

Getting the prices right + 10

Towards target oriented pricing

T&E
Europe's voice for sustainable transport



**Getting the prices right
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Bd de Waterloo 34,
B-1000, Brussels, Belgium
Tel: +32-2-502 9909 / Fax: +32-2-502
9908 / info@t-e.nu / <http://www.t-e.nu>

Author: Markus Liechti, T&E

Getting the prices right was a fundamental requirement from environmental NGOs in the early 1990s. This publication makes the step from theory to practice and asks to implement a target oriented pricing system to support a sustainable transport system serving European citizens.

Picture front page: Enforcement station for Swiss Heavy Vehicles Fee (source: Swiss Federal Customs Authority).

Executive Summary

Getting the prices right was a fundamental requirement from environmental NGOs in the early 1990s. Transport prices should better reflect the real costs to the users, make the transport sector more efficient and reduce its negative impacts on the environment and the citizens. Transport users should pay for transport related costs according to the user and polluter pays principle. Such a pricing system would give the right incentives to the users, a correct price to transport and to the use of scarce resources related to transport.

Getting the prices right is still a fundamental requirement in 2003. Transport users do not yet pay for the negative impact they impose on the environment and the society in form of air pollution, noise annoyance, greenhouse gas emissions, accidents, land take and barrier effects. Transport prices do not yet reflect the real scarcity of the resources used. Scarce resources are still wasted in an unsustainable transport system.

Over the last ten years, the policy framework of the European Union has changed. Environmental aspects have become more important. The Treaty of Nice requires in article 6 the integration of environmental protection into Community policies and activities. However, this has not improved the environmental performance of transport at all. The transport and environment reporting mechanism (TERM) of the European Environment Agency in 2001 contains a simple message: transport is becoming less and not more environmentally sustainable. The main problems are:

- ? Ongoing transport growth
- ? Ongoing increase of transport related greenhouse gas emissions
- ? High number of people in urban areas and sustainable areas suffering from air emission level above EU emission standards.
- ? Increasing number of people suffering from transport related noise
- ? Ongoing high pressure on land use and biodiversity from transport infrastructure
- ? Unacceptably high road fatalities
- ? Increasing congestion

On a very general level, there is a widely shared agreement to make the current transport system more sustainable. The Sustainable Development Strategy, approved by heads of states and governments at the Gothenburg Summit in June 2001 defines decoupling of transport and economic growth and modal shift towards more environmental friendly modes as the main objectives for the transport sector. However, politicians failed so far to fix

explicit targets in order to change traditional transport patterns and to reduce the above-mentioned transport related problems. Only a few targets exist on European level. The White Paper on Common Transport Policy includes two targets:

- ? The number of road deaths should be halved by 2010
- ? The rail share should be stabilised at the level of 1998.

An important target for the European Union is confirmed in the Kyoto protocol. The emissions of greenhouse gases within the European Union should be reduced by 8 % by 2008 compared to the level of 1990. However, the Kyoto protocol does not provide targets for individual sectors like transport, but only for total emissions. Further explicit targets are needed in order to give a measurable guideline for required instruments and measures. Such targets may be e.g.

- ? Reduce transport related CO₂ emissions by 2010 by x %.
- ? Reduce the number of people to be exposed to transport related air emissions by 2010 by x %.¹
- ? Reduce the number of people to be exposed to transport noise above annoyance level by 2010 by x %.²
- ? No additional threat to sensitive areas, natural sites, wetlands from the construction of new transport infrastructure.

Once such targets are fixed, a wide range of instruments is necessary to achieve them. In the past, transport policy did not use the whole range of possible instruments but was concentrated on a few types. One can distinguish between the following types of instruments:³

- ? Information and persuasion: popular and necessary, but not efficient and only effective in the long term.
- ? Regulation: less and less popular but necessary and effective though not very efficient.
- ? Technical improvements: popular and necessary, not effective alone, limited efficiency.
- ? Infrastructure: popular, but neither effective nor efficient and seldom necessary
- ? Economic instruments: efficient and necessary, but not effective for all targets and not really popular

¹ Related to existing air quality legislation which must anyway be met (European Parliament and Council 2001).

² The Commission must give a progress report on noise next year (European Parliament and Council 2002)

³ The characteristics of each group of instruments are simplified. See chapter 4 for a more comprehensive analysis.

Transport economists thus are indeed united in their agreement that the most economic approach to transport pricing would be the application of marginal social costs: the price paid by transport users should reflect the amount of transport they are “consuming” and all costs they are generating as transport users.

Unfortunately this widespread agreement by economists on the rationality of such a change has not yet convinced policy makers to implement fair and efficient pricing systems. Indeed much of the debate surrounding transport pricing focuses on how it may be possible to measure exactly the marginal social costs, rather than changing the price structure.

Research over the last 10 years has also shown the limits of social marginal cost pricing. The theoretical conditions of a perfect market, upon which social marginal cost pricing is based do not exist in the real world. It is further focused on efficiency. However, efficiency is not the only objective in transport policy or in policy in general.

After 10 years of discussion it is time to move away from the question on what the perfect price and perfect methodology might be. It is time to implement **target oriented pricing** as we know enough first of all that today's prices are perfectly wrong. The implementation of a target oriented pricing could follow the following approach:

- ? Identify the problems (these have been well known for a long time already; see chapter 2)
- ? Set targets with an explicit timeframe to reduce the problems (targets hardly exist so far in transport, see chapter 3)
- ? Introduce a pricing system based on the known and generally accepted types of costs and cost levels
- ? Apply other instruments focused on the target (e.g. technical improvements, regulations).
- ? Evaluate the effectiveness of the instruments in reaching the targets after a certain period.
- ? Progressively strengthen the target and set a timeframe for intermediary targets (e.g. the Kyoto target to reduce greenhouse gas emissions by 8 % is only a first step, in the long term these emissions must be reduced much more ⁴)
- ? Adjust the instruments and its parameters once the system is up and running. At this moment at the latest, it will be time to increase the initially low-level prices.

Pricing also generates substantial revenues and the crucial question is what to do with them becomes important for two reasons:

⁴ The Royal Commission on Environmental pollution's 22nd report, page 199, recommends a 60 % reduction by 2050 compared to 1997. See also UNFCCC.

- ? Depending on the use of the revenues, those can support the objectives of the pricing system or create the opposite effects.
- ? The acceptability of pricing systems depends on the use of revenues. The acceptability is higher if the revenues are used for the transport sector or if the transport sector is compensated by the reduction of other taxes.⁵

With regard to economic efficiency, revenues should be used:

- ? For the general budget and
- ? To reduce direct taxes.

However, these solutions are faced with very low acceptability as users, taxpayers and politicians tend to prefer:

- ? Earmarking the revenues for transport
- ? Reducing transport related taxes

Therefore, some principles must be followed by earmarking some or all of the revenues and by compensating the users for acceptability reasons:

- ? The revenues should be used for the general budget or for measures supporting the objectives of a sustainable transport policy and enabling to reduce the negative impacts of transport. This means that all projects need to be subject to an integrated economic and strategic environmental assessment.
- ? The field in which earmarked money must be used should be as open as possible to maintain a certain flexibility. This ensures a more efficient use of money than a narrow field with few possibilities to spend the money. Earmarking the money for all transport modes is in any case better than for the transport sector which generates the revenues.
- ? Some of the revenues can be compensated by reducing other public income if the costs have already been included in the public budget but paid by taxpayers.
- ? Ideally, all citizens should benefit from this compensation as all citizens are concerned by the negative impacts of transport. Thus, the reduction of non transport related taxes should be preferred.
- ? Transport related taxes should only be reduced if they contradict the objectives of fair and efficient pricing. Regular taxes on transport, e.g. as fuel taxes should continue and do not contradict to a fair and efficient pricing system.

