





**European Commission
DG Mobility and Transport**

**Transport Research
Knowledge Centre**

Thematic Research
Summary:

Regulation / Deregulation

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Foreword

This report has been produced as a part of the activities of the TRKC (Transport Research Knowledge Centre) project of the Sixth Framework Programme.

The role of TRKC, as its predecessor project EXTR@Web, is to collect, structure, analyse and disseminate transport research results. It covers EU-supported research, as well as research financed nationally in the European Research Area (ERA) and selected global research programmes. The main dissemination tool used by TRKC is the public web portal at www.transport-research.info.

The approach to dissemination of results of the research projects, adopted by the TRKC team, includes the following three levels of analysis:

- Project Analysis, which provides, project by project, information on research background, objectives, results, technical and policy implications;
- Thematic Analysis, which pools findings of research projects according to a classification scheme based on into thirty themes, fixed for the life time of the TRKC project; the product of this analysis activity is the set of Thematic Research Summaries (TRS); the present document belongs to this set;
- Policy Analysis, which pools findings of research projects according to combinations of themes based on ad-hoc policy priorities, which are agreed with DGMOVE of the European Commission and the representative group of research users.

The present Thematic Research Summary deals with the theme of regulation/deregulation. The aim is to provide the reader with a structured guide to the results of research projects carried out mainly in the European Research Area (ERA). The report is intended for policy makers at the European, national and local levels, as well as interested readers from other stakeholders and from the academic and research communities.

Disclaimer

The analysis in this report is under responsibility of the TRKC project team; it does not represent the official viewpoint of the European Commission; it has not been approved by the coordinators of the research projects reviewed.

Executive summary

This thematic research summary on regulation/deregulation aims to provide the reader with a synthesis of results of completed European research projects related to that theme. The first part includes a brief overview of the scope of the theme and summarises the main policy developments at EU level relevant to the theme. The second part contains a synthesis of the main findings and policy implications from research projects and identifies the implications for further research. Research results are presented according to three sub-themes: regulations on pricing, regulations on safety and regulations to promote quality.

The research projects for which the synthesis is provided are European EU-funded and national projects that are completed and with results publicly available. The EU projects have been funded under the Sixth Framework Programme. Projects that had been reviewed in the related report produced within the predecessor project EXTR@Web are only briefly summarised in the background section of each sub-theme.

The first sub-theme is concerned with the **regulations on pricing**, and covers aspects such as the user reaction and efficient differentiation of charges and tolls, and the coordination of urban road user charging organisational issues.

The second sub-theme covers **regulations on safety**, focusing on devising methodologies to update speed limits, fully automatic integrated road control, reducing the amount of driving under the influence of alcohol and thus improving traffic safety, improving police enforcement of road traffic and cross border enforcement of traffic violations, and intelligent traffic regulations.

The third sub-theme looks at research into **regulations to promote quality**, and focuses on an Irish project reviewing taxi, hackney and limousine services and a Scottish project tackling the abuse of off-street parking for disabled people.



Abbreviations and acronyms used

CEC	Commission of the European Communities (= EC)
DGMOVE	Directorate-General for Mobility and Transport (new EC Directorate-General from 2010)
DGTREN	Directorate-General for Energy and Transport (former EC Directorate-General up to end of 2009)
EC	European Commission (= CEC)
ERA	European Research Area
EU	European Union
FP5	Fifth Framework Programme
FP6	Sixth Framework Programme
HGV	Heavy Goods Vehicle(s)
ISA	Intelligent Speed Adaption
ITS	Intelligent Transport Systems
MC	Marginal Cost
PTA	Priority Thematic Area
RUC	Road User Charging
SUSTDEV	Sustainable Development Global Change and Ecosystems
TEN-T	Trans-European transport network(s)
TLE	Traffic Law Enforcement
TRKC	Transport Research Knowledge Centre
TRS	Thematic Research Summary
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe
US	United States



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1. Introduction

This report provides a structured review of the research relating to regulation/deregulation, carried out in transport research projects throughout the European Research Area (ERA). This report covers one of the thirty themes in the classification scheme adopted by the TRKC project. The scheme, and the theme which together make up this report, are shown in the table below.

Table 1. The classification scheme adopted in TRKC

<i>Sectors</i>	
✓	passenger transport
✓	freight transport
<i>Geographic</i>	
✓	urban transport
✓	rural transport
✓	regional transport
✓	long-distance transport
✓	EU accession issues
<i>Modes</i>	
✓	air transport
✓	rail transport
✓	road transport including walking and cycling
✓	waterborne transport
✓	innovative modes
✓	intermodal freight transport
<i>Sustainability policy objectives</i>	
✓	economic aspects
✓	efficiency
✓	equity and accessibility
✓	environmental aspects
✓	user aspects
✓	safety and security
<i>Tools</i>	
✓	decision support tools
✓	financing tools
✓	information and awareness
✓	infrastructure provision including TENs
✓	integration and policy development
✓	Intelligent Transport Systems (ITS)
✓	regulation/deregulation
✓	land-use planning
✓	transport management
✓	pricing and taxation
✓	vehicle technology

This scheme was adopted to enable search facilities in the TRKC portal, and to ensure comprehensive coverage of research results and appropriate policy analysis in the Thematic Research Summaries (TRS). Definitions for each theme are found on the TRKC portal at www.transport-research.info.

In the predecessor EXTR@Web project, TRSs were produced for 28 out of the thirty themes (resulting from merging of some themes into a single TRS). The TRKC project is producing first versions of TRS for themes for which a critical mass of project results is available by February 2010, with certain groups of themes for which fewer project results are available being merged.

The TRS “regulation/deregulation” produced in the predecessor project EXTR@Web (EXTR@Web, 2006), had reviewed research from European projects belonging to the Fifth Framework Programme (FP5) and national projects. The report here adds new projects to the analysis reported on in that report. The new projects are mainly European projects from FP6.

The research reviewed in this report does not represent the entire range of research dealing with regulation/deregulation carried out in Europe. The report focuses on research from those projects, which have prepared documentation on their results available to the TRKC team after the issue of the EXTR@Web report (EXTR@Web, 2006). A summary of the research, reported on in the EXTR@Web report, is also included to make the reader aware of a more complete range of research, which has dealt with the theme.

The report is organised as follows. Sections 2 and 3 set the scene. **Section 2** includes a brief analysis of the scope of the theme. **Section 3** provides an overview of the policy priorities at EU level, which underpin the research objectives. The sources for this section are principally European Commission documents, which have set the policy agenda such as white papers, green papers, and communications, as well as EU legislation such as directives, regulations and decisions.

Section 4 reports on the results from specific research projects. The section is structured according to sub-themes to make the broad area of research, which has dealt with regulation and deregulation, more manageable. For each sub-theme, the research objectives and findings are reported on. A special focus is given to the policy implications of research results. **Section 4** is concluded with an overview of the gaps and topics for future research which could be identified by the projects. Sources for Section 4 are



documents available from the projects and reporting on achievements, essentially the project final reports and selected deliverables. Section 4 is organised according to three sub-themes: regulations on pricing, on safety and on promoting quality.

The **Annex** includes the list of the research projects that have been reviewed in the report. Links to the projects' websites are included. In several cases these websites make the project documentation available to the public. This may include final reports and project deliverables.

