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Seamless Transport Policy: Institutional and Regulatory Aspects of Inter-Modal Coordination

05

Discussion Paper 2012 • 05

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International Transport Forum
at the OECD, Paris

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France

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Seamless Transport Policy: Institutional and Regulatory Aspects of Inter-Modal Coordination

1. INTRODUCTION

This paper briefly discusses inter-modal¹ coordination of transport services from a perspective of what could be called “diversity-based mobility policy”². It examines the framework conditions for inter-modal competition and coordination under an approach to transport policy making that reflects the broad variety of mobility needs and aspirations in market economies and reflects the social opportunity costs of alternative ways of addressing the demand for mobility.

The paper discusses integrated land-use planning and transport policy making, the importance of institutional frameworks for integrated transport planning and the fiscal framework for inter-modal competition, including in relation to external costs. Competition for resources between freight and passenger services is considered as well as truly inter-modal issues.

The paper was prepared for the National Transport Development Policy Committee of the Government of India following a Workshop in Delhi in February 2012, supported by the World Bank, Ausaid and the International Transport Forum. At the request of the Committee the paper focuses mainly on transport policy making in Europe but it also draws on experience in Japan, Russia and North America.

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1. This paper uses the term ‘inter-modal’ to indicate relationships between different modes of transport. The term ‘inter-modal transport’ therefore covers a range of transport services using a combination of modes, either for passengers and freight. The un-hyphenated term ‘intermodal transport’ is reserved for container transport, in conformity with the way this phrase is usually used in North America.
 2. A characterization of policy developed by Kurt Van Dender of the International Transport Forum in the 2012 Transport Outlook (ITF 2012c).

2. TRANSPORT POLICY

Over recent decades there has been a growing focus in transport policy making towards service delivery to end users, in both freight and passenger transport. The policy focus has shifted from intermediate goals such as annual plans and budgets for public transport corporations and annual spending on infrastructure, to final goals in terms of the effectiveness of transport services in providing access to jobs, housing and leisure activities, aiding the competitiveness of businesses and creating the conditions for economic growth. This is reflected in a range of initiatives including requirements for public transport services to publish key performance indicators, governments providing public support for the development of advanced logistics management tools, increasing political interest in congestion and a new transport policy focus on reliability of service and, in a few administrations, the development of analytical tools to focus on the end-to-end journey.

The other major change in European transport policies in recent decades has been the emphasis on efficiency, to both improve services and contain demands on public spending. Introducing and reinforcing competition in the supply of transport services, both within modes and between modes, has been an important part of the drive for efficiency. This has sometimes been aligned with the goal of reducing the size of government in relation to private sector activity and more generally been associated with the aim to reintroduce private enterprise to industries nationalized under conditions of financial crisis during or in the aftermath of the last World War. The model for transport services in Europe is increasingly market led and commercially organized, with public services purchased from operators (regardless of ownership) under contracts or concessions that specify the services to be delivered and the compensation to be paid for services required that are not commercially viable.

Inter-modal transport policy in European countries is basically market driven. This approach has been characterized as “co-modality” in recent European Commission policy papers, meaning seeking complementarities between the modes or more simply using the best mode for the job. Current European Union policy towards modal shift, driven largely by public and political concern over climate change, is discussed in a later section. National transport policies seek mainly to coordinate intervention, in terms of taxation, regulation, funding and investment, to avoid waste or undermining policy towards one mode as a collateral effect of intervention in another mode.

3. INSTITUTIONAL FRAMEWORKS

Institutional organisation, and the location of decision-making authority for intervention in the transport sector, is fundamental to inter-modal coordination. In Europe and OECD countries, the majority of transport sector policies are the responsibility of a single transport ministry. Ministries of finance usually retain responsibility for most of the taxes on transportation; fuel excise duty, carbon taxes, taxes on vehicle ownership and annual charges for access to the road network. Finance ministries also usually issue guidelines for appraisal of investments and for the design of public private partnerships. Specialist agencies, such as civil aviation authorities, can have extensive powers over a particular mode but fall under the overall responsibility of the transport minister. This overall responsibility for transport policy under a single Minister facilitates inter-modal coordination.

To be clear, some decisions are the sole responsibility of independent agencies such as aviation authorities and rail regulatory agencies etc., where regulators have been established by act of parliament to be independent both of industry and government. In such cases the onus for coordination is on transparency, with decisions and the reasons for decisions taken made public, and on orderly consultation procedures with stakeholders, including the transport ministry. Where procedures for coordination prove ineffective, or policies prove irreconcilable, the remedy is for Ministers to go to parliament with amendments to the mandate for the independent agency. This again is designed to be a transparent procedure that provides as much protection as possible to the interests of regulated parties from arbitrary changes of policy. (ITF 2011a). The very reason for establishing independent regulatory agencies is to insulate private investors in the regulated industry from capricious changes in policy and avoid conflicts of interest when the government is both the regulator and an active participant in the sector with financial resources at stake. Independent regulation is critical, for example, to successfully attracting private risk-investment to railways that are dependent on operating subsidies awarded by the transport ministry for the delivery of non-commercial public services, or are dependent on access to infrastructure owned by the state or another party.

India and China find themselves at the opposite end of the spectrum of institutional organization, with multiple transport sector ministries, some integrated with a state enterprise providing the majority of services in their sub-sector. This arrangement makes distinguishing between the public interest and the narrower interests of the transport operator difficult. Inter-modal policy coordination tends to be the responsibility of no institution under such arrangements.

Russia has undergone an institutional transition over the last two decades that is instructive. Until the 1990s, allocation decisions under central planning provided a degree of inter-modal coordination, albeit poorly aligned with the public interest. Central planning made modal coordination possible despite the organisation of the transport sector in a series of mode-specific ministries integrated with their respective transport operating companies. In 1990, with the end of central planning, an integrated transport ministry was established covering all modes except rail, which continued to be run by a monolithic ministry operating train services itself. However, in 1996 responsibilities for aviation and highways reverted to independent ministries leading to overlaps of responsibilities, policy incoherence and most significantly gaps in policy, notably with respect to sustainable development and intermodal containers.

In the following years, over fifty committees were established to facilitate coordination but, with no powers granted to these bodies, their impact was limited. In 2000, the sector was reunited into a new Ministry of Transport, with the railways brought into the ministry in 2004 when railway operations were corporatised and re-established as a state-owned company. The earlier fragmentation of the sector is, however, still felt as many decisions on fiscal policy, funding and regulation are taken in other ministries or in industry associations. The cultural change involved in transitioning from a fragmented model of modal ministries to an integrated ministry with separate corporatised transport service operators is bound to take time and meet resistance so authority for policy making across the modes has to be identified clearly in government – either in a comprehensive transport ministry or a ministry or inter-ministerial authority for economic reform – if some areas of policy are not to be captured by vested interests.