⁵ See final conclusions from PATS (Pricing Acceptability in the Transport Sector) project (PATS 2001).

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Introduction

Ten years ago T&E published “Getting the Prices Right” by Per Kågeson.⁶ This publication attempted to apply the user and polluter pays principles, which are common approaches in other sectors, to the transport sector. They were also agreed at the earth summit in Rio in 1992.⁷ The publication argued that users should pay both for using transport infrastructure and for the impacts this use inflicts on the rest of society and the environment. This application of the user pays and polluter pays principles would not only bring about environmental benefits, but would also make the transport sector more economically efficient.

Ten years later sustainable development has not progressed particularly far, and the practical implementation of many of the principles agreed at the Earth Summit in Rio are far from realised. This is also true for transport, where the application of the polluter pays principle has been endorsed at the highest political level in the last ten years without being applied. Transport ministers have endorsed the approach at their third pan-European transport conference in Helsinki in 1997,⁸ and later that year they reiterated their commitment to making the polluter pay in the UN-ECE regional conference on transport and environment in Vienna.⁹ Furthermore, progress towards a more sustainable transport system has become an imperative in the European Union since the Gothenburg summit in June 2001 identified the transport sector as one of four priority areas to put integration of environment on a faster track.

Several times, the European Commission underlined the importance of a user based pricing system, e.g. in its 1995 Green Paper “Towards Fair and Efficient Pricing”,¹⁰ or in its 1998 White Paper on ‘Fair payment for infrastructure use’¹¹ and finally in its 2001 white paper on ‘European transport policy for 2010: time to decide’.¹² In the latter, the Commission announces a framework directive on transport infrastructure pricing for 2002. At the time of writing, such a framework directive has not yet been presented but instead has been indefinitely postponed. This despite demands from heads of states at the Barcelona council in March 2002 that transport costs must be reflected in transport prices by 2004.¹³

Over the last ten years, since T&E’s publication ‘Getting the prices right’, most transport problems have increased. Its negative impacts on the society, the economy and the environment have grown.¹⁴ Effective

⁶ See T&E 1993.

⁷ United Nations Conference on Environment and Development, Rio de Janeiro, June 1992.

⁸ See Third pan-European Transport Conference (1997). (<http://www1.oecd.org/cem/topics/paneurop/DeclHels97.pdf>).

⁹ See UN-ECE 1997 (http://francais.cipra.org/texte_f/actuel/Declaration_Vienna.htm).

¹⁰ See European Commission 1995.

¹¹ See European Commission 1998.

¹² See European Commission 2001.

¹³ See European Council 2002.

¹⁴ Some improvements with regard to air emissions per ton or passenger kilometre happened. The overall effect improvement is small as the amount of tons and passenger increased (see chapter 2).

measures still fail to be implemented. Today Europe needs more than a fair and efficient pricing system for transport infrastructure: it needs a fair, efficient and EFFECTIVE pricing system. Together with other instruments, such a pricing system should serve to achieve explicit targets, e.g. to reduce the negative impact of transport and transport volumes. This is in strong contrast with the current situation and hesitation of policy makers to set explicit targets and apply effective measures. Although not all costs are subject to scientific consensus and economists may possibly never find the absolutely correct level of transport infrastructure costs, it is time to move from theoretical discussions to real implementation. The direction is clear and the instruments are well known.

This publication will first describe the developments of transport and related problems over the last 10 years (chapter 2). Then, in chapter 3, it defines possible targets to achieve a more sustainable transport system. The fourth chapter deals with the instruments to reach these targets. Chapter 5, analyses different ways of using revenues from pricing systems and, finally, chapter 6 contains general conclusions and recommendations.

1. Development of transport problems

Ten years ago, T&E's publication 'Getting the Prices Right' pointed out a number of negative impacts of transport on the environment and the citizens. The publication showed that air emissions, noise and accidents caused a lot of damages also known as external costs. Transport users did not pay for them, and thus these costs were a burden for the society as a whole. In practice, it meant that transport users have been subsidised by society in general; resulting in the disadvantaged in society subsidising the wealthy.¹⁵ In accordance with the polluter pays principle, these external costs should be covered by a fair and efficient pricing system and thus paid by the transport users. Ten years later, this principle is still scarcely applied and transport users do not yet pay for the costs they cause. In the meantime the negative impacts of transport have increased.

The policy framework of the European Union has changed since 1993. Environmental aspects have become more important. The Amsterdam Treaty requires, in article 6, the integration of environmental protection into Community policies and activities.¹⁶ As an element to fulfil this requirement, the joint Transport and Environment Council in 1998 invited the Commission and the European Environment Agency (EEA) to set up a transport and environment reporting mechanism (TERM). In 2001, EEA presented the second indicator-based report on transport and the environment.¹⁷ This report confirmed the trends of the first TERM report in 2000. It contains the simple message: transport is becoming generally less and not more environmentally sustainable.

The following major problems still exist:¹⁸

Transport growth

Ongoing increase in road transport and aviation represent increasing threats to the environment and human health. Passenger transport continues to shift to road and air. Over the past 20 years passenger transport has increased by about 55 %. The main increase has happened in the air and road sector. Car ownership has increased by 64 % since 1980, resulting in 451 cars per 1000 inhabitants by 1998. Travel distances continue to increase and prices for public transport are rising much faster than for private cars, making public transport more expensive in relation to private car use.

The same trends must be recognised in freight transport, with an increase of 55 % between 1980 and 1998. The largest growth was in road freight, with almost 4 % growth per year and short sea shipping with 2.6 % growth. Rail freight fell by 16 % between 1980 and 1998. Its share dropped to 8 % of the

¹⁵ See T&E 2002.

¹⁶ See European Council 1997.

¹⁷ EEA 2001: 'TERM 2001 – Indicators tracking transport and environment integration in the European Union'

¹⁸ Unless otherwise specified, the figures refer to the TERM 2001 report and generally refer to EU-15.

transport market while road transport accounts for 43 % and short sea shipping for 42 %.

Passenger and freight transport has over the last 20 years been perceived to be closely linked to the economic growth. However, in the 1990s transport growth was even higher than economic growth. The Sustainable Development Strategy¹⁹ from the Gothenburg Summit in June 2001 asked for a significant decoupling of transport and economic growth. It has not happened so far and the forecasts in the White Paper on Common Transport Policy²⁰ do not show any development in this direction.

Greenhouse gas emissions

The growth in greenhouse gas emissions from transport is particularly worrying and jeopardises the EU's chances meeting its targets under the Kyoto protocol. Transport is the fastest growing economic sector (47 % growth since 1985) and consumes more than 30 % of final energy. Due to the fuel dependency of the transport sector this increase in energy consumption has also resulted in an increase in greenhouse gas emissions. Transport is a major source of anthropogenic CO₂ emissions contributing 24 % of the EU total. This share will increase in the coming years if nothing changes because CO₂ emissions from the road sector are growing much faster than from other sectors. Road transport is the main cause for this increase and contributes 84 % of the transport sector's CO₂ emissions.

