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ARTICLES

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THE PIVOTAL ROLE OF THE PRIVATE SECTOR IN ACHIEVING TRANSPORT POLICY OBJECTIVES

Abstract: In the past few decades, devolution trends seem to dominate societal developments and government policies. The private sector's influence is increasing everywhere, also in the transport sector. However, transport measures are politically sensitive, while specific socio-economic features make transport provision sometimes not very attractive for the private sector. At the same time, the external costs of the transport sector are increasing, despite official public policies. To analyse how this may change, a private sector scenario is constructed, showing which problems may be solved when private sector involvement is largely increased and when government intervenes only by means of market-based measures. In such a scenario equity issues will receive much less attention and the transport system may become entirely different from what current policies aim at; in this scenario, collective transport modes will probably largely disappear (except air-planes); at the same time new – low emission – fuels will dominate the transport scene. In this private sector scenario environmental problems as well as congestion will largely be solved. It can be concluded that when governments are prepared to accept the loss of influence in a strategic sector and the society in general is prepared to accept less equity, increasing private involvement in the transport sector may help significantly in solving transport problems.

Key words: transport, public policies, privatisation.

1. INTRODUCTION

In current transport policies there is a clear trend towards liberalising European and global markets. This is caused by an increasing attention for market incen-

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tives in general, in order to improve the competitive position *vis-à-vis* other countries. Devolution trends seem to dominate governmental policies. There are clear trends towards privatisation, deregulation and governments 'stepping back', e.g. by reducing social security benefits, subsidies, etc. Market forces seem to become more dominant in all regulated sectors. One of the well-known examples in transport are the policies to make railway companies more independent from governments; in some countries railways may even be privatised (e.g. in the United Kingdom) (Button and Pitfield, 1991). It may be concluded that also the government is increasingly subject to market forces and is increasingly rationalised on the basis of efficiency principles (Self, 1993).

At the same time, individualism has become a megatrend in society. Individuals seem to act more and more as 'calculating citizens', who are oriented towards monetary gains and their own societal position. The influence of e.g. churches, labour unions and other societal organisations has diminished. As a result, it seems that altruistic behaviour has decreased too, which is also reflected in public policies tending to abolish e.g. social security systems, subsidies for social support, and subsidies for housing of lower income groups. A consequence is that it becomes more difficult for governments to steer the individuals, while (financial) incentives and market-based interventions are increasingly becoming more important.

Traditional welfare theory argues that social welfare can be maximised through market transactions based on free exchange in perfectly operating markets. In this idealised environment, government intervention would negatively affect the Pareto-optimal outcome of a freely operating market (Coase, 1988). In practice, there is a clear role for the government in all market economies, but this influence is usually oriented towards various specific economic sectors or the fulfilment of specific socio-economic objectives (Fokkema and Nijkamp, 1994). It is often argued that the transport sector is one of those sectors which cannot be left entirely to the competence of the private sector, because of the large number of externalities involved and because of equity reasons (Marcou, 1993).

However, the transport system seems to be increasingly out of control. Mobility rates increase, leading to increasing congestion problems and increasing environmental problems; the external costs of transport may be as high as 5% of GNP (Verhoef, 1996). Official policy objectives are very ambitious to solve these problems; for example, mobility growth should be reduced, public transport use should increase and the environmental externalities should largely be reduced. The actual introduction of measures, however, is a major problem because the social feasibility and acceptance of measures is quite low. Therefore, it seems that new policy solutions and strategies are hardly found for the transport system, so that the problems tend to increase. Apparently, there are forces which push the system in a direction which is not desired.

Facing societal and economic trends, combined with the failing government intervention in the transport sector, provokes the question to what extent private sector influence in the transport sector can be increased in order to achieve transport policy objectives. In this paper, we will investigate this by first presenting rational economic arguments why governments intervene in the transport system and why these policies seem to fail. Next, a scenario will be constructed which describes the impacts on society of a large scale increase of private sector involvement in transport. Finally, some conclusions will be drawn.

