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Fair Prices in Road Transport

Guidelines for a climate-friendly, economically efficient and socially balanced reform of taxes, levies and subsidies related to passenger cars

DISCUSSION PAPER

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The original version of this discussion paper was published in German language in February 2022. Since then, energy and climate policy discussions and decisions – also in the transport sector – have been shaped by the Ukraine war and the subsequent energy crisis. Thus, some minor amendments were made for the translation. This applies primarily to passages where relevant policy changes have been made recently. Such amendments – compared to the original version – are italicised in the text.

Content

Core results

1. **Policymakers must realign the tax and levy system for motorised private transport to meet the enormous challenges of the coming years**.
   The taxes, levies, subsidies and support programmes in force in the transport sector today do not take into account the climate-, transport- and budget-related imperatives that will become increasingly salient over the course of this decade. The existing fiscal architecture largely stems from the heyday of fossil fuel energy supply, and is not headed in the direction of a climate-neutral future. The adjustments made so far at the level of individual fiscal instruments are piecemeal and insufficient. In order to make the portfolio of fiscal policy instruments fit for the necessary transformation of transport beyond the current legislative period and beyond 2030, they must be adapted to current and future requirements, coordinated with one another and supplemented in a targeted manner with future-proof and intelligent solutions. Above all, a new fiscal architecture must ensure that passenger car transport makes its contribution to achieving climate targets, that high-quality transport infrastructures and mobility services for all can be financed, and that competition for the scarce resource of public space is alleviated and road capacities are not overloaded. This must be achieved in a way that is both economically efficient and socially balanced.

2. **A carefully balanced fiscal architecture takes into account instrumental interactions and anticipates the upcoming transformation.**
   The main pillars of the fiscal architecture for reducing emissions from transport are, on the one hand, instruments that primarily address the level of activity and the choice of transport mode by changing the (relative) prices for different forms of mobility, and, on the other hand, instruments that primarily aim to influence vehicle characteristics. Some instruments address more than one lever, which is why they have to be well coordinated, and instrumental synergies and interferences have to be taken into account. Careful and regularly reviewed coordination is also necessary because the importance of the individual instruments changes in the course of the transformation process – in addition to those with steadily increasing or steadily decreasing importance in terms of climate protection and securing public revenue, other instruments may only have a temporary role.

3. **National fiscal architecture complements the climate policy framework and instruments set at European level for passenger car transport.**
   Certain interactions with the climate policy instruments for passenger car transport at the European level also need to be considered. Of particular importance is the interplay between the European CO_2 emissions standards and the fiscal incentive structure for vehicle purchase at the national level. If designed in a well-aligned and ambitious manner, the two regulatory approaches can complement each other in such a way that together they unlock the full potential for fleet transformation. In the medium term, moreover, the planned transfer of emissions trading for fuels from the national to the European level will create a pressing need for coordination.

4. **In our view, the key elements of a portfolio of instruments that is effective in terms of climate protection, economically efficient, fiscally sustainable and socially balanced are as follows:**
    a. **Raise the carbon price path** for fuel emissions trading and - after its transfer to a European trading system in the medium term - **ensure an appropriate minimum price** via energy taxation; develop a practicable model for a **per capita payment to** redistribute the public revenue generated; **do not raise the commuter tax allowance,** instead transfer it to a more socially balanced **mobility allowance.**
    b. Immediate preparation and medium-term introduction of an intelligent, **mileage-based passenger car toll as a stable financing instrument** for transport infrastructure and sustainable mobility options, as well as for improved traffic control.
    c. **Structural reform of vehicle taxation:** introduction of a potent **price signal based on first registration** as the central policy instrument for the transformation of the vehicle fleet at the national level and to re-finance the purchase premiums for electric cars; abolition of the annual ownership tax for all passenger cars when the passenger car toll is introduced.
    d. Reform of **subsidies for electrically powered passenger cars** by making them degressive and **gearing them** more closely to **their actual contribution to climate protection** - both for plug-in hybrids and for fully electric passenger cars.
    e. **Abolition of tax privileges and misdirected incentives regarding** the **private use of company cars** through an environmentally differentiated increase in the taxable benefit-in-kind and consideration of private mileage, as well as supplementary special depreciation rules for fully electric company cars.

1 Introduction

1.1 A decade of major challenges for transport policy

Germany's transport policy faces enormous challenges. First and foremost, there is the climate policy challenge, which is also at the heart of the restructuring of the tax and levy system proposed in this discussion paper. In addition, however, there are challenges for public budgets - especially in the period after the coronavirus and energy crises - as well as challenges relating to competition for scarce public space and congested infrastructure capacities. At the same time, the sector is undergoing a technological transition towards electrification and digitization, not least due to these challenges.

The current portfolio of fiscal instruments in the transport sector is not suitable for successfully mastering the tasks ahead in a changing environment. For a successful transformation of the transport sector, it is essential to realign the fiscal architecture in parallel with regulatory adjustments, for example in road traffic law, and to make future-proof infrastructural decisions. This requires a comprehensive, consistent reform of the fiscal framework that takes into account conflicts and synergies between individual instruments in terms of both their mode of action and their acceptance. In contrast, an isolated consideration of reform options for single instruments can lead to counterproductive interactions and undermine consistency within the policy mix.

As part of a forward-looking overall strategy for the transport sector, it falls on the new German government to design and implement as quickly as possible a fiscal architecture that meets the challenges of the transport sector and makes it fit for the future. After all, whether the transport transformation that is essential for climate protection can take decisive steps by 2030 will be largely determined by political action in the current legislative period. In particular, the price instruments targeting investment decisions must be launched as quickly as possible, because a new car purchased today will remain in use well beyond 2030. Taxes and subsidies that affect past investment decisions should be changed cautiously or with sufficient lead time to enable subsequent reactions and adaptation. The window of opportunity for political action to enable successful climate protection by 2030 is therefore already closing within this legislative period.

The coalition agreement of the new government sets a political framework for how the transport transformation can be shaped. While it confirms the objectives of the previous government in terms of reducing greenhouse gas (GHG) emissions, and also comes up with ambitious targets in the transport sector (for example with regard to the spread of electric vehicles), there are considerable gaps when it comes to the policy instruments required to achieve these targets. These gaps are particularly pronounced in the fiscal architecture of the transport sector. Some of the crucial fiscal instruments are mentioned only in vague formulations, some are taken up with little ambition, and others are completely absent. On the other hand, none of the main components of a future-proof, consistent fiscal architecture is explicitly excluded by the government treaty. Already announced, moreover, is an emergency climate protection programme to be equipped "with all necessary laws, regulations and measures." In view of the

undeniable need for rapid progress on climate protection in transport, this formulation could ultimately also be a "passe-partout" for the reform of the fiscal architecture.

However, the current government's framework for action is not defined exclusively by the coalition agreement. Its policy is also crucially framed by the necessities arising from the German constitution (Basic Law). Of overriding importance here is the ruling of the Federal Constitutional Court on the Federal Climate Protection Act ("Bundes-Klimaschutzgesetz", KSG) of April 2021, which strengthened the state's responsibility for an effective climate protection policy and ultimately brought about an amendment to the KSG. This law prescribes yearly, sector-specific GHG emission ceilings, including a mechanism that calls for emergency climate protection programmes with further measures in case targets are not met. Also relevant are the budgetary constraints resulting from the so-called debt brake ("Schuldenbremse"). Added to this are the requirements at European level.

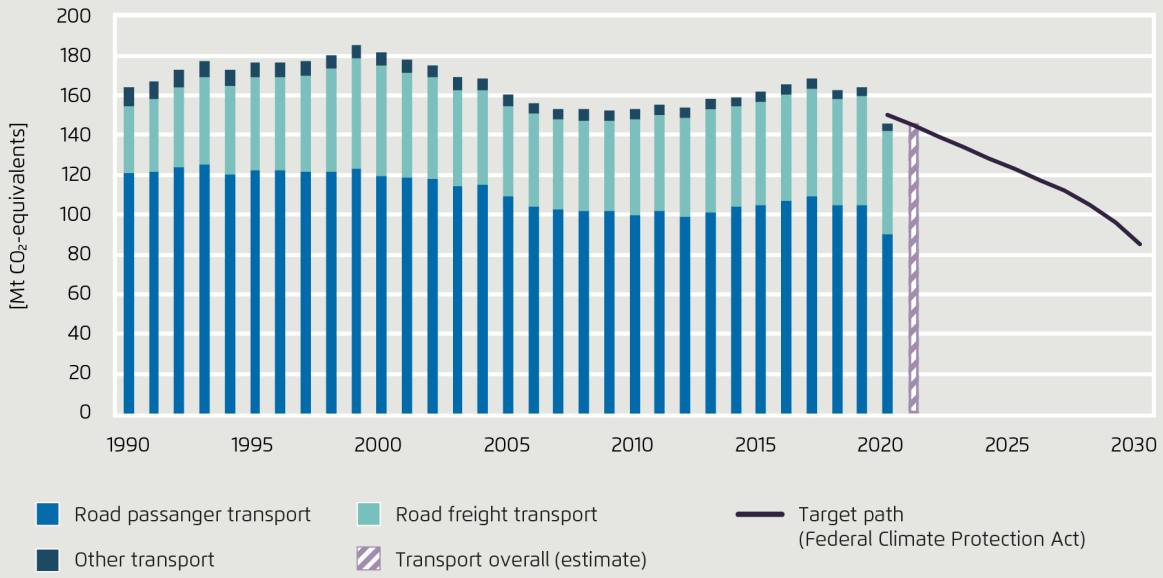
1.1.1 Three decades of stagnation - one decade to halve emissions

So far, the transport sector has been the problem child par excellence of climate protection. In 2019, the last year before the mobility restrictions caused by the coronavirus pandemic, transport emissions were 164 million metric tonnes of CO_2 equivalent, the same level as in 1990. Transport is thus the only sector in Germany whose GHG emissions have not been reduced compared with 1990, the reference year for climate policy.

The amended Federal Climate Protection Act sets an emissions target of 85 million metric tonnes of CO_2 equivalent for transport in Germany in 2030, which corresponds to a 48 percent reduction within a decade (see Figure 1). Without considerable additional climate policy efforts, this target will be missed by a wide margin, as shown by various calculations, most recently the Projection Report 2021 of the German government. In view of its dominant share of emissions, road passenger transport in particular will have to make a decisive contribution to reducing emissions; it alone was responsible for around 100 million metric tonnes of CO_2 equivalent most recently.

GHG emissions from passenger transport are reduced by shifting part of the traffic from passenger cars to more climate-friendly modes of transport. The second mainstay of a successful climate protection strategy for transport is the rapid electrification of the passenger car fleet - all relevant scenario studies agree on this. Both levers contribute significantly to reducing the final energy consumption of transport, with the remaining energy demand increasingly having to be met from climate-neutral sources.

