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Transport:  
A Stakeholder Approach

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Research Memorandum 1996-6

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# **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.

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## 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 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

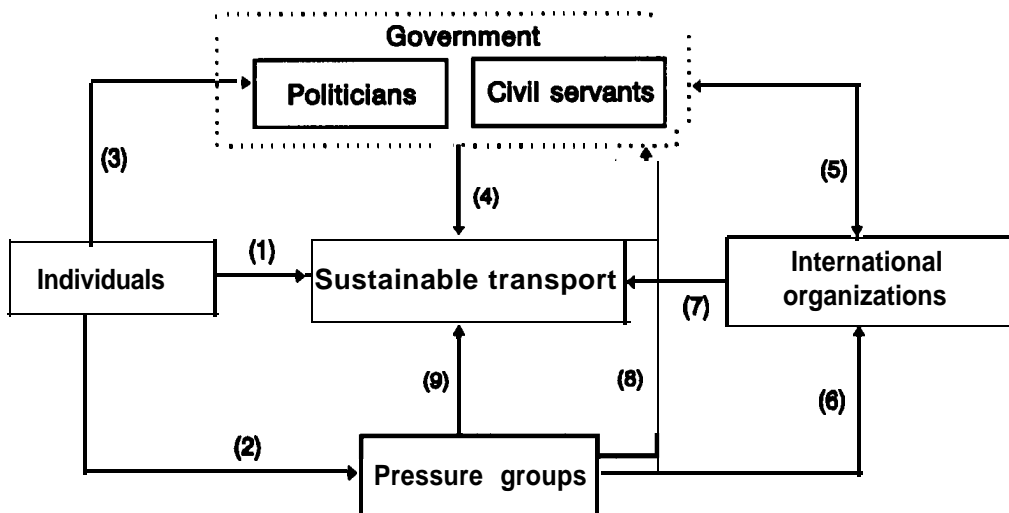
In light of the above-mentioned observations, it **makes** sense to identify stakeholders in the **process** for achieving sustainable transport, to analyse the incentives of these stakeholders and to explain why the transport system still

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*

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, however. 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 be 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.

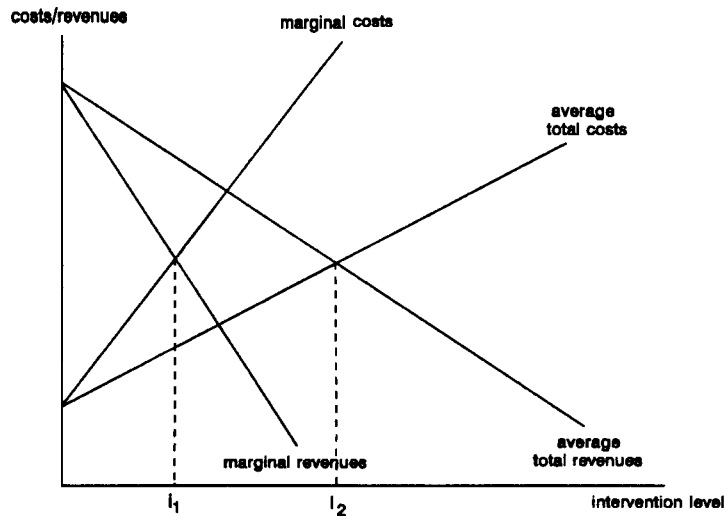
In this respect **also** the policy cycle as presented by Van Dijk (1991) **may** be illustrative. This cycle is as follows:

- \* the environment becomes 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. As **will** be noted in Subsection 2.4 environmental groups **may** be **weaker** in this respect than their competitors;
- \* 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  $i_1$ , 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  $i_2$ . 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 CO<sub>2</sub> 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 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 **organizati-**ons, 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 **organi-**zations **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** impor- tant 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**

	Expected Scenario	Desired Scenario
Spatial	<ul style="list-style-type: none"> <li>* Concentration of population and activities in European <b>economic core zone</b></li> <li>* Moderately compact city introduced</li> </ul>	<ul style="list-style-type: none"> <li>* Peripheral regions develop positively</li> <li>* Compact city introduced</li> </ul>
Institutional	<ul style="list-style-type: none"> <li>* No clear policy-orientation toward sustainable transport</li> <li>* No clear separation of public and private responsibilities (railways, <b>infrastructure</b>)</li> </ul>	<ul style="list-style-type: none"> <li>* Regulatory <b>policies</b> are largely introduced</li> <li>* <b>Infrastructure</b>, railways etc. are publicly owned</li> </ul>
Economic	<ul style="list-style-type: none"> <li>* Transport system not <b>very profitable</b></li> <li>* No clear policy level which is most important</li> </ul>	<ul style="list-style-type: none"> <li>* Transport system is <b>rather</b> profitable</li> <li>* <b>Much</b> centralization in economic policies (EU)</li> </ul>
Socio-psychological	<ul style="list-style-type: none"> <li>* Individualization trend <b>continues</b></li> <li>* Little attention for equity, both in society and in transport</li> </ul>	<ul style="list-style-type: none"> <li>* Individualization trend <b>reverses</b></li> <li>* <b>Much</b> attention for equity, also in transport</li> </ul>

Source: Nijkamp et al. (1996)

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

	Expected scenario	Desired scenario
Long distance	<ul style="list-style-type: none"> <li>* conventional private <b>cars</b> dominate modal split</li> <li>* large <b>scale</b> introduction HST</li> <li>* <b>collective</b> modes offer supplementary service</li> </ul>	<ul style="list-style-type: none"> <li>* <b>Collective</b> modes dominate (HST, <b>trains</b>)</li> <li>* Conventional fuels largely replaced by new <b>fuels</b> (electricity, liquid hydrogen)</li> </ul>
Urban	<ul style="list-style-type: none"> <li>* More introduction of metro and light rail</li> <li>* Introduction electric <b>cars</b></li> <li>* Conventional <b>cars</b> most important</li> </ul>	<ul style="list-style-type: none"> <li>* <b>Collective</b> modes dominate</li> <li>* <b>Car</b> use heavily restricted</li> <li>* <b>Walking</b> and cycling increases</li> </ul>

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 CO<sub>2</sub> 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 also** 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** also 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 **also** 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, international 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** lose 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.



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