

SUSTAINABLE MOBILITY



Results from
the transport research programme



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Additional information on the transport research programme is available on the Internet. The programme's Knowledge Centre (<http://europa.eu.int/comm/transport/extra/home.html>) provides:

- structured guides to the results and projects for particular topics;
- summaries and final reports of individual projects;
- access to project web sites and other contact details.

References to some projects are included in this brochure, to help the reader access further information quickly through the Knowledge Centre.

Information on the wider transport activities of the European Union is also available on the Internet. It can be accessed through the Europa server (http://europa.eu.int/comm/dgs/energy_transport/index_en.html).

Manuscript completed in July 2001.

Luxembourg: Office for Official Publications of the European Communities, 2001

ISBN 92-894-1547-9

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THE NEED FOR RESEARCH



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In this brochure, discover how research can contribute to future policy for sustainable mobility, and identify topics worth investigating further on the web.

Over recent decades, social and economic opportunities have been underpinned by growth in mobility. But if current trends continue, there will be alarming increases in congestion, greenhouse gas emissions and dependence on oil imports. This can only be tackled using an integrated mix of policy measures¹. Therefore, through its transport research programme², the European Union has targeted a range of actions to help policy-makers develop effective solutions.

This brochure highlights the most significant results. Its purpose is to raise awareness of the information and decision support that is now available, and to encourage readers to obtain further details through a web-based Knowledge Centre (at <http://europa.eu.int/comm/transport/extra/home.html>).



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The challenge: balancing economic, social and environmental interests

The pursuit of sustainable mobility presents a challenge. Actions are needed to limit the environmental and other costs of traffic movements. Yet these must be reconciled with aspirations for economic growth and social demands for access to services and leisure activities. Improved transport links are seen as vital to boost market access in the European Union, as well as reducing

disparities between regions and between citizens. Therefore a balance must be struck.

The solution is widely perceived to lie in an integrated approach, combining economic instruments, regulations, new technologies, infrastructure investment and other policy actions. The transport research programme is providing a vital foundation for this, developing guidelines and tools to support the implementation of policy measures, and demonstrating their likely impacts.

The transport research programme supports the development of integrated policies capable of tackling pan-European transport issues.

KEY RESULTS

Research is having a major impact on policy for sustainable mobility. Selected highlights are described in this section.

Baseline forecast for transport in Europe

To provide a consistent basis for policy-making, a "reference scenario" has been produced for the European transport sector through to the year 2020. This is based on the projection of current trends. Building on this, software models have been developed for forecasting transport demand and traffic flows, allowing the effects of policy options and alternative socio-economic scenarios to be tested.



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The models have been used in a pilot Strategic Environmental Assessment of the Trans-European Transport Network (TEN-T).

Estimates of traffic growth³



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The reference scenario for European passenger transport anticipates that car dependency, journey lengths and the demand for long distance trips will all increase from 1995 levels. The modelling work has quantified this, projecting more than 20% growth in passenger-kilometres by 2010, with a decline in walking and cycling and 70% growth in travel between European countries. Long-distance trips increase at twice the rate of "short" trips (of less than 40 km), and growth rates vary by a factor of two between Member States.

In the freight sector, globalisation of production and markets will contribute to roughly 40% growth in tonne-kilometres moved by 2010 and 65% by 2020, with nearly 100% growth in cross-border traffic. The increasing average length of haul is expected to favour the railways. However, the length of "overloaded" routes suffering serious congestion is predicted to increase significantly unless policy action is taken.

Regulation for environmental protection

Together with pricing, regulation is an effective means of controlling the environmental impacts of transport. Research has evaluated a range of abatement options, such as new take-off and approach procedures to reduce noise at European

airports, regulatory controls on waste management in the maritime sector, and certification of aircraft and rail vehicles. In addition, measurement and modelling tools have been developed to support the policy process. As a result, proposals have already been made for new standards and Directives in the maritime and rail sectors.

Measuring railway noise⁴

A range of techniques have been developed and tested to improve the measurement of railway noise. This is to support the regulatory approval of rolling stock, monitoring of ambient noise and diagnosis of the sources of noise. These results have fed into a new version of the ISO standard for exterior noise type

testing of rail vehicles, increasing its reproducibility. In the longer term, the results will assist national authorities in determining measures needed for compliance with future EU legislation on noise. For example, the techniques proved capable of quantifying the noise reductions due to technologies such as improved braking systems and bogie shrouds.

