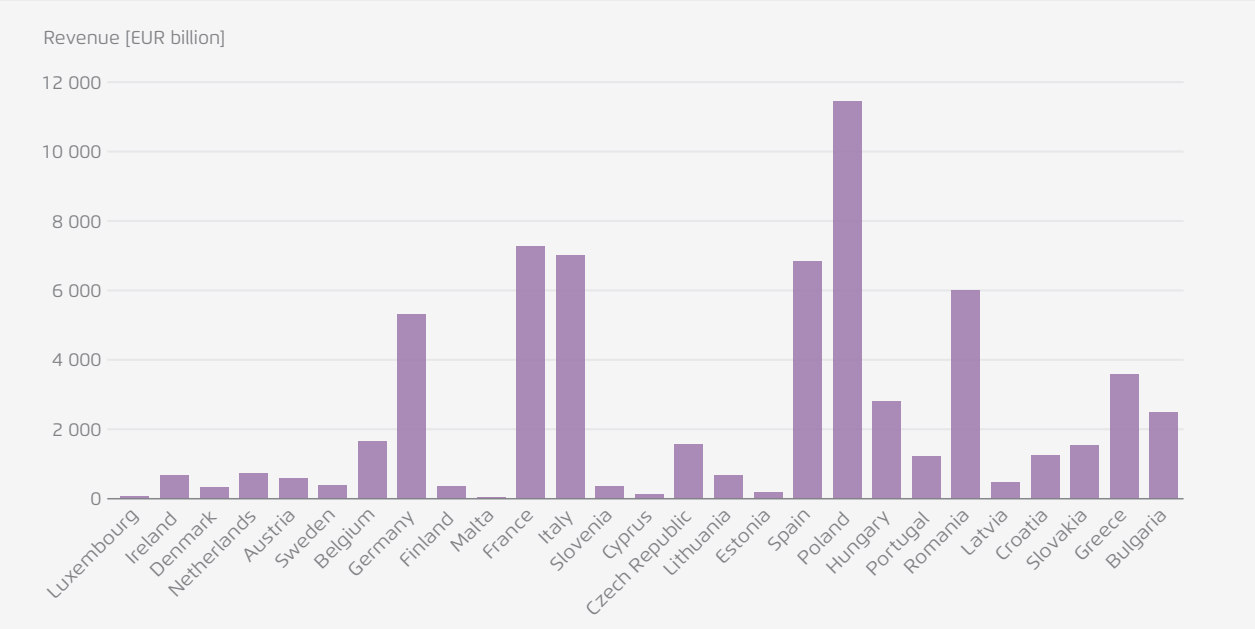


The carbon prices indicated in purple do not constitute predictions but were chosen as examples to illustrate the dynamics of revenue distribution at different price levels.

Agora Energiewende (2023) based on Öko-Institut (2023). *Percentage share of total allowance amount

Distribution of revenue from the Social Climate Fund to member states 2027–2032

→ Fig. 10



Agora Energiewende (2023) based on Öko-Institut (2023)

Member states will receive money from this Social Climate Fund to relieve the burden on these specific group of people. The member states are required to submit Social Climate Plans that contain "a coherent set of existing or new national measures and investments to address the impact of carbon pricing on [particularly vulnerable groups]"[38]. The member states are to contribute at least 25 percent of the estimated total costs of the Social Climate Plans from their own national budgets, meaning that the great majority of the funding will come from the revenue generated by auctioning ETS 2 allowances. The revenue in the Social Climate Fund will be distributed among member states according to a complex formula that factors in not only the population size but also includes the gross national income per capita and the number of people at risk of poverty living in rural areas (Annex I). This results in the Social Climate Fund having a progressive distribution effect. Poland, which will receive roughly 17.6 percent of the total revenue, occupies first place, while Luxembourg comes in last at 0.1 percent.

This is in principle a suitable mechanism for counterbalancing the regressive distribution effect between member states. However, the volume of revenue that will be channelled into the Social Climate Fund from the ETS 1 and the ETS 2 is capped at EUR 65 billion over the seven-year period.[39]

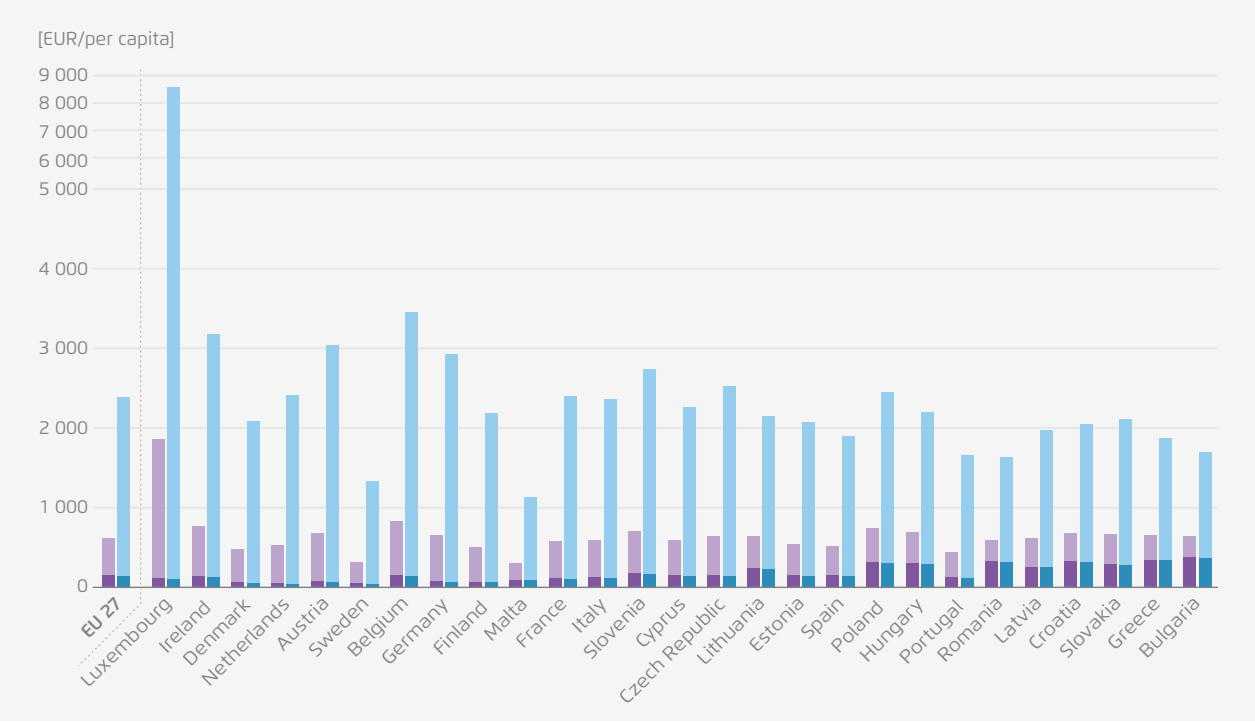
The EUR 65 billion cap means that the relative proportion of revenue available to the solidarity-based mechanism will decrease at higher prices. In all, 5.3 billion allowances (without taking into account the market stability reserve) will be auctioned until 2032. How high the proportion of revenue from the ETS 2 that will be channelled into the Social Climate Fund is, will depend primarily on the level of carbon prices:

