Ministry of Infrastructure
and Water Management

Energy saving in transport through avoid/shift policy measures

An exploratory study on dealing with scarcity

Netherlands Institute for Transport Policy Analysis | KiM

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Summary

In general, there are various reasons to save energy in the transport sector. For example, reducing energy demand helps prevent certain energy sources from becoming scarce during the energy transition (from fossil fuels to renewable energy). Energy scarcity can lead to price rises, and price rises come with risks. Consider the affordability of transport, which is already a problem for some groups in society. Furthermore, price rises could result in public resistance to climate targets and lead to greater pressure on governments to lower ambition. However, governments can mitigate undesirable effects, such as lower affordability, by focusing specifically on energy demand reduction.

Strategies for saving energy include improve (efficiency improvements, such as energy-efficient vehicles), avoid (reducing demand for transport, for example by working from home) and shift (choosing a different mode of transport, for example cycling instead of driving). However, with the avoid and shift strategies, it is not easy to achieve substantial energy savings.

Changes in the transport energy mix may alter the arguments for energy savings during the energy transition. The demand for (renewable) electricity from the transport sector is expected to rise sharply, while other sectors of the economy are also increasingly reliant on this energy source. Competition between these sectors is therefore intensifying. Electric mobility may face both grid congestion and electricity production shortages. Rising use of e-fuels by the aviation and shipping sectors is driving the demand for electricity from mobility even further.

Whether sufficient biofuels and e-fuels will be available in the future depends on whether the necessary production capacity – in the Netherlands and elsewhere – is scaled up and whether the required biofeedstock and hydrogen are available in sufficient quantities at reasonable costs. Scaling up takes time and requires significant investment from market players.

These are arguments for limiting the use of renewable fuels as much as possible. In the case of e-fuels, which are produced using electricity, there is the additional argument that their production consumes multiple times more energy than the fuel itself yields.

Avoid and shift policies can complement improve policies. The actual energy savings achieved through this depend on how the vehicle fleet develops. If road traffic becomes increasingly electric, then avoid and shift measures will contribute less to energy demand reduction in absolute terms (PJ). This is because electrification itself already yields significant energy efficiency gains. Consequently, there is less energy left to save. The opposite effect occurs as the maritime and aviation sector start using more e-fuels. In that case, energy savings achieved through avoid and shift measures will actually yield greater returns, because producing e-fuels consumes so much energy.

From the perspective of governments appears that achieving substantial energy savings through avoid and shift policy measures is no easy task. While pricing mobility to reduce demand is an option, significant pricing is required to achieve major results. In any case, substantial energy savings are less feasible through softer instruments, such as voluntary agreements and subsidies. At the same time, regulatory policies aimed at limiting mobility (volume reduction), such as a mandatory strict parking policy for employers, seem practically unfeasible and disproportionate.

One key consideration when designing potential measures is that they should not make mobility less affordable (for certain groups) rather than improving affordability. Public support for implementing avoid and shift measures in the event of an energy shortage lies primarily with incentive-based measures, rather than those that make driving more expensive.

This publication should be viewed as a first exploratory study in which the Netherlands Institute for Transport Policy Anlaysis (KiM) seeks to gain an understanding of measures in the field of avoid and shift policy measures and their potential effects, not only on energy savings but also more broadly. We note that the focus is on long-term energy savings rather than measures in case of a short term crisis. Although the focus is on the transport sector in The Netherlands, the study may be relevant to other countries as well.

The detailed examples are generally not policy options currently being considered by the Dutch government for long-term energy savings – with the exception of permitting the Super EcoCombi and the distance-based air travel tax – though some pricing options build on earlier policy intentions. We believe that further exploration of the possibilities and the scope for action in this area would be useful. An insight growing in relevance is that the importance of energy saving has also increased with the perspective of resilience to geopolitical developments and with a view to energy security.

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1 Introduction

Introduction

The Netherlands' policy aimed at decarbonising the transport sector focuses largely on electrification, particularly of road transport, as well as at increasing the use of renewable fuels, such as biofuels and e-fuels, particularly in aviation and shipping. To achieve this, it is necessary to produce and distribute renewable energy in ever-increasing volumes. To prevent the various renewable energy carriers for mobility from becoming scarce, energy saving is also an important strategy. Furthermore, under European policy, the Netherlands is legally obliged to save energy.

In general, scarcity will lead to an increase in energy prices. This need not necessarily be a problem in itself. After all, as energy prices rise, energy demand will fall, in accordance with the market mechanism of supply and demand. However, energy price rises caused by scarcity also entail risks. This is linked to the affordability of mobility, which is already a problem for some groups in society. Moreover, price rises could lead to public resistance to climate policy and increase pressure on the government to weaken this. Instead of achieving energy savings through market mechanisms (rising prices leading to reduced demand), the government can use policy to specifically target energy savings, thereby minimising the aforementioned negative effects – such as affordability issues – as much as possible.

There are various ways in which governments can stimulate energy savings. For instance, it can focus its policy on fuel-efficient vehicles, encourage people to avoid certain forms of transport – such as working from home – or incentivise people to switch to more energy-efficient modes of transport, such as public transport instead of the car.

Scope of this publication

In this publication, we first examine the energy demand of the transport sector in the Netherlandse, both now and in the future, broken down by different energy sources (primarily electricity and fuels). We also look at the reasons for saving energy and how these may vary depending on the energy source. We then focus on avoid and shift as specific strategies for energy demand reduction in transport.

We are doing this based on the view that there is a knowledge gap to be filled regarding these two strategies. For example, a great deal is already known about energy savings through improve. Think of electrification and hybridisation (vehicles that recover their braking energy). These areas also already receive a relatively high level of policy attention, for example through CO_2 standards for vehicles. Much less is known about energy savings through avoid and shift, especially to what extent concrete policy options can result in savings.

To get a sense of the potential savings that can be achieved through avoid and shift strategies, and the role the government plays in this, we will examine a few hypothetical policy measures within the scope of both strategies. These are examples taken from the literature and are generally not measures that the government is actually considering.

For these examples, we will examine the order of magnitude of energy savings that can be achieved and what other effects they may lead to. We have also presented some of the measures to a group of respondents to gain insight into the level of public support for such measures.

Selection criteria for example policy measures

The minimum requirement for our examples is that each one must be able to save at least approximately 0.5% of energy in the subsector they are aimed at (for example, domestic freight transport). They must also, *in theory*, be feasible without encountering legal objections from the outset, for example because they conflict with the free movement of persons and goods in Europe. Or because they conflict with the requirement that a measure must be proportional, which means that the means must not be too restrictive for the chosen end. In our search for measures in the literature, we also came across an 'annual quota for the number of flights per person'. Motivated by energy saving this measure appears to have no legal chance of success from the outset. We have not analysed this type of unfeasible measure further in terms of its potential saving effect, but it can be included in a discussion on the 'proportionality' of measures.