Pricing to manage transport demand

Economic instruments are among the most effective levers to promote more sustainable travel choices. European research has played a central role in evaluating the

potential for optimising prices. Practical guidelines and calculation methods have been devised to support the introduction of measures such as road pricing. In addition, public acceptance and behavioural reactions have been tested through surveys and small-scale demonstrations.

Changes in pricing structures⁵

Studies of transport corridors showed that the socially efficient level of charges for transport is strongly dependent on the local context, and optimal pricing could require charges to be reduced in some situations. For instance, in some case studies, the current price of inter-urban car travel was estimated to be too high relative to the social cost in 2010.

This result reflected the tightening of vehicle emissions regulations and an assumed investment in road capacity to reduce congestion. However, in urban areas, prices are often too low and fail to discourage congestion. Long-distance road freight is generally under-charged, because taxes do not increase sufficiently with vehicle weight and distance travelled.



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European transport policy information system

European integration has seen major changes in mobility patterns and services. However, the statistical tools to monitor these changes and support policy-making have not kept pace. In particular, data are needed on

international flows, the TEN-T, new logistic services, transport chains and intermodal transfers. Therefore the transport research programme has devised new methods for data collection and estimation, as well as defining a system for data sharing across Member States.

Decision support tools⁶

A European transport policy information system (ETIS) has been proposed based on a network of co-operating systems. It would provide access to various databases across Europe, create a structured core database, and support the analysis of subsets of data that relate to specific policy issues at regional,

national and European levels. Research has provided software to support the connection process, a proposed standard format for data exchange, and applications to simplify the interface with end users. Several other decision-support systems have already been developed using these tools, and are being used by the European Investment Bank and local planning authorities.

AREAS OF RESEARCH

The aim of research on sustainable mobility has been to identify packages of measures that address multiple policy objectives in a balanced way. This has included:

- evaluating the typical impacts of measures;
- developing methods, databases and modelling tools to support the evaluation and implementation of policy;
- identifying legislative and market barriers.

The research has supported policy in six main areas:

Understanding the future

Developing scenarios and forecasts of the future context in which transport policies must operate, and providing data on the current situation.

Increasing economic performance

Identifying strategies to ensure good accessibility and improve the competitiveness of individual modes and multi-modal services.

Improving social conditions

Promoting the equitable treatment of regions and citizens, and providing advice on changes that will affect working conditions.

Protecting the environment

Developing tools for environmental management and regulatory control.

Building transport strategies

Evaluating the contribution of pricing, traffic management, land-use planning and other measures to an overall strategy for transport.

Balancing policy packages

Developing evaluation methods to help policy-makers deal with conflicting objectives and the trade-offs between impacts.

The first area (Understanding the future) provides the foundation for policy analysis. Next, the areas looking at economic, social and environmental impacts and transport strategies supply the building blocks. And finally, the research on policy integration provides the means of ensuring a truly “sustainable” approach.



UNDERSTANDING THE FUTURE

Scenario analysis

Scenarios can help policy-makers to understand the likely development of the transport sector. They can also show the range of possible outcomes due to uncertainties in the socio-economic and political context, as well as the effects of alternative transport policies. The transport research programme has provided both qualitative and quantitative forecasts for a “reference” scenario, as well as developing scenarios of “alternative” futures.

It was concluded that both new technologies and the “decoupling” of transport growth from economic growth are needed to achieve sustainability targets. However, the growth in air travel and the increased demand for leisure activities (e.g. from an ageing population) will act as major constraints.



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Conclusions on policy in the face of uncertainty ⁷

Three “images” of the European transport system in 2020 were prepared, involving different degrees of technological innovation and “decoupling”. Then, by working backwards from these end-states, policy paths were defined that could achieve the desired economic, social and environmental outcomes.

A number of early actions were identified that would contribute well to any policy path, regardless of the uncertain social and political developments outside the transport sector:

- Tax reform – a shift of the tax base from labour to the use of natural resources.
- Low emission zones – providing an incentive for the market to select clean vehicle technologies.
- Tele-commuting – experimenting with tele-working options in conjunction with land-use planning.
- Road pricing – taxation on the use of congested urban roads.
- Actions to provide integrated information systems.



