

SESSION 1: TACKLING TRANSPORT EXTERNALITIES BY PERFORMANCE-RELATED INSTRUMENTS – THE ROLE OF REGULATORY, ECONOMIC AND INFORMATION/COMMUNICATION INSTRUMENTS

Tackling externalities – state-of-the-art on policy research

Abstract from Chris Nash¹, EU UNITE Project Co-ordinator, University of Leeds

Assessing Externalities – Lessons from the EU's UNITE project

The objective of the UNITE project was to support policy makers in setting charges for the use of transport infrastructure by the provision of appropriate methodologies and empirical evidence. The work of the project fell into three broad areas:

- development of methodologies and case studies for the measurement of marginal social cost
- development of pilot transport accounts for all the countries of Western Europe and certain accession countries
- consideration of how to integrate the information from transport accounts and marginal cost case studies in taking decisions on transport pricing

The external effects covered in UNITE were congestion, external accident costs, and environmental costs. *Environmental* external effects of transport cover a wide range of different impacts, including the various impacts of emissions of noise and a large number of pollutants on human health, materials, ecosystems, flora and fauna. These were estimated using the bottom up impact pathway approach.

A few key conclusions are provided here from the accounts. The total social cost of road infrastructure provision and use (excluding vehicle operating costs) amounts on average to some 4% of GDP in Western Europe. Infrastructure costs some 1.5%, Congestion amounts to around 1%, external costs of accidents 0.5%, air pollution 0.6%, noise 0.3% and global warming 0.2%.

For road, total revenues cover total infrastructure costs in all countries except for Hungary. In more than half of the countries studied, the total revenues exceed the total costs of infrastructure, accidents and the costs of air pollution, global warming and noise. However there are substantial shortfalls in Austria, France, Germany, Greece, Hungary, Spain and Switzerland. By contrast, the degree to which rail system costs are covered by revenue from passengers and freight differs substantially between the countries studied, from a maximum of 63% in the case of Finland to a minimum of 8% in the case of Hungary. The simple unweighted average for all the countries in the study is 36%.

This should not be taken to imply that rail transport is underpriced relative to road. In terms of efficiency it is necessary to look at the marginal costs of road and rail use. The marginal cost case studies imply that the marginal cost of rail transport is very much below the average cost, whilst for congested roads the reverse may be the case.

An important part of the integration work in UNITE was to model the implications of alternative pricing rules for a set of case studies, as have other European projects. A survey of the results has been made in the IMPRINT-EUROPE project, and is summarised here. Broadly the implication is that more efficient pricing in urban areas would, as expected, reduce car traffic and increase that on public transport, as well as having important impacts on factors such as time and route of travel. For inter-urban transport the implications are less simple, as the existing situation is more diverse. Typically all passenger modes are charged above marginal social cost, whilst freight modes are often undercharged. Thus there is no simple conclusion that more efficient pricing of inter urban transport would always benefit the environment, although rail does often enjoy modest gains at the expense of road and air.

¹ Due to unforeseen circumstances, Mr. Nash was not able to attend the High-Level Special Session, this abstract is presented here as some of the information on the UNITE project was referred to in the presented given by Mr. Emile Quinet.

PREMIERE SÉANCE : TRAITER LES EXTERNALITES DES TRANSPORTS PAR DES INSTRUMENTS LIES AUX PERFORMANCES – LE ROLE DES INSTRUMENTS REGLEMENTAIRES, ECONOMIQUES ET FONDES SUR L'INFORMATION/LA COMMUNICATION

Traiter les externalités – état d'avancement des recherches sur les politiques

Abstract from Emile Quinet, Ecole nationale des ponts et chaussées, Paris

Pourquoi et comment lutter contre les atteintes des transports à l'environnement

L'environnement est un des principaux problèmes posés par les transports et leur développement. Ce problème a fait l'objet de beaucoup de travaux et de recherche, à la fois sur le plan technique et sur le plan économique, et les résultats généraux obtenus fournissent maintenant une base solide pour le décideur politique. L'objet de cette intervention est de dresser un tableau général de ces résultats, qui font apparaître à la fois le coût environnemental des transports et les moyens de réduire ce coût.

