

EVERY JOURNEY HAS ITS PRICE

A POLICY STRATEGY FOR CUTTING TRANSPORT CO₂ EMISSIONS

JOINT ADVICE OF THE COUNCIL FOR TRANSPORT, PUBLIC WORKS AND WATER MANAGEMENT
(*RAAD VOOR VERKEER EN WATERSTAAT*), COUNCIL FOR HOUSING, SPATIAL PLANNING AND
THE ENVIRONMENT (*VROM-RAAD*) AND ENERGY COUNCIL (*ALGEMENE ENERGIERAAD*) TO THE
NETHERLANDS GOVERNMENT

ABRIDGED VERSION

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Raad voor Verkeer en Waterstaat

The Council for Transport, Public Works and Water Management (*Raad voor Verkeer en Waterstaat*) advises the minister and parliament on policy matters relating to these three areas. The counsel provided is strategic in nature and geared to structural solutions in the longer term. At the same time, though, current political concerns are never far away. Joined-up thinking is the key here, including in particular the European dimension.



VROMraad

The Council for Housing, Spatial Planning and the Environment (*VROM-raad*, or VROM Council) was established in 1996. It is charged with advising the government and both houses of parliament on the main aspects of policy with regard to environmental sustainability and on other key elements of national policy relating to housing, spatial planning and environmental management. The VROM Council is also charged with providing advice on the environmental policy activities of the government at the international level.

E N E R G I E R A A D

The Energy Council (*Algemene Energieraad*) advises the government and parliament on matters of energy policy. It aims to serve as a conscience for government and society and to contribute to the public energy debate, with the public interest always its major concern. The Council has a maximum of ten members, appointed by Royal Decree on the basis of their expertise and general experience in society. They come from relevant civil society organisations, but fulfil their advisory duties in an independent capacity. The status and duties of the Energy Council are defined in the General Energy Council Act.

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EXECUTIVE SUMMARY

If European climate targets for 2050¹ are to be realised, governments will need to pursue far more vigorous policies to address the CO₂ emissions of the transport sector. The only way to secure these targets is by engendering a breach in the ever-upward trend in CO₂ emissions by both passenger and freight transport. This is the conclusion of three of the Netherlands' major advisory bodies, representing the policy areas of transport, energy and the environment², in a recent report drawn up in response to a formal government request to advise on how the transport sector, including international aviation and ocean shipping, can best contribute to achieving long-term CO₂ reduction targets. In their advice and recommendations the councils stress the urgency of the matter. Without robust measures, the fast-growing transport sector may take up the entire European CO₂ 'emissions space' by the year 2050, leaving nothing for other sectors like industry or households. It is clearly unavoidable, therefore, that the transport sector will itself also have to make a major contribution to reducing carbon emissions.

In concrete terms, a far more vigorous CO₂ policy means instigating, as a matter of priority, a *price for CO₂ emissions* across the entire transport sector, in the form of emission taxes or emissions trading. It is one of the pivotal conclusions of the councils' advice that assigning a price to CO₂ emissions is *indispensable* for securing the required reductions: without such action, long-term climate ambitions simply cannot be fulfilled. The main appeal of pricing policy is that it leaves it up to society, i.e. private citizens and industry, to decide how emissions cuts can best be achieved at least cost. Driven by customer demand, industry can move towards manufacture of more fuel-efficient cars, for example, while individual citizens may choose to travel less by car and more by public transport.

Putting a price on CO₂ emissions is a step that should preferably be taken at the global or at least European level. And that will take time: it may well be decades before appropriate pricing mechanisms are in place and sufficiently

1 A 60-80% reduction in greenhouse emissions in 2050 relative to 1990.

2 The Council for Transport, Public Works and Water Management (*Raad voor Verkeer en Waterstaat*), the Council for Housing, Spatial Planning and the Environment (*VROM-raad*, or VROM Council) and the Energy Council (*Algemene Energieraad*).

effective throughout the transport sector. Alongside pricing policy it is therefore essential in the short and medium term to invigorate and broaden the scope of dedicated CO₂ reduction policies for all modes of transport³. The main focus should be on introduction of more efficient drive-train technologies and less carbon-intensive energy carriers⁴. Examples include CO₂ standards for passenger cars, tax breaks for purchase of fuel-efficient vehicles and CO₂ standards for transport fuels.

- 3 Dedicated CO₂ reduction policies are policies that specifically promote introduction of fuel-efficient vehicles, vessels and aircraft and low- or zero-carbon energy carriers. Examples of such policies for the transport sector include CO₂ standards for passenger cars, tax incentives for purchase of cleaner vehicles and requirements on the share of biofuels in motor fuels.
- 4 Besides liquid and gaseous transport fuels, the reference here is also to low- and zero-carbon electricity as a potential energy carrier.
- 5 As detailed in the integrated policy package on energy and climate change presented by the European Commission in early 2007 for achieving emissions cuts in the 21st century.
- 6 As detailed in the new Dutch government's 'Clean and Efficient' programme (*Werkprogramma Schoon en Zuinig*), an English summary of which is available at <http://international.vrom.nl/docs/internationaal/CleanandEfficient.pdf>.

Lastly, it will always be important to use flanking policies to create an appropriate playing field for achieving transport CO₂ reductions and to make the transition to a low-carbon economy as painless as possible. The aim of such policies is to facilitate sustainable alternative choices and to encourage innovation. An example of the first would be improved spatial planning in combination with better public transport. Innovation policy, for its part, is required when the market fails to come up with innovations yielding attractive and affordable sustainable alternatives. This holds particularly for radical innovations like alternative drive-train technologies, new aircraft concepts and sustainable alternative fuels.

Each of these policy tracks is equally important. In the view of the reporting councils it is essential that all three tracks be pursued concurrently: without any one of them, the policy objectives will not be achieved.

The overall policy package proposed by the councils cannot be introduced overnight. Securing the required emission cuts in the transport sector constitutes one of society's greatest challenges for the years ahead, certainly at the global level. Although the recent intensification of climate policy at both the European⁵ and national⁶ level is certainly a step in the right direction, the action envisaged is still inadequate for bringing about the required trend breach in transport CO₂ emissions. New policies are urgently required, as is an invigoration and broadening of existing policies.

Elaborating effective climate policy for the transport sector requires vision and political leadership. With the three-track policy strategy outlined above the reporting councils seek to contribute to developing such a vision; the required political leadership must come from Europe and countries like the Netherlands. Such leadership is indispensable if the current deadlock hampering effective climate policy in the transport sector is to be broken.

