

Mobility within Reason

English translation from Dutch summary
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1 Introduction

Mobility is a vital element of modern society. The movement of people and of goods enhances both our living standards and our well-being. However it also brings in its wake train significant adverse effects. The vertiginous growth in road traffic, in particular, is causing problems: excessive emissions (particularly CO₂ and NO_x), impaired access to towns and factories, degradation of the quality-of-life in both urban and rural areas. In combating these adverse effects the government has over the last decade adopted two different tacks:

Firstly the *environmental standards* applying to vehicles and fuels are being made gradually more stringent. This increases the eco-efficiency of individual vehicles. But this benefit is being partly offset by the growth in mobility. Since the late 1980s, environmental policy has therefore also sought to *curb the growth in mobility*, particularly passenger car use. Spatial planning measures have been a major component of government policy in this regard, involving in particular the creation of 'compact cities' and locating industry so as to minimise transport needs.

In its advice 'Mobility within Reason' the Council for Housing, Spatial Planning and the Environment analyses the merits of the present policy towards road traffic, and draws up proposals for updating this strategy to produce a more favourable balance between the costs and benefits of mobility. If adequate solutions are to be devised, the adverse effects need to be analysed in terms of the geographical level (i.e. local, regional, national, global) at which they occur.

2 Growth in traffic volumes

The growth in road traffic is rooted in the structure of our economy and our society. Future increases in car-use will be related to demographic factors such as population growth and reductions in mean family size. These structural factors, which have driven growth in the past, are gradually beginning to lose momentum, however. Although the number of passenger cars will grow by several tens of percentage points by 2030, the growth of automobility in terms of the total number of kilometers will decline to the historically low figure of 15 to 35% over 35 years. This holds out excellent prospects of bringing the *emissions* problem under control by technical means. But any increase in car-use threatens to further aggravate problems of *congestion and quality-of-life* at the regional and local levels.

Freight transport has long been increasing much faster than passenger transport. By 2030 vehicle kilometres are expected to have increased by a further 40-70% and a growth of even 200% cannot be ruled out. This prolonged growth is driven by the growth in GNP, leading to an expansion in the volumes of products transported, and by the increasing distances between different companies and between the companies and their markets. For the moment the trend towards a knowledge-based, service-oriented economy seems to be reinforcing this growth rather than moderating it, thus placing an interesting perspective on expectations to the contrary. Low transport costs (which average 2-5% of the cost price of final products) mean that producers are not under pressure to reduce the distances involved. This growth is only expected to level off later. As a result, *congestion and quality-of-life* problems will be exacerbated along specific routes and in specific locations. As a contributor to the *emissions* problem, freight transport is still of lesser importance, but the proportion of the total emissions it accounts for is increasing.

The emissions from freight transport, and specifically road transport, are gradually drawing level with (CO₂) or exceeding (NO_x) those from the (numerically far superior) passenger car.

The problems caused by road transport are predominantly attributable to domestic freight transport, which accounts for 80% of freight vehicle-kilometres and is expanding rapidly. International freight transport accounts for only a small proportion of road transport. It is however a major contributor to *congestion* on the major international transport arteries.

3 Traffic volume containment policy to date

Since the National Environmental Policy Plan and the Second Transport Structure Plan - which both date back to the late 1980s - the government has been trying to curb mobility - in particular car-use - in the following ways:

- effecting a modal shift¹: the achievement of a substantial shift from the motor-car to public transport and bicycle, and from lorries to shipping or rail, supported by spatial planning policy;
- reducing the need to use cars through changes in the spatial structure, in particular by shortening the lengths of frequent journeys;
- pricing policy.

Modal shift

The Council observes that a modal shift in passenger traffic with car journeys giving way to walking, cycling and public transport can make a useful contribution to reducing congestion, improving access at the local/regional level and enhancing quality-of life locally, but will have much less impact on overall national car-use in terms of kilometres driven. This policy will therefore have little impact on the national emissions of CO₂ and NO_x. A considerable increase in public transport would be necessary to bring about a small reduction in the total national car traffic. Public transport accounts for only a small proportion of total mobility, and an improved public transport will primarily attract travellers other than motorists. Since the emissions per traveller-kilometre for public transport are about half of those for the car, a successful modal shift, although it would cut emissions from cars, would result in a substantial increase in emissions from public transport. And the potential net reduction to be achieved by a shift from car to public transport is reduced further each year that the environmental performance of the passenger car improves.