2. Scope of the theme

Regulation, in the context of this theme, is defined as the use of physical regulation or the law to correct what is perceived to be failure, particularly market failure, in the transport sector. Regulation may also be used to achieve specific transport objectives, such as safety. Deregulation is the removal of regulations, often in order to adjust competition policy. Deregulation is often taken to mean privatisation; however, though sometimes related, these terms do not have the same meaning.

Except from amending market failures, legislators may well be interested in creating new markets, creating links for existing markets, or, in a more general term, promote market birth and development.

If markets are perceived to be failing in some way, regulation by government is often called for. If (government) regulations are perceived to be failing in some way, deregulation is often called for.

Reasons for regulation of the transport market include:

- The perceived need to correct for market failure;
- The perceived need to co-ordinate between different transport modes (to promote efficiency and to avoid wasteful competition) – an ‘integrated’ transport system;
- To prevent the growth of monopoly or to control monopolies;
- To promote safety and the efficient use of infrastructure (e.g. traffic regulations);
- To prevent environmental damage;
- To take account of international agreement and controls; and
- Cross-modal competition.

In transport research, the term deregulation is most usually applied to the public transport sector (air, rail, coaches, taxis, water transport and buses) and to the freight sector.

Broadly, regulation may be categorised as being either:

- Economic regulation; or
- Non-economic regulation.

Economic regulation is concerned with primarily economic issues related to the organisation of the sector, such as market entry (including licensing, for example, whether

a particular public transport operator is permitted to enter the market), the capacity of the system (number of companies, number of routes, level of frequency) and the policy on pricing.

Non-economic regulation includes regulations which are imposed for other reasons such as safety and security, passenger comfort and to further other, similar, objectives like social and peripheral cohesion, environmental protection, consumers' / citizens' / workers' rights protection, equal rights promotion, etc.

The UK bus system provides a useful case study of both types of regulation/deregulation (IHT, 1997). The UK Transport Act 1985 established a competitive market for the provision of bus services outside London, with road service licensing and a de-regulated system based on bus service registration. Within London, the majority of bus services are privately supplied under contract with the organization which plans and regulates the network of services. While the intention of the 1985 Act was to promote competition, the Act included provisions to ensure safe and acceptable standards of operation (so called, 'quality licensing'). The Act enables local authorities to apply for regulations to be introduced to prevent danger to road-users and/or to reduce severe traffic congestion, by limiting the number of buses using particular roads.

The above summary of topics describes the principal breakdown of technical, organisational and managerial aspects that come under the theme, whereas Chapter 4 of this document reflects sub-themes according to actual priorities in transport research policy and results available.

3. Policy context

The EU Commission and the national governments have pushed forward policies of regulation and deregulation in the European traffic system over the past few decades. The White Paper (2001) 'European transport policy for 2010: time to decide' (CEC, 2001) emphasised the need for regulatory action due to the growing imbalance between transport modes in the EU, the need to eliminate bottlenecks, the need to place users at the heart of transport policy and to manage the globalisation of transport. The growth of road and air led to increased congestion. It was believed that the full potential of rail and short-sea shipping was not being exploited and these could provide real alternatives to road haulage. There was the need for regulated competition between the modes and to improve quality in the road sector, to revitalise the railways and to control air transport. Deregulation in Europe was heightened by the UK experience (in terms of road freight, interurban coaches and the local bus market) and the US experience of the airline industry. European policy for deregulation has focussed more on rail and air transport.

In terms of improving road quality, there have been regulations in working conditions and road safety, such as reorganisation of working time giving an average working week of 48 hours, harmonisation of weekend bans on lorries, introduction of a driver's certificate, and development of vocation training for drivers. It was insisted that this package of measures had to be adopted in order to develop a high-quality road transport system.

The share of freight being carried by rail in Europe has fallen over the years and the share carried by road is increasing. However the European Commission sees rail as having major potential and their goal is to revitalise the railways and to achieve modal rebalance as mentioned earlier. The goal of creating a single European railway system by 2020 had been proposed. Rail stakeholders agreed to achieve the following objectives by 2020: increase its market share of passenger traffic from 6% to 10% and of goods traffic from 8% to 15%, a 50% gain in energy efficiency, a 50% reduction in emissions of pollutants and an increase in infrastructure capacity in line with traffic targets (White Paper, 2001). Progress has been made to open up rail transport to regulated competition with the opening up of the trans-European rail freight network (Mid-term review of the 2001 White Paper; CEC, 2006).

In terms of intermodal competition between road and rail, the 2006 Directive on charges for heavy goods vehicles, amending Directive 1999/62 represents something of a step forward. Under this directive, Member States can introduce charges for heavy goods vehicles on roads throughout their jurisdiction. The charges must be, on average, tied to the costs of construction, operation, maintenance and development of the network, but can be differentiated according to levels of congestion, environmental and accident costs. Tolls must be allocated to vehicle types on the basis of stipulated equivalence factors based on objective evidence. In exceptional circumstances a surcharge of up to 25% will be permitted, to fund alternative rail infrastructure.

A great deal of deregulation has occurred in the European air sector leading to the removal of restrictions on market entry, capacity, frequency and pricing. In terms of safety, a comprehensive set of common, uniform and mandatory legislation covering the main elements of safety have been adopted. Progress has also been made in establishing passenger rights. The first steps towards liberalisation in Europe took effect in 1987 due to two international agreements which allowed partial capacity and tariff liberalisation. The move towards a single market in 1993 brought about, gradually, further liberalisation. It allowed a common licensing criterion for air carriers across the whole of the EU, replacing national ownership and control restrictions. Airlines meeting certain ownership, financial and safety requirements may be granted with an Operating License by any EU Member State which allows the airlines to exercise traffic rights on virtually any route within the EU, following the rights specified in the Market Access Regulation. The Air Fares Regulation put forward the principle for air-lines to set fares freely. Cabotage restrictions for domestic services being carried out in an EU Member State by a carrier licensed in another EU Member State still held until 1997. Regulations enforcing public service obligations were upheld for routes that were regarded as necessary for economic development. Competition Laws of the EU Treaty (Articles 81 and 82) were applied to safeguard against anti-competitive behaviour and market power abuse.

Even with the move towards deregulation, many regulations were imposed to ensure that airlines had fair access to infrastructure and services. EU regulation (95/93) established common rules for allocating slots at congested airports and aimed at facilitating competition particularly among new entrants. EU directive (96/67) opened up the market for ground-handling to greater competition, aiming to reduce airline operating costs and improve handling service quality. EU regulation (2299/89) introduced a code of conduct for

computer reservation systems to ensure a neutral and non-discriminatory distribution of airline products between airlines.

Following 1979, there was a deliberate commitment to reduce government involvement in the UK bus industry as the market force approach was seen as the best way to achieve an efficient allocation of resources. The public sector had to provide value for money and there was a need to cut back on public expenditure. The 1980 Act put forward partial deregulation in the bus industry and the 1985 Act led to a deregulation package being implemented in the UK bus industry on 26th October 1986. The essence of the White Paper was that deregulation would produce a competitive market where costs would fall, re-source allocation would be improved and no significant undesirable spin-off effects would be caused. The 1985 Transport Act implemented abolition of entry regulation, privatisation and fragmentation of the National Bus Company and reconstitution of publicly owned companies so that they do not have an initial advantage in the new competitive framework. Operators satisfying quality controls could offer the services they wanted on a commercial basis, and local authorities could keep the power to supplement the commercial services if they felt was necessary on social grounds, but only on the basis of competitive tendering. Deregulation was not introduced in London because of concerns about the effects of free entry on congestion and the effects on the rail system. London Transport decided to retain control over all planning issues but to move towards privatisation through franchising and create 'competition for the market'.

