MEETING DEMAND FOR SUSTAINABLE TRANSPORT AND TRANSPORT INFRASTRUCTURE IN THE ENLARGED EUROPEAN UNION

Final Study

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EXECUTIVE SUMMARY

The common transport policy (CTP) is one of the two common policies that were explicitly referred to in the Treaty of Rome, the other being the common agricultural policy. The Commission began to exercise its power and its duty to present proposals in the domain of transport in 1962, and from the early eighties Parliament began to take initiatives, the main purpose of which was to support the development of a transport infrastructure. The Council, on the other hand, was reticent and divided, and perhaps its reticence stemmed from its division. In 1985, Parliament obtained a judgment from the European Court of Justice against the Council for its failure to act; the judgment was followed by an end to the stalemate in the formulation of the common transport policy.

The powers of Parliament in this domain were considerably increased by the Treaties of Maastricht (cooperation) and then Amsterdam (codecision). The Commission has continued to exercise its power and duty to present proposals by broadening and refining the substance of the CTP, which is essentially about opening up the internal transport market and enhancing the European transport infrastructure, pursuing these aims by means of various implementing instruments – besides regulatory measures, there have been user-charging provisions and measures designed to promote technological developments. The Council, by contrast, has been riven by fundamental differences between those Member States which attach priority to liberalisation, believing it will lead to harmonisation, and those which put harmonisation first, regarding it as the prerequisite of liberalisation, and by national interests (peripheral countries/central countries, countries with major transport gateways, especially seaports, countries with special transit problems, such as Alpine transit, countries with preferential access to sources of finance, such as the Cohesion Fund, which could face competition for these resources as the enlargement process develops, etc.).

The debate on the CTP has been rekindled in recent years by the prospect of the accession to the European Union of Central and Eastern European countries, the Baltic States, Cyprus and Malta, which has created a new political and technological situation. Enlargement is a major challenge, since the ways in which mobility develops in those countries will play a key role in the establishment of sustainable transport systems in Europe. The process of eastward enlargement will shift the main transport axis to an east-west alignment, whereas present-day traffic flows predominantly up and down the north-south routes. Moreover, at the start of the nineties, the countries of Central and Eastern Europe had a very specific transport structure in which rail played a major part, despite the mediocre rail infrastructure and services. The opening to the outside world was marked, against a background of severe contraction of economic activity, by a drastic fall in the use of rail transport – albeit less drastic in the case of transport within Central and Eastern Europe – and a huge rise in the relative volume of road transport, accompanied by a significant increase in the size of the vehicle pool and by developments in the organisation of haulage companies. The cooperation process in the Mediterranean region is less advanced but is nevertheless developing.

The creation of the single market and economic growth have palpably fuelled the rise in demand for freight transport over the past decade or two. Europeans are also travelling more and more as their disposable income has increased, different lifestyles have developed and people have exercised their new-found freedom of movement, with all its inherent symbolism. Mobility is growing at a rate of 2% per annum in the realm of passenger transport and 3% for freight transport in Eastern Europe. Provided that the growth in the volume of transport remains in step with economic growth, demand should have risen by some 20% for passenger transport and 40% for freight by the year 2010. Safety problems and congestion, as well as pressure on the environment, are increasing significantly, and the sustainability of the transport system is in doubt, especially in the light of the commitments made in Kyoto on the reduction of greenhouse-gas emissions. The enlargement process will considerably exacerbate these problems as the territory of the European Union is increased by 33% (i.e. by 1.07 million square kilometres) and its population by 28%, or 105 million inhabitants; the greater distances to be covered and the growth in the volume of trade are liable to change the transport patterns on which the current transport systems in the EU are based.

Transport therefore seems to be both a necessary condition for the operation of modern economies as well as one of the main demands made by society. At the same time, however, that selfsame public opinion is less and less
prepared to accept the consequences of transport development, both for general reasons – which are quite often more emotional than objective – and for personal reasons (yes to a railway station near my home, but no to a railway line at the bottom of my garden - the ‘not in my backyard’ (‘NIMBY’) syndrome). Moreover, freedom of movement is one of the fundamental principles enshrined in the EC Treaty and one of the cornerstones of a market economy, which considerably restricts the range of available regulatory instruments, especially since the Community must endeavour to remain competitive in a globalised economy. Lastly, transport policies are determined not only by the Member States and, subject to the constraints of subsidiarity, by the Community but also by regional and local authorities; the policies of these various tiers of government are far from forming a coherent whole; indeed, such coherence can only be achieved on the basis of a reasonable consensus regarding the main aims of transport policy.

It cannot be denied that this consensus seems to exist on the ‘politically correct’ side of the debate, where it is agreed that the infrastructure needs to be modernised, that better use must be made of the existing infrastructure, that more efficient and fairer pricing is required, that the balance between the various modes of transport should be shifted in favour of those that are regarded as more environment-friendly, that intermodal services should be developed, that the environment should be respected and that new technological developments should be exploited to the full. However, the apparent largely uniform nature of this thesis conceals what are probably quite wide substantive disparities, making the consensus no more than a facade built of words to which different parties assign significantly different meanings. The railway package offers a graphic illustration of this state of affairs if we consider the semantic variations to which the terms ‘freight’ and ‘freeways’ are subject in the context of the trans-European rail-freight network.

The aforementioned consensus can only be established by means of a debate based on reliable and objective information, a debate in which the representatives of the people and the mouthpieces of public opinion are closely involved. It is imperative that transport policy should be open to scrutiny so that the public identify with its aims and so that it is driven by the popular will. The need to give the legislative authority instruments with which to exercise its powers prompts us to recommend that a periodic report be produced on the CTP and that greater importance be attached to the Transport and Environment Reporting Mechanism (TERM) process by means of discussion in Parliament and within the Council, similar to the monitoring procedure for the broad economic policy guidelines and for the economic stability and convergence programmes. This openness to public scrutiny, along with greater consideration of the needs of users and the aspirations of the general public, would certainly be promoted by the establishment of committees on which the various interested parties were represented; the influence of such committees would be strengthened if they reported to Parliament. The same transparency and independence must be encouraged in the realms of safety and regulation, probably by the creation of autonomous authorities. The development of research into methods of strategic assessment and the broad publicising of selection criteria, as practised in some Member States, can also be used to foster transparency. Unification of the methods employed in economic and social analysis would be difficult and undoubtedly artificial. On the other hand, reasonable convergence of these methods and openness regarding the indicators used to assess the various values, such as time or safety levels, seem to be prerequisites of a constructive dialogue at the Community level.

Sustainable mobility is a major challenge, but it should be borne in mind that the concept of sustainability must not be governed by either narrow Malthusian principles or an irresponsible laissez-faire approach (Brundtland report). First of all, transport is not an end in itself but a means of economic development, an instrument of social cohesion and an expression of individual freedom. This is even truer of the transport infrastructure, which itself is no more than a platform for the provision of transport services in response to economic and social demand. The construction of new infrastructure must therefore be confined to absolutely essential projects, foremost political priority being accorded to the improvement and optimisation of the way in which the existing infrastructure is managed, with a view not only to exploiting the opportunities offered by new technology but also to maximising the efficiency of operators in meeting the demand of users, who are the justification for the services that operators provide. The idea of using the spare capacity that already exists in some modes of transport is totally consistent with this approach; it cannot work, however, unless potential bottlenecks are overcome and, above all, unless the operators of these modes of transport, which have been in gradual decline since the thirties, are capable of satisfying the demand for their services. The aim to be pursued is that of
sustainable mobility, not the defence of any particular modes of transport; to that end, it will be necessary to take account of the entire transport chain, which is itself part of the logistics chain, in order to guarantee the performance of the whole chain, not just its individual links. Comparing the performance of a goods train or a train of river barges with that of a road-haulage vehicle is meaningless except in the limited number of cases in which such a choice exists. Only if the whole chain is considered objectively in the light of demand can the spiral of decline of rail and waterway and maritime transport be reversed. Consideration of the logistics chain and, in more general terms, of the production system is equally indispensable, for the movement of goods in a process based on the just-in-time principle, the expansion of distribution and supply areas and the specialisation of production units mean that paramount importance attaches to regularity, monitoring and responsiveness as well as resulting in frequent small consignments; the quality of the service that operators provide thus assumes prime importance.

Consideration of the logistics chain in its entirety also implies questioning what is often regarded as a basic postulate, namely the irreversible nature of growth in the volume of transport or, at the very least, the importance of such growth; subject to the proviso that the competitiveness of the EC economy must not be diminished, it seems to be imperative to envisage the possibility that the production process could develop in such a way that the demand for transport will be reduced and that it will become easier to use less responsive modes of transport than air or road transport, although this would obviously not absolve the operators of these other modes from the requirement to increase the efficiency of their services in line with demand. Similarly, there is a need to pay greater heed to the spatial development of Community territory and to reflect upon the present concentration of gateways in terms of seaports and airports. A less concentrated gateway structure and a diversification of their feeder channels (feeding of seaports by river and canal, mass handling, possibly accompanied by the creation of ‘dry links’, such as the one between the ‘northern arc’ and the port of Gioia Tauro in Calabria).

The use of regulation as an instrument of transport policy must be maintained; pricing is a valuable complementary mechanism. Nevertheless, a number of restrictions must be borne in mind: (i) price is only one of a number of factors that determine a user’s choice between modes of transport; (ii) there are no reliable databases that could be used to demonstrate the underpricing of particular modes of transport; (iii) the acceptability of the scale of charges implies that users perceive the link between the price they pay (excluding tax) and the utilisation of the revenue from such user charges; in other words, external services must be charged at a rate which will yield enough revenue to repair any damage they cause, and any cross-subsidisation between modes of transport, for example in an urban setting or a sensitive natural environment, must be kept within justifiable limits; any excessive use of cross-subsidisation leads to taxation, which is less readily accepted by the general public and which normally involves transfers into and out of the general budget; (iv) reconciling the proclaimed desire that prices should be a true reflection of real cost with the principle of free-market pricing is quite clearly a formidable task.

Transport policy is funded through a number of different channels at the present time; the trans-European networks budget, created as the result of a European Parliament initiative in 1982, is far from being the main source of funding. Three main objectives appear to be identifiable: (i) establishing a trans-European transport network (TEN-T), i.e. guaranteeing transit through the heart of Europe and linking peripheral areas with the centre, which should be funded from the TEN-T budget; (ii) guaranteeing radial services to non-central areas, which should be financed from the structural funds; (iii) enabling the less-developed States to catch up with the others, which is the purpose of the cohesion fund and the structural pre-accession instrument (ISPA), as well as the PHARE programme when it comes to supporting the institutional structure of the Central and Eastern European countries, an essential requirement in the effort to reverse the decline of the railways in those countries. The present confusion in the use of the various financial instruments complicates matters and creates tension in negotiations on the appropriations to be allocated to each instrument. As far as funding is concerned, recourse to public-private partnerships (PPPs) is an option that should not be overlooked; it must be remembered, however, that applications have been fairly limited and that public support is generally required; such support is difficult to reconcile with the available funds, the maximum percentage that the Community is allowed to contribute to trans-European network projects and the rules that govern the awarding of contracts. By contrast, PPPs are often a very effective instrument for innovation and for the facilitation of project management.
Because of the very high cost and long-term impact of transport provision and in particular of transport infrastructure, a strategic approach to transport planning must be adopted, an approach that allows for assessment of the potential impact of innovations within each mode of transport. Innovations can reduce the environmental impact of transport, for example by reducing emission or noise levels, improve its quality in terms of speed, comfort, etc., and make it safer. Moreover, by making competition keener, they can create new potential for particular modes of transport, thereby altering the balance between the various modes.

Road transport appears to be adapted to the needs of the present production system: production to order, low-density coverage and consignments requiring less than the full capacity of a road lorry and even less of the capacity of a railway truck. The private car has also reigned supreme in the domain of passenger transport for several decades. On the other hand, the many disadvantages associated with excessive reliance on road transport have generated a growing demand from politicians and the general public for a reduction in the relative volume of people and goods transported by road. Be that as it may, the vast majority of logistics experts consider it inevitable that road haulage will continue to dominate the freight market for decades to come, by reason of its intrinsic advantages. The real challenge is to improve the efficiency of road transport and to minimise its disadvantages.