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Organising statistical data

To make detailed projections of future transport patterns, reliable data on the current situation are needed. However, statistics are poor in various areas of policy concern, such as long-distance travel. Therefore the transport research programme has developed new methods for collecting data, exploiting information technologies such as the Internet. These have been supplemented by low-cost methods of estimating traffic flows, based on available economic and transport data. A framework and tools for data sharing across Europe have been devised, as described previously, and the use of web-based data exchange has been successfully piloted.

The transport research programme has developed new methods for collecting data, exploiting information technologies such as the Internet.

Compiling data on freight transport chains⁸

A survey of electronic data interchange (EDI) systems showed that the information required to build freight trip matrices often exists in the computer system of the originator of the consignment. However, automation of data collection from these systems would be difficult

without standardisation, and issues of confidentiality need to be addressed. The research concluded that it is not practical to use data from EDI and tracking and tracing systems at present. However, there is an immediate opportunity to introduce an EU-wide standard for freight data collection formats, to feed into new freight logistics systems.



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INCREASING ECONOMIC PERFORMANCE

Competitiveness of the individual modes

Growth in freight transport, especially road freight, has been one of the factors supporting European economic development. It is also

one of the factors that threatens serious congestion. Therefore there is strong interest in making all the modes more competitive and facilitating modal transfer off the roads. Research has identified factors and trends affecting costs, in order to indicate the critical areas for policy action.

Road freight costs⁹

Survey results showed substantial variations in drivers' wages and fuel costs (the largest cost factors) between countries. Total taxes also vary between countries, ranging from 10% to 25% of the total operating cost of long-haul trucks. For 100km distance, EU prices are between 3 and 8 times higher than in eastern European countries, but prices are closer for long distance freight. Case studies suggest that systematic violation of traffic rules could reduce costs per tonne-kilometre by up to 30-40% in some countries.



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Competition in the container shipping industry¹⁰

Research found that poor profitability has largely been due to intense cost-based rivalry, while capacity utilisation has been good. The main impact of the continuing pressure on costs is likely to

be on-shore job losses due to the rationalisation of operators, use of new technologies and process redesign. The challenge for policy is to encourage EU companies to retain their on-shore control centres in Europe, rather than relocating them e.g. to the Far East.

The role of government intervention

Liberalisation in the transport sector poses the challenge of balancing market efficiency with public goals and the associated use of subsidies. Research has identified areas

where further deregulation is desirable (for instance to improve interoperability within the Single Market). In addition, it has assessed experiences to date, and provided tools and methods to support the implementation of regulatory reform.



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Liberalisation of the rail sector¹¹

Studies of Member State experiences with liberalisation identified a series of issues requiring clarification in future Directives. These include the treatment of costs and the role of the infrastructure manager. Therefore methods were proposed for calculating and allocating

rail capacity and costs, and a model developed for simulating the interaction between train operators and the infrastructure manager. Also, software was devised to help Member States decide on financial support to railway services that are deemed socially necessary but not commercially viable.

Increasing regional accessibility

The development of the Single European Market, stronger trade links with the Baltic and central European countries, and investment in the Trans-European Transport Network (TEN-T) are requiring policy evaluation to be done on a broader geographical scale than up until now. Moreover, a more strategic assessment is

needed, taking account of long-term and system-wide effects on socio-economic, environmental and traffic outcomes. In response, the transport research programme has developed methods for assessing the regional effects of investments in transport infrastructure. It has also assessed the prospects for increasing flows along particular key routes.

Strategic assessment of regional impacts¹²

Guidelines and software have been produced for evaluating the impacts of multi-modal corridor investments and the entire TEN-T strategy on regional development. Outputs include indicators of regional traffic growth, accessibility, employment and other social impacts. Modelling results indicate that most

regions will improve their accessibility and economic performance in absolute terms as a result of the TEN-T, but with some changes in their relative position. The maximum TEN-T investment would lead to a slightly less polarised distribution of accessibility and economic output among the regions. However, this slight cohesive effect would not be able to reverse the general trend towards economic polarisation in the EU.

Trade routes through Arctic waters¹³



The oil and natural gas reserves in northern Russia are viewed as a vital long-term energy source for western Europe. Many oil companies would prefer

to transport the oil by icebreaking tankers rather than by pipeline. Therefore a demonstration voyage was made to test the viability of the route and the use of new technologies. The work proved that the route is technically passable and safe, even in hard ice conditions, and new software for routing through icy waters proved effective. However, it was concluded that changes are needed in the legal and business context in order to attract the long-term investments that are essential to make the route cost-competitive.