Le premier résultat est relatif à l'évaluation du coût environnemental. De nombreuses évaluations convergentes montrent que les conséquences susceptibles d'une évaluation monétaire représentent de 3 à 8 % du PIB, ce pourcentage variant selon le pays, la nature (marginal ou moyen) du coût calculé, et la liste des effets pris en compte.

Les économistes ont montré les avantages de l'internalisation des dommages, qui consiste à faire ressentir à l'auteur des dommages le coût de ces dommages ; c'est en quelque sorte l'application du principe pollueur-payeur. Cette internalisation peut se faire sous forme de taxes (taxes de bruit aéroportuaires), de redevances d'infrastructures (péages de congestion), ou encore de marchés de droits (comme ceux qui sont prévus par le protocole de Kyoto contre le réchauffement planétaire).

Les avantages de ces derniers outils d'internalisation sont multiples: ils présentent une plus grande efficacité environnementale, ils fournissent des ressources aux budgets publics qui peuvent conduire à la création d'un double dividende. Il s'avère que les craintes selon lesquelles les taxes environnementales ne pénaliseraient les industries nationales sont largement injustifiées dans nos pays aux activités diversifiées.

Néanmoins, à côté de ces aspects positifs, l'internalisation pose des problèmes politiques, qui tiennent à ce que les taxes frappent certaines catégories de la population, et de ce fait posent des problèmes de distribution et d'acceptation.

Ces problèmes doivent être examinés avec attention et résolus, faute de quoi l'internalisation risque d'échouer. Il convient alors, dans chaque situation concrète particulière, d'analyser les meilleures pratiques, de façon à atteindre une situation gagnant-gagnant. Parmi les idées directrices qui doivent guider cette recherche, objet actuellement de nombreuses études et réflexions, on doit souligner l'efficacité de l'information, et la possibilité de procurer une compensation aux catégories de population et groupes qui sont pénalisés.

The time period the HVF has been in force is short. Therefore a definitive assessment of the impacts of the new charging regime is not yet possible. Interim results look as follows:

- An increased **replacement and renewal of the truck fleets** could be observed as the introduction of the HVF approached.
- The **efficiency within the road transport sector** has further increased. The effects identified include an improved logistic performance, less empty trips and efforts of haulage companies for a better adaptation of their vehicles to the specific transport needs of the clients. Concentration tendencies in the road transport sector have been accelerated.
- Evaluation of available figures show a **decrease in vehicle-kilometres**. After many years of freight traffic growth, there seems to be a change in trend:
 - 1999: +5.4%
 - 2000: +7.2%
 - 2001: -3.9% (introduction of HVF)
 - 2002: -2.8%
- So far, the **rail sector has not been able to profit from the HVF** and to increase its share on total freight transport. One reason is that a large part of the cost increasing effect of the HVF for road freight transport has been balanced out by the increase of the permissible total weight of trucks.
- The higher weight limit for trucks passing Switzerland resulted in a **return of detour traffic** having used other, i.e. non-Swiss trans-Alpine road corridors before.
- **No relevant negative side-effects** could be observed:
 - Only in a very limited number of cases shifts from the use of motorways to smaller roads occurred in order to reduce the mileage.
 - Haulage companies didn't switch from heavy to light goods vehicles.
 - There was no perceptible increase of consumer prices.

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Implementation of transport taxes and charges

Abstract from Michèle Dix, Deputy Director, Congestion Charging, Transport for London, London

The central London congestion charging scheme was introduced in February 2003. The primary aim of the scheme is to reduce traffic congestion in and around the charging zone. The scheme is intended to contribute directly to four of the Mayor's ten priorities for transport as set out in his Transport Strategy published in July 2001:

- to reduce congestion
- to make radical improvements in bus services
- to improve journey time reliability for car users
- to make the distribution of goods and services more reliable, sustainable and efficient.

The scheme is also intended to generate net revenues to improve transport in London more generally.

The congestion charge is a £5 daily charge for driving or parking a vehicle on public roads within the congestion charging zone between 7.00am and 6.30pm, Monday to Friday, excluding weekends and public holidays. The central London congestion charging zone covers 22 square kilometres in the heart of London. The Inner Ring Road forms the boundary of the congestion charging zone, and no charge applies to vehicles using that route. Certain categories of vehicle, notably taxis, motorcycles and buses, are exempt; and certain categories of vehicle users can register for discounts – for example residents of the congestion charging zone can register for a 90% discount, and disabled Blue Badge holders are eligible for a 100% discount.