A policy geared towards effecting a modal shift in freight transport will only achieve a minimal reduction in total national emissions. In the first place the differences in environmental performance are apparently much smaller than is generally thought. In appraising the effect of a modal shift, the environmental performance of the different modes must be compared for the same freight types, and account must also be taken of the effects of the first or last transport leg, of the need for transshipment and the often unavoidable need, in the case of waterway or rail transport, to take a more roundabout

¹ Modal split refers to the relative proportions of the different forms of transport (e.g. car against public transport); a modal shift is a shift in the modal split.

route. Secondly, on the basis of present technology the chances of achieving a really substantial reduction in the proportion of national freight transport using road are not considered to be very high. Prospects, such as they are, are best for long-distance transport: this accounts for only a small proportion of road transport in the Netherlands, and only a limited proportion of this can be switched to another mode of transport. Most freight transported by road is over relatively short distances. The Council therefore considers that multimodal transport will have little role in achieving the reduction objective for emissions of CO₂ and NO_x. It can however have a significant impact on specific bottlenecks: particularly the main transport arteries for international freight transport and on freight transport in and around towns.

Changes in the spatial structure

Modifying the spatial structure is a rather ineffective way of curbing national mobility. Spatial planning and land-use policy, in particular choices made in regard to infrastructure, have much more influence on where traffic flows occur and on the mode of transport than on the total volume of traffic in terms of numbers of journeys and kilometres driven. Spatial planning policy has a much greater impact on matters related to quality of the more local environment (noise and other nuisance, hazard and the protection of scenic, ecological and cultural-historical features).

Pricing policy

Policy intended to reduce passenger traffic volumes through prices have led to sharp increases in prices, but the traffic reduction objectives have not been met. The Council advocates that pricing policy be based on a proper internalisation of the external costs so that both individuals and organisations can make better decisions about transport. However the pricing issue in relation to passenger traffic is much more related to the *structure* of these costs than to an inadequate internalisation of the external costs for the transport sector as a whole: the key problems here are the low proportion of the total costs which are variable and the lack of differentiation in motoring costs.

The *variable* part of the costs must be made higher. These higher variable costs may be partially or fully offset by reductions in the fixed costs; for example, per kilometre costs can be increased by means of national pricing measures.

Across-the-board increases in national variable costs ignore the fact that in some circumstances car-use has only a minor adverse impact while in others the impact is considerable. Greater *differentiation* in taxes and levies is therefore desirable (congestion charges, parking costs, annual car tax based on crucial vehicle characteristics such as emissions characteristics and specific energy consumption). This differentiation should be geared more towards reducing the external costs at times and in places where the greatest problems occur. Motoring costs should preferably be structured such that the

user sees these costs rise as the external costs he imposes increase, and sees them fall when the opposite applies. The motoring costs for the individual motorist are at present far from ideally structured: the variable component is too low and the fixed component too high.

The external costs of freight transport have not yet been internalised to a sufficient degree. A more complete internalisation of costs could reduce the growth in this sector in the period up to 2010 by some 10-20% below what would otherwise be the case. It will not, however, materially affect the locational decisions of industry or the geographical distribution of labour, either nationally or internationally.

An updated policy strategy

The foregoing leads us to conclude that policy-makers should take more account of the possible effectiveness of measures at the different geographical levels. In tackling the adverse effects of mobility it is therefore appropriate to formulate specific policy for (a) emissions problems important on a wider (national and international) level, (b) problems related to amenity and quality-of-life (noise and other nuisance, hazard, urban air quality) and (c) the problem of congestion/access. Moreover in seeking more efficient policy strategies it is important to distinguish between passenger traffic and freight transport on roads.

4 Mobility and emissions

The central focus of environmental policy for the transport sector must continue to be on reducing emissions by fostering the development and application of innovative vehicle and fuel technologies. For a number of pollutants this will have to be accomplished through regulation (*and* enforcement), in particular at the European level.

The improvement in environmental performance being achieved through modifications in conventional technology is impressive. Despite growth of 70-80% in automobile traffic over the period 1980-2020, almost all emissions will reduce by 50-90%. This reversal of previous trends demonstrates that most of the problems associated with harmful emissions can be adequately controlled by means of technical measures. This certainly does not apply to CO₂ emissions, however. In the Netherlands, economic instruments - cross-sectoral carbon or fuel taxes or tradeable emissions permits - are more appropriate than a policy specifically designed to reduce emissions from the transport sector². This will open the door to a significant - and in the Council's view, necessary - contribution from the transport sector to the reduction of climate-disrupting emissions from the Dutch economy as a whole to within the permitted emissions ceiling, in a way that is cost-effective from the national standpoint.