Europe is currently the only power bloc in the world that has shown itself willing and able to display leadership in the realm of climate policy. With respect to international aviation, the European Union has already taken the lead by initiating unilateral climate policy, as witnessed by its intention to include international aviation in the European carbon emissions trading scheme, for example. This is a major boost for European credibility and also puts on the pressure at the international negotiating table. In the international arena, one option would be for the EU to table discussions on the functioning of organisations like the International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO) when it comes to elaborating climate policy for aviation and ocean shipping.

As a major player in the transport world, the Netherlands is in an excellent position to credibly and convincingly advocate adoption of vigorous climate policy for the European transport sector. The councils recommend that the Dutch government make full use of this position and take the initiative on articulating strategies and policies for the transport sector. In addition, the Netherlands could team up with like-minded countries to develop policy initiatives for Europe's main airports as well as key north-west European seaports. With respect to road transport, the Netherlands can take the lead by itself introducing some form of CO₂-indexed road pricing.

Effective transport climate policy will probably lead to changes in today's patterns of production and consumption, because of rising transport prices, among other things. This process of change may be painful and evoke resistance and opposition. Without change, though, it is inconceivable that long-term carbon emission reduction targets can be secured. In their advice, the councils have endeavoured to come to terms with the prospect of opposition by striving as far as possible for cost effectiveness, freedom of choice, no loss of competitiveness and encouragement of innovation.

When all is said and done, effective climate policy will also create opportunities for European and Dutch companies and knowledge centres, with those that come up with new products and services gaining a first-mover advantage in the global marketplace. By responding wisely to emerging opportunities and at the same time adopting a pro-active role in the political arena, the Netherlands can gain a head-start. And a sustainable head-start will bring not only commercial benefits but, most importantly, climate benefits, too.



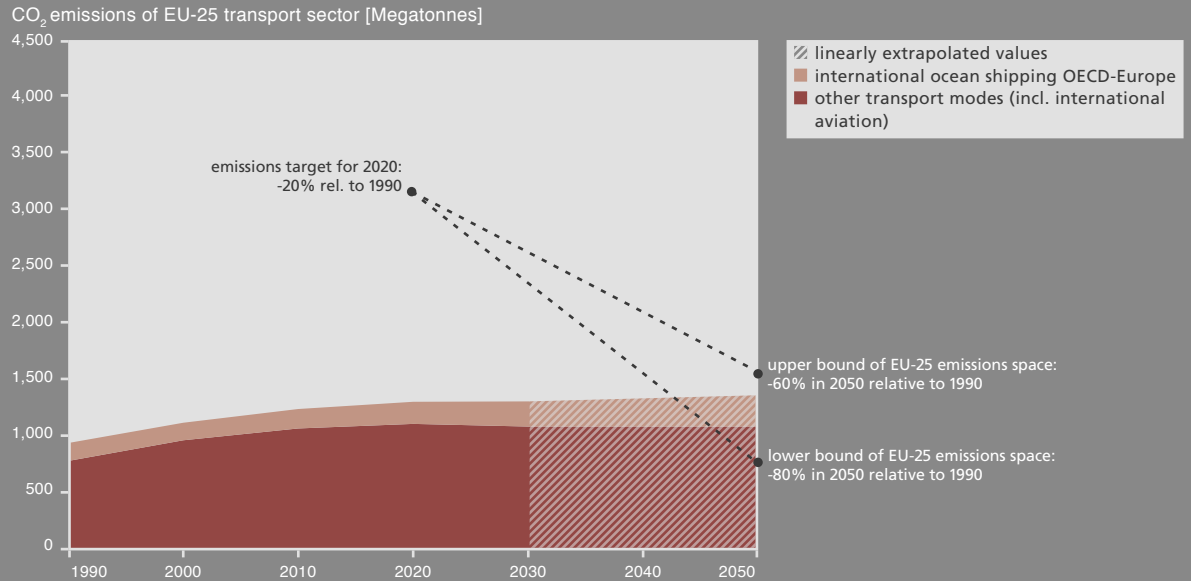
SUMMARY OF THE ADVICE AND RECOMMENDATIONS

SUMMARY OF THE ADVICE

Transport sector threatens to derail achievement
of climate targets

If European climate targets for 2050 are to be realised, the Netherlands and Europe will need to pursue far more vigorous policies to address the CO₂ emissions of the transport sector. In the absence of robust measures, the rapidly growing transport sector threatens to take up the entire European CO₂ 'emissions space' by about 2050 (see Figure 1). To get anywhere near the stated European emission targets, industry, households, power generation and other sectors would have to reduce their CO₂ emissions to virtually zero. As this is obviously out of the question, over the coming decades the transport sector will itself have to make a major contribution to reducing carbon emissions.

FIGURE 1

RISK: TRANSPORT CO₂ EMISSIONS WILL EXCEED LOWER BOUND OF 2050 'EMISSIONS SPACE' FOR ENTIRE EU-25

Sources: DG Tren (2006), *European energy and transport; trends to 2030 - update 2005*. Office for Official Publications of the European Communities, Luxemburg. Elzen, M.G.J. den, J.G.J. Olivier and M.M. Berk (2007), *An analysis of options for including international aviation and marine emissions in a post-2012 climate mitigation regime*. MNP report 500114007/2007, Bilthoven, The Netherlands.

Notes:

1. Data based on 'Business As Usual scenario' for EU-25 in DG Tren (2006), supplemented by projections for ocean shipping by Netherlands Environmental Assessment Agency, MNP (Den Elzen *et al.*, 2007).
2. Projected CO₂ emissions of international shipping are for OECD-Europe. As OECD-Europe is not congruent with EU-25 (!)¹ the data provide merely an indication of the ocean shipping CO₂ emissions that can be assigned to EU-25. The MNP study assigns these emissions on the basis of cargo or passenger port of origin, thereby allocating 50 percent of total CO₂ emissions of shipping to and from OECD-Europe countries to OECD-Europe.
3. Transport sector CO₂ emissions also include international aviation emissions, which have been assigned on the basis of country of sale of bunkered fuel. This is thus a different allocation method than that used for shipping by MNP (see note 2).
4. CO₂ emissions in the period 2030-2050 have been linearly extrapolated from projections of average annual emissions growth 2020-2030.
5. Emission caps are based on stated EU reduction targets for 2020 (-20 percent relative to 1990) and 2050 (-60 to -80 percent relative to 1990). Note that the 2020 target does not formally apply to the CO₂ emissions of international aviation and shipping, while the graph represents the situation as if this were the case. The indicative reduction targets for 2050 do formally hold for the cited emissions.
6. Long-term emission caps apply to all greenhouse gases, while the graph shows the picture for CO₂ emissions only, with the CO₂ emissions cap calculated on the assumption that all greenhouse gases emissions (including CO₂) need to be reduced by the same percentage.