The outcome of UK bus regulation based on 2000 data showed that operating costs had fallen significantly by around 50%. Public spending on services had fallen as a result of the removal of support to fares and service levels. There had been both an overall growth in bus kilometres run by 25-30% and a drop in ridership. There had been a fall of 29% between 1985/86-1995/96 in passenger trips for buses outside London and combined with the effects of increased bus kms run, average passengers boarding per bus fell by 43%. Fares rose significantly especially in metropolitan areas and there was relatively little sustained on-street competition. In London, ridership remained broadly stable, but grew slightly in terms of trips.

EU regulation has led to a considerable reduction in marine pollution and maritime accidents. The EU has established an advanced regulatory framework for safety and pollution prevention, most recently with the third maritime safety package.

In summary, the mid-term review of the White Paper (CEC, 2006) stated that since 2001, there had been progress in opening up rail freight transport to competition, the upgraded

social conditions of road transport, the definition of 30 TEN priority projects, the creation of the European Single Sky, the strengthening of aviation passenger rights, the new road charging directive, the promotion of inter-modal transport with the Marco Polo programme and the reinforcement of the legal framework in maritime safety. The Commission has now produced a Green Paper on the TEN-T (CEC, 2009), suggesting more emphasis be placed on whole networks rather than on priority projects, and a specific proposal for a regulation governing the development of freight priority corridors.

The EC communication (2009) states that European transport policy has assisted social and economic cohesion and has promoted the competitiveness of the European industry, as well as facilitating integration. Market opening has generally led to greater efficiency and lower costs, which can be seen especially in air transport. The regulations have led to progress being made in reducing air pollution and road accidents. Safety agencies have been set up for aviation (EASA), maritime (EMSA) and rail (ERA).

EU legislative measures on transport security have now been developed for most transport modes and critical infrastructures. The 2001 White Paper did not refer to security; however this issue has now take precedence following the attacks of September 11th 2001 in the US, and more recently, terrorist attacks on public transport in Madrid and London.

The 2009 EC Communication feels that the environment is the main policy area where further improvements are necessary. Growth in greenhouse gas emissions is very high in the transport sector. The communication sets out seven broad future policy objectives: quality transport that is safe and secure, a well maintained and fully integrated network, more environmentally sustainable transport, keeping the EU at the forefront of transport services and technologies, protecting and developing human capital, smarter pricing reflecting costs acting as traffic signals, and planning with improvements in accessibility.

In terms of future policy instruments for the next White Paper of 2010, the optimal functioning of the transport system is stated to require full integration and interoperability of the individual parts of the network, as well as interconnection between different modal networks. Infrastructure will need to be carefully planned to avoid congestion and time losses, and to optimise transport chains and the overall transport network. Funding for resources for sustainable transport is a key issue. The goal towards a low carbon economy requires major changes in the transport system, however funding this is difficult in the current economic climate, but transport can become increasingly self-financing in terms of infrastructure. Improvements in technology are very important in order to accelerate the

transition to a low carbon society and lead global innovation. In terms of the legislative framework, further promotions of market opening and greater competition are seen as vital. Education, information and awareness raising campaigns are said to play an important role in influencing future consumer behaviour. Effective and coordinated action is seen as vital. It is stated that the transport sector can only thrive if policy makers provide sound planning, adequate funding and a proper regulatory framework for market operators. It is seen as important that 'Europe speaks with one voice', as the transport sector is increasingly international and the policy needs to ensure further integration with neighbouring countries and advance Europe's economic and environmental interests in the global scale.

Overall, in terms of regulation and deregulation, the EU policy is towards achieving a transport system that fulfils economic, social and environmental objectives. The challenge is to find the appropriate balance between regulation and deregulation. In determining transport market structures; publicly planned, owned and operated transport systems may allow direct implementation of transport policy objectives but they may also encounter a lack of managerial incentives and cost inefficiency. On the other hand, high levels of deregulation may lead to cost efficiency but may reduce the scope for an integrated system.



4. Research findings

4.1 Introduction

The research synthesised in this report deals with three sub-themes, as shown in the figure below:

- *Regulations on pricing*
- *Regulations on safety*
- *Regulations to promote quality.*

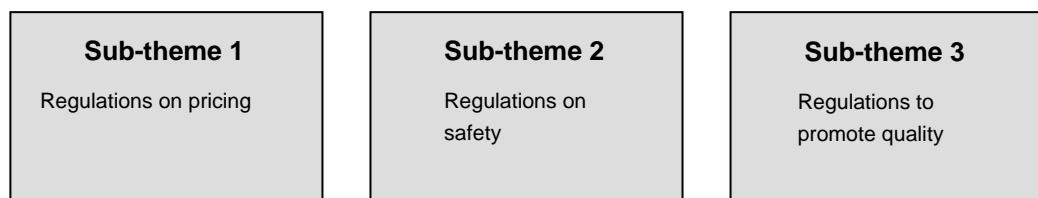


Table 2 below shows the EU-funded projects, which have dealt with each of the sub-themes. Further details of projects listed in this table are given in the Annex. The Table includes:

- projects which had been synthesised in the TRS (EXTR@Web, 2006) produced within EXTR@Web (the predecessor of the TRKC project) and which are briefly summarised in the background of the following sub-sections;
- completed projects which are synthesised in this TRS and for which the following sub-sections report on research objectives, research results, policy implications and implications for further research;
- projects which are still on-going or which, although completed, have not yet made results publicly available.



Table 2. Projects relevant to the theme

Sub-theme	Contributing projects
Regulations on pricing	<p>Projects covered in this paper: CURACAO; DIFFERENT</p> <p>Projects covered in the EXTR@Web paper: D3; DESIRE; MC-ICAM; Multi-modal freight model for distance-based HGV charging; SPECTRUM; Deregulation of cargo traffic on the Finnish railways: Survey of implications</p>
Regulations on safety	<p>Projects covered in this paper: REVEL; BAIID; FAIR; PEPPER; CAPTIVE; ITR</p> <p>Projects covered in the EXTR@Web paper: GOING-SAFE; SAMRAIL; Safety of children in road traffic in connection with child safety equipment in motor vehicles; The long-term effects of hands free legislation on mobile phone use; HALTI</p>
Regulations to promote quality	<p>Projects covered in this paper: SERVICES; Tackling the Abuse of Off-street Parking for Disabled People in Scotland</p> <p>Projects covered in the EXTR@Web paper: UG116; FACT</p>

4.2 Sub-theme 1: Regulations on Pricing

4.2.1 Background

Research reported in the Thematic Research Summary on Regulation and Deregulation produced in EXTR@Web highlighted that action on pricing was needed with regards to private road traffic. It was suggested that a tax based on distance travelled could be

introduced which would be similar to the tax charged for heavy goods vehicles. The fuel tax could be restructured as a CO₂ tax and reduced. Research found that rail transport would also have to improve the level of its external cost coverage. Environmental damage could be reduced, through implementation of this pricing reform.