Rail transport could play a more important part in international freight transport, given the growth in trade within the Community and the spare rail capacity that exists. This potential is further enhanced by the prospect of enlargement. In the sphere of passenger transport, road congestion and major innovations in the rail system, such as high-speed trains, are helping to reinstate rail transport as a viable alternative to road and air, particularly in certain lucrative segments of the market, namely suburban services, inter-city transport and high-speed interregional and international services. The competitiveness of rail as a means of passenger transport depends on the development of services designed to improve the quality of transport provision and to promote intermodal integration. The railways in general are performing less well in the domain of freight transport than in that of passenger transport; it must certainly be stressed that intermodal integration presupposes the provision of a level of service which meets the needs of users. Compared with road haulage, rail has a disadvantage in terms of flexibility in the sense that it cannot respond so effectively to fluctuations in demand as well as being slower and less reliable, which are cardinal sins in the eyes of merchants who operate in accordance with the ‘just in time’ principle. Nevertheless, the long-distance international freight market offers considerable potential for rail operators, especially in particular segments such as full trainload consignments, combined transport and freight freeways.

Waterway transport offers considerable capacity for the movement of goods and is economical over long distances. From a logistical point of view, the two drawbacks of waterway transport are the necessary massification of consignments and the slow speed of travel; its main trump card is punctuality, which road haulage is sometimes hard put to emulate in congested areas. Since traffic is growing at a faster rate than the size of the waterway network, great benefit would be derived from the development of links between catchment areas, such as the reopening of the Danube link.

Air transport is flourishing at the present time. The economic importance of this mode of transport is growing. Some basic sectors of the economy, such as tourism, are largely dependent on air transport. However, there are technical limits to the growth in demand for air transport. The main problem is how to provide more capacity. Improvements in air-traffic control capabilities, the construction of new high-capacity airports outside urbanised areas and the development of rail-air integration, from which both modes of transport would eventually benefit, can contribute to more efficient use of airspace.
Maritime transport is the reference mode for international exchanges of goods. Economic globalisation and the prospect of Maltese and Cypriot accession to the European Union are likely to lend greater weight to maritime transport. Moreover, the huge capacity of cargo ships, the geographical shape of Europe and the availability of extensive port facilities make it equally desirable to strengthen the role of marine transport in intra-continental trade. Maritime transport has been making significant technological and economic progress, especially through the development of containerised transport: the introduction of ever larger ocean-going vessels, of fast container ships and high-speed (40-knot) passenger ferries. Coastal shipping in Europe and feeder services can supplant road haulage for very large freight consignments and absorb some of the increase in demand. This development will serve to encourage better use of the potential of the many ports that are dotted along the coasts of the European Union. Feeder services, operated by the shipping lines, will develop easily in view of the rapid growth in the size of ocean-going vessels and the need to reduce the number of their ports of call in order to minimise costs. The same will not necessarily apply to coastal shipping, which involves a more complex intermodal transport chain and represents a break with the traditional model in which the shippers call the tune. Lastly, the development of coastal shipping requires coordination between the various links in the intermodal chain; it requires the provision of complete door-to-door services, rather than port-to-port services that are entirely under the control of the shipper.

The development of a European global navigation-satellite system (GNNS) for civil use - the Galileo system – will be a means of considerably enhancing the safety and efficiency of all modes of transport and of optimising traffic flow, thanks to the numerous applications offered by the system. One very interesting application would serve to eliminate all the formalities associated with toll collection, which could make it easier to implement user-charging policies. The information provided by GNNS systems will allow better control of the logistics chain (tracking and tracing) by tangibly promoting the development of intermodal systems.

Intermodal selection, whereby planners seek to identify the most suitable mode for each segment of the transport market, is one of the keys to the more effective use of the various transport systems and hence to the achievement of sustainable mobility. Similarly, within each mode of transport - especially air, maritime and road transport – it is best to choose the most suitable vehicle for a given task; this intramodal selection has to be taken into account along with intermodal selection. In actual fact, the measures taken to optimise the transport chain are largely similar, whether they involve a choice of mode or a choice of vehicle within a particular mode; these measures include the monitoring of freight consignments and vehicles and of transfer points and the harmonisation of loading units.
OPTIONS BRIEF

The achievement of sustainable mobility in the enlarged European Union poses numerous complex challenges. The present study identifies various types of action that could be taken to improve the effectiveness of the common transport policy:

- There could be more extensive coordination between the policies and plans that are formulated at the various levels of government (regional, national and Community level) and by other organisations, such as the United Nations Economic Commission for Europe (UNECE), which sponsored the European Agreement on Main International Traffic Arteries (AGR Agreement), the Trans-European North-South Motorway (TEM) project, etc. The purpose of such coordination would be to improve the coherence of the policy and planning structure and to maximise the effectiveness of Community support.

- Systematic use could be made of Community support (TEN, ISPA, Cohesion Fund, etc.) as a lever to encourage the coordinated involvement of the Member States’ and applicant countries’ governments and of the private sector.

- The criteria governing the selection and implementation of projects could be more clearly defined (expected level of demand, expected completion dates, contribution to the improvement of environmental safety and of the territorial balance, etc.). A well-defined framework is essential; consideration of national advantages alone may exclude projects offering socioeconomic benefits on a wider scale.

- Clear data should be available as a basis for sensitive selection and planning, as a means of improving transparency at every decision-making level and as the starting point for a democratic debate on the CTP (reports presented to the European Parliament, consultation procedures, etc.). Reliable databases could be created on the following subjects:
  - the environmental performance of each mode of transport, considered in terms of the whole logistics chain rather than of individual links,
  - benchmarking of each mode of transport on the basis of customer demand, i.e. production of a demand-based rather than a technically orientated performance indicator,
  - the demand situation (cf. SIMPT, the Italian information system for transport planning and monitoring), and
  - the capacity of each mode of transport and of every vehicle type within each mode to respond to this demand, given the inherent characteristics of each mode and vehicle type.

- Efforts could be made to give a common dimension to strategic assessment; the common standards should then be applied as far as possible in network-based assessments. For example, the manner in which bottlenecks are relieved should be described in the context of the network.

- Greater account could be taken of environmental considerations; the instrument of strategic environmental assessment (SEA) should be used at every stage in the planning process, and care should be taken to avoid the practice of using SEAs to defend previous decisions instead of using them to assess available options.

- The complementary nature of the various support instruments could be exploited in order to maximise the degree of cross-fertilisation between policies (TEN, cohesion, regional development, ISPA, etc.), so that the best possible use is made of Community contributions. Planning instruments should be refocused on the planning objective and should not be adulterated by reference to the provisions of financial regulations, such as Article 3 of the Regulation establishing a Cohesion Fund, which leads to an escalating plethora of cross-references. At the same time, it is essential to guarantee an efficient interface between planning and programming. A distinction should be made between two types of transport project:
  - transit and radial links (TEN-T budget), and
  - local services ensuring full coverage of EU territory (the structural funds in the wider sense, i.e. the European Regional Development Fund (ERDF), the Cohesion Fund, ISPA, etc.).
• The following action could be incorporated into the revision of the TEN-T:
  - more attention could be devoted to network management;
  - full consideration could be given to single-mode as well as intermodal transfer points;
  - efforts could be made to focus the TEN-T on links that would benefit the Community as a whole (transit routes and radial links between the periphery and the centre);
  - the people of the Union could be given a sense of ownership of the TEN-T by means of identification signs, which would have to be coordinated with the signposting of national trunk roads and the Euro roads established by the AGR;
  - account could be taken not only of the opening of links with Central and Eastern Europe but also of closer links with the Mediterranean region.

• Efforts in the domain of transport infrastructure could be intensified as a means of coping with the growth in demand and of reducing interoperability problems in the Member States and applicant countries (the European road-traffic management system (ERTMS), improvement of the traffic-bearing capacity of European roadways, etc.) as well as a means of promoting the intermodal approach.

• Consideration could be given to the areas covered by each of the available instruments (regulation, user charging, etc.) with a view to determining the most effective ‘package’. It would be wise not to overestimate the effect of charging on users’ choice of transport and to ensure that charges remain within the bounds of acceptability, particularly by preserving the linkage between price levels on the one hand and service quality and/or indemnification of damage caused to the environment by the chargeable transport. ‘Shadow tolls’ (paying the private sector to build new infrastructural facilities) could be used in areas where such investments are less viable.

• The efficiency of the transport infrastructure and of transport services could be improved by means of closer cooperation between infrastructure providers (such as the trans-European rail freight freeway (TERFF), which operates as a one-stop shop) and between service operators in domains such as rail transport and intermodal services, as well as through the application of new information and communications technology and other new technical developments in response to the needs of customers and transport providers (vehicle monitoring, more efficient management of transfer points within and between the various modes of transport, etc.).

• The efficiency of intermodal transport services could be improved by means of greater investment in transshipment points such as ports and terminals. The support framework for multimodal initiatives could be broadened. The systematic development of pilot actions for combined transport (PACTs) in the applicant countries could help to maintain a fairer balance between the demand for road transport and the demand for other modes of transport.

• Special attention could be devoted to the need for a more demand-led approach by operators to the provision of services. This could serve the following purposes:
  - reverse the decline which some modes of transport have been undergoing since the 1930s, despite numerous attempts to prop them up, and
  - avoid, as far as possible, the need to build new infrastructural facilities by using mechanisms such as traffic, freight and fleet management to make the best possible use of the present infrastructure.

• A strategic approach could be adopted in the following areas:
  - the logistics chain and the production system (particularly by means of a ‘just in time’ supply system),
  - land-use planning within the Community, especially as regards the ‘gateways’ to Community territory, and
- the trans-European networks, with special consideration of the existence of the large single market and of regional cross-border traffic, as distinct from transit traffic.

This strategic perspective should make it possible to envisage sensitive developments, including those that might curb mobility, but these developments must be realistic; in particular, they must take account of national interests and of the need to keep the Community competitive in a globalised economy.

- In the domain of maritime transport, measures could be taken to promote the harmonisation of national policies in order to create a level playing field. A systematic effort could be undertaken to establish strong common positions which would lend greater weight to the Community Member States and institutions in international negotiations. The potential offered by coastal and combined sea/waterway transport could be effectively exploited in the Mediterranean and the Baltic as well as on the Atlantic seaboard.

- The impetus generated by the accession process could be exploited with a view to ensuring that the applicant States align themselves as closely as possible with the body of Community law and practice (the *acquis communautaire*), especially as regards social legislation (to prevent social dumping), the opening of markets and transport quality and safety, in order to improve the efficiency of the various modes of transport and to achieve the best possible intermodal balance.
INTRODUCTION

The development of the demand for transport and the forthcoming enlargement of the European Union make it necessary to update national transport policies and the principles of Community transport policy. In a context of rapid growth in demand, the environmental sustainability of transport operations must be regarded as a primary objective whenever choices have to be made. Moreover, the level of integration and the competitiveness of the enlarged European Union will depend heavily on the efficiency of its transport system.

The present study, which the European Parliament Committee on Regional Policy, Transport and Tourism asked the STOA unit to produce, is designed to provide an assessment framework which, proceeding from an enumeration of the individual problems that impede environmental, economic and social sustainability and of any inconsistencies that may exist between the various transport policies, will be able to help the European Parliament in its efforts to update the common transport policy. The project, which does not directly address the matter of urban transport, is intended to provide inputs for the revision of the guidelines governing the system of trans-European transport networks and, in more general terms, to help decision-makers to support activities to be carried out in the EU framework for the purpose of increasing the degree of harmonisation, efficiency and sustainability of transport policies in Europe.

The aim of the first part of the study is to present the principles that have been established at the EU level and the main political and technological aims which are currently the subject of debate among experts and decision-makers. The first section of this part (section A.1) is introductory in character; it summarises the development of the political and legislative framework of the European Union in the realm of transport with a view to presenting the debate from a historical perspective and putting it in its proper context. Section A.2 contains the nucleus of the study; its aims are to review the main subjects of debate, with special consideration of the prospect of enlargement, which is shifting the debate onto new ground, and to highlight the close link that exists between political options and technological developments, which will be examined transversely throughout the study. Transport planning, especially as it relates to the transport infrastructure, because of the high cost and long-term impact of the latter, must be undertaken from a strategic perspective within which the potential impact of technological innovations in each mode of transport can be assessed. The technical solutions that are identified in this way could in fact create new opportunities for certain modes of transport and increase their relative importance within the transport system as a whole.