¹ OECD-Europe = Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom. EU-25 = OECD-Europe plus Cyprus, Estonia, Latvia, Lithuania, Malta and Slovenia *minus* Iceland, Norway, Switzerland and Turkey.

Urgent need to intensify climate policy for the transport sector

More vigorous CO₂ policy needs to be developed for the transport sector as a matter of urgent priority. The effects of policy measures filter through only very gradually, because alternative, low-carbon transport options take decades to develop and deploy. One of the reasons for this is the slow turnover of vehicles, vessels and aircraft. New aircraft and ocean-going vessels have an operating life of around 30 years, for example.

Although the recently announced intensification of European and Dutch climate policy is a step in the right direction, it falls far short of what is needed to achieve the required trend breach in transport CO₂ emissions. In particular, there is as yet not a single effective measure scheduled for implementation when it comes to fast-growing segments like road freight, aviation and ocean shipping.

Advice of three national councils sought

Against the background of this problematique, the Council for Transport, Public Works and Water Management, the VROM Council and the Energy Council of the Netherlands present, in this document, a robust policy strategy for achieving the required level of CO₂ emissions reduction in the transport sector. This strategy constitutes the councils' response to the previous government's request for advice on how the transport sector, including international aviation and ocean shipping, can best contribute to realising commitments on CO₂ reduction and energy conservation. In these efforts the councils were asked to make due allowance for social and political feasibility, the international context and technical feasibility (see appendix 1). In drawing up the requested counsel, the main point of reference has been the long-term objective of European climate policy: a 60 to 80 percent reduction of greenhouse gas emissions in 2050 relative to 1990.

The councils' premises: the polluter pays, cost effectiveness and no loss of competitiveness

In elaborating their vision and strategy concerning the issue of transport CO₂ emissions, the councils proceeded from the following three basic principles:

1. The polluter pays: CO₂ emissions must have a price.
2. The proposed climate policy should be as cost-effective as possible: whenever feasible, CO₂ reductions need to take place where such measures cost least. As CO₂ cuts in the transport sector are relatively

expensive at present, it will often be more cost-effective to implement abatement measures in other sectors like power generation. However, this still means that in the medium and long term the transport sector must itself also make a substantial contribution to cutting CO₂ emissions.

3. The proposed climate policy may not lead to any significant loss of Dutch or European competitiveness: wherever possible, the policy instruments need to be designed such as to uphold and promote a level playing field for all polluters. Ideally, this means pursuing a uniform policy at a sufficiently large-scale level.

The need for a three-track CO₂ policy

In order to achieve the required breach in the ever-upward trend of transport CO₂ emissions, the councils advocate *simultaneous* and *coherent* development of three policy tracks:

- CO₂ pricing policy
- dedicated policies to reduce transport CO₂ emissions⁷
- flanking policy.

In the councils' judgement, a combination of these three tracks is essential because on its own no single one can secure the desired emission cuts. The first, CO₂ pricing policy, should take the form of a system of CO₂ charges and/or tradable CO₂ emission permits. The second track, dedicated CO₂ reduction policy, is concerned with specific emission reduction measures that will not be forthcoming with CO₂ pricing policy alone, or insufficiently so, or too slowly. A case in point is introduction of CO₂ standards for new cars. The third track, flanking policy, makes CO₂ emission cuts practically feasible by facilitating alternative courses of action. An example would be the further opening up of European airspace combined with harmonisation of air traffic control, making it possible to fly more direct routes, leading in turn to savings on kerosene fuel. In the past there has been insufficient combining of flanking ('pull') and harder ('push') policies such as emissions trading or carbon taxes and emissions standards. It is precisely a combination of pull and push that is so essential at present. Only if the pressure on parties to reduce their CO₂ emissions is substantially increased will there be greater demand for alternative courses of action.

7 Dedicated CO₂ reduction policies are policies that specifically promote introduction of fuel-efficient vehicles, vessels and aircraft and low- or zero-carbon energy carriers. Examples of such policies for the transport sector include CO₂ standards for passenger cars, tax incentives for purchase of cleaner vehicles and requirements on the share of biofuels in motor fuels.

Pricing policy essential for required carbon cuts

In the councils' judgment, carbon emission charges or emissions trading are indispensable for securing the required emission reductions. This is for four main reasons:

- It means polluters can choose how they contribute to emissions reduction, with a choice from a broad array of responses. In the technical

realm, there are two basic options: switching to a more fuel-efficient vehicle model and using a fuel with a smaller carbon footprint. Non-technical responses include improved logistical efficiency, geographical concentration of production and consumption, use of a transport mode with a smaller carbon footprint, travelling less, or simply paying for CO₂ emissions.

- For some sectors like freight transport there are simply too few effective policy alternatives for securing the required emission cuts. This is due above all to the heterogeneous nature of this sector, which makes it all but impossible to develop a dedicated array of effective policy instruments.
- It means the required CO₂ emission cuts can be achieved at least cost to society.
- Provided the CO₂ price is high enough, polluters are given a permanent incentive to pursue technical and non-technical innovation in the widest possible sense.

Robust dedicated reduction policies called for; pricing as yet insufficient for securing emission cuts

In the councils' judgment, there is as yet no prospect of a well functioning set of carbon pricing instruments becoming operational in the near term. For example, the inclusion of aviation in the European emissions trading scheme (EU ETS) – as proposed at the end of 2006 – is still a long way from becoming a reality. And even when implemented, no system functions perfectly in the early stages; witness the teething troubles of the present EU ETS. It is also to be queried whether such systems create sufficient incentives for developing alternative forms of transport with a (far) lower carbon footprint. This will only be the case if (anticipated) caps on emissions are sufficiently low, or charges sufficiently high.

To ensure that sufficiently vigorous emission cuts are nonetheless realised in time, robust dedicated CO₂ mitigation policies will need to be implemented in the short and medium term. In concrete terms, this requires policies promoting deployment of more fuel-efficient vehicles, vessels and aircraft on the one hand and use of lower-carbon energy carriers⁸ on the other.