Greenhouse gas emissions of the transport sector for the years 1990–2020, estimate for 2021 and yearly sectoral target for 2020–2030 Figure 1



Agora Verkehrswende (2023) | Notes: Other transport includes coastal & inland waterway transport, national air transport, rail transport. Sources: UBA 2021; UBA 2022; Agora Energiewende 2021; Federal Climate Protection Act

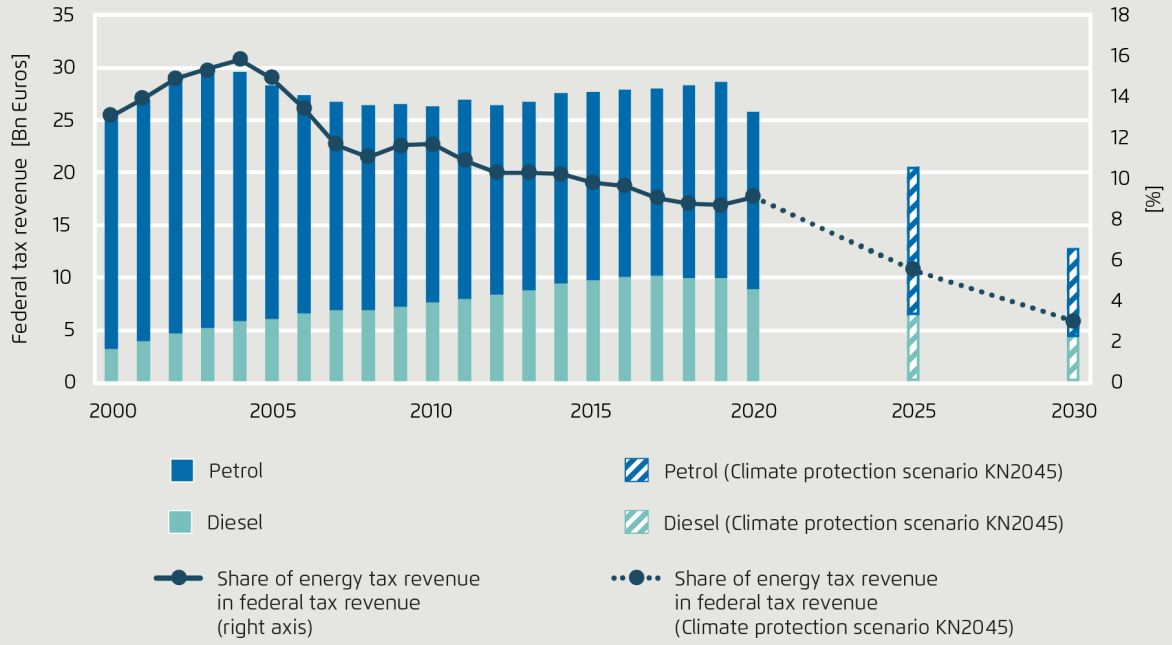
1.1.2 Financing needs to maintain high-quality infrastructure

The financing of high-quality transport infrastructure and sustainable mobility services is confronted with two main challenges. On the one hand, in view of the significant increase in national debt in the wake of the coronavirus and energy crises, competition for scarce public funds is expected to increase after the acute crises have been overcome - and thus also the questioning of infrastructure financing. On the other hand, a structural financing problem arises from the fact that, with the transformation in power train technologies, the tax revenues that were previously considered the basis for infrastructure financing will prospectively disappear: the energy tax and the vehicle tax (see Figure 2).

Under the current structure of these two taxes, tax revenues will decline sharply as the market penetration of electric drives increases, since their tax base is linked to the use of internal combustion engine vehicles (ICEV) and tax exemptions for electric vehicles are envisaged until 2030; the new revenues generated by the electricity tax will not come close to offsetting this decline. In order to achieve the transport sector's climate targets, it is expected that by the end of the decade there will have to be at least 15 million electric vehicles in the passenger car fleet, which corresponds to just under one third of the total fleet. This makes it clear that the sources of funding for transport infrastructure will have to change.

Energy tax revenue in passenger car transport for the years 2000 to 2020 and projection for 2025 and 2030 based on climate protection scenario KN2045

Figure 2

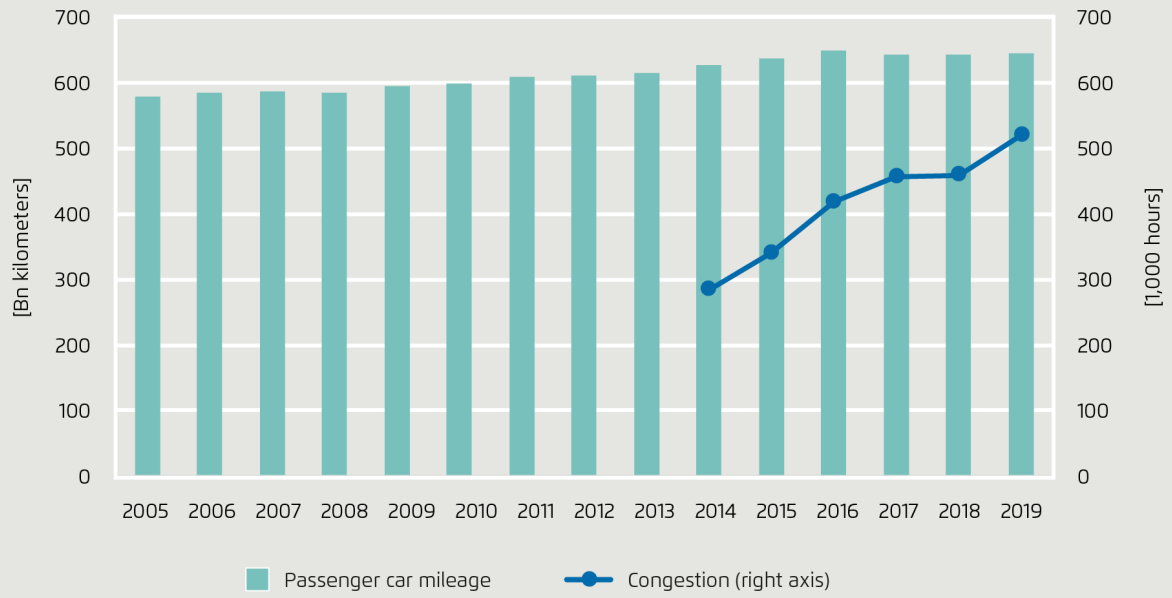


Agora Verkehrswende (2023) | Numbers as of February 2022; Notes: Up to and including 2020, nominal energy tax revenue according to domestic sales. Until 2005 mineral oil tax, including eco-tax. Energy tax revenue estimates for 2025 and 2030 based on the climate protection scenario KN2045. Total federal tax revenues in 2025 and 2030 on the basis of data from the Working Party on Tax Revenue Estimates and own extrapolation. Dotted line corresponds to linear projection. Sources: DLR; DIW 2021 and Destatis 2022 (for years 2000–2020); Prognos; Öko-Institut; Wuppertal-Institut 2021, BMF 2021 and own estimates (years 2025 and 2030)

1.1.3 Transport infrastructures at capacity limits and scarcity of public space

In view of increasing car mileage, the roads in Germany are being used to or beyond capacity in many places (see Figure 3). This causes direct and indirect costs for the users: higher fuel costs, time-related costs and stress. At the same time, congestion leads to higher emissions. However, the solution to this cannot be the continuous construction of new roads and the expansion of existing ones. This makes neither environmental nor economic sense. Instead, existing capacities must be better utilised through sensible traffic management. With the projected increase in the number of autonomous vehicles, the political pressure to strengthen traffic control could grow further. Public space is a scarce and valuable resource, especially in cities. It must be managed and priced in a way that is commensurate with its actual value.

Car mileage and congestion on Germany's motorways for the years 2005 – 2019 Figure 3



Agora Verkehrswende (2023) | Numbers as of February 2022; Notes: Modified calculation method for determining passenger car mileage from 2017 onwards. Values for passenger car mileage include estate cars. Congestion duration also influenced by recording quality of traffic situation; Sources: DLR; DIW 2021; ADAC 2022

1.2 Levers of the transport transformation

1.2.1 Activity level

Private and commercial transport users should be encouraged to make their mobility behaviour more sustainable. This applies both to decisions about how much and where to drive, and to the choice of transport mode. Consequently, this lever aims at avoiding unnecessary trips and shifting motorised individual transport to more climate-friendly forms of mobility (public transport, cycling and walking).

1.2.2 Innovations and fleet modernisation

Both the vehicle fleet and the energy supply must be converted to climate neutral technologies. Suppliers and producers must develop appropriate innovations and offers for this purpose. However, these must also be accepted by the users. The purchasing decisions of private customers and companies play an important role in the climate-friendly modernisation of the vehicle fleet. Policy instruments are therefore needed to promote the sale of low-emission vehicles and to force carbon-intensive technologies out of the market and out of the vehicle stock.

1.2.3 Infrastructure

More climate-friendly technologies and more sustainable modes of transport often require new infrastructures. This applies to traditional transport infrastructure and energy supply, but also to digitisation. In many cases, the state is responsible for planning, financing and provision, as well as

for the associated regulation. A particular challenge here is to align the lead-time-intensive planning with the long-term development of markets and technologies.

While activity level and fleet modernisation can be sufficiently addressed via fiscal incentives and are thus the focus of this paper, the provision of adequate infrastructure requires a much stronger direct intervention by the public sector. Therefore, this lever is considered in the assessment of fiscal instruments only in terms of their suitability to secure stable financing of needed infrastructure.

1.3 Criteria used for instrument selection and design

1.3.1 Effectiveness of climate policy

The economic instruments, in conjunction with regulatory, planning and investment instruments, must reliably contribute to achieving the emission reduction targets in transport. The political yardstick is the targets set out in the German Climate Protection Act, which are derived from the EU's climate policy framework and the Paris Agreement, which is binding under international law. In order not to shift the burden to younger and future generations, the decisive measure for climate protection is the cumulative emission of GHG.

1.3.2 Economic efficiency

When selecting and designing fiscal instruments, care must be taken to ensure that emission reductions are achieved at the lowest possible economic cost. This benefits both current and future generations, thereby increasing the acceptance of climate protection measures. It also makes it easier to comply with the debt brake enshrined in the Basic Law. Fiscal instruments can contribute to economic efficiency in particular when market prices do not reflect the actual respective costs. In the context of environmental economics, such costs include in particular the costs of damage caused by environmental stress. By factoring in previously external damage costs, fiscal instruments can reduce these market distortions and help ensure that prices fulfil their economic functions as smoothly as possible.

In view of further imperfections and barriers in the market, however, further interventions may also be necessary in order to achieve the climate protection targets at the lowest cost possible. For the selection, design and balancing of fiscal instruments, the following guiding principle can be useful: As simple as possible, but also as complex as necessary.

1.3.3 Social equitability and acceptance

In a democracy, a massive transformation like that necessary in the transport sector can only succeed when a majority of society accepts and supports it. In turn, the transformation of transport will only be accepted if the transition to a climate-neutral mobility system is socially balanced, and the opportunities and costs are distributed fairly. This applies in particular to the pricing instruments, as these are regularly met with the greatest reservations among the population. In the transition to post-fossil mobility, compensation and support measures are therefore indispensable, especially for low-income households, because those households often

do not have the financial resources to purchase climate-friendly vehicles in the short term or to adapt other circumstances that determine their everyday mobility.

Both existing and new or reformed instruments must therefore be assessed in terms of their impact on the distribution of available income and wealth. In general, regressive distributional effects should be avoided. For example, there should be no systematic subsidisation of already wealthy households at the expense of public budgets and thus of all taxpayers, including low-income households. Finally, transparency and clear communication create understanding and increase willingness to change in society.

1.3.4 Fiscal sustainability

The fiscal instruments in the transport sector should help ensure that the overall system of taxes and levies guarantees the financing of government tasks in the long term and, in particular, that there is a sufficient financing basis for the necessary investments associated with the transformation of transport. Crucial for this is the choice and design of the respective tax base. For example, if the incentive is actually effective, the fiscal yield of taxes linked to CO_2 emissions or to fossil fuels in general will decline.

1.3.5 Fit into the European climate policy framework

Central provisions for climate policy in transport, which are binding for the German government, are set at the European level. On the one hand, the government should work toward tightening up the EU's *Fit for 55 package*, which already contains important reform proposals. On the other hand, it must be supplemented by tailored national fiscal instruments. These must not only be legally and administratively compatible with the European regulations, but must also be specifically tailored to their shortcomings and gaps in effectiveness.

1.4 Focus and structure of the current paper

The primary focus of this discussion paper is the climate policy challenge for the transport sector. However, in the context of the following depiction of a possible restructuring of the fiscal architecture, the implications for the other challenges mentioned above are also outlined.