These topics are dealt with in greater depth in the second part, which is more analytical in character and is designed to assess in more detail the implications of the various political and technological options for the development of transport in Europe in the light of the impending enlargement of the EU. This part of the study begins with an analysis of demand for transport, taking account of the anticipated impact of enlargement, and goes on to review the political challenges faced by the Member States and applicant countries in the sphere of transport and to sketch out the foundations of a strategy for the transition from the national scale to the European scale. The study concludes with an analysis (section B.2) of the development prospects for each mode of transport as well as for the intermodal approach, which is one of the keys to the creation of sustainable transport models in Europe. In this section of the study we try to identify the specific advantages of the various modes of transport - particularly in relation to technological development – which have to be taken into account when it comes to redefining the CTP and to indicate how these advantages can define the future role of each mode of transport within a sustainable European transport system.
Part A  The present state of the common transport policy

A.1  The political and legislative framework in the European Union

A.1.1  Development of the common transport policy

The principle of the free movement of persons and goods was one of the foundation stones of the Common Market when it was created in 1957; the Treaty of Rome established only two areas of common policy, one of which was transport. In fact, this aim and the right to provide transport services in other Member States of the Community were generally limited by a whole series of technical obstacles, prohibitions and formalities (technical inspection of vehicles, customs duties, etc.) which dictated the establishment of a proper common transport policy (CTP). Exercising its power and its duty to initiate legislation, the European Commission presented an action programme for transport in 1962 and followed this up with Communications on transport policy in 1973 and 1983. The inertia of the Council prompted the European Parliament to bring an action before the European Court of Justice, which delivered a judgment in 1985 ordering the Council to fulfil its obligations. This judgment ended the stalemate, and Community legislation was gradually put in place, the essential purpose of which was to eliminate the obstacles at national borders through a policy of harmonisation and liberalisation, in order to guarantee the free movement of persons and goods between member countries and to achieve the aim of a common market.

It became apparent, however, that the implementation of regulatory measures designed to open up the transport market was not sufficient in itself to create an efficient European transport system, to guarantee freedom of movement and to achieve the goal of cohesion. In fact, it became evident that there was a need to create and connect nationally planned physical infrastructures, to lend a European dimension to the transport networks, to link the peripheral parts of the European Union with its central areas and thus to hasten the completion of the single market; these requirements dictated the establishment, alongside the regulatory policy, of a Community infrastructure policy.

The European Parliament had shown the way in 1982, when it introduced into the Community budget a new appropriation for infrastructural support. In December 1990 the Commission presented a Communication entitled Towards trans-European networks, and the Maastricht Treaty then incorporated into the Treaty Establishing the European Community a Title XII on trans-European networks. On the entry into force of the Treaty of Amsterdam, the European Parliament’s right of codecision was extended into the realm of transport legislation, which significantly strengthened the role of the European Parliament in the definition of the common transport policy.

A.1.2  The main thrust of current policy

On the basis of these developments, the principles of a new CTP began to take shape in the late eighties. The new policy adopted a broader perspective, in which the various social, environmental and other issues related to transport policy were taken into account in a global approach with a view to achieving sustainable mobility. This approach served as the basis for the definition of the main pillars of today’s CTP. First of all, the need to create the missing links in the chain brought forth the trans-European transport networks, the purpose of which was to connect the regions of the European Union with each other, to bind the existing networks into a system of supranational planning. The pursuit of this approach implies that the problems affecting each mode of transport should no longer be treated in isolation but in accordance with a rationale of complementarity. The intermodal approach and the concept of integrated transport systems began to play a greater part in the definition of transport policies, as did the idea of establishing a level playing field on which all modes of

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1 The judgment delivered by the Court in 1985 was a key element in the development of the CTP; the Court required the Council to take action with a view to ensuring that freedom to provide international transport services was guaranteed and that non-resident transporters were able to ply their trade in the territory of any other Member State (cabotage). European Court Reports 1985, pages 1513 et seq.

transport could compete on equal terms; this generated the debate on the assignment of costs. The definition of **efficient and equitable user-charging**, designed to ensure that users pay the real cost arising from their transport operations, has thus become fundamental to the functioning of the single market as well as a key to the establishment of a fairer balance between the various modes of transport. The other objectives of the CTP are to protect the environment, to guarantee the safety of people and property, to strengthen economic and social cohesion, to strengthen the single market and to enhance the competitiveness of the European Union.

### A.1.3 The trans-European transport network

The creation of trans-European transport network (TEN-T) quickly became a key component of the CTP, thanks to the broad political consensus that developed around the TEN-T idea in the early nineties. The Maastricht Treaty provided a proper legal basis for the TEN-T; by affirming that the Community may promote ‘the interconnection and interoperability of national networks as well as access to such networks’, it enables the Community to support the financial efforts of the Member States\(^3\) (see subsection A.1.5 below). The TEN-T is also a major component of the growth and employment strategy, as set out in the White Paper of 1993 on growth, competitiveness and employment, and an essential addition to the single market. The impetus generated by this initiative led to the identification of 14 priority transport-infrastructure projects at the Essen meeting of the European Council in December 1994 (see the map at Annex A-1).

The concept of the TEN-T was further developed in 1996 with the adoption of the *Community guidelines for the development of the trans-European networks*,\(^4\) which defines the aims and priorities of the TEN-T. All infrastructure which meets the specified criteria is included in the TEN-T and is deemed to be an asset of common interest. Maps accompanying the present report identify all the links which constitute the trans-European transport networks and which are eligible for financial support from the European Union, subject to the conditions laid down in the financial regulation governing the TEN-T.\(^5\) Parallel to the creation of new infrastructure, interest is also focused on the restructuring of the existing network to promote interoperability and the best possible use of available capacities. Congestion problems can be solved by means of better traffic management, especially through the development of **intelligent transport systems** (ITS) and their incorporation into the TEN-T. At the present time, the trans-European transport network covers 70 000 kilometres of road and rail links, 20 000 km of inland waterways and 300 airports; the seaports have just been integrated into the system (see Annex A-20). The aim of these networks is the creation by the year 2010 of an integrated transport network within the EU (see the maps at Annexes A-2 to A-6).

Since the adoption of the Decision in 1996, more than 5 000 km of road network have been built and several railway lines have been opened. The transport system is becoming more efficient, and, as markets are opened to competition, prices are falling. The TEN-T concept, however, continues to develop; in accordance with the 1996 Decision, the European institutions and the national governments are currently at the stage of revising the guidelines. In this context, it is essential not only to take account of the benefits of new technology but also to address the challenges posed by the forthcoming enlargement of the European Union.

### A.1.4 EU transport policy in relation to the applicant countries

The debate on the CTP has been rekindled over the past few years by the prospect of integrating Central and Eastern European countries, the Baltic States, Cyprus and Malta into the European Union. Six countries, namely Poland, the Czech Republic, Hungary, Slovenia, Estonia and Cyprus, are already negotiating the terms of their accession to the Union. The prospect of enlargement has shifted the debate onto **new political and technical**

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\(^3\) Treaty Establishing the European Community, Title XV, Articles 154, 155 and 156 (formerly Title XII, Articles 129b, 129c and 129d).


ground. While consistency of the applicant countries’ transport policies with the Community guidelines is one of the criteria for assessing whether they are ready for EU membership, the extension of the networks must nevertheless be accompanied by a review of current EU policy in the light of the new situation.

The primary impact of enlargement on the transport network will be geographical. The territorial surface of the Union will increase by 33% (an addition of 1.07 square kilometres) and its population by 28% (105 million more inhabitants). The longer distances and the increase in trade is liable to change the pattern of transport operations in the EU. The establishment of efficient transport systems is one of the main conditions that have to be satisfied if the applicant countries are to be properly integrated into the Union. The transport infrastructure network that exists in those countries must therefore be systematically improved until it reaches the level required by the European Union. We shall encounter the same problems relating to bottlenecks, interoperability, intermodal coordination, etc., as have arisen in the present Union of 15 States.

All the institutions of the European Union take the view that transport policy represents a major challenge in the enlargement process. Alignment with the body of Community law and practice in the realm of transport and the development and connection of networks as a means of promoting projects of common interest and ensuring interoperability, as the EC Treaty requires, are key elements of the pre-accession stage. The prospect of integrating the Central and Eastern European countries, with the need to ensure that networks with little history of integration are developed in a coherent manner, means that it is more important than ever to develop the TEN-T in the framework of the common transport policy. The extension of the TEN-T to the applicant countries is regarded as one of the pillars of the enlargement strategy, since it is not only a means of establishing new links with those countries, strengthening cohesion between regions and successfully extending the single market but also one of the keys to sustainable development throughout the enlarged EU. This aim, which requires the establishment of close collaboration between the EU and the applicant countries during the pre-accession phase, is at the root of a number of initiatives.

A.1.4.1 The Europe Agreements

The European Union has concluded individual association agreements with the countries of Central and Eastern Europe and the Baltic States with a view to promoting the integration of the continent. The Agreements provide a legal framework for the accession process (for the structured dialogue between the specialised councils of the EU and the corresponding government ministers of the applicant countries), and their key component is the recapitulation of the acquis communautaire. The Europe Agreements have implications in terms of the transport policy to be implemented in the applicant countries and provide for the development of cooperation among the signatory States. In pursuit of that objective, the enhanced pre-accession strategy has been put into effect; the aim of the strategy is to pave the way for the restructuring of national standards and for their adaptation to those of the EU and to improve the conditions governing market access.

A.1.4.2 The pan-European transport corridors

With a view to developing a common infrastructure policy and on the basis of the groundwork undertaken at several pan-European conferences of Transport Ministers, the concept of pan-European corridors was developed. Within this framework, nine corridors were identified as priority elements of a common transport policy. At the Helsinki conference in June 1997, these nine corridors were extended, and the decision was also taken to create a tenth corridor as a link with the countries of the former Yugoslavia. The corridor concept has been supplemented by the definition of four pan-European transport areas (PETRAs), involving the harmonisation of procedures and the elimination of customs problems. The applicant countries undertook to give priority to these corridors, which represent the preliminary stage in the extension of the TEN-T. The idea of the corridors is derived directly from the substance and aims of the TEN-T, and their purpose is to improve the efficiency of transport operations between the various parts of the continent. Like the TEN-T, the corridors are multimodal in character.

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6 For more details on the Europe Agreements and on the national programmes for the adoption of the acquis communautaire (the body of established Community law and practice), see [http://europa.eu.int/comm/enlargement/index.htm](http://europa.eu.int/comm/enlargement/index.htm)
combining road and rail transport facilities with international airports and with the major seaports and inland ports and assigning a key role to the development of intelligent transport systems (see maps at Annexes A-7 and A-8).

A.1.4.3 The TINA initiative

With a view to assessing the infrastructural requirements in the applicant countries, the TINA initiative (Transport Infrastructure Needs Assessment) was launched in June 1997. The aim of the initiative is to supervise and coordinate the development of an integrated network in eleven applicant countries – the six which have now reached the negotiating stage plus Bulgaria, Latvia, Lithuania, Romania and Slovakia – and to prepare for the extension of the TEN-T by ensuring that the infrastructure projects in those countries are coordinated with those that are being implemented within the present European Union.

The purpose of this initiative is to generate cooperation in the realm of transport infrastructure by applying modern assessment methods, such as geographic information systems (GISs). In 1999, the TINA Group presented its final report, which outlined a backbone transport network for the eleven participating countries, an infrastructure network that was to be given priority status in transport plans and budgets. The maps accompanying the final report identify a total of 18 600 km of road links, 20 900 km of rail links, 40 airports, 20 seaports and 58 inland ports in eleven applicant countries which are to be brought up to Community standards by the year 2015 (see the maps at Annexes A-9 to A-16).