3.1. Financial implications of institutional conflicts of interest

The political economy of organizational change on this scale is documented by Yoshiyuki Kasai, now chairman of the Japanese railway company JR Central, in his book on the financial collapse and privatization of Japan's railways (Kasai 2003). He also details the impact of institutional conflicts of interest on transport operations. One of the key conflicts of interest for governments in relation to railways is concern to limit annual budgetary expenditure whilst demanding public services to be provided at prices below cost. This is a problem that undermines the performance of corporatized state-owned railways and even more so rail systems operated directly by a Ministry. Mr Kasai states the problem as follows. *Setting the price for a company's goods and services is clearly one of the most important decisions that the management has to make. Since its establishment, all of JNR (Japan National Railways, before privatisation) fares were regulated by the Fare Act: the ability to raise fares would only be possible if the Fare Law were to be revised. Moreover, it was not just fares: the annual expenditure budget of JNR, including wages and capital expenditure as well as borrowing plans, were subject to approval from the Diet (parliament) as it was all regarded as an integral part of the national budget. Unfortunately through the 1950's the government consistently resisted JNR's repeated calls for proper and timely fare increases. The objective was to keep fares as low as possible in order to assist other industries. This eventually led to financial collapse of the railways, with debts exceeding \$56 billion in 1975. From this point successive governments realised that fundamental change was essential but it took until 1987 for the restructuring and privatization of the company to be executed.*

Inter-modal policy in Japan was seriously undermined by this inherent conflict of interest, and from a rail company's point of view, Mr Kasai believes this is still a problem, albeit to a lesser degree. He states, *the profit adjustment framework (cross-subsidies agreed at privatisation) ... cause a distortion of the entire Japanese transportation framework. More specifically speaking, as a result of the profit adjustment, passengers on the Tokaido Shinkansen (high speed train) are forced to pay fares at least 20% higher than they should be in order to support the railway system in the rest of Honshu (Japan's main island) If Shinkansen fares were reduced by 20% it would not be possible for planes to compete with rail between Tokyo and Osaka.*

Rail policy reform in Europe since the 1990s has, with good reason, made its first priority the ending of cross-subsidies and the payment of full compensation for public service obligations, under specific contracts between the government and rail operators. (Directive 91/440/EEC). Cross-subsidies are still an issue – particularly for the railways of Central and Eastern Europe (ECMT 2005) and some railways in Europe have continued to accrue debts. The intent of European law and direction of policy is, however, clear.

3.2. Integration of Transport and Environment Ministries

The trend towards integrated transport ministries has extended in many western European countries to the incorporation of transport with related government departments in super-ministries. Many Latin countries traditionally integrate public works, housing and territorial development with transport but more recently the trend in many countries has been to integrate transport and the environment. The UK was an early example with the establishment of the Department for Transport and the Environment from 1997 to 2001. Some experts report little success in integrating policy between the sectors from this merger (Preston 2012), but it has left a legacy of environmental issues taking a prominent place in transport sector policy making and effective integration of environmental costs into routine economic appraisals of transport sector investments.

Switzerland has had an integrated ministry for many years, the Department for Environment, Transport, Energy and Communications. Environmental protection is clearly a priority for the Department as will be seen later from a discussion of Swiss inter-modal freight transport policy. France created a super-ministry in 2007, the Ministry for Ecology, Sustainable Development, Transport and Housing. This merged the former Ministry of Transport, Public Works, Tourism and Shipping with the Ministry of Ecology and the Department of Energy from the Ministry of Industry. The creation of the Ministry coincided with a major series of political consultations on environment policy at the highest level with a broad range of stakeholders, known as the "Grenelle de l'Environnement" (a name recalling a political process that settled the social unrest of 1968). These consultations resulted in a more prominent profile for environmental protection and especially climate change policy in transport decision making.

4. INTEGRATED PLANNING AND ASSESSMENT AND INSTITUTIONAL COORDINATION

4.1. UK Project Appraisal Guidance

The transport planning and economic assessment framework has a primary role in inter-modal policy. The practice of integrated assessment is probably most advanced in the United Kingdom and the Department for Transport provides useful tools and transport analysis guidance on the "WebTAG" pages of its website <http://www.dft.gov.uk/webtag/>. Cost benefit assessment for transport projects was developed in its current form in the UK, specifically to examine the merits of the Victoria Line extension to the London underground system in the 1960's. Simple financial appraisal techniques failed to capture a major part of the benefits that arose from relieving congestion on other underground lines rather than adding to overall ticket sales revenues in the short term. These benefits could only be accounted for by monetizing the time savings for all users arising from improvement to the network.

Major improvements to the appraisal system were made in the 1990s in response to concern that long term impacts on the environment of major transport projects with a structuring effect on land use and economic development were not adequately accounted for in decision making processes (ECMT 2004). One example was public protest over the extension of the M3 motorway between London and Southampton. The new road cut through an attractive recreational area of hills next to the wealthy and touristic city of Winchester, a tunnel to preserve the area being viewed as unaffordable and undermining the economic case. At its terminus in Southampton to road caused severance problems in a relatively low income residential area and was seen as providing transport for the rich at the expense of the poor. Protest over the environmental and equity issues led eventually to a requirement for assessment of all strategic road investment projects to encompass potential alternatives, catering for mobility demand through investments in other modes. The department published Guidance on the Methodology for Multi-Modal Studies (GOMMMS) to be followed in such cases, forming the basis for today's strategic environmental appraisals. There is little direct evidence of rail or other modes substituting for road investments as a result of the guidance but it has created a strategic approach to planning that assesses investments in the context of broader transport system networks at a regional level and seeks to optimize the use of land for transport infrastructure along trunk corridors.

Shortly thereafter, a 1998 Transport White paper added to the appraisal system as part of a move away from 'predict and provide' solutions to transport problems towards a more integrated transport policy, noting that decisions need to be based on a full range of options and a comprehensive analysis of the impacts using a consistent approach (DfT 2005). To this end, the White paper introduced the New Approach to Appraisal (NATA). The main innovation was a requirement to produce an Appraisal Summary Table (AST) to provide decision makers with the key information they need at a glance. The clear intention is not to pre-empt the decision but rather highlight critical information for decision-makers where trade-offs and compromises might have to be made.