Greenhouse gas emissions from international transport mainly from aviation are growing dramatically. These emissions are not addressed under the Kyoto protocol.

Air pollution

Some positive developments can be recognised with regard to air emissions. Thanks to vehicle technology and fuel quality improvements, vehicles have become less polluting per transport unit. Between 1990 and 1998, transport emissions of acidifying substances were reduced by 20 %, and of tropospheric ozone by 25 %. However, transport is still responsible for more than half of tropospheric ozone precursor emissions and more than 20 % of acidifying substances. Further emission decreases are needed to meet the targets of the European Commission's directive on national emission ceilings, which are now binding.²¹

Although urban air quality has improved, a large number of people is still exposed to high pollution levels. In 2010, 70 % of the urban population is likely to suffer from PM10 levels exceeding the limit values and 20 % from

¹⁹ See council conclusions (European Council 2001) and communication on sustainable development strategy (European Commission 2001a).

²⁰ See European Commission 2001b.

²¹ See European Parliament and Council 2001.

exceeding NOx limits. This causes premature deaths, chronic bronchitis and asthma attacks among other things.²²

Noise

An increasing number of people suffer from transport noise annoyance. More than 30 % of the European citizens are exposed to road noise levels above 55 dB(A), which is an unacceptable level. With regard to rail and aircrafts about 10 % of the population is highly annoyed from noise. In 2002, the European Parliament and the Council adopted the noise directive²³ in which the Commission will develop noise maps as a basis for future action plans. Noise annoyance represents a huge risk for human health, including stress, mental health disorders, insomnia and heart diseases.²⁴ It causes particular difficulty for children learning.

Land use

Land is under permanent pressure for new transport infrastructure. More than 10 hectares of land were used every day for new motorways during the 1990s in Europe. Road and rail infrastructure takes land from agricultural use and to a lesser extent from built-up areas. In urban areas road transport takes up increasing amounts of land. Road transport is much more land intensive than railways (3.5 times) or bicycles.

Biodiversity and natural resources

The big pressure on land use also conflicts increasingly with nature conservation. 66 % of bird areas and 63 % of wetlands have at least one major piece of transport infrastructure within 5 km.²⁵ The average size of fragmented land parcels is constantly shrinking and varies between 20 km² in Belgium and 600 km² in Finland. The Finnish level is particularly high compared to the EU average. The dense fragmentation of land is a threat for biodiversity. Sensitive areas such as mountainous regions, wetlands or coastal zones will suffer greatly under further expansion of infrastructure and its use.

Accidents

Road accidents are the most frequent cause of death for persons under 40 years. More than 40'000 people die on European roads every year. Road is by far the most dangerous transport mode despite the fact that fatalities have fallen by 28 % since 1980. Trucks and cars are strongly affecting pedestrians and cyclists. Rail and aviation claim comparatively few victims.

²² See e.g. WHO 2000 or WHO-UNECE 2001.

²³ See European Parliament and Council 2002.

²⁴ see e.g. WHO 2000 or WHO-UNECE 2001.

²⁵ Wetlands covered by the Ramsar Convention (UN Ramsar 1971).

Congestion

The growing and unbalanced transport growth increasingly threatens the transport system. Traffic congestion is increasingly becoming a daily reality of urban road networks. In addition it concerns also 10 % of the trans-European road network. Furthermore, parts of the rail network and of the European airports are also congested.²⁶

Congestion results in an increase of fuel use and therefore has negative impacts on the environment and global warming. The blocked road network also has negative impacts on the economy in form of lost time. The Commission's Green Paper on fair and efficient pricing estimated congestion costs of 5 % of GDP.²⁷

Conclusions

The TERM report on the environmental indicators of transport shows that the transport sector is still moving in the wrong direction; away from sustainability. Transport is nowadays more damaging the environment, quality of life and the health of citizens than ten years ago when the political debate on transport pricing started. This is despite the fact that transport pricing is a politically accepted principle.

All the statements in favour of a more efficient and a more sustainable transport system have not changed the traditional transport patterns. Transport has become more road-oriented over the last 10 years and thus less sustainable from the environmental, economic and social perspective. The transport system at the beginning of the 21-century is causing more negative impacts on the environment and citizens than a decade ago.

Increasing congestion hampers the economy and people without access to a car are nowadays faced with more difficulties to access goods and services needed for their daily life than in the early nineties.

²⁶ See European Commission 2001b.

²⁷ See European Commission 1995.

2. Political targets

The current transport system is causing a wide range of problems (see chapter 2) and is not sustainable from an environmental, social and economic point of view. The transport sector has increasing difficulties to fulfil its function of serving the needs of the citizens and the economy.

On a very general level, there is a widely shared agreement that current transport system should be made more sustainable. The Sustainable Development Strategy²⁸, approved by heads of state and government at the Gothenburg council in June 2001 defines decoupling of transport and economic growth and modal shift towards more environmental friendly modes as the main objectives for the transport sector. These objectives are vaguely formulated, however, and need further definition.

In general terms an appropriate policy must promote a transport system that is more sustainable than today's, more respectful for the environment, fairer for citizens and more efficient for the economy. With regard to the list of transport problems (see chapter 2) more differentiated objectives may be:

- ? Reduce total transport growth and transport volumes of the most environmentally damaging modes (road, aviation).

Reducing transport growth and even the transport volume is crucial for environmental as well as economic reasons. The transport sector has grown faster than the economy over the last ten years. This means that the economy's transport intensity has been rising: more resources are needed for transport to produce the same amount of goods. From an economic point, this is a completely undesired consequence, as economic behaviour requires a cautious use of scarce resources. This approach is well known in relation to labour under the name of 'rationalisation', i.e. producing the same amount of goods with less labour. The same approach is largely not applied for transport mainly because transport costs are very low compared to labour costs. Consequently the economy continues to waste scarce resources for transport without adding any value for the citizens. Decoupling, as demanded by the Gothenburg council²⁹, means rationalisation of transport by producing the same amount of goods with less transport input. Many environmental problems and the congestion can only be solved if such a rationalisation or decoupling happens. It is also economically sound.

- ? Reduce transport related emissions of greenhouse gases

The transport sector must also contribute to achieve the Kyoto target. For that to happen, a reduction target needs to be set for GHG

²⁸ See European Council 2001 and EC 2001a.

²⁹ See European Council 2001 and EC 2001a.

emissions from the transport sector. Such a target must be set per unit, e.g. x % less CO₂ emissions per ton or passenger kilometre and for the whole sector, e.g. y % less CO₂ emissions from transport by 2008. The second target is needed because transport growth reduces the positive effect of reducing CO₂ per ton or passenger kilometre.