Research on pricing reform considered acceptability to be the main barrier for urban and interurban road transport pricing. Studies generally concluded that the benefits and costs of marginal cost based pricing of roads fall unevenly on the population, with the benefits widely and thinly distributed and the costs concentrated on a minority. Political acceptability of some measures is a concern which may outweigh the benefits in terms of efficiency; moreover the perception of what is acceptable seemed to vary according to different nationalities. The key dimensions and policy issues highlighted by research are the scope or coverage of the pricing system, the level and composition of pricing measures, the degree of differentiation across vehicles/infrastructure users, over time and spatially, the use of revenues, and supplementary measures and actions.

Research highlighted the importance of the social costs associated with externalities and the appropriateness to internalise them through economic instruments. Economic instruments appeared to be very relevant, representing a valid (sometimes optimal) capacity allocation mechanism and a market based way to internalise problematic externalities at airports.

The view of some research was that EC initiatives concerning fair and efficient pricing were likely to be welfare enhancing even if implemented on their own. The planned investment programme with respect to the Trans-European Network (TEN) should be implemented as part of a package with fair and efficient pricing. This could be linked to the issues concerning revenue recycling, i.e. how to use the pricing revenue. Some urban case studies showed that some of the best performing packages involved distance charging and fuel tax, however in terms of implementation there are questions on the public acceptability of such measures, especially with short term implementation.

In general it has been found that there remains considerable potential for the greater use of economic instruments at both urban and interurban levels, particularly when implementation in packages with other instruments. Overall it should be considered that policy instruments that provide efficiency gains without costs to a particular stakeholder or group are rare and possibly non-existent. For example changes in public transport fares

would be at the cost of the operator, which may be unacceptable for privately operated public transport systems.

In terms of deregulation of cargo traffic on railways, it is expected that the market shares between the different forms of transportation remain reasonably unchanged. The increase in supply is not expected to bring more freight to the railways, and competition will not increase the total markets significantly. However the presence of credible competition could somewhat reduce the average price of transportation. It is expected that the number of competitors will remain very low.

4.2.1 Research objectives

Much of the recent research in regulations on pricing has been concerned with tackling the problems of road congestion and considering the effects of differentiation of charges (CURACAO and DIFFERENT). It is generally thought the trends in traffic can be addressed by using a set of policies and measures aimed at reducing and rationalising transport demand on a network, in order to reduce traffic congestion. Road pricing/road user charging is one of the possible solutions for reducing the problem of traffic congestion in cities. However road pricing can be very difficult to implement as it has to accommodate the interests of various stakeholders, including national and local governments, road users, citizens and businesses. The shortfall (between the potential of road pricing and the progress of its actual implementation) was seen as a focal point of some research.

A research objective has been to compare and contrast different approaches to urban road user charging such as tolling, distance-based pricing and charges for infrastructure and parking. The exchange of information will need to be facilitated, raising awareness and disseminating and promoting research results and best practice at a European, national, regional and local level. It is seen as important to maintain a sound knowledge base to support decision-making and integration of research results into policies (CURACAO).

In the European Union, levels and structures of transport infrastructure charges vary strongly across transport modes and countries. Some degree of convergence exists on the intention to apply the principle of marginal cost pricing in various transport sectors, but due to difficulties in funding transport investment and even serious concerns about marginal social cost pricing in several countries, any such convergence is slow. Furthermore, at present, the charging regimes that can be observed are often far from internalising external costs and are rarely based on efficiency principles. In this situation, differentiation of

existing charges appears to be a sensible intermediate step. The potential scope of price differentiation is broad and includes dimensions such as: time, place, type of infrastructure, type of user and/or type of goods, and type of vehicle and axle loads.

Some key objectives of research are to improve the understanding of user reactions to differentiated prices; to develop a scientifically sound approach to determine efficient differentiation of infrastructure cost based charging schemes and methods to assess their impact on user behaviour; to analyse and demonstrate the benefits and effectiveness of differentiated charging and taxation schemes as a means to manage mobility, externalities, equity aspects and to obtain revenues and recover infrastructure costs; and to provide policy recommendations in general and, in particular, for the Common European Transport Policy (DIFFERENT).

4.2.2 Research results

The research results report that road user charging should be designed in the context of the selected complementary policies. The effectiveness and acceptability of charging schemes are affected by a number of charging specifications (e.g. level of charge, variations by vehicle type, location and time of day, exemptions and discounts) and a trade-off is necessary between these two impacts (CURACAO and DIFFERENT). Technologies are available to support such scheme designs, such as automatic number plate recognition (ANPR), dedicated short range communications (DSRC) and global navigation satellite systems (GNSS).

The performances of charging schemes critically depend on the behavioural responses induced. The complexities of the pricing negatively affect the reliability of conventional prediction methods. In particular, the prediction of economic and equity impacts remains a significant challenge.

Research results show that road user charging schemes have typically reduced traffic entering the charged zone by between 14% and 23%. However, when the main objective of the scheme is not to reduce traffic, but generate revenue, reductions have been much smaller. Effects on speeds and congestion have been more variable. The schemes generate various impacts on the environment. Most of them (due to reduced traffic levels) are positive. However, the redistribution of traffic may have negative impact (CURACAO).

Acceptability is still the main concern of cities implementing road user charging schemes. Acceptability is significantly affected by complementary policy instruments and the use of the scheme revenue, and it can be increased by discounts and exemptions. There is often a conflict between acceptability objectives (through lower charges and increased use of discounts) and effectiveness objectives (which may require higher charges and fewer exemptions), which requires to make a trade-off (CURACAO and DIFFERENT).

Due to the lack of empirical evidence, the transferability of experience from one city to another is a little understood aspect of charging policy. Implementation processes (including legislative frameworks and political structures) differ substantially among cities and countries. Evidence shows that political commitment is crucial and the implementation scheduling must strictly match the electoral cycle. Furthermore, it is believed that consensus at regional level can avoid conflicts between adjacent authorities (CURACAO).

Effective monitoring of road user charging impacts is crucial to sustain and enhance the scheme, as well as to increase empirical evidence on the scheme. It is generally felt that cities should be encouraged to carry out comprehensive evaluations of implemented schemes taking into account the full range of identified policy objectives.

The analysis of the information and data collected from case studies show that using road user charging schemes as a demand management tool can produce the following traffic, environmental, safety, financial and economic benefits:

- a reduction in the number of vehicles entering the charged area and a reduction in delays in the charged area of up to a third
- a reduction in CO₂ emissions and pollutant emissions in the charged area
- a reduction in the number of accidents in the charged area
- additional finance for investment, although this varies according to the scale of the scheme and the pricing structure
- in general, no negative effects on economic activities related to road charging scheme implementation. (CURACAO)

Research results show that pricing schemes are rarely implemented in pure textbook forms but rather reflect a compromise between various aspects and approaches. There is an optimal degree of differentiation beyond which further differentiation is counter-productive. It is suggested that a political influence on pricing structures is always discernible and therefore should not be disregarded in the design of pricing-structures (DIFFERENT).

The factors that play a decisive role, when designing charging schemes, and therefore, that are essential for differentiation, were also identified. Normative economic theory identified three main dimensions, which must be taken into account: the aims of pricing; the cost structure, and the demand of infrastructure user.

Results from case studies undertaken have revealed that pricing is effective. This result has been obtained by considering the effects of price changes and the effects of differentiation. In general, the evidence collected shows that price changes affect travel behaviour and mode choice.