The AST includes the results of financial appraisal and socio-economic cost-benefit analysis but also lists the impacts of the project in relation to headline government policy agendas – for example, social equity, poverty relief, climate change mitigation, landscape protection, pollutant emissions, etc.. Some of the indicators presented are quantitative others simply descriptive. This approach to presenting key political information alongside the outcome of economic modelling goes some way to counter arguments that cost-benefit analysis tends to be used and manipulated to justify decisions already taken on other grounds. The current UK government has further improved the AST approach by adding more detailed information on the business case for the project, structured as follows:

- Strategic Does the proposal present a good fit with wider policy objectives?
- Economic Does the proposal present good Value for Money?
- Financial Is the proposal financially affordable?
- Delivery Is the proposal deliverable?
- Commercial Is the proposal commercially viable?

4.2. Urban Land-Use and Transport Planning

Institutional and planning frameworks are of critical importance to effective inter-modal coordination of passenger transport in metropolitan areas. For infrastructure planning and traffic management this begins with design for accessibility rather than mobility. Most trips begin and end with a pedestrian leg. Infrastructure has to be designed to provide adequate, safe, protected space for pedestrians. Where trunk road and rail infrastructure severs access, infrastructure design has to incorporate safe protected pedestrian walkways, with minimum detour and avoiding excessive waiting times at traffic lights. The issues are the same for countries at all levels of development but typically pedestrian access has been neglected during periods of rapid growth in motorisation (ITF 2012a). The same infrastructure planning considerations apply to cycling, where adequate bicycle parking at rail and metro stations is an additional requirement for effective inter-modal mobility. Japan has a strong record in incorporating cycle parks in rail and urban planning and Europe's leading cycling nation, the Netherlands, is currently investing significantly to improve its inter-modal cycling facilities (Tiwari 2011 and ITF 2012b).

France's "Plans des Déplacements Urbains", introduced in 1982, are a good example of central government intervention to ensure city planners take a multi-modal approach to optimising mobility options. All cities above a certain population threshold are required to produce mobility plans. Other countries have adopted similar procedures. These plans also alert planners to the transport impacts of planned housing, commercial and other transport intensive land use developments, allowing for better coordinated transport infrastructure investment or relocation of the development to areas better served by existing infrastructure. The Netherlands pioneered this kind of coordinated transport and land-use planning mechanism with its "A B C" zoning system. However, local governments remain vulnerable to large employers and large contributors to local taxes exerting pressure to have zones re-classified as suitable for transport-intensive uses to permit development (ECMT 2001).

Coordination of planning between different levels of government in metropolitan areas is always a challenge. Zurich in Switzerland, for example, witnessed a decade or so of conflict between city and regional plans for land use development and transport in the 1980s and the 1990s (ECMT 2003). The end result is, nevertheless, a good example of inter-modal planning. Their city's 2001 Mobility Plan was based on:

- Inter-modal mobility, with operational transport chains,
- Mobility management and consulting services for sustainable transport,
- Promotion of public transport for all purposes,
- Promotion of walking and cycling,
- Parking management by regulation,
- Combined traffic and land-use planning.

Major investments in public transport have been made, with local and express regional trams and tunnelling under the main station to enable through running tram services. However, some major investments in regional services were delayed to prioritise pedestrian access to local feeder tram services, benefiting a larger number of existing and new users of the overall public transport system. Almost all residents of the city can now reach a tram or bus stop within 300 metres, with 30 minute maximum service intervals and many lines running with daytime intervals of 6 to 8 minutes (ECMT 2003).

China's national government legislated in 1989 for integrated land use and transport infrastructure planning by local governments, aiming to provide a blueprint for sustainable urban transport development (Pan 2011). All major cities are required to develop transport master plans and the Code for Planning and Design of Urban Residential Areas requires basic services and shops to be accessible by non-motorised transport in the main parts of the city and requires public transport to be accessible within reasonable walking distance of all residents. However, the plans have difficulty keeping pace with the rapid expansion of China's cities and investment in bus networks has not been able to respect the provisions for accessibility because of later legislation requiring an increase in cost recovery from bus operations in the face of burgeoning subsidies. The newer peripheral areas of cities tend to be poorly served by public transport, increasing the cost of access to residents to jobs and services in the centre.

This phenomenon is widespread. Mexico City has invested heavily in metro and BRT systems but the poorer populations in peripheral suburbs are dependent on using informal public transport (private mini-buses) that cost far more per ride than the public buses operated under concessions from municipal governments. Often, several rides are required to make the journey to work or link to the public transport system. Low paid workers can find 25% of their income consumed in commuting costs as a result (Cervero 2011). This problem is exacerbated by fragmentation of government jurisdictions and authority. Bus service concessions are awarded by local government and there are no arrangements for integrated planning of routes and timetables between the Mexico City municipality and the numerous municipalities in the suburban parts of the metropolis. There is also no effective coordination between bus concessions and suburban rail services that fall under the responsibility of the federal government. Rail stations are therefore often poorly served by feeder bus services because the bus companies prefer to take passengers on longer trips all the way to the city centre. Road congestion makes for much longer commutes as a result (Rivera 2011). Coordination problems of this type also affect bus services in advanced cities such as Hong Kong, where concessions are the responsibility of the lowest level of government and highly fragmented.

Successful examples of matching the geographical scope of transport planning authorities to the catchment area for travel in metropolitan areas are, fortunately, numerous and include Barcelona, the STIF in Paris, Transport for London and the Land Transport Authority in Singapore. These all provide for interconnected, inter-modal public transport services, integrated ticketing across the modes and effective long term planning. Japan and Switzerland excel in providing inter-connecting bus feeder services for railways, and local rail feeder services for national rail. The inter-connected Japanese rail and bus service networks serving the metropolitan areas located along the spine of the high speed Shinkansen rail lines, act as the largest seamless public transport system in the world. The regional rail services and onward connecting buses also serve rural Japan with an integrated national timetable, which operated in paper form long before the internet facilitated itinerary planning. Swiss Railways follow a similar philosophy, rejecting investment in a trunk high speed rail corridor across the country in its Rail Plan 2000, in favour of dispersed investment across the network to raise speeds more moderately everywhere and produce a “clock-face timetable” right across the nation, so that rail inter-connections and onward bus connections are predictably synchronised at regular intervals. This reduces the time taken for multi-leg and inter-modal journeys and increases the reliability and predictability of the system for the user.