2. THE PUBLIC SECTOR AND TRANSPORT

2.1. Reasons for governments to intervene in the transport sector

There are three conventional arguments often used to justify government intervention, which under specific conditions also may apply to transport infrastructure (Fokkema and Nijkamp, 1994; Nijkamp and Rienstra, 1995):

1. The 'infant industry' and 'infant region' argument; in an initial stage of industrial or regional development the economic basis of a sector or region is too weak to be competitive and to survive. This argument is often used to justify subsidies and protection to the transportation sector and for the construction of high quality infrastructure in less favoured regions, for example in the European Union;

2. The market imperfection argument; a market system does not always result in a Pareto-efficient allocation. In practice, there are many cases of inertia, biased behaviour or a lack of information which lead to so-called market failures, so that a Pareto-efficient allocation of resources is not achieved. The aim of government intervention is then to remedy this sub-optimal allocation and in this way to move towards the theoretically pure situation of perfect competition. Well-known causes of market-failures are:

– imperfect competition; this may involve indivisibilities or returns to scale (e.g. public utilities), where natural monopolies are necessarily to be publicly owned to serve the consumer's interest. Infrastructure is an example of this, because it is in most cases not efficient to operate two links at the same corridor. Also the special network character of infrastructure causes imperfect competition: one given link may contribute to the profitability of other links, and therefore an unprofitable link may be profitable when the impact on the total network is taken into account;

– imperfect information: in case of lack of (reliable) information (or of equal access to information), governments may issue regulations on product quality or liability in order to protect less informed actors;

– absence of markets: governments may decide to intervene in the market from different motives, for instance, to eliminate negative externalities (e.g. environmental taxes or standards in case of environmental damage), to generate positive externalities (e.g. subsidies in case of third-party effects outside the realm of market transactions), or to ensure efficient market transactions in case of public goods (e.g. urban road infrastructure should be accessible to all users, in particular as variable user charges may be inefficient and costly).

3. The ethics and justice argument; normative views on the functioning of the economy are important in this case. This argument emerges if, in accordance with ethical or political beliefs of society or governments, the outcomes of a market economy are regarded as inequitable or unacceptable. An obvious example is the provision of non-profitable public transport, because the government wants to provide a minimum mobility level for everyone at reasonable fares.

Because of the above mentioned reasons, governments influence the transport system largely, by introducing regulations, imposing taxes, providing subsidies, etc. In theory, the government should aim in this way at a social optimal result in which external impacts have to be weighted against economic (monetary) gains. As mentioned in Section 1, however, it seems that this social optimum is not achieved. An explanation may be found in the so-called government failures. These will now be elaborated, based on public choice theories in which it is taken for granted that governments are composed of people, who have also their own indigenous objectives and utility functions. Important in this respect is that mostly a distinction is made between politicians (and political parties) on the one hand, and civil servants on the other hand. This distinction may be necessary because of the different utility functions both groups may have. Both groups will subsequently be discussed (cf. Rienstra and Nijkamp, 1998).

2.2. Politicians and government failures

In public choice theory it is assumed that politicians are in the first place focused on re-election (Frey, 1983). Only when this is more or less secured, ideologies and altruism may come into play. Certainly in the present time, when voters seem to shift very easily from one party to another, the re-election issue receives more emphasis than in the past; this reduces the possibilities for politicians to act in an altruistic way, e.g. in order to stimulate a sustainable transport policy stronger than desired by the voters. As a consequence, it may be expected that politicians

will carefully monitor and follow the opinions of their voters, which are in general not in favour of strict transport policy measures (Rienstra *et al.,* 1996).

At the same time, one should be aware of the large shifts in opinion of voters. As observed by Rietveld (1997), the priorities of voters may drastically change, depending also on general economic conditions, unexpected disasters or threats, etc. For example, in the Dutch elections in the year 1989 environmental issues had a high priority in the view of voters, whereas in the year 1986 environmental issues had a much lower priority. Also in recent years, environmental issues seem to receive less attention. The focus in transport policies may then shift over time from environmental to e.g. accessibility issues.

Particularly important in this respect is therefore the voting behaviour. During election periods people may vote for parties which promise to care for social and environmental issues. However, when measures are introduced which influence the life of the voter, these measures are often strongly opposed. As a result, politicians may act in a different way during election time than after the elections. One of the basic assumptions may therefore be, that 'political parties formulate policies in order to win the elections, rather than winning elections in order to formulate policies' (Downs, 1957). A result of this observation is, that politicians often remain vague during election times, promise too much (only to some extent, the credibility is also important), and try to bind the median voters.