A broader assessment is required

The question of whether it makes sense to actually implement the measures we have outlined as examples falls outside the scope of our study. If governments are to be able to make informed decisions on this matter, a comprehensive societal cost-benefit analysis of the measures is required. We do not provide such an analysis in this study. Measures aimed at more efficient vehicles, another important route to energy savings, also fall outside the scope of this study, although some of the example measures do have some overlap with this area.

A more detailed analysis and methodology of the potential effects of the example measures can be found in the background report 'Energy saving in transport through avoid/shift measures: an exploratoratory study on managing scarcity'.

2 Why save energy in transport?

Why save energy in transport?

Lower CO_2 emissions, cost savings and reduced dependence on energy imports are some of the reasons for saving energy in the transport sector. Energy saving also reduces the likelihood that energy for transport will become scarce, and therefore more expensive.

Arguments

One of the arguments for energy demand reduction is that the Netherlands is legally obliged to do so under the European Energy Efficiency Directive (EED). More substantive arguments for energy saving that are often cited include:

- Energy savings lead to CO_2 reduction (if the energy sources are fossil fuels) and thereby lower the cumulative emissions in the coming decades, thereby increasing chances to meeting climate targets.
- The challenge of becoming climate-neutral is less daunting because fewer investments are required in energy production, large-scale transmission and detailed distribution (affordability of the energy system).
- Energy savings reduce the risk of future scarcity (and consequently rising prices) of energy sources, particularly hydrogen (and e-fuels) and biofuels. Such scarcity could make achieving climate neutrality substantially more expensive.
- Energy savings help reduce countries' dependence on other countries, for example when it comes to importing raw materials and fuels (security of supply).
- Energy saving leads to lower energy bills for citizens and businesses (affordability).
- Energy saving means less space is needed for raw materials and the production of energy sources, as there is then less demand for them.

Arguments for energy saving in the mobility sector vary by energy carrier

The general arguments that apply to energy saving can be supplemented with arguments specific to mobility.

In the case of fuels (e-fuels, biofuels), the potentially limited future supply is one of the arguments for reducing their use. Scaling up production (including securing a sufficient supply of raw materials) takes time and requires significant investment from market players. These are arguments for limiting the use of renewable fuels as much as possible. In the case of e-fuels, which are produced from electricity, there is the additional argument that their production consumes much more energy than they yield. The production of e-fuels is therefore not very energy-efficient.

In the Netherlands, electric mobility is likely to face issues with both grid congestion and insufficient electricity generation capacity until at least 2035. In both cases, limiting peak demand for electricity will help. In the longer term, electric vehicles in the Netherlands are expected to account for a substantial share of total electricity demand. Competition with other sectors of the economy, which are also using (increasing amounts of) electricity, will therefore become ever greater. Should e-fuels come to be produced in the Netherlands in the future, electricity demand – which is indirectly attributable to the mobility sector – even further.

3 Transport energy consumption in the Netherlands

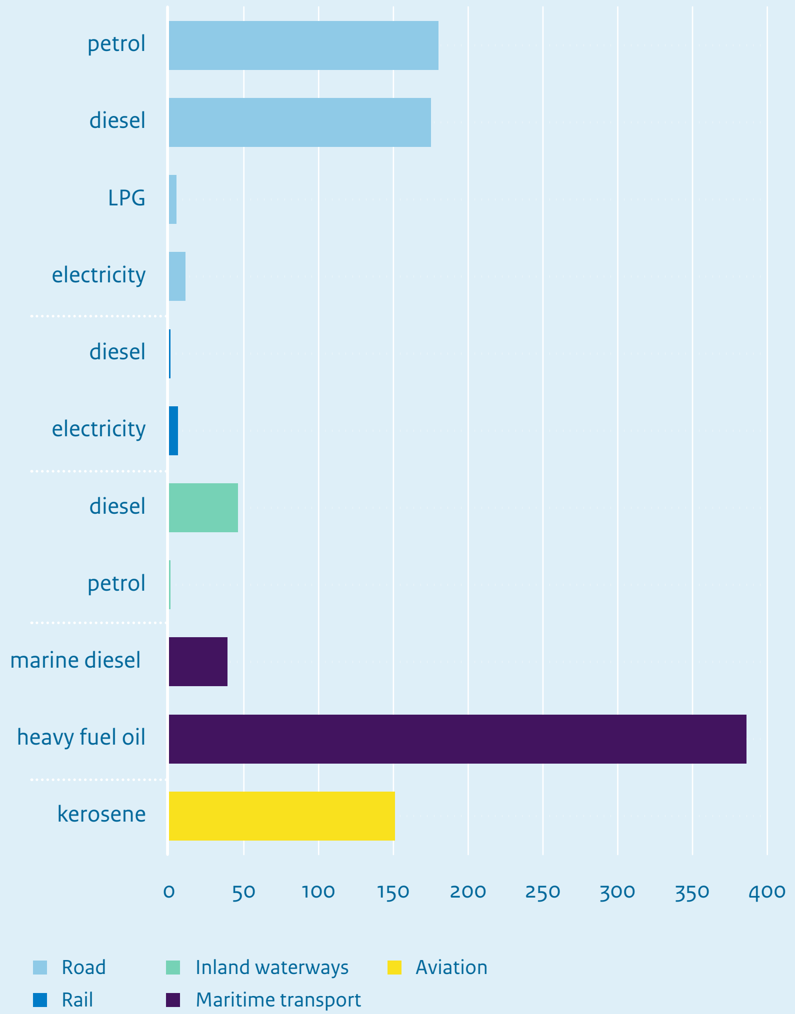
Energy consumption of the transport sector in the Netherlands

As the energy transition progresses, the transport sector requires an increasing amount of renewable energy carriers. Demand for these is also rising in other sectors.