In the case of interurban road transport, evidence from case studies shows quite clearly that price changes lead to changes in transport demand. The case of railways is very unclear, mainly due to severe data limitations, which are a consequence of the regulatory upheaval that the railway sector is currently running through. As to the air transport, in all cases investigated the effects of changes in starting and landing fees on the behaviour of airlines were rather limited. Despite of the many case studies on ports, the picture of effects of price changes for the mode “shipping” is not clear. However, evidence was found that differentiation aiming at more environmentally sound performance of mitigation of risk might be used as a tool within a wider group of tools or policy measures. (DIFFERENT)

4.2.3 Policy implications

Research suggests that before considering road user charging as a sustainable urban transport strategy, City and Regional Authorities should clearly specify their objectives and stick to them consistently. A road user charging scheme should be designed considering the full range of complementary policies that will support it. It is important that City and Regional Authorities designing a road user charging scheme allocate resources for continuous monitoring of performance after its implementation. Acceptability should be addressed at the outset of the road user charging scheme design process in all its different aspects. A persistent dialogue with the public, pressure groups, politicians and the media is needed. (CURACAO)

National Governments are recommended to develop a clear national transport strategy. This strategy should also highlight the potential benefits of road user charging as a tool for demand management at both local and national levels. The application of road user

charging schemes should also be considered as part of a wider strategy involving the internalisation of external costs and the adjustment of road and vehicle taxation systems. National Governments are recommended to ensure the provision of appropriate legislation which will enable city, local, and regional authorities to implement both road user charging and the policy instruments which will complement it. (CURACAO)

The Commission is recommended to publish guidance for authorities interested in considering road user charging as a policy tool. It is also recommended to provide financial support to cities to carry out feasibility studies addressing ways to reduce congestion and environmental impacts including RUC options, and to support research and demonstration projects that specifically address key issues (e.g. acceptability, requirements for effective implementation, economic and equity impacts); educational campaigns, training schemes and toolkits explaining the rationale behind road user charging as one valid option in the range of measures available to transport planners, and encouraging citizens' and stakeholders' participation in finding out approaches to tackling sustainable mobility issues; research on standardisation and interoperability of road user charging systems and technologies. The Commission should also bear in mind the need for governance structures which enable city authorities both to implement road user charging (and the policy instruments which complement it), and to collect and use scheme revenues in accordance with policy objectives. (CURACAO)

Research showed that simplicity of pricing schemes is preferred. People will prefer schemes as simple as possible, unless a complex scheme offers them a clear price advantage. Motivational factors, particularly acceptance, affect user's perception of pricing schemes and user responses towards differentiated prices. Users' motivation to deal with pricing schemes and users' responses towards pricing schemes depends on personal price thresholds. Positive economic theory showed that special interest groups intervene in the political process in order to derive utility for their members. In this respect it is very likely that apart from regulation, special interest groups will try to affect the tariff structure. In other words the degree of differentiation of a charging scheme will finally also reflect the balance of the political power. The establishment of independent regulatory authorities could be a solution. (DIFFERENT)



4.3 Sub-theme 2: Regulations on Safety

4.3.1 Background

Research reported in the Thematic Research Summary on Regulation and Deregulation produced in EXTR@Web included a survey of current practices which found the Safety Directive to be suitably formulated, addressing all the important safety issues that an open, vertically separated and horizontally integrated railway of the EU could face. It found that there is a sufficient baseline to elaborate on Common Safety Methods (CSM), Common Safety Targets (CST), and Common Safety Indicators (CSI), and for safety certification and approval issues. Research proposed a commonly agreed structure for the Safety Management System (SMS) comprising of a number of different elements and specified requirements and guidance for each element. It recommended that the proposed guidelines, approaches and processes be further developed through tests and trials.

Research found that legislative alternatives (administrative payments and conditional fines) would decrease the time spent in handling the fines in the office after monitoring speeding. Administrative payments would decrease the amount of police work more than the conditional fine since preliminary investigation was not performed. Since police resources are likely to remain at the current level there have been opinions about municipal speed control. A city, municipality or road authority could handle some or all tasks in the automatic speed enforcement process. Administrative payment allows more municipal participation than the conditional fine.

Research looking at the effects of hands-free phone legislation, concluded that the legislation has significantly decreased the use of phone in the car. Immediately after the act came into force, the share of those drivers who reported that they were holding the phone in their hands while driving decreased from 56% to 15%. Research highlighted that the legislative shift had not decreased dangerous traffic situations – reported by drivers – which were related to mobile phone use, and neither had there been any changes in the profile of the dangerous situations. The most common dangerous situation was the failure to observe other traffic. The majority of the drivers felt that the drivers should only be allowed the use of a hands-free equipped phone while driving. Based on the studies conducted so far, it is too early to draw any final conclusions regarding the safety effects of hands-free devices.

Research was conducted into the safety of children in road traffic in connection with child safety equipment in motor vehicles. Devices to test child restraint systems in accordance to UN ECE Regulations No. 44 and 16 were produced and checked. 20 child restraint systems were tested using the devices developed. An array of imperfections and even defects were found, indicating insufficient influence of Conformity of Production testing.

Research was conducted in optimising the design of new passenger aircraft seats in terms of structural improvements to reduce weight, production costs, assembly time and maintenance costs, as well as integrated all the styling and comfort aspects, while making the seat suitable for up to 95% of all passengers. It defined the general seat styling and specified the comfort design; and assessed seat assemblies with regards to limits in Head Injury Criteria.

4.3.2 Research objectives

Recent research highlighted that speed limits are not adequate in some zones/areas, and the limit should be understandable and acceptable for drivers, thus making it more respected by drivers than at present. The envisaged scheme consists of a basic limit, according to the highway type. This basic limit can be raised or lowered depending on the design features of the section and the specific and variable circumstances of environment and traffic. The main aim of the research was to achieve a method for setting an adequate speed limit for each road section, by providing a model for use by road managers (REVEL).

Also concerning speed limits, research was undertaken in Sweden to inform the driver of the current speed limits on the roads of certain areas in Sweden. It aimed to produce an intelligent aid to vehicles/drivers regarding adaptation to prevailing traffic regulations, known as Intelligent Speed Adaption (ISA). The ISA-system also warns the driver when exceeding the speed limit by a sound signal or vibrations in the accelerator. Information provided by the system could potentially inform the driver at an appropriate time and with an appropriate approach. In this way many hazardous situations can be avoided where the driver, due to lack of attention, neglects to stop or to travel in a cautious manner or even in the wrong direction. (ITR)

Driving under the influence of alcohol is considered as one of the greatest dangers in road traffic. Research was undertaken in reducing the amount of driving under the influence of alcohol and thus improving traffic safety. The aim was to study the efficiency of the use of Breath Alcohol Ignition Interlock Device, also known as 'alcolock' in preventing drunken driving (BAIID experiment).

Other research believed that a new integrated and efficient approach must be designed in an open architecture to avoid severe accidents, and achieve the urgently required higher safety levels and to improve traffic flows on motorways. It was felt that automated methods were effective and that the current solutions were outdated, and innovation was needed. However the adoption of automated methods was slow and enforcement needed commitment and dedication. The main goals of an automated road control scheme were increased traffic safety along with increased traffic efficiency and road protection and better Overall Efficiency and Economy by fully automatic and multi-purpose enforcement systems (FAIR).