Another important observation is that voters may choose for a party because of many relevant subjects involved. It is likely that one party will have a preference for a given subject (e.g. financial/budgetary policy), while another party is preferred for other reasons (e.g. environment). A voter has to make a trade-off, and will vote for the party with the optimal mixture. A result, however, may be that the preferences of all voters are not consistent, as is witnessed by the Arrow paradox ($A > B$, $B > C$, $A > C$; cf. Downs, 1957). This provides a politician with some degrees of freedom, which however may be used for personal gains. Additional objectives of politicians which are often mentioned in the literature are: getting monetary benefits, increasing personal power, receiving a place in history (books), altruism, ideology, etc.

An important feature of many transport problems are the long term impacts and the wide range of solutions that are necessary (e.g. infrastructure projects to solve congestion, climate change problems). Because of the short term in which elections take place, such long term problems tend to be more or less neglected by politicians. The main reason is that it is not possible for politicians to present results of their policies before the next elections, while at the same time there are many negative impacts for their voters (e.g. restrictions in car use). This trend may be reinforced by the increasing impact of the media in past decades. Because individuals can more easily be reached and informed, the degrees of freedom for politicians are decreasing even more.

In this respect also the policy cycle as presented by van Dijk (1991) may be illustrative. This cycle applied to transport may be as follows:

– transport externalities become a political issue (e.g. because of a disaster, new information);

– the issue is taken over by politicians and it becomes an electoral issue, therefore many policy measures are promised;

– after the elections concrete targets and instruments are to be introduced. An 'information battle' starts, in which lobby groups (e.g. environmental groups, industries, etc.) inform the policy maker;

– new decisions are taken; however, in the previous stage many possibilities are not regarded as acceptable, while later on the issue may not be that relevant anymore in politics; therefore, strong measures are (often) not introduced.

In this way, a picture is presented of weak politicians, not able to apply long term strategies to solve transport problems. However, also a second group may negatively impact transport policies: the civil servants.

2.3. Civil servants and government failures

Civil servants will normally have a utility function, which differs from the societal or the political one; this may sometimes lead to a suboptimal allocation of funds because of reasons of bureaucratic power or self-esteem (Nijkamp and Rienstra, 1998). An example of such a utility function is discussed in the budget maximisation theory (cf. Dunleavy, 1991), which takes for granted that the utility function of civil servants correlates positively with the public budget he has at his disposal. Since the civil servant has a monopoly position in the provision of information to the parliament, he will supply information with the intention that the intervention level is higher than in the societal optimal situation.

There are also other theories, like the bureau shaping theory (Dunleavy, 1991). In this theory, higher ranked civil servants are not focused on budget maximising, but on status, prestige, patronage and influence of their work tasks. This objective may not correspond to maximising budgets, and neither with the achievement of a social optimal result. In general, it may be concluded however, that the objectives of civil servants do not necessarily have to fit with attempts to achieve a social optimum.

In theory, there are also other circumstances which increase the influence of civil servants, but which may not result in a social optimum (Frey, 1983):

– there is in the public sector little incentive to act in a socially optimal way; a civil servant is seldom confronted with the consequences of decisions, especially when he acted in the formally right way;

– it is difficult to measure and evaluate the output;

– there is no clear market demand for their services, because these are mostly public goods;

– citizens avoid to get problems with civil servants, because they need them for getting permits, etc.;

– in the public sector there are often limited possibilities for extra wage increases, promotions, etc., so that there may be little incentives for good performance.

This attitude may result in suboptimal solutions, in which the governmental influence becomes too large, while changes in strategies and policies are not stimulated. In transport, this may result in a too large intervention in the transport system. Some consequences may be:

– the price asked for using infrastructure may be too low, to satisfy car users (which is a powerful pressure group) and to maximise subsidies (budgets);

– public transport companies are protected too much, because then the influence of civil servants is the highest;

– new technologies and ideas are not introduced, in order to avoid failures.