In summary, the key findings relating to the congestion charging scheme after six months or so of operation are as follows.

- Driver responses to charging appear to have settled: traffic data, payments data and survey information are all pointing to new settled patterns of travel.
- Traffic delays inside the charging zone have reduced by about 30%.
- Drivers in the charging zone are spending less time in traffic queues, with time spent either stationary or travelling at below 10 kilometres per hour reduced by about a quarter.
- About 60,000 fewer car movements per day now come into the charging zone.
- TfL estimate that 20 to 30% of these have diverted around the zone; that 50 to 60% represent transfers to public transport; and that 15 to 25% represent switching to car share, motorcycle or pedal cycle, or other adaptations such as travelling outside charging hours or making fewer trips to the charging zone.
- Public transport is coping well with ex-car users: extra bus passengers travelling to the charging zone are being accommodated by increased bus network capacity.
- Concerns over charging having a detrimental impact on economic activity appear to be misplaced.
- Congestion charging is expected to generate £68 million this financial year for spending on transport improvements, and £80 million to £100 million in future years.

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Implementation of transport taxes and charges

Abstract from Sharon James, International Transport Workers' Federation, London

Internalisation of transport externalities in the context of sustainable development – Stakeholder views (trade unions)

The globalisation of the world economy has depended on the technical and organisational capacity of the transport and telecommunications sectors. In addition, unit costs of transport have fallen dramatically, making it possible for new patterns of production and distribution to emerge.

The reduction in the cost of transport is clearly in part attributable to technological advances. However, it is also in large part due to the externalisation of the real costs of transport to labour and the environment.

Current demands on transport are largely driven by the freight transport needs of large global corporations, which require the ability to provide services at ever lower unit costs, and greater flexibility. The financial pressures to reduce inventory levels have led to increased use of just in time production methods in many industries. These developments have placed huge pressures on labour, producing a sharp downward trend in terms of wages and conditions of employment.

The discussion on the externalisation of transport costs has generally focussed on the environmental cost. But it is important that the cost currently borne by workers is also understood and highlighted. This is particularly important as moving to sustainable transport modes, and using economic interventions such as transport taxes and charges, will inevitably create winners and losers at a range of levels. There must be sustained political commitment and partnership with a range of stakeholders, including trade unions, to ensure that there is an equitable distribution of burdens and benefit in the transition.

A broad range of social issues must be addressed in the move towards sustainable transport strategies. Pure fiscal measures are insufficient on their own and attention needs to be paid to just transition policies, the role of public transport in sustainable development, and the impact of such measures both on the direct and indirect role of transport in stimulating jobs and economic activity. In addition, they need to be backed up by regulation, and political interventions by governments to ensure social protection and policy coherence. There is also a need to invest in environmentally friendly modes of transport with particular attention paid to the benefits of an integrated transport strategy.

SESSION 2: CORPORATE MOBILITY MANAGEMENT AND INTEGRATED MOBILITY SERVICES AND LOGISTICS FOR PASSENGER AND FREIGHT – NEW RESPONSIBILITIES AND OPPORTUNITIES

Overview on passenger transport

Abstract from Hans Dittmar, President and CEO of Reconnecting America, Washington D.C.

Transport Demand Management In The US: New Approaches To Mobility And Accessibility And Intermodalism

Transportation demand management has long focused upon the provision of information and supportive strategies to encourage individuals to take fewer trips. Recent research in the United States demonstrates that key to reducing travel demand by automobile are the following variables: residential density, public transit accessibility, and pedestrian friendliness. At the same time, major demographic shifts, including the aging of the so-called “baby boom generation”, younger people deferring child-bearing, growth in single person households, and immigration, all point toward a growing demand for denser, more walkable housing in a mixed-use environment. The national trend toward the construction of new light rail, commuter rail and rapid bus systems may supply the armature to help meet this demand in a way that reduces travel by single-occupant automobile, if actions are taken to remove barriers to the construction of mixed-use transit-oriented neighborhoods. Case studies demonstrate significant environmental and economic benefits from taking this course.