IMPROVING SOCIAL CONDITIONS

Care for disadvantaged groups

Trends such as the ageing of the population and increasing dependency on the car create policy challenges. For example, people in rural areas, those without access to a car and disabled people require attention to be given to declining public transport services and user-oriented design. Various research projects have surveyed the problems and identified options for dealing with them. For example, good practice in the design



of public transport interchanges has been compiled, and guidance provided on urban planning measures to promote cycling and walking.

Maintaining the viability of public transport in rural areas¹⁴

A web-based database has been compiled, describing Member State experiences in ensuring rural access to transport. In addition, a good practice guide is available, covering 12 different schemes for providing viable services. The results have highlighted the

possibilities offered by information technologies, particularly to increase the flexibility of services, and also the economic and environmental benefits of combining goods and passengers in single services. The latter will require legislative changes in some countries.

Meeting the needs of disabled people¹⁵

The first overview of the special needs of disabled people in the maritime sector led to a set of recommendations for changes in the design and operation of ships, such as improvements in crew training. The changes include

arrangements for the efficient evacuation of disabled passengers. As far as disabled seafarers are concerned, the research concluded that a switch to shore-based jobs is highly likely due to safety constraints, although adaptations in regulations could allow some crew members whose fitness becomes impaired to be re-employed on board.



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Working conditions

Many new technologies and working practices will be introduced to transport operations over the next couple of decades. Moreover, policy changes will be the driving force behind many of them – affecting safety

systems and regulations, traffic management systems, and equipment to improve interoperability. Research has identified the likely impacts on working conditions, and made recommendations on how to mitigate potential problems.

Selection and training of air traffic controllers¹⁶



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The harmonisation of European air traffic control, coupled with the introduction of new technologies and automation strategies, will significantly change the working environment for air traffic controllers. Based on a definition of the job profile for future controllers, a generic process has been devised for their selection, including a revised set of selection criteria. In addition, detailed guidelines have been developed for controller training to meet the needs of new air traffic management systems.

Acceptability and equity of policy changes

Recent protests over increases in fuel prices have illustrated the importance of gaining public acceptance of policy changes. Getting prices right (in terms of the overall benefits to society) is seen as one of the most powerful ways of moving towards sustainable mobility, yet it is potentially one of the most difficult. Therefore the transport research programme has made detailed studies of the acceptability of pricing reform, as well as stakeholder reactions to other measures such as urban travel restrictions. In addition, the equity of the impacts of pricing and infrastructure investments has been evaluated.



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Acceptability of pricing measures¹⁷

Extensive user surveys in various cities have shown that public acceptance of new pricing measures is low, particularly among motorists, even though pricing is perceived to be an effective tool. To increase acceptability, the reform of pricing needs to be staged, starting with simple systems with low charge levels. In addition:

- The revenue should be earmarked (or "hypothecated") for specific spending programmes such as public transport, or returned to the local population in some other way.

- Compensating measures should be considered for social groups that are disadvantaged by the pricing scheme.
- Guarantees should be given over the protection of privacy.
- Evidence should be provided that pricing measures have been effective in solving transport-related problems.

PROTECTING THE ENVIRONMENT

Support for abatement strategies

The road sector has recently seen intensive regulatory action to reduce environmental impacts, and attention is now turning more towards the rail, air and maritime sectors. Research has evaluated the performance of

current controls in these three sectors, and identified ways of improving them. Often this has involved assessing the measurement procedures that enable legislation to be enforced, and devising improved procedures. Noise emissions have been one focus, to help Member States meet the requirements of major changes in legislation over the next few years.



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Noise abatement in the air sector¹⁸

Research found that, while there is common European legislation on aircraft noise, there is a lack of harmonisation between Member States in the application of noise abatement practices. Moreover, to assess the potential noise benefits of any specific procedure, it is necessary to use a common and validated modelling tool. Problems with existing models were highlighted in an evaluation exercise – as a result, work on a new tool is in progress. In addition, promising procedures for noise abatement were identified, covering both the short term and the medium term.