One of the conclusions may be that the influence of individuals on the behaviour of civil servants may be expected to be small. The utility function of civil servants may result in suboptimal solutions and hamper the creation of new policy strategies and solutions.

Especially in Europe, international organisations seem increasingly to interfere with transport issues. This may also negatively impact on achieving transport policy measures, as will be discussed next.

2.4. International organisations and government failures

From a public choice point of view, countries tend to join an international organisation (as a club) when (Vaubel, 1991):

– international externalities occur, which result in an underproduction of international public goods (e.g. peace keeping) and/or an overexploitation of common resources (e.g. emissions of greenhouse gases; water supply in certain areas);

– international economies of scale occur in the production of public goods (e.g. international standards for certain goods; stimulation of R&D of certain industries);

– co-operation is beneficial for all parties; non-co-operative behaviour produces suboptimal outcomes ('prisoners dilemma') and co-operative behaviour improves the outcome (e.g. international trade agreements, environmental measures); free riding is a main problem in this case.

International organisations become increasingly important for all kinds of policies. This is the result of the strong globalisation of the world economy; markets are opened and liberalised, requirements for products are standardised, etc. In the European transport sector, this results in an increasing co-operation of countries, e.g. in the construction of an HST-network and other Trans European Networks. This increasing importance is especially the case in Europe, where the European Union gains more and more influence in policies, while national governments lose autonomy.

As a result, many transport measures are also taken by international organisations, in order to prevent 'free rider' behaviour of certain countries. This trend is also observed in the transport market. Several examples can be given of the decreased freedom of national governments in the transport market:

– fuel prices cannot be determined in an independent way, because people may buy fuel 'on the other side of the border';

– protection of the railways is abolished, because of new European regulations;

– companies are becoming increasingly 'footloose': when environmental measures are taken in one country, companies invest in other countries where the resulting costs are lower; a well-known example are the discussions in several countries about the introduction of a CO_2 tax;

– in an integrating economy like the EU, certain measures are often forbidden, because it may hamper free trade principles.

It may be concluded that many measures have to be taken within international organisations. At the same time, one country can often hamper the introduction of measures because of voting procedures within these organisations. As a consequence, also many independent issues are politically linked to each other, which hampers the effective introduction of new policies. This inertia is reinforced by the frequent insufficient democratic control: media are in general nationally-oriented, while the democratic mechanisms do not work within international organisations, and especially individuals seem to have little interest and influence in these organisations. Therefore, policies of international organisations are prepared in a 'black box', in which lobbies of individual countries and pressure groups fruitfully operate.

It can be concluded that there are many reasons why governments at all spatial levels may not sufficiently intervene in the transport system. In that case problems may not be solved. This provokes the question whether the private sector may provide solutions, in particular when this sector is to some extent steered by means of market-based interventions (e.g. increase in fuel prices, CO_2 tax, etc.). Whether transport provision is attractive for the private sector will now first be analysed, followed by a scenario what such a system may look like.

2.5. Transport provision by the private sector: a promising option?

For private investors investments in transport infrastructure have characteristics which make these investments different from competing investments such as immovables and capital goods in several ways. These are (ECMT, 1990; Nijkamp and Rienstra, 1995):

– the expectation of the economic life of infrastructure is very long compared to other investments;

– the operational costs are relatively low in many cases, especially on longer distance infrastructure;

– during the construction a large amount of capital is required;

– the period before infrastructure construction actually begins can be very long, because of many legal decision-making procedures, resistance in society etc.;

– the construction period is very long compared to other investments;

– once started, the investment is almost irreversible. If the construction is stopped this would imply destroying capital, because it is not possible to use the investment alternatively.

From the above mentioned characteristics it follows that in the beginning of a project high financial capital amounts are needed. In general this makes private investors more reluctant, as this reduces their flexibility. The relatively high interest amounts at the start of the project are not immediately compensated by high cash-flows. Instead, often the future returns on investments are relatively low, while in most cases there are no revenues at all before the infrastructure operation starts. After the start of the operation, profits will of course get higher overtime, because repayments are made. There are however many risks involved, e.g. on the use of infrastructure at hand. Clearly, when mobility on the segment concerned grows, the revenues tend to grow as well. The problem is that the rise in profits and revenues often starts many years after the initial investment, which makes the uncertainty and the risks very high compared to alternative investment options. As a consequence, the financial and legal aspects of private loans for infrastructure are often rather complicated (Banister *et al.*, 1995).