Because there is no large-scale automobile-industry in the Netherlands, this country is currently playing little role in the development of low-emissions vehicle technologies. In this regard the Netherlands must be reliant on international and/or European technology. Until now developments have been dominated by European emissions standards. However there is scope in Europe for governments to pursue a more offensive policy in regard to technology than they have so far done. Only recently have the first steps been taken within the EU to increase pressure on auto manufacturers to enhance fuel efficiency. It is as yet unclear which technology will prevail. An energetic (European) policy needs to be pursued which does not pre-empt this decision and which harnesses the competition between manufacturers to produce the vehicle technology of the future. Another possibility would be to make agreements or set specifications for the mean energy efficiency of imported cars.

² It is estimated, for example, that an attempt to reduce CO₂ emissions from passenger traffic by 1.2 million tonnes by making motoring more expensive would necessitate a petrol price hike of Euro 0.25 per litre (i.e. an increase of more than 20%), while a rise of just Euro 0.01 would generate sufficient funds to finance a reduction in CO₂ emissions of the same magnitude at the current marginal reduction costs in the Netherlands.

The government should invest heavily - preferably within the framework of the EU - in a well-targeted R&D policy, so as to stimulate technical progress. One component of this policy would be to enlarge markets, for example by providing incentives to producers and hauliers, and niche management (temporary protection for promising technologies from competing products), although subsidies must be used cautiously. The Council advocates special attention for buses, vans and lorries in view of the rapid expansion in the numbers of these vehicles (throughout Europe). Other possibilities would be to provide tax incentives to encourage the purchase of fuel-efficient cars, and to introduce an Environmental Fund to encourage the early purchase of such vehicles.

More attention needs to be paid to the emissions standards for rail, water transport and marine shipping.

5 Mobility, quality-of-life and spatial quality

The growth in road transport is giving rise to acute pressures on the quality-of-life in urban areas in and around our cities, in the form of congestion, hazard and noise; in rural areas it is causing damage to wildlife and the countryside. In order to preserve amenity and protect the quality of towns and the countryside, the expansion of the transport system must be made more subservient to the existing or desired spatial structure than is at present the case. Decisions about the structure of the transport system can have major potential strategic implications for spatial planning policy. This argues for close coordination of the content of the Fifth Policy Document on Spatial Planning and the National Transport Plan.

Reducing the deleterious impact of traffic on quality-of-life in urban areas calls in the Council's view for a policy with the following components:

- A plan of campaign for a coherent approach to freight transport in the 'network city'³ comprising voluntary agreements with the transport sector on load factors for freight traffic in urban areas; the development of 'logistics parks' in which transport-intensive activities are concentrated and the related transport can better be coordinated; and the vigorous promotion of urban distribution systems and additional study of and decision-making on the construction of underground distribution systems.
- Well regulated and well situated transport links: very good facilities for bicycle traffic and public transport, the eradication of through traffic from residential areas and the physical consolidation of traffic flows between towns (also as a means of facilitating intermodal transport). It is essential that early provision is made for public transport to new suburbs. More specialised or large-scale facilities which provide a function for the city as a whole, such as hospitals, theatres, specialist shops, department stores and administrative buildings need to be served by a transport network of excellent quality.
- A parking policy which ensures that the external costs related to space requirements, not only downtown but throughout the urban area, are adequately internalised.
- A policy of selective admission of freight traffic into towns, also aimed at encouraging the use of low-emissions vehicles.
- Promotion of car-sharing.

³ Concept used by urban planners to denote a polycentric (contiguous) urban area characterised by traffic flows with a network configuration.

- Discouragement of car-use in residential areas so as to enhance the quality-of-life in the direct living environment. The close proximity of facilities is crucial for this, as is a concrete parking policy at the local district level.

In rural areas it is desirable, in the view of the Council, that much more effort is made to ensure that existing infrastructure blends harmoniously with the surrounding landscape, and the greatest restraint should be exercised in constructing new infrastructure in greenfield sites. If infrastructure is designed to be in harmony with the characteristics of an area, this will go a long way towards ensuring public acceptance and support; the appreciable extra costs which this involves must be regarded as an integral part of the infrastructure costs if quality-of-life is to be protected in our country. It can sometimes be difficult to reconcile the need for noise abatement with maintaining spatial quality in the countryside. Noise screens can be visually intrusive, cause habitat fragmentation and impair travellers' enjoyment of the landscape through which they are travelling. This problem can be overcome by taking an integrated approach to transport aesthetics which is adapted to the specifics of the local situation so that the characteristic natural and scenic features of the landscape can be enjoyed by road-users and train passengers. Industrial ribbon development is a cause of real concern.