At the same time, an opportunity exists to reduce the harmful environmental effects of long-distance air travel. The U.S. economic downturn and the reduction in long distance travel subsequent to the September 11, 2001 attack has caused profound shifts in U.S travel patterns, with substantial shifts from air to auto. At the same time the aviation industry has responded by cutting service to many small and medium sized cities and substantially reducing the number of short-haul trips. Regional jets are increasingly handling those short-haul trips that are being made, often at stage lengths beyond their optimum performance.

Short distance air travel is the more environmentally damaging than longer air trips due to the impact of the take-off and landing cycle. The opportunity exists to use pending national legislation to enact a policy to better integrate long-distance travel networks in the United States at major hub airports, with air, rail and inter-city bus all connecting in one “travelport”. In this scenario, rail and bus would primarily serve short and medium distance trips up to about 640 kilometers and would begin to serve as “spokes” in the restructured hub and spoke” system, with aviation primarily serving longer trips. Improvements in the national passenger rail system to accomplish this would be made through shared investment in the largely private rail infrastructure, and would have the benefit of increasing capacity, throughput and reliability for rail freight as well.

SESSION 2: CORPORATE MOBILITY MANAGEMENT AND INTEGRATED MOBILITY SERVICES AND LOGISTICS FOR PASSENGER AND FREIGHT – NEW RESPONSIBILITIES AND OPPORTUNITIES

Experience with integrated mobility services concepts

Abstract from Hermann Knoflacher, Transport Research Institute, Technical University, Vienna

Experiences on city level and a pilot project on cooperate mobility management

Austrian experiences are not based on trial and error; they are based on a sound scientific background. This background is based on empirical and theoretical analyses of transport system behaviour with the following core hypothesis or effects:

- 1) There is no growth of mobility in the transport system, only a shift from one mode to another can occur.
- 2) There is no time saving in the transport system possible. If speed changes, the distance changes without changing the travel time
- 3) There is nothing like “freedom of modal choice”: structures determine behaviour and therefore the data.

The key element is not traffic flow; the key element is the organisation of parking space in relation to other modes. The key problem for practice is to find politicians, who are willing to apply and realise intelligent transport policy.

Three cases will be described:

- Eisenstadt a city with 11.000 inhabitants introduced a pedestrian zone of about 1 kilometre, narrowed main road, organised parking, traffic calming and introduced the city taxi. Effect: reduction of car mobility, increase of pedestrians, public transport stops and mobility. Quantitative figures will be presented
- City of Vienna, 1.6 million inhabitants, introduction of several measures from pedestrian zones to public transport priority and parking. Quantitative effects will be presented.
- The city of Schlanders (Italy) 6.500 inhabitants, similar measures like in Eisenstadt.

In all the cities, studies have been carried out before and after the measures. All the cities had strong benefits in economic terms of local business, local shops and strengthened the local economy. The pilot project in this presentation is the Vorarlberger Medienhaus, a company with about 350 employees, in a typical American situation, far away from public transport at the fringes of everything, since the company moved from the city centre of Bregenz to another municipality, where the company got free ground for a media service centre. In cooperation with the local company based environmentalist group, the employees and the employer, the attempt was made to change the modal choice to fulfil the “Kyoto-goals” for CO₂ emissions in transportation. In cooperation with the employees, the employer, local municipality and public transport system operators a lot of integrated measures were introduced like improvement for a better pedestrian access to public transport (rail), reorganising the local bus lanes by providing a bus stop in front of the new company, improving parking facilities for cyclists, reorganising parking lots on the ground of the company, introducing a new information system on all PCs, on the entrance and the exit, and a bonus system for using public transport etc.

These integrated measures were introduced with following effects:

Working trips of employees have been reorganised in such a way, that energy for mobility could be decreased by minus 15 % CO₂ diminished by minus 17 % within two years.

This pilot project was not only restricted to the company itself, but also to the households of the employees. These results will also be presented at the meeting.