The political risks make up the most important difference with respect to other investments, however, since the government has many reasons to interfere in the transport market (cf. Section 2). There is always a danger of changes in laws or new regulations or even nationalisation, because of a changing transport policy. In the Netherlands, for example, the government has the legal right to interfere when national interests are harmed; in France, the government forced the investors in the Mont Blanc tunnel and the St. Bernhard tunnel to invest their profits in other infrastructure projects. It is obvious that this may change when

institutional and social changes cause a withdrawal of the public sector out of the transport sector (Rienstra and Nijkamp, 1998).

Nevertheless, it is interesting to investigate to what extent private sector involvement may increase, and how governments can 'use' the private sector to achieve policy targets. Therefore, a scenario will be constructed maximising private sector involvement in the European transport system in the year 2030.

3. PRIVATE SECTOR INVOLVEMENT: A SCENARIO

As argued by Nijkamp *et al.* (1998), the transport sector is related to many policy fields. A transport scenario should therefore take many of these issues into account. These issues relate to:

– the spatial organisation; extreme developments may be a diffuse vs. a very concentrated spatial structure both on the European and urban scale level. This will have large impacts on transport distances and transport flows. The latter will again affect the competitiveness of collective transport modes because these are dependent on high density flows;

– institutional issues, in particular the degree and nature of government intervention in the transport market; we will assume that government influence is necessary, but we assume that only market-based measures are taken, while the management of transport modes and infrastructure is purely private;

– the economic policy; general policies will also be applied to the transport sector, which affects subsidies. Also the way governments intervene is important: regulatory measures may have different impacts than market based measures; the same holds for the level of centralisation. This consideration is also important for future economic growth, regional development, the construction of infrastructure towards peripheral regions etc.;

– socio-psychological factors; non-intervention may favour inequity in society (for example, an uneven income distribution, uneven chances for individuals, e.g. travelling, education) which will also have impacts on the transport policy and objectives.

In the scenario developed here, technological advances in the transport sector are regarded as endogenous developments (i.e. responses) result of systemic forces. Now, we will elaborate on the above mentioned issues, assuming a government which withdraws out of the economy as much as possible, while the society largely become individualistic; the reference year is 2030. First we will discuss the above mentioned factors, next we will describe the resulting transport system. The scenario is based on Nijkamp *et al.* (1998).

3.1. Spatial factors

The spatial organisation in the year 2030 is the starting point of this scenario. A shift will take place out of the cities and the core zone towards 'green' rural and partly peripheral regions, which are becoming favourite places for living and working, because of higher valued living conditions (the suburbanisation trend). Because of mobility price increases, in general only the higher income classes will be able to move to these areas. Governments will attempt not to interfere, because every individual is supposed to be free in choosing his or her place of living. At the same time the trend towards footloose companies will continue, as these firms follow the highly educated working force. This will especially be true for the most dynamic sectors in the economy.

As a result, the peripheral and rural regions around large urban areas tend to become highly competitive, despite the abolishment of regional support programmes. Therefore, a diffuse spatial organisation – according to the chains and zones model – will occur in all countries in Europe. The resulting transport demand reflects a pattern characterised by many low density criss-cross links.

The same trends will occur at the urban level. Every region has one or more cities, which are the main centres of population and economic activities. Because of the higher transport costs regions have become more self-supplying, while they have also become rather powerful because of devolution trends.

The urban organisation which is evolving has also a diffuse structure. The population of most cities will not grow. The size of households will decline further, therefore more dwellings are needed to house the smaller families. People who can afford it will move towards 'green' suburbs. The same holds true for many services like shopping malls etc. Also companies will follow this trend, because of the poor and expensive accessibility of the urban centres. People in the lower income classes, however, stayed behind in the old city centres.

