From the Expected to the Desired Future of Passenger Transport: A Stakeholder Approach

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Abstract
Sustainability as an unambiguous policy goal is not a priori secured, as is clearly shown in the transport sector, where the negative externalities are still increasing despite official policies aiming at a reduction of these external costs and at the achievement of a sustainable transport system. To analyse why this is the case, a conceptual model is developed in this paper, in which stakeholders are identified which influence sustainable transport policies. These stakeholders are individuals, the public sector (subdivided into politicians and civil servants), international organizations and pressure groups (car industry, oil industry, car users and environmental groups). It appears that - although it may be assumed that nobody desires an unsustainable future - most incentives and mechanisms in our conceptual model of the decision-making process hamper the achievement of a sustainable transport system. In the second part - by way of empirical test - results of a questionnaire among Dutch transportation experts on the expected and desired future of European passenger transport are concisely discussed, in which the year 2030 is taken as a reference year. It appears that in the expected future the stakeholders largely behave as predicted in the conceptual model. In the desired future, however, the stakeholders have to change their attitudes drastically. It is concluded that a strategy focused on behavioural changes of stakeholders is necessary for the achievement of sustainability goals. Sufficient and appealing information, the existence of alternatives for car use and a cooperation of all stakeholders are key success factors for the achievement of a sustainable transport system in the future.
1 Introduction

In a simple atomistic society driven by market forces, individual citizens operate on the basis of optimizing their utility in a Pareto-optimal way. When no transaction costs occur, even externalities will be included in the market decision (Coase, 1988; Nijkamp and Rienstra, 1996). Of course, transaction costs do exist in the real world, so that in a somewhat more complex and ordered society a government may have to intervene in order to provide services and policies to cope with market failures, so that a more or less social optimum outcome is secured.

However, in practice, governmental policies and outcomes of decision-making processes in society are not that simple. Also other stakeholders play an important role, while each stakeholder has his own utility function. Also individuals may not always seem to act in a rational way, while governments may have their own utility functions, which differ from the societal ones. Therefore, the outcomes of a certain policy-making process may not result in socially optimal outcomes.

When the results of the great many attempts and policies to achieve more sustainability in transport are analysed, this observation seems to hold very well. Officially, policies aim at achieving sustainable transport, by reducing congestion and stimulating public transport. In reality however, these policies are not very successful. In every European country the mobility levels increase, the modal split changes in favour of the car and airplane, and the emissions of harmful gases increase. As a result, the external costs of car use may be as large as 3% of the European GNP (Verhoef, 1994). In fact, this is a strange observation, since almost no individual in society wishes the environment to deteriorate. At the same time congestion, especially in large cities and densely populated regions, becomes an increasing problem, which is not coped with in an effective way.

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. In this paper it is analysed why this is the case and which changes are necessary in the decision-making process to achieve a more sustainable transport system.

The contents of this paper is as follows. In Section 2 a conceptual model on the decision-making process in the transport sector is presented, which explains the question why this is the case. In Section 3 this model is tested in an empirical way by analysing the opinions of Dutch transportation experts on the expected and desired future of the transport sector. Strategic policy conclusions are drawn in Section 4.

2 A Conceptual Model of Stakeholders

In light of the above-mentioned observations, it makes sense to identify stakeholders in the process for achieving sustainable transport, to analyse the incentives of these stakeholders and to explain why the transport system still...
moves away from sustainability. Such an analysis may be carried out by applying public choice theories to the transport sector, so by applying an economic analysis to the outcomes of the decision-making processes which should but do not lead to a sustainable transport system.

There are two ways of policy analysis in public choice theory (Rietveld, 1995). The normative approach analyses the optimal outcome of a process, by determining which outcome is Pareto-optimal. The second analysis is the positive approach, in which the actual outcome of the decision-making process is analysed. Here, we will focus on the second type of analysis, applied to sustainable transport policies.

In public choice theories, the basic assumption is that every human being acts as if he were a rational utility maximiser (see e.g., Dunleavy, 1991). This assumption provides a clear basis for analysing the behaviour of individuals, although one also should pay attention to theories, which explain non-rational behaviour. There are however also attempts to rationalize this behaviour (see e.g., Brady et al., 1995).

Eventually, it may be possible to change incentives of the stakeholders in one way or another, so that current trends may bend into the direction, which is desired by society at large. A conceptual model which presents the influence of the main stakeholders on (sustainable) transport choices is presented in Figure 1.