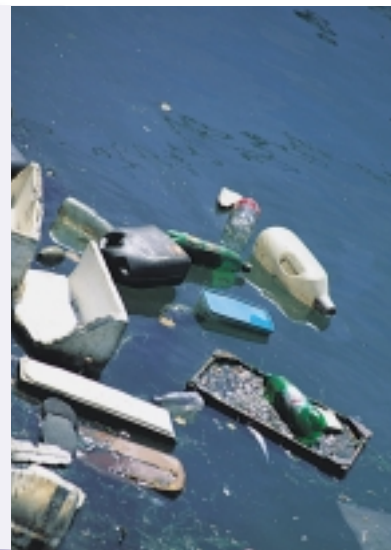
Environmental management for ports¹⁹

There is a growing interest in environmental management systems in the maritime sector, to meet the challenges of increasingly stringent regulations. In response, research has supported the exchange of good practice between port managers. A web-based information system has been provided, including:

- A self-diagnosis method that allows ports to assess their environmental situation and performance. This tool

incorporates the requirements under the European Eco-Management and Audit System (EMAS) and ISO 14000 standards, and has been tested by more than 60 ports.

- Data resources allowing each port to benchmark their own situation against results from other European ports.
- A database containing around 100 case study descriptions of successful actions.
- A guide to assist port authorities in the process of analysing environmental issues and selecting appropriate monitoring methods.



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Evaluation of environmental impacts

System-wide evaluation of environmental consequences is essential in developing sustainable transport policies. For example, a Strategic Environmental Assessment (SEA) has been demanded for the Trans-European Transport Network (TEN-T). This is to ensure that the full effects of the policy initiative

are assessed, and not just the direct impacts of individual sections of infrastructure. The transport research programme has made a major input in developing the SEA work, compiling the methods, and making them operational in a software tool. This has been complemented by other, more fundamental studies on emissions modelling and the valuation of environmental damage.

Estimation of pollutant emissions²⁰

A catalogue of methods and emissions factors has been compiled for estimating pollutant emissions and energy consumption in transport. This catalogue has already contributed to policy-related initiatives in three areas:



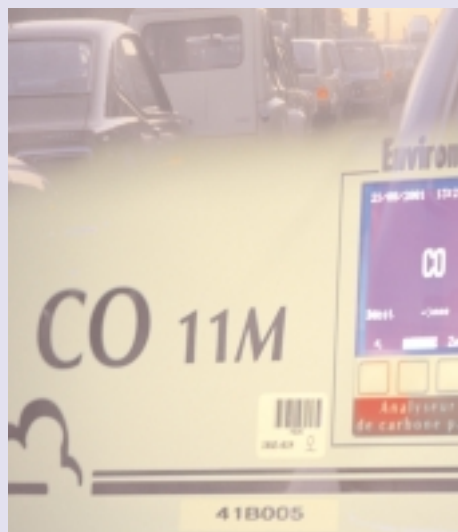
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- methodological support to Member States in reporting emissions according to their obligations under the UNECE Convention on Long Range Trans-boundary Pollution and the UN Framework Convention on Climate Change;
- assessment of vehicle and fuel standards to meet EU air quality objectives, within the Auto-Oil II programme;
- the pilot SEA of the TEN-T.

In the SEA results, the TEN-T is projected to increase overall passenger and freight transport demand, but with a substantial shift to rail and a reduction in road network congestion. These changes are estimated to reduce greenhouse gas emissions relative to a do-nothing scenario.

Valuation of environmental damage²¹

The evaluation of external costs is an essential step in the reform of pricing policy, aimed at charging users for the costs they impose on the transport system and on society. Drawing on previous EU-funded research, the transport research programme has demonstrated methods for assessing the various costs, such as accidents, air pollution, noise and global warming. For instance, substantially lower externalities (50% or less) have been estimated for rail compared to road transport on selected major European routes. Guidelines have been prepared giving recommended methods, for use by policy-makers and transport planners.



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BUILDING TRANSPORT STRATEGIES

Identifying good practice for specific measures

The first step in building a policy package is to ensure that good practice is adopted in each of the component parts. The transport research programme has generated extensive evidence and recommendations on a wide range of measures, including:

- economic instruments;

- combined planning of land-use and transport;
- mobility management and information actions;
- physical measures and infrastructure investment;
- regulatory controls;
- traffic management systems.

Other brochures in this series provide more extensive description of important findings and guidance on individual measures.