- ? Reduce transport related air emissions and the number of people exposed to emission levels exceeding air quality standards.³⁰
- ? Reduce transport related noise emissions in general and the number of people exposed to noise levels which are annoying or harmful for health.³¹
- ? Reduce land use for new transport infrastructure
- ? Increase the protection of natural sites, wetlands and sensitive areas endangered by transport infrastructure
- ? Reduce the number of fatalities and injured people from transport accidents
- ? Reduce transport congestion

These objectives are not yet really sufficient to achieve more sustainability and to assess the effectiveness of instruments (see chapter 4) to reach them. In order to achieve a reduction of the negative impacts of transport, explicit targets should be fixed. Currently, only a few explicit targets exist on European or international level to reduce transport related problems.

The White Paper on Common Transport Policy includes two targets:³²

- ? The number of road deaths should be halved by 2010
- ? The rail share should be stabilised on the level of 1998 by 2010.

An important target the European Union has committed to, is fixed in the Kyoto protocol. The emissions of greenhouse gases within the European Union should be reduced by 8 % by 2008 compared to the level of 1990. However, the Kyoto protocol does not provide targets for explicit sectors but only for total emissions. Although the transport sector is the main driver for the increase in greenhouse gas emissions within the European Union, it cannot be forced to reduce its emissions or to slow down its growth under Kyoto, as there is no target for transport emissions. The European Union should define such a sector target in order to make transport contribute to reaching the EU commitments.

Further explicit targets are needed in order to give measurable guidelines for required instruments and measures. Such targets may be e.g.

³⁰ See European Parliament and Council 2001.

³¹ See e.g. WHO 2000 or WHO-UNECE 2001.

³² See EC 2001b.

- ? Reduce transport related CO₂ emissions by 2010 by x %.
- ? Reduce the number of people to be exposed to transport related air emissions by 2010 by x %.
- ? Reduce the number of people to be exposed to transport noise above annoyance level by 2010 by x %.
- ? No additional threat to sensitive areas, natural sites, wetlands from the construction of new transport infrastructure.

The definition of such targets is established through political will. Scientists and theories can only assess the expected impacts of a certain exposure or emission level and waiting for perfect scientific knowledge would mean waiting forever. However, they cannot answer the question of which is the best, most efficient and most economic level of these impacts.

Reducing transport's impacts, securing and improving the quality of life, the health of the citizens, the protection of the environment and of the global climate is neither negotiable nor tradable against a bit more or less economic growth but must have first priority. There is no efficient level of climate change or road fatalities but only more or less efficient instruments to reduce these dangers. Any human behaviour must take into account the health of current and future generations, the stability of the earth's ecosystem and the capacity of local ecosystems to cope with negative impacts. This is also true for transport.

Therefore sustainable transport policy cannot be defined by academics and efficiency oriented economic theory, but by politicians consciously applying their responsibility for the current and future generations. They have to set ambitious and explicit targets which help to secure and improve the above mentioned objectives. Only when the targets are known, will scientists, industry and interested parties be able to explain which instruments should be applied to achieve the targets most efficiently and without discrimination.

Conclusions

Effective and concrete targets have to be set according to the problems identified in chapter 2. These targets must be ambitious in order to protect European citizens and the environment from the growing impacts of transport. Targets must build the crucial part of a sustainable European transport policy. Defining them is the first task politicians have to do rather than to deal with the instruments to reach the targets or to await consensus on the level of external costs by scientists.

3. Instruments for a sustainable transport policy

A wide range of instruments is necessary to achieve the ambitious but necessary targets for sustainable transport policy. Complex problems need usually a mixture of instruments. In the past, transport policy did not use the whole range of possible instruments but was concentrated on a few types of instruments. One can distinguish between the following types of instruments:

- ? Information and persuasion
- ? Regulations
- ? Technical improvements
- ? Infrastructure
- ? Economic instruments

The following explains the pros and cons of these types of instruments and how they are implemented. It responds to the following questions:

- ? How effective is the instrument? An effective instrument means that the instrument really contributes to reach the target.
- ? How efficient is the instrument? An efficient instrument means that the instrument contributes in a cost effective way to reach the target.
- ? How acceptable is the instrument? An instrument with a high acceptability means that there is a potentially high political will to implement the instrument.

3.1 Information and persuasion

Information and persuasion are focused on changing people's behaviour by using convincing arguments. This is important at the beginning of a process to raise awareness for a specific problem. Such campaigns are popular political tools amongst politicians because they give them the possibility to do something to solve the problem but not to hurt anyone. In transport such campaigns exist in many areas, e.g. for eco-driving or using public transport or cycling in cities. The acceptability of this kind of instruments is therefore quite high.

In the short term they are not effective because it requires long and repetitive campaigns to convince people to change their behaviour just with good arguments.³³ However, even if someone is persuaded in theory, they may feel unable to modify their behaviour because of the underlying conditions. Some people will be susceptible to a message at a given time and others not. Windows of opportunities (e.g. buying a new car or not) are

³³ An obstacle to change the behaviour quickly is the prisoner's dilemma. Individuals know that their behaviour change does not improve the situation as long as all other people do not change their behaviour as well (see Frey 1981 or Kuhn 2001).

important with regard to the effectiveness of such instruments. There is nothing mechanical about behaviour change across a population through persuasion.³⁴ However, information and persuasion are necessary to a certain extent to raise awareness and gain political acceptability for other instruments in the long term. Due to the high amount resources required to change behaviour, this instrument is not efficient though necessary.³⁵

3.2 Regulations

Regulations have a long tradition in transport and exist in many forms, e.g. speed limits, weight limits, minimal requirements for equipment and social issues as working conditions in the transport sector. Regulations are not applied equally for different transport modes. They are very strong for railways and rather weak for road transport. This creates clear distortion of competition between transport modes. With regard to the EU's objective to promote the internal market, regulations are less accepted today than earlier. However, it is a myth that the internal market and the concept of free movement of transport do not allow for strong regulations to limit negative impacts, and even transport flows under certain conditions. The road transport sector uses this argument to a great extent and interprets free movement of goods as the right to unlimited transport when and under whatever conditions. This is not meant by the Treaty: free movement of transport primarily requires non-discriminating possibilities for all EU citizens and prohibits setting up national barriers against foreign users such as custom duties or technical barriers.³⁶

Strict regulation is less efficient than economic instruments³⁷ but is in many cases the only effective means to achieve the targets. They are needed to protect citizen's against the negative impacts of transport, mainly with regard to high risks (e.g. transport of dangerous goods), in sensitive areas and to protect transport workers from exploitation and social dumping.³⁸ Primarily in road freight transport but also in maritime or air transport regulations must be strengthened in order to reduce intermodal distortions.

3.3 Technical improvements

Technical improvements of engines and fuel quality are very popular and have dominated transport policy over the last 10 years. The acceptability of technical instruments is therefore quite high. They provide a certain innovation which keep some benefit for industry and society. Technical

³⁴ See T&E 2002b.

³⁵ See Frey et al 1991.

³⁶ See European Treaty Article 23.

³⁷ Regulations do not distinguish between those users who can reduce negative impacts with a few resources and those which need a lot of resources. To achieve the same reduction level it would be more efficient, i.e. cheaper, to reduce emissions from the user with the lesser costs more than from the other user (see Frey et al 1991).