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Experience with integrated mobility services concepts

Abstract from Bernard Dicke, German Association of the Automotive Industry, Frankfurt

Corporate Mobility Management – Stakeholder views (business)

1. Corporate Mobility Management is an important instrument to optimise fuel efficiency of the transport sector.
2. In 1995 the German automotive industry made a voluntary agreement to cut average fuel consumption of new passenger cars sold in Germany by 25 per cent up to 2005 against 1990 level based entirely on vehicle-related improvements. The industry is well on track to meeting its commitment: The total reduction since 1990 has reached 20.2 per cent by the end of 2002.
3. The truck industry also has improved fuel efficiency continuously. The fuel consumption of a 40 ton tractor trailer unit has been reduced by one third compared to 1967.
4. However, a huge amount of fuel is wasted in road transport in traffic jams caused by infrastructure bottlenecks and organisational deficits of road transport and intermodal traffic chains. It is estimated that traffic jams every day are responsible for
 - losses of 30 million litres of fuel, resulting in additional emissions
 - millions of hours of lost leisure
 - overall costs of 250 millions Euros to the society.
5. Simulations have shown, that due to traffic jams and stop-and-go traffic some 12 billion litres of fuel a year are wasted – nearly 18 per cent of total fuel consumption by road traffic in Germany compared to traffic conditions without any frictions.
6. Corporate mobility management using modern information technologies offers many new ways to improve traffic flows, the transfer from one mode of transport to another and sustainability of transport in general. The automotive industry has been a driving force of developing and implementing of ITS. The whole technological range and its positive impact on efficiency, safety in transport and a better environment will be presented at the 10th World Congress and Exhibition on Intelligent Transport Systems and Services, 16 – 20 November 2003 organised by ERTICO in Madrid.
7. 850 kilometres of autobahns are equipped with variable message signs, which improve traffic flow, fuel efficiency and road safety. In addition to these, network supervision systems installed on around 1,700 kilometres help to alleviate congestion. More than 10 per cent of cars sold in Germany are equipped with navigation systems, more than 50 per cent in the premium class. Many of them use the Traffic Message Channel (TMC) for dynamic navigation. Optimised route planning reduces searching, mileage driven and energy consumption.
8. Congestion and organisational failure still cause high inefficiencies in urban transport. In many German cities car manufacturers, truck manufacturers and suppliers work actively in public private partnerships (PPP) to implement corporate mobility management e.g. Stuttgart, Munich, Cologne, Frankfurt, Hanover. New IT-technology like floating car data is used to implement high value data management combining both private and public transport. This allows a completely new flexibility

in route guidance and traffic management. Service providers estimate, that a reduction of 10 per cent of inner urban traffic jams can be reached. This would save 10 million litres fuel a year.

9. Conclusion: Corporate mobility management is an important measure towards sustainable mobility. The private sector and public authorities should increase their efforts to implement ITS together on European, national and regional level. The modal split in industrial countries cannot be significantly changed. As all forecasts show, the road sector will remain the dominant mode of transport in all OECD countries. To improve roads efficiency must be a priority on the way to sustainable mobility.

SESSION 2: CORPORATE MOBILITY MANAGEMENT AND INTEGRATED MOBILITY SERVICES AND LOGISTICS FOR PASSENGER AND FREIGHT – NEW RESPONSIBILITIES AND OPPORTUNITIES

Experience with integrated mobility services concepts

Abstract from Markus Liechti, T&T European Federation for Transport and Environment, Brussels

Economic instruments and Corporate Mobility Management – Stakeholder views (environmental NGOs)

Tremendous transport growth over the last decades has increased the negative impacts of transport on the environment, the society and the economy. As a result transport infrastructure scarcity is increasingly obvious in the form of congestion. The most common reaction to congestion has been the construction of new infrastructure to increase capacity.

But building new transport infrastructure is expensive, worsens environmental and social impacts, contributes only in certain cases to the economic development (see SACTRA²) and has only limited effectiveness in reducing congestion. Transport is a scarce good as all other goods. Therefore, efficient and effective demand management must be given more importance: this means economic instruments. However, the focus should rather be on the objective, i.e. limiting the level of transport growth, than of the instruments.

Such an approach is often, wrongly, seen as a contradiction to the principle of free movement within the internal European market. However, in June 2001 the Gothenburg Council of Ministers made a firm statement on decoupling economic growth and environmental stress.