![Figure 1: A conceptual model of stakeholders in a decision-making process towards sustainable transport](image)

Only the strongest relations are presented in Figure 1; it should be acknowledged that of course also other relations hold, which are assumed to be less strong. Policies to change e.g. the behaviour of individuals or the R & D of the car industry (which may be an important pressure group) are included in the ‘sustainable transport’ box. Next, we will discuss the behaviour, incentives and relations of the distinct stakeholders.
2.1 Individuals and sustainable transport

The first group of stakeholders in the transport system is formed by the individuals. In the end these are the consumers of transport; the behaviour of this group is therefore critical for the achievement of sustainability. This group of stakeholders may influence the road to sustainable transport directly, but also via other stakeholders as was already shown in Figure 1.

In the past decades, individualism has become a megatrend in society. Individuals seem to act more and more like ‘calculating citizens’, who are oriented towards monetary gains and their own societal position. The influence of e.g., churches, labour unions and other societal organizations has diminished. As a result, it seems that altruistic behaviour has decreased too, which is also reflected in public policies which tend 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. Individuals behave thus more and more as if they were rational (calculating) citizens, as is largely assumed in the public choice literature. This however, may lead to outcomes which do not seem rational, e.g., because acquiring information is not free (time and monetary costs). In this respect it should be added, that information has become much cheaper in the past decades (radio, television), a trend which is still continuing (e.g., the development of ‘the electronic highway’); therefore, individuals are becoming better informed. At the same time, the overload of information leads to the observation that the presentation of information becomes increasingly important; otherwise the information is lost because it is not appealing.

In the decision-making process of these individual stakeholders, information is the starting point. The decision is first of all determined by (perceived) alternatives. The final choice between these alternatives is made on the basis of a cognitive and motivational decision-making process, making use of the available knowledge of the alternatives, perceived or presupposed pros and cons, personal preferences and attitudes, and social and individual norms. In other words, the alternatives are traded-off against each other, which is, however, only partly rational and very strongly biased (Rooijers and Steg, 1991). The above-mentioned factors will now concisely be discussed, using partly the behavioural theories of Fishbein and Ajzen (1975) and Ronis et al. (1989).

Knowledge

An optimal rational choice between alternatives includes first of all that all possibilities are known in an objective way. This is often not the case, however. In transport, for example, those people who travel little or not at all by public transport hardly see it as an alternative. The knowledge from which a choice has to be made is usually just a subset of all feasible possibilities; this leads to the first subjective bias in the decision-making process.
**Perceived pros and cons**

An optimal objective choice further presumes that all pros and cons of the alternatives are known, and then have to be weighted on a rational basis. In reality, these conditions are not fulfilled, because they are both largely biased as a result of selective perception and cognitive dissonance mechanisms (Festinger, 1954). People try to reduce this dissonance psychologically to the maximum extent by (Brady et al., 1995):

- revoking the decision when new information comes available;
- making the own decision more attractive;
- reducing the attractiveness of alternatives;
- avoiding to get new information;
- providing funds to e.g., an environmental organization which claims to be the solution for a problem.

As a result, people in general are inclined to overestimate the advantages and to underestimate the disadvantages of their own way of behaviour, while for the alternatives the opposite holds true. In transport, for example, the costs, travelling time and environmental pollution linked with car use are often trivialized, whereas long travelling times and lack of comfort in public transport and bicycles are emphasized (Rooijers, 1992). Only when the dissonance on the current situation and behaviour becomes so large that it is impossible to deny it, the behaviour of individuals may change.

**Individual preferences and attitudes**

Besides these cognitive factors also motivational and even emotional factors play a significant role. Such factors include aspects such as pleasure, privacy, status, personal control and representativeness. In transport, these factors may largely contribute to the preference for individual travel modes.

**Social and personal values**

People do not live in isolation, but act in a social context, which may have a substantial influence on the decision-making process and the behaviour of a person. In fact, people are strongly motivated to compare themselves with other relevant groups and to conform to general trends in a social context (Festinger, 1957). Here too, it should be observed that especially individually perceived social norms are important, which differ from objective standards. So the result is that the perceived social norms are distorted or influenced by individual preferences and attitudes.

Not only social but also personal norms may be relevant as well. These are the individual's behavioural motives, which are of importance for himself, but which are more or less isolated from his individual preferences and perceived social norms. For instance, an individual may have a strong preference for car use, but nevertheless he chooses to use his bike for health reasons.