Current energy demand

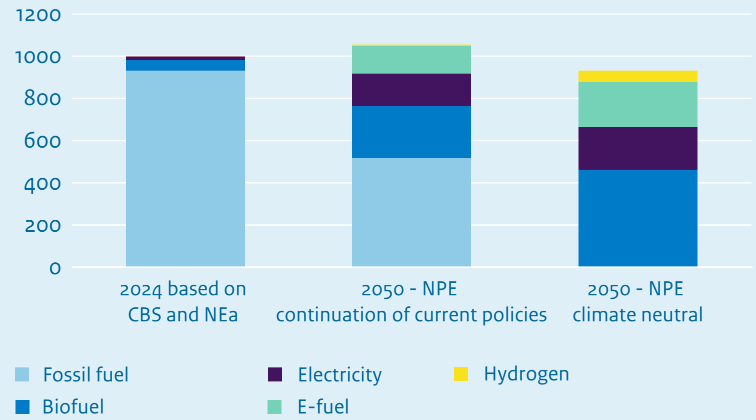
Energy demand for transport in the Netherlands amounted to over 1,000 PJ in 2024. This figure represents energy consumption based on refuelling and charging in the Netherlands, regardless of where the energy is used. Energy losses incurred during the production of energy carriers are not included in this figure. More than half (58%) of the energy consumption in the Netherlands was accounted for by aviation and shipping (purple and yellow bars in the graph opposite), which operate primarily internationally. The energy consumption shown in the graph therefore relates not only to mobility within Dutch territory, but also to that outside it.

Transport energy consupmption (charging and refuelling) in the Netherlands in 2024 (PJ)



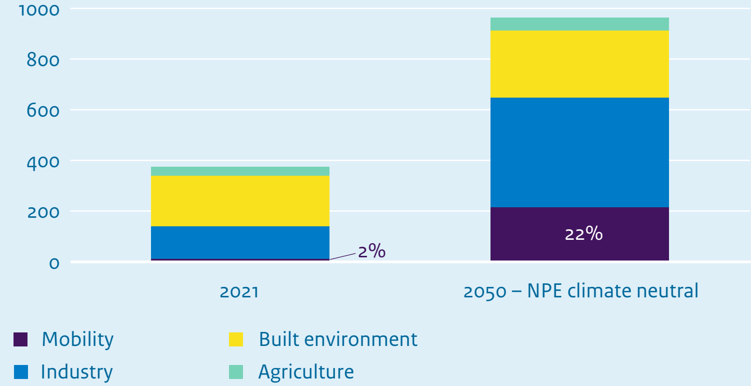
Source: KiM based on CBS

Transport energy consumption (PJ)



Source: KiM based on NPE

Electricity consumption in the Netherlands (PJ)



Source: KiM, based on CBS data

Possible development up to 2050

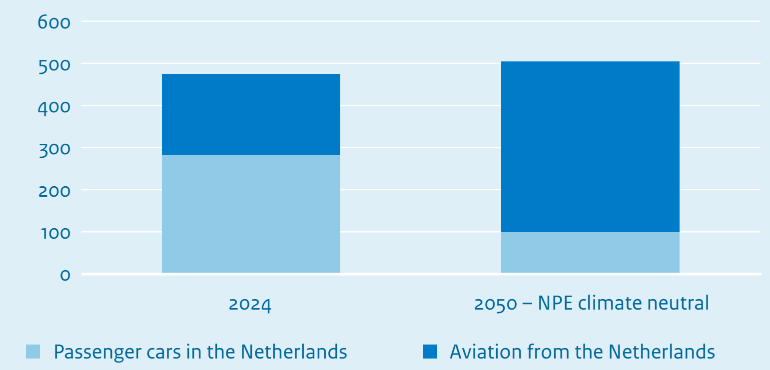
In the National Energy System Plan (NPE) published by the Ministry of Climate and Green Growth in 2023, two scenarios for 2050 have been outlined: a scenario in which current policies are maintained and the share of fossil fuels remains relatively high in 2050, and a scenario in which climate-neutral mobility is achieved by 2050. Electricity plays a major role in both future scenarios, as do biofuels and e-fuels. See the figure below.

Development of electricity demand for mobility

In the longer term, electric vehicles in the Netherlands could account for a substantial share of total electricity demand. In the climate-neutral scenario from the NPE, in which there are no more CO_2 emissions by 2050 and in which road transport has also been electrified on a large scale, the transport sector will account for approximately 22% of all electricity consumption in the Netherlands by 2050. Currently, this figure stands at just 2%. In this scenario, the combined electricity demand of all sectors will grow by a factor of 2.5 between now and 2050, from around 400 PJ today to 1,000 PJ (around 280 TWh) in 2050. See the figure below. The more electricity required for mobility – as a share of total demand and in absolute terms of petajoules – the greater the competition with sectors such as industry and buildings.

The figure does not take into account any additional electricity demand that might result from e-fuel production in the Netherlands. An alternative is for e-fuels to be imported. In that case, electricity demand in the Netherlands will not rise.

Primary energy consumption (PJ)



Source: KiM based on CBS

Risk of energy shortages increases

Due to growing demand for renewable energy sources, driven in part by the transport sector, there is a risk that these will become scarce, meaning that demand will exceed supply. This could lead to price increases: energy will become more expensive.

In the Netherlands, it is expected that renewable hydrogen and sustainable carbon carriers, such as biofuels and e-fuels, in particular, will become scarce. For instance, in the NPE, renewable electricity is expected to remain scarce 'until around 2035' and grid congestion is expected to remain a 'constraining factor' for some time to come.

Aviation: a major contributor to primary energy demand

If the expectation that aviation will use more e-fuels in the future comes true, this will require an increasing amount of energy in the energy supply chain. This means that aviation's primary energy demand – that is, the energy used by this mode of transport, including all energy losses incurred during the production and transport of energy carriers to the refuelling or charging location – will increase.

The primary energy demand of passenger cars was greater than that of aviation in 2024 (see figure above). According to the NPE's climate-neutral scenario, the situation will be reversed by 2050. Due to electrification, the energy demand of passenger cars – both primary and final – will fall sharply between 2024 and 2050. In contrast, the primary energy demand of aviation will rise sharply between 2024 and 2050, mainly due to the expected widespread use of e-fuels.

4 Avoid and shift in relation to energy saving

Avoid and shift in relation to energy saving

In addition to making vehicles more fuel-efficient (improve), energy demand reduction can also be achieved by choosing alternative modes of transport (shift) and by reducing transport demand (avoid). Targeted government interventions through avoid and shif measures can help to reduce energy demand while also taking into account the various arguments for energy saving, such as affordability for citizens and businesses, savings in land use and reduced dependence on energy imports.

General strategies in climate policy and energy demand reduction

Avoid and shift, together with improve, form the three policy strategies in mitigating climate change. In themselves, avoid and shift are also energy-saving strategies (as is part of improve); see the figure on the next page. In practice, the distinction between the strategies avoid, shift and improve cannot be drawn very strictly. Many policy measures fit within multiple strategies. For example, a distance-based truck charge, differentiated by CO_2 emissions, can have an impact on the demand for mobility (avoid) and theÙchoice of transport mode (shift) and vehicle efficiency (improve). The levy encourages transport operators, for example, to use other, more fuel-efficient modes of transport or to drive less, so that they have to pay as little as possible.