4.3. Integrated Public Transport Ticketing

Many cities have successfully introduced integrated ticketing for urban public transport services, with single standard rate tickets or smart-cards valid on rail, metro, tram, bus and cable-car systems. All such systems are dependent on a revenue sharing agreement between the transport operating companies providing the services. This usually takes much longer to negotiate than the development of the common technology for ticketing, and frequently requires central government intervention to broker a deal, or make acceptance a condition for the award of public service concessions.

Transport for London’s Oyster Card illustrates how integrated, smart ticketing systems can have considerable payoffs to providers as well as to users. Contactless smart-card ticketing has greatly increased gate throughput capacity, reducing strain on metro terminal capacity. Contactless cards have also speeded up boarding on buses, increasing capacity and speed of service. And fare evasion has been reduced substantially. India’s new smart card for using transport systems across the country can be expected to have similar benefits on a larger scale, with revenue sharing arrangements equally critical to success. In London, contactless bank cards will soon supersede the Oyster Card. Switching to a bank account based system, from a card that has to be manually charged with credit periodically by passengers, offers several advantages. It enables the processing of information to be moved from the card reader terminals to back-office computers with major cost savings. Bank account based systems offer the possibility of a universal payment system compatible with systems in any city and country, where the bank has agreed to take responsibility for any fraudulent use of cards before the system detects and rejects an invalid card.

5. REGULATORY FRAMEWORK AND CHARGES FOR THE USE OF TRANSPORT INFRASTRUCTURE

5.1. Road - Rail Freight Competition

Competition between road and rail freight transport operators is conditioned by relative productivity and the regulatory conditions applying to tariffs and access to Transport networks. This also applies to intermodal transport on the railways, maritime containers and truck-rail train services. Road productivity has vastly increased with the building of motorway networks and the liberalisation of trucking markets. There is no longer any tariff regulation for road freight in OECD markets and access to the market is conditional only on basic requirements of professional competence and solvency. Working and driving time regulations, introduced largely in the interests safety, affect competitiveness with rail as do night time driving bans in some places and restrictions on carrying some kinds of freight at weekends and in holiday periods in some countries. Most OECD countries allow access to foreign licensed companies and vehicles to the domestic trucking market to a certain extent and in the European Union there is a single market in road haulage with quotas on cross-border traffic phased out for all but the newest member countries. Maximum truck weights and dimension are regulated nationally to protect infrastructure assets and for safety. The European Union has agreed standard weights and dimensions for access to roads internationally, with some member states allowing larger vehicles to be operated nationally on the trunk road network.

Maximum weights and dimension limits can have a significant impact on competitiveness between the modes. The European Union is currently in the process of reviewing its international maximum weight limits for reauthorisation. The possibility of moving from the current limit of 40 tons to 60 tons which is the national limit in Scandinavian countries and under trial in the Netherlands is under review and been evaluated in terms of productivity and potential modal shift. For the UK, studies foresee all deep sea container movements shifting from rail to road as a result of such a change (Knight 2008). But the UK market is not typical with short average lengths of haul and therefore relatively high costs per ton kilometre. The impact on continental European railways is expected to be a shift of around 4% (TML 2009).

Exceeding maximum limits by overloading also can have major productivity impacts. It is illegal and highly prejudicial to safety. It is a problem in OECD countries, but not to the extremes typical for Indian roads. Considerable resources are devoted to policing compliance with loading limits and efforts are being directed at finding systemic ways to curb the problem at lower cost than inspecting vehicles on the road. This "chain of responsibility" approach has been taken to its most effective level in New South Wales in Australia, where powers to inspect the financial records of shippers and transport companies have been granted to road safety authorities. Where records of sales and haulage contracts don't match some very large fines have been applied, for example to grain shippers, with strongly deterrent effect (ITF 2011b).

As road freight productivity increases, railways have to respond in terms of both level of service and prices if profitable markets are not to be lost. As the road network becomes more reliable, higher value, non-bulk loads will tend to move to the roads for the flexibility and door-to-door service that roads can provide. Railways can be handicapped in maintaining their competitiveness in a number of ways:

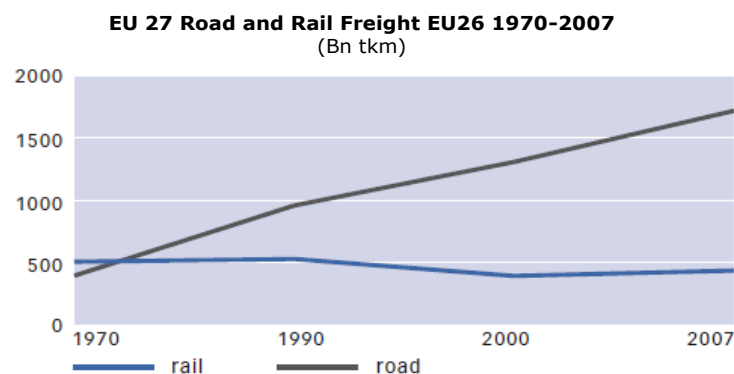
- Rail tariff controls that are prescriptive and revised only occasionally:
 - preventing the negotiation of prices; and
 - preventing pricing according to what the market will bear.
- The use of freight revenues to partially cover passenger transport costs:
 - With cross-subsidies to maintain low passenger fares in the absence of sufficient government compensation for public services provided;
 - By covering common costs so that passenger train service can be priced at marginal cost even when they consume a major share of infrastructure capacity.
- Labour costs on the railways divorced from industry norms, through wage agreements, early retirement plans, over-manning, demarcation of jobs etc. State-owned monopolies are prone to this kind of cost inflation as they are insulated from direct competition (but not immune to inter-modal competition).

Most railways have suffered from these problems at some point in their development. European freight railways are free of tariff regulation but freight revenues support passenger services in some Central and Eastern European railways, eroding their competitiveness. Cost recovery rates vary greatly across the region's railways (see accompanying figures in charges for the use of rail infrastructure).

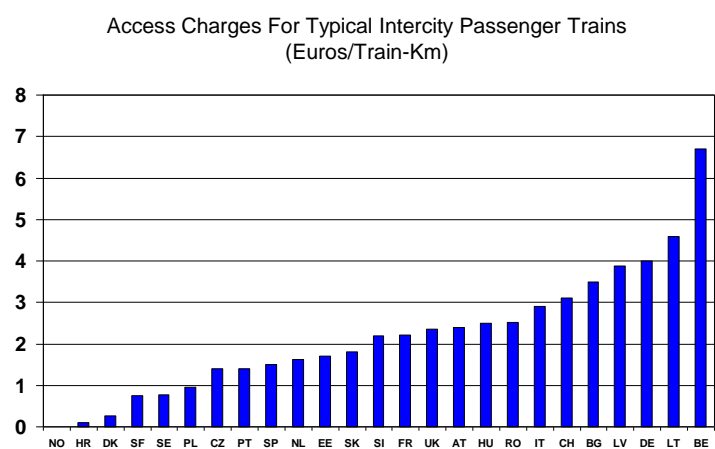
All European railways suffered inflated labour costs and where liberalisation has proceeded slowly continue to do so. Except for the Baltic States, passenger trains take priority over freight movements affecting the average speed and reliability of freight rail. Changes in the relative productivity of road and rail in Europe as a result of all these factors are reflected in the figure below showing the evolution of road and rail freight volumes in the European Union.