So the existence of habits hampers the possibility to change behaviour. To break out of undesirable habitual behaviour the individual will first need to have knowledge about all relevant alternatives (Ronis et al., 1989). Subsequently, the
decision-making process itself can be influenced by control measures that affect the factors mentioned before.

Consequences for transport

It is thus clear that there is a bias in the behaviour of individuals, which is rather conservatively oriented. This is a major obstacle for the achievement of a sustainable transport system (relationship 1 in Figure 1). Both the travel need and the travel mode choice are important in this respect; the first one is not discussed in this paper, although especially land use and residential policies may structurally reduce travel needs. It may also be concluded that the freedom in the transport decision-making process is mainly limited to the travel mode selection regarding new and incidental trips. When this process would also take into account repeated similar trips, positive experiences (or absence of negative experiences) with a certain travel mode may act as a positive reinforcement of the choice made before, which increases the chance that on the next occasion the same mode will be chosen (Rooijers and Steg, 1991). This may have at least two important consequences:

* there is hardly an explicit choice; the travel mode is used because it was used before, and therefore other alternatives are even not considered;
* persistent prejudices and misperceptions may develop which can hardly be remedied.

It should be acknowledged that the chance of habit formation is probably the highest for car use, because the car is more multi-functional than other travel modes; therefore, it has a highly attractive value; as a result, car use will not quickly lead to negative experiences.

In conclusion, because of the mechanisms described above individuals are biased towards their previous behaviour; there are little incentives to change behaviour, and it will be very hard for public transport and/or new technologies to gain a large(r) market share in the transport sector.

As will be discussed in Subsection 2.4, the influence of individuals on several pressure groups - especially the car industry and environmental groups - may be rather high (relationship 2 in Figure 1). The first is dependent on the demand in the market, while the second may reduce dissonance of individuals. However, in practice this potential still has to mobilized. The above observed psychological bias may hamper this mobilization. The same holds for the influence of individuals on politicians (relationship 3 in Figure 1). The latter will be further discussed in Subsection 2.2.

2.2 The government and sustainable transport

The next important stakeholder is the government (relationship 4 in Figure 1). Governments may influence the achievement of sustainable transport 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 the environmental impacts have to be weighted against economic (monetary) gains.
At present, devolution trends seem to dominate governmental policies. There are clear trends towards privatization, deregulation and governments 'stepping back', e.g., by reducing social 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 of governments; in some countries railways may even be privatized (e.g., in the United Kingdom). It may be concluded that also the government is increasingly subject to market forces and is increasingly rationalized on the basis of efficiency principles (Self, 1993).

In public choice theories 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.

Politicians and sustainable transport

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 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 (relationship 3 in Figure 1). As a consequence, it may be expected that politicians will carefully monitor and follow the opinions of their voters. For sustainable transport again, the inherent conservatism of citizens is relevant for the behaviour and span of control of politicians.

At the same time, one should be aware of the large shifts in opinion of voters. As observed by Rietveld (1995), the priorities of voters may drastically change, depending also on general economic conditions, unexpected disasters or threats, etc. For example, in the Dutch election in the year 1989 environmental issues had a high priority in the view of voters, in the year 1986 environmental issues had a much lower priority. Also in recent years, environmental issues seem to receive less attention.

Particularly important in this respect is thus the voting behaviour of individuals. 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 (see e.g., Mueller, 1989).
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; see also Downs, 1957). This provides a politician 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 environmental issues (especially climate change problems) are the long term impacts and the wide range of solutions that are necessary. 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 is as follows:

1. The environment becomes a political issue (e.g., because of a disaster, new information);
2. The issue is taken over by politicians and it becomes an electoral issue, therefore many policy measures are promised;
3. 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. As will be noted in Subsection 2.4 environmental groups may be weaker in this respect than their competitors;
4. 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.

Civil servants and sustainable transport

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, 1996). An example of such a utility function is discussed in the budget maximization theory (see e.g., 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. This is illustrated by a graphical presentation in Figure 2, in which a simple situation is presented with linear cost and revenue curves and without fixed costs. In this figure the level of intervention is supposed to be related to the budget of the civil servant: a budget of a civil servant increases when the intervention level increases.