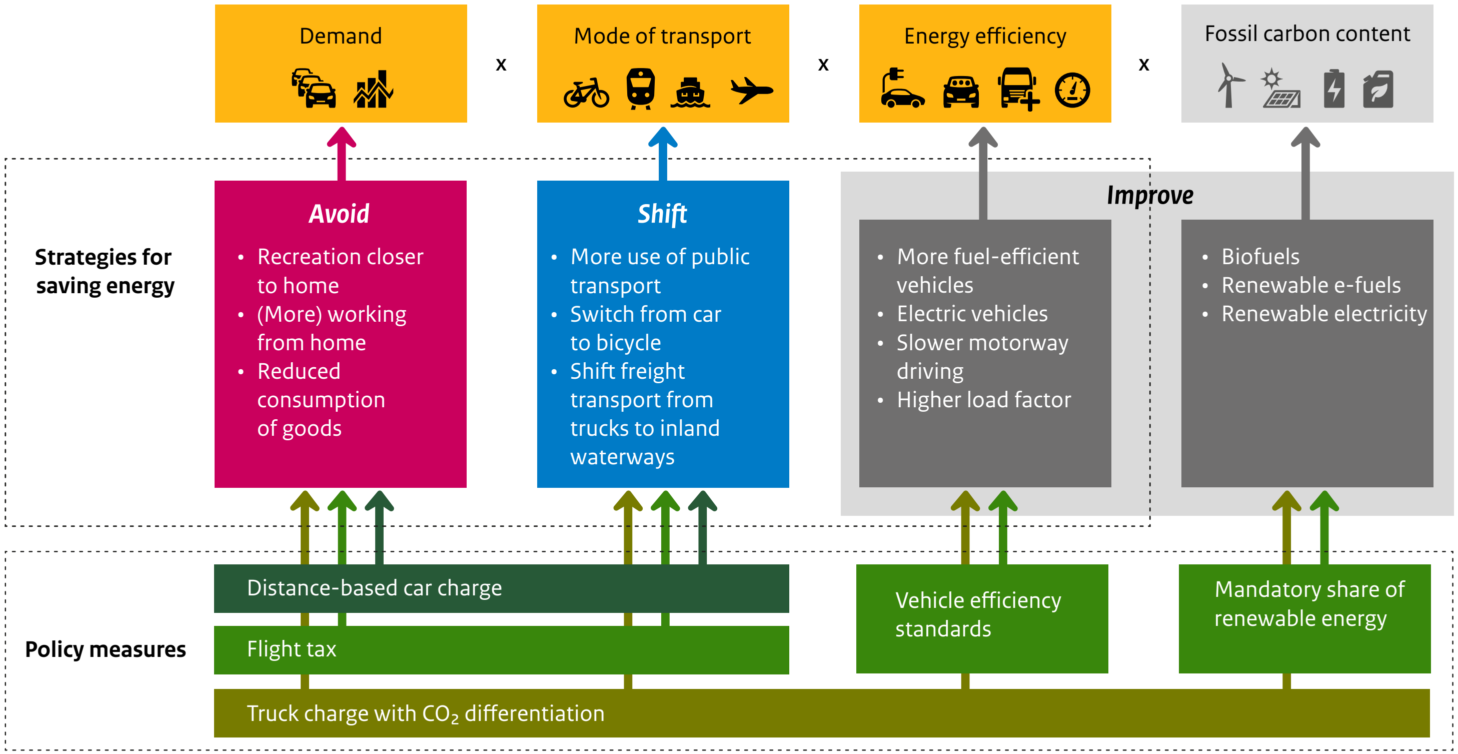
Energy savings are currently achieved mainly through technical modifications to vehicles, such as electrification (vehicles with an – energy-efficient – electric motor), hybridisation (vehicles that recover their braking energy), low-rolling-resistance tyres, vehicle aerodynamics and more efficient internal combustion engines. These modifications primarily fall within the ‘energy efficiency’ component of improve.

Arguments for avoid and shift

The improve strategy in climate policy – with its two components of energy efficiency and fossil carbon content – may come with several risks.

1) In the case of energy-efficient vehicles, part of the energy savings is often negated in practice by the so-called rebound effect. This is the effect whereby users start using their vehicles more often because of due to costs savings from the fuel efficiency gain. As a result, the ultimate saving effect may prove disappointing in practice.

2) If the focus is on reducing fossil carbon content, i.e. on the use of renewable energy sources, there is a risk that at some point the limits of availability – at reasonable prices – of space, raw materials and other resources are becoming apparent. This naturally also affects the cost of energy. Challenges include, for example, the land required for the production of bio-based raw materials and solar and wind energy, the (timely) availability of sufficient production capacity, problems with grid congestion in the distribution of electricity, and dependence on energy imports (with a negative impact on security of supply). See also the arguments for energy saving in Chapter 2.