6 Mobility and access

The main problems related to access arise in the network cities where traffic flows, both passenger and freight, are increasingly interfering with one another. These problems go beyond simply ensuring the free flow of international freight transport, which has long been the focus of policy on traffic and infrastructure. Measures to restore access are urgent, but at the same time simply adding more infrastructure is unacceptable if degradation in spatial quality is to be prevented. The Council considers that the way forward essentially lies in *technical innovation and pricing*.

The issue of increasing infrastructure capacity calls for a hierarchical approach. Plans not yet finalised and infrastructural bottlenecks should be tackled using the following approach and criteria:

- The first choice must be for solutions involving better utilisation of the existing traffic infrastructure. On the supply side this means applications of information and communications technology ultimately leading to automatic vehicle guidance systems. On the demand side, a proper system for pricing the use of vehicles and infrastructure is urgently needed: variable charges which depend on the place and time at which use is made of the infrastructure. Equipment which enables such systems to be put into effect must be made available in the near future.
- Where bottlenecks remain which cannot be removed in this way, the Council can accept an expansion in capacity, provided this consists of an addition to the *existing* infrastructure, and provided that the modification required remains within an existing physical allocation of land, or satisfies stringent planning criteria relating to the appropriateness of the development to its surroundings. The decision-making needs to be built on a more rational foundation, which requires a better pricing system.
- Expanding capacity by constructing new linear infrastructure along new routes should be avoided other than in exceptional circumstances where crucial links are missing in a transport system which forms part of a well designed spatial model, and where these new elements are in harmony with their surroundings. These are more likely to be in the public transport network than in the road network.

Now that our cities have become network cities, new demands are being made of our public transport system. The challenge is to identify selective, well-targeted investments. The Council advocates - in addition to connecting in to the international high-speed train network - above all excellent public transport facilities between multimodal nodes, the early provision of connections to new centres of urban growth, and tangential

connections between new metropolitan sub-centres to complement the centre-to-centre connections which have traditionally been better provided.

The present policy sets out, sensibly, to retain major service sector employers (offices, etc.) in towns. In order to limit commuting to work by car, the policy is to mainly offer these employers locations which are excellently served by public transport and with little by way of car-parking facilities: the so-called 'A location' policy. This policy needs to be urgently modified in order to prevent it from backfiring.

7 Recommendations

- Stop burdening spatial planning policy with objectives for the transport sector at national level, such as the reduction of *national* emissions and a shift in the *national* modal split. This has proven to be insufficiently effective because generic concepts such as, for example, the compact town do not permit sufficient recognition to be given to the time- and location-specific nature of the adverse effects of mobility and the different geographical levels at which they apply. Spatial planning policy does however have a major role to play in reducing the negative impact of traffic on quality-of-life and access at the regional and local level.
- Impressive strides forward have been made in abating emissions by modifying conventional technology, and this trend must be continued and intensified. Societal and political pressure has produced results, and must be maintained. Emission reductions achieved by promoting innovations in vehicle and fuel technology are such that previous trends in emissions have been reversed, except for CO₂. Prospects for further improvements continue to be good. As far as policy instruments are concerned, for a number of pollutants the Netherlands must pursue the route of regulation (*and* enforcement) at the European level. Other instruments include ensuring the widespread application of these innovations, incentives for producers and hauliers, niche management, tax concessions for fuel-efficient vehicles and the establishment of an environmental fund to promote the early purchase of such vehicles.
- Efforts and pressures need to be stepped up in order to bolster policy, presently languishing, with regard to emissions standards for rail, inland waterway transport and marine shipping, along the same lines as the foregoing.
- As far as CO₂ is concerned, considerations of cost-effectiveness argue for the use of economic instruments - cross-sectoral carbon or fuel taxes or tradeable emissions permits - in preference to a policy specifically designed to reduce emissions from the transport sector. This will open the door to a significant - and in the Council's view, necessary - contribution from the transport sector to the cost-effective reduction of climate-disrupting emissions from the Dutch economy to within the permitted emissions ceiling. This will help to also promote the internalisation of external costs in the freight transport sector, which has hitherto been insufficient.
- The external costs associated with the automobile have not been sufficiently internalised. The *variable* part of the costs must be made higher. These higher variable costs may be partially or fully offset by reductions in the fixed costs. And this variabilisation of the costs must be accompanied by a greater *differentiation* in taxes and levies (congestion charges, parking costs, annual car tax based on

crucial vehicle attributes such as emissions characteristics and energy consumption). This differentiation should be geared more towards reducing the external costs at times and in places where the greatest problems occur. The costs should preferably be structured such that the user sees his costs increase as the external costs he imposes increase, and sees them fall when the opposite applies.