A.1.5 EU transport policy in relation to other partner countries

Beyond the enlargement framework, the European Union has also spent many years developing its cooperation in the sphere of transport with other partner countries. Foremost among these countries is Switzerland, which plays a special role in the domain of Alpine transit; in the year 2000, Switzerland concluded an indivisible package of seven agreements with the EU, which now await ratification. One of these agreements relates to road and rail transport. Switzerland is gradually permitting the use of its roads by 40-tonne goods vehicles. Haulage vehicles in transit, like national carriers, are required to pay the heavy-traffic levy (RPLP). Rail links will be further developed, particularly by means of the Gotthard Base Tunnel, and it will be possible for Switzerland and the EU Member States to coordinate the transfer of a large share of freight traffic from road to rail (traditional goods trains and piggyback transport).

The European Union has been engaging in cooperation with Russia and the other countries of the former Soviet Union, as well as with the countries of the former Yugoslavia and with Albania, through its technical-assistance programmes such as PHARE and TACIS. In 1991, the European Union signed a transit agreement with Yugoslavia, but the agreement was destined never to enter into force. In a similar but more comprehensive process, the EU has been seeking to conclude transport agreements with the new States that have emerged from the Yugoslav crisis and has already signed such agreements with Slovenia and the Former Yugoslav Republic of Macedonia (FYROM). Alongside free transit and legislative harmonisation, these agreements provide for cooperation on the development of a trans-European transport infrastructure. It is important that the efforts to conclude such agreements should be continued, particularly as a means of reintegrating the grey area that was created in the wake of the Yugoslav crisis. The future of transport in the region remains linked to the geopolitical developments that have resulted in major regional realignments. Countries such as Slovenia and Croatia on the one hand and Serbia on the other, part of the same political entity until the early nineties, now have virtually no economic and commercial ties. The crisis in the region has, for the time being, engulfed two of the Helsinki corridors, namely corridors 10 (Budapest-Belgrade-Skopje-Thessaloniki) and 7 (the River Danube corridor, potentially more important because of the Rhine-Danube link). If this situation persists, the result will be a realignment of traffic flow patterns, which will be conducive to the development of the Adriatic sea route and of the east-west axes situated to the north and south of Serbia.

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7 See also the TINA website: http://www.tinasecretariat.at/report.html
The purpose of the Euro-Mediterranean partnership is to intensify relations between the EU and its Mediterranean partners, and the partnership has important implications in the realm of transport. It defines objectives relating to the transport infrastructure (interconnection of national networks with a view to creating interoperable multimodal networks) and to the provision of transport services (more efficient and viable services provided within a common transport area in compliance with high social, environmental and safety standards). An initial step in this direction is the definition of transport corridors in the Mediterranean region (Corrimed). The European Union has financed studies designed to assess infrastructure needs on a regional basis, and the Retramed working group on transport research in the Mediterranean region has been created to promote cooperation with the Mediterranean countries in the transport sector.

A.1.6 Sources of funding

The development of the trans-European transport networks marks the transition from a CTP based on a regulatory approach to a broader view, which includes an infrastructure policy. This development, entailing a higher level of Community support, assigns an even more pivotal role to the budgetary choices that are made within the scope of the CTP. This in turn increases the importance of the CTP in the eyes of the European Parliament, since Parliament, together with the Council, is the budgetary authority of the European Union.

The investments required for the planning and development of the infrastructure defined in the TEN-T guidelines are very substantial; at the time of the Christophersen Group, they were estimated at €400 bn to €500 bn for the period up to 2010, including €110 bn for the 14 priority projects. As far as the applicant countries are concerned, the initial cost relates to the incorporation of established Community law and practice, most of which has to be completed prior to accession; the current alignment of the transport systems in many of the applicant countries requires extensive restructuring, beginning with the administrative machinery, and this will generate high costs, which are liable to rise even higher in the coming years. The bulk of these costs, however, will be incurred as a result of standardisation, especially the improvement of the road network to equip it for higher maximum axle weights, and the construction of new infrastructure. The cost of establishing the corridors should amount to somewhere around €25-30 bn, and it is estimated that expenditure on the TINA network will have reached €90-100 bn by the year 2015. A number of financial instruments are available to support these efforts:

- The TEN-T allocation in the Community budget, which owes its existence to a budgetary initiative taken by the European Parliament in 1982 and which amounted to €1.8 bn for the period from 1995 to 1999, has been increased to €5 bn for the period from 2000 to 2006.
- The European Regional Development Fund (ERDF) finances infrastructure projects outside the scope of the TEN-T in eligible regions; the infrastructure in question must be part of a general programme.
- The Guidance section of the European Agricultural Guidance and Guarantee Fund (EAGGF), the European Social Fund, etc., can provide modest amounts of support.
- The Cohesion Fund, which is the main source of Community funding for the eligible countries: half of the resources allocated to the Cohesion Fund (€18 bn between 2000 and 2006) are earmarked for transport infrastructure, especially the TEN-T.
- PHARE is now focused on institutional modernisation, which affects the transport sector, and on investment in sectors other than agriculture, the environment and transport. It has an annual budget of €1.56 bn.
- The structural pre-accession instrument (ISPA), the equivalent of the Cohesion Fund, is the main instrument for assisting applicant countries with the funding of transport and environment projects (€1.05 bn per annum from 2000 to 2006). In the realm of transport, priority is assigned to the following types of project: (1) projects tending to promote sustainable mobility, especially those

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8 The partner countries in the Mediterranean are those which took part, along with the EU and its Member States, in the Barcelona Conference, namely Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, the Palestinian Authority, Syria, Tunisia and Turkey.


which meet the criteria laid down in the TEN-T guidelines; (2) projects designed to achieve the objectives of agreements concluded with the EU, including the interconnection and interoperability of national networks with each other and with the TEN-T. Project selection takes place in the framework of a strategy report produced by each country; these reports give countries the opportunity to define their strategies and to highlight any views that diverge from those of the EU as well as various internal tensions in the applicant countries which derive both from electoral problems and from the difficulties experienced by the population when confronted with changes that are sometimes drastic. The projects to be implemented in the applicant countries will no longer be financed from the ISPA funds after those countries’ accession. Since the countries of Central and Eastern Europe will, in all probability, be fairly unstructured, they will have to satisfy certain conditions in order to qualify for support from the Cohesion Fund itself.

MEDA, the main financial instrument for the implementation of the Euro-Mediterranean partnership, also provides funding transport projects, especially in the form of technical assistance, within the framework of national and regional indicative programmes.

Other sources of funding play a key role in the development of the transport infrastructure, foremost among them being the European Investment Bank (EIB), which already devotes a high proportion of its loans to transport projects (48% in Central and Eastern Europe). Finance is also provided by other international financial institutions such as the European Bank for Reconstruction and Development (EBRD) and the World Bank as well as national institutions such as the Japanese Bank for International Cooperation (JBIC). There are also many other support initiatives in the realm of transport, such as the UNECE projects TEM (Trans-European North-South Motorway) and TER (Trans-European Railway) and the South Balkan Development Initiative (SBDI), which is financed by the United States and supports the development of the Albania-Macedonia-Bulgaria axis in the area corresponding to strategic corridor 8. Because of a certain degree of overlap between programmes, the European Community concluded a memorandum of understanding with the main international financial institutions in 1998 with a view to improving the coordination of the various financial instruments and defining the scope for cofinancing. It would nevertheless be useful to compile a detailed inventory of the funding programmes and to increase the amount of cooperative interaction and cross-pollination between them as well as to promote a higher level of input from the private sector; despite the great efforts that have been made, there will still be a need for private-sector investment (see subsection A.2.2.8 below).

Most of the Community funding comes from structural funds in the wider sense of the term. The general effect of enlargement on the structural funds will be dramatic. In a European Union of 27 members, more than a third of the population will live in countries where per capita GDP is lower than 90% of the EU average, as against a sixth of the population at present in the 15-member EU. The transition from 15 to 27 Member States will entail an increase in the surface area and population of the Union in the order of 30%, whereas its total GDP will rise by only 5%. Three groups of countries are likely to emerge: a group of 12 countries whose GDP exceeds 90% of the EU average, an intermediate group achieving about 80% of the average GDP, comprising Spain, Portugal and Greece as well as Cyprus, Malta, Slovenia and the Czech Republic. The average per capita GDP in the third and final group (Poland, the Baltic States, Hungary, Slovakia, Bulgaria and Romania), which accounts for 16% of the future EU population, will be about 40% of the average for the 27-member Union. There can be no denying that the redistribution which will have to be effected is bound to cause acute tension between Member States.

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12 The only one of these programmes with a visible public profile is the network of E-routes established by the European Agreement on Main International Traffic Arteries (AGR Agreement), concluded under the aegis of the UNECE; the route numbers are displayed on a green background on road signs.

A.2 The present debate on the future of transport in Europe

A.2.1 Sustainable mobility: a major issue

The demand for personal mobility seems to symbolise the ideal of freedom, as the recent fall of the Iron Curtain has illustrated. The satisfaction of this demand has been facilitated by rising standards of living and the increase in car ownership, which has now reached the same level in the countries of Central and Eastern Europe as that of the European Community in the 1970s (see Annex A-43). Economic growth, which will have to be sustained if the employment problems that still beset many Member States and applicant countries are to be overcome, the creation of a large market without frontiers and the development of the production process (production to order and ‘just in time’ supply, concentration and specialisation of production facilities, wider markets, etc.) have also generated an increase in demand for transport which is outstripping economic growth (see Annex A-26). Economic growth and the increase in the total volume of transport have been closely linked for decades; at the present time we are experiencing the severance of the link between the growth in GDP and the growth in demand for mobility. Moreover, the volume of transactions and the intermodal distribution pattern do not seem to be moving in a sustainable direction, especially in terms of environmental protection and public safety.

The way in which demand has developed (see also subsection B.1.1 below) has resulted in road transport gaining an increasing share of the market, absorbing at least the entire amount of growth in the volume of freight traffic. In the realm of passenger transport, increasing wealth has enhanced the popularity of private cars and fast links (travel by air and high-speed train). This trend has only started to manifest itself in the countries of Central and Eastern Europe; nevertheless, since the fall of the Berlin Wall, most of these countries have seen a collapse in the demand for rail transport, accompanied by rapid growth in the volume of road traffic (see the diagrams at Annexes A-44 and A-45). Enlargement will generate a further increase in the volume of traffic, which will sorely test those countries’ road networks as well as those of the EU.

There is a need to address this demand in order to guarantee freedom of movement, the functioning of the market and the competitiveness of the European economy; it is therefore becoming increasingly necessary to come up with effective solutions to the problems associated with the development of mobility, namely congestion, which costs the Member States €100 bn every year, the degradation of the environment and safety problems (40 000 deaths and 1 500 000 injuries every year on European roads, shipwreck fatalities, oil slicks, etc.). The action taken by the EU should include effective responses that will help to redress interregional imbalances and to achieve economic and social cohesion.

It is necessary to link all these issues together in order to move in the direction of sustainable development, which, according to the definition proposed by the World Commission on the Environment and Development (Brundtland Report - Our Common Future - 1987), consists in:

- satisfying the needs of the present without restricting the scope for future generations to satisfy their own needs, and
- marrying economic development with protection of the environment.

The concept of sustainability implies a form of long-term planning which can foster solidarity between generations. This concept is increasingly at the heart of the transport debate and relates not only to environmental concerns, as it must do under Article 6 of the EC Treaty, which specifies that environmental protection
requirements must be integrated into the definition and implementation of Community policies, but also to economic and social considerations, an aspect emphasised by the Council of Transport Ministers at its Luxembourg meeting in April 2001. Because of the importance of transport in our society and its impact on our lives, those who shape the common transport policy bear great responsibility. **Sustainable development is unthinkable without sustainable mobility**, which means offering each individual an efficient and reliable system of transport in which the benefit to the individual user is harmoniously linked to the good of society in general.

A.2.2 Priority tasks and available options

The achievement of sustainable mobility is therefore the main aim of the CTP, which must be designed to reconcile the need for mobility with the need to respect the environment, to promote safety and to exercise social responsibility. The path to be followed in pursuit of these objectives is the subject of the debate in which the European institutions, national governments, experts and all other interested parties are currently engaged. As far as the European institutions are concerned, there is generally a broad consensus on the main objectives between the Commission and the European Parliament, at least on the theoretical side. The position of the Council of Ministers and the European Council is sometimes more difficult to discern; the half-yearly rotation of the presidency makes it difficult to establish continuity of action, despite the troika system, and the Ecofin Council, for its part, is inclined to restrict its support to regulatory initiatives and even to water down measures designed to raise revenue from those who pollute the environment, instead of using the revenue to repair the damage. Moreover, the complexity of the subject matter sometimes makes the interinstitutional debate more difficult, since it is harder to take decisions in the absence of sufficient reliable data, as for example on the issue of user charges.