→ At an average carbon price of EUR 200/t CO_2 from 2027 to 2032, the revenue from the sale of 305 million allowances would be channelled into the Social

38 Article 4(1) of the Regulation establishing a Social Climate Fund.

39 Taking into account the 25 % share that member states are supposed to make available for the Social Climate Fund from their national revenue, this results in a total of EUR 87.6 billion for the period 2027 to 2032.

ETS 2 revenue by member state in relation to the population size depending on the carbon price (2027–2032) → Fig. 11



Agora Energiewende (2023) based on Öko-Institut (2023)

Climate Fund (following an ETS 1 sum of roughly EUR 4 billion). The revenue from the auctioning of the remaining 4.995 billion ETS 2 allowances, roughly 94 percent, would be divided among the member states in accordance with their historic emission proportions. Because it accounted for 24 percent of historic emissions, Germany would therefore receive around EUR 237 billion from national auctioning between 2027 and 2032 alone.

→ If the average ETS 2 price were only EUR 50/t CO_2, only 4.1 billion allowances would be auctioned by the member states, corresponding to roughly 75 percent of the revenue.

The higher the carbon price rises, in other words, the more member states with historically high emissions will benefit (see Figure 11). Poorer states would lose out, as would wealthy states with successful climate policies in the buildings and road transport sectors (Sweden for example has been very effective in reducing emissions from the buildings sector since 1990). The fact that inequalities become even more pronounced as carbon prices rise on account of the applicable distribution logic becomes particularly obvious if one looks at the revenue available to the member states on a per capita basis for supporting the transformation.

The price is determined by the response of the big emitters

The scope for significantly influencing the level of EU-wide prices differs very considerably from one member state to another. One extremely effective way of keeping carbon prices low is to reduce Europe-wide demand for allowances by implementing additional national climate protection measures in the ETS 2 sectors. In this context, a particular role is played by the climate policy of the big emitters: Germany, France and Italy are together responsible for more than half of ETS 2 emissions – Germany

alone accounts for nearly a quarter of the total (see Figure 8). If these big emitters pursue a weak climate policy in the buildings and road transport sectors, this will hit the wallets of all EU citizens – though in relative terms it will affect people in the poorer member states in particular (see above).

The great unknown: can the trade of AEAs provide a counterbalance?

Since the ETS 2 is supposed only to complement rather than replace the ESR, member states will still be required to meet their annual national emission reduction targets from the ESR. The ETS 2 cannot guarantee that this will happen; on the one hand, because it covers only 60 percent of ESR emissions, and on the other because pure market logic determines where emissions will be reduced first. If the carbon price is medium or high, emissions can be expected to decline in the poorer member states first because they will respond more sensitively to the price rise. At the same time, the poorer member states have less ambitious targets under the ESR: Bulgaria, the poorest country, is supposed to reduce emissions by ten percent compared to 2005, whereas the richest countries, including Germany, have a reduction target of 50 percent. Accordingly, it is likely that the poorer member states will noticeably overfulfil their ESR targets. If the wealthier member states do not implement any additional measures to lower their ETS 2 emissions, their national emissions will initially decline only to a small extent and they will not be able to meet their ESR targets of their own accord. However, the ESR permits countries to buy AEAs from other member states that overfulfil their own targets. This could result in additional money being transferred from the wealthier to the poorer member states and may therefore (partly) counterbalance the effect described above.

Considerable uncertainty surrounds this assumption, however:

- First, demand of AEAs will depend largely on **whether and to what extent member states implement additional measures in the ESR sectors** and whether supply and demand are balanced overall. This would not be the case as of 2023. Even if the member states were to implement all the measures they announced, those would only lead to a 34 percent emissions reduction by 2030 compared to their 2005 level. The EU-wide ESR target of 40 percent would thus be missed by six percentage points.[40]

- Second, it is **unclear how the ETS 2 prices and the AEA prices will interact.** The emission budget in the ETS 2 is defined by law regardless of the price level. Thus, the price in the ETS 2 does not directly influence the quantity of available AEAs. Furthermore, the ETS 2 covers only 60 percent of the ESR emissions, so ESR prices also reflect the development of emissions in other areas (especially the agricultural sector).
  A high ETS 2 price could have an indirect impact on the AEA prices, however. Because the AEAs are set in a very illiquid market between states, the ETS 2 price could be used as the most suitable reference level.
- Third, there is **only little experience of AEA trading**. The ESR targets to date have been so low that most member states were easily able to overfulfil them by "banking and borrowing" allowances, which the ESR permits to a limited extent. As of 2023, only Malta, Ireland and Germany have ever had to buy AEAs from other member states at any point.