Research was undertaken aiming to enhance the effectiveness and efficiency of police enforcement of road traffic. It critically looked at the relevant aspects of enforcement, such as target behaviours, the detection of infringements, administrative and legal handling after infringement, decisions concerning the volume, location and timing of enforcement, effects of enforcement on road-user behaviour and accidents, enforcement methods and tools, collection of enforcement data, and enforcement in the social context. Speeding, drink driving and use of seatbelts were especially targeted. The need for improved enforcement data and better understanding of the impacts was recognised, and the potential of innovative technologies in the different links of the enforcement chain was studied. (PEPPER).

As well as the policing of road traffic, the improvement of compliance with road traffic laws across different Member States is a fundamental part of any EU Member States' road safety strategy and is a priority issue for the European Commission. Where road users fail to comply with road traffic laws, Member States' national legislation allows them to apply a range of financial and non-financial penalties to deter non compliance in the future. Historically, Member States' procedures for setting, imposing and enforcing these penalties have been designed to deal with violators who reside in the State where they commit the road traffic violation. However, since the foundation of the European Union on 1 May 1993, there has been an increase in cross-border traffic and as an inevitable consequence, an increase in the number of road traffic violations committed by so-called 'non-resident

violators'. Research looked to identify the steps that could be taken at a European level to implement a pan-EU approach to cross-border enforcement involving all Member States (CAPTIVE).

4.3.3 Research results

The research developed a new method for modelling a safety profile from speed measures. This profile has been related to the specific design features of road sections, with its inherent own risk factors) which resulted in its own accident record. Both the safety profile and the speed profile have been compared in order to find if there was any kind of relationship between them. A set of specific safety criteria have been obtained for each road type. Road managers therefore have at their disposal a tool for setting speed limits in a rational way which can be for drivers, and for relating them to the design speed. (REVEL)

Research undertaken in Sweden using ISA found that the following effects can be expected with better informed drivers: driver safety, comfort, fewer errors because of inattentiveness; traffic in the right places, traffic safety and lower environment costs (ITR).

Research showed that communications between process parties were insufficient. Participants felt that information concerning the process was difficult to obtain and it was not always adequate. Also the authorities saw some shortcomings in inter-office communications. The role of police was emphasised in order to improve communications to participants and organise regular meetings for authorities. It was felt there was considerable delay between the time that a driver was arrested for driving under the influence of alcohol and the conviction in court. This could take up to a few months and the suspect was banned from driving during this period. The role of the medical monitoring programme organised by the health authorities was criticised as being inappropriate and inefficient. It was emphasised that the role of the medical monitoring programme in the future of the experiment should be discussed between authorities (BAIID experiment).

A European traffic law monitoring database model was developed, it was expected that the results would serve the development of enforcement methods and monitoring and planning of enforcement. The model is capable of handling data concerning actors related to enforcement in each country and their roles; national enforcement campaigns; key actors' opinion on enforcement measures; traffic enforcement technologies and aids; and cross-

border enforcement rules and best practices. In terms of strategic, legal, administrative and social context of Traffic Law Enforcement (TLE) in Member States, the main findings and conclusions were that there is universal recognition that TLE has an important role in maintaining legal and safe road user behaviour, but also that it can and must be made more efficient and effective. (PEPPER)

Most of the practices promoted by the 2004 EC Recommendation on Enforcement are supported by most stakeholders in all Member States. However substantial traffic policing, as is advocated by the Recommendation, does not come cheaply. Yet, only a few Member States have allocated special funding in their national safety strategies for the new bigger policing activities. There are growing trends in the EU to limit the size of police forces dedicated to traffic control. Research found that institutional barriers within the EU, and legal issues regarding EU versus Member States' privileges complicate the definition of EU policy instruments regarding road safety and Traffic Law Enforcement. In many of the EU states there are institutional barriers between ministries, between central and local authorities, between various police forces, which impede adoption of a coherent new Traffic Law Enforcement policy and its efficient implementation. The evidence seems compelling that massive speed control and continuous drink-driving control can have a decisive role in bringing down road fatalities substantially and relatively quickly. (PEPPER)

Research found that in order to implement effective cross-border enforcement across the EU, there was the need to establish the degree of consistency and structure necessary which will require Member States to adopt a 'common approach' to cross-border enforcement. This approach would define which enforcement processes need to be undertaken in a common way and in accordance with common operational standards. It would not seek to prescribe or harmonise the Member State's own enforcement processes, instead the common approach seeks to ensure that Member States can easily cooperate with each other for the purposes of cross-border enforcement as and when necessary. This would comprise of three elements: common operational procedures that have to be carried out the same way in each Member State and which facilitate state-state cooperation, transitional elements which will allow Member State's national enforcement procedures to work seamlessly with the common operational procedures, and common standards of operation which specify the minimum standard to which the common operational procedures must be performed by all Member States. If a common approach to cross-border enforcement could be implemented across the EU, the expectation of the research was that road users would be assured of fair and equal treatment. The deterrent effect of penalties imposed through the enforcement process would therefore be applicable

to all drivers regardless of where they reside, where their vehicle is registered or which Member State issued their driving/operating licence. (CAPTIVE)

4.3.4 Policy implications

The general view was that in order for the objectives of the research to be met, political involvement was needed to push these schemes forward. The policy implications of the research are related to the assessment by authorities for the application of speed limits depending on the characteristics of the road. Research undertaken has provided a clear goal of achieving higher safety, traffic efficiency and road infrastructure protection improvements. A major political initiative is required to allow the use of technology to enable a wider and innovative “Pan-European Regulation” to overcome the discrepant and diverging national approaches in enforcement. (REVEL, BAID and FAIR)

It was found that there was great difficulty on how to gather the required information on speed etc. This indicates a goal, within a number of years, to have a national road database containing several different types of traffic regulations. This information could potentially be used on a large-scale basis in appropriate vehicle equipment to present a complete and intelligent aid in adjusting to different traffic regulations. By integrating the ISA-function in a general traffic regulation function, the tool becomes more attractive. The ISA-principle as a whole would benefit from having more information presented in the same equipment (ITR).

It was emphasised by Member States that traffic law enforcement was a very important concept and should be made more efficient and effective, however increased traffic policing is very costly. Drink-driving legislation and enforcement practices enjoy strong support from all stakeholders in each state and there is support for stronger sanctions. Stakeholders like the idea of increased harmonisation of cross-border enforcement. There is less agreement however, within EU institutions and among stakeholders in Member States, about the legitimacy, feasibility, practicality or desirability, of having a top-down, EU mandated TLE policy that goes into specific tactical issues of how to do traffic policing. Police forces are generally interested in adopting new enforcement practices and new technologies for traffic policing. However, the adoption is rarely just a technical issue, it requires changes in strategic-level thinking, adaptation of legal systems and modifying management practices. Successful upgrade of a TLE system and general safety

management requires the prior availability of institutions capable of handling the upgrading and successfully working out cooperation mechanisms between the many institutions. Legal and administrative barriers for efficient and effective implementation of innovative enforcement systems should be removed. These barriers include technical (lack of an EU-type approval mechanism), institutional (who will be the agencies responsible for implementation, operation, updating and maintenance) and legal barriers (caused by privacy issues insufficiently covered in national law or restricted by national law, e.g. driver vs. owner/keeper responsibility). Member States should address this as well, and cooperation on this should be pursued with the European Commission, making it a really joint effort (PEPPER).