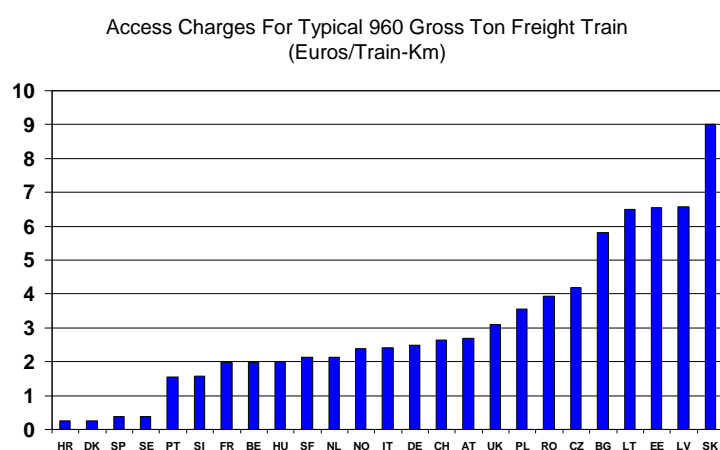
EU railways suffered growing debts and eroding markets



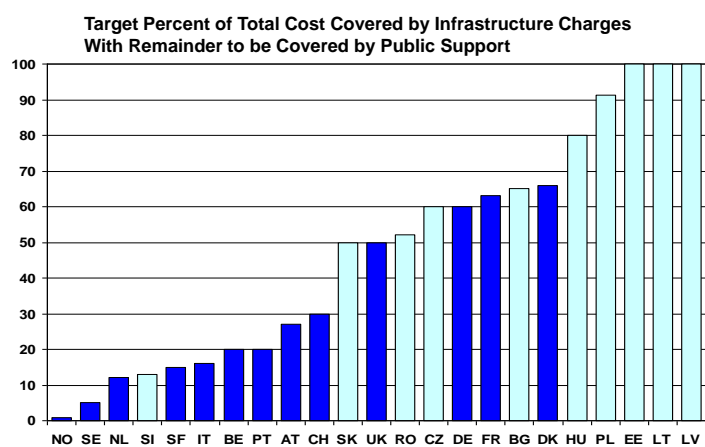
Source: Fair and Efficient, ARE, DETEC, Switzerland

Figure: **Charges paid in EU States for using Rail Infrastructure**

Source: ECMT 2008



Source: ECMT 2008



Source: ECMT 2005

Light colouring indicates CEE

National governments in Europe have responded to this loss of competitiveness and agreed a common set of regulations in the European Union aiming to:

- prevent the accumulation of debts through under-compensated public service obligations,
- transfer historical debts out of the railways,
- ensure non-commercial operations under public service obligations are fully paid for by government under contract, and
- create the conditions for the progressive introduction of competition in all rail markets, beginning with freight.

For both the improvement of finances and the creation of conditions for competition the regulations (Directive 91/440/EEC and subsequent “packages” of regulations, currently being consolidated in a “recast” 2010/0253(COD) being considered by the European Parliament) require separation of rail accounts between passenger operations, freight operations and infrastructure management. They require separate management of infrastructure and train operations and since last year require an independent regulator, separate also from the transport ministry, to enforce the regulations and ensure fair access to the rail network for new entrant train operators.

5.2. Swiss Inter-Modal Freight Transport Policy

Switzerland has developed a very complete set of policies to manage road and rail freight transport, spurred by concern to protect its Alpine valleys from excessive road transport and more particularly objection to road noise by local residents. Expansion of the motorway system and the building of motorway tunnels crossing the Alps in the 1960’s and 70’s made Switzerland a key link for international road haulage between Italy and the rest of the European Community. A night-time and Sunday driving ban was imposed to limit noise nuisance and Switzerland restricted the size of trucks allowed on the roads to 28 tons maximum loaded weight, far below the standard 40 tons in the European Union. Neighbouring countries complained of detour traffic on their roads and harmonisation of weight limits became one of the issues for negotiation of a trade treaty between Switzerland and the EU, finally agreed in 2001. A change in weight limits to 40 tons was agreed and put to national referendum on a package of measures centred on building two new base tunnels through the Alps to carry rail freight transiting the country. The tunnels provide for increased rail productivity by increasing capacity, reducing gradients and radically shortening transit time. The weight limit change for trucks also made a radical improvement to the productivity of road freight. To limit growth in the number of trucks crossing the Alps an electronic kilometre charge (the Heavy Vehicle Fee) for all trucks using Swiss roads was introduced (in 2001) as the key element of the package. The charge was originally calculated on the basis of the external environmental costs of trucks traffic and differentiated by vehicle emissions class. However, the full charge was phased in only gradually, over several years under conditions agreed in the EU trade treaty. Two thirds of the revenues from the road charge are used to finance building of the rail tunnels and other rail investments, one third goes to local government budgets. The other rail sector investments include rail and intermodal terminals in Switzerland and in Germany and Italy to improve rail freight and road-rail services through Switzerland.

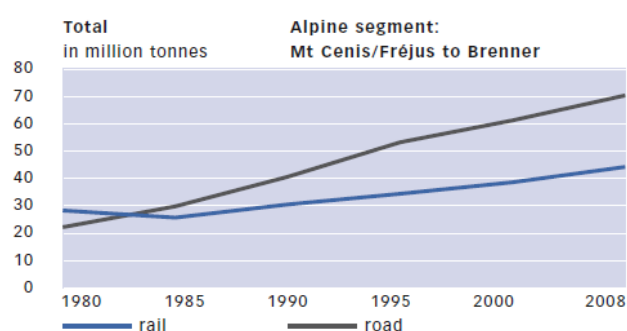
Access to intermodal freight terminals, in terms of timing of access as well as capacity, can be critical to the competitiveness of freight businesses. The inclination of a terminal operator is naturally to deny access to competitors. Intervention to impose access may remove incentives to invest, a problem widely acknowledged in the literature (ITF 2010). The most effective role for government in these circumstances is to broker voluntary agreements among the potential users of the facility to manage access cooperatively. Or, as in the Swiss case, to provide funding to improve facilities, even outside its borders.