Optimisation of traffic control measures ²²

A good practice manual and modelling tools have been developed for road traffic simulation. Two applications were studied: the design of urban traffic control systems; and the management of congestion due to incidents, heavy traffic, accidents and roadworks. The tools simulate the dynamics of vehicle

movements, and are more effective than traditional traffic network models for assessing behavioural responses. They enable real-time simulation of traffic movements and faster than real-time prediction of the consequences of traffic hold-ups, for use by traffic planners and network managers.



Evaluating the transport effects of policy packages

Following the selection of promising measures, policy packages can be constructed. Research has looked at the performance of integrated strategies, to identify potential synergies and the critical components of each package. For example, it was found

that the most cost-effective measures for reducing urban transport demand are based on pricing. Road pricing per kilometre or at a city cordon performs well, while parking charges have a less direct impact and may not work where there is extensive private off-street parking within the congested area. Subsidies to urban public transport are less effective.

Strategies for reducing urban traffic ²³

A good practice guide has been developed for the selection and implementation of traffic demand reduction strategies, particularly aimed at city authorities. This covers some 30 measures, illustrated by case studies. "Push" measures to deter the use of vehicles (e.g. road pricing,

fuel taxes) are seen as more effective than "pull" measures (e.g. improving alternative modes). But travel reduction is found to be most likely where both "push" and "pull" measures work together in a package, with the revenue from the former being used to fund the latter.



BALANCING POLICY PACKAGES

Evaluation tools

The selection of policies and infrastructure investments from the viewpoint of sustainability requires a wider and more strategic assessment than the economic evaluation classically

used in the past. Research has therefore provided tools for estimating wider socio-economic and regional effects. Various approaches have been tested, exploring the best ways to take account of long-term effects and the interaction between transport investment and regional economic development.

Modelling the interactions between transport and the economy ²⁴

A tool has been developed to model the long-term interactions between the transport sector and other sectors of the economy over a 25-year time horizon. This was achieved by linking sub-models covering macro-economic activity, regional economics and land-use, transport demand and environmental impacts, and using feedback loops to capture the inter-relations between variables.

The tool was used to simulate the effects of policy packages of varying complexity. Overall, a fully integrated set of measures produced the best

results. However, none of the tested packages was able to meet the Kyoto requirements for abatement of greenhouse gas emissions.

Related projects looked more specifically at the effects of investments in major transport corridors on the local economy, using models and scenarios to evaluate the relative merits of alternative strategies. Combinations of road and rail projects were found to offer the greatest overall benefits, with road projects having the greatest effect on accessibility and rail projects improving safety and air quality.

Decision support tools

Policy-makers often have to cope with complex decisions. Even if they have estimates of the various impacts of a set of interacting measures, they still have to make trade-offs between policy objectives and take decisions in the face of uncertainty. Moreover, different policy-makers will usually attach different weights to the various decision criteria. To aid the decision process, the transport research programme has developed and tested a number of support tools, particularly for multi-criteria analysis.



Coping with uncertainty and differences in policy priorities ²⁵

To support the overall evaluation of transport policies, a range of social and economic indicators have to be considered. Innovative research has shown how to integrate tools for estimating these values with an assessment framework combining both cost-benefit and multi-criteria analysis methods. The work has also provided a procedure for attaching monetary values to different impacts, harmonised across Member States.

A second tool has been devised to assist the development of policy in uncertain situations. For this purpose it includes:

- scenarios of alternative political and socio-economic contexts within which the impacts of policy options can be evaluated;
- an evaluation methodology and software that can cope with uncertain or fuzzy data.

A third multi-criteria tool helps different decision-makers make explicit how they rate specific policy objectives and the contribution of various impacts in achieving their goals. This is aimed at overcoming some of the conflicts between different policy levels in the EU.

Good practice for policy demonstrations

Innovations in policy and technology can benefit from pilot-scale demonstration, both to learn about the solution in a low-risk way and to increase stakeholder acceptance. However, some previous demonstrations have failed to deliver the expected insights. A major contributor has been the lack of focus on the policy goals underlying the demonstration, which should pervade all aspects of the project's implementation. This is all the more important where the multiple policy objectives of sustainable mobility have to be considered. Therefore the transport research programme has



generated new process guidelines in this area, to complement the evaluation tools described previously.