8 Besides liquid and gaseous transport fuels, the reference here is also to low- and zero-carbon electricity as a potential energy carrier.

In theory, dedicated CO₂ reduction policies can be retracted once pricing instruments are working smoothly. In practice, however, smooth functioning will be hampered by the existence of information deficits and limits to economic rationality: the choices made by market parties are not always

rational from an economic point of view. When buying a new car, for example, people make little if any allowance for fuel costs. To address this kind of market failure, certain additional policies will always be necessary.

Flanking policy essential alongside direct CO₂ reduction policy

Flanking policy contributes indirectly to CO₂ emission reduction by facilitating attractive alternative courses of action with a smaller carbon footprint. In the first place it can encourage innovations that for one reason or another fail to emerge in the marketplace. Creating an incentive for research on fuel cells, for example, can help accelerate development of affordable hydrogen-fuelled cars. Secondly, the government can make it easier for parties to implement certain mitigation measures. By combining improved spatial planning with good public transport, for example, the same mobility needs can be catered for with lower CO₂ emissions. As a third option, the scope for emissions reduction can be increased through improved knowledge and skills. By adopting a more fuel-efficient driving style, for example, the trip from A to B can be accomplished with lower CO₂ emissions.

Vigorous CO₂ reduction policy may have undesired socio-economic impacts. By means of suitable flanking policy, these risks can be reduced and steps taken to ensure that any 'pain' resulting from higher transport costs or other effects of climate policy is alleviated.

Develop three tracks simultaneously in a flexible, adaptive process

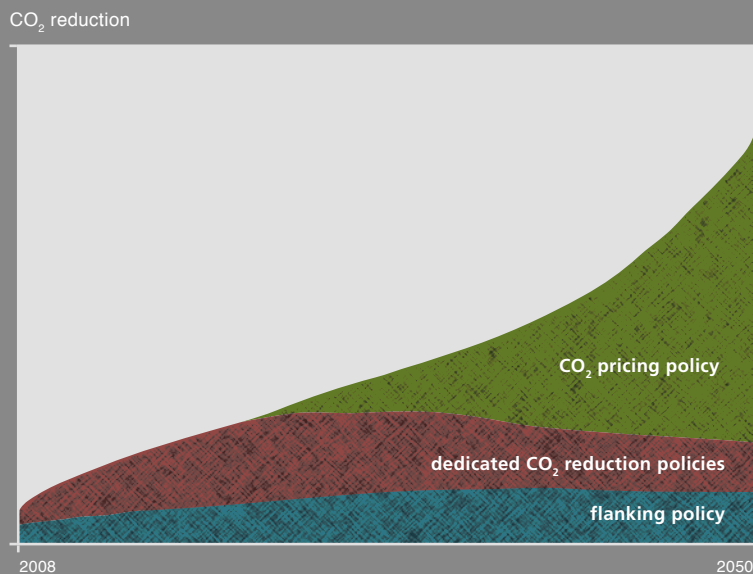
Elaboration of the policy tracks set out above will need to take place as a flexible and adaptive process in which the (political) scope for further policy invigoration is pro-actively explored. Policy strategies and the associated set of instruments can, in addition, be further articulated by responding dynamically, one step at a time, to windows of opportunity emerging from developments in the political climate, the economic cycle and technology.

In the councils' judgment, a breach in the ever-rising trend of transport emissions can only be accomplished if the track of CO₂ pricing policy becomes operational and effective in the shortest possible term. As it will nevertheless be some time before this track can be fully elaborated, the councils advocate simultaneous and vigorous pursuit of the other two tracks.

Figure 2 provides an *indicative* and *schematic* picture of how the three tracks can contribute to CO₂ emissions reduction in the longer term.

FIGURE 2

INDICATIVE TREND IN CO₂ EMISSION REDUCTION VIA THE THREE POLICY TRACKS



Swift introduction of emission charges or emissions trading essential

From the angle of cost effectiveness and commercial competitiveness alike, the optimum strategy would be to introduce a system of emission charges or emissions trading on a global scale, encompassing all sectors of the economy. At the moment this is anything but realistic, though: at the United Nations level the political will for such a move is presently lacking.

While pursuit of a global mechanism remains as necessary as ever in the councils' view, introduction of pricing policies in the form of emission charges or emissions trading at the European level is urgently required in order to make due progress and exert additional pressure during international negotiations. The councils therefore support the European Union's unilateral initiative to include air flights to and from Europe in

the EU ETS. The European Commission is considering adopting a similar approach for ocean shipping, too.

With respect to a pricing mechanism at the European level, the councils see three options.

- Inclusion of the entire transport sector in the *existing European emissions trading scheme*. This would encompass all modes of transport⁹: overland transport, (international) aviation and ocean shipping, inland and short sea shipping, and so on.
- Inclusion of aviation and possibly ocean shipping in the *existing European emissions trading scheme* and *CO₂ charges* for the other transport modes.
- *A separate, closed emissions trading scheme* for the *entire* transport sector excluding aviation, or possibly aviation plus maritime shipping, if these are included in the existing European emissions trading scheme.

Participation of the entire transport sector in the current EU ETS is the most cost-effective strategy. In the short and medium term, though, this is not likely to lead to any substantial emission cuts in the transport sector itself, as the bulk of the reduction will probably occur in other sectors, where measures are cheaper to implement. Including transport in the EU ETS will probably lead to a rise in the price of CO₂ emission credits for those sectors already participating in the scheme: industry and power generators. A preliminary study commissioned by the councils indicates that variants can be designed in which the estimated price rise seems acceptable. Energy-intensive industries like steel, paper, aluminium, cement and parts of the chemicals industry may face some degree of hardship, however.

The councils advocate undertaking a thorough preliminary review of the pros and cons of the cited pricing options as a matter of priority. This review should also include a study of the scope for limiting the potential drawbacks of the respective options (such as loss of competitiveness in certain sectors already participating in the current EU ETS).

In the ultimate choice for one or other of these options, a pragmatic attitude is of the essence. This makes it of key importance to maintain a certain flexibility, so a switch can be made to a superior system (more cost-effective, for example), should such a step be required in the future. At the present juncture, what we need above all is to make an urgent start with putting a price on CO₂ emissions.

⁹ I.e. car, van, truck, ship, aircraft and so on.