Switzerland's policy has had a marked impact on the share of road and rail freight crossing the Alps as the accompanying graph shows; modal shares are reversed between the Swiss alpine crossings on the one hand and French and Austrian Alpine crossings on the other hand.

The opening of the first base tunnel last year, however, has not so far had an impact on modal split. This may be for a number of reasons. First the night and Sunday driving bans are an important factor in determining modal choice. Also the size of chemical tankers and are restricted on the roads, making rail the dominant carrier for hazardous goods. The first, Lötschberg tunnel is on a secondary route. Opening of the Gotthard tunnel may have more of an impact. Two base tunnels probably represents an over-investment but was politically desirable to balance expenditure between the regions. It should also be noted that the track access charges levied on trains for using the tunnels have been set at a level that is below marginal costs, so the value of the rail investment remains to be proved - until and unless rail demand becomes sufficient to support higher charges. While Swiss inter-modal policy is the most comprehensive and effective anywhere, its economic efficiency is not entirely proven.

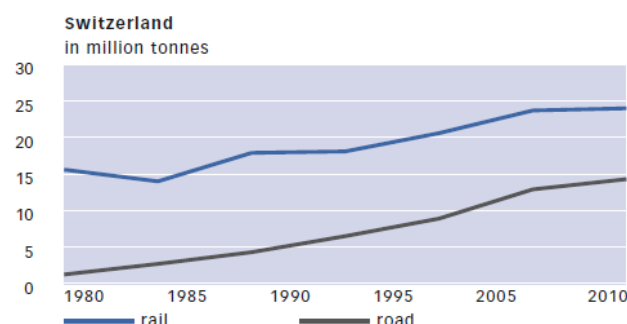


Total Trans-Alp Freight Fr-CH-Aus



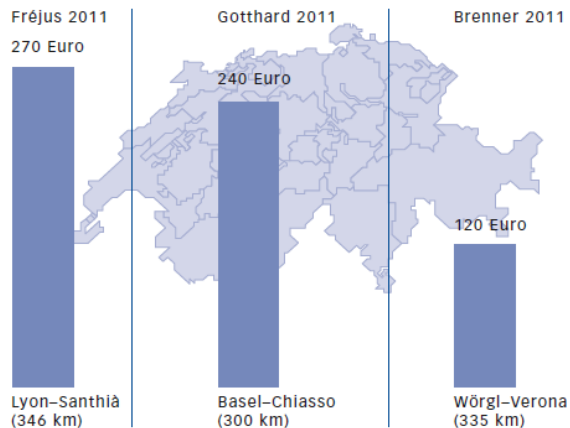
Switzerland

- 28t -> 40t
- HVF 2001
- Sunday and night ban



Source: Fair and Efficient ARE, DETEC

Comparison of Transit fees on Fréjus, Gotthard and Brenner



Source: Fair and efficient, The Distance-related Heavy Vehicle Fee (HVF) in Switzerland, ARE, DETEC

<http://www.aren.admin.ch/themen/verkehr/00250/00461/index.html?lang=en>

The impact of the Heavy Vehicle Fee on road haulage has been significant. At its introduction in 2001 it represented a 20% increase in charges levied on trucks per vehicle kilometre driven. Coupled with a change in productivity of 18% as a result of the first stage of the weight limit increase the overall effect was that vehicle kilometres driven were 12% lower than they otherwise would have been, according to projections from the Swiss Ministry (DETEC). Perhaps the biggest impact was to provoke a radical restructuring of the Swiss trucking market, with mergers and absorptions of small companies by larger logistics organizations able to better manage operations, consolidate loads and reduce empty running. Germany introduced its own electronic truck kilometre charge in 2005, albeit at a much lower level than Switzerland (see figure) and this resulted in an estimated 13% reduction in empty runs.

Impact of km charges on haulage

• Swiss HVF

- 20% increase in charges per vkm
- 18% increase in productivity
- vkm 12% lower than they would have been

12c/km



34c/km



• German Maut

- Empty runs down 13%



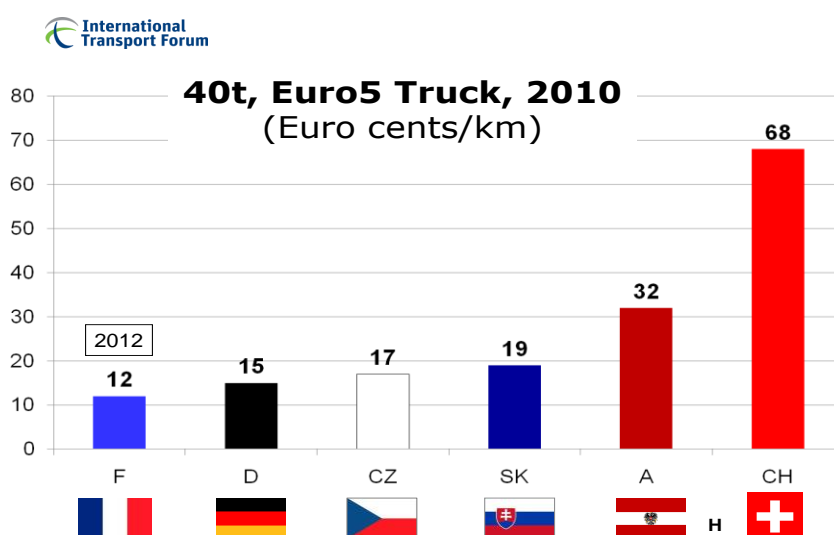
D
2005



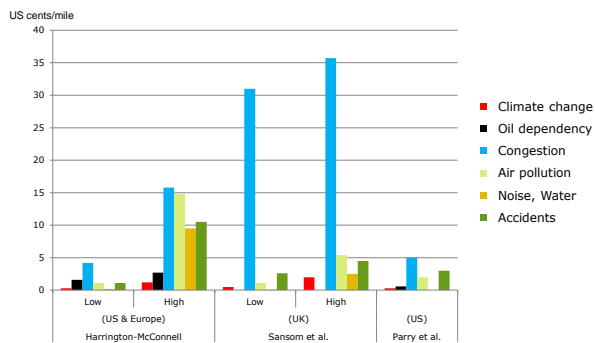
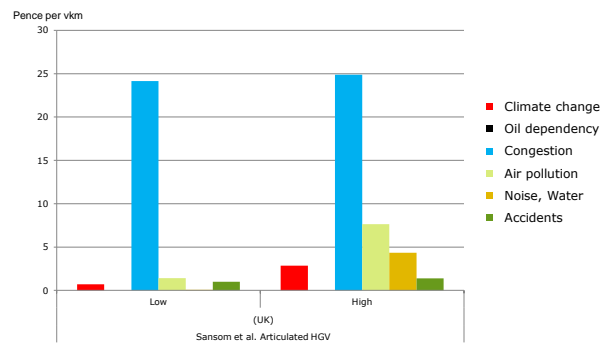
CH
2001