Traditional economic instruments that should be used are e.g. congestion charges for urban areas or the application of the user and polluter pays principle. Another economic instrument is the **trade of rights to use the infrastructure**. This requires a definition of a limited number of slots which can be traded and used by those who are willing to pay most for the right to use the transport infrastructure. The Alpine area could act as a guinea pig to show the effectiveness of the instrument for freight transport.

Having the right economic signals, non-economic instruments and corporate mobility management are becoming more important and more relevant. A unique alliance of European business and environmental organisations, supported by the Dutch government promotes the concept of **transport reduction**. This concept creates cost reductions for businesses and sustainability for society in general. It represents a real win-win situation for the economy and society and proves that decoupling of economic growth and transport growth is possible. Although, this is not an economic instrument, it works with economic arguments.

For passenger transport, economic arguments are not enough as the use of the private car is not a matter of simplistic economic behaviour. Therefore, mobility management for passengers should focus much more on non-motorised transport in all domains as education, land use planning but also allocation of transport infrastructure. This increases the capacity of the system and the mobility of the citizens. Corporate mobility management can also play an important role for passenger transport, e.g. in promoting car-sharing of parking space management.

² SACTRA 1999: Transport and Economy. The Standing Advisory Committee on trunk Road Assessment. DETR. August 1999.

SESSION 2: CORPORATE MOBILITY MANAGEMENT AND INTEGRATED MOBILITY SERVICES AND LOGISTICS FOR PASSENGER AND FREIGHT – NEW RESPONSIBILITIES AND OPPORTUNITIES

Company freight logistics management

Abstract from Alan McKinnon, Logistics Research Centre, Heriot-Watt University, Edinburgh

Company Logistics Management: Opportunities for Decoupling Freight Transport Externalities from Economic Growth

In the field of freight transport, the decoupling debate has focused mainly on ways of breaking the link between GDP and tonne-kms. It has been argued that tonne-km and GDP trends will ultimately diverge as factories and warehouses reach their maximum economic size, supply lines become fully extended and future increments in personal income are spent on services rather than material goods. Over the next 5-10 years, however, the enlargement of the EU, the growth of e-commerce and internationalisation of retail chains, among other things, are likely to reinforce the growth in tonne-kms.

Governments will have great difficulty restraining the growth in tonne-kms, for several reasons. First, full internalisation of the environmental costs of freight transport is unlikely to raise transport costs sufficiently to arrest the centralisation of production and warehousing in many sectors or to offset the wide factor cost differentials that are driving the globalisation process. (Ironically, the transfer of manufacturing, and usually the upper tiers of the supply chain, to low-cost Far East countries offers a means of reducing freight transport intensity in Western countries, but at a high economic cost.) Second, as the deregulation of the European trucking industry has only recently been completed, there is no enthusiasm for re-introducing quantitative controls on transport capacity. Third, constraining the growth of tonne-kms would conflict with other policy goals such as the promotion of international trade and regional economic development, which currently have higher priority within the EU.

We need to reconsider whether the tonne-km is the right index to decouple. The problem with this index is that it does not correlate very closely with freight transport externalities. The environmental impact of each tonne-km of freight movement is also influenced by the freight modal split, vehicle utilisation, energy efficiency and emissions per litre of fuel consumed. Policy-makers can exert greater leverage on these factors than on the underlying growth in demand for freight transport expressed in tonne-kms. A strong case can be made therefore for redirecting decoupling initiatives towards the GDP-vehicle km and vehicle km-emissions ratios. Recent research has shown that these ratios are more sensitive to fiscal measures, regulatory changes and government-sponsored promotional campaigns and can be varied in the short to medium term.

SESSION 3: EXPERIENCES WITH ENVIRONMENTAL IMPACT ASSESSMENTS OF TRANSPORT INFRASTRUCTURE AND HABITAT PROTECTION

Overview

Abstract from Richard T. Forman, *Advanced Environmental Studies in Landscape Ecology*, Harvard Graduate School of Design, Cambridge, MA.