Research stated that the imposition and enforcement of penalties on non-resident country violators of road traffic laws will start achieving its theoretical contribution to improvements in road safety across the EU and will contribute to reducing the number of road deaths in the EU to the 25,000 needed to achieve the Commission's 2001 White Paper target of a 50% reduction (CAPTIVE).

4.4 Sub-theme 3: Regulations to promote Quality

4.4.1 Background

Research reported in the Thematic Research Summary on Regulation and Deregulation produced in EXTR@Web looked at the technical and economic implications of the proposed regulations that were being made under the Disability Discrimination Act 1995 in the United Kingdom. Key issues were the additional continuing costs associated with improving access to buses and coaches as well as to fully (wheelchair) accessible taxis; the additional revenue generated by the fully accessible buses; and the total capital costs of achieving fully accessible bus and taxi fleet. Other research related to rail and produced rich synthetic information on the consequences of track layout and compared European Standards and national limits.

4.4.2 Research objectives

Objectives of a recent research project in this area were to assess the extent and quality of taxi services in Ireland and to make recommendations that would inform the development

- Certain towns have not declared taximeter areas, hence some hackneys are operating outside the law and plying for hire on the street. Where taximeter areas have been declared, they are often poorly designed, covering very small geographical areas, hence most trips are not on the meter or subject to maximum fare regulations.
 - Enforcement of legislation regarding the operation of hackneys is inadequate, particularly outside major urban areas.
 - Consumers are faced with a relatively complex fare structure, which differs between taximeter areas. The fact that maximum fares operate only within taximeter areas is confusing to the consumer.
 - Estimates indicate that average earnings for taxi drivers have fallen since liberalisation of the taxi market.
 - Consumers are not fully aware of their rights and responsibilities, or those of taxi and hackney cab drivers.
 - Taxi and hackney vehicle and driver licensing systems are somewhat fragmented.
- (SERVICES)

Scottish research identified five different types of disabled parking bay abusers based on their attitudes to reserved parking facilities and the factors motivating them to misuse such facilities:

- 'In denial' - people who have misused reserved bays for people with disabilities but deny their actions.
- 'Reluctant' abusers - people who might have misused reserved bays once or twice, and are reluctant to re-offend.
- People who believe their actions are 'justified' because (a) they had parked in a reserved bay unknowingly, (b) they are entitled to use other reserved parking facilities such as parent and child, or staff parking or (c) they have a temporary disability or reduced mobility or care for someone with specific needs, but are not entitled to use a Blue Badge.
- 'Persistent' abusers - this group admit to using disabled people's parking bays on a regular basis, and therefore pose a real threat to disabled people's access to services.
- Misusers and fraudulent users of the Blue Badge.

This research reviewed the effectiveness and appropriateness of a range of possible intervention measures:

- Patrolled car park - the opportunity for direct, face-to-face involvement with a parking attendant, together with signs adjacent to parking bays warning of the imposition of a fine, does seem to reduce abuse. This is most effective when the site is integrated and where there is one single entry point to the reserved bays that are segregated from the rest of the car park.
- Barrier systems - in sites where regular monitoring by staff is not possible, barrier systems could offer the best solution. Alternatively, in smaller car parks, a provider might consider installing a remote controlled mini-barrier system in individual bays, but this is shown to be only practical for sites that have a 'closed' membership. Barrier systems can offer the clearest and fairest approach to intervention, and the only means of preventing all types of abuse.
- Automatic Number Plate Recognition - supermarket providers have realised that the use of Automatic Number Plate Recognition (ANPR) camera technology works well in monitoring the use of segregated parking areas for registered disabled customers and in dealing with the problem on the spot. This relies on 'live' monitoring; otherwise the action caught on camera would need to be followed up with a warning or penalty.
- Imposition of fines – the effectiveness might depend on whether the fine is enforced by a parking attendant or a local authority parking attendant. For example, where parking has been decriminalised (e.g. Edinburgh) there are lower compliance rates than in cities where parking is still dealt with by the city's traffic wardens (e.g. Inverness).
- 'Charging for all' - the introduction of a 'charging for all policy' for parking at Ninewells hospital in Dundee has resulted in a significant reduction in the occurrence of parking abuse. However, consideration should be given to offering concessions to disabled users if they have regular medical appointments.
- Advisory measures - measures such as automated electronic announcements and bay design (i.e. surface markings and signage), although essential in preventing 'accidental' abuse, were shown to have little impact on preventing other types of abuse when used on their own. (Tackling the Abuse of Off-street Parking for Disabled People in Scotland)

4.4.4 Policy implications

To maintain and further improve taxi services, research in this area from Ireland suggested various recommendations, including the following:

- Better education for taxi and hackney users in relation to their rights as consumers and the legal code applying to cab services. A user-friendly guide to the regulations would be beneficial to consumers.
- There is a need for better in-cab information for users, e.g. driver and vehicle licence details, fare cards, and information on customer complaint procedures, with summary information in a number of foreign languages.
- A comprehensive information and complaints system is required. It is recommended that dispatch companies be required to maintain a log of complaints for inspection by the competent authorities. A penalty points system should be developed for drivers who have complaints against them upheld.
- It is recommended that a Customer and Driver Charter be introduced, detailing the rights and responsibilities of each.
- There should be a policy to significantly expand the proportion of cabs that are wheelchair-accessible (e.g. through tax incentives for taxi operators), and monitoring is needed on the level of service provided to people with a disability.
- It is recommended in the short-term to retain separate taxi and hackney licensing, but to re-consider the issue in the longer term once other reforms have been implemented.
- Taximeter areas should be expanded to cover towns with significant populations (e.g. over 7000 inhabitants) and the geographical boundaries of these taximeter areas should reflect settlement patterns.
- Access to bus lanes (currently open for taxis) should be granted to hackneys and limousines.
- The same fare structure and fare levels should apply in all taximeter areas.
- A tiered fare structure for taxis is recommended which compensates drivers for long distance journeys and allows all trips to be made on the meter. Fares should normally be reviewed every two years.
- Hackney and limousine fares should remain unregulated.
- Attendance of taxi drivers at a training course should be obligatory and should be part of the renewal process for driver licensing. The renewal period itself should be reduced to every two years.
- The first time taxi licence fee is considered a barrier to entry to the market. This should be considerably reduced and fees re-balanced away from first time fees and towards renewal fees.
- A 'one-stop-shop' approach to vehicle licensing, testing and meter verification should be considered.