The issues that have been raised demonstrate the whole amplitude and complexity of the debate. The attention of the European institutions has lately been focused particularly on the definition of concepts that would serve to calculate costs more efficiently and precisely, to improve the safety of maritime transport and to promote a more commercial approach to rail transport. But the current revision of the TEN-T guidelines and the forthcoming publication of the Commission White Paper on the revision of the CTP, as well as the challenges posed by the enlargement of the EU, demand a globalisation of the debate; the various issues are all, in fact, closely interlinked, as the debates on infrastructure charging and intermodal transport have demonstrated. There can be no coherent approach without a joined-up action programme that is capable of exploiting the synergy between the various measures to be taken in the political and technological fields.

A.2.2.1 The development and optimised management of transport infrastructure

For some years now, as we have seen, infrastructure has been one of the main priorities of the CTP. It is an essential means of **coping with demand** and guaranteeing the balanced development of the whole territory of the European Union. A Community effort in this domain is made all the more justifiable by the fact that the share of GDP that the Member States devote to investment has generally declined over the last two decades (1% now, as

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17 For example, the rail package adopted by the Council of Transport Ministers at its meeting on 20 and 21 December 2000, after a difficult conciliation process with the European Parliament, concluded on 22 November 2000, reflects a delicate balance that was struck between the Member States favouring broad liberalisation and those which preferred cooperation among the national rail companies (the latter group included the French presidency). The main result of these measures was that they would create an entirely open market in international freight transport by the year 2008. Less than three months after the laborious adoption of this package, the Swedish presidency put a new rail package on the agenda for the Stockholm meeting of the European Council, held on 23 and 24 March 2001; the new package would grant operators the right to provide domestic freight services in other Member States and would open the market for international passenger services linking the main cities of the Union. As a result of this proposal, the opposition between the two camps was hardened once again.

18 Because of this, following the presentation of a Commission Green Paper and White Paper on transport infrastructure charging, the European Parliament adopted a resolution on the subject of user charging in January 2001 in response to a report produced by Mr Paolo Costa on the initiative of the Parliamentary Committee on Regional Policy, Transport and Tourism. Recital I and paragraph 2 of the resolution call on the Commission to supply reliable data.
against an average of 1.5% in 1975), despite the increasingly important role of transport in today’s economies (see Annex A-27).

However, a number of problems still affect the realm of transport infrastructure. In the context of the CTP, there is an observable lack of coherence within the European Union; this is due to the fact that networks were developed from a national perspective over a long period of time. The uneven territorial distribution of traffic flows also poses problems. Whereas congestion is a recurring problem along some transport arteries, others have an insufficient volume of traffic to justify infrastructural investment, which poses funding problems. To put it simply, traffic is concentrated into the main north-south continental corridors which serve the major North Sea ports, the gateways to the European continent. On a national scale too, traffic is heavily concentrated on the main arteries; in Italy, for example, 60% of road traffic is crammed into 2% of the network. Consequently, some 7,000 km of the trans-European road network, i.e. one tenth of the network, are constantly subject to traffic jams (for example the Brenner transalpine corridor and the Rhone Valley), while some peripheral regions still have inadequate links with the Community network and with the principal economic centres of the EU. A major Community funding effort, which the European Parliament has championed since the eighties, is imperative if the gaps are to be filled and the bottlenecks relieved – and it should be remembered that the bottlenecks are not all in areas close to national borders – if cohesion is to be achieved and if the Union is to rise to the challenges of eastward enlargement, Euro-Mediterranean partnership and globalisation.

A revision of the TEN-T guidelines should be undertaken very shortly; it is very likely that the Commission will present a revision of limited scope in which it will include, as it undertook to do in 1996, the parliamentary amendments that were not adopted at that time. It is also likely that the Commission will opt for extremely minor modifications; since the codecision procedure only gives the European Parliament the right of veto, the Council will most probably be in a strong position if it comes to conciliation. On the other hand, the Commission intends to undertake a more radical revision of the TEN-T guidelines in or around the year 2004, because of the likelihood that enlargement will give rise to considerable expectations.\(^\text{19}\) This position will probably be supported by the Council. Parliament, for its part, seems to be more favourably disposed to a greater allocation and more widespread distribution of Community aid, targeted at underdeveloped regions with structural deficiencies, especially in the domain of the TEN-T. As far as the funding requirement is concerned (€5 bn for the period from 2000 to 2006), the Commission has based this on the revised financial regulation for the trans-European networks. The regulation emphasises the need to strengthen the trans-European character of projects and to lengthen the time frame for project funding, so that annual instalments can be made available without delay. The Commission wishes to make the Community contribution more effective by concentrating its support on basic projects.\(^\text{20}\) Finally, the new version of the regulation introduces the system of multiannual indicative programming, which is better suited to the special nature of infrastructural investment.

The infrastructure effort must not be neglected, particularly in view of the extension of the TEN-T to the applicant countries, which will require a significant input from the EU. The European Parliament emphasises the importance of this extension in the context of the pre-accession strategy and takes the view that the financial support granted under the PHARE and ISPA programmes should be increased. It also points to the need to coordinate other measures of transport policy more effectively with these programmes. The Commission also favours a sizeable commitment; in Agenda 2000, it considers that the trans-European benefits that are rightly expected to materialise from these projects warrant a significant contribution on the part of the EU. The problems to be resolved in the applicant countries are quite daunting, beginning with the introduction of European standards – Central and Eastern European roadways, for example, are built to take vehicles with a maximum axle weight of 10 tonnes at the very most, whereas the European standard is 11.5 tonnes. The financial constraints will probably result in a very lengthy transitional period and in an initial concentration on the TEN-T arteries alone.

\(^\text{19}\) Cf. Le développement des RTE – Perspectives (‘The development of the trans-European networks – prospects’), a speech by Mrs Loyola de Palacio, Commissioner for Transport and Energy and Vice-President of the European Commission, to the European Investment Bank colloquium in Strasbourg on 14 February 2001.

Emphasis is placed on reorganisation of the existing infrastructure; any attempt to respond to the growth in the volume of traffic by merely building new infrastructure is liable to prove an unrealistic approach, because of the very heavy strain it could impose on the budget and the environment. The fact is that priority is often given to new construction work, which brings more kudos for decision-makers. It is therefore essential to redress the balance away from construction and in favour of maintenance, which is often regarded at the present time as an operating expense and is less likely to receive Community support, being perceived as part of the normal budget of the public authorities, one of the items of public expenditure that have to be kept in check.

Another priority objective of the Community infrastructure policy is the rebalancing of the transport networks (see also point A.2.2.2 below); the TEN-T is actually a very important means of improving the balance between modes of transport. There is ample convergence of views among the three institutions on the need to support this adjustment of the intermodal balance; this wish is already reflected in the financial regulation governing the TEN-T, which assigns at least 55% of the transport appropriations to rail transport, including combined transport, a maximum of 25% to road transport, 15% to the development of intelligent transport systems and the remainder to ports, inland navigation and airports. The European Parliament wants to see the continued pursuit of this approach in the revision of the TEN-T guidelines and in the extension of the TEN-T to the applicant countries. Recent European Parliament documents attach great importance to this effort to rebalance the TEN-T. The resolution on transport infrastructure charging emphasises that ‘the current enlargement process will appreciably increase the need to improve the European infrastructure networks as a matter of urgency, giving priority to modes that best respect the environment’. The rapporteurs from the Committee on Regional Policy, Transport and Tourism have recommended to the Commission and to the European Investment Bank that at least 70% of the funds they allocate to infrastructure projects be reserved for environmentally friendly modes of transport.\textsuperscript{21} The resolution on intermodal transport,\textsuperscript{22} for its part, emphasises the need to develop a trans-European infrastructure network capable of combining and integrating the various modes of transport. In fact, as the Commission has highlighted on several occasions, the transport infrastructure is still developing along unimodal lines, whereas an intermodal transport network requires an approach based on complementarity and interconnectivity. The resolution on intermodal transport calls for adequate representation of intermodal investment projects within cofinancing initiatives relating to the trans-European transport networks and within transport programmes financed from Community funds in general.

This desire for a new balance between the various modes of transport, which implies the development of an intermodal approach, focuses special attention on rail transport and on local coastal shipping (‘short sea shipping’). While the distribution of the TEN-T funds already testify to the priority that has been assigned to the railways, considerable aid for the seaports and intermodal terminals within the TEN-T is also essential as a means of matching supply to demand and of eliminating bottlenecks in the system. The parliamentary resolution on intermodal transport, moreover, calls for the assignment of a special status in the TEN-T framework to seaports and terminals by virtue of their role as interfaces between modes of transport. The development of short sea shipping should also be accompanied by an improvement in the links between ports and inland areas; care must be taken, however, to ensure that this improvement does not mean excessive expansion of the road network, which would run counter to the aim of adjusting the intermodal balance; to this end, the creation of multimodal rail and waterway corridors from seaports should be encouraged.

Given the lengthy period of time required for infrastructure projects, the effects of this adjustment effort will take about ten years to manifest themselves. In discussions on the revision of the TEN-T guidelines, including the extension of the transport network towards the East and the Mediterranean, it will therefore be necessary to place greater emphasis on the complementary approach, the principle of customer service and the need to make the best possible use of the network.

\textsuperscript{21} Opinions drafted by members of the Committee on Regional Policy, Transport and Tourism on the Commission reports regarding the applicant countries’ progress towards accession, April 2001.
\textsuperscript{22} Resolution adopted by the European Parliament following the presentation of the report by Mrs A. Poli Bortone, on behalf of the Committee on Regional Policy, Transport and Tourism, on intermodality and intermodal freight transport in the European Union, January 2001.
It is essential to **make better use of the existing infrastructure**. Solutions which promote a more harmonious use of the infrastructure can boost its capacity quite considerably. In the realm of road transport, flexible lane definition\(^{23}\) may be a way to solve the problem of frequent bottlenecks in highly urbanised areas, where new infrastructure is often not an option because of the lack of space and the high cost. Better use can be made of the rail infrastructure too, where minor adjustments can result in significant increases in capacity; technical innovations, such as the modernisation of signalling systems (European Rail Traffic Management System – ERTMS) will make it possible to sustain these higher capacities in the long term.\(^{24}\) In addition, better organisation on the part of operators (and infrastructure administrators) is likely to decompartmentalise the market on the one hand and to allow economies of scale and improve service quality on the other. The Commission considers that liberalisation and open competition are the best recipe for greater efficiency. Parliament and the Council only partly endorse this view (see point A.2.2.6 below).

**Intelligent transport systems** (ITS) can promote more effective management of both infrastructure and vehicle fleets. They can improve the capacity and safety of infrastructure and ensure better use of vehicles, resulting in fewer empty seats, less unused freight capacity, greater profitability and more fluid traffic movement (see point A.2.2.11 below). The ITS, which are part of the trans-European transport networks, are increasingly being seen as a key element in sustainable mobility, a view that is succinctly reflected in the words of the Commissioner responsible for transport policy, who expressed the wish to invest more in ideas than in concrete.\(^{25}\)

Despite the development of these systems, however, the physical modernisation of the infrastructure remains a necessity and a major financial commitment. The very long-term impact of the creation of infrastructure requires decision-makers to undertake a painstaking **strategic assessment**, involving examination of the large number of available options and of the expected impact of technological innovations (see point A.2.2.11 below). In Article 8 of the Decision on Community guidelines for the development of the TEN-T, Parliament and the Council require the Commission to develop appropriate methods of strategic environmental assessment. Progress has been made in this direction at both the national and European levels;\(^{26}\) a number of analytical methods and assessment techniques are available, but there is a need for further development of this approach, particularly on a supranational scale, with a view to optimising investments and guaranteeing a greater degree of transparency and flexibility in infrastructure planning.