5.3. European Union Policy

Most of the Central European countries have now followed the Swiss and German lead and introduced electronic truck kilometre charges (see figure) and France follows suit this year with a charge on sections of its motorways that are not already subject to a conventional toll. Central countries with large transit traffic flows are motivated to charge for road use by the kilometre to ensure an adequate contribution to road investment costs from foreign registered trucks. France was spurred to introduce an electronic kilometre charge, despite already using conventional tolls on most of its motorways, largely because of detour traffic on motorways running parallel to the German border, large sections of which were un-tolled as they serve as bypasses around towns including Strasbourg. Most urban stretches of motorway in France are un-tolled to avoid transferring traffic to secondary roads and the electronic charge is also designed to cover the environmental costs of using trucks in all urban areas. All of the European truck charges are differentiated by environmental emissions class of the vehicle but the primary rationale for the charges (outside Switzerland and France) is to recover infrastructure costs in a way that covers transit traffic as well as domestic road users (see table).



Charging System	Vehicles charged	Principal objective	Secondary objective
Swiss HVF	Trucks	Manage truck numbers Environment	Revenue Rail investment
German Maut	Trucks	Revenue Transit contribution	Environment (Euro#) Road wear (axles)
Austrian Maut	Trucks	Revenue Transit contribution	Environment Road wear
Czech toll	Trucks	Revenue Transit contribution	Environment Road wear
Slovak toll	Trucks	Revenue Transit contribution	Environment Road wear
France eco-tax	Trucks	Diverted traffic on German border	Environment Rail investment

External costs vary, but congestion is always the biggest marginal cost category**Congestion biggest external cost for trucks too**

The European Union regulates these charges³, setting a maximum limit designed to prevent over-charging transit traffic to the detriment of trade and the interests of peripheral countries. The technical and political difficulties of determining the economically efficient level for charges – for example, on the basis of marginal social costs of road use based on road wear and external environmental and congestion costs – means that the maximum charge allowed is calculated according to historic expenditure on the roads nationally. The regulation was modified in 2006 and again in 2011 to allow some differentiation in relation to environmentally sensitive areas and congestion. However, considerably more latitude may be needed in the freedom to differentiate charges if they are to be effective in managing congestion. At the same time, trucks are the primary cause of congestion on only a few roads in Europe (roads serving ports for example) and passenger cars are generally much more numerous.

The European Commission has set out its inter-modal policy in a series of white papers. Policy has changed in nuance from white paper to white paper. The 1995 White Paper *Towards Fair and Efficient Pricing in Transport* and 1998 White Paper *Fair Payment for Infrastructure Use*, laid the emphasis on establishing the right pricing framework conditions for creation of a single European transport market and achieving a sustainable modal split. This involved setting prices for using transport infrastructure in each mode on the basis of the short run marginal costs of using the infrastructure, including external environmental and congestion costs.

The 2001 White Paper European transport policy for 2010: Time to Decide set a more aggressive tone, saying 'Unless competition between modes is better regulated, it is Utopian to believe we can avoid even greater imbalances, with the risk of road haulage enjoying a virtual monopoly for goods transport in the enlarged European Union. The growth in road and air traffic must therefore be brought under control, and rail and other environmentally friendly modes given the means to become competitive alternatives'. Modal shift was highlighted as a policy objective in itself along with decoupling transport growth from economic growth and limiting overall transport demand growth.

3. Directive 2011/76/EU of the European Parliament and of the Council of 27 September 2011 amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures.

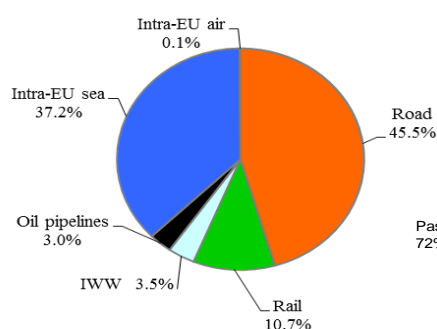
Nevertheless, the measures to achieve this remained focussed on ensuring a fair and efficient pricing and regulatory framework – with a new emphasis on harmonised working conditions in the haulage sector and the liberalisation of railways to improve their competitiveness.

A mid-term review of progress in implementing the 2001 white paper's policies was published in 2006, with a marked change in emphasis towards modal shift. Although the Commission maintained that this remains a priority, the focus changed towards 'co-modality' - or the optimised use of all modes of transport – rather than 'inter-modality' (moving traffic off the roads and onto rail and water for all or part of the journey). The review emphasized promoting co-modality via the harmonisation of standards and the integration of the various transport modes into efficient logistics chains. Policy on "decoupling" also changed, with the objective redefined as decoupling growth in transport from growth in the negative environmental impacts of transport. The latest, 2011 White Paper marks something of a switch back to modal shift rather than co-modality. The 2011 *Roadmap to a Single European Transport Area* (COM/2011/0144) places great emphasis on environmental protection and sets out the following key goals for 2050:

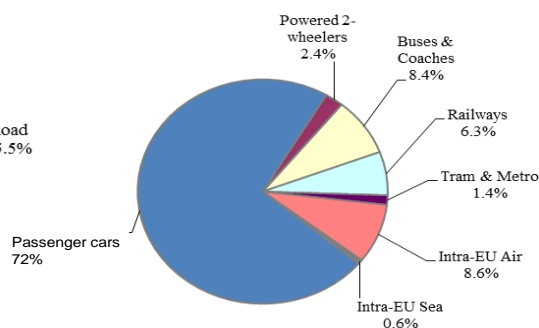
- No more use of conventionally-fuelled cars in cities.
- 40% use of sustainable, low carbon fuels in aviation
- At least a 40% cut in CO₂ emissions from shipping.
- A 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport.
- All of which will contribute to a 60% cut in transport emissions by the middle of the century.