3.2. Institutional factors

The devolution trends will largely continue. Organisations like the UN, OECD and the World Bank will not get more power, whereas national states become relatively more powerful. There is one major exception, however. The global environmental problems (e.g. the greenhouse effect, depletion of the ozone layer, acid rain) cannot be solved at the national level, because individuals and countries are caught in the social dilemma of 'free rider' behaviour. Therefore, a strict environmental policy will be agreed upon all over the world, while evasion from this policy is not possible. An example is a global CO_2 tax, which will

increase, for example, the price of conventional fuels to a large extent. As a result, fiscal revenues are to a significant extent based on environmental taxes.

Also a reversal in the European integration policy will occur; as a result the regional support and agricultural subsidies will largely be abolished. Most emphasis will be put on the competitiveness of countries and regions, which will reinforce the trends towards governments 'stepping back'. Therefore, there is no active housing and physical-spatial policy, while also social security systems will have been drastically reduced in size and coverage.

Also the transport sector will be no main policy field anymore. Infrastructure and the exploitation and operation of networks will be largely privatised. As a result, for example, user charges (by, for instance, road pricing) will be introduced at a large scale. When demand is not sufficient, the infrastructure will simply be closed.

3.3. Economic factors

The European economy will develop in a relatively positive direction, because of the introduction of more market principles and incentives. Therefore, the European economy will become more competitive compared to other trade blocks. Because of the high mobility costs, trade growth will largely diminish. Despite this, a large share of the population may still afford to live in rural areas, because of high economic growth and rising incomes.

Regional economic growth will exhibit more dispersed patterns because of the diffuse spatial development. Therefore, the economy in the core regions will develop in a relatively negative direction, whereas the opposite holds for peripheral and rural regions.

Policies will be aiming at internalising environmental costs by increasing the price of conventional fuels, for example, by implementing a CO_2 tax, but also by introducing levies on noise, visual and stench annoyance etc. The variable costs of transport will also increase because of the privatisation of the infrastructure. All public transport will become also privatised, while only basic safety standards will have to be met. All transport has become profitable in this way, in the sense that all users pay for all costs (including social costs).

3.4. Social and psychological factors

There will be a widespread agreement in society that the environment has to be protected, which will make global measures possible, despite the disintegration of the world community. At the same time, the individualisation trend will

become more perseverant. Therefore, evasion problems will likely occur, which will make market-based measures more necessary. This trend will also lead to a smaller household size, which will increase housing needs and therefore reinforce geographical diffusion trends.

Social security systems will be largely privatised and minimised; the same holds for all kinds of public subsidies and government support. A strong socio-economic segmentation in society will come about; for example, the income distribution will become much more skew. Therefore, also mobility and housing possibilities may develop much more uneven.

Intuitively, society can be divided in three income classes: the first class is that of the rich people (the 'happy few' may make up approx. 20% of the population). They own private cars (based on new fuels) and are not restricted by the high mobility costs; therefore they can afford to live in highly valued areas with a high quality of life.

The middle class accounts for about 60% of the population. They can afford a private car, but they are restricted by the high variable transport costs. This class will mostly live in suburbs and rural regions. Teleworking will become more common, which will reduce mobility needs.

Finally, the lowest income class (approx. 20%) will mostly consist of unemployed people, living in old quarters of cities. For their travel needs they depend on either car rentals or (more likely) collective modes, because they cannot afford to own a private car.

Next, we will explore the consequences of this interior scenario for the transport system.

3.5. Long distance transport

Because of the diffuse spatial organisation many low demand criss-cross transport links will emerge. The taxes and user charges will make mobility much more expensive. The environmental taxes will be so high that conventional fuels are to a large extent not used anymore, and will be replaced by new alternative fuels (such as liquid hydrogen).

Infrastructure will be largely privatised, and will be planned, constructed and operated by the private sector. The same holds for collective modes, which will be exploited on a commercial basis. Because of the low density of demand on many links, the use of collective systems will largely diminish.

Individual modes will generally be the most efficient ones; therefore, the high and medium income classes will own a private car. Telematics systems will be introduced for many transport applications, while on the main links route

guidance will become common practice. This will increase the capacity of the infrastructure significantly.