A.2.2.2 **Optimum use of the modes and means of transport and development of the logistics system**

Many of today’s transport problems result from a failure to make good use of the potential offered by the various modes of transport. **Adjustment of the balance between modes of transport** is one of the keys to sustainable development. The aims of this adjustment are to reduce the external effects of excessive reliance on the road network, to prevent the saturation of the infrastructure and to reduce the level of dependence on mineral oils.\(^{27}\) The interoperability and interconnection of networks will also serve to ensure that maximum benefit can be derived from the opening of transport markets.\(^{28}\)

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\(^{23}\) We refer here to ‘intelligent motorways’, for which provision is made in the Dutch national transport plan; if traffic becomes heavy on a motorway, two- or three-lane carriageways are transformed into carriageways with three or four narrower lanes. So that the requisite level of safety can be maintained, the narrowing of lanes is accompanied by a reduction of the speed limit; in this way, a stretch of road can be made to handle a greater volume of traffic.

\(^{24}\) The present signalling system limits the scope for scheduling trains at brief intervals on the same stretch of track. A new command and control system would make it possible for trains to run at more frequent intervals over a stretch of track without increasing the risk of collision.

\(^{25}\) Le développement des RTE - Perspectives, speech by Commissioner Loyola de Palacio to the EIB colloquium; see footnote 19 above.

\(^{26}\) The main development at the Community level has been the publication of a Manual on Strategic Environmental Assessment of Transport Infrastructure Plans, produced by the Energy and Transport Directorate-General of the European Commission; the directive on strategic environmental assessments, however, is still on the drawing board.


\(^{28}\) See the European Parliament resolution on intermodality and intermodal freight transport, adopted in January 2001 following the presentation of a report by Mrs A. Poli Bortone; cf. footnote 22 above.
This subject is playing an increasingly central role in the debate among decision-makers and experts. As far as Parliament, the Commission and the Council are concerned, it is safe to say that their views converge on the need to **revitalise the underutilised modes of transport.** The efforts that are being made in this field are focused on the creation of an **integrated transport system** involving the use of less pollutant modes of transport, especially rail, inland navigation and short sea shipping. The eastward enlargement, the accession of Cyprus and Malta and the increase in external contacts are likely to promote this adjustment process. Short sea shipping and feeder services have the potential to absorb a significant part of the increase in the volume of traffic; the total coastline of the Member States amounts to 67,000 km, and it is estimated that somewhere between 60 and 70% of the main industrial centres are located less than 200 km from the coast. It is also worth mentioning that enlargement could give the railways a more important role in international freight transport, given the growth in the trade flow within the Community and the greater distances involved (see subsection B.2.2 below).

Adjustment of the modal balance entails the systematic development of the **intermodal approach**, of **combined transport** and of the **logistics system**. Intermodal complementarity, i.e. the use of the most appropriate mode of transport for a given purpose, and intramodal complementarity, i.e. the use of the most appropriate vehicle within a particular mode of transport, require the organisation of interfaces, in other words the creation of easily accessible ‘exchange platforms’, such as the Italian interporti, and to reduce the loss of efficiency that results from transshipment, particularly by using information and communication technology (ICT) to monitor vehicle movements (see subsection B.2.7 below).

The recent resolution of the European Parliament on intermodal transport shows firm determination to proceed in this direction, in that, besides supporting an appropriate infrastructure policy, it backs the **development of the market in intermodal services**. It calls on the Commission to support cooperation between the national bodies responsible for intermodal transport with the aim of gathering information, identifying best practices and furthering market acceptance of innovation. It also supports the **establishment of an electronic market** for intermodal freight transport, which allows transport users to choose the best possible itinerary for goods and order their preferred services online, thereby making the market transparent and opening up opportunities for new operators. The resolution also calls on the Commission and the Member States to support the establishment of firms specialising in intermodal services, since such firms are the key to actually getting intermodal transport services onto the market, and to promote cooperation projects between small and medium-sized haulage businesses on the one hand and rail and shipping enterprises on the other. The resolution also calls on the Commission to keep up its efforts to achieve the same conditions of competition for the various modes of transport by means of **common charging rules**.

The European Parliament considers that enlargement will make transport routes longer, which may impact favourably on the development of intermodal transport, and emphasises the importance of ensuring the highest possible proportion of intermodal transport in freight traffic with the candidate countries. To that end, the resolution calls on the Commission to bear in mind the legal, technical and operating conditions of intermodal transport in the accession negotiations and in decisions on the allocation of ISPA resources, etc., which should be concentrated to a great extent on the railways, so as to maintain at least in part the previously very strong position of the central and eastern European railways in freight transport.

The resolution attaches great importance to **short sea shipping** as an alternative to road transport and calls on the national governments to take the requisite measures to encourage the use of this mode of transport, for instance by providing investment support to short sea shipping projects and by framing the planned combined-transport support measures in such a way that they can also apply to short sea shipping. The legal framework is certainly of paramount importance to the development of combined transport. Vigorous action on a Community scale,

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29 In an integrated system, undertakings and modes of transport engage in fair competition, and the user pays all internal and external costs for the chosen mode of transport. In addition, undertakings cooperate to form transport chains in which each leg of the journey is covered by the mode that represents the most cost-effective option. In the majority of cases, rail, waterway or maritime transport will be the best option for most of the long-distance sections, with road transport generally reserved for shorter distances, especially the first and last legs of a journey involving the use of combined transport. Integrated systems are a long-term objective (Commission definition of integrated transport, contained in COM(98)414 final).
with due regard to the subsidiarity principle, is essential if this type of transport, which is generally long-distance and often involves journeys through several Member States, is to be developed. The parliamentary resolution refers to the need to update Regulation (EEC) No 1107/70 on aid for combined transport in order to take account of the development of transport and the increasing liberalisation of the transport market over the past thirty years. We believe that the amended regulation could provide for more substantial tax concessions by means of a flexible mechanism that would allow a higher percentage of total mileage to be covered by road transport where appropriate, since the ceiling of 20% that currently applies to some types of journey is unrealistic. The European Parliament resolution on transport infrastructure charging also emphasises that combined transport ‘can make a sustainable contribution to reducing external transport costs and should therefore benefit from a charging system that will safeguard the investment required for its rapid development’.

Another important task highlighted by Parliament is the harmonisation of loading units, which would be undertaken in collaboration with the European Committee for Standardisation (CEN). The standardisation of loading units is the subject of debate among specialists, because the present situation is an obvious impediment to the development of intermodal transport. Harmonisation is essential as a means of facilitating transshipment between different modes of transport and responding more effectively to modern-day transport requirements; it has therefore become apparent over the past few years that there is a need to define a small standardised container size (European intermodal loading unit) which corresponds more closely to customer and operator requirements (see subsection B.1.1 below). Another option is to alter the dimensions of railway trucks and road-haulage vehicles so that they correspond to container sizes, thereby maximising the available loading space (see subsection B.2.7 and Annex A-41).

Such developments are imperative if full use is to be made of the reserves of capacity and the intrinsic characteristics of mass transport. The need, in fact, is for door-to-door services, not quayside delivery. It is therefore essential to create transport reliable, efficient and fluid transport chains in which transshipment operations and interfaces between modes of transport are as transparent and inexpensive as possible.

Finally, it should be stressed that intermodal complementarity presupposes the provision of a service that meets the needs of users, which implies in turn that each link in the chain must perform its function in a reasonably efficient manner, even if some modes of transport are subject to inherently rigid parameters, and that the interfaces between vehicles operate efficiently, which requires flexible and responsive organisation and a real-time information system. The constraints that affect this policy of optimisation, especially the fact that some solutions have adverse collateral repercussions, must not be overlooked.

Rail transport, for example, is not efficient unless it is carrying large quantities. The railways are not well suited to present-day demand patterns, which require not only the dispatch of consignments that are often smaller than the capacity of a vehicle (whereas a full train is the most cost-effective unit) but also a high degree of adaptability and the monitoring of freight movements. There are, of course, numerous markets to which rail transport is ideally suited, such as the markets in raw materials, vehicles and bulk foodstuffs, but strenuous efforts in terms of administrative organisation and computerised communication are essential if rail is to become a viable option for other types of goods. Besides, the quest for efficiency will result in a reduction in the number of railheads and hence in lengthy road journeys to and from goods depots. The organisation of the transport chain in pursuit of economies of scale may be an efficient approach but it also gives rise to congestion. While intermodal and intramodal platforms and hub-and-spokes systems may increase efficiency, they also encourage congestion by concentrating traffic movements; by coordinating timetables to reduce connection times, they also generate successive waves of vehicle departures and arrivals, thereby producing a rush-hour effect in the vicinity of railheads.

A.2.2.3 Controlling the development of demand

The possibility of taking action to slow down the growth in mobility has not yet been systematically discussed within the European institutions. Parliament has referred to the need for the integration of transport and town and
country planning in order to curb demand, but the Commission seems to regard an increase in the volume of traffic as an irreversible trend, on the basis of the postulate that the current production process, involving delivery to order, the concentration and specialisation of production facilities, wider markets, etc., is an inalterable fact of life. However, the quest for solutions that would loosen the link between economic growth and increased transport activity, with all its adverse effects, seems to us to be an avenue that ought to be explored. This aim could be achieved if greater consideration were given to the decisions taken by consumers, businesses and policymakers in other fields and to the impact of these decisions on transport.

**In the realm of production,** within the limits imposed by the pursuit of global competitiveness, it is conceivable that the production system could develop away from compartmentalisation by means of the creation of industrial districts, where goods would be produced close to purchasers’ premises. The scope for the reduction of transport movements can be assessed with businesses from various sectors of the economy, and initiatives could be launched to promote better practices with a view to reducing the number of movements, the volume of goods transported and journey distances to the necessary minimum.

**Policy coordination** is also necessary; policy decisions taken in fields other than transport often have a direct effect on demand for transport. For example, if the market is distorted by differences in production costs from one region to another, or if regional legislation encourages companies to locate production and assembly facilities in different places, as in the case of parts manufacture and vehicle assembly in the automotive industry, this can create additional demand for transport. Town and country planning policy may also be affected by the way in which infrastructure charging is applied. Closer liaison between the various decision-making bodies would make for more accurate assessment of the impact of legislative initiatives on transport.

In general, the growth in mobility could be more effectively controlled by means of the **judicious location** of centres of human activity, such as residential areas, service centres, industrial production facilities and distribution points, and through the way in which these centres are organised. Land-use planning must not generate additional mobility. The policy of the Netherlands is a good example of an integrated approach; the designation of residential, industrial and commercial areas is very closely linked to traffic-management and transport policies and depends to a considerable extent on the accessibility of a given location by the various modes of transport. Economic activities and services are categorised on the basis of the volume of transport they are liable to generate, consideration being given to the number of residents, visitors and employees and to the level of their dependence on road transport.

Town and country planning has been heavily influenced by transport developments. Land-use models based on a particular mode of transport bind the society in question to long-term reliance on that mode. Widespread car ownership, for example, has fostered the construction of widely dispersed low-density housing developments and business centres which cannot easily be served by public transport and compel people to travel long distances by car to places of work, leisure facilities, shopping centres, etc. Apart from an explosion in the number and length of car journeys and their consequences in terms of congestion, fuel consumption, pollutant emissions, accident rates, etc., such models are also less efficient from the point of view of the use of energy and the construction of water, electricity and other supply networks and have a far wider general impact in that they use up far more green land, lead to the abandonment of town centres and neglect of the architectural heritage and encourage a process of social segregation, of which the American conurbations are a prime example, as well as damaging the fabric of social relations. The influence of transport, in other words, goes far beyond its immediate impact.

This demonstrates the indissoluble link between transport planning on the one hand and regional-development and town-and-country planning policies on the other. Only an integrated approach can result in adequate

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30 Draft opinions presented by the rapporteurs from the Committee on Regional Policy, Transport and Tourism on the reports for the year 2000 from the Commission on progress towards accession by each of the candidate countries, April 2001.
33 Society adapts to developments in its transport systems and is moulded by them. The trend described above, for example, disperses friends and families over a wide area and puts their relationships entirely at the mercy of the transport system.
assessment of the economic, environmental and social impact of transport, enabling policymakers to exercise a satisfactory degree of control over all the relevant variables. The assessment of a new piece of infrastructure is liable to paint a false picture in the absence of an integrated approach; the estimation of benefits does not take account of the fact that new infrastructure offers a strong inducement to companies to relocate, which may ultimately stimulate the demand for transport.  