As uncertain as the price development of the AEAs may be, it appears virtually out of the question – given that the ESR targets have been raised for all member states – that AEAs will in future ever be traded at EUR 1/t CO_2 again, which is the price that Germany paid for 11 million AEAs in 2022.[41] However, it is also entirely unclear whether the economic imbalance can be redressed by distributing high ETS 2 revenue among the member states.

40 European Commission (2023c)
41 Although the purchase only took place in 2022, it was based on the fulfilment of ESR obligations in the period 2013 to 2020. This very low price was due to a very high oversupply of AEAs for the period to 2020. This oversupply could not be carried forward after 2021 and thus became worthless at the end of 2020.

Protecting the opportunities that the ETS 2 entails

The ETS 2 is a core element of the Fit for 55 package and an urgently needed module for lowering the persistently high emissions in the buildings and road transport sectors. Because the number of allowances is capped, it sets an emission reduction target while at the same time constituting an instrument by which to achieve it. It could provide valuable investment incentives in both the buildings and road transport sectors.

As seen above, however, the lack of concepts for the transition and for addressing the social balance leads to unequal burdens not only within but also between the member states. If high ETS 2 prices coupled with an unequal redistribution of revenue were to cause energy poverty in poorer member states to increase, meaning that people there were no longer able to afford basic energy needs such as heating their homes, this could give rise to considerable resistance to the pricing system among the population. In turn, there is a risk that this could be exploited by extreme political forces to mobilise people against climate action and the EU itself. If the Fit for 55 package were to fall apart, the EU would fail to meet its 2030 target overall and could thereby trigger international backpedalling on climate policy.

It is now vital to protect the opportunities inherent to the ETS 2 and to take political steps to avert the risks. And time is running out – it's less than two years until the ETS 2 auctions begin.

6 What needs to be done now: cornerstones of a smooth transition to the ETS 2

6.1 German carbon pricing must be made future-proof

To leverage the opportunities offered by the ETS 2, it makes sense to raise carbon prices in Germany timely. Overall supply is fixed Europe-wide and for all sectors in the emissions trading system with a defined reduction cap, so demand for ETS 2 allowances will determine the level of prices. Because of Germany's high share of ETS 2 emissions, German climate policy has a significant influence on this demand. A higher national carbon price can thus serve to reduce emissions in Germany even before 2027 and thereby help to keep allowance prices lower from 2027. It therefore makes sense to raise the carbon price on a national level in order to facilitate a smooth transition to the ETS 2 without short-term price surges.

There are two possible ways to implement higher carbon pricing via a fixed price system:

Increasing the fixed prices in the BEH

It would be conceivable to raise the BEH fixed prices each year. This would involve the least administrative effort as merely the level of carbon prices would need to be adjusted. However, this route entails constitutional risks in view of the Federal Government's lack of the "right to invent taxes"[42]. It is irrelevant that it classifies the BEH as a "non-tax levy"[43] because, according to the Federal Constitutional Court (Bundesverfassungsgericht), it is not the designation that counts but the material core of the regulation.[44] In the absence of a fixed cap, the BEH in its currently applicable form acts as a tax, so it seems questionable whether it can be classified as a constitutional "benefit levy" (*Vorteilsabschöpftungsabgabe*).[45] Because it is linked to the release of emissions – a commodity that cannot be consumed – it cannot be classified as a fundamentally permissible excise tax (*Verbrauchsteuer*) either.[46] Continuing the fixed price system in the BEH beyond the provided introductory phase until 2026, which could presumably still be regarded as a "transition phase" to a constitutionally permissible trading system,[47] would therefore entail considerable legal risks. If the system were to end in 2027, however, one key advantage of a fixed price system would disappear: the fact that it establishes a national minimum carbon price. This would allow to protect the carbon price in Germany if the political pressure becomes so high at EU level from 2027 that measures are taken to artificially maintain prices at EUR 45/t CO_2, thereby rendering the ETS 2 ineffective for Germany (see information box).

Carbon surcharge added to energy tax

Alternatively, it would also be possible to add a carbon surcharge to the existing energy tax, which has been classified by the Federal Constitutional Court as a permissible excise tax.[48] In concrete terms, this would involve levying an additional amount in euros per unit of the product in question that would

42 Decided in Federal Constitutional Court Decisions (BVerfGE) 145, 171 = NVwZ 2017, 1037 (nuclear fuel tax), Rn. 58 ff. and Ls.3.
43 Cf. Draft law of the Federal Government on National Allowance Trading for Fuel Emissions (Fuel Emission Allowance Trading Act – BEHG) from 23 October 2019.
44 Federal Constitutional Court Decisions (BVerfGE) 55, 274, 304 f. (vocational training levy); BVerfGE 67, 256, 276 (Investment Aid Act); BVerfGE 92, 91, 114 (fire brigade levy).
45 IKEM (2019); Öko-Institut (2019).
46 IKEM (2019).
47 Somewhat doubtful: IKEM (2019).
48 Agora Energiewende / Agora Verkehrswende (2019); Agora Energiewende (2018).

Infobox 3: Why a national minimum price?