In anticipation of European initiatives in this area, in the short term steps should be taken to introduce some form of CO₂ pricing policy at the national or regional level. The Netherlands should introduce a carbon-indexed kilometre charge for road vehicles, for example, and Schiphol should team up with other major European airports and introduce landing charges differentiated according an aircraft's climate impact.

Swift invigoration and broadening of dedicated CO₂ reduction policy needed for all transport modes

As Figure 2 shows, in the short and medium term it is from the track of *dedicated CO₂ reduction policies* that the bulk of the cuts in transport CO₂ emissions must ensue. It is therefore essential, as a matter of urgent priority, to invigorate this track and broaden it to encompass modes of transport other than cars. In the case of road transport, for example, there is a need for progressive CO₂ standards for passenger cars, light goods vehicles (vans) and heavy goods vehicles (trucks). In the case of ocean shipping, for which there is no climate policy at all in place at present, one option might be voluntary agreements with the sector on emission cuts or a climate-oriented 'stick-and-carrot' policy regime for ocean-going vessels entering European ports. With regard to fuels, the councils advocate introducing CO₂ standards encompassing the entire fuel chain from oil recovery to engine combustion ('well to wheel').

Focus innovation policy on alternative fuels, new drive-train technologies and aircraft concepts

Government innovation policy, one of the key elements of flanking policy, is essential in situations in which the innovation activities emerging from the market prove insufficient. This holds particularly for radical innovations like alternative drive-train technologies and new aircraft concepts. There is also a need for innovation policy on renewable, alternative fuels with major CO₂ reduction potential.

The core message of the councils' vision

While proposing these concrete policy measures, the councils do not consider them to be the core message of their counsel. What is pivotal in the councils' vision is that it:

- stresses the importance of *simultaneous* and *coherent* elaboration of the three policy tracks;
- makes due allowance for the capricious (international) evolution of policy trends by advocating an *adaptive* and *dynamic* strategy ('organic steering');

- considers the track of CO₂ pricing policy indispensable for securing the 2050 emission reduction targets;
- considers the exploration and elaboration of CO₂ pricing policy for the transport sector to be a matter of the highest priority;
- recognises that in the short and medium term CO₂ pricing policy will not lead to sufficient cuts in transport CO₂ emissions;
- considers the track of dedicated CO₂ reduction policies indispensable for achieving such cuts, for the foreseeable future at any rate;
- recognises that climate policy can be a painful process;
- stresses the importance of flanking policy to alleviate that pain;
- considers bottom-up elaboration of climate policy of major importance: the Netherlands should not wait until global or European policy is in place, but start now and adopt a pro-active stance in the Netherlands, possibly teaming up with other European countries;
- proceeds from the premise that the EU and the Dutch government have a key role to play in developing effective as well as cost-effective climate policy at the global level.

In the view of the reporting councils, this vision provides a robust frame of reference for articulating a vigorous long-term policy strategy for reducing the CO₂ emissions of the transport sector.

'Clean and efficient' policy programme takes important first steps, but invigoration and broadening essential

The policy strategy set out by the Dutch government in the *'Clean and Efficient'* programme comprises elements of all three tracks¹⁰.

In terms of pricing policy, this programme is congruent with the European position of including aviation and possibly ocean shipping in the EU ETS. With regard to freight transport by trucks a study on inclusion in the ETS has been announced. While supporting this initiative, the councils are of the opinion that creation of pricing mechanisms needs to be substantially accelerated. It is of pivotal importance, moreover, that a swift start also be made with elaborating a CO₂ pricing policy for private cars.

When it comes to dedicated CO₂ reduction policy, the government programme has high ambitions with respect to improving the fuel economy of cars. Whilst certainly applauding these ambitions, the councils consider the absence of dedicated policy for the other transport modes a cause for concern. Nor are the councils in favour of (vigorous) obligations for the

¹⁰ An English summary is available at <http://international.vrom.nl/docs/internationaal/CleanandEfficient.pdf>.

share of biofuels in vehicle fuels as a measure in isolation. As an additional measure they advocate introducing minimum requirements for 'well-to-wheel' CO₂ emissions, as a means of ensuring that net CO₂ reductions become the leverage point rather than a particular fuel or energy carrier.

European and Dutch leadership urgently required

Elaboration of effective climate policy for the transport sector demands vision and political leadership both from Europe vis-à-vis the rest of the world and from the Netherlands vis-à-vis Europe. Europe is presently the only power bloc that is capable of demonstrating global leadership in the realm of climate policy and has shown a willingness to do so. By setting stringent environmental standards, the EU is becoming ever more of a global trendsetter; given the size of the European market, non-EU industries are conforming increasingly to its demands.

With a major international airport and one of the largest seaports in the world and a solid share in road freight carriage, too, the Netherlands is a key player in the transport field. Within Europe, it is therefore in a good position to credibly and convincingly advocate an intensification of climate policy for the transport sector.

With a view to establishing an effective climate policy for the transport sector, the councils appeal to both the EU and the Netherlands to adopt a leadership role. Articulation of global policy on international aviation and ocean shipping, in particular, is an issue requiring European leadership. In the United Nations context, the EU can show leadership by questioning the functioning of existing institutions like the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) when it comes to elaborating climate policy. In this context the EU has already taken the lead by articulating climate policy for international aviation unilaterally. The councils wish to encourage the EU to continue down this path: it boosts European credibility and in doing so puts on the pressure at the international negotiating table.

Within the EU, the Netherlands can demonstrate leadership. On the one hand, it can actively contribute to elaborating European strategy and policy in this realm. On the other, the Netherlands can take concrete steps by developing policies for aviation and ocean shipping, on its own or together with like-minded nations, and by introducing a CO₂-indexed kilometre charge for road transport within its own borders as a matter of priority.

Addressing opposition to vigorous climate policy

Without vigorous policy to reduce transport CO₂ emissions, long-term climate policy commitments can simply not be achieved. Such policy may have a major influence on today's patterns of production and consumption. It may lead to adjustments in society that elicit opposition and protest. In articulating policies it is important to address this opposition in order that it may be overcome. In drawing up the present advice, the councils have endeavoured to come to terms with the prospect of possible opposition by striving as far as possible for cost effectiveness, freedom of choice, a level playing field, encouragement of innovation and a measured rate of change. Nonetheless, effective climate policy will inevitably trigger a process of change that may at times be painful. To alleviate this pain as far as possible, the councils advocate a strengthening of flanking policies.