It would be wise to do more to promote research and a systematic debate on these subjects, exploring factors such as the potential effects of developments in the field of ICT (teleworking, flexitime, e-commerce, etc.) on the demand for mobility. There would also be a need to establish closer cooperation between those who frame transport policy and policymakers in the field of development planning at the local level, at the regional level and, of course, at the Community level.

A.2.2.4 Greater consideration of development planning for the Community area

The Community dimension of development planning is especially pertinent in the context of the present study. Transport, in fact, is one of the key elements of the European Spatial Development Perspective (ESDP). However, it would be useful to focus more sharply on developing a common integrated approach to land-use planning on a European scale so as to increase the potential for cross-fertilisation between planning policy and the policies on trans-European networks, regional development and cohesion, which are major elements in the European development-planning policy. These efforts are an essential means of promoting territorial cohesion and harmonious development as well as redressing the balance between the various modes of transport and realigning and rationalising the main traffic flows.

The entry of traffic from other parts of the world into the European continent is currently concentrated into a small number of gateways – seaports and airports – most of which are still located within the northern arc that stretches from Le Havre to Hamburg. This results in congestion, both in the areas around these gateways and along their feeder corridors. It is therefore desirable to reduce this concentration, but without impairing the competitiveness of the European Union, and to reorganise the routes to and from these gateways, using short sea shipping, feeder waterways and rail links (cf. the ‘dry links’ between Benelux and Calabria). It is, however, probable that the first steps in this direction will meet with resistance from the Member States where these gateways are located and from the major shipping lines, whose long-term strategies have always been based on mass cargo handling.

In the realm of maritime transport, however, it is noticeable that the growth in the flow of goods has been accompanied to some extent by more rapid development of feeder corridors serving the major Mediterranean ports such as Valencia, Barcelona, Marseilles, Genoa, La Spezia and Piraeus. The volume of containerised traffic handled by these ports has been growing rapidly (see Annex A-40). The predominance of the northern seaports is no longer as absolute as it was only five years ago, and the way has been prepared for Europe to be served by two distinct sets of gateways, one in the north and one in the south. These new seaport developments in the Mediterranean region, especially the major transshipment hubs such as Gioia Tauro and Algeciras, have generated other important developments in terms of feeder links between transshipment hubs, gateways and secondary ports and of trans-European combined-transport networks radiating from the heart of Europe to the northern and southern gateways.

At the same time, in more general terms, transport policy can play an important role in enhancing the appeal of peripheral locations (for example, the opening of the high-speed TGV rail link with the Mediterranean, which

34 See IPTS Report No 51 of February 2001, in which the article entitled Une approche intégrée de l’aménagement du territoire et de la planification des transports (p. 14), describes the main links between economic activities, developers and the transport system; see also A transition to sustainable mobility in No 11 of February 1997 and De nouvelles approches de l’aménagement du territoire : politique des transports et développement urbain durable in No 36 of June 1999 (p. 18).


36 The European Parliament resolution on intermodal transport calls for the definition, within the development plan for the Community area, of a European master plan for intermodal facilities which would make it possible to mobilise and direct public and private investment to appropriate strategic sites in order to limit the growth of long-distance heavy goods vehicle traffic.
will reduce journey times from the centre of Paris to the centre of Marseilles to three hours) and therefore has the potential to be a very strong decentralising influence, although we must not exclude the possibility that it could also have the perverse effect of creating new concentrations.

The structure of the Community area is highly centralised, and maximum use should be made of the structural funds (the ERDF, the Cohesion Fund and ISPA) to reduce this overcentralisation. The peripheral regions require complementary investment in secondary networks that will enable them to derive maximum benefit from the TEN-T, whereas the trans-European network routes themselves should be confined to:

* trans-European transit links (designed to eliminate bottlenecks, which are not restricted to frontier areas), and
* radial links between the centre and the periphery.

The problem of capillary links from the network arteries into the various parts of peripheral or landlocked regions is not relevant to the TEN-T and unwarranted reference to the latter can produce perverse effects (cf. Article 3 of the Regulation establishing a Cohesion Fund, which restricts eligibility to transport infrastructure forming part of the trans-European network, thereby inducing national governments to press for considerable expansion of the TEN-T, which consequently loses much of its framework character, especially when other Member States subscribe to this inflationary process by requesting the inclusion of their sections of cross-border routes in the TEN-T). There is clearly a need to strike a territorial balance by means of functional integration of the TEN-T with local transport networks so that network development can spread to the local level and so that excessive local polarisation can be avoided.

### A.2.2.5 Efficient charging

Infrastructure charging, one of the key issues in the current debate, is an instrument that can be used to enhance the efficiency and sustainability of the transport system. It can be a prime factor, next to satisfactory service quality, when it comes to choosing a mode of transport. The definition of uniform principles governing the imposition of charges in all Member States of the EU is therefore of fundamental importance if the market is to function properly. An efficient charging system should serve to improve the balance between supply and demand in the realm of transport. This implies that the ‘user pays’ principle must be the basis of the charging policy; the application of this principle should also make for a fairer policy. Individual and collective interests will coincide if the price of transport takes account of all the social costs and benefits of mobility. Users will thus be more aware of the consequences of their choice in terms of environmental pollution, accident potential, etc. If society’s capacity to regulate itself were more effectively exploited, the social aims of transport regulation could be achieved without curtailing users’ freedom of choice.

The Commission and Parliament seem to concur on the need for fair and efficient charging; the Commission, however, seems to favour the marginal social cost as the basis for the levying of charges, whereas Parliament, in its resolution of January 2001, while acknowledging the merits of pricing on the basis of marginal social cost, emphasises the need to recover the full identifiable cost of transport. Neither Parliament nor the Commission rules out the idea of public aid, provided it is granted in a transparent manner (cf. the aforementioned parliamentary resolution and the Commission proposal for a regulation on aid for the coordination of transport by rail, road and inland waterway to replace Regulation (EEC) No 1107/70, as amended, and the proposed directive on public-service requirements). In this domain, Parliament insists on adherence to the principle of

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38 Such projects benefit from Community aid on the basis of their contribution to the achievement of the objectives set forth in Article 154 (formerly 129b) of the EC Treaty, in other words if they promote the interconnection and interoperability of national networks as well as the access to such networks or if they help to link island, landlocked and peripheral regions with the central regions of the Community or to achieve other priorities and objectives set forth in the TEN-T guidelines.
40 To this end the Commission published a Green Paper in 1995 (entitled Towards fair and efficient pricing in transport policy), then, after consultation, a White Paper in July 1998 (Fair payment for infrastructure use) and Directive 2001/14/EC of 26 February 2001 on the allocation of railway infrastructure capacity, the levying of charges for the use of railway infrastructure and safety certification; the Directive largely follows the guidelines laid down in the White Paper.
subsidiarity, to which the Commission seems to ascribe less importance in this particular area; the principle will very probably be emphasised by the Member States as a means of resisting excessively strict control. The Council has also expressed its agreement on the need for fair and efficient charging; national interests, however, compel the Member States to interpret fairness and efficiency in widely differing ways.

The question of how external costs can be assessed and recovered is a crucial issue, as Parliament rightly stresses, whereas the Commission, for its part, fails to explain in its Green and White Papers how charging in respect of external factors would exactly cover the budget deficit that would arise from marginal-cost pricing in cases of increasing returns, i.e. for highly capital-intensive infrastructure and transport services. Parliament has also asked the Commission to supply reliable data, which do not seem to exist at the present time. Parliament and the Commission recommend the inclusion of all forms of levy – fuel duty, road tax, tolls, etc. – in the assessment, and such an approach may well reveal, in fact, that the ‘user pays’ and ‘polluter pays’ principles are already being applied to a greater extent than is often asserted. If this hypothesis is true, the efficiency of a charging system must depend primarily on the political choices made by the competent authorities in full knowledge of the facts. There is a certain inherent contradiction in the statement that a system of charging reflects the real costs when that system is supposed to be active rather than reactive.

The ‘shadow tolls’ that are used in the United Kingdom, Finland and Portugal may be an element in a financial package but cannot be regarded as an instrument of infrastructure charging in their own right, because they do not create any new resources or influence demand. Understanding of the pricing system by users and the public at large seems in practice to be a condition of its acceptability. The limits of cross-subsidisation (between geographical areas and/or modes of transport) are therefore likely to vary. The principle of using revenue from one mode to finance another is certainly more acceptable to road users in urban areas and sensitive environments such as the Alps or the Pyrenees than to those who drive through open countryside from one town to another.

Finally, there are two basic economic mechanisms that must not be neglected, which means that we must be aware of them and ready to pay the price in order to overcome their effects:

- Marginal-cost pricing of infrastructure use (and of highly capital-intensive transport services) creates a budgetary deficit. In this case it is necessary to accept either subsidisation or the application of the least flawed pricing formula (the Ramsey-Boiteux pricing rule); the effect of Ramsey-Boiteux pricing is that the most captive markets will be overcharged, which is inherently unfair.

- The distinction between infrastructure and services is fundamental. Markets in transport services are or can be deregulated; competition can work in service markets. Infrastructure, on the other hand, is generally administered by a natural monopoly and comprises essential facilities which require regulation.

**A.2.2.6 Improvement of market access and regulation of the market**

The common transport policy that has slowly been put in place is characterised by the priority it accords to the opening of the transport market by means of a policy of liberalisation and harmonisation. The first moves in this direction were made in the domain of road transport and were followed by the liberalisation, the gradual deregulation, of the other modes of transport. This process was accompanied by the emergence of an infrastructure policy. The applicability of the rules of competition sometimes highlighted differences which slowed down the adoption of packages of liberalisation measures, a phenomenon which was more conspicuous in some modes than in others. Today the debate is focused on rail and maritime transport as well as on a number of issues that are fundamental to the smooth functioning of the market, such as charging, state aid and working hours.

The debate on the liberalisation of the railways is especially lively. The Commission has done a great deal of work on the idea of a strong injection of market economics into the railway systems, which used to benefit in all Member States, and still does in some, from a special position within the national transport economy. To that end, the Commission has developed several ideas, notably that of intramodal competition between train operators
who have to purchase track-access rights for their trains on the rail network. It has also favoured the privatisation of railway undertakings. In the eyes of Parliament and the Council, this concept of intramodal competition seems less crucial in the short term than the need to improve the efficiency of rail and to ensure that it can compete effectively with road and air. These efficiency gains should be achieved in a wider context of healthy intermodal competition, whether the operators be public or private, and should be pursued primarily by means of action in the domain of user charging. A number of national governments tend to prefer cooperation between companies; it is very probable that the various interested parties understand the substance of the rail package in somewhat different ways.

As things stand, intramodal competition is to be introduced for freight in the medium term. This is the recommendation contained in the rail package, which stipulates that new entrants to the market will enjoy the unrestricted right to operate their trains on the European rail network by the year 2008. This remains a live issue, because some countries and a number of experts are still rather perplexed, fearing that intramodal competition will drain the strength of rail operators. Such a situation would play into the hands of road and air operators, who are the real competitors of the railways. This outcome would run counter to the aim of revitalising rail transport with an injection of free enterprise.

This antithesis between competition and cooperation is evident among operators using the trans-European rail freight freeways (TERFFs), the international corridors in which infrastructure administrators have formed a consortium to sell long-distance track access, thereby enabling train operators to guarantee fast, high-quality international freight transport. The consortium is represented, in accordance with the ‘one-stop shop’ principle, by a single contact who deals directly with the purchasing rail operators. This means that we have a cooperative system of freightways at the present time rather than a competitive system of freeways. The TERFFs, which require genuine convergence among the participating countries, are an important testing ground that will provide an indication of the scope for the creation of areas of competition.