The paper first looks at those instruments that primarily target the level of activity by changing the (relative) prices for different forms of mobility and thus stimulating changed, more sustainable usage behaviour. Then it turns to those instruments that are primarily aimed at influencing vehicle characteristics. However, it is not always possible to make a clear distinction, as some instruments address more than one lever at the same time. Infrastructure planning and provision are not the subject of this paper.

The order in which the fiscal instruments are described is intended to illustrate how they build on each other and how they address imperfections or gaps in the previously used instruments. For example, the passenger car toll follows the description of the CO_2 price and energy taxes in transport, since the latter do not address electric vehicles and are thus not sustainable in the long

term, particularly as far as influencing the level of activity is concerned. Subsequently, the structurally reformed vehicle taxation system, focused on the initial registration of passenger cars, addresses the ineffectiveness of the CO_2 price in influencing the investment decision; the purchase premiums complement the reformed motor vehicle tax such that, taken together, the two instruments form a bonus-malus system. And, finally, a reformed company car taxation system takes up the price signals of the restructured motor vehicle taxation system in order to mirror these signals in a regulation that is as tax-neutral as possible.

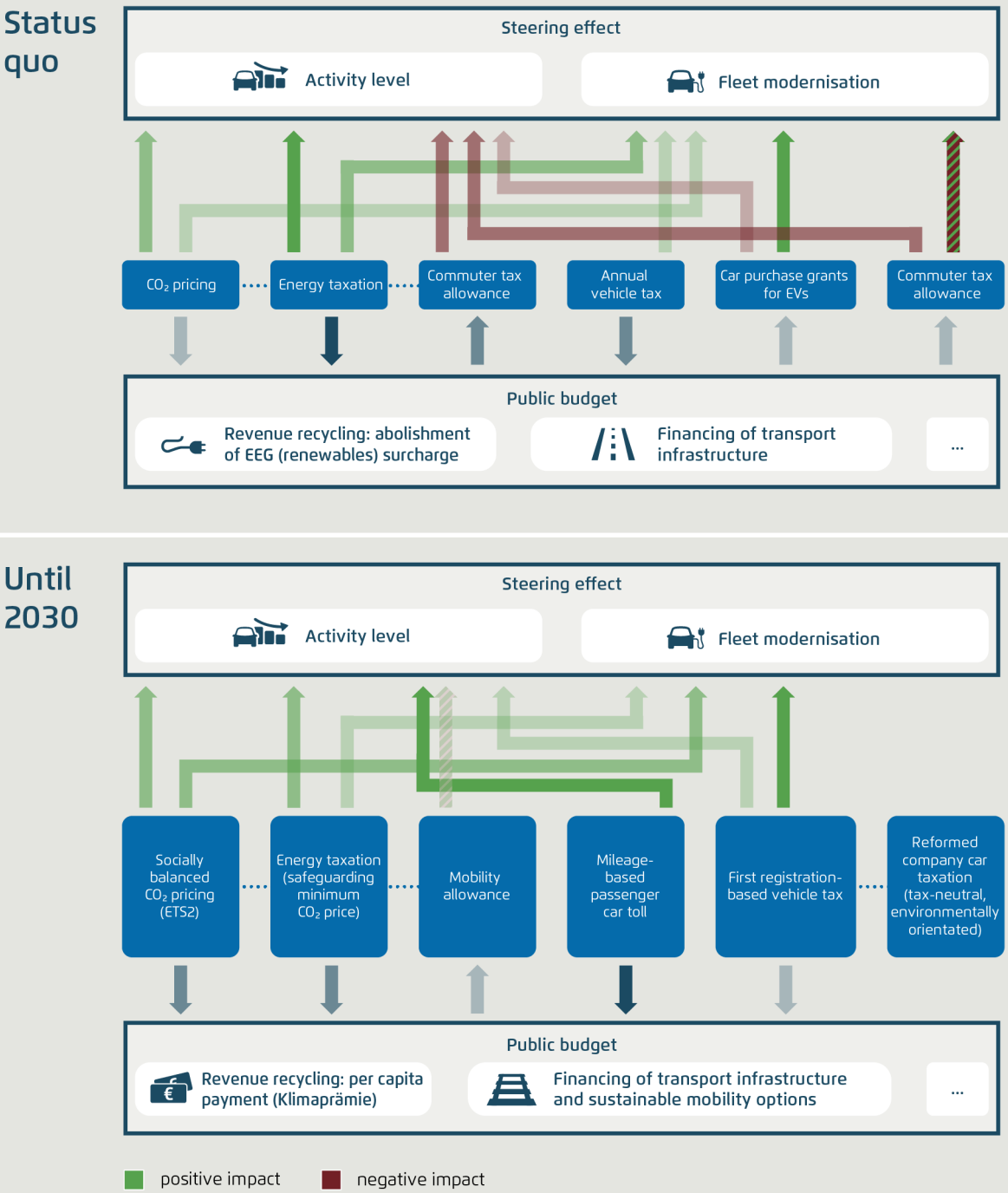
When designing the mix of policy instruments, it is particularly important that they fit together coherently. This discussion paper deliberately confines itself to the guidelines for a reform of the fiscal architecture and refrains from making detailed quantified proposals. If a quantified proposal were to be deviated from in one area of the instrument bundle, this would generally entail adjustments in other areas as well in order to ensure the consistent interaction of policy instruments. Ensuring this consistency among actually implemented instruments is the task of the new federal government.

Below, we will first briefly describe the general mechanisms and impact pathways for each of the instruments, the status quo of their current implementation and the relevant statements in the coalition agreement, before outlining the key points of a reform. Finally, the interaction of the individual instruments and their coordination in terms of policy coherence and timing to ensure a stable fiscal architecture that is in line with climate targets are outlined once again in an overall assessment. The individual reform proposals are not necessarily new, they may have been under discussion for some time. The aim of the paper is to identify the key elements of a coherent overall realignment of the fiscal architecture for the passenger car segment, taking into account instrumental interactions, and to stimulate a discussion on options for their concrete design and speedy implementation.

The original version of this discussion paper was published in German language in February 2022, just before the start of the Ukraine war and the subsequent energy crisis. Since then, energy and climate policy discussions and decisions – also in the transport sector – have been shaped by these unforeseen developments. Still, the analyses and recommendations of the original paper remain largely valid. Some minor amendments were made for the translation, however. This applies to passages where the geopolitical and economic developments have substantial implications for our proposals or where relevant policy changes have been made recently. Such amendments – compared to the original version – are italicised.

Figure 4 below provides a schematic overview of the incentive and budgetary effects of the fiscal instruments discussed in this paper in the status quo and after their reform.

Steering effect and budgetary impacts of fiscal instruments:
status quo and after reforms until 2030 Figure 4



Agora Verkehrswende (2023)

2 CO_2 pricing: raise price path and safeguard minimum level

2.1 Initial situation

2.1.1 Instrument description

CO_2 pricing is considered by many - especially economists - to be the guiding instrument or backbone of climate policy. It makes climate costs visible and tangible, and thus relevant to decision-making. Increasing the price of fossil fuels affects transport activity and the choice of transport mode. It also has an influence on vehicle purchasing decisions, at least to the extent that vehicle buyers actually take into account the future operating costs influenced by the price of fuel. There is no doubt that CO_2 pricing plays a central role in the mix of instruments. However, it is not a panacea. The simplicity, cost efficiency and environmental effectiveness of a climate policy that relies primarily on CO_2 pricing, which is impressive at first glance, is hindered by a variety of barriers and market imperfections. These considerably limit the real-world efficiency of a largely mono-instrumental approach narrowed to CO_2 pricing and justify - also from an economic perspective - a differentiated mix of instruments for climate protection in transport. Moreover, it is only able to internalise a part of the hitherto external costs of (road) transport, while others - for example noise or pollutant emissions - are not addressed.

Nonetheless, if the climate damage costs of burning fossil fuels are not adequately reflected in their prices, vehicle and usage decisions will continue to follow distorted price signals and an efficient transport transformation will not succeed.

2.1.2 Status quo

Currently, the CO_2 emissions resulting from the combustion of fossil fuels are priced by means of a national fuel emissions trading system. This initially entails fixed prices, which are to rise from an initial 25 euros per metric tonne of CO_2 in 2021 to 55 euros in 2025. Thereafter, prices are to be determined by supply and demand in the market, initially within defined price corridors. A price corridor of 55 to 65 euros is envisaged for 2026; no such definition is provided for subsequent years. Empirical studies show that CO_2 prices at this level are not expected to have a substantial incentive effect - either in terms of usage or in terms of car purchase decisions. The CO_2 prices in the German national emissions trading system are also significantly lower than those in European emissions trading for stationary installations.

2.1.3 Coalition agreement

In their coalition agreement of November 2021, the parties of the so-called traffic light coalition ("Ampelkoalition") emphasise that they want to revise the Fuel Emissions Trading Act (*Brennstoffemissionshandelsgesetz*, BEHG) – that is, the national trading system – in line with the EU's *Fit for 55* package and to rely on a rising CO_2 price as an important instrument, combined with a strong social compensation. At the same time, the coalition agreement explicitly does not envisage an increase in the price path set out in the BEHG - referring to the recent rise in energy prices. In the medium term, national emissions trading is to be transferred to a newly created

European emissions trading system for the transport and heating sectors, and a uniform emissions trading system is then to be created across all sectors in the 2030s.

Social compensation is to be achieved by abolishing the German renewable energy levy – the so-called EEG surcharge – from 2023; *this was already done in July 2022 to help households cope with rising energy prices*. In addition, a further social compensation mechanism – direct payments by the state to households – is to be developed to cushion future price increases. The social climate fund proposed by the European Commission in parallel with the new emissions trading scheme is only indirectly supported in the coalition agreement: There should be "social compensation" in all EU countries.

2.2 Reform proposal

2.2.1 Increase in the price path for fuel emissions trading

Maintaining the current CO_2 price path in the national emissions trading system does not meet the requirement for appropriate CO_2 pricing, nor does it meet the targets of the German Climate Protection Act for the transport sector. Efficient instrumentation of the transport transformation requires that the increase in the CO_2 price path under the BEHG be made significantly steeper than currently envisaged, so that the minimum price in 2025 is not less than 80 euros per metric tonne of CO_2. The initial fixed prices or price corridors create planning certainty and should be retained for the time being. As set out in the coalition agreement, the national fuel emissions trading system could then be transferred to the EU-wide emissions trading system for road transport and heating proposed by the European Commission. Parallelism between national and European emissions trading should be avoided.

2.2.2 Energy tax reform: remove tax privilege of diesel and safeguard minimum CO_2 price level

Even after the introduction of an EU-wide emissions trading system for road transport and buildings (and some other GHG sources), a minimum price for CO_2 must be ensured at national level. This would apply if the prices in European emissions trading were too low for the German context, for example as a result of low price caps or a generally unambitious design. In view of the very different economic starting points within the EU and not least because of the European burden-sharing regulation, which requires Germany to make a disproportionate contribution to emissions reduction, this case is not unlikely, so national minimum pricing must be prepared at an early stage. *The price cap agreed upon in December 2022 for the European emissions trading scheme that will cover the transport sector – 45 euros per metric tonne of CO_2 from 2027 – actually necessitates national safeguard measures.* The existing instrument of energy taxation lends itself to this. In addition to its function as a safeguard for adequate CO_2 pricing, energy taxation should also be reformed so that the tax rates for the various fuels are assessed on a uniform basis - according to their respective carbon and/or energy content. The European Commission has also proposed aligning tax rates with energy content in its reform proposal for the EU Energy Tax Directive. This implies a - gradual - alignment of the tax rates for diesel and gasoline.