Figure 2 The intervention level under a budget maximizing civil servant

When the parliament would have full information, it would choose the intervention level at which the marginal costs would equal the marginal revenues, which corresponds to an intervention level of \( i \), which is optimal. A civil servant however, may provide only information about the total costs, and as a result the parliament may decide to intervene at (somewhat left of) the point where the average total costs equal the average total revenues, which corresponds to intervention level \( i_1 \). This is optimal for the civil servant since it maximises his budget, but it is suboptimal from a societal point of view. In this respect it is also important to notice that the costs of receiving information of third (neutral) parties is high in most cases. 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 with maximizing budgets, but also not 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 publicly offered services, because mostly public goods are provided; 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 a 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 the infrastructure may be too low, e.g., to satisfy car users (which is a powerful pressure group) and to maximize 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, as is also demonstrated in Figure 1. The utility function of civil servants may result in suboptimal solutions and hamper the creation of new policy strategies and solutions.

2.3 International organizations and sustainable transport

From a public choice point of view, countries tend to join an international organization (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);
- cooperation is beneficial for all parties; non-cooperative behaviour produces suboptimal outcomes (‘prisoners dilemma’) and cooperative behaviour improves the outcome (e.g., international trade agreements, environmental measures); free riding is a main problem in this case.

International organizations become increasingly important for all kinds of policies. This is the result of the strong globalization of the world economy; markets are opened and liberalized, requirements for products are standardized, etc. In transport this results in an increasing cooperation of countries, e.g., in the construction of a 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, environmental measures are also taken by international organizations, in order to prevent ‘free rider’ behaviour of certain countries. This trend is also observed in the transport market (relationship 7 in Figure 1). 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 CO₂ tax;
- in an integrating economy like the EU, certain measures are often forbidden, because it may hamper free trade principles.

It may concluded, that many measures have to be taken within international organizations. At the same time, one country can often hamper the introduction of measures because of voting procedures within these organizations. 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 organizations, and especially individuals seem to have little interest and influence in these organizations. Therefore, policies of international organizations are prepared in a ‘black box’, in which lobbies of individual countries and pressure groups fruitfully operate.

2.4 Pressure groups and sustainable transport

The final group of stakeholders identified in the conceptual model is made up of pressure groups, which may have a far-reaching influence on policies of both governments and international organizations (relationships 6 and 8 in Figure 1). At the same time individuals influence the existence, behaviour and impact of pressure groups (relationship 2).

Pressure groups tend to come only into existence when collective efforts provide certain advantages to the members of a group. Their activity can be considered as a public good; therefore, there are little incentives to become a member. There are three conditions however, which may make a group stable and effective (Frey, 1983):

- in small groups free riding becomes impossible because of social control; this makes small pressure groups often more effective than large ones;
* a group may provide a private good to the members; therefore, it becomes attractive to join the club. Well-known examples are mobile repair services for car drivers, an interesting journal, access to information, etc. However, also organizing social activities may be a reason to join, or the feeling to belong to an exclusive club;
* governments may force a group focusing on a specific issue into existence, because they prefer to deal with formal groups.

Individuals with common interests, but without sharing explicitly one of the above reasons, constitute ‘latent groups’. These groups only may come into existence when policies interfere too much in a negative way. As a result, groups in society differ in power and strength: labour unions and employer organizations, for example, are well organized, while consumers and tax payers do not have powerful pressure groups. Also environmental lobbies may be relatively weak because of their large size and diffuse objectives. By negotiating, the most powerful groups may gain advantages at the expense of the less powerful ones. For each intervention measure the costs per individual (consumer, tax payer) may be so low and unclear, that it is not rational to resist the measure (like minimum prices, protection measures, etc.).

Strong groups may have much power in a decision-making process (Mueller, 1989). Governments often depend on information provided by the groups, while in exchange they may receive services from the public sector. They also may influence voter groups or mobilize people.

As observed above, the influence of pressure groups in international organizations may be large, in particular because of the lower democratic control and the low participation of individuals in the process (relationship 8 in Figure 1). Also the efficiency of lobbies of national governments seems to be very important in the decision-making process of international organizations (relationship 5).

Several groups may be identified which influence the transport sector to a large extent (relationship 9):
* the car (and aviation) industry;
* railway companies;
* associations of car drivers;
* the oil industry;
* environmental groups.

These groups will now briefly be discussed.

The car industry

The car industry is first focused on maximizing profits and on the protection of its market share. In the end, this industry is often dependent on the demand in the market, i.e. on individuals. Individuals are clients of either the car industry, the railways or other transport suppliers in order to satisfy their travel demand. In a free market, one may assume that supply is determined by demand of individuals, so that the car industry would follow the demand of citizens.
Because of the reasons mentioned in previous sections however, citizens seem to be very conservative in their attitude towards changes, and therefore the car industry seems to have little incentives for developing more sustainable cars and transport technologies.