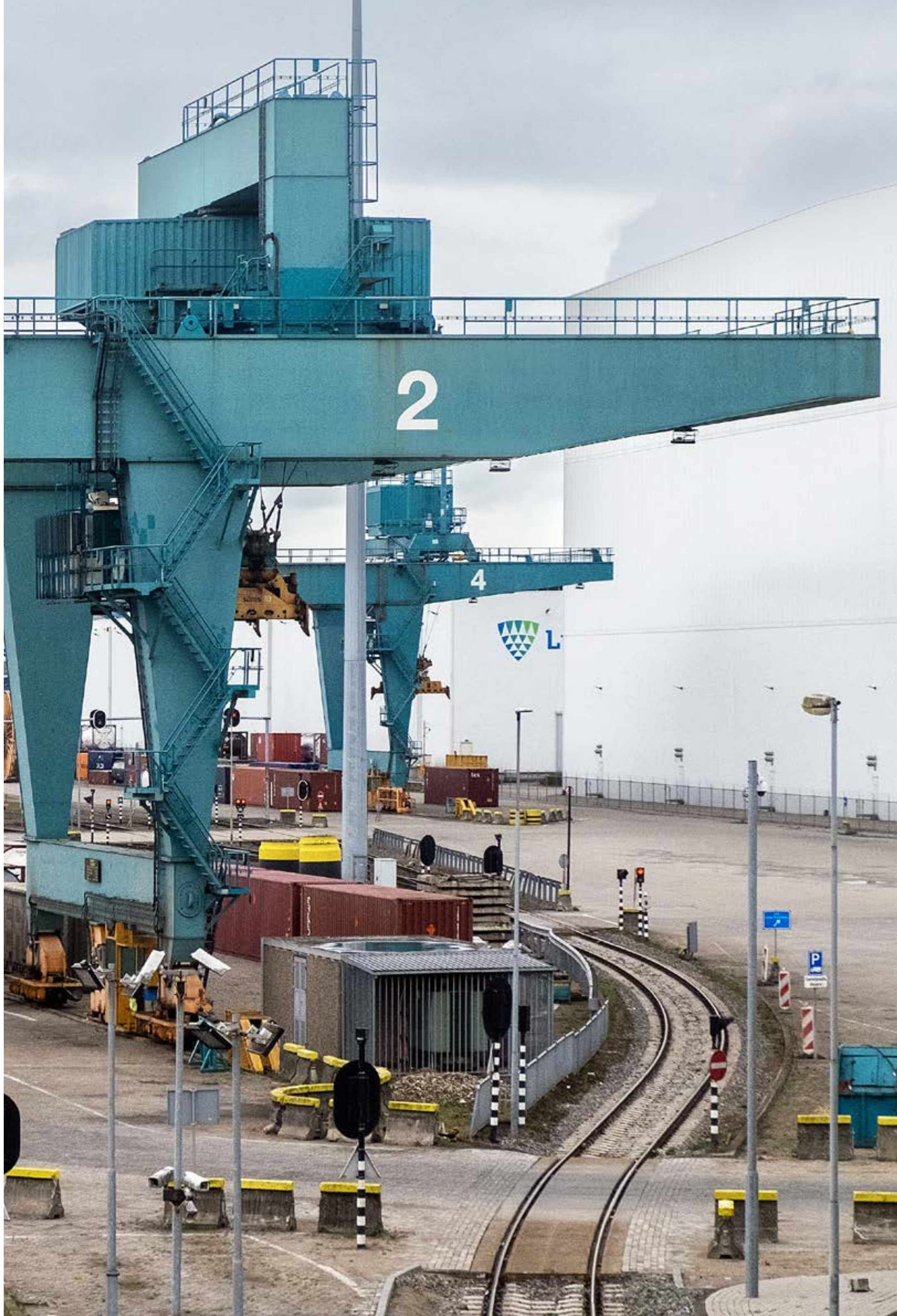


Diminishing (and increasing) marginal returns

The further the electrification of transport has progressed, the less avoid and shift help to save in absolute terms (PJ). This is because electrification in itself already yields significant energy savings. Avoid and shift then have a reduced additional benefit, as there is less energy left to save.

As the use of e-fuels (particularly in aviation and shipping) increases, energy savings actually yield greater returns. As mentioned above, this is because the production process for e-fuels is not particularly efficient. Reducing the use of e-fuels by cutting transport volumes or through a modal shift therefore results in significant (primary) energy savings.

As the energy transition progresses, avoid and shift policies for transport modes that primarily use fuels (fossil, bio or e-fuels) will therefore a greater energy-saving effect than for modes of transport that use electricity.



5 Examples of avoid and shift policy measures

Examples of avoid and shift policy measures

Here we discuss a number of hypothetical avoid and shift measures. The focus is on the role played by the government in this regard and on the energy-saving effects of these measures. The measures are taken from literature and are – with a few exceptions – not policies that the Dutch government is actually considering. In this way, we aim to gain an understanding of the potential effects of the measures on citizens and businesses. The policy settings of the measures are based on assumptions that can be found in the background report.

Types of measures and government roles

With a view to supporting public interests, governments can assume various roles:

- Regulating, for example through fiscal instruments, setting standards, or permitting or prohibiting certain activities;
- Implementing, for example by constructing or improving infrastructure;
- Facilitating, for example through subsidies or agreements with stakeholders in the sector or other public authorities;
- Communicating, for example through information provision, benchmarking or campaigns.

To get a sense of the impact that government policy can have on energy savings, we have examined 16 hypothetical examples of measures; see the figure on the next page.

The examples all fall into the categories of regulating, implementing and facilitating. Communication can be an important supporting policy, but is not sufficient on its own to achieve the chosen minimum target of 0.5% savings.

Below, we briefly discuss some of the 16 example measures; for the others, please refer to the background report.

Examples of policy measures for passenger transport

The first example measure in the field of passenger mobility is a *road pricing scheme*, a system whereby users of passenger cars and vans pay a charge based on the distance travelled. Such a charge makes car use less attractive and will result in a decrease in the distance people travel by car and that they opt (to a limited extent) for other modes of transport.

Whereas a road pricing scheme is broadly aimed at all users of passenger cars and vans, our second example measure targets a specific group: drivers of company-leased cars. In this case, the tax liability for company-leased cars is made *distance-dependent*. This is expected to reduce the private use of these cars. At present, driving a company car is in many cases more cost-effective than driving one's own car.

Example policy measures

Facilitation

- Promoting zero-emission zones in cities and subsidies for LEVVs
- Stimulating working from home