As seen above, the ETS 2 allowance prices could be significantly higher in 2030 than the politically targeted amount of EUR 45/t CO_2. Unless political steps are taken to properly prepare for higher carbon prices, there is therefore a risk that the ETS 2 system could be seriously weakened due to the political pressure brought about by sudden price rises. Capping the ETS 2 price at EUR 45/t CO_2 would be particularly problematic.[1] This would actually mean that carbon prices in Germany would fall again by comparison with the figure of EUR 65/t CO_2 that is currently planned for 2026. Insofar as no additional measures are taken to reduce emissions instead, Rieckels et al. assume that the ETS 2 targets will be exceeded by 40 percent (415 Mt CO_2eq) in 2030 alone, which would mean that the ESR targets would not be met in any of the member states. Germany alone would fall short of its ESR target by around 110 Mt CO_2eq.[2]

A national minimum carbon price could help avoid such a target shortfall and act as a safety net in the event that the ETS 2 became weakened. This safety net is all the more important given that the emission reduction path in the ETS 2 is in any case less ambitious than the trajectory envisaged in the BEH. The UK's carbon price support tax could serve as a model. It was introduced in 2013 because allowance prices in the ETS 1 were not stable, secure and high enough to create sufficient incentives to invest in renewable power generation.[3] The annual tax rates were supposed to reflect the difference between the desired lower price limit and the expected carbon price under the ETS 1.[4]

In Germany, a minimum carbon price could be achieved by adding a carbon surcharge to the energy tax. This would involve setting a new figure each year – this being the difference between the desired minimum carbon price and the carbon price future in the ETS 2. If for example a minimum carbon price of EUR 90/t CO_2 were set for 2027, and the ETS 2 price were politically capped at EUR 45/t CO_2, the tax would amount to EUR 45/t CO_2.

1 Agora Energiewende/Ecologic Institute (2021).
2 IfW Kiel (2023).
3 The World Bank (2023).
4 Leroutier (2022).

be determined by the specific carbon emissions of the individual energy products to be taxed.[49]

This proposal would raise fewer constitutional concerns as the carbon emissions would not be the subject of the tax, but only part of the basis for its assessment. This is comparable to the tax on the ownership of motor vehicles.[50] The advantage here, as with an increase to the fixed prices in the BEH, is that it inherently establishes a minimum price.

49 Klinski/Keimeyer (2019).
50 Id.

How to prepare for both higher and lower prices

To prepare for potentially higher ETS 2 prices and to create a legally secure hybrid system that protects the system against regressive steps, the following measures should be enacted:

→ **The price corridor for 2026 is extended to EUR 55 to 75 EUR/t CO_2.** In this regard, the "Climate Protection Programme," which the new Government is obliged to enact, offers an opportunity to strengthen carbon pricing and lower emissions.

→ **If the Umweltbundesamt projection report indicates that the climate targets will not be achieved by 2030, the upper limit of the carbon price corridor should be raised by an additional EUR 10/t CO_2 in 2026.**
→ At the same time as the ETS 2 replaces the BEH, on 1 January 2027, Germany should introduce a **national minimum carbon price of EUR 90/t CO_2.** This would secure the previous price path with a view to preventing any retrograde step in climate policy. The national minimum carbon price can be implemented by incorporating an appropriate carbon surcharge into the energy tax, based on the difference between the national minimum carbon price and the expected ETS 2 prices. The mechanism that allows the carbon price to be raised by EUR 10/t CO_2 if total emissions exceed the level permitted in line with the national ESR targets by 2030 remains in place.

6.2 Establishing a socially just concept for redistributing the revenue

6.2.1 Introducing a climate bonus makes sense but is not enough

For society to accept increased carbon pricing within Germany, it is crucial not only to provide state support for the transition to climate-friendly alternatives (see above) but also to introduce a concept for redistributing the revenue. This is all the more true given that the ETS 2 could generate considerable additional revenue for the state.

The climate bonus can and should be introduced without delay

Carbon pricing coupled with a climate bonus has a pronounced progressive effect: low-income households in particular will benefit from this thanks to their lower carbon footprint (see above).

A legal basis for the direct payment of public benefits was created in the 2022 Annual Tax Act (*Jahressteuergesetz*). This means it is now legally possible to record account numbers (IBAN and, if applicable, BIC) together with the tax identification number (tax ID) in a joint database.

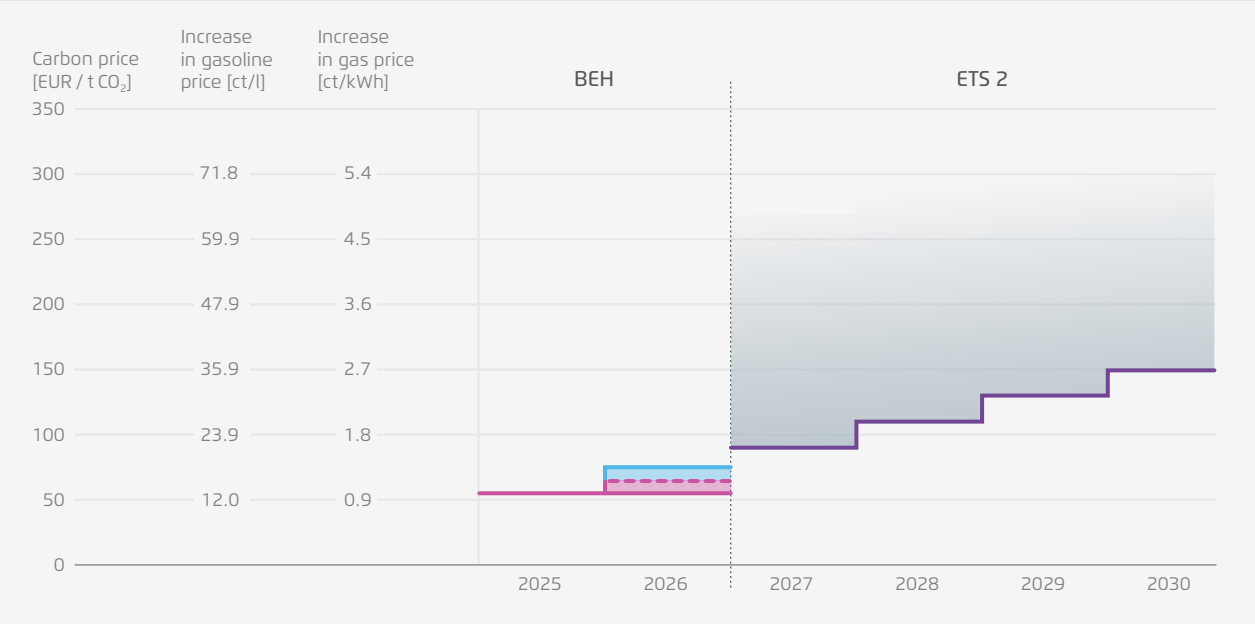
From an administrative point of view, it would be possible to pay out a lump-sum per capita amount via the Family Benefits Offices (*Familienkassen*) with six months' advance notice[51]: because these offices make monthly child benefit payments, they already have the necessary technical infrastructure in place, as well as the data relating to one parent and all children (approx. 26 million people). Pensioners (approximately 14 million people), assuming they agree to their data being shared between their pension fund and the Family Benefits Office, can likewise have their climate bonus paid out to them by the Family Benefits Office – if not, this would be done via their pension fund. For the majority of the rest of the population (approx. 32 million people) the data needed could be accessed from the Federal Central Tax Office (Bundeszentralamt für Steuern) following clarification of data privacy regulations. Everyone else (approx. 8 million) would need to file a separate application. Compared to indirect payment via income tax or health insurance contributions, the advantage of this system is that the climate bonus would be more visible. This is important not only of its acceptance but also of the way the recipients then use the money: studies show that people subconsciously assign spending to separate mental budgets or accounts, so the way the funds are labelled can make a difference to what they are spent on.[52] To avoid hardship cases, the climate bonus should be paid monthly in advance, with a statutory obligation in place to ensure that it will rise in line with the carbon price.[53]