In the past decades, a strong concentration has taken place in the car industry. As a result, very large companies are now present in many countries (e.g., Germany, France, Japan, etc.), which provide much employment and form an important economic sector. As a result, these companies have a strong influence on government policies at both the national and the international level. For example, the European car industry which is facing an increasing competition of Japanese and American car industries has - as a result of their large economic importance for the European market - been heavily protected. Another example of the influence of this industry can be found in the tax credits given in France and Spain when people buy a new car; this measure was taken in order to stimulate employment in the car industry. A main aim of these industries may be to protect their investments once made, and to reduce costly investments in new technologies which are not directly asked for in the market. As a result, investments in environmental friendly technologies may be low.

Railway companies

A second important player at the interface of transport and environment is formed by the railway (and other public transport) companies. Governments have invested largely in rail infrastructure and have usually covered exploitation losses of these companies, while - as a result of ownership conditions - governments were also otherwise highly involved in these companies. Rail companies seem to have a strong lobby at the national level, because stimulating public transport is a main objective of most governments in order to reduce congestion and environmental impacts. Also the social task of public transport - providing mobility possibilities to people who cannot afford a car, elderly, remote regions, etc. - makes this sector important for government policies. Finally, also the employment in this sector is considerable, while the employees in this sector are often highly organized in labour unions and are also eager to strike, which may have strong economic and social impacts.

Associations of car drivers

A third influential group is formed by associations of car drivers. Because of the strong psychological impact of car driving, strong anti-car measures are very unpopular and opposed by strong lobby groups in all countries. These pressure groups have succeeded in having a large amount of members, e.g., by providing mobile repair services and popular journals. As a consequence, the influence of these groups may be extremely high, also because they are able to mobilize many people. Restrictions on car use are therefore unpopular in every western country.
The oil industry

Another important pressure group may be the oil industry. In the first place, this sector employs many people, but also the financial power of this industry is extremely high. It is obvious that this industry favours the use of fossil fuels to the maximum extent, so that reductions in oil use may be opposed by these industries. Because of the international character of the industry, also the influence of this sector on international organizations may be very large.

Environmental pressure groups

A final important group are environmental pressure groups. As discussed before, these may be relatively weak, because they have to combine opinions of a lot of people, which may result in free rider behaviour and in a latent group. An exception are local and regional groups, which may play an important role when a group of individuals is facing local externalities, like noise annoyance and visual intrusion. These groups are often relatively small, which makes free rider behaviour more difficult. At the same time the objectives of such a group are usually pronounced and clear, which makes the group stronger. Well-known examples are the so-called NIMBY (Not In My Backyard) pressure groups, which oppose large infrastructure projects. These groups operate often in a very effective way.

Also at the national level however, environmental groups may be important. Their influence may increase because of alarming information provided e.g. by scientists (e.g., the Club of Rome, the recent IPCC-report) or by disasters (depletion of the ozone layer, floods), but also because of own field work (e.g., noise and odor annoyance, visual intrusion). As argued above, individuals often support such groups in order to reduce their dissonance. These groups also may gain support by providing information to the public. The ‘marketing’ of such a group becomes therefore very important (e.g., Greenpeace). However, the environmental groups are mostly considered to be weaker than their opponents, not only because of differences in size, but also because they try to achieve improvements in the long run, while politicians are often focused on the short term (e.g., employment in the car industry).

From our conceptual model it can be concluded that most forces have a negative impact on the attempts to achieve more sustainability. Most stakeholders in the decision-making process seem actually to be in favour of the current situation, while changes in the system and society are not popular and are not shared by large majorities.

Next, we will test our conceptual model in an empirical way, by presenting various results on expected and desired developments in many fields that influence transport and the transport system itself.
3 An Empirical Test: From the Expected to the Desired Future of Transport

To investigate empirically, in our paper, the future of transport a postal survey questionnaire has been sent to Dutch transportation experts. In a second round, an earlier version of both scenarios were validated and commented by the respondents of the first round as well as by a sample of European transport experts.

The reference year of this experiment is the year 2030; the questions concern the Western-European passenger transport system. For a detailed description and accounting of the questionnaire used we refer to Nijkamp et al. (1996); here we only note that the response rate was 36% (n = 271), and that the response gave a representative picture of the sample.