Guidelines for project design, management and evaluation ²⁶

Generic guidelines have been developed for the selection, design and evaluation of individual pilot and demonstration projects. These guidelines cover the various decisions and evaluation phases through the entire life cycle of the project. In a similar way, a more focused guide to good practice has been developed specifically for city-based projects with clean vehicles and fuels. The expected users include project sponsors, project managers and their

experts. A vital feature of both sets of guidelines is the provision of a "quality assurance" framework, ensuring that the project results give clear-cut answers to the policy-related questions that called for the piloting of the new transport solution. In the UK, local authorities have shown interest in using the guidelines to help meet government requirements for the appraisal of transport investments.

CURRENT DEVELOPMENTS IN TRANSPORT RESEARCH

This section highlights some of the current research into policies for sustainable mobility. Further details are available from the Links section of the web-based Knowledge Centre.

The transport research programme has shown how to build integrated strategies for sustainable mobility, seeking a balance between different policy objectives. The work has identified the scale of potential benefits, and has provided an information base and evaluation tools to support the decision-making process.

Building on this, current research is moving in a number of directions:

- support for policy implementation, for

instance concerning noise abatement and vehicle environmental labelling;

- in-depth assessment of selected policy options with high potential, such as reform of pricing (described in a separate brochure);
- development of solutions to meet emerging issues, such as the health risks now being attributed to ultra-fine particulate emissions from engines;
- further progress towards practical tools for policy support, particularly aimed at taking account of wider socio-economic impacts.

Support for policy implementation ²⁷

Energy labelling of cars is being implemented by Member States. But this fails to take account of environmental damage such as the health effects of particulate emissions and noise. A more comprehensive approach could favour

the market introduction of new vehicle and fuel technologies. Therefore new research is looking at the potential for vehicle environmental rating schemes, accessible to the consumer through the web.

Research to meet emerging needs²⁸

Emerging evidence indicates that the health effects of vehicle exhaust emissions are strongly correlated with the release of sub-micron particulate matter – much smaller than previously thought. Therefore, research is under way to define accurate

and reproducible methods of measurement, and also to characterise the emissions behaviour of current and future vehicles. The results will feed into work on a harmonised European methodology for preparing inventories and forecasts of transport emissions.

Development of policy support tools ²⁹

Previous research has highlighted the need to estimate the wider socio-economic and spatial impacts of policies in a comprehensive way, in order to address the principles of sustainability. Several studies are being launched in this area.

Other research will identify measures that allow economic growth to continue while minimising the environmental and other negative impacts from transport. Advances will also be made in forecasting transport demand and building scenarios of future developments.



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References

Further information on the following projects can be obtained from the web-based Knowledge Centre.

Other key documents referenced in the brochure are available on the DG Energy and Transport web site (http://europa.eu.int/comm/dgs/energy_transport/index_en.html).

1. *White Paper "European transport policy for 2010: time to decide", COM(2001)370*
2. *The transport research programme is part of the fourth framework programme for Community activities in the field of research, technological development and demonstration for the period 1994 to 1998*
3. *SCENARIOS, SCENES and STREAMS projects*
4. *METARAIL project*
5. *PETS project*
6. *BRIDGES, INFOSTAT and MESUDEMO projects*
7. *POSSUM project*
8. *INFREDAT and MYSTIC projects*
9. *SOFTICE project*
10. *ASDSS project*
11. *EUROPE-TRIP, LIBERAIL and SONERAIL projects*
12. *EUNET-SASI and EUROSIL projects*
13. *ARCDEV and ICE ROUTES projects*
14. *VIRGIL project*
15. *HANDIAMI project*
16. *CAST project*
17. *CONCERT-P, PATS, PRIMA, SOFTICE and TRANSPRICE projects*
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22. *HIPERTRANS and SMARTTEST projects*
23. *DANTE and START projects*
24. *ASTRA, CODE-TEN, EUNET-SASI and EUROSIL projects*
25. *EUNET-SASI, SAMI and TENASSESS projects*
26. *MAESTRO and UTOPIA projects*
27. *CLEANER-DRIVE project*
28. *ABLE, ARTEMIS, PARTICULATES and REVEAL projects*
29. *IASON, SPRITE, THINK-UP, TIPMAC and TRANSECON projects*

The programme's Knowledge Centre is available at:

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OFFICE FOR OFFICIAL PUBLICATIONS
OF THE EUROPEAN COMMUNITIES
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ISBN 92-894-1547-9



9 789289 415477 >