³⁸ Social dumping means apply very bad working conditions to people from countries with a lower salary level and by disturb the competition between workers.

improvements have already contributed to reduce the emissions per kilometre of certain air pollutants suchg as NOx. However, transport growth has offset much of this progress and many people in urban areas are still exposed to emission levels above European emission limits.³⁹

Technical improvements are also envisaged by the voluntary agreement with the car manufacturers. The average growth of CO₂ emissions from new cars is expected to slow down.⁴⁰ Without this agreement, CO₂ emissions from road passenger transport would increase by 29 % from 1990. However, this agreement does not bring the transport sector any closer to EU's target to reduce greenhouse gas emissions by 8 %. In the best case with full implementation of the agreement, the growth of CO₂ emissions will still remain at 11 %.⁴¹

Technical measures are necessary but insufficient, as they do not address the growth of transport volumes. The efficiency of technical instruments varies considerably.

3.4 Infrastructure

Decisions to build new infrastructure are still very common with many politicians on the grounds that they help create jobs and economic growth. The transport and road building industry play a big role in the way these decisions are being made. The construction industry on the other hand is quite indifferent for which transport mode it can build new infrastructure. In reality politicians tend rather to favour road infrastructure. The road lobby uses very strong arguments and it is still very easy to convince people that more roads will remove bottlenecks and congestion. However, the experiences and the theory of the last years show that this is not true.⁴² Nor is it true that building new transport infrastructure will always automatically provide the expected economic and regional development.⁴³

In fact, building new infrastructure is usually the most expensive and least effective, even counter-productive instrument to achieve the objectives of sustainable development. It destroys landscapes and endangers habitats. Once operational, it generates new transport, more congestion and new bottlenecks. There may be a few cases, where new transport infrastructure supports sustainable transport objectives. However, such decisions can only be taken after a thorough assessment of the economic, environmental and social impacts. Strategic environment assessment needs to be further developed, generally applied and the results seriously taken into account by

³⁹ See European Commission 2001.

⁴⁰ The 'ACEA agreement', ACEA 1998.

⁴¹ See EEA 2001.

⁴² Despite the fact that over the last 30 years, two thirds of transport infrastructure investment was made in road transport, congestion of the road network increased. See EC 2002. For theoretical background see Transtech 2001,

⁴³ See SACTRA and T&E 2002c.

decision makers before they take decisions. For this, information and persuasion are essential.⁴⁴

3.5 Economic instruments

The application of economic instruments is a new approach in transport policy. Economic instruments are intended to give the right incentives to transport users by installing the correct prices. In perfect markets this is automatically the case. However, transport markets are far from being perfect and are characterised by all kinds of distortions such as subsidies, externalities, economies of scale or monopolies.

Therefore, prices in the transport sector are unusual in that there is very little relationship between the amount “consumed” and the total price. Indeed in air transport it is often cheaper to travel further, flying an extremely indirect route with a “stop-over” instead of taking a direct flight. For road transport the majority of the price paid by the user are the direct vehicle purchase and certification / taxation costs rather than the marginal costs of additional journeys. Moreover these marginal costs are mostly fuel costs, which represent only a small part of distance or consumption related costs. Even in rail and public transport there are season tickets or time related tickets available rather than the user paying a price directly related to the total distance travelled.

If transport is to be more fairly and efficiently priced then there needs to be a much closer relationship between the amount consumed – i.e. the distance or resources – and the price. This change away from time related prices to distance related prices will improve the fairness and economic efficiency of the transport sector and improve overall well-being. Those who consume more transport, more natural resources and cause more impacts to society and environment have to pay more.

To make the sector perform better in environmental terms there will need to be further changes. Prices paid by users must be related to the total costs of a journey, including the damage it causes society and the environment. Those causing negative impacts to society and the environment should be the ones paying the costs, rather than it being society as a whole that bears the costs. Enabling this to occur would require transport prices to include a component related to the extra costs each journey produces. This so-called social-marginal cost pricing would apply the polluter pays principle to transport.

Transport economists are indeed united in their agreement that the most economical approach to transport pricing would be the application of marginal social costs. This means deriving the costs paid by the transport user on the basis of the amount of transport they are “consuming” and the total costs transport generates. According to the static microeconomic theory

⁴⁴ See T&E 2002c.

social marginal cost pricing guarantees the static equilibrium and maximises the benefits for the economy which means that the scarce resources are efficiently allocated. Users pay the correct price and therefore do not waste scarce resources for transport which is currently the case. Using these resources elsewhere makes the whole economy and society better off, by accelerating innovation in the transport sector, making European economy more competitive and creating more jobs and a higher GDP.

Unfortunately this widespread agreement by economists on the rationality of such a change has yet to have an impact in terms of the implementation of the policies that would achieve this change. Indeed much of the debate surrounding marginal social cost pricing focuses on how it may be possible to measure exactly how much the marginal social costs are, rather than changing the prices paid by transport users. This trend to indefinitely postpone the implementation of fairer prices until the perfectly fair price has been defined can be described as “the best being the enemy of the good”. We know that the current prices are absolutely incorrect so a change to a “user-pays” system of transport prices would only make the prices fairer – even if they would not necessarily be perfectly fair.⁴⁵

It is therefore important that a move is made to apply marginal social cost prices. But this should be done utilising conservative estimates of external costs to begin with – only including those costs that are easiest to calculate a monetary value for first and gradually extending the scope to others as the methods to define these costs are developed. This makes much more economic sense than waiting for all the potential costs to be derived exactly before beginning to apply the principle of marginal social cost pricing.

External costs from the transport sector arise in the following fields which should all be included in a user related pricing system:⁴⁶

- ? Environmental costs: ‘classic’ air pollution, noise, health impacts, climate change
- ? Accidents
- ? Congestion
- ? Road maintenance (wear and tear)

Over the last ten years, a number of research projects have tried to calculate the level of external costs and to find a way how to implement the user pays principle.⁴⁷ The Green Paper on fair and efficient pricing⁴⁸ calculated the external costs as 4 % of the GDP.⁴⁹ However, this amount varies sometimes by a factor of 10 according to a number of different studies.⁵⁰ Strong interest

⁴⁵ See e.g. Goodwin 2002.

⁴⁶ See High Level Group on Infrastructure pricing 1999.

⁴⁷ See e.g. PETS 2001, PATS 2000, IMPRINT 2002, DESIRE 2003.

⁴⁸ See European Commission 1995.

⁴⁹ Congestion 2 %, Accidents 1.5 %, environment and noise 0.6 %, see European Commission 1995.

⁵⁰ See e.g. Infrac-IWW, CE 2002 ; ECMT, LOMBARD et al 2002.

groups use these differences to delay the implementation of such pricing principles as a whole. Therefore, only a few systems are implemented so far.⁵¹

The research over the last 10 years has shown also the limits of social marginal cost pricing. Professor Rothengatter warned that 'SMCP is not a *'Eierlegende Wollmilchsau'*: you cannot get eggs, wool, milk and pork from one single animal'.⁵² The main limitation of social marginal costs is that it is based on theoretical conditions of a perfect market which do not exist in the real world. It is further limited to the efficiency criteria. However, efficiency may not be the only objective in transport policy or in policy generally.