In the questionnaire, it was first asked to indicate both expected and desired future developments of background factors influencing transport, which can be found in the spatial, institutional, economic and socio-psychological field. Next, the expectations and desires on the use of several conventional and newly developed transport modes were investigated. In this way it is possible to construct an expected and a desired scenario, while also the discrepancy between reality and wish can be investigated. Here we will first concisely describe the results of this experiment. Next, we will analyse the role of the stakeholders in more detail.

3.1 Outline of the expected and desired scenario

The main developments and characteristics of the expected and desired scenario are presented in Table 1; for a more extensive elaboration of the scenarios we refer to Nijkamp et al. (1996).

In the experiment it is taken for granted that transport demand is mainly a derived demand, influenced by the above mentioned factors. The resulting transport system is presented in Table 2.

From these tables it can be concluded that in the expected scenario various trends and underlying factors will not change to a large extent. For example, no large scale changes are expected for individual citizens, who are not expected to modify their behaviour drastically in order to reduce the externalities caused by transport. The same holds for the government, whose policy is not expected to be sufficiently and clearly focused in one direction. Especially future spatial developments appear to be a focal point of attention of the various transportation experts in the panel used.

In the desired scenario a clear choice is made for a collective transport system. Therefore, large scale changes are necessary in the behaviour of individuals, as well as in the institutional and economic environment. At the same time the government should invest largely in infrastructure of collective modes and take measures to reduce car use to a large extent. In this way the policy is clearly focused on regulation of the transport sector and on the stimulation of a modal shift towards collective modes.
Table 1  *Main characteristics of the expected and desired scenario*

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<th>Expected Scenario</th>
<th>Desired Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spatial</strong></td>
<td>* Concentration of population and activities in European economic core zone</td>
<td>* Peripheral regions develop positively</td>
</tr>
<tr>
<td></td>
<td>* Moderately compact city introduced</td>
<td>* Compact city introduced</td>
</tr>
<tr>
<td><strong>Institutional</strong></td>
<td>* No clear policy-orientation toward sustainable transport</td>
<td>* Regulatory policies are largely introduced</td>
</tr>
<tr>
<td></td>
<td>* No clear separation of public and private responsibilities (railways, infrastructure)</td>
<td>* Infrastructure, railways etc. are publicly owned</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>* Transport system not very profitable</td>
<td>* Transport system is rather profitable</td>
</tr>
<tr>
<td></td>
<td>* No clear policy level which is most important</td>
<td>* Much centralization in economic policies (EU)</td>
</tr>
<tr>
<td><strong>Socio-psychological</strong></td>
<td>* Individualization trend continues</td>
<td>* Individualization trend reverses</td>
</tr>
<tr>
<td></td>
<td>* Little attention for equity, both in society and in transport</td>
<td>* Much attention for equity, also in transport</td>
</tr>
</tbody>
</table>

*Source: Nijkamp et al. (1996)*

Table 2  *The expected and desired long-distance and urban transport system*

<table>
<thead>
<tr>
<th></th>
<th>Expected scenario</th>
<th>Desired scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long distance</strong></td>
<td>* conventional private cars dominate modal split</td>
<td>* Collective modes dominate (HST, trains)</td>
</tr>
<tr>
<td></td>
<td>* large scale introduction HST</td>
<td>* Conventional fuels largely replaced by new fuels (electricity, liquid hydrogen)</td>
</tr>
<tr>
<td></td>
<td>* collective modes offer supplementary service</td>
<td></td>
</tr>
<tr>
<td><strong>Urban</strong></td>
<td>* More introduction of metro and light rail</td>
<td>* Collective modes dominate</td>
</tr>
<tr>
<td></td>
<td>* Introduction electric cars</td>
<td>* Car use heavily restricted</td>
</tr>
<tr>
<td></td>
<td>* Conventional cars most important</td>
<td>* Walking and cycling increases</td>
</tr>
</tbody>
</table>

*Source: Nijkamp et al. (1996)*
As demonstrated by Rienstra et al. (1995), the expected scenario will not result in large scale reductions of the use of conventional fuels and CO₂ emissions; the desired scenario however, might result in reductions - depending on several assumptions - of about 80%, which may be sufficient for achieving a ‘sustainable’ emission level.

3.2 The role of the stakeholders in the expected scenario

It is clear that there are large discrepancies between the expected and desired future of passenger transport. It is now interesting to analyse whether the stakeholders identified in the conceptual model of Section 2 behave in the way assumed, resulting in a system which is not expected to move to sustainability (as is indicated by about 80% of the respondents).