2.2.3 Socially balanced revenue redistribution

Regarding the social impacts, several studies have shown that a progressive distributional effect can be achieved if the revenues from CO_2 pricing are recycled appropriately. Suitable measures include, in particular, the reduction of electricity prices by abolishing the EEG surcharge – *which has now been adopted* – and lump-sum dividends to private households. In combination with further targeted relief measures and investment aid for particularly affected households and a plannable, gradual price increase, social hardship can be avoided as much as possible. Aligning the tax rates for gasoline and diesel is not very critical in terms of its distributional impact, since - often larger - diesel vehicles are disproportionately found in high-income households.

With regard to the distributional effect of carbon revenue recycling by means of a reduction in electricity prices or a per capita refund, the following should be considered: The progressive effect of revenue recycling via reduced electricity prices could weaken in the coming years. This is because a switch to electric drives is likely to occur more quickly in high-income households. This implies a lower burden on these households from the CO_2 price and, at the same time, greater relief from the elimination of the EEG surcharge. For this reason - and in view of further increases in CO_2 prices and emissions trading revenues - an administratively manageable model for direct lump-sum payments to private households should be developed very quickly. In order for such a revenue recycling instrument to strengthen the broad acceptance of ambitious CO_2 pricing, it is important that the payments are highly visible in addition to being easily accessible to all.

2.2.4 No revenue recycling via the commuter tax allowance, introduction of a mobility allowance instead

Together with the introduction of national CO_2 emissions trading, an increase in the commuter tax allowance (*Entfernungspauschale*) from the 21st kilometre of the one-way journey was decided as a - supposedly social - compensation scheme. As part of the income-related expenses, the allowance reduces the taxable income of an employed person, but the effective financial relief depends in particular on the individual (marginal) tax rate. As a result, high-income earners benefit far more than those with medium or low incomes. In contrast to revenue recycling via reduced electricity prices and lump-sum transfers, an increase in the commuter allowance thus has a regressive distributional impact. It provides little targeted relief for those employees who are, due to their income situation, particularly affected by rising CO_2 prices. This means that the commuter allowance is not very suitable as a socially oriented compensation instrument for higher fuel prices, as it is often portrayed in the political arena. Even the newly introduced *Mobilitätsprämie* (a - very low - tax rebate for commuters with very low income) cannot compensate for this deficit. In addition, the commuter tax allowance reduces the incentives to limit the distance between home and work and thus the traffic volumes caused by commuting. This counteracts the intended environmental effects of higher fuel prices.

A (further) increase in the commuter allowance should therefore be avoided at all costs; in the long term, it would be advisable to reduce or at least environmentally differentiate the tax treatment of commuting costs. In the short term, an income-independent mobility allowance (*Mobilitätsgeld*) is much more suitable as a compensation instrument for commuter households. If the commuter tax allowance were replaced by a mobility allowance of, say, 10 cents per kilometre, commuting employees with low incomes could be relieved financially compared to the status quo,

while commuters with high incomes would be incentivised to reduce their commuting kilometres and, at the same time, the public budget would also be relieved. A maximum level for the mobility allowance could also limit incentives for particularly long commutes. This kind of targeted relief for vulnerable households would increase the social acceptance of important climate protection measures, such as CO_2 pricing. From a social policy perspective, it would seem sensible to initially grant such a mobility allowance irrespective of the mode of transport, but then to differentiate it on the basis of ecological criteria after a transitional period or to phase it out completely.

Against the backdrop of rising energy prices since the beginning of 2022, the German government decided on extensive financial relief for private households and companies. Among other things, it countered the rise in fuel prices with temporarily lowered energy tax rates for gasoline and diesel and lower carbon prices in the BEHG for the longer term. Additionally, the commuter tax allowance for long distances was increased earlier than initially planned.

Those policy measures are generally poorly designed - in social, environmental and geopolitical terms alike. A subsidisation of fuel consumption is very expensive for the state and it is also socially unbalanced. The financial relief is not targeted at those who are experiencing economic hardship as a result of rising prices. Instead, it is precisely the highest-income households that are relieved most because they consume the most fuel. From an environmental perspective, too, the tax cuts on fossil fuels send the wrong signal. In addition to directly weakening incentives to save energy, there is a risk of creating problematic path dependencies and expectations. Consumers could come to expect that the state will ensure - if necessary by using public funds - that car use remains comparatively inexpensive, even with fossil fuels. This would undermine incentives for a change in mobility behaviour. In geopolitical terms, there is a risk that some of the relief will end up with the suppliers of fossil fuels via the price effect of subsidy-supported demand.

Therefore, the carbon price for fossil fuels should be plannable for consumers and defined along a more ambitious price path in the future. For social compensation, the German government should swiftly develop a procedure for direct redistribution of the carbon pricing revenues to the population.

3 Mileage-based passenger car tolls: stabilising infrastructure financing base and managing traffic efficiently

3.1 Initial situation

3.1.1 Instrument description

Road user charges are levied on passenger cars and trucks in a large number of countries. These primarily serve the purpose of (road) infrastructure financing. However, if designed wisely, they offer far greater potential to make an important contribution to a successful transport transformation and to help overcome the transport policy challenges mentioned above. A mileage-based, differentiated toll system applied to all roads can (a) provide incentives to reduce CO_2 and pollutant emissions; (b) lead to a more efficient utilisation of existing transport infrastructure capacities; and (c) ensure stable infrastructure financing based on the user pays principle. In terms of climate policy, such a toll primarily pays off on the "activity level" lever.

3.1.2 Status quo

Germany has had an established mileage-based toll system for trucks since 2005. For passenger cars, the introduction of a time-based toll was passed by the Bundestag in 2015. However, this was stopped by the European Court of Justice because it would have unilaterally burdened drivers from other countries and thus violated EU law. The project was subsequently not pursued further - not even in a modified form.

3.1.3 Coalition agreement

The introduction of a passenger car toll is not explicitly mentioned in the coalition agreement, whereas the plan to differentiate the truck toll according to CO_2 emissions from 2023 onwards and to introduce external cost charges for CO_2 emissions as well as to include commercial road haulage from 3.5 tonnes of technically permissible maximum laden mass is explicitly mentioned. The following wording should be emphasised in this context: "We will use the additional revenue for mobility." A restriction to road infrastructure financing is thus rejected, so that financing contributions for more climate and environmentally compatible mobility options seems possible.

Even if it is not explicitly mentioned, the coalition agreement does provide a starting point for the introduction of a car toll: "Investments in the transport infrastructure must be further increased and secured in the long term." The reliable revenues from a toll guarantee such long-term financial security by decoupling them from annual budget decisions.

3.2 Reform proposal

3.2.1 Objective: infrastructure financing in line with the user/polluter pays principle

Ideally, starting in the second half of this decade, an intelligent passenger car toll can make an important contribution to mastering the transport policy challenges mentioned in Chapter 1.1. This requires an appropriate design. A "toll sticker" system - i.e., a toll that is only time-based but not mileage-based - does not meet this requirement. The goal of a future-oriented passenger car toll is road charging based on actual use, strain on the transport infrastructure as well as external costs caused. In this way, incentives are created to avoid unnecessary trips, increase vehicle occupancy and shift to more environmentally friendly modes of transport. If (environmentally relevant) vehicle characteristics are also taken into account when determining the toll rates, incentives can also be provided for fleet modernisation and the selection of more efficient vehicles. In addition to the vehicle's specific pollutant emissions, its weight is a particularly suitable toll parameter, since heavy passenger cars are associated with greater environmental impact (e.g., due to tyre wear), greater road wear and tear, and higher external accident risks. CO_2 emissions, on the other hand, can be measured and priced more precisely via emissions trading or energy taxation.

3.2.2 Better traffic management through differentiated toll rates

Time and location-variable toll rates (for example, congestion surcharges) can be used to send additional, more specific scarcity signals that support the optimisation of traffic flows. Traffic flows are directed by the price signals in such a way that spatial and temporal bottleneck situations are avoided as far as possible. Better capacity utilisation management goes along with a reduced need for road expansion and, moreover, improved planning reliability for road users, especially for the logistics sector. In particular, inner cities could benefit from reduced congestion with all its negative side effects. Furthermore, particularly sensitive areas (e.g., densely built-up residential areas) can be relieved of the negative effects of traffic in a more targeted manner. In this context, it must be ensured that the municipalities have sufficient leeway; such freedom within a uniform federal system would also make separate city toll systems unnecessary.

In terms of acceptance and social equity, it would also be possible to grant special conditions to certain user groups, such as users with health restrictions or mobility service providers cooperating with public transport. It would also be conceivable in principle to impose lower tolls on routes where there is currently no attractive alternative to the private car, while higher tolls would apply in areas that are well served by public transport. However, the additional expense and possible loss of transparency must be carefully weighed against the potential benefits.

3.2.3 Implementation

The introduction of an environmentally and fiscally sustainable passenger car toll that meets the long-term challenges in transport policy requires a conceptual and administrative lead time. The aim should be to implement the system by the mid-2020s. If this succeeds, such an intelligent toll can become not only a supporting pillar for a future-proof fiscal architecture but also an innovative digitisation project with international appeal. For this to succeed, preparatory work must begin

now, and directional decisions must be made early on. For example, research work on specific design issues can already be initiated in the short term, taking into account (financial) yield, steering effect, collection costs and social compatibility. In addition, data protection (*privacy by design*) and a high level of interoperability within the EU must be taken into account from the outset when developing the concept. Actual implementation could then take place in stages. In an introductory phase, only the pure infrastructure costs could be charged; subsequently, the toll rates should be supplemented by other previously external costs (congestion costs, environmental costs).

3.2.4 Revenue utilisation and recycling

Infrastructure financing via revenues from a mileage-based toll has a major advantage from a budgetary perspective: the level of revenue is largely independent of the composition of the passenger car fleet in terms of energy source; energy tax and vehicle tax revenues, on the other hand, are steadily declining as the electrification of the power train of passenger cars progresses. In addition, infrastructure financing will be more strongly decoupled from budgetary policy decisions, which will improve planning security in times of renewed budgetary constraints.

The use of revenues should follow the guiding principle of an environmentally, economically and socially sustainable transport system. A narrowing of the financial flows to "road finances road" cannot guarantee this. Instead, revenues should not be used exclusively for road construction and maintenance but should serve to ensure sustainable and affordable mobility for all. After all, relief is created precisely by strengthening the quantity and quality of alternatives to motorised private transport. Consequently, in line with the guiding principle of transport finances mobility, toll revenues should be used not only to finance road infrastructure but also to improve public transport and the infrastructure of non-motorised transport. With regard to road infrastructure, a clear priority should be given to maintaining the existing infrastructure, as already indicated in the coalition agreement. It is also important to ensure that municipalities have room for manoeuvre when it comes to revenue allocation. In addition, the nationwide expansion of the charging infrastructure could also be supported on a transitional basis with the revenues collected from road pricing.

Parallel to the gradual levying of road user charges, financial relief can also be provided elsewhere in the fiscal framework in order to avoid overburdening motorists. One option would be to abolish the annual motor vehicle tax, which has only a comparatively weak incentive effect (see Chapter 4.3), as part of the introduction of the toll. On the other hand, energy tax rates could be adjusted and possibly reduced in the course of the gradual toll increase (to integrate further external costs into the toll rates).

4 Vehicle tax: increase effectiveness by focusing on the purchase decision

4.1 Initial situation

4.1.1 Instrument description

The motor vehicle tax (*Kfz-Steuer*) taxes the ownership of a registered motor vehicle. The tax is levied irrespective of the actual duration of use of the vehicle. In view of the flat, lump sum tax rates, the "activity level" lever is only addressed to the extent that the tax influences the number of passenger cars owned and thus indirectly the number of vehicle kilometres travelled. In terms of its climate policy impact, the focus is primarily on the car purchase decision and thus the "fleet modernisation" lever. These can potentially be influenced effectively by designing the tax base and tax rate in a way that is appropriate to the target. With revenues of just under 10 billion euros, around 80 percent of which comes from the taxation of passenger cars, the vehicle tax also fulfils an important fiscal function. Beyond ownership taxes, other legally permissible transaction taxes related to motorised means of transport would also include a registration tax, which - unlike in many other European countries - has not been levied in Germany to date, but would offer some advantages in terms of its incentive effect (and its social compatibility).