Road Ecology: Environmental Impacts of Road Infrastructure, with Experience and Policy Implications from the USA

For centuries society has attempted to reduce nature's impacts on roads, and now has begun to reduce road impacts on nature. We have spread an enormous net over the land, an engineering marvel and economic success story. Roads cover a land teeming with natural flows of water and soil, plus movements of animals and seeds, which produce the characteristic rich patterns of biodiversity. These two giants, the land and the net, lie in an uneasy embrace. Natural processes disrupt the net and the net disrupts natural processes. Both are costly to society.

Road/vehicle transportation in the USA is an outlier internationally, with some 6.2 million km. of public roads, 2.3 km of road per 100 persons, and nearly a quarter of a billion vehicles using the roads. Although public-road length grows annually at only 0.2%, vehicle numbers grow markedly, and vehicle-kilometers-traveled continues to grow at >3%. Consequently environmental effects, from wildlife movement and biodiversity to water flows, sedimentation, aquatic ecosystems, fish, and greenhouse gases, spread. Fortunately the scientific field of road ecology expands as well, and offers solutions and hope.*

Twenty-one major road-environment steps or events since 1900 are presented as a foundation for today's road ecology. Three groups of scientific principles, transportation solutions, and policy issues are usefully recognized today:

1. Wildlife, Biodiversity, and Vegetation includes: road-killed animals; barrier effect and small populations; traffic noise and disturbance; and roadsides of degraded habitat and exotic species.
2. Water, Chemicals, and Atmosphere includes: hard surface, peak water flows, and erosion; array of chemicals along roads; degraded aquatic ecosystems and fish; and atmospheric dust, snow, noise, pollutants.
3. Road Systems and the Land includes: road density, network form, and landscape fragmentation; access roads and human impacts on nature; road, stream, and channel/pipe networks; road-effect zone meshing engineering and ecology; and regional transportation mitigation and planning.

As public pressure related to transportation and the environment increases, and as the science grows rapidly, major policy players increasingly look for solutions. Looking ahead, we can identify a dozen road-ecology issues, for which solutions have begun and are likely to grow in the next few years in the USA. On this trajectory, "the real achievement will be safe and efficient transport elegantly embedded in nature's biological diversity and natural process."³

³ * *Road Ecology: Science and Solutions*. 2003. [Forman, R. T. T., D. Sperling, et al.]. Island Press, Washington, D.C. 481 pp.

**SESSION 3: EXPERIENCES WITH ENVIRONMENTAL IMPACT ASSESSMENTS OF
TRANSPORT INFRASTRUCTURE AND HABITAT PROTECTION**

Experience with implementation of EIAs and SEAs

Abstract from Axel Friedrich, Mobility and Environment Division, Umweltbundesamt (Federal Environment Agency), Berlin

Strategic Integration of Environmental Goals into Urban Transport Development – STEP: Berlin adopts a new Strategy for Mobility

Two and a half years of intensive work have come to a promising end: The Berlin Senate has adopted a new Strategy for Mobility in Berlin in July 2003. This modern integrated strategy will enable Berlin to satisfy the city's mobility needs by combining economic efficiency, social justice and a higher degree of environmental compatibility. In the decade following the German – and in particular Berlin – political Unification the Berlin Transport Policy consisted mainly in repairing and creating new infrastructure. The former division of the city and its separation from the international transportation system have left their marks that can be observed still today. For this reason, even in the future there will be necessary tasks of completion and enlargement of the present traffic infrastructure – despite certain conflicts with environmental matters. Nevertheless, the new Strategy establishes clear new priorities in favour of the preservation and qualification of present facilities over further infrastructural enlargement. It aims at a better exploitation of the existing capacities by using intelligent organization and telematics-based technology. Also it increasingly promotes non-motorized traffic and intends to avoid a further rise in motorized traffic. The New Strategy for Mobility wants a trend reversal towards the means of transport offered by the “Environmental Combination”.

The New Strategy targets at the time horizon of 2015 and contains a programme of precise measures until the end of the current legislative period in 2006.

But not only the Strategy itself is new, also new ground has been broken in establishing this large-scale planning work by means of a genuine consultative process. The entire work process has been accompanied by a “Round Table” gathering 20 representatives of relevant stakeholders and interest groups as well as an Scientific Advisory Council.