Individuals

One of the striking features of the expected scenario is that individuals are not prepared to sacrifice for a sustainable transport system. In general, they are not expected to change their behaviour, e.g. by travelling by public instead of private modes, by living in compact cities and by a reversal of the individualization trend. These trends may be regarded as an extrapolation of past trends, and may be explained by cognitive dissonance theories (see Subsection 2.1).

The government

The government in the expected scenario is rather ambiguous. All kinds of measures are taken, but there seems not to be a clear policy focus. Car use is to some extent restricted by road pricing, parking measures, etc. These measures are not introduced in a sufficient way, however. The policy also fails in providing sufficient alternatives by large scale investments in collective modes and their infrastructure, while also the responsibility (public, private) for the provision of these services is not well organized.

The only policy which is expected to be introduced is a rather strict spatial policy at both the urban and European level, aiming at geographical concentration and a compact urban spatial structure. Such a policy reduces travel distances and creates voluminous travel demand per trip, and as a result collective modes become more competitive. Apparently, there will be a consensus in society on these issues, which is rather striking since the living conditions in a compact city may not always be very preferable. It may be the case, that nature parks etc., become increasingly important in the opinion of individuals, while civil servants will tend to like the regulation of the spatial structure.

International organizations

International organizations are not expected to dominate the political scene. In the area of economic and transport policy, for example the European Union, is not expected to become the most important authority. This makes it difficult to coordinate policies and to reduce international externalities. In this way free
rider behaviour of individual countries becomes an attractive option. This may explain why several measures - like road pricing, increasing fuel prices, restricting car use - may not be introduced to a sufficient extent, because it affects the competitive position of individual countries. At the same time, this hampers the coordination of the construction of a network of collective modes, like the HST-network. An advantage may be that the decision-making process takes less time and that less compromises are necessary, but this is not expected to compensate for the disadvantages.

Pressure groups

Pressure groups, finally, seem to behave like is assumed in the conceptual model. Therefore, individual car use is still dominant, while little changes are introduced in the transport system. The car and oil industry succeed in reducing the dissonance of individuals, and influence the trade off between short-term (economic) and long-term (environmental) issues within national and international authorities. Environmental groups will apparently not be successful in changing these opinions, as is explained by the conceptual model. The same holds for railway companies, who are not able to gain a larger market share.

In conclusion, the conceptual model presented in Section 2 appears to offer a reasonable mapping of expected real-world developments. The main stakeholders in the process seem to behave in the way predicted in this model. As a result, the system is not expected to change in the direction of more sustainability. Next, it is interesting to investigate how the stakeholders should act in order to achieve a more sustainable transport system according to the Dutch transportation experts in our sample.

3.3 The role of the stakeholders in the desired scenario

In the desired scenario a clear choice is made for regulation and the stimulation of collective transport modes. This requires an entirely different behaviour of distinct stakeholders.

Individuals

Individuals may be the starting point for the necessary changes, because in a democratic society with an economy based on free market principles, both the government and the industry will finally follow these opinions. In the desired scenario the individuals are more or less forced - but also prepared - to reduce car use and to use collective modes or to shift to cycling and walking. Such a behaviour can only be achieved, when the dissonance of individuals becomes so large that they change their behaviour. This may be achieved by the provision of information in a way which can not be denied; another possibility is that the negative consequences of the current mobility behaviour become so clear (e.g., by a disaster) that individuals will change their behaviour. An important remark in this respect is that there should be alternatives available for current car use; large scale investments in collective modes are therefore necessary.
The government

The national government should, in the desired scenario, shift responsibilities to regions and international organizations (regionalization and centralization); therefore the influence of this government level will decrease. International externalities should be coped with by international organizations, while local and regional externalities might be coped by regional and local authorities. In this way the subsidiarity principle may hold for the transport policy. When this is achieved, free rider behaviour of national governments can be avoided, because relevant measures are compulsory. The task of governments is to focus their policies clearly on the provision of collective modes and the reduction of car use. Large scale investments are necessary in the infrastructure of these modes. In the urban areas a policy focused on the compact city may be a key success factor for the achievement of the desired direction.

It is clear that in this situation both national politicians and civil servants should be prepared to give up part of their authority, while at present this level is very influential. It is obvious that this will cause many problems in practice. These may first be found in the utility functions of politicians, which have to support this shift. They should be more focused on long term sustainability issues instead of short term electoral success.