4.1.2 Status quo

The rates of the motor vehicle tax are differentiated according to specific CO_2 emissions. This tax base which was implemented in 2009 is intended to have an incentive effect towards more climate-friendly vehicles. Previously, the tax was differentiated according to pollutant classes. In addition, the rates are based on the engine capacity of the respective passenger car, with the engine capacity component being higher for diesel vehicles - to compensate for the lower energy tax on diesel. Electric cars are generally taxed according to their weight, but will continue to benefit from a tax exemption until 2030.

At the beginning of 2021, the CO_2 component of the tax was raised by making the tax rate progressive. Nevertheless, the vehicle tax in its current form is not sustainable. It cannot generate stable revenues in the long term, nor does it have any substantial incentive effects. The weak incentive effect is due on the one hand to the low tax level and on the other to a structural deficiency. For example - after the reform of the vehicle tax that came into force on 1 January 2021 - the annual tax rate for a compact-class gasoline-fuelled passenger car with 1,000 cubic centimetres of engine capacity and CO_2 emissions of 120 grams per kilometre, which is already above the European CO_2 fleet limit for passenger cars, is 71 euros. For a gasoline-fuelled SUV with 1,500 cubic centimetres of displacement and emissions of 160 grams of CO_2 per kilometre, 178 euros will be due. Tax amounts of this magnitude and tax differences of around 100 euros, as between the models cited, do not exert any significant decision-making weight in the choice of vehicle. In relation to the purchase price and in the context of a complex decision-making situation, this price signal risks being “lost in the noise.”

In addition to the absolute level of the vehicle tax, its structure - the uniform annual levy - further reduces its incentive effect. Studies show that car buyers do not fully take into account future running costs (fuel costs, vehicle taxes) when deciding on buying a car (i.e., which model and whether at all). Possible reasons for this are both a general so-called "present bias" in decision-making situations and the omission of systematic total cost accounting. Also of importance is the fact that new vehicles are generally kept for only five to six years and that tax liability is also passed on with the sale. When the tax liability is passed on, the period of consideration relevant to first-time buyers also ends - at least as long as efficiency characteristics and CO_2 emissions of a passenger car and the resulting tax rates are not reflected in the prices in the used car market. In this case, only a fraction of the vehicle tax owed over the entire service life is ultimately included in the purchase decision. The fact that such incomplete capitalisation of differences in vehicle tax actually occurs is largely due to the lack of transparency in the used car market, for example because of low information requirements. However, it is also true for the efficiency label for new cars that a vehicle's cost implications are not featured prominently; instead, heavy, emission-intensive vehicles are systematically preferred by the German label design. The structural effect outlined here weakens the effectiveness of the carbon-oriented vehicle tax in its current form.

With the technological shift toward electromobility, the vehicle tax in its current form is also fulfilling its fiscal function less and less. Battery electric vehicles are subject to comparatively low tax rates, which, moreover, will not be levied until 2030. The increasing electrification of the passenger car fleet is consequently accompanied by a decline in tax revenues. If the car taxation policy remains unchanged, this drop in tax revenue will be accompanied by billions of euros of subsidies for (partially) electric passenger cars. These subsidies could be financed "internally" and in a targeted manner through a reform of the motor vehicle tax geared to climate targets.

4.1.3 Coalition agreement

The coalition agreement only mentions the motor vehicle tax to the extent that the tax treatment of diesel vehicles in the motor vehicle tax is to be reviewed in the course of aligning gasoline and diesel taxation (as a result of implementing the EU Energy Taxation Directive). The coalition agreement thus falls short of the plans of the previous federal government, which identified (further) CO_2 differentiation of the motor vehicle tax as a priority area for action (as part of the so-called *Klimapakt für Deutschland* from May 2021).

4.2 Reform proposal

4.2.1 Focus on first registration

Provided that it is appropriately designed, a reformed vehicle-related tax can play an important role in the transformation of the fleet toward electric drives and fuel-efficient vehicles. A key task would be to meaningfully supplement the insufficient incentive effect of CO_2 pricing and energy taxes on the vehicle purchase decision. In order to influence the purchase decision as effectively as possible, the price signal should (also) be applied at the time of purchase. The aforementioned losses in effectiveness of an annual tax payment can be overcome if the tax is bundled and levied at the time of first registration (in Germany) - as with acquisition/registration taxes, which have

already been implemented in a large number of European countries. For a given overall tax burden, using acquisition/registration taxes instead of annual ownership taxes could achieve a stronger steering effect. It would also be conceivable to implement the current vehicle tax on the ownership of a car in such a way that a significantly higher tax rate applies in the year of first registration than in the following years of ownership, or that the rate is degressive overall, i.e. it levels off with the length of ownership. Together with the premiums for zero/low-emission cars, which are also paid out at the time of registration, this would create a de facto bonus-malus system that could be designed to be largely revenue-neutral. Although a significant increase in the tax rates within the current structure with uniform annual payments would also allow a stronger steering effect to be achieved than before, potential for more effective steering would be wasted.

4.2.2 Progressive tax rate

The tax rate that applies at the time of first registration should be progressive, so that as CO_2 emissions rise, increasingly higher tax rates are payable for each additional gram of CO_2. The introduction of progressive vehicle taxation has already been initiated with the last reform of the vehicle tax. From a fiscal perspective, the greater ability and willingness to pay of buyers of large, expensive and generally more emission-intensive vehicles speaks in favour of a progressive tax rate. From an environmental perspective, a progressive tax rate can also be justified by the fact that larger vehicles, which tend to be more carbon-intensive, typically cover higher average mileages; incremental improvements in specific CO_2 emissions per kilometre could thus achieve greater absolute CO_2 savings. Finally, a progressive tax rate seems appropriate in terms of social balance, since large and expensive new cars are primarily purchased by high-income households.

The tax rates per gram of CO_2 should also be adjusted regularly over time, but as predictably as possible. In view of, among other things, the manufacturers' existing production plans and the progressive improvement of the charging infrastructure for electric passenger cars, the tax rates should gradually increase in the coming years to enable a fleet transformation that is as seamless as possible.

4.2.3 Ensuring social balance

Compared to the status quo of the tax structure, a vehicle taxation regime based on the first registration can be assumed to have a more balanced distributional effect. For now, second, third and fourth owners of a car pay the same annual tax amount as the first owners, who decide on the consumption characteristics of the car and thus the annual tax burden. Used car buyers even tend to bear a higher tax burden per vehicle kilometre, since the average mileage decreases with the age of the car. If, on the other hand, the tax amount is due in full (or to a large extent) upon first registration, the tax incidence, i.e. the effective distribution of the tax burden, shifts in the direction of first-time buyers. This shift is based on the assumption that the tax incidence of the one-off payment due at first registration reflects the development of car depreciation over the service life; thus, the highest costs are incurred in the first years after first registration. Since new car buyers generally have higher incomes, this results in a progressive distributional effect. This can be reinforced by a progressive tax rate, which primarily affects buyers of heavy, powerful, fuel-intensive and usually expensive cars.

Nevertheless, even with such a reform in the direction of vehicle taxation based on first registration or a bonus-malus system, it cannot be ruled out that some low-income households will experience an additional financial burden. This applies in particular to households which, due to their specific situation, are dependent on a larger, often still non-electric vehicle, the prices of which could rise (moderately) in the used car market in the course of such a reform. Examples include families with several children and without charging facilities for an electric car. The price increase may result from reduced supply of such used cars due to falling sales figures in the new car market and from malus payments being passed on in the used car market.

However, tailored relief could be developed for these cases. For example, a tax rebate could be granted based on the number of children living in the household - and additionally depending on household income. To prevent abuse, this could be linked to a minimum ownership period and limited to one car per family. A regulation that focuses on the causal factor that requires financial relief (i.e. children in the household or physical impairment) is much more effective and less likely to create disincentives than one that focuses on vehicle characteristics. If, for example, all passenger cars up to the typical CO_2 value of a family car were granted extensive tax exemption or very low tax rates in order to achieve a social balance, this would massively impair the environmental incentive effect. Such a regulation would also relieve the tax burden on various SUVs and a large proportion of the new car fleet in general - without any objective justification - and would therefore be less targeted. The use of other vehicle characteristics (e.g. volume, number of seats) would also have limited socio-political effectiveness, since large-volume vehicles are not only driven by households with children or people with other special needs.

Regulations like the potential "child bonus" would also be conceivable in principle for the subsidy schemes for zero and low-emission vehicles. In particular, if the level of subsidies is staggered according to specific final energy consumption (see section 5.2.2), such a bonus could compensate for the higher energy consumption (and the associated lower subsidy) of a - necessarily - larger passenger car.

4.2.4 Adjustment of the tax base

The specific CO_2 emissions should initially serve as the primary assessment basis for a reformed vehicle-related taxation based on first registration. As a possible second assessment basis, vehicle weight is well suited, since it correlates with both road use and external accident costs. Another conceivable alternative to weight would be vehicle area (surface covered by the vehicle) to address the use of public space. However, the costs associated with vehicle area vary greatly with the spatial use profile of the vehicle, which affects their suitability; for example, these costs are much higher in urban areas than in rural areas. Engine displacement should no longer be part of the assessment basis; it does not function as a good indicator for either infrastructure wear and tear or the level of external (environmental) costs.

For plug-in hybrids (PHEVs), a progressive tax rate primarily based on CO_2 would - continue to - result in a very low tax burden, provided that it continues to be calculated based on the combined CO_2 value of the PHEV. This is true even if the vehicles are very large, high-powered and expensive. With a view to the distributional and environmental considerations outlined in section 4.2.2., it is necessary to examine how appropriate taxation can also be ensured for such vehicles.

In particular, such a regulation should provide effective incentives to improve efficiency, particularly regarding the PHEVs' specific fuel consumption during the internal combustion engine driving mode.
One possibility for this would be if, first, the tax rates for the respective CO_2 emissions in the combustion engine driving mode - charge sustaining (CS) mode - and in the (locally emission-free) electric driving mode - charge depleting (CD) mode - were determined, and these were then weighted with the - realistic - driving shares in the respective mode. Due to the progressive tax rate, such a calculation of the tax liability would yield a higher tax burden especially for very powerful PHEVs from the upper segments with high fuel consumption when driving in CS mode. In order to determine more realistic electric driving shares, the so-called *utility factor* should be adjusted within the framework of the WLTP procedure on the basis of current data; this is important not only for national taxation, but also, for example, for the steering effect of the European fleet limits. *Recent action by the European Commission to better align the utility factor with real driving behaviour is thus to be welcomed.*

In view of the accelerating fleet transformation with electric vehicles becoming dominant among newly registered cars, final energy consumption appears to be a suitable and equally simple central assessment basis in the medium term. For the remaining ICEVs, specific final energy consumption correlates closely with CO_2 emissions, and targeted efficiency incentives would also be provided for electric drives. Such a change would thus allow the use of a uniform assessment basis and elicit efficiency improvements from both internal combustion engines and electric drives in the future. Vehicle weight could continue to serve as a supplementary criterion, even if it is addressed at the same time by means of a passenger car toll, since current (toll) payments have only a muted steering effect on the purchase decision due to the structural effect (weaker impact of running costs than one-off costs) outlined above.

To the extent that the energy tax rates on gasoline and diesel are harmonised (or the energy tax assessment is standardised), the differentiation of vehicle tax rates between the two types of drivetrains can also be largely dispensed with. As long as there is no harmonisation of the energy tax, a higher tax rate per gram of CO_2 can be levied on diesel vehicles in a reformed vehicle taxation system to compensate for the diesel privilege.