Instruments have also to be effective. Mainly with regard to safety objectives, the efficient pricing level may not be effective to reduce the risk to an acceptable level for the society. If the user has to pay marginal costs for accidents, only the marginal user will disappear and accidents may be marginally reduced, which is very likely too little to achieve safety targets.⁵³ It is, for example, unlikely that social marginal cost pricing alone can achieve a target as formulated in the Commission's 2001 White Paper to halve road accidents by 2010.⁵⁴ The same is true for certain risks or noise annoyance in sensitive and urban areas. Although the user pays for the noise costs, the number of cars or trucks will be reduced, the noise level for the citizens along urban access roads or in narrow valleys can still exceed the critical level for human health.⁵⁵

This does not mean that the users should not pay these costs or that the user pays principle is wrong. It just means that pricing instruments alone cannot solve all transport related problems and reach all objectives. It also shows that efficiency is only one objective. Therefore, the discussion on a perfect pricing system should be much less focused on the correct cost level and rather focus on the objectives that are intended to be reached with the pricing system.

After more than 10 years of discussion on the perfect price and perfect methodology, we therefore need to move towards implementation. We know enough to conclude that today's prices are not perfect but perfectly wrong. The implementation of a target oriented pricing system should be envisaged according to the following approach:

- ? Identify the problems (these have been well known for a long time already; see chapter 2)
- ? Set targets to reduce the problems (targets scarcely exist in transport, see chapter 3)

⁵¹ See box at the end of this chapter with existing examples of pricing systems.

⁵² See Rothengatter 2002.

⁵³ Reducing the number of transport users may even increase the number of accidents if the average speed will increase due to the fewer vehicles on the road.

⁵⁴ See European Commission 2001b.

⁵⁵ The noise level is not so much depending on the marginal user and can only be achieved by substantial reduction of the transport volume.

- ? Introduce a pricing system based on the known and generally accepted social marginal costs which in the first instance are quite low
- ? Apply other instruments focused on the target.
- ? Evaluate the effectiveness of the instruments to reach the targets after a certain period.
- ? Progressively strengthen the target and set a timeframe for intermediary targets (e.g. the Kyoto target to reduce greenhouse gas emissions by 8 % is only a first step, in the long term these emissions must be reduced much more ⁵⁶)
- ? Adjust the instruments and its parameters as needed. At this moment at the latest, it will be time to increase the initially low-levelled costs.

Some existing examples of user oriented pricing systems⁵⁷

European environmental aviation charge

The Dutch institute CE has recently accomplished a study⁵⁸ on how an environmental aviation charge should be designed. At present, there is no political will to implement such a charge. Some airports apply emissions based landing and airport taxes. Aviation still benefits from old rights of an infant industry from the 1940s being exempted from all taxes like VAT or excise duties.

European differentiated fairway and harbour dues

An example for such fairway and harbour dues exists in Sweden⁵⁹, and takes into account the environmental performance of vessels. Despite the common opinion that maritime transport is better from an environmental point of view, this mode has many environmental impacts (NOx, oil spills) or accidents (Erika or Prestige).

Kilometre charge for heavy goods vehicle

On 1 January 2001, Switzerland has introduced the Swiss Heavy Vehicles Fee.⁶⁰ This is a distance related charge which is due on all roads within Switzerland for all vehicles above 3.5 tons and differentiated according to the emission classes. The average level of

⁵⁶ The royal commission on environmental pollution's 22nd report, page 199, recommends a 60 % reduction by 2050 compared to 1997. See also UNFCC.

⁵⁷ Despite the fact that there are only a few systems implemented, those show the technical feasibility to implement them. Not introducing pricing systems based on technical arguments is generally a pretext not to do anything or a way to push new technologies as GALILEO. This publication will not deal with technical aspects. For more information see e.g. T&E 2000.

⁵⁸ See CE 2002b.

⁵⁹ See T&E 1999.

⁶⁰ See ARE 2002.

the fee is at the moment by 1 Euro cent per ton kilometre. In 2005, this level will be raised to 1.7 Euro cents per ton kilometre as an average value.⁶¹ The experiences after 2 years are quite positive. The feared negative impacts for the economy and price increases for the transport of heavy goods have not happened, furthermore the technical system is functioning well.

Germany and Austria intend to introduce similar systems in 2003 and in 2004, respectively. Germany is replacing the current Eurovignette solution based on the EC directive 1999/62⁶². This directive is rather limited in its possibilities to apply as comprehensive a system as in Switzerland and needs to be up-dated.⁶³ The Commission is expected to present a proposal to amend directive 1999/62 by mid 2003.

Urban road pricing

An interesting example of an urban road pricing scheme was implemented on 17 February 2003 in London.

Ken Livingstone, mayor of London gambled his political career, introducing a congestion charge to enter the centre of London. While there are some reservations about such a simplistic system, it will give a positive signal for other cities to follow London's example under the condition that it will be successful. Despite heavy objections beforehand and apocalyptic warnings of chaos the first experiences have so far been quite positive with regard to the technical functioning and the effectiveness of the charge. The number of vehicles has dropped by 20 % on average which is more than expected. Most importantly, Ken Livingstone has shown the necessary political courage, balancing the perceived will of the people for inaction against their clearly expressed desire to inhabit more liveable cities.

Rail access charges

Rail access charges are already required in directive 2001/14⁶⁴ which is part of the first railway infrastructure package. This directive should have been integrated into national law by 15 March 2003. Only three member states fulfilled this requirement (Belgium, Denmark, France). So far, the different countries follow quite different approaches some charging marginal costs, some full costs and some no costs at all.

⁶¹ The maximum permissible weight was risen from 28 tons to 34 tons when the HVF was introduced in 2001 and will be further risen to 40 tons in 2005.

⁶² See European Council and Parliament 1999.

⁶³ See T&E 2000.

⁶⁴ See European Parliament and Council 2001.

Conclusions

A wide range of instruments exists to make transport more sustainable. A package of measures is required to achieve clear objectives and targets.

*Pricing is the most efficient instrument, however it is not yet implemented on a general basis and in some cases it is not sufficient to reach the targets. At the moment it must be assumed that pricing alone will not reach any ambitious target as there is not yet an agreement on all external costs and only the lowest level of scientifically proven costs is accepted. Therefore, the discussion should move away from the perfect level of social marginal costs towards a **target oriented pricing** approach for all transport modes. This means that pricing is one instrument among others of a target oriented transport policy.*

First, politicians have to define ambitious targets to reduce transport related problems, and, assisted by scientists and experts, develop a package of instruments to achieve the targets. After a certain period the effectiveness of this package must be evaluated and instruments or parameters adjusted. The targets should progressively become more ambitious and the pricing level higher.

On a European level, the Commission should present a comprehensive and ambitious framework directive for all transport modes and urgently revise directive 1999/62 for pricing of heavy goods vehicles.

4. Use of revenues

4.1 The role of the revenues for a sustainable transport policy

Pricing is an efficient instrument to change transport patterns. It gives incentives to the user to reduce unsustainable behaviour and makes transport fairer, more efficient and less damaging for the environment and citizens. It also generates substantial revenues. The question of what to do with them becomes important for two reasons:

1. Support incentives and objectives of pricing system: Depending on the use of the revenues, those can support the objectives of the pricing system with additional incentives to reduce unsustainable behaviour. This is the case if revenues are used for example for noise protection and safety measures, car sharing initiatives, public transport, cycling or pedestrian facilities. Earmarking of revenues for measures to reduce the negative impacts of transport would support the objectives of the pricing system and of a sustainable transport policy.