In the government also incentives should be introduced for achieving clear targets for civil servants, e.g. by setting a clear time path which can easily be checked by the media and individuals. Also incentives (e.g., monetary, promotion, etc.) can be given to civil servants, in order to change their utility functions. In this way regulation should not be reduced, but made much more effective in order to serve the achievement of general sustainability objectives and a societal optimal result.

International organizations

As mentioned above, intemational organizations should become more important, while also some competence should shift to regional authorities. In this way externalities may be coped with at the level where they occur. It is clear that several measures can be introduced much easier than at the national level (road pricing, increase in fuel prices, cooperation of railway companies). However, it is necessary that the decision-making process within these organizations will change. National interest should not be a main issue in this process, therefore these organizations should become more independent of national governments. Therefore, an authority like the EU should gain more independence; the decision-making process should become faster and more efficient. At the same time however, there should be more democratic control, since otherwise the decision-making process will be steered by pressure groups and the civil servants of these organizations. Instead, individuals - with opinions as discussed before - should steer these organizations. When this is not achieved the legitimacy of these organizations is at stake and policy measures will not be accepted in society.
Pressure groups

Pressure groups, finally, should largely change their attitude. The car industry follows mainly the demand of individuals. As a result of this scenario, the car industry will largely diminish, while new technology will be based on the cars powered by electricity or other alternative fuels. Therefore, this industry should not protect its current position, but develop new markets and strategies. For example, by shifting funds to the development and promotion of ‘zero-emission’ cars. An entirely new market may be found in the development of new collective modes and the production of these modes. When the desired scenario will become reality, a lot of production capacity and funds are needed and a large market may be found in this field. This capacity may largely be found in the car industry.

The oil industry may loose its position to an even larger extent, since the use of fossil fuels may largely diminish. However, also in the future there will continue to be a high demand for energy in order to power the transport system. This industry should therefore focus on the development of new sustainable energy forms; a shift which will probably only succeed when there is a sufficient level of demand in their market.

Railway companies and urban transit authorities should change their attitude from defending their protected position and subsidies towards a market-oriented organization. In the desired scenario their market potential is extremely high; the railway companies should therefore be much more eager to meet this challenge. As a result, more flexibility, efficiency and market orientation is a sine qua non for the success of such a policy. In this way also the profitability of this system should largely increase.

Environmental pressure groups finally, may play a vital role in making society more conscious about the environmental consequences of mobility and in creating dissonance in society. These groups should therefore carefully present their information to individuals, the government and international organizations. Of course, the credibility and public acceptance of these organizations is important.

4 Conclusions

From the conceptual model developed in Section 2 it may be concluded that most forces in the decision-making process hamper the development of policies clearly focused on sustainability in the transport sector. This observation also holds when the expectations of transportation experts are analysed: most trends are expected to continue and will not change to a large extent. In the desired future, however, the role of the stakeholders differs largely from the expected future. When this scenario becomes reality, a more sustainable future may be achieved.

Clearly, the current decision-making process will not stimulate the transformation towards a sustainable transport system, although this need and the related objective is acknowledged by a large majority in society. Individuals
may and in a democratic society with an economy based on free market principles should be the starting point of possible changes. At least three key success factors may be identified.

First, it is necessary that the information about the external effects of the current mobility behaviour becomes so appealing that it creates a dissonance that is so large that individuals want to change their behaviour. Environmental groups, scientists, and national and international authorities may play an important role in the provision of this information. When this occurs, governments cannot deny this trend, and measures may have a strong support in society. New ways of information provision may have to be found, therefore. In the end the (car and oil) industry will have to follow the demand of their market and offer such alternatives in order to survive.

A second key success factor is the presence of appealing alternatives for the current mobility behaviour (new technologies, collective transport modes) (see also Rienstra et al., 1996). When these are not available, individuals are not able to change their behaviour and attitude, even if they want to do this. The government should invest heavily in the infrastructure of collective modes, so that alternatives become available; a clear policy for stimulating such a shift is a necessary condition too. Railways should be prepared to change their organization and provide an alternative for the current car system, in cooperation with other providers of collective transport (urban public transport, bus companies, taxi companies). Finally, the car and oil industry should invest in alternatives and have to find new markets and strategies.

The third success factor however, may be most important. A rigorous psychological and cultural turn a round seems to be necessary in the whole society. All stakeholders need to change their attitude and cooperate in order to cope the challenge of making the radical shift towards a sustainable society. When there is such a willingness among all stakeholders, new policy options and strategies may be identified and introduced, and a sustainable transport system may become a realistic and deliberate option.
References