Effective climate policy a key challenge for the future

The elaboration of effective climate policy for freight and passenger transport is one of the outstanding challenges for the future. The councils stress the importance of vision and political leadership in rising to this challenge. With the policy strategy outlined above the reporting councils seek to contribute to developing such a vision; the required political leadership must come from Europe and countries like the Netherlands, however. Such leadership is crucial for breaking the current deadlock hampering effective climate policy in the transport sector and opening the way for sustainable transport systems.

RECOMMENDATIONS

To achieve the required reduction of CO₂ emissions in the transport sector it is essential to pursue a three-track strategy comprising CO₂ pricing policy, dedicated CO₂ reduction policy and flanking policy. For each of these tracks there follow concrete recommendations.

CO₂ pricing policy

1. As a matter of the utmost urgency, introduce a system of CO₂ charges and/or tradable CO₂ emission rights in the EU, encompassing the entire transport sector.

At the moment it is only at the European level that introduction of a system of emission charges or emissions trading for the transport sector is

a realistic proposition. Before such a system can be implemented, a robust study is first required to establish what kind of system is preferable.

To this end the councils recommend that the following options be reviewed:

- Inclusion of the *entire* transport sector in the *existing European emissions trading scheme*.
- Inclusion of aviation and possibly ocean shipping in the *existing European emissions trading scheme* and *CO₂ charges* for other modes of transport.
- *A separate, closed emissions trading scheme* for the *entire* transport sector, possibly excluding aviation, or aviation plus ocean shipping.

This review should cover all the pros and cons of the respective options, their practicability and the potential risks. The scope for addressing any potentially negative impacts on competitiveness should also be assessed.

In conjunction with these efforts, further study is also required to estimate the sensitivity of the various transport modes to a range of CO₂ prices. One issue that needs to be considered is the impact of high CO₂ prices (several hundred euros per tonne) over an extended period of time.

2. In the EU framework, continue to strive for a global emissions trading scheme for international aviation and ocean shipping.

Ultimately, the CO₂ emissions of international aviation and ocean shipping can only be tackled within an international framework. With its major seaport and airport, the Netherlands is in a position to play a pro-active role in the EU in pursuing creation of a global emissions trading market to this end. If due progress is to be made, Europe must not be afraid to question the functioning of existing institutions like the ICAO and IMO when it comes to the articulation of climate policy. While the UNFCCC¹¹ is one forum where this might be addressed, it is an issue that may well need to be tabled at the General Assembly of the United Nations. The councils support the EU's efforts in the international climate negotiations to assign responsibility for developing climate policy for international aviation and ocean shipping to two new working groups, comprising representatives of the UNFCCC and ICAO for aviation and representatives of UNFCCC and IMO for ocean shipping. These working groups need to be given a clear political mandate to come to concrete agreements according to a predetermined timetable on assigning and addressing the greenhouse gas emissions of international aviation and maritime shipping. In these efforts it

¹¹ United Nations Framework Convention on Climate Change.

is important that the UNFCCC establish the precise mandate and timetable of these working groups, with the ICAO and IMO bearing responsibility for policy design and implementation, for within the UNFCCC agreements can be reached in the context of overall, global climate policy, creating greater scope for diplomatic solutions than in the ICAO and IMO. In turn this will increase the chances of breaking the political deadlock around the elaboration of climate policy for international aviation and ocean shipping.

3. In anticipation of introduction of a CO₂ pricing policy for the transport sector at the European level, take steps to introduce charge schemes or emissions trading at lower scale levels.

The councils recommend that the following concrete measures be adopted.

Road transport

At the national level, introduce a CO₂-indexed kilometre charge for passenger cars and light goods vehicles (vans). If properly designed, such a charge can help reduce CO₂ emissions. It is then essential that the kilometre charge be sufficiently differentiated according to CO₂ emissions and that the proposed (partial) abolition of the Car and Motorcycle Purchase Tax for passenger cars in tandem with the kilometre charge be designed such that there is no decrease in the overall energy efficiency of the vehicle fleet.

In addition, initiate development of a representative test for the energy consumption of heavy goods vehicles (trucks), so a similar CO₂-indexed charge can be introduced for these vehicles, too.

Aviation

In collaboration with the United Kingdom, France, Spain and Germany, strive to elaborate and implement a system of airport landing charges differentiated according to climate impact. In doing so, the effects of greenhouse gas precursors like nitrogen oxides should also be included. Under many bilateral aviation agreements, landing charges indexed solely to CO₂ emissions are not permitted, being deemed a kerosene tax in disguise because of the linear relationship with fuel consumption. The envisaged charge scheme should be implemented on all flights to and from major European airports (Heathrow, Charles de Gaulle, Frankfurt, Madrid and Schiphol, for instance).

Ocean shipping

Working together with the north-west European seaport nations, strive to introduce a 'competition-proof' CO₂ charge on the fuel consumption of ocean-going vessels. Two variants are conceivable:

- a route-dependent CO₂ charge covering the emissions of the journeys of all ocean-going vessels entering north-west European seaports;
- a CO₂ charge on all ocean-going vessels over a certain tonnage entering north-west European seaports, based on the total volume of fuel bunkered in the three or six months prior to mooring in the port concerned.

Dedicated CO₂ reduction policy

4. Take steps to invigorate dedicated CO₂ reduction policy for the transport sector, in the form of vehicle CO₂ standards and minimum CO₂ requirements for fuels, for example. Also implement CO₂ reduction policies in those segments where there is currently no such policy at all.

In concrete terms, the councils deem short-term introduction of the following policies to be essential.

Passenger cars and vans

- Progressive CO₂ standards for passenger cars and vans.
- CO₂-indexing of tax benefits for new lease cars.

Heavy goods vehicles

- Progressive CO₂ standards for heavy goods vehicles, for which purpose a representative type approval test must be developed.

Aviation

- Landing charges differentiated according to energy performance (only if landing charges indexed to climate impact prove unfeasible or are not implemented for other reasons; see recommendation 3).

Ocean shipping

- Voluntary agreements with ocean shipping on CO₂ reduction in this sector.
- A climate-oriented 'stick-and-carrot' regime for ocean-going vessels entering EU or north-west European seaports, with sticks and carrots keyed to the presence or absence of an integrated environmental management system and/or specific fuel-saving measures.

Fuels

- Introduction of minimum CO₂ requirements for the entire production chain, ‘well-to-wheel’.