However, the revenues of a pricing system can also be used in a way that they create the opposite incentives. If these are used entirely for the same transport mode where they were collected, the demand for this transport mode would be stimulated and new transport volumes generated. Unsustainable transport modes, with high social costs would benefit more than other modes which is obviously against the principles of a sustainable transport system. Earmarking the revenues within the transport mode where they are generated is contradictory to the objectives of a sustainable transport policy.

If the revenues are not earmarked at all but used by the treasury for public expenditures in general, the effect of the revenues depends on the political priorities. The effect on the transport sector will be less if the revenues are used for all public tasks. It will neither promote nor hinder sustainable transport as it is used for all public tasks which must be paid by the general budget.

2. Support acceptability of pricing system: The acceptability of pricing systems depends greatly on the use of the revenues. It is never attractive to pay for something which had previously appeared to be for free. Therefore, the implementation of efficient transport pricing systems is often faced with the problem of very limited acceptability by politicians and users. Acceptability increases if the revenues are used for the transport sector or if the transport sector is compensated by the reduction of other taxes. The result of a European study (PATs 2001) shows that it is quite acceptable to use money from road user charges for other transport modes. On the opposite side, the compensation of taxpayers by a reduction of direct taxes on income is hardly accepted.

Taxpayers do not believe that this will happen. They prefer compensations on transport related taxes.⁶⁵

The next section deals with earmarking in the light of the economic theory.

4.2 Theoretic principles of earmarking

Earmarking of public revenues has a long tradition and benefits from political goodwill, basically in times of particularly scarce public finances or when interest groups risk to lose their privileges. From a policy-economic point of view this is quite understandable. Interest groups with a narrow common objective are usually strongly organised and have political powers which do not correspond to the share of the economic importance or the population they represent. These interest groups are the strongest in moments where they fear to lose public money or other subsidies. In order to maintain or even increase their advantages, they ask for earmarking of certain revenues. This would be very convenient for such interest groups, because the money will be for now and always reserved for their interests and it will not be disputed in budgetary discussions against other public tasks.

It is therefore logical that the road transport sector, heavily supported by the road building industry asks for earmarking of revenues from road pricing. It is more and more difficult to get money for their interests in a budgetary process. The stability requirements of the Eurozone restrict the increase of expenditures and make public money scarcer than before. The competition between policies and projects of different sectors, e.g. building new roads against the insurance of social security system, becomes tougher. Furthermore, the utility of projects in the road transport sector is increasingly doubted and the sector is being to take responsibility for its negative impacts. The strategy is quite obvious: as it is unavoidable that the road transport sector has to pay in the future for its negative impacts, its protagonists try to make the best out of it and ask to earmark all these revenues for their sector. Earmarking the revenues from a pricing system would not only compensate them at the moment for the charges they have to pay but would secure a considerable amount of additional money for now and always for their interests. This money would be out of the democratic allocation of public money by the budgetary process and would limit even more the freedom of present and future generations to follow other priorities.

Although the policy-economic theory explains well why earmarking is attractive it is very doubtful from a neoclassical economic point of view. Ex-ante earmarking of money for a certain purpose not only limits democratic rights but also the possibility to use money in an efficient way. The objective of neoclassical theory is to use scarce resources most efficiently, means where they provide the highest value. Earmarking of revenues is consequently inefficient as the money has to be spent for a certain purpose in a limited sector whereas it could possibly be more usefully allocated for

⁶⁵ See PATS (2001).

projects in other sectors. Furthermore, efficient pricing systems do not generate new revenues but make users pay for already existing costs which are nowadays paid by public money, directly by the citizens. Thus it is just a shift from the general taxpayer to the user which makes the transport system more efficient. In principle, there are no new public tasks and the public revenues should not increase but the costs for the transport sector will increase because it does not pay its costs today. Therefore, the request from the transport sector to be compensated for the additional costs from a charging system can only exceptionally be granted in cases where it already pays some costs. In that case, it is efficient to replace some time-oriented flat rates, such as the Eurovignette, which gives no incentives for efficient use of the infrastructure.⁶⁶ Generally, it is seldom the case that users already pay for any transport related costs. Existing taxes in the transport sector cannot automatically be considered as a payment for their negative impacts or even for the infrastructure costs but as real taxes which are necessary to cover public expenditures and which are due without giving the taxpayer any direct right to public services.⁶⁷

Tax payers should be compensated by reducing direct taxes on income and other labour related costs. This would change the relative costs on the input factor market where labour is much more taxed than other input factors like capital and transport, which can also be considered as an input factor to the production chain. Taxes on labour have permanently increased over the last 30 years much more than taxes on any other activities or goods. In many countries taxes on salaries are almost as high as the salary itself.⁶⁸ A reduction of labour taxes and a shift towards environmental oriented taxes would decrease labour costs, and thus production costs, increase competitiveness of the European economy and create much more and much more sustainable jobs and GDP growth than using all the revenues for transport infrastructure. A recent study within a European research project on interurban road pricing (DESIRE 2003) shows that the GDP will also increase by reducing indirect taxes, namely VAT.

4.3 Practical approach to use the revenues

The previous two sections show a discrepancy between an efficient and objective oriented use of the revenues and a more acceptable use of them.⁶⁹ From an efficiency point of view revenues should

- ? Be used for the general budget
- ? And taxpayers compensated by reducing direct taxes.

⁶⁶ The reduction of other flat taxes as car owner taxes is already more critical because these taxes give incentives to reduce car ownership. However, they should be better differentiated in order to reflect environmental characteristics of the car.

⁶⁷ Such taxes lead to a certain distortion of the competition and are not efficient. However, almost no tax is free of distortions but public expenditures have to be paid somehow. The objective of taxation is to cover public expenditures with as little distortions as possible.

⁶⁸ A Study from UPI Heidelberg shows the difference between the increase of labour taxes by a factor 35 and fuel taxes by a factor below 5.

⁶⁹ Re. to the use of revenues, see also Goodwin 2001.

However, these solutions are faced with very low acceptability as users, taxpayers and politicians tend to prefer

- ? Earmarking the revenues (even within the transport mode where it is generated)
- ? Reducing transport related taxes and asking for no increase of transport costs⁷⁰

These two approaches differ substantially and insisting on the efficient use of revenues would just result in blocking the introduction of any user oriented pricing systems at all. There are obviously some options which must be strictly opposed:

- ? Earmarking the revenues within the transport sector where they are collected: this is completely against the objectives of a user oriented pricing system and a sustainable transport system as the most pollutant, less safe and most congested mode would benefit more than all other modes. This would generate more unsustainable transport not less. In addition, earmarking money in such a narrow way limits extremely the freedom to use the money and is not efficient at all.
- ? Transport not becoming more expensive: This is a clear contradiction to the application of the user pays principle. As transport users nowadays do not pay for all their costs and as the objective of an efficient pricing system is to bring transport prices closer to transport costs, transport must generally become more expensive. This does not mean that some kind of transport, e.g. in remote areas with few inhabitants and using a clean vehicle, become less expensive because the effective costs of these transports are lower than what the users pay today.