Communication

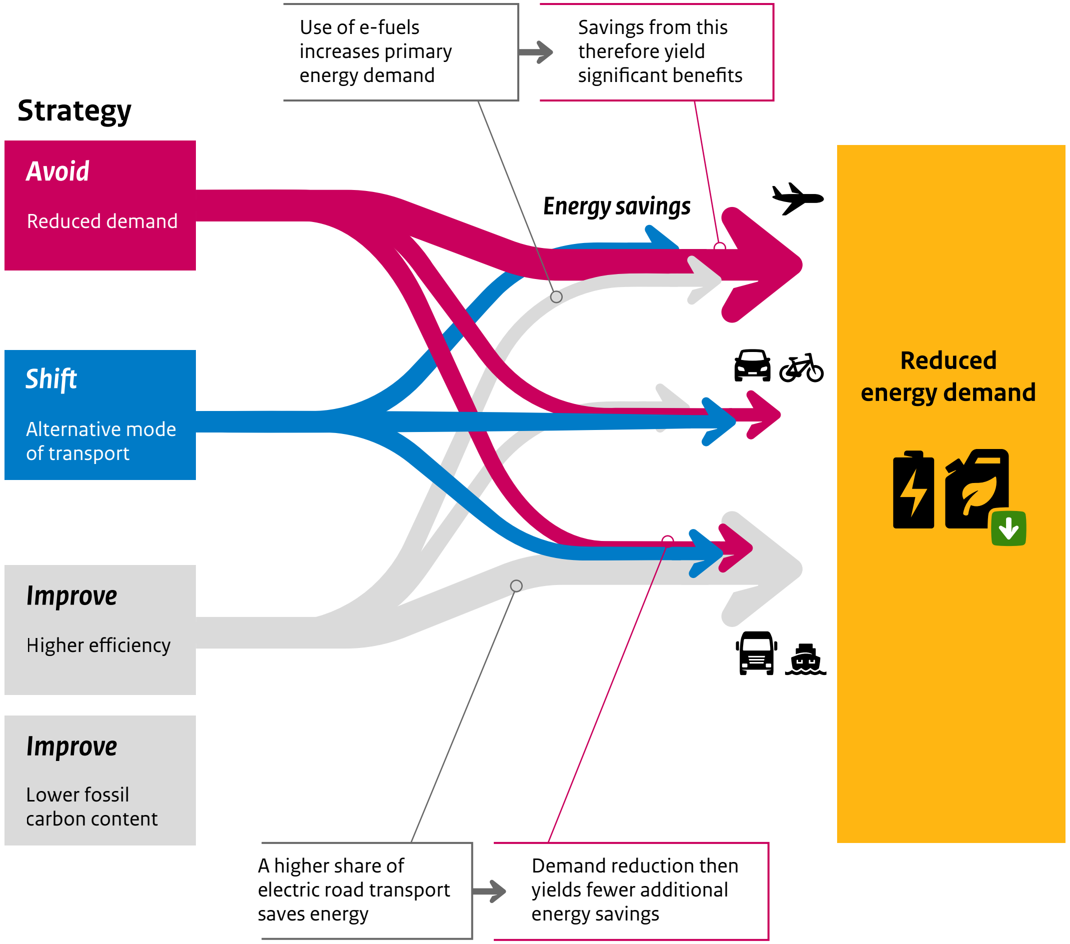
- No example measures

Implementation

- Investment package for modal shift

Regulate

- Increase in fuel excise duty
- Making additional tax liability for lease cars distance-based
- Abolish tax-free commuting liability
- Car-free Sundays
- Reduction of the speed limit on motorways to 80 km/h
- Mandatory strict parking policy for employees
- Tax incentives for compact cars
- Introduction of road pricing
- Increase and extension of the truck charge
- Energy performance standards for freight transport
- Reducing the speed limit for trucks on motorways to 70 km/h
- Authorisation for Super EcoCombi freight vehicles
- Making air travel tax distance-based
- Mandating transparent delivery costs for consumers (e-commerce)



The third example in the area of passenger transport is that the government is investing further in *public transport and cycling infrastructure*, with a view to encouraging a modal shift towards public transport, (e-)bikes and walking. If, at the same time, it reduces investment in infrastructure for cars, car users will have an extra incentive to switch – where possible – to public transport, (e-)bikes and walking.

The final example measure in the field of passenger mobility that we discuss here is a *reduction in the speed limit* on motorways and other main roads. This measure ensures that cars consume less energy per kilometre driven (because engines are more fuel-efficient at lower speeds) and therefore actually falls under the 'improve' strategy. However, as a second-order effect, the measure also leads to lower transport demand, as motorists opt for different (shorter) routes and modes of transport. As such, it also partly falls within the '*avoid*' and '*shift*' strategies. Reducing the speed limit on motorways is already possible as a measure in the event of a crisis in the fuel supply. Further investigation will be required to determine whether a lower speed limit is legally tenable in the absence of an acute crisis, and long-term energy saving is the primary objective of the measure.

Examples of measures for goods transport

In mid-2026, the Netherlands plans to introduce a distance-based truck charge. An example of a measure in the freight transport sector is that this charge will be increased in the future and *extended* to cover more roads. This increase and extension of the truck charge will make road transport more expensive. This will lead to an increase in the efficiency of road transport (as the load factor of trucks rises) and to other, more efficient route choices being made. A modal shift is also expected to take place from road transport to rail and inland waterway transport. By differentiating the tax according to emissions, the government can also incentivise trucks with lower CO_2 emissions, and thus lower energy consumption.

Our second example measure for freight transport is the authorisation of the *Super Ecocombi* (SEC) on the roads. The SEC is an extra-long truck combination consisting of a tractor unit with two trailers, each 13.6 metres. The combination is therefore twice the size of a standard tractor-trailer and can carry 72 tonnes of goods. This type of truck is currently not permitted in the Netherlands. If one SEC were to replace two standard tractor-trailers, efficiency gains could be achieved.

Example measure: aviation

In an example for aviation, we will consider the five options for a distance-based air travel tax that the previous Dutch government commissioned an external consultancy to develop. Each option is projected to generate €257 million tax revenues in 2027. The options differ in terms of whether or not to tax transfer passengers, whether or not to impose a higher tax on flights shorter than 500 km compared to medium-haul flights, whether or not to impose an additional surcharge on business class passengers, and so on. According to this analysis, the flight tax amounts to a maximum of 96 euros for the longest flights (>10,000 km). By way of comparison: the current air passenger duty in the Netherlands is €29 per flight, regardless of the distance flown.

6 Energy savings and public support

Energy savings and public support

Energy savings of the measures

The figure below classifies the example policy measures from Chapter 5 by sector and by the energy savings that appear possible under our chosen assumptions. The following page presents the results of a public support survey covering 10 of the 16 measures in the table.

Example measures

Energy savings within the sector	0.5 to 2%	2 to 5%	5 to 10%	>10%
Passenger transport	Stimulating working from home	Strict mandatory parking policy for employees	Increase in fuel excise duty	Introduction of road pricing
	Making additional tax liability for lease cars distance-based	Abolishing tax-free commuting allowance	Reduction of the speed limit on motorways to 80 km/h	
	Investment package for modal shift	Tax incentives for compact cars		
		Car-free Sundays		
Freight transport	Mandatory transparent delivery costs for consumers (e-commerce)	Reduction of the speed limit for trucks on motorways to 70 km/h	Increase in fuel excise duty	Increase and extension of the truck charge
	Authorisation for Super EcoCombi (SEC) freight vehicles			Energy performance standards in freight transport
	Promoting zero-emission zones in cities and subsidies for LEVVs			
Aviation	Distance-based aviation tax			

Notes on the table: The exact parameters used in the calculations, such as the levels of taxes and duties, are set out in the background report. The level of energy savings has been estimated for 2040 using both an optimistic and a pessimistic scenario. To estimate the percentage of the expected total energy consumption in the relevant sector (e.g. domestic freight transport), we have taken the midpoint of these values.