Some have argued that the amount of the climate bonus, rather than being uniform, should be income-dependent[54] or, as in Austria, staggered according to the region[55]. Though understandable on social policy grounds, any such approach would

51 Ariadne (2022).
52 Id. with additional references.
53 Umweltbundesamt (2022b).
54 ARD (25.08.2023).
55 BMK Austria (2023).

Transition from the BEH to the ETS 2: proposal for a carbon price path

→ Fig. 12



Agora Energiewende (2023) based on Federal Government (2023). Note: the prices stated do not include Value Added Tax.

further increase the complexity of the payment mechanism[56] and thus entail the risk of delaying its introduction even more. It therefore appears sensible to begin with uniform income transfers and then, as carbon prices rise and drive up the additional costs, to increasingly stagger the climate bonus according to social criteria. To give it more targeted impact in social and fiscal terms, the climate bonus could be subject to income tax.[57] Other instruments could be used to ease the burden on groups affected specifically.

If the introduction of the climate bonus were to be delayed for administrative reasons, a reduction in electricity tax could be a pragmatic way to bring about relief in the short term. That said, any reduction in electricity tax should not be implemented instead of the climate bonus because, as a redistribution option, it is not scalable with rising carbon prices.

A targeted overall concept to ease the burden

The proposed raising of carbon pricing would ensure sufficient financial resources to pay for the climate bonus. This revenue should be used for the climate bonus and other measures to support the transformation. For various reasons, however, it appears sensible not to earmark all the revenue for the climate bonus but rather to also use additional instruments.

→ **It is not only a question of income:** besides income, numerous other factors influence the individual burden posed by the energy costs – and people's ability to act in the sense of changing their behaviour and investing in cutting emissions. These include the number of people per household, the availability of public transport, whether the individuals in question own or rent their home and the size and energy efficiency of their home.[58]

56 Ariadne (2023b).
57 UBA (2022b).

58 Agora Energiewende/Agora Verkehrswende (2019); MCC (2023c); Ariadne (2023b).

→ **People do not want the entire revenue to be used for the climate bonus:** numerous studies have shown that the population's willingness to accept carbon pricing is dependent above all on the increased use of the revenue for environmentally friendly investments.[59] The reason given for this is that perceived effectiveness and fairness are the most important criteria for personal attitudes[60] and environmentally friendly investments are the measures that offer the highest perceived effectiveness, especially when people do not understand or have doubts about the steering effect of carbon pricing and the progressive effect of the climate bonus.[61] In addition, people are often more likely – depending on their own notion of fairness – to advocate targeted relief for people on low incomes.[62]

→ **How to design the climate bonus to ensure conformity with European law is still unclear:** there is legal uncertainty about whether the revenue from the general auctioning of ETS 2 allowances from 2027 can be used to finance the climate bonus in its currently discussed form and about the extent to which the model would need to be adjusted for this to be possible. Though the ETS Directive allows the ETS revenue to be used to pay out a climate dividend, this must have a "proven positive environmental impact". The legal text does not specify what this means in concrete terms, or whether it would also include indirect effects, e.g. an increase in acceptance. The legal situation relating to the revenue that Germany will receive directly from the Social Climate Fund is even more critical: the costs of measures providing direct income support – assuming that the climate bonus is counted as such a measure – must not represent more than 37.5 percent of the estimated total costs of the climate plans to be presented by the member states and should also be limited in time.[63] The reason given for this is that direct income support does not address the root causes of energy poverty and transport poverty and therefore does not contribute to the primary purpose of the Social Climate Fund.[64]

For these reasons, a nuanced overall concept is needed to provide specific support for vulnerable groups, meeting their needs in terms of both living and transport. Given the complex – though to some extent equalising – interplay between the various cost factors (for example, the average household size of commuters is larger than that of non-commuters and the heating consumption per square metre of the former is below average, statistically speaking[65]), comprehensively developing such a concept would go beyond the scope of this impulse paper.

In the buildings sector, one option would be to set minimum energy efficiency standards for buildings, combined with instruments to facilitate inexpensive modernisation and an affordable switch to renewable heating (e.g. leasing of heating systems, socially staggered grants for increasing the energy efficiency of buildings and a reform of the modernisation levy).