The essential strict rejection of these two requests does not automatically question the acceptability of pricing projects. Studies have shown that the acceptability for urban pricing schemes is also high if the money is used to improve the urban transport system.⁷¹ With regard to compensating users, T&E has shown that the introduction of a use related tax for road freight transport would allow for a certain compensation by reducing other transport taxes.⁷² In this case, a harmonisation of the very differing taxation system in the different member states could be achieved and existing distortions reduced. The principles that must be followed by earmarking some or all of the revenues and by compensating the users for acceptability reasons can be summarised as follows:

- ? The revenues should be used for the general budget or for measures supporting the objectives and targets of a sustainable transport policy and reducing the negative impacts of transport. In certain cases, this can also be new infrastructure, after an integrated economic, social and strategic environmental assessment in order showing the benefits of the project.

⁷⁰ It is obvious that it is not possible to do both, earmarking revenues and compensate the users. The revenues cannot be used twice.

⁷¹ See PATS 2001.

⁷² See T&E 2000.

- ? The field in which earmarked money must be used should be as open as possible to maintain certain flexibility. This ensures a more efficient use of money than a narrow field with a few possibilities to spend the money. Earmarking the money within all transport modes is in any case better than within the specific transport sector which generates the revenues.
- ? Some of the revenues can be compensated by reducing other public revenues if the charging system gives a surplus in relation to the real costs which have to be paid by the public budget.
- ? Ideally, all citizens should benefit from this compensation as all citizens are concerned by the negative impacts of transport. Thus, the reduction of non transport related taxes should be preferred.
- ? Transport related taxes should be reduced if they do not give incentives to a sustainable use of transport, if they lead to distortions between transport modes and countries, and if their reduction contributes to harmonising transport taxation within the European Union.

Conclusions

Depending on the way revenues from pricing systems are used, they can support the objectives of pricing and a sustainable transport or they can lead to effects which neutralise those of the price systems. Therefore, revenues must not only be used for the transport mode where they are generated only. This would be in favour of the least environmental friendly mode because its revenues would be the highest. In theory, the money should ideally go to the treasury and should be allocated according to the priorities defined in democratic budget procedures. The acceptability of such a solution is generally low and a certain earmarking is necessary, as the users want to know what they get for their money. Therefore, the revenues should be used to reduce negative impacts of transport and to achieve the defined targets.

The purpose of pricing systems is not to generate additional revenues for public tasks but to make users pay for costs which are currently paid by the society. Therefore, other taxes should be reduced as a compensation of the transport pricing system. Ideally, all citizens should benefit from this reduction as all currently have to pay for the transport related costs. An efficient way of compensation would be the reduction of direct taxes on the income. This would reduce labour and production costs and make the European economy more competitive and create new jobs. However, compensation within the transport sector has a higher acceptance. In this case only the surpluses of the revenues should be compensated and only by reducing existing transport taxes which are distorting competition and have no incentives for sustainable behaviour to the users.

5. Conclusions

The transport sector is still moving in the wrong direction away from sustainability. Transport is nowadays more damaging to the environment, quality of life and the health of citizens than ten years ago, when the political debate on transport pricing started.

Transport is economically less efficient, environmentally less sound and less socially just than 10 years ago. Transport users still do not pay the costs they cause to the society and burden the economy by several % GDP of external costs.

Economic instruments like pricing, promoted by T&E early as in 1993, are considered making transport more efficient. However, they have hardly been implemented over the last decade, despite the increasing problems caused by transport.

Politicians have tried to overcome transport problems with more traditional approaches and instruments like voluntary agreements, infrastructure building and technical measures. This policy obviously failed. After wasting 10 years, it is finally time to apply the whole range of instruments to reduce the negative impacts of transport.

In order to achieve real progress in the transport sector targets should be defined and instruments designed to achieve these targets.

Pricing is the most efficient instrument, however it is not yet implemented on a general basis and in some cases it is not effective to reach the targets.

The current discussion on the perfect level of the social marginal costs and methodology to implement blocks the implementation of pricing instruments.

*A **target oriented pricing** approach for all transport modes should be applied and pricing implemented as part of a package of measures to achieve sustainability targets.*

The effectiveness of this package must be evaluated after a certain period and instruments or parameters adjusted. The targets should progressively become more ambitious and the pricing level higher.

On European level, the Commission should present a comprehensive and ambitious framework directive for all transport modes and urgently revise directive 1999/62 for heavy goods vehicles.

Revenues should not be earmarked for the transport mode where they are generated. That would be in favour of the least environmental friendly transport because its revenues would be the highest.

Ideally, the money should go to the treasury and should be allocated according to the priorities defined in democratic budget procedures. The acceptability of such a solution is generally low and a certain earmarking is necessary, as the users want to know what they get for their money. Therefore, the revenues should be used to reduce negative impacts of transport and to achieve the defined targets.

Other taxes should be reduced as a compensation of the transport pricing system. Ideally, all citizens should benefit from this reduction as all have currently to pay for the transport related costs. An efficient way of compensation would be the reduction of direct taxes on income. This would reduce labour and production costs and make the European economy more competitive and create new jobs.

Compensation within the transport sector should only correspond to the surpluses of the revenues and only by reducing existing transport taxes which give no incentives for sustainable behaviour.

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ABOUT THIS PAPER

Getting the prices right was a fundamental requirement from environmental NGOs in the early 1990s. Transport prices should better reflect the real costs to the users, make the transport sector more efficient and reduce its negative impacts on the environment and the citizens. Transport users should pay for transport related costs according to the user and polluter pays principle.

Getting the prices right is still a fundamental requirement in 2003. Transport users do not yet pay for the negative impact they impose on the environment and the society in form of air pollution, noise annoyance, greenhouse gas emissions, accidents, land take and barrier effects.

The discussion on pricing has been mainly focused on efficiency over the last 10 years and the correct level of external costs. However, reducing transport's impacts, securing and improving the quality of life, the health of the citizens, the protection of the environment and of the global climate is neither negotiable nor tradable against a bit more or less economic growth but must have first priority. There is no efficient level of climate change or road fatalities but only more or less efficient instruments to reduce these dangers. Any human behaviour must take into account the health of current and future generations, the stability of the earth's ecosystem and the capacity of local ecosystems to cope with negative impacts. This is also true for transport.

This publication makes the step from theory to practice and asks to implement a target oriented pricing system to support a sustainable transport system serving European citizens.

ABOUT T&E

The European Federation for Transport and Environment (T&E) is Europe's principal non-governmental organisation campaigning on a Europe-wide level for an environmentally responsible approach to transport.

The Federation was founded in 1989 as a European umbrella for organisations working in this field. At present T&E has some 40 member organisations covering 21 countries. Members are mostly national organisations, including public transport users' groups, environmental organisations and European environmental transport associations ('Verkehrsclubs'). These organisations in all have several million individual members. Several transnational organisations are associated members.

T&E closely monitors developments in European transport policy and submits responses on all major papers and proposals from the European Commission. T&E frequently publishes reports on important issues in the field of transport and the environment, and also carries out research projects.

The list of T&E publications in the annex provides a picture of recent T&E activities. More information about T&E can be found on the web-site: <http://www.t-e.nu>. This includes a comprehensive list of all publications and position papers, and free access to the T&E Bulletin and news releases.

A full list of T&E's members is available online, including links to their websites.