Surface infrastructure will be strongly taxed because of the high environmental externalities, and therefore it will become attractive to construct subterranean transport links for long distances. The same holds for existing highways, which will be reconstructed as subterranean infrastructure or otherwise closed. This strategy will be less attractive for conventional rail infrastructure, therefore a significant part of traditional rail infrastructure will be closed.

As a result, only at high density links High Speed Trains (HST) and Maglev trains will be in operation. This will especially be the case between large cities where high density links do exist. A bus system will be set up towards other cities, which are mainly used by people who do not own a car. On very long distances new LH_2 airplanes may offer an expensive but environmentally-benign service.

At the beginning of the next century mobility growth will be sometimes negative, because of the new environmental taxes. Later on new technologies may be introduced which become cheaper too. Therefore, mobility will start to grow again from 2010 onwards. The modal split on long distances will change in favour of the private car. The share of this mode will be about 90%, with all cars driving on new environmentally more friendly fuels.

3.6. Urban transport

Parallel to the above mentioned long distance transport trend, also the cities will develop towards a diffuse spatial organisation, while the population will not grow to a large extent. Many public transport links will not be profitable anymore, therefore several public transport links will be closed. An extensive bus system will be set up for people who do not own private cars.

Private cars based on electricity and new fuels will be the main mode of urban transport in 2030, while on shorter distances also the bicycle will be an important mode in suitable cities. Only at high density links collective modes will offer a service. A great deal of infrastructure will be constructed as subterranean infrastructure, while electronic user charges will be levied everywhere.

Because of the shift out of the cities, urban mobility will decrease at the beginning of the next century, after which it will stabilise. The modal split of the private car will be approximately 70%, while collective modes will have a modal share of about 30%.

It can be concluded from this scenario that the transport scene is largely dominated by new fuelled vehicles, but that environmental and congestion problems will largely be solved.

4. CONCLUSIONS

Transport policies are related to many other policy fields and objectives, as equity, regional development, economic policy, etc. In addition, transport is a politically very sensitive area, so that governments are not eager to impose strict transport policy measures. As a result, the external costs caused by the transport sector increase largely, while there is hardly any perspective for solving them.

In the last few decades, devolution trends seem to dominate society and government policies. This is partly induced by a change in ideological and cultural insights, but also the financial problems may be an explanation of this feature. Nevertheless, private sector influence is increasing, a trend which is also found in the transport sector. The privatisation and private financing of infrastructure, however, seems not to be introduced very stringently. This is partly due to the political sensitivity of transport measures, while specific features make transport provision not very attractive for the private sector.

The private sector scenario shows that many problems may be solved when private sector involvement is largely increased and the government only intervenes by means of market-based measures. Of course, this scenario is extreme and in the first place is meant to encourage discussions, but it shows what the impacts may be of increasing private sector involvement. It should be acknowledged, however, that this scenario has negative impacts on certain policy objectives: in particular the position of lower income groups, peripheral regions and inner cities may face serious problems in the scenario. It is questionable as well whether congestion problems will be fully solved.

Nevertheless, some interesting conclusions can be drawn from the scenario. Equity issues will receive much less attention in such a society, which makes income distribution more uneven and makes society in general less 'social'. Interestingly, the transport system may become entirely different from what current policies aim at: collective transport modes will largely disappear (except airplanes), while at the same time new – low emission – fuels will be introduced. The latter system may fit much more in the market demand and in a more diffuse spatial pattern which is again the consequence of reducing spatial planning.

Environmental problems caused by transport may largely be solved by means of the introduction of these new fuels. The same holds for congestion, because market based measures (e.g. road pricing) make mobility much more expensive,

resulting in lower mobility growth. The transport sector will also be less subsidised, while e.g. a CO_2 tax may result in more income; in this way financial problems of governments may be reduced.

One should note that also opposite tendencies may occur. The high mobility prices may result in a more compact spatial organisation in order to reduce mobility costs. Also other trends may be reversed because of the high mobility costs. In our scenario, however, economic growth is so high that these costs are accepted by a large share of the population, so that these trends continue.

From the analysis in this paper it can be concluded that when governments are prepared to accept the loss of influence in a strategic sector such as transport and the society in general is prepared to accept less equity (both being major trends), increasing private involvement in the transport sector may help significantly in solving several urgent transport problems.

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