- It is not recommended that a standard cab be introduced, as there is no real demand for this and it would significantly increase costs to the trade. Also, there is no need to recommend a standard colour for cabs. (SERVICES)

The research findings from Scottish research point to the need for car park providers to consider the following key points with regards to the misuse of disabled parking bays:

- Undertaking regular monitoring of the car park, and consulting users on their parking requirements to help determine which measures will be most practical and effective.
- Raising awareness among service users on the correct use of the Blue Badge.
- Charging for facilities/services - in principle, access to services was considered to be more important to research participants with a disability than free parking.
- 'Designing out abuse' and reducing the need to travel by private car - there are benefits of 'designing out' abuse through thoughtful car park design, as opposed to penalising or confronting abusers.
- The need for education - the research highlighted a general perception that there is, among some people, a lack of respect for disabled people and of the impacts that parking abuse can have on a disabled person.
- Circumstances in which abuse might be tolerated e.g. people with reduced mobility who do not fall within the eligibility criteria of the Blue Badge scheme.
(Tackling the Abuse of Off-street Parking for Disabled People in Scotland)

4.5 Implications for further research

In terms of pricing, the knowledge about transferability of results from one transport mode to another so far is limited. The findings suggest that the way people react to pricing schemes strongly depend on people's perception of unique characteristics of specific transport modes. So, cross sectional transfer of charging scheme principles and thus the transfer of expectations in behavioural changes does not seem to be adequate if unique characteristics and specific perception of users on (specific) transport modes are not taken into consideration. Further research is required in this area. It is also felt that there is not enough research concerning the welfare effects of differentiated pricing schemes. It was highlighted that research was required on how to collect data in a way that makes better research possible but which respects the strategic interests of the railway industry and the relevance of price discrimination for increasing the modal share of railways.

In terms of promoting safety, it was felt that more work needs to be done in removing legal and administrative barriers for efficient and effective implementation of innovative enforcement systems. There are large variations between countries in the availability of enforcement data, but the common situation is that the available information is limited. A conceptual model for European TLE database was outlined which will fulfil most output needs specified by the Recommendation on enforcement. However, a survey of the needs of national and regional authorities and research organisations should be conducted to make sure that the database would be useful to all relevant users and future enforcement issues. With regards to cross border enforcement of traffic violations, a common approach is said to only be fully effective once the actions included the Implementation Plan have been successfully completed by the Commission and Member States as necessary. National plans for implementation need to be prepared to reflect these activities including the time it will take to implement the legislative package in each State. National plans need to be consolidated into a EU-wide plan which will subsequently be used as a benchmark against which progress will be measured. Once operational, the effectiveness of the common approach must be monitored on a regular basis. Due to difficulty in gathering the required information on speeds etc, there is the need for a goal, within a number of years, to have a national road database containing several different types of traffic regulations.

In terms of promoting quality, research from Ireland suggested that a Customer and Driver Charter should be introduced which makes clear the rights and responsibilities of each. Also there is the need to introduce a more comprehensive complaints and information system. Research from Scotland indicates that more could be done in increasing information about the correct use of disabled parking bays.

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Annex: List of projects by sub-theme

Sub-theme 1: Regulations on Pricing				
Project acronym	Project title	Programme	Project website	Coverage
	Deregulation of cargo traffic on the Finnish railways	MinTC R&D - Ministry of Transport and Communication's R&D Projects Supporting Transport Policy (Finland)	N/A*	Covered in EXTR@WEB paper
	Multi-modal freight model for distance-based HGV charging	DfT Cleaner Fuels and Vehicles - Department for Transport - Cleaner Fuels and Vehicles (UK)	N/A*	Covered in EXTR@WEB paper
CURACAO	Coordination of Urban Road-User Charging Organisational Issues	FP6-SUSTDEV-2 - Sustainable Surface Transport	www.curacaoproject.eu	Covered in this paper
D3 (NRP 41)	Fair and Efficient Pricing	NRP 41 - Transport and Environment (internal research plan) (Switzerland)	www.nfp41.ch	Covered in EXTR@WEB paper
DESIRE	DEsigns for Interurban Road pricing schemes in Europe	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	www.tis.pt/proj/desire.htm	Covered in EXTR@WEB paper
DIFFERENT	User reaction and efficient differentiation of charges and tolls	FP6-SUSTDEV-2 - Sustainable Surface Transport	www.different-project.eu	Covered in this paper

Sub-theme 1: Regulations on Pricing				
Project acronym	Project title	Programme	Project website	Coverage
MC-ICAM	Implementation of Marginal Cost Pricing in Transport - Integrated Conceptual and Applied Model Analysis	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	www.its.leeds.ac.uk/projects/mcicam	Covered in EXTR@WEB paper
SPECTRUM	Study of policies regarding economic instruments complementing transport regulation and the understanding of physical measures	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	N/A*	Covered in EXTR@WEB paper

Sub-theme 2: Regulations on Safety				
Project acronym	Project title	Programme	Project website	Coverage
	Safety of children in road traffic in connection with child safety equipment in motor vehicles	OPTIMISATION - Optimisation of the transport system and its sustainable development (Czech Republic)	N/A*	Covered in EXTR@WEB paper
	The long-term effects of hands free legislation on mobile phone use	MinTC R&D - Ministry of Transport and Communication's R&D Projects Supporting Transport Policy (Finland)	N/A*	Covered in EXTR@WEB paper

Sub-theme 2: Regulations on Safety				
Project acronym	Project title	Programme	Project website	Coverage
BAIID	BAIID experiment (Breath Alcohol Ignition Interlock Device). Process follow-up	MinTC R&D - Ministry of Transport and Communication's R&D Projects Supporting Transport Policy (Finland)	N/A*	Covered in this paper
CAPTIVE	Common Application of Traffic Violations Enforcement	DGTREN project	http://ec.europa.eu/transport/oadsafety_library/publications/captive_final_report.pdf	Covered in this paper
FAIR	Fully Automatic Integrated Road Control	FP6 project	www.project-fair.de	Covered in this paper
GOING-SAFE	Addressing technical and human factors involved in the implementation of 3-point shoulder harnesses, on all seats, in passenger aircraft	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	www.aeroseatingsafe.com	Covered in EXTR@WEB paper
HALTI	Comparison between different legislative systems of automatic speed enforcement	LINTU - Long-term Research and Development Programme for Road Safety (Finland)	N/A*	Covered in EXTR@WEB paper
ITR	Intelligent Traffic Regulations	National project from Sweden	N/A*	Covered in this paper

Sub-theme 2: Regulations on Safety				
Project acronym	Project title	Programme	Project website	Coverage
PEPPER	Police Enforcement Policy and Programmes on European Roads	FP6-SUSTDEV - Sustainable Development, Global Change and Ecosystems - Priority Thematic Area 6 (PTA6)	www.pepper-eu.org	Covered in this paper
REVEL	A methodology to update speed limits	CEDEX - Strategic Plan of Infrastructures and Transport (Spain)	N/A*	Covered in this paper
SAMRAIL	Safety management in railways	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	http://samnet.inrets.fr	Covered in EXTR@WEB paper

Sub-theme 3: Regulations to promote Quality				
Project acronym	Project title	Programme	Project website	Coverage
	Tackling the Abuse of Off-street Parking for Disabled People in Scotland	National project from Scotland	N/A*	Covered in this paper

Sub-theme 3: Regulations to promote Quality				
Project acronym	Project title	Programme	Project website	Coverage
FACT	Fast and Comfortable Trains	FP5 - GROWTH - KA2 - Sustainable Mobility and Intermodality	N/A*	Covered in EXTR@WEB paper
SERVICES	National review of taxi, hackney and limousine services	National project from Ireland	N/A*	Covered in this paper
UG116	Accessibility regulations - Economic and Design Specifications	DfT Strategy Economics & Mobility - Department for Transport - Strategy Economics and Mobility (UK)	www.dft.gov.uk/rmd/project.asp?intProjectID=9147	Covered in EXTR@WEB paper

Notes:

(*) More information (project profile, results summary and/or a final report) is available at <http://www.transport-research.info/>