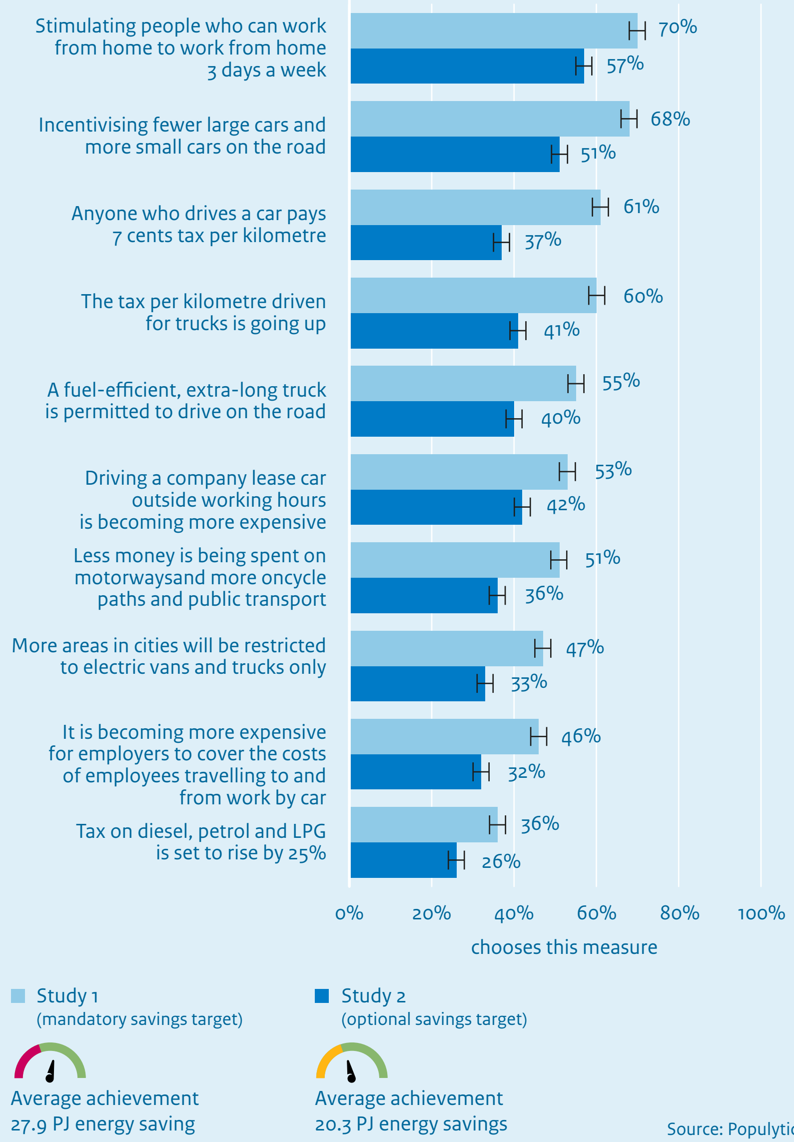
Public support

In two studies, we investigated the level of support among the Dutch public for the 10 energy-saving measures that are legally the least complex. In one study, participants *had* to choose measures to achieve a specific energy-saving target; in the other study, achieving that target was optional.

Although a majority of respondents support energy saving within the transport sector when the situation calls for it, for few of the measures presented a majority was in favour. In general, incentive-based (non-mandatory) measures are preferred over measures that make driving more expensive. For every measure, there is at least one group of participants who would like to implement it, but also at least one group who would rather not. Supporters of a measure see positive effects, while opponents of the same measure have objections.

The aspect of ‘fairness’ emerges clearly in respondents’ motivations, among both supporters and opponents. For instance, some respondents view the ‘polluter pays’ principle as fair, while others emphasise that a car may be essential for some people and that measures could disproportionately affect lower income groups.

Results of the choice task: share of respondents choosing a policy measure



Source: Populytics

Discussion of effects

It appears that achieving substantial energy savings through avoid and shift is not straightforward.

- Road pricing to reduce demand is possible, but to achieve significant results – such as the example measures 'introducing a road pricing scheme' and 'increasing and extending of Dutch truck charge' – requires substantial pricing. The public support survey (see previous page) showed that incentive-based (non-mandatory) measures were preferred over measures that make driving more expensive.
- In addition to pricing policy, regulatory policy aimed at reducing transport demand and modal shift can also have a major impact, such as a mandatory strict parking policy for employers. However, far-reaching bans and restrictions appear to be neither feasible nor proportionate in practice.
- Government investment in cycling and public transport infrastructure must be substantial (and investment in road infrastructure decrease) in order to achieve significant energy savings.
- In any case, it is not easy to achieve significant energy savings using softer instruments, such as voluntary agreements and subsidies.

In the case of road transport, there is the added complexity that the (absolute) savings effect of avoid and shift measures decreases as the vehicle fleet becomes more electrified. For instance, 'encouraging working from home' yields fewer savings for an employee who drives an electric car to work than for one who drives a petrol car, for the simple reason that an electric car uses less energy. While the policy effort (encouraging working from home) remains the same, its impact on energy demand is therefore diminishing.

Another point is also worth mentioning. As we have seen, one of the arguments for avoid and shift policies is that they offer the opportunity for targeted steering of energy demand, in contrast to energy savings via market forces (where energy demand decreases 'automatically' as a result of high energy prices). At the same time, mobility actually becomes more expensive in a number of example measures (in the settings we have chosen). A key consideration when designing any measures is therefore that they do not worsen the affordability of mobility (for certain groups) rather than improving it.

7 Discussion

Discussion

Exploratory study

This study provides a number of examples of policy measures that could reduce energy consumption in the transport sector. Focus is on the Netherlands but the study may be relevant to other countries as well. Our aim is to contribute to filling the current knowledge gap in this area. As relatively much is already known about energy saving via the improve strategy, we have deliberately excluded this strategy and focused solely on avoid and shift. We do not address the question of whether it makes sense to implement specific avoid and shift measures. Should governments wish to make choices in this regard, what is 'proportionate' and 'socially desirable' is essential, and considerations such as fairness, costs /benefits and broader environmental impacts come into play.

The study should be viewed as a first exploratory study in which we seek to gain an understanding of the policy options in the avoid and shift domains for mobility and their potential impacts, not only on energy savings but also more broadly. The detailed examples are generally not policy options currently under consideration by the Dutch government – the authorisation of the SuperEco Combi and the flight tax are the exceptions – although some pricing options do build on previous policy intentions.

With this initial exploratory study, KiM aims to contribute to the knowledge base for and debate on adaptive policy: when will governments implement certain measures, and on what basis? What is proportionate, and what is desirable? However, this debate goes beyond the scope of this publication, and a wide range of questions are relevant here, for example:

- What is energy scarcity and when does it become a problem?
- Which effects are undesirable – for example, an (excessive) dependence on foreign countries that could lead to supply uncertainty or significant price fluctuations, or, conversely, higher energy prices in the longer term?
- Which co-benefits – that is, policy objectives other than energy saving – do we consider important? Or is energy saving, in fact, a co-benefit of measures taken for other purposes (as is currently the case)?