Flanking policy

5. Take steps to ensure that the efforts of forums promoting CO₂ reductions in the transport sector address *all* modes of transport. For certain sectors or modes it will be necessary to develop new forums or extend existing ones.

Forums geared to (among other things) promoting CO₂-reducing innovations have an important part to play in driving and facilitating the necessary changes in the transport sector, as well as in signalling opportunities for pursuing vigorous CO₂ emission cuts and any bottlenecks impeding such activities. They are in a good position to indicate where (additional) flanking policy is necessary or desirable. Examples of such forums include platforms like the Energy Transition Platform for Sustainable Mobility, public-private partnerships like Connekt or Transumo, organisations like SenterNovem and the Netherlands Institute for Transport Policy Analysis (KiM). For segments and/or transport modes on which there is still relatively little focus in climate policy (for example, (ocean) shipping), it may be necessary to develop new platforms or networks or extend existing ones.

6. For all modes of transport, encourage specific innovation activities geared to CO₂ reduction that fail to adequately emerge from the market unaided.

Government innovation policy should above all seek to encourage development of alternative energy carriers with major CO₂ reduction potential, alternative drive-train technologies, new aircraft concepts and energy efficiency improvements in the logistical realm. As long as it remains unclear which technology will predominate in the longer term, the focus should be on drivetrains using biofuels as well as on electricity and hydrogen. The Dutch government should focus on those aspects in which Dutch knowledge centres and/or companies already excel.

7. Facilitate flanking policies at the level of individual transport systems and to that end intensify initiatives taken in the past that have been judged effective.

The aim of such policies is to facilitate CO₂ reduction measures as well as alleviate some of the 'pain' of far-reaching climate policy. Concrete examples include improved spatial planning combined with better public transport; changes to general infrastructure policy; and measures in the realm of traffic management, including the opening up of European airspace.

Other

8. Take steps to ensure that (anticipated) trends in the CO₂ emissions of international aviation and ocean shipping become an integral part of national and European environmental balances and outlooks.

It is important that the emissions of aviation and ocean shipping, both rapidly growing modes of transport, be structurally included in environmental balances and outlooks: this will give an important impulse to putting this emissions growth on the political agenda. That these emissions have still not been assigned to individual countries should not be a reason for not inventorying them. If necessary, future trends can be charted on the basis of several different allocation variants.

9. Political leaders in the Netherlands and Europe can demonstrate leadership by taking the initiative on further articulation of climate policy for the transport sector. To this end, the recommendations set out above provide a robust set of reference points.

APPENDIX 1

GOVERNMENT REQUEST FOR ADVICE

English translation of government letter seeking advice on energy and climate policy for the transport sector.

From: Ms Karla Peijs, Minister of Transport,
Public Works and Water Management,
To: The Chairman, Council for Transport, Public Works and
Water Management, P.O. Box 20906, 2500 EX The Hague

Date: 5 February, 2007

Dear Mr. Chairman,

Also on behalf of the Minister of Economic Affairs and the Secretary of State for Housing, Spatial Planning and the Environment, I herewith request you to furnish advice on energy and climate policy for passenger and freight transport.

Transport is indispensable for economic growth and social development, but traffic growth also has its downside. Accessibility is declining, noise nuisance is increasing at a growing number of locations, and air pollutant emissions are affecting the quality of life. Emissions of greenhouse gases – in particular, carbon dioxide – constitute an increasingly urgent problem, moreover. Finally, passenger and freight transport relies predominantly on fossil fuels, for which security of supply threatens to become problematical.

Nationally, at the EU level and internationally, numerous policies have been implemented to address these issues, including measures to reduce transport emissions of air pollutants and greenhouse gases (in particular, CO₂). In our country, transport accounts for around 20 percent of total CO₂ emissions. The government's objective is to reduce the emissions of the transport sector (freight and passenger) to at least 38.7 Megatonnes CO₂ by 2010, compared with around 35 Megatonnes in the year 2000. As things stand at the moment this target will probably be achieved, provided scheduled policy is indeed implemented in timely fashion and transport growth does not exceed official projections. Post-2010 it is anticipated that in the absence of additional measures transport CO₂ emissions will rise to 45.8 Megatonnes in 2020 (excl. emissions of international ocean shipping and aviation).

The outcome of decision-making on climate policy post-2010 is as yet unclear. It is possible, on the one hand, that the route adopted under the Kyoto protocol will continue to be pursued, implying new agreements on emission caps. It is also conceivable that a different angle will be taken, though, centering on agreements on abatement strategies, for example, or with greater emphasis on adaptation, or a combination of both. It is consequently no easy matter to articulate long-term CO₂ policy for the transport sector. The challenge is to elaborate a strategy that will be robust across a range of conditions.

If the main focus proves to be on the Kyoto route, there will probably need to be a decline in the CO₂ emissions of the European transport sector post-2010 (post-Kyoto). For the climate problem to remain manageable, west European emissions of CO₂ and other greenhouse gases would have to be reduced by 40-60 percent compared with 1990 (4th National Environmental Policy Plan). What this would mean for passenger and freight transport (emission caps, efficiency targets) is as yet unclear. Until now no attempts have been made to curb the continued growth of Dutch transport CO₂ emissions. Further pursuit of the Kyoto strategy would seem to imply a need to breach this trend, however (certainly if the target of 50 percent domestic cuts is retained). At the same time, a review of transport sector climate policy carried out in 2005¹² has indicated that there is only limited scope for steering in this sector, with no more than a few percent of total emissions amenable to direct government policy. The review emphasizes the interconnectedness of several policy areas, with a particular focus on energy policy. One of the targets included in the 2005 energy report *Nu voor*

¹² *Evaluatie klimaatbeleid in het verkeer en vervoer 1999-2004*, PriceWaterhouseCoopers, 2005.

later ['Now for later'] is a 1 percent annual improvement in the efficiency of energy use (1.3 percent as of 2008 and 1.5 percent as of 2012¹³). The government proposes an invigoration of policy in, above all, the transport sector and the built environment. As transport becomes more energy-efficient, CO₂ emissions will also decline.

In a recent report by the Scientific Council for Government Policy¹⁴ (WRR) it is recommended that a realistic strategy on climate change be adopted, comprising three tracks: (1) adaptation to climate change, (2) reduction of greenhouse gas emissions and (3) effective global coordination. According to the WRR, transport and electricity consumption are the most relevant sectors for securing CO₂ cuts via changes in the energy mix, with the contribution of Transport to emission cuts needing to come mainly from efficiency improvements. The WRR envisages changes in the transport fuel mix occurring only very gradually.