- A transformation is needed in the way planners think about transport systems. We should be regarding the configuration and modification of transport systems as a vital tool for exerting influence on the spatial structure rather than seeking to adapt the transport system to the spatial structure.
- This argues for close coordination of the content of the Fifth Policy Document on Spatial Planning and the National Transport Plan.
- In order to improve quality-of-life in urban areas, a plan of campaign is required for a coherent approach to freight transport in the 'network city' comprising voluntary agreements with the sector on load factors for freight traffic in urban areas, the development of 'logistics parks' in which transport-intensive activities are concentrated and coordinated, the vigorous development of urban distribution systems and additional study of and decision-making on the construction of underground distribution systems.
- Improvements in quality-of-life also require: well regulated and well situated transport links: very good facilities for bicycle traffic and public transport, the eradication of through traffic from residential areas and the physical consolidation of traffic flows between towns (also as a means of facilitating intermodal transport); a parking policy which ensures that the external costs related to space requirements, not only downtown but throughout the urban area, are adequately internalised; a policy of selective admission of freight traffic into towns, also aimed at encouraging the use of low-emissions vehicles; promotion of car-sharing; and discouraging the use of cars in residential areas. The close proximity of facilities frequented daily is crucial for this, as is a concrete parking policy at the local district level. It is essential that early provision is made for public transport to new suburbs.
- It is desirable that much more effort is made to ensure that existing infrastructure blends harmoniously with its surroundings in rural areas, and the greatest restraint should be exercised in constructing new infrastructure in greenfield sites. It can sometimes be difficult to reconcile the need for noise abatement with maintaining spatial quality in the countryside. This difficulty can be overcome by taking an integrated approach to transport aesthetics which is adapted to the specifics of the local situation so that the characteristic natural and scenic features of the landscape can be enjoyed by road-users and train passengers. Industrial ribbon development must be resisted.

- Good access to companies and to goods and passenger transport facilities is an urgent matter, but at the same time simply adding more infrastructure is unacceptable if degradation in spatial quality is to be prevented. The Council considers that the way forward essentially lies in technological innovation and pricing. Plans not yet finalised and the resolution of capacity problems should be tackled using the following approach and criteria:

The *first choice* must be for solutions involving better utilisation of the existing traffic infrastructure. On the supply side this means automatic vehicle guidance systems. On the demand side, a proper system for pricing the use of vehicles and infrastructure is urgently needed. Equipment which enables such systems to be put into effect must be made available in the near future.

Where bottlenecks remain which cannot be removed in this way, an expansion in capacity is acceptable provided this consists of an addition to the *existing* infrastructure, and providing the modification required remains within an existing physical allocation of land, or satisfies stringent planning criteria relating to the appropriateness of the development to its surroundings. The decision-making needs to be built on a more rational foundation, which demands a better pricing system (see recommendations 4 and 5).

Expanding capacity by constructing new linear infrastructure along new routes should be avoided other than in exceptional circumstances where crucial links are missing in a transport system which forms part of a well designed spatial model, and where these new elements are in harmony with their surroundings. These are more likely to be in the public transport network than in the road network.

- A central pivot in the strategy to maintain or enhance access consists of the development of an integrated multimodal network for passenger traffic, with a significant share being taken by public transport on congestion-prone routes. The public transport system must be improved through selective investments of a strategic nature. In addition to connecting in to the international high-speed train network, this means in particular providing excellent public transport facilities between multimodal nodes, the early provision of connections to new centres of urban growth, and tangential connections between new metropolitan sub-centres. The policy of discouraging commuting to work by squeezing parking facilities needs to be reconsidered as it can backfire by causing employers to relocate.

Annex: Composition of the Council for Housing, Spatial Planning and the Environment

The Council for Housing, Spatial Planning and the Environment is made up as follows:

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