These goals are highly ambitious but can best be described as aspirational. Intermediate, operational goals based on measures evaluated in terms of costs and effectiveness have yet to be established and are not discussed in any detail in the white paper. The current modal splits for freight and passenger transport in the EU and recent trends are summarized in the following figures. As is evident from the data, major changes in trend will be required to meet the 2050 goals.

Modal split intra-EU27 freight transport in 2008

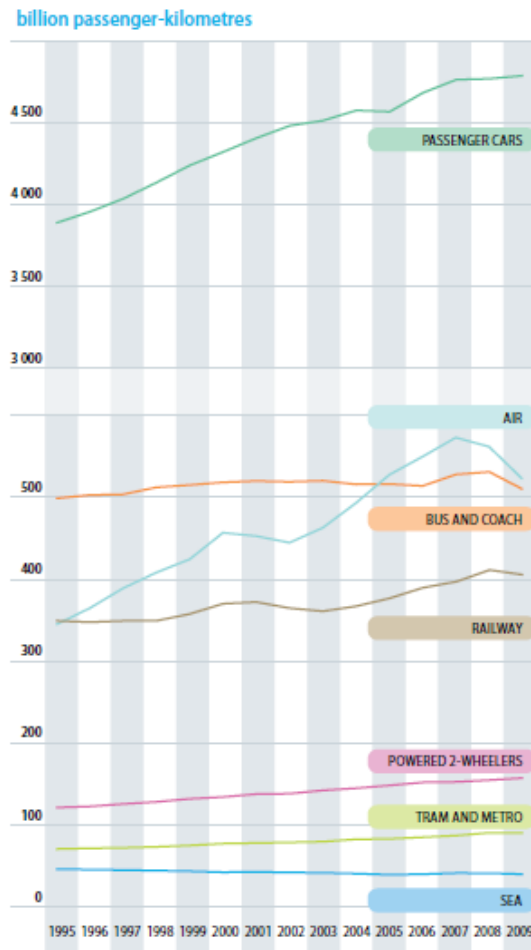


Modal split of intra-EU27 passenger transport in 2008

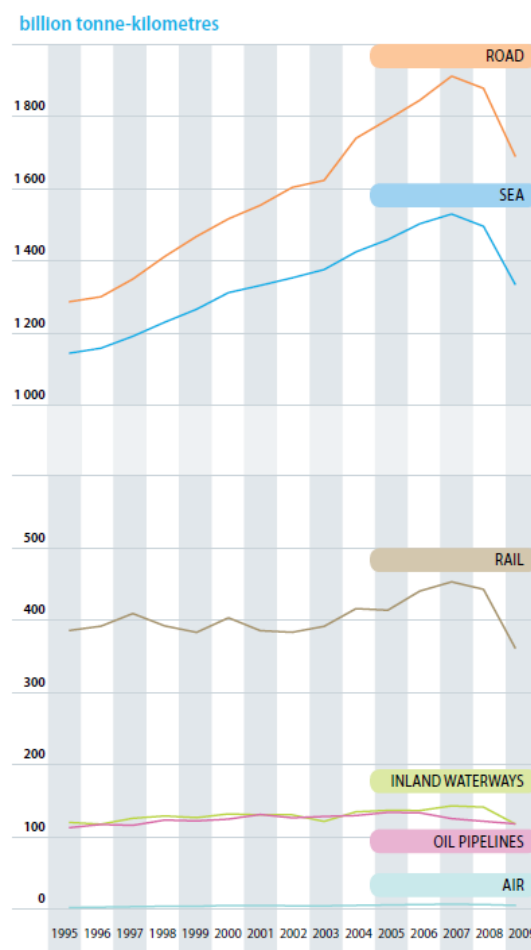


Source: EC 2011.

**EU-27 Performance by Mode
for Passenger Transport – 1995-2009**



**EU-27 Performance by Mode
for Freight Transport – 1995-2009**



21

Source: EU Transport Statistical Pocketbook

http://ec.europa.eu/transport/publications/statistics/pocketbook-2011_en.htm

The International Transport Forum's Transport Outlook (ITF 2012c) acknowledges the difficulties of meeting climate change policy goals of the kind set out in the White Paper, as the following extract describes. *Maintaining mobility levels (more or less) but producing them in a considerably less car-reliant manner and with predominantly low carbon technologies is a massive challenge. It means entering uncharted territory in the sense of the structure of the production of mobility and in the sense of switching to a different energy basis for the system at large. ... The mobility aspirations of individuals and households are not broadly aligned with the requirements of the vision. Broadly, car ownership and use remains a household priority when it becomes affordable. Pricing policies have real but somewhat limited potential. Transport demand declines when prices rise, but the response is relatively small and is likely to become smaller as incomes grow. This adds to the appeal of taxes on light-duty vehicles for raising public revenue but reduces the effectiveness of charges for steering behaviour. The point is not that taxes have no effect on mobility choices (they do) but that obtaining large change through this channel will require drastic policies. There most definitely is scope for steering mobility choices through prices and taxes, especially to increase energy efficiency and to reduce congestion.*

These changes are in many cases desirable but it is not likely that they will lead to structural change in broad mobility patterns or to considerably slower growth in mobility volumes. Even the traditional policy model of public support for mass transit and rail systems has had only limited success in curbing the demand for car-based mobility. Pushing this approach further will require accompanying policies’. Such policies include strong land-use planning controls and measures to limit car use in cities, probably as comprehensive as the measures developed in Singapore and including limiting the number of cars in circulation.

6. CONCLUSION

Efficient coordination of transport, to ensure the right mode is used for the right task, depends on establishing an integrated transport policy. John Preston in a companion paper (Preston 2012) sets out a hierarchy of key areas for integration as follows:

1. integration of public transport information.
2. physical integration of public transport services.
3. integration of public transport fares and ticketing.
4. integration of infrastructure provision, management and pricing for public and private transport.
5. integration of passenger and freight transport.
6. integration of (transport) authorities.
7. integration between transport measures and land use planning policies.
8. integration between general transport policies and the transport policies of the education, healthcare and social services sectors.
9. integration between transport policies and policies for the environment and for socio-economic development.

Whilst all of these aspects are important, this paper has focussed on the three central issues: management and pricing of transport infrastructure; integration of transport authorities; and integration between transport measures and land use planning policies. In Europe and *a fortiori* in rapidly developing countries intervention to ensure adequate coordination has to be carefully crafted as transport markets are de-regulated, opened to competition and opened to private investment. Competition and private investment can make coordination more difficult, but where current policies do not deliver favourable outcomes this is no reason for delaying reforms essential to ensuring that transport system facilitates economic growth rather than constraining it.

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