Different strategies thus lead to different solutions. There seems to be a need to achieve better integration of policies geared to CO₂ reduction and to improving transport energy efficiency. This would also accord more with the perceptions of consumers and business alike. At the same time, there should also be further examination of other policy options such as pricing and emissions trading within the transport sector.

In the opinion of the councils, how can the transport sector best contribute to realising the required CO₂ emission cuts and energy efficiency targets, if due allowance is made for social and political feasibility, the international context and technical feasibility? What, given the uncertainties concerning the outcome of political decision-making, would constitute a robust strategy for the passenger and freight transport sector, including ocean shipping and aviation, and how can the policy strategy vis-à-vis ocean shipping and aviation best be coordinated at the global level?

I would like to receive your advice by mid-2007.

Yours sincerely,

Karla Peijs, Minister of Transport, Public Works and Water Management

¹³ The question of how energy efficiency improvements of over 1.5 percent annually are to be realised is addressed in a Government communication to Parliament (parliamentary session 2005-2006, 29575 no.12).

¹⁴ *Klimaatstrategie – tussen ambitie en realisme*, an English summary of which is available at <http://www.wrr.nl/english/content.jsp?objectid=3664>.

APPENDIX 2

BACKGROUND

DOCUMENTS

To assist in elaborating their vision, the councils asked several outside specialists to support them with factual information, background materials and essays. The following documents were forth-coming:

- Annema, J.A., A. Hoen and G. Geilenkirchen (2007). *Review beleidsdiscussie CO₂-emissiereductie bij personenvervoer over de weg* [Review of policy debate on road transport CO₂ emissions reduction], Netherlands Institute for Transport Policy Analysis (KiM) and Netherlands Environmental Assessment Agency (MNP), The Hague.
- Blom, M., B. Kampman and D. Nelisse (2007). Price effects of incorporation of transportation into EU ETS, CE Delft in collaboration with Ecofys B.V. (E. Worell and W. Graus), Delft.
- Elzen, B. (2007). *Een bewogen dag in 2053, een essay* [An eventful day in 2053, an essay], University of Twente, Twente.
- Faaij, A. (2007). Biomass and biofuels. Copernicus Institute, University of Utrecht, Utrecht.
- Smokers, R.T.M., L.C. den Boer and J.F. Faber (2007). *State-of-the-Art CO₂ en Mobiliteit* [Status report on CO₂ and mobility]. CE Delft, Delft.
- Wit, R. (2007). *Klimaatbeleid en Internationale Luchtvaart* [Climate policy and international aviation], Leiden.

These documents can be accessed on the websites of the Council for Transport, Public Works and Water Management (*Raad voor Verkeer en Waterstaat*), Council for Housing, Spatial Planning and the Environment (*VROM-raad*) and Energy Council (*Algemene Energieraad*); see page 36.

APPENDIX 3

COUNCIL AND COMMISSION MEMBERSHIP

MEMBERS OF THE COUNCIL FOR TRANSPORT, PUBLIC WORKS AND WATER MANAGEMENT

*mr*¹³. G.J. Jansen (chair)
ir. M.W. van Lier Lels
Dr. *ir.* M.P.M. Ruijgh-van der Ploeg
Prof. Dr. Th.A.J. Toonen
Dr. R.L. Vreeman
mr. N.J. Westdijk MBA

General secretary

ir. H.J.M. Verkooijen

MEMBERS OF THE COUNCIL FOR HOUSING, SPATIAL PLANNING AND THE ENVIRONMENT (VROM COUNCIL)

mr. H.M. Meijdam (chair)
Prof. Dr. Ch.W. Backes
Prof. Dr. P.J. Boelhouwer
drs. C.F. van Dreven
Prof. Dr. M.A. Hajer
Prof. Dr. M.W. Hofkes
Prof. Dr. *ir.* J.T. Mommaas
Prof. *ir.* A. Reijndorp
drs. A. Rijckenberg

¹³ Dutch titles are printed in italics
without a capital letter.

mr. H.C.F. Smeets
M.A.J. van der Tas
ir. S. Thijsen
Prof. Dr. P.P. Tordoir
drs. P.J.L. Verbugt
Prof. Dr. ir. B.C.J. Zoeteman

Observers

Prof. Dr. W. Derksen, on behalf of the Netherlands Institute for Spatial Research (*Ruimtelijk Planbureau*)
drs. V.R. Okker, on behalf of the Netherlands Bureau for Economic Policy Analysis (*Centraal Planbureau*)
Dr. M.A.J. Kuijpers-Linde, on behalf of the Netherlands Environmental Assessment Agency (*Milieu en Natuur Planbureau*)
Dr. V. Veldheer, on behalf of the Netherlands Institute for Social Research (*Sociaal en Cultureel Planbureau*)

General secretary

drs. A.F. van de Klundert

MEMBERS OF THE ENERGY COUNCIL

ir. P.H. Vogtländer (chair)
ir. M.E.E. Enthoven (vice-chair)
Prof. Dr. J.C.J.M. van den Bergh
Prof. Dr. J.G. van der Linde
mr. C. Trojan
drs. G.H.B. Verberg
H.C.W. Verhoeven-van Lierop
Prof. Dr. ir. M.P.C. Weijnen
ir. W.K. Wiechers

General secretary

drs. H.E.G.D. Dunsbergen

COMMISSION MEMBERS

ir. M.W. van Lier Lels, Council for Transport, Public Works and Water Management (chair)
Prof. Dr. Ch.W. Backes, VROM Council

ir. M.E.E. Enthoven, Energy Council
Prof. Dr. M.W. Hofkes, VROM Council
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C.I.A. de Vries, VROM Council

Every journey has its price. A policy strategy for cutting transport CO₂ emissions. Joint advice of the Council for Transport, Public Works and Water Management (*Raad voor Verkeer en Waterstaat*), Council for Housing, Spatial Planning and the Environment (*VROM-raad*) and Energy Council (*Algemene Energieraad*).

ABRIDGED VERSION

TRANSLATION

Nigel Harle, Gronsveld, The Netherlands

DESIGN

Telldesign, Rotterdam, The Netherlands

This abridged version and the full text of the councils' advice (in Dutch) can be downloaded and ordered from the websites of the following secretariats:

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