To enable people to switch to more climate-friendly modes of transport, it would make sense among other things to leave the EUR 49 ticket in place and increase the regionalisation funds. It would also be conceivable to introduce an electric mobility bonus for people who are on low incomes and lack sufficient local public transport links, or a social leasing model such as that introduced in France.[66] A more carbon-graduated motor vehicle tax levied upon initial vehicle registration could reduce lock-in effects in emission-intensive technologies. Furthermore, in order not to counteract the incentivising effect of carbon pricing, company car taxation should also be reformed.[67]

59 Ariadne (2023b); Bauske et al. (2023) with additional references; Adelphi (2022).
60 Bergquist et al. (2022).
61 Ariadne (2023b).
62 Sommer et al. (2022); Dechezleprêtre et al. (2022).
63 Article 8(2) sentence 4 und Recital 21 of the Regulation establishing a Social Climate Fund.
64 Recital 21 of the Regulation establishing a Social Climate Fund.
65 Agora Energiewende/Agora Verkehrswende (2019).
66 Transport & Environment (2023).
67 For more on this, see Agora Verkehrswende (2022).

6.2.2 Adapting the European Social Climate Fund to price expectations

The agreement on establishing the Social Climate Fund in its current form was an important breakthrough in the European ETS 2 negotiations. It provides for a maximum sum of EUR 65 billion to be taken from the revenue from the ETS 1 and 2 and made available for social compensation between the member states. Based on the target price of just under EUR 50/t CO_2 that is to be set when the scheme is introduced, this sum means that a 25 percent share of the ETS 2 revenue will be made available for the Social Climate Fund. This share is also mentioned in the Commission's original proposals.[68] However, if the prices in the ETS 2 were to significantly exceed EUR 50/t CO_2, the proportion of the total revenue that would be distributed via the Social Climate Fund would be considerably smaller.

Since political agreement on the Social Climate Fund was only reached a year ago, it is inconceivable that these stipulations will be changed in the near future. In 2028 at the latest, however, when the regulations governing the Social Climate Fund are due to be reviewed and a discussion about the post-2030 climate architecture will be necessary, it would make sense to check – also on the basis of initial experiences of the ETS 2 – whether the Social Climate Fund needs to be adjusted to a possibly quite different price level in order to ensure cohesion between the member states, especially for the period after 2030.

Concrete thoughts about how to further develop the Social Climate Fund will require detailed analysis in the next few years and should be embedded in a broader framework to ensure the socially just design of the energy transition in Europe. Possible approaches to further developing the Social Climate Fund include:

- → **Adjusting the maximum volume of the Social Climate Fund.** In the existing system, raising the upper limit could bring about the desired social compensation at higher prices.
- → **Reserving a percentage of the allowances for the Social Climate Fund.** Defining a specific percentage for the solidarity share of the revenue generated by the auctioning of ETS 2 allowances could automatically take price fluctuations into account.
- → **Adjusting the allocation of auction volumes to the member states.** At present, the revenue from auctions and the number of allowances to be auctioned benefit the member states according to a predefined formula that is based on their historic emissions. Changing the distribution formula is legally possible but very challenging in terms of the negotiations it would require and should be embedded in the negotiations on the new multi-year EU budget.

6.3 Protecting the state against budgetary risks

Declaring planned purchases of AEAs under the ESR early on

Though the ETS 2 constitutes an important emission reduction instrument, it is unable because of its EU-wide scope to guarantee compliance with the national ESR targets. On the basis of the climate change mitigation measures planned to date, Germany will miss its ESR targets by 126 Mt CO_2eq by 2030.[69] Replacing the sector targets by an overall cross-sectoral accounting - as provided for in the reformed KSG- will increase the risk of the transformation being delayed in the ESR sectors because the pressure to enact the necessary transformative measures will be weakened.[70]

It is true that the ESR allows member states that fail to stay within their AEAs to subsequently purchase allocations from other member states that have not fully used their AEAs. Not only is this option expensive, however; it is also uncertain whether supply will even be available from other member states.

68 European Commission (2021b).

69 Projection report (2024).

70 Expert Council on Climate Change (2023).

The amended KSG contains a "soft" rule that requires the Federal Government to make efforts to avoid purchasing AEAs to fulfil its ESR obligations (Article 7(3) of the draft KSG); however, this is primarily a declaration of intent and no mechanism to enforce it is in place.

The KSG should therefore be adapted to ensure at least that a purchase can only be taken into account once it has already happened, meaning that compliance with the ESR targets cannot be "feigned" by referring to hypothetical option for purchases after a failure to meet climate targets. Consequently, the Federal Government would have to make sure that AEAs were purchased from other member states in respect of future years. Since the ESR limits the advance transfer of AEAs (for the period 2021 to 2025 to a maximum of 10 percent and for the period 2026 to 2030 to a maximum of 15 percent of the AEAs), this would limit the scope for purchases. This would be all the more true given that the other member states will also be aware of possible budgetary risks as their own national climate targets are raised. An even more reliable approach would constitute the legal obligation to ensure compliance with the ESR targets without purchasing any AEAs.[71]

6.4 Using other climate change mitigation instruments to cushion the price increase

Higher carbon prices are an important climate change mitigation instrument but for the following reasons should form part of a broad instrument mix:[72]

→ **The greater the extent to which carbon pricing is supplemented by additional climate change mitigation instruments, the lower the allowance price will be that is required to achieve the climate targets.**[73] This is because additional climate change mitigation instruments reduce the demand for allowances, thereby releasing some of the pressure from the system.

→ The scope for consumers to respond to a higher carbon price – for example by switching to more climate-friendly means of transport – is **largely determined by the existing infrastructure**. Public transport and other green mobility options are often less widely available in rural areas than in cities, for instance, which makes it difficult to opt for any means of transport other than a car.