4.3 Supplementing or substituting the current motor vehicle tax for a tax on ownership

In principle, a tax based on the first registration could supplement or replace the current annual vehicle tax. In the course of an overall readjustment of the fiscal architecture in the transport sector, however, an annual ownership tax would become increasingly dispensable. It would then no longer fulfil a function that is not more appropriately performed by other instruments:

- A stable **financing function** for the infrastructure (and public transport) that respects the userpays principle is guaranteed by an intelligent, mileage-based passenger car toll. Frequent drivers and users of heavy vehicles, who cause higher costs, also make a higher financial contribution.

- The desired environmental **steering function** is more appropriately pursued by a vehicle tax based on the first registration, a CO_2 price or an energy tax, a mileage-based car toll and parking fees.
    - **Investment**: Purchase decisions in favour of low-emission or zero-emission cars are - as argued above - more effectively stimulated by a one-time vehicle tax based on the first registration due to its higher visibility and because it avoids the efficacy losses of an annual tax that result from the non-transparent used car market.
    - **Fleet modernisation/exnovation**: An appropriately high CO_2 price (and tolls differentiated according to pollutant emissions) encourages the withdrawal from the car stock of old and emission-intensive vehicles that are driven a lot and their replacement with newer ones. The flat annual vehicle tax ignores this usage component. In addition, a temporary scrapping bonus, designed according to strict social and ecological criteria, could accelerate the retirement of older vehicles. However, this bonus should not be linked to the purchase of a new vehicle.
    - The flat-rate motor vehicle tax is also not very accurate in charging for the **use of public (road) space**. An intelligent car toll can address the competition for - temporarily and regionally - scarce road capacities and thus reduce congestion costs, for example. Appropriate parking management that reflects the value of public space and is adapted to local conditions reduces the number of vehicles, especially where vehicles are associated with high (opportunity) costs. This applies above all to competition for scarce public space in cities. In rural areas, these costs are much lower. The annual vehicle tax ignores this regional component.
    - **The external costs of vehicle production and disposal** can also be better internalised via a one-off first registration-based tax (or other instruments), as they are independent of the length of vehicle ownership (in Germany).

In addition to the above arguments in favour of replacing the annual ownership tax, the introduction of new fiscal instruments raises the question of acceptance if existing burdens are not reduced simultaneously. One conceivable approach would be to initially waive the current annual vehicle tax for all newly registered vehicles and instead switch to the model of a one-off payment upon initial registration. The revenue thus generated should at least be sufficient to refinance the bonuses for electric vehicles and could also compensate for the - initially modest - losses in the previous annual tax, although exact compensation would be difficult to implement due to uncertain market developments. For existing vehicles, the annual vehicle tax should be retained for the time being; it could then be eliminated with the introduction of the first stage of a mileage-based passenger car toll. Such a staggered approach would preserve a substantial portion of the highly predictable vehicle tax revenue until the toll is established as a new financing instrument with a stable revenue stream. Yet, this presupposes a rapid political decision in favour of a passenger car toll. If the medium-term implementation of a mileage-based passenger car toll is not foreseeable, it is likely that an annual vehicle tax will continue to be required. Notwithstanding, there is still an urgent need for reform in this case to make the tax more future-proof - many of the above considerations regarding the tax base and tax progression remain valid for this.

If a one-off first registration tax proves unfeasible politically, various mixed models would also be conceivable, in which significantly higher annual rates would initially have to be paid after first registration than in later years. In terms of steering effect and social balance, such a model would be clearly better than the status quo. However, in the event of a structural reform of vehicle taxation, the question arises whether there should not be an outright alignment of the tax structure with its respective (environmental) purpose.

Regardless of the precise design of a reformed vehicle taxation system, the tax-related (and also the energy consumption-related) cost implications of the passenger car purchase decision must be presented in a more transparent, prominent and effective manner. This should be implemented by means of the long overdue reform of the passenger car efficiency label.

5 Car purchase grants: degressive design and alignment with climate policy benefits

5.1 Initial situation

5.1.1 Instrument description

Purchase premiums for electrified passenger cars are intended to accelerate their market penetration and thus the transformation of the fleet. They serve to overcome initial barriers to purchase and disadvantages in competition with the established combustion technology; these include in particular the currently still significantly higher purchase prices, but also consumer uncertainties regarding a comparatively new technology. From an economic point of view, temporary subsidies are justifiable insofar as they are associated with positive externalities of technology development.

5.1.2 Status quo

The key instrument at national level to promote the market penetration of electric drives is the so-called *Umweltbonus* (environmental bonus). This is a purchase premium for battery electric vehicles, plug-in hybrids and - theoretically - fuel cell vehicles. Since the increase under the 2030 climate protection programme (*Klimaschutzprogramm 2030*), the environmental bonus for all-electric vehicles has been 6,000 euros (net list price up to 40,000 euros) or 5,000 euros (net list price up to 65,000 euros). For plug-in hybrids (with a specific CO_2 value of less than 50 grams per kilometre or a minimum electric range of 60 kilometres), the bonus is 4,500 euros (net list price up to 40,000 euros) or 3,750 euros (net list price up to 65,000 euros). The environmental bonus is split equally between the German government and industry. Each vehicle manufacturer selling a new vehicle and eligible for the environmental bonus must make a contribution, which is granted as a discount on the net list price. However, the extent to which the manufacturers' contributions actually represent factual subsidies or would be granted anyway - in the context of general price reductions and due to the pressure to reduce emissions as a result of the European CO_2 emission standards - remains open to question. The so-called *Innovationsprämie* (innovation premium) was introduced with the economic stimulus package in the wake of the coronavirus crisis. This doubles the government's share of the environmental bonus, increasing the purchase premium for purely battery electric vehicles to up to 9,000 euros and for plug-in hybrids to up to 6,750 euros. The premiums have contributed to the recent significant acceleration in the market ramp-up of electromobility in Germany, but at the same time are associated with high financial burdens on the federal budget. Moreover, in addition to possible windfall effects, attention has also shifted to risks of abuse due to the (formerly) very short minimum period of ownership for subsidised electric vehicles. Shortly after the end of the six-month period of ownership, some of the subsidised vehicles were exported, and thus they do not permanently reduce the emissions of the domestic fleet.

5.1.3 Coalition agreement

The coalition agreement provided for a reform of the purchase premium. The aim of the announced reform was to make the subsidy degressive and to grant it only for passenger cars

"that can be shown to have a positive climate protection effect." The coalition agreement states that this is to be "defined only by an electric driving share and a minimum electric range." From August 2023, the minimum electric range of PHEVs was planned to be raised to 80 kilometres. Moreover, the purchase premium is no longer considered necessary beyond 2025 in the coalition agreement.

5.2 Reform proposal

5.2.1 Degressive design and integration into a bonus-malus system

The reform of the subsidies for electric cars set out in the coalition agreement should be tackled together with a reform of vehicle taxation. By combining targeted purchase premiums for low-emission passenger cars and significantly higher taxes for carbon-intensive vehicles at the time of first registration (see Chapter 4.2), a de facto bonus-malus system is created that steers customer demand toward more environmentally friendly vehicles.

This dual approach also provides scope for reducing purchase premiums without jeopardising the pace of fleet transformation. Eventually, the decisive factor for the financial attractiveness of electric cars is the price difference between electric, environmentally more compatible drives and emission-intensive combustion engines. Consequently, with higher taxation of climate-damaging vehicles, subsidies for more climate-friendly alternatives can decrease - without reducing the relative incentive effect.

Permanent subsidies for electric cars – funded by all taxpayers and through the Climate and Transformation Fund, which is also partly funded by general budgetary resources - are neither socially nor environmentally acceptable in terms of a successful transformation of transport. The main beneficiaries would be high-income households, which buy new cars comparatively frequently, while all taxpayers would pay for the purchase grants. In addition, a net subsidisation of vehicle purchases would further manifest the dominance of motorised private transport and thus run counter to the mobility transition, i.e., the shift toward more sustainable forms of mobility.

As electrification becomes more widespread, purchase premiums for new cars should be phased out completely. Purchase premiums for older used electric cars could be a possible means of facilitating the switch to zero-emission vehicles for hardship cases, i.e., people who are demonstrably dependent on a car - for example, as part of a social transformation fund. The establishment of such funds at national level is also part of the European Commission's *Fit for 55* proposal for a socially just transition.

In the meantime, the federal government has decided to gradually reduce the purchase grants for fully electric passenger cars and to abolish them completely by the end of 2024. However, there is no complementary malus instrument, as there is still no initiative for a CO_2-based vehicle taxation based on the first registration.

5.2.2 Efficiency incentives also for (pure) electric vehicles

The reform of the purchase grants for plug-in hybrids, which is intended to ensure actual climate benefits in real-world use, is to be welcomed. Empirical data show that this is by no means guaranteed for now. The actual climate protection effect of PHEVs is determined in particular by their real-world fuel consumption and CO_2 emissions. When revising the funding conditions for PHEVs, this should therefore be taken into account in addition to the criteria of proven electric driving share and minimum electric range mentioned in the coalition agreement; even with the same electric driving share, consumption and emission values can vary considerably depending on vehicle size and configuration. In addition, it is appropriate to generally phase down subsidies for PHEVs more quickly than for battery electric passenger cars, since PHEVs are also difficult to reconcile with the goal of climate neutrality. If it proves impossible to link subsidies to real electric mileage or real-world CO_2 emissions in the short term, it would be preferable to phase out plug-in hybrid subsidies completely instead of continuing them without strict conditions.

In January 2023, the purchase subsidies for plug-in hybrids were entirely abolished.

However, linking the funding level to environmental criteria should not be limited to plug-in hybrids. In the future, the subsidy level for battery electric vehicles should also not be linked solely to the vehicle price. The current system does not provide any direct financial incentives for energy-efficient electric cars, nor for electric cars with the widest possible range. The main criterion for differentiation here would be the specific electricity consumption per kilometre in order to provide greater support for energy and resource-efficient vehicles than for high-consumption passenger cars. Furthermore, the electric range could be a possible supplementary criterion. Vehicles with a higher electric range tend to have a greater annual mileage and thus substitute for more "combustion engine kilometres," which means that a higher premium would be justified by a greater environmental return. At the same time, the electric range generally increases the necessary battery capacity and thus the purchase price premium compared to an alternative with an internal combustion engine, which the purchase premium is intended to help overcome. Thus, the combination of the two criteria would benefit those vehicles that are still economical with a good electric range or that still have a range suitable for everyday use despite low energy consumption. The energy consumption criterion alone would possibly over-subsidise the typical second vehicle with low mileage; the range criterion alone would be even more critical - from an environmental and social perspective - because the subsidy would then in fact be aimed too much at large and energy-hungry cars. A possible "range bonus" should, however, be capped at a sensible maximum, since the additional benefit decreases significantly at very high electric ranges.

In order to make it easier for families with several children and people with physical disabilities to purchase a - necessarily - larger and correspondingly more energy-hungry electric vehicle, special regulations are conceivable, as already discussed in Section 4.2.3 above.

Even after the most recent reforms, purchase grants are still not aligned consistently with the specific environmental performance (e.g., energy efficiency) of the subsidised vehicles.

6 Company car taxation: Eliminate socially unjust tax privilege, introduce environmental incentives

6.1 Initial situation

6.1.1 Instrument description

The so-called company car taxation comprises the tax regulations regarding the acquisition and operation of company-owned vehicles that are also available for private use. Company cars include those used partly for business and partly for private purposes by self-employed persons as well as those vehicles that are provided to employees as part of their salary. Some of the tax regulations are also relevant for company-owned cars without private use. In a growing number of European countries, the tax treatment of company cars is designed according to environmental considerations, so that employers and employees have financial incentives to choose climate-friendly vehicles and limit the consumption of fossil fuels. Depending on how it is designed, the tax treatment of company cars can therefore either set in motion or block the two levers for transformation focused on in this paper.