We believe it would be useful to explore the possibilities and scope for action in this area further. An insight growing in relevance is that the importance of energy saving has also increased with the perspective of resilience to geopolitical developments and with a view to energy security.

Co-benefits of measures

In this study, we have taken energy saving as our starting point. In practice, we see that avoid and shift policies that already exist are adopted for reasons other than energy saving. Consider, for example: reducing local environmental impacts and CO_2 emissions, road safety, security of energy supply or congestion reduction. In such situations, energy saving is more of a co-benefit than the primary driver. An example of this is policy aimed at electrification, where CO_2 reduction is the primary driver, alongside improving air quality and security of energy supply.

Costs of measures

Costs are a key consideration when deciding whether to implement measures. To gain a clear picture of the costs of the example measures discussed, a more detailed analysis of the costs and benefits of the measures is required, including aspects such as investment, administrative costs, travel time gains or losses, energy costs, road safety, as well as any potential impacts on the business community. Such an analysis proved unfeasible for this study.

Maritime transport

Maritime transport, including short-sea shipping, is in the Netherlands the sector with the highest energy demand, due to bunkering in Rotterdam. This makes the maritime sector of great importance in the event of a potential energy shortage. In the context of this study, which focuses on measures that the Dutch government could take on its own, we were unable to identify any suitable avoid or shift measures in this area. After all, maritime transport is a sector in which carriers can easily switch to other, foreign ports for bunkering. Any measure taken solely within the Netherlands would therefore primarily result in bunkering shifting from Rotterdam to foreign ports, without any net savings effect.

About this publication

Methodology

The research into reasons for energy demand reduction in the transport sector and transport energy demand development was carried out on the basis of a literature review and own expertise.

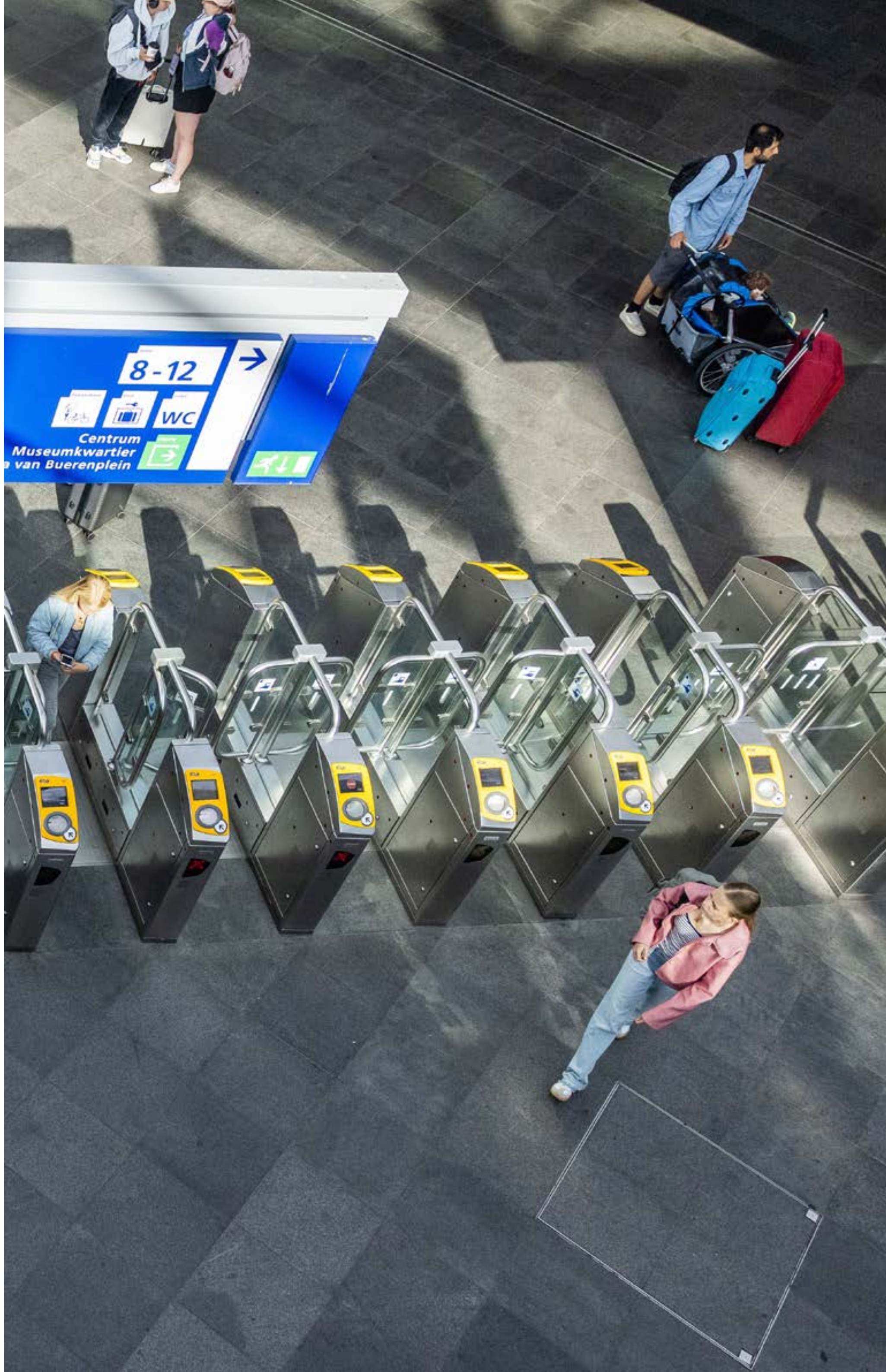
To select the example policy measures in the avoid/shift domain, we developed a long list of measures based on a literature review. Following a brief legal assessment (quick scan), some measures were excluded because, based on current national, EU and international legislation, we consider them not legally feasible if long-term energy saving were to be the primary objective of the measure.

CE Delft analysed the energy savings (in petajoules, PJ) resulting from the measures for the year 2040. The impact of each measure depends on the chosen parameters (for example, the rates of the truck charge). As the results are subject to considerable uncertainty, the potential savings are given as an optimistic and a pessimistic estimate.

Populytics conducted the public support survey via a closed Participatory Value Assessment among some 3,000 respondents.

Background report

For further information on the methodology, assumptions and results, please refer to the background report, which can be downloaded from the website www.kimnet.nl: Bakker, S.J.A., Moorman, S. (2026) *Energy saving in mobility through avoid/shift measures. An exploratory study on dealing with dealing with scarcity*. Background report. KiM Netherlands Institute for Transport Policy Analysis.



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