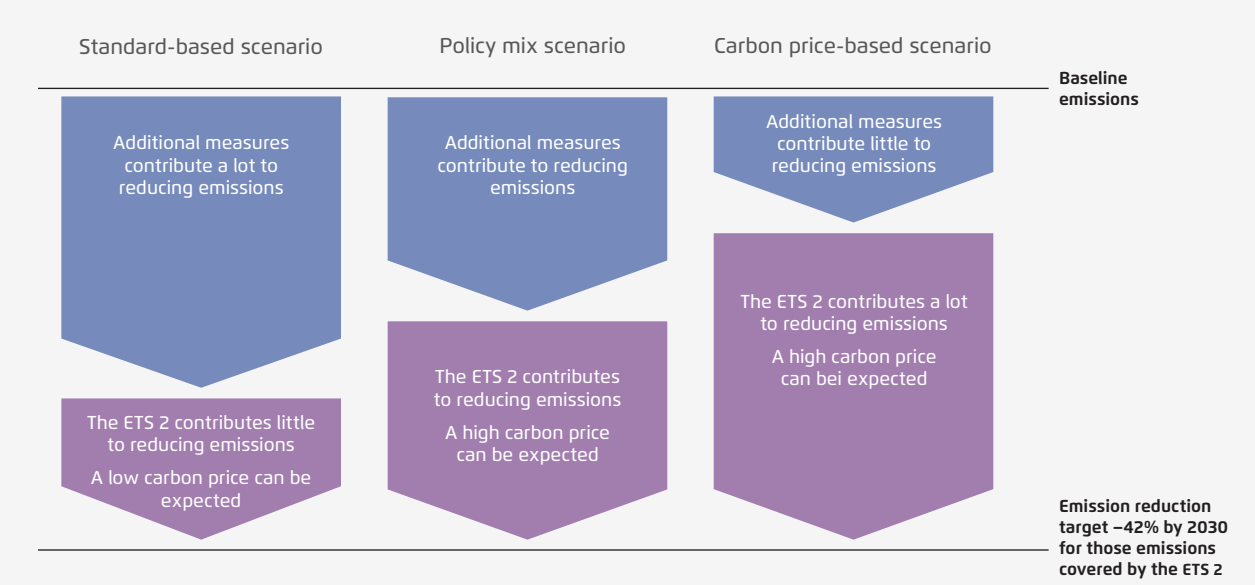
→ Efforts by private households to reduce emissions can be associated **with considerable capital outlay** (to buy a new car or modernise a home, for example). This means that there is little scope for amending earlier decisions once investments have already been made. This problem is compounded by the longevity of the fossil capital stock: a car has an average lifetime of more than 15 years, while a gas-fired boiler lasts roughly 15 to 20 years.

→ In the buildings sector, the **"landlord-tenant dilemma"** also needs to be considered. This refers to the fact that landlords of privately rented flats are generally responsible for investing in improving the building's overall energy efficiency, yet the heating costs are borne primarily by the tenants. The Carbon Dioxide Cost Sharing Act (*Kohlendioxidaufteilungsgesetz*) that has been in force since 1 January 2023 provides for a staggered model according to which the share of the carbon price costs to be borne by tenants rises in line with the emissions per square metre. However, this does not resolve all the challenges(transparency, access to investments for tenants, socially responsible sharing of costs between tenants, continued burden on tenants in the form of part of the carbon price).

→ In the road transport sector in particular, **climate targets are often linked to other public policy targets** – such as the reduction of air pollution in cities and the associated health risks, efforts to make traffic flow smoothly etc. Carbon pricing is an inherently one-dimensional instrument that is

71 Verheyen/Franke (2023b).
72 The following remarks are based mainly on Agora Energiewende /Ecologic Institute (2021).
73 UBA (2022c).

Interaction of additional climate protection measures and the ETS 2 → Fig. 13



Agora Energiewende (2023) based on Agora Energiewende (2021)

intended to reduce greenhouse gas emissions in a cost-efficient manner but is not able to pursue any other purposes at the same time. Complementary instruments can often lead to synergetic effects here.

→ Many households have **incomplete information** about their energy consumption and their scope for reducing it. Given their limited time and resources, consumers frequently rely on imprecise rules or routines that they have developed over time. Assistance provided by the state can then result in more cost-efficient decisions.

→ **Other political measures can distort or indeed entirely offset the impact of the carbon price.** This is the case for instance if specific fuels such as diesel are subsidised or certain fuel uses (e.g. the private use of company cars) benefit from tax privileges. This contradictory subsidy policy, which has also been criticised by the *Bundesrechnungshof* – Germany's federal audit office – increases the risk of bad investments and leads to reduced revenue for the state.

When it comes to the interplay between the level of the Europe-wide carbon price from 2027 and the accompanying measures (see Figure 13), Germany plays a particular role in reducing emissions because it accounts for such a high share of ETS 2 emissions. A package of measures for the effective reduction of emissions is therefore the best way to avoid high carbon prices. The package of measures should aim in particular to overcome structural obstacles so that climate-friendly alternatives can be used and investments in climate protection made possible. Since citizens and many companies have hardly any knowledge of the future additional costs entailed by the ETS 2, **information measures should improve transparency and facilitate targeted investments**. Above all, information should be provided that is relevant to the respective decision-making context – for example the purchase of a new car or heating system. This could be ensured by obliging car salesmen and heating installation companies to provide the appropriate information. In addition, it would make sense to include relevant information on gas and heating oil bills.

7 Conclusion

The high ETS 2 prices projected in some studies require member states to take action to properly prepare for the introduction of the ETS 2. They can do so in two ways: by developing national carbon pricing systems, so that they facilitate a smooth transition to the ETS 2 in 2027, and by already implementing effective measures to lower emissions in the ETS 2 sectors. If this can be achieved, the ETS 2 could make an important contribution to reducing emissions in the buildings and road transport sectors, while at the same time generating hundreds of billions of euros in state revenue between 2027 and 2032 alone – money that would be available to ensure a socially just transition.