In order to strengthen the incentive for employers to purchase more environmentally friendly company cars, the deductibility of purchase and fuel costs for income and corporate profit taxation is differentiated according to vehicle characteristics in some countries. The starting point is often the type of drive and fuel as well as the specific CO_2 emissions of a vehicle. Alternatively, business investment behaviour can be influenced by increasing or shortening the depreciation period for purchased cars or by allowing degressive (instead of linear) depreciation.

The determination of the benefit-in-kind of private use of a company car by self-employed persons and employees is of particular relevance for the tax incentive effects – both regarding the acquisition and the use of these cars. The benefit-in-kind is generally subject to income tax and social security contributions. In most European countries, a lump sum assessment of the benefit-in-kind is permitted for reasons of tax simplification. Depending on its specific design, it typically sets financial incentives with regard to certain vehicle characteristics (for example, price, age, equipment, drive, engine performance) as well as usage (for example, mileage, consumption). In some countries, the benefit-in-kind assessment is differentiated according to drive and/or CO_2 emissions with the explicit aim of achieving an environmental incentive effect.

6.1.2 Status quo

In Germany, company car taxation is not systematically structured according to environmental criteria. For example, the acquisition and operating costs for passenger cars are fully deductible, which is in line with the objective net principle of German income tax law. Consequently, under current tax law the acquisition costs of a luxury class car with high CO_2 emissions are just as fully deductible as those of an efficient, fully electric compact car. So far, the legislator has not provided

for any special climate protection-oriented regulations regarding the depreciation period for commercial passenger cars.

The taxable benefit-in-kind from the private use of a company car is linked to the price of the vehicle. For each calendar month, a flat rate of one percent of the gross list price at the time of first registration is applied. For plug-in hybrid cars with a minimum electric range of currently 60 kilometres, only half of the list price is applied. In the case of purely battery electric vehicles below the gross list price threshold of 60,000 euros, only a quarter of the list price is currently taxed, and for cars above this price threshold half of the list price is taxed. As an alternative to the flat-rate benefit-in-kind assessment, the benefit-in-kind can also be determined individually by means of a detailed logbook. Here, the individual value of car use is based on a portion of the actual total costs of ownership of the vehicle in accordance with the documented private use share.

Several studies have shown that the current standard taxation ("one percent flat rate") acts like a tax concession, because it systematically underestimates the actual pecuniary advantage of private company car use, especially in the case of new or young used passenger cars. As a result, even in the case of average private use, there are significant financial advantages compared to private car purchase (with higher cash wages). The status quo thus creates financial incentives for the commercial acquisition of brand new company cars, which are usually more expensive and often larger and heavier than in the case of private car acquisition. Not least because of the tax environment, which favours new cars, company cars substantially shape the car fleet in Germany in the long term: they are typically kept for only a few years for commercial purposes and then transferred to private owners via the used car market.

In conjunction with full fuel cost takeover by the employer, the flat-rate taxation enables private driving at a flat rate. This runs counter to existing political efforts to reduce the overall mileage and GHG emissions of car traffic.

The legislature forgoes government revenue of at least 3 billion euros through the low tax valuation of private use, and the trend is upward. The current regulation is also socially unjust, because the tax privilege is concentrated on a distinct population group. Thus, about half of the subsidy volume benefits the 20 percent of households with the highest income.

6.1.3 Coalition agreement

The coalition agreement envisages a gradual reduction from 2023 in the subsidies for electric cars, which are currently set to run until 2030: plug-in hybrids, which are currently popular as company cars, should lose their special tax status compared with internal combustion vehicles unless they can prove in individual cases that they are used predominantly, i.e. more than 50 percent, in purely electric driving mode. In addition, the minimum electric range will be increased to 80 kilometres earlier than originally planned, namely as early as August 2023. Fully electric passenger cars will again be taxed at a uniform rate of half a percent of the list price from 2025.

With regard to the taxation of combustion engine company cars, the coalition agreement does not contain any explicit statements. However, the general wording on subsidy reduction ("reduce superfluous, ineffective and environmentally and climate damaging subsidies and expenditures")

is a possible starting point for a reform of the tax treatment of internal combustion company cars. To do so, the coalition would have to classify the current tax regulation accordingly.

In addition, the coalition agreement provides for so-called super depreciations for newly acquired assets serving climate protection for the years 2022 and 2023. *However, the coalition decided not to enact them before 2024 due to the economic situation.* It can be assumed that the acquisition of all-electric company cars will fall under this subsidy. It remains unclear whether the planned super depreciation will be designed as a real bonus (depreciation greater than 100 percent) for climate-friendly assets or merely enable faster depreciation. Meanwhile, the agreement between the coalition parties does not provide for a comprehensive structuring of the total depreciation amount for company cars according to environmental criteria, as has been decided in Belgium, for example.

6.2 Reform proposal

6.2.1 Abolishment of the tax privilege for company cars

The adjustments to company car taxation envisaged in the coalition agreement are a step in the right direction, but they also have fundamental deficits with regard to the criteria mentioned above.

From an environmental and, in particular, climate protection perspective, the planned linking of the tax benefit for plug-in hybrid company cars to a minimum share of electric driving and a higher minimum electric range is generally expedient. Many PHEVs currently in widespread use as company cars do not achieve the range requirement envisaged from August 2023, which means that the additional privilege would be restricted to a limited range of models for the time being. Against the backdrop of the low electric driving share of PHEV company cars, the adjustment of the subsidy conditions for these vehicles represents an important and overdue change of course. As the average range in electric driving mode increases and the charging infrastructure is expanded, the electric driving share required for tax subsidies should also increase in subsequent years. Moreover, the most effective way to ensure a positive climate protection effect for PHEVs would be to link the tax benefit to low real fuel consumption. The reduced subsidisation of all-electric company cars from 2025 onwards is also to be supported in order to curb distributionally regressive windfall gains. Yet, the proposed reform does not address the fact that the flat-rate taxation of private use is already tantamount to a financial advantage – also in the case of purely combustion-powered company cars.

The environmental, economic and social problems that the tax privilege generally entails have not yet been sincerely tackled. However, the climate protection targets make it necessary to implement a tax-neutral regulation in the short term, especially for pure combustion vehicles.

A structural reform should meet several requirements. Of overriding importance is to treat the private use of a company car as tax-neutral as possible compared to the use of a car purchased privately with a higher cash salary. The easiest way to achieve this would be to abolish the flat-

rate assessment of the benefit-in-kind and make it mandatory to document the private share of the overall mileage using an (electronic) driver's logbook. It would have to be ensured that the assessment rates used correspond as closely as possible to the actual value of use. However, this would require a significantly higher level of bureaucracy for tax authorities and taxpayers alike. If the option of flat-rate assessment is to be retained, but without systematically underestimating the value in use, the (flat-rate) assessment level must increase overall, across all drivetrain types.

A better alignment to the extent of private use can also be achieved without the time-consuming keeping of a driver's logbook: A fixed proportion of the total mileage of the company car could be attributed to private use and taxed. This keeps the documentation effort low, since only the mileage at the beginning and end of the accounting period would have to be noted. At the same time, it rules out the use of a company car at a flat rate.

Furthermore, any reform must ensure that the tax base for company cars reflects the financial incentives that apply to private purchases. In addition to government subsidy programmes for electric cars, these also include taxes on vehicle acquisition or registration (and ownership). This is achieved, for example, by adding both government purchase premiums and vehicle-related taxes to the assessment base for company car taxation, while the flat-rate assessment is uniform for all types of drive (for example, 1 percent of the new assessment base, plus a usage component). The effective fiscal incentives for purchasing climate-friendly company cars would then largely correspond to those for private car purchases. An appropriate assessment of the benefit-in-kind in the sense of an approximation to "tax neutrality" therefore does not in itself pursue any (environmental) objective that goes beyond those existing in the case of private cars.

In the event that there is no structural reform of the general vehicle taxation, and it is not significantly tightened up in terms of its environmental incentive effect, a fiscal steering towards more climate-friendly vehicles should be maintained at least at the company car level by differentiating the (flat) tax assessment rates. Compared with the current system (0.25/0.5/1 percent of the list price), the key factor is that the assessment rates increase overall. Calculations show that pure combustion engine cars and plug-in hybrids with low electric mileage should be assessed at around 2 percent of the list price per month in order to approach an effective tax burden comparable to the first-best solution outlined above. Plug-in hybrids with an electric driving range above 50 percent should be assessed at around 1.5 percent of the list price.

6.2.2 Special depreciation only for pure electric vehicles

Special depreciation allowances for climate-friendly capital goods generate a steering effect that incurs still low cost for the state under current financing conditions. A special depreciation allowance in the year of purchase, for example amounting to 50 percent of the acquisition costs, can therefore be a fiscally efficient solution to accelerate the switch to purely battery electric vehicles in corporate fleets. Solutions are also conceivable that shorten the depreciation period for climate-compatible vehicles for a transitional period but retain the existing linear character of the "deduction for wear and tear" (AfA).

Extending or limiting the general deductibility of vehicle costs depending on the climate impact or other vehicle characteristics, and thus deviating from the objective net principle of German income

tax law, could be legally justified on the basis of non-fiscal steering objectives. However, an additional bonus - through depreciation of more than 100 percent - for electric vehicles in the submarket of corporate cars does not appear to be very expedient from an economic point of view. To the extent that effective steering taxes for *all* passenger cars (see Chapter 4.2) prove to be politically unfeasible, a limitation of deductibility (malus) could be an alternative to impose visible and clear price signals on climate-damaging combustion vehicles at least for commercial purchases. In terms of social considerations, the latter could even appear more attractive, as private households would only be indirectly affected. Ultimately, however, fiscal policy-induced price signals that apply to only part of the vehicle market must be considered inefficient compared with overarching solutions. A powerful and visible steering tax for *all* newly registered passenger cars therefore seems superior.

7 Concept for a decade of transport transformation

Transport policy in Germany and Europe is facing enormous challenges, of which climate policy is the main focus here. In order to master these challenges, a discussion is needed on what a sustainable transport system for Germany as a whole looks like and how the necessary political instruments are to be designed so that a consistent overall strategy can be developed on this basis. There is now widespread agreement on many aspects of the overall target to be achieved. For example, the climate policy targets and sustainable transport will only be achievable if the vehicle fleet is quickly electrified and alternatives to private motorised transport are strengthened. However, there is far less consensus on the right instruments.

7.1 Consistent and comprehensive concept instead of loose collection of instruments

This paper is intended to stimulate a discussion - which is urgently needed - on what such a mix of instruments might look like and which aspects and developments need to be taken into account when designing and dynamically adapting it. The above deliberations outline what Agora Verkehrswende considers to be the essential fiscal policy starting points for putting passenger transport on a transformation path that is in line with the goals outlined at the beginning. However, they do not in themselves constitute a promising, comprehensive strategy. On the one hand, a balanced policy mix requires not only fiscal but also regulatory, informational and infrastructural instruments. Second, the design of individual fiscal instruments does not take place in a vacuum. Their suitability and appropriate design always results - in addition to normative judgments - from their embedding in the climate and transport policy instrument portfolio. This applies both to interactions within the fiscal architecture and to the interplay with the broader - national and European - instrumental framework. This interplay can bring synergies and lead to counterproductive frictions. As an example for the first case, information measures, such as a transparent car label, can make price signals more visible and thus more effective. Another example of instrumental interdependence with outstanding significance for the technological transformation of vehicle drivetrains is the interaction of European CO_2 fleet standards and national fiscal instruments that target the electrification and efficiency improvement of passenger car fleets (see box p. 40).

7.2 Fitness check: instrument in, instrument out

Particularly in the field of fiscal instruments, the interactions affect not only the effectiveness of climate policy and the economic efficiency of the instrument bundle, but also their - actual and perceived - burdening effect on citizens and thus their acceptance. If they appear as constantly new burdens, this can undermine support for the transformation of transport. Moreover, an excessive thicket of fiscal incentive instruments can reduce their effectiveness by overburdening

citizens and companies with the complexity of the fiscal architecture and causing them to no longer react appropriately to the individual price signals - in the sense of the intended steering effect. Therefore, the general rule for the instrument mix should be: as lean as possible, as differentiated as necessary. In particular, when new fiscal instruments are introduced, it should be examined whether they -make other instruments dispensable and can be abolished. If necessary, parallel adjustments should be made to the existing set of instruments. This applies, for example, to the annual vehicle tax with the timing of the introduction of a mileage-based car toll.

7.3 Optimise leverage

In addition to the aforementioned burdening effect on citizens and acceptance, the yardstick for such a fitness check of the instruments should be how effectively and efficiently the respective fiscal instruments and their design variants serve the levers of the transport transformation (see Chapter 1.2). For example, the annual vehicle tax is a relatively ineffective instrument in terms of influencing activity levels and fleet modernisation: on the one hand, as shown above, owning a passenger car in itself generates only small use-independent external costs. Therefore, it seems appropriate to strengthen usage-based cost charging (through a mileage-based car toll), especially since this can generate a revenue stream that is at least as reliable. On the other hand, with regard to the car purchase decision, a comparatively small annual price signal is more likely to be lost in the decision-making process than a much stronger fiscal impulse at the time of purchase or initial registration.

The criterion of efficiency, especially from a political perspective, also includes the economical use of scarce public resources. If the same fiscal incentive effect can be achieved with less public funding (and without socially unbalanced burdens), such an approach is often preferable. An example of this is the fleet transformation to electric drives, which is more efficiently orchestrated with a de facto bonus-malus system of first registration-oriented vehicle taxation and reformed, degressive purchase premiums than with a pure subsidy policy. After all, the decisive factor for the financial attractiveness of electric cars when purchasing a vehicle is not the absolute level of subsidies, but the price difference between electric, environmentally more compatible drives and emission-intensive internal combustion engines. Since new cars in general (and heavily tax-subsidised electric company cars) are primarily used by high-income households, but the subsidies are financed by all taxpayers, such a shift in fiscal incentives toward a financing malus component is also socially acceptable.

7.4 Anticipatory transport policy: Thinking about the transformation dynamics at an early stage

A fitness check of the existing instrument portfolio should, however, not only be carried out ad hoc at the time of implementing new instruments or fundamentally overhauling existing ones. Rather, it is important to anticipate at an early stage the technological (and also societal) developments to be expected in the light of the vision of sustainable transport. What is needed is a forward-looking and dynamic transport policy: It must initiate the necessary developments for a transformation with its mix of instruments today, but at the same time it must also adapt to them in the course of these developments. This is very clearly illustrated by the example of the necessary and already emerging technological transformation in the passenger car market in the direction of electric drives. Today's instruments for influencing activity and financing infrastructure (especially energy and vehicle taxes) are based primarily on the combustion of fossil fuels. This tax focus on fossil technologies supports electrification, although the early market ramp-up of electromobility is also significantly stimulated by generous subsidies. As the stimulated development becomes more successful, this approach becomes less and less sustainable either environmentally or fiscally. Electric road transport must also contribute to infrastructure financing and be regulated in terms of its activity level and efficiency: For example, through a mileage-based car toll for all drive systems, through degressive bonuses for electric cars that are graduated according to energy efficiency, and through a structural reform of vehicle taxation with a strong price signal that applies to the first registration and which refinances the temporary premiums for electric cars and also sets efficiency incentives for them in the future.

A forward-looking transport policy is already planning today to adapt its instruments to its future tasks and framework conditions; it is not just driving by sight. Or, to put it another way, transport policy must come before the transformation and not lag behind it. The overall concept for environmentally, fiscally and socially sustainable transport, which the new German government must develop very quickly, should be viable for at least the next ten years. This does not mean that, in the light of emerging developments that were not foreseen in this way, there may not be a need for readjustment. But the supporting elements of the fiscal architecture that is now to be designed should already offer reliable, stable statics for the transformation of transport beyond the current decade.

7.5 Work on a "fair transport transformation charter" must begin now

Finally, the aim of this discussion paper should be repeated once again. First, it is intended to point to the urgency of designing a fiscal framework for the transformation of the transport sector that is sustainable in the long term. Work on a balanced (fiscal) policy mix must begin without delay. Right from the start, the creation of an overall concept must take into account the mutual instrumental interactions and the adjustment requirements that are already foreseeable today in the course of the transformation process. With a poorly coordinated juxtaposition of different (fiscal) instruments and a transport and tax policy that is reacting in a rather ad hoc manner, the

challenges of transport policy will neither be mastered effectively nor in an efficient and socially balanced way. The “Charta der Fairkehrswende” ("Charter for a Fair Transport Transformation") proposed by Agora Verkehrswende could provide the framework for such a forward-looking overall concept, which would naturally include other instruments in addition to fiscal ones. It can be used to design a future-proof strategy that achieves the climate goals and thus does justice to future generations, keeps the overall costs and thus the burden on everyone low, and fairly distributes the remaining costs and opportunities of the upcoming transformation.

Second, it aims to contribute to the discussion on the specific design of the fiscal instrument portfolio. In view of the mutual instrumental interactions described above and the diverging normative assessments, there is often no single correct design for the respective fiscal instruments. If an instrument cannot be implemented or cannot be implemented in the most effective way, the design of the remaining instrument mix must usually also be adapted in order to achieve the "second best" overall result. To stay in the transportation picture: If a "proper" instrumental exit is missed or is blocked (for political reasons), then the route to the destination must be adjusted. Therefore, this discussion paper largely avoids quantified detailed proposals, although recommendations are made as to the direction in which price signals should evolve. This exact design is now to be worked out by the new federal government.

Interplay with European CO_2 standards

Presumably the most effective instrument in recent years for reducing specific emissions from passenger cars and driving electrification forward has been the European CO_2 fleet standards. These regulate the average CO_2 emissions of all new passenger cars sold in Europe. The overall European target for passenger car CO_2 emissions is broken down to the individual vehicle manufacturers, who are responsible for achieving the target and must pay financial penalties if they fail to meet it. There are basically two ways for manufacturers to meet their targets. First, they can reduce the CO_2 emissions of their internal combustion engine vehicles. Second, they can switch to electric, locally emission-free drive systems.

In order to assess the effectiveness of national fiscal instruments that focus on fleet transformation, it is imperative to take into account the interplay with CO_2 fleet standards. A fundamental distinction must be made between two cases: the case where the limits are "binding" in the economic sense, i.e., manufacturers do not go beyond their European reduction requirements due to the costs associated with reducing emissions; and the case where there is "overachievement" of the European CO_2 fleet targets so that they are no longer "binding," for example due to ambitious national measures in several countries while the European CO_2 standards are rather weak at the same time.

In the latter case, it holds true that additional national instruments that successfully reduce the emissions of the national passenger car fleet are also reflected in an emissions reduction in a pan-European perspective. The situation becomes more complicated in the case of continuing binding CO_2 standards. In this case, the concrete design of national fiscal

instruments is of decisive importance with regard to the (European) net effect on passenger car emissions. A policy that relies primarily on subsidies for electric passenger cars may ultimately even result in higher European emissions: The locally (and thus according to fleet regulation) emission-free electric cars allow manufacturers to achieve higher CO_2 emission levels from their internal combustion engine passenger cars, since the fleetwide CO_2 limit is defined as an average value across all vehicles. At the same time, the passenger car fleet is expected to grow, partly due to higher sales of subsidised electric cars and partly due to cheaper internal combustion cars. The latter is because manufacturers will have to install fewer fuel-saving technologies in internal combustion vehicles and will have less pressure to reduce sales of emission-intensive internal combustion vehicles by means of a corresponding pricing policy. As the number of vehicles increases, total mileage can also be expected to rise, albeit not in proportion to the size of the fleet. Higher total mileage with widely the same average emissions per vehicle will ultimately result in higher total European emissions - even if emissions may decrease in the country granting the subsidies. If, alternatively, temporary purchase premiums for electric cars are refinanced through higher taxes on - in particular emission-intensive - combustion vehicles (for example, through a bonus-malus system), such a potentially counterproductive effect does not occur. Nevertheless, if fleet CO_2 standards continue to be binding, there will still be a so-called waterbed effect in this case: More electric and/or low-emission passenger cars as a result of fiscal measures in one EU member state enable higher average emissions in other countries.

However, it is clearly not enough to dismiss national fiscal instruments for fleet transformation as useless and ineffective because of a possible waterbed effect. There are very good reasons to use them in parallel with existing CO_2 standards. First, due to their structure, European fleet values are generally not binding throughout. To date, CO_2 target values have been set at intervals of around five years (2015, 2021, 2025, 2030); in the intermediate years, the limit value of the previous target year remains valid. Accordingly, passenger car manufacturers align their production and marketing strategies to reduce their fleet emissions toward the respective target year. Thus, the binding effect is increasingly lost in the intermediate years. Both in the coming years and in the years 2026 to 2029, when the 2025 target values will continue to apply, considerable emission reduction potential could be wasted. Whereas the EU fleet standards tend to encourage erratically stepwise improvements, a national bonus-malus scheme can provide continuous incentives for efficiency improvements. This will result in a more even reduction trajectory, with lower specific CO_2 emission values for new registrations in the intermediate years, and thus also an overall more efficient existing fleet in 2030, as well as the associated lower (cumulative) emissions.

In addition, European fleet standards and complementary fiscal instruments represent a good combination of reliability and more supply-oriented regulation on the one hand, and more flexible and situation-dependent incentive structures depending on the other. The fleet CO_2 standards provide vehicle manufacturers with longer-term orientation and planning certainty. Portfolio and production planning can be aligned with the Europe-wide CO_2 standards. At the same time, from a climate policy perspective, they form a kind of safety net that sets –

preferably ambitious – minimum targets for fleet transformation. In addition to the aforementioned intermediate year effect, parallel fiscal instruments can pay off in terms of climate policy in particular if the pace of transformation that can actually be achieved turns out to be higher than the pace assumed when limit values were set. Whereas fleet standards alone make it unlikely that they will be "overachieved," even if this would be possible at comparatively low cost, fiscal instruments can incentivise the leveraging of this additional potential. Ultimately, fleet CO_2 standards and parallel fiscal incentive instruments create a combined "price-quantity-control" that promises better results than one class of instruments alone in an uncertain technological environment.

Yet, the European fleet standards will only provide stable guidance for manufacturers - and also for suppliers and providers of charging infrastructure - if they are sufficiently ambitious. Otherwise, the necessary pace of transformation would remain difficult to predict for the industry, as it would result from the sum of a large number of largely uncoordinated national and regional policy decisions; these would be necessary to compensate for the lack of CO_2 reduction pressure from the fleet standards and thus to avoid missing national and European climate targets. In the next round of European negotiations, the German government should therefore strongly advocate, also in the interests of industry, significantly more ambitious and more continuous (e.g., yearly) fleet CO_2 targets. *The European agreement achieved in the autumn of 2022 to raise the reduction requirements from the CO_2 standards to 55 percent by 2030 (compared to 2021 levels) does not live up to this goal.* In addition, the fleet standards, as well as the national fiscal framework, should already be geared to the future of a transforming passenger car market, for example by also addressing the consumption of electric vehicles in the future.

Finally, distributional considerations within the EU may also argue for the use of national fiscal instruments. Through additional fiscal incentives, a faster pace of transformation is achieved in richer EU member states than in less prosperous countries. In consequence, the former finance a greater share of the learning curve leading to falling costs for zero-emission powertrains, thereby relieving the burden on citizens in poorer member states. In addition to addressing immediate equity issues, this can also be interesting from a political economy perspective, as it facilitates agreement on ambitious climate policies.

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