Annex: Revenue of member states at different ETS 2 prices (2027–2032)

Revenue of member states from auctioning of ETS 2 allowances and from the Social Climate Fund at an average carbon price of EUR 50/t CO_2 during the period 2027 to 2032

Table 1

	State revenue from auctioning of ETS 2 allowances (distributed acc. to historic emissions) [million euros]	State revenue from Social Climate Fund [million euros]	Total state revenue [million euros]	Sum available per capita for redistribution [euro/capita]
EU 27	204 213	65 000	269 213	601.1
Austria	5 458	579	6 037	670.7
Belgium	7 842	1 660	9 502	816.2
Bulgaria	1 853	2 499	4 353	636.8
Croatia	1 386	1 263	2 649	671.4
Cyprus	392	131	523	577.0
Czech Republic	5 176	1 562	6 738	630.3
Denmark	2 436	325	2 761	469.8
Estonia	526	186	712	534.4
Finland	2 399	348	2 747	495.1
France	31 883	7 277	39 159	572.7
Germany	48 471	5 318	53 789	646.7
Greece	3 308	3 587	6 895	650.9
Hungary	3 762	2 816	6 578	679.3
Ireland	3 138	663	3 801	751.3
Italy	26 929	7 024	33 953	575.2
Latvia	660	464	1 124	600.1
Lithuania	1 105	664	1 769	624.5
Luxembourg	1 139	66	1 205	1 857.4
Malta	112	46	157	299.8
Netherlands	8 528	721	9 248	525.0
Poland	16 568	11 439	28 007	739.3
Portugal	3 229	1 223	4 452	433.3
Romania	5 104	6 013	11 117	583.8
Slovakia	2 033	1 531	3 564	654.6
Slovenia	1 104	358	1 462	694.0
Spain	16 897	6 838	23 734	500.5
Sweden	2 775	400	3 176	303.1

Agora Energiewende (2023) based on calculations by the Öko-Institut (2023)

Revenue of member states from auctioning of ETS 2 allowances and from the Social Climate Fund at an average carbon price of EUR 150/t CO_2 during the period 2027 to 2032

Table 2

	State revenue from auctioning of ETS 2 allowances (distributed acc. to historic emissions) [million euros]	State revenue from Social Climate Fund [million euros]	Total state revenue [million euros]	Sum available per capita for redistribution [euro/capita]
EU 27	734 640	65 000	799 640	1 785.5
Austria	19 635	579	20 214	2 245.7
Belgium	28 211	1 660	29 871	2 565.8
Bulgaria	6 667	2 499	9 166	1 341.0
Croatia	4 986	1 263	6 249	1 583.8
Cyprus	1 410	131	1 541	1 699.9
Czech Republic	18 621	1 562	20 183	1 888.0
Denmark	8 764	325	9 089	1 546.4
Estonia	1 891	186	2 077	1 559.4
Finland	8 631	348	8 979	1 618.1
France	114 695	7 277	121 972	1 783.8
Germany	174 369	5 318	179 688	2 160.3
Greece	11 900	3 587	15 487	1 462.0
Hungary	13 535	2 816	16 351	1 688.4
Ireland	11 289	663	11 952	2 362.0
Italy	96 875	7 024	103 899	1 760.3
Latvia	2 375	464	2 839	1 515.7
Lithuania	3 976	664	4 640	1 637.8
Luxembourg	4 098	66	4 164	6 417.2
Malta	402	46	447	853.2
Netherlands	30 678	721	31 398	1 782.4
Poland	59 600	11 439	71 039	1 875.4
Portugal	11 616	1 223	12 839	1 249.7
Romania	18 362	6 013	24 375	1 280.0
Slovakia	7 314	1 531	8 845	1 624.7
Slovenia	3 973	358	4 330	2 055.6
Spain	60 784	6 838	67 622	1 425.8
Sweden	9 984	400	10 384	991.2

Agora Energiewende (2023) based on calculations by the Öko-Institut (2023)

Revenue of member states from auctioning of ETS 2 allowances and from the Social Climate Fund at an average carbon price of EUR 250/t CO_2 during the period 2027 to 2032

Table 3

	State revenue from auctioning of ETS 2 allowances (distributed acc. to historic emissions) [million euros]	State revenue from Social Climate Fund [million euros]	Total state revenue [million euros]	Sum available per capita for redistribution [euro/capita]
EU 27	1 265 066	65 000	1 330 066	2 969.9
Austria	33 811	579	34 390	3 820.7
Belgium	48 581	1 660	50 240	4 315.5
Bulgaria	11 480	2 499	13 980	2 045.2
Croatia	8 586	1 263	9 849	2 496.2
Cyprus	2 428	131	2 560	2 822.9
Czech Republic	32 066	1 562	33 627	3 145.7
Denmark	15 093	325	15 418	2 622.9
Estonia	3 256	186	3 442	2 584.3
Finland	14 863	348	15 212	2 741.1
France	197 507	7 277	204 784	2 994.9
Germany	300 268	5 318	305 586	3 673.9
Greece	20 492	3 587	24 079	2 273.2
Hungary	23 307	2 816	26 123	2 697.4
Ireland	19 439	663	20 102	3 972.8
Italy	166 821	7 024	173 845	2 945.3
Latvia	4 090	464	4 553	2 431.3
Lithuania	6 846	664	7 510	2 651.0
Luxembourg	7 057	66	7 123	10 977.0
Malta	692	46	738	1 406.6
Netherlands	52 828	721	53 548	3 039.8
Poland	102 633	11 439	114 072	3 011.4
Portugal	20 002	1 223	21 225	2 066.0
Romania	31 620	6 013	37 632	1 976.2
Slovakia	12 596	1 531	14 126	2 594.7
Slovenia	6 841	358	7 199	3 417.1
Spain	104 671	6 838	111 509	2 351.2
Sweden	17 192	400	17 593	1 679.2

Agora Energiewende (2023) based on calculations by the Öko-Institut (2023)

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Wie Elektrofahrzeuge, Wärmepumpen und Co. die Stromkosten für alle senken können

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About Agora Energiewende
Agora Energiewende develops scientifically sound and politically feasible strategies for a successful pathway to climate neutrality – in Germany, Europe and internationally. The organisation which is part of the Agora Think Tanks works independently of economic and partisan interests. Its only commitment is to climate action.

Agora Energiewende
Agora Think Tanks gGmbH
Anna-Louisa-Karsch-Straße 2
10178 Berlin | Germany
P +49 (0) 30 7001435-000

www.agora-energiewende.org
info@agora-energiewende.de

Translation: Chris Cave
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