In the domain of maritime transport, the Community institutions have focused their efforts on anti-trust measures, specifying the exemptions that may be granted to particular categories of activity in view of the special nature of maritime transport (see Annex A-21). The present debate is primarily centred on seaports, particularly on funding, efficient infrastructure charging, freedom to practise maritime trades (in the cargo-handling market, for example) and free competition in the provision of services. The drafting of a new major directive (‘ports package’) was announced by the Commission on 13 February 2001. The main purpose of this directive is to create greater transparency regarding access to the provision of port services by harmonising the procedures for the granting of concessions. Freedom to provide services is the general rule, but the port authority may restrict this freedom, subject to prior authorisation, especially for reasons of limited capacity or space or for safety or environmental reasons. An example illustrating this principle of access to services may be seen in the concept of ‘self-assistance’ put forward by the Commission, whereby all port users are free to make their own arrangements for the provision of certain port services, such as piloting and cargo-handling. This serves to reduce port costs in some specific cases. Transitional measures will have to be applied to existing concessions, and solutions will have to be found for several tricky situations.

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41 These differing views were examined by a Conciliation Committee, which forged an agreement between Parliament and the Council on the amended directives that make up the ‘rail package’ (Directive 91/440/EEC on the development of the Community’s railways, Directive 95/18/EC on the licensing of railway undertakings and the new Directive 2001/14/EC on the allocation of railway infrastructure capacity, the levying of charges for the use of railway infrastructure and safety certification, which replaces Directive 95/19/EC. In addition, a proposed Directive 2001/16/EC on the interoperability of the trans-European conventional rail system (OJ L 110 of 21 April 2001) provides for the formulation of technical specifications for interoperability (TSIs), which focus on ICT applications for passenger and freight transport and on traffic management.

42 Where restrictions apply, service concessions must be granted for an appropriate length of time on the basis of a non-discriminatory and transparent call for tenders. In the case of cargo-handling services, at least two companies must be involved in each area of cargo handling (containers, bulk goods, etc.). If the port authority itself provides handling services and has a share of the handling market in excess of 20%, it cannot decide on the granting of concessions, which must therefore be awarded by another body.

43 Provided they obtain permission from the port authority, which must ensure that the users’ arrangements do not prejudice safety.

44 Cargo-handling monopolies in many ports, such as Bremerhaven and Felixstowe, and the involvement of the port authority in cargo-handling (in the Port of Rotterdam, for example, Rotterdam Municipal Port Management (RMPM) has a 35% stake in the stevedoring company ECT).
If short sea shipping is to fulfil its potential, more competition must be introduced into the provision of maritime services, and ports must become more efficient; they must be competitive in terms of productivity, reliability and price, and they must provide high-quality services in terms of accessibility, intermodal facilities, etc. Their funding must be beyond reproach in its compliance with the rules governing state aid, concessions must be awarded on the basis of transparent criteria, and port services must be open to competition. These rules must be established for all ports in EU Member States and must be quickly put into effect in the applicant countries.

The opening of the market has the potential to create greater efficiency, and indeed one might well ask whether the premature deregulation of the market in road transport is not one of the reasons for the rapid growth of that mode of transport. Nevertheless, deregulation is not the same as *laissez faire* capitalism, and the Community institutions are heavily involved in market regulation, which consists in the creation and application of the following mechanisms:

- Technical and social regulation, which is an element in the interoperability of modes of transport and in the provision of a level playing field for intermodal competition (the latter aim being achieved by establishing a framework and a set of controls to prevent social dumping). Regulation is also a fundamental guarantor of safety and environmental protection. Even in the fields in which market mechanisms such as pricing can have a significant effect, regulation habitually proves to be an effective ingredient in any package of measures.
- An appropriate legal framework relating to services of general interest and public service contracts, which is an indispensable means of satisfying the demand for transport from the less powerful sections of the population or from the inhabitants of sparsely populated or remote areas.
- Measures of investment support designed to promote modernisation, interoperability and improvement of the quality of services and to counteract dwindling investment (as in the railways in the United Kingdom).
- Establishment of regulatory authorities to ensure compliance with the rules designed to protect transport users and the general public. These regulatory authorities are also a source of transparency.

### A.2.2.7 A transparent common transport policy

The transparency of a transport policy is an indispensable prerequisite of its public acceptability; even more so if it introduces innovations. The need to give the legislative authority the means to exercise its powers prompts us to recommend a periodic report and to suggest that greater weight be attached to the Transport and Environment Reporting Mechanism (TERM) in the form of discussion by Parliament and the Council in a procedure comparable to those used to monitor the broad economic-policy guidelines and the economic stability and convergence programmes.

This transparency, along with fuller consideration of user needs and public aspirations, would certainly be fostered by the establishment of committees drawn from all interested parties; the influence of these committees would be enhanced if they reported to Parliament.

The same transparency and independence should be promoted in the realms of safety and regulation, probably by means of the establishment of autonomous authorities.

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45 In view of the emergence of a European single market in public-transport provision, the Commission has proposed a new regulation distinguishing between three types of system, namely ‘closed markets’, ‘regulated competition’ and ‘deregulation’, while letting it be known that the Commission’s own preferred model is that of regulated competition. See the draft report by E. Meijer, of the European Parliament Committee on Regional Policy, Transport and Tourism, on the proposal for a European Parliament and Council regulation on action by Member States concerning public-service requirements and the awarding of public-service contracts in respect of passenger transport by rail, road and inland waterway (COM(2000) 7-C5-0326/2000-2000-2012(COD)).

46 In this context, Mr T. Bouwman, draftsman of the opinion of the European Parliament Committee on Regional Policy, Transport and Tourism on services of general interest in Europe (COM(2000) 580 – C5-0000/2001 – 0000 (COS)), calls on the Commission to extend the concept of a service of general interest.

47 In connection with the creation of the European Maritime Safety Agency, Mr E. Mastorakis, reporting on behalf of the Committee on Regional Policy, Transport and Tourism, approved the idea of establishing a degree of Community control over the application of
The development of research into strategic assessment methods and the wide dissemination of the selection criteria - for which some of the Member States, incidentally, already make provision (see point A.2.2.11 and subsection B.1.2 below) - can also help to increase transparency. Standardisation of economic and social analysis methods would be difficult and would certainly be artificial; on the other hand, reasonable convergence of these methods and transparency regarding the values included in the assessment of factors such as time or safety levels seem to be indispensable conditions for constructive dialogue at the Community level (see also subsection B.1.2 below).

A.2.2.8 The creation of public-private partnerships

The idea of greater involvement of the private sector in transport investment is supported by the European institutions. The creation of public-private partnerships (PPPs) would serve to enhance the efficiency of the public sector, if only by dint of emulation and benchmarking, while activating important sources of finance. It must be remembered, however, that the economic and social benefits, which are the motivating force for political decision-makers, usually outweigh the financial return, which is a *sine qua non* of investments in the eyes of the private sector; many projects cannot therefore be undertaken by a PPP unless public support is granted, which implies a firm political commitment to the implementation of the projects and a clear distribution of risk from the outset. In a number of cases, the Community contribution will be a decisive factor in the financial viability of a project.

In addition, it is imperative that there should be a legal framework for the placing of contracts, a framework that allows for dialogue between the contracting parties. The ‘public contracts’ package should provide a framework within which it would be possible to speed up the implementation of projects and make them more viable. This public-private partnership could take the form of a concession, by whatever name it may be known – concession, BOT (build, operate and transfer), DBFO (design, build, finance and operate), etc. – but could also fall within the broader category of delegated management, possibly without private-sector funding, or a contractual relationship in which the autonomy of the private sector, and hence its responsibility, is extensive. However, PPPs must not be regarded as a panacea, because the private sector can only commit itself to projects with the potential to yield a financial return.

Some projects of a strategic nature which are designed to redress the balance between modes of transport or to promote the territorial cohesion of the European Union can only yield a return on a time scale which is too long for private investors. These projects must therefore be supported by the public authorities and the Community - at considerably higher rates than the 10% permitted by the financial regulation on the trans-European networks and even than the 20% rate for which provision is made in certain cases – or be linked to schemes that are already operating on a commercial basis, provided that such schemes are in a sound financial state and that the conditions governing the linkage are consistent with the rules of competition and the principle of non-discrimination.

A.2.2.9 Adapting to a ‘globalised’ world

In an economy that is becoming more and more globalised, it is impossible to establish a transport policy without taking account of the absolute necessity of maintaining and improving the competitiveness of the Community economy in the world markets. Europe will not be able to defend its position within the world economy unless its transport infrastructure and services are efficient and competitive. The pursuit of a keener competitive edge in a globalised economy raises the question of the quality and safety of transport. The importance attached to these
attributes by the European Union is liable to handicap our transport providers, who have to compete with operators in countries where transport quality and safety standards are less stringent. The fact that the three institutions have to reach prior agreement on common positions – on maritime safety, for example – probably makes the EU more intransigent in international forums. On the other hand, it is essential that the accession of the new EU members be subject to their having embraced the great bulk of established Community law and practice in these domains.

In terms of links with our eastern neighbours, the eastward enlargement of the EU gives rise to challenges and opportunities that relate specifically to transport policy:

- an increase in trade and a certain realignment of the traffic pattern (increased flow of traffic along the East-West corridors, which for historical reasons, have remained largely underdeveloped, alongside the traditionally busy North-South routes);
- lengthening of trade routes, which could potentially favour modes of transport other than road haulage, provided that these other modes offer satisfactory service quality and a reasonable degree of interoperability (introduction of standard track gauge in the easternmost areas, improvement of roads so that they can carry higher axle weights, etc.);
- the poor state of the infrastructure and a rapid shift away from a rail-dominated transport system, particularly for internal traffic and travel to and from the West; the switch to road, however, has been more gradual in the case of traffic between the countries of Central and Eastern Europe;
- a significant risk of social dumping because of the disparities in living standards.

Trade with the Mediterranean countries is also increasing significantly, and the establishment of a strong trading partnership with these countries is one of the priorities of the European Union. The Communication on the Euro-Mediterranean partnership in the transport sector defines specific objectives relating to infrastructure (creation of multimodal interoperable corridors, improvement of links between ports and hinterland) and to transport services (more efficient and viable services provided in a common transport area in accordance with high social, environmental and safety standards). The development of these relations could well increase the relative importance of maritime transport and boost the activity of the ports in Southern Europe.

In more general terms, any improvement in the global competitiveness of the Community transport system will depend chiefly on the development of sea and air transport, which are the keys to intercontinental trade. Improving the quality and efficiency of these modes of transport is therefore tantamount to making the EU a more effective player in the world market. Appropriate development of the port infrastructure within the TEN-T and the development of coastal shipping and of Euro-Mediterranean sea links would revitalise maritime transport and could therefore strengthen the role of the EU as a maritime trading bloc. The accession of Cyprus and Malta could be of great benefit in this context, since it would significantly increase the Union’s share of the world shipping fleet and hence its clout in international organisations; it will be necessary, however, to ensure that the safety standards for vessels flying the Cypriot or Maltese flag are raised, given the potential impact of these fleets on short sea shipping in Europe.

The European shipping registers are faced with highly aggressive international competition. In 1970, 32% of the total tonnage of world shipping sailed under the flag of an EEC Member State; by 1995, this figure had fallen to 14% (see Annexes A-37 and A-38). The appeal of registration outside the EU, and especially of sailing under flags of convenience, is chiefly due to lower rates of taxation and to less stringent employment regulations and safety inspections.

Negotiations on land, sea and air transport with countries outside the EU constitute a particularly important dimension of our efforts to address these issues. One of the problems inherent in relations with these countries

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49 The European Union is a committed member of numerous international organisations in the domain of land, sea and air transport, such as the European Conference of Ministers of Transport (ECMT), the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO).
concerns the exercise of powers. In practice, the Member States will frequently have concluded reciprocal agreements with non-EU countries on matters such as market access. The provisions of these bilateral agreements may differ from the legislation applicable to the single European transport market and give rise to a certain degree of discrimination between countries, which is liable to distort competition and blunt the economic advantages enjoyed by the EU. The absence of a common position diminishes Europe’s ability to defend its economic interests effectively. The judgments of the European Court of Justice relating to the powers of the EU in the domain of foreign affairs can certainly be applied to transport, but in many cases they have not been recognised by the Member States.50.

Be that as it may, the various legal provisions permitting the Member States to coordinate their activity in the domain of foreign maritime affairs in order to counteract certain unfair trading practices on the part of non-Community shipping companies and, to an increasing extent – in accordance with the provisions of the EC Treaty – relations with non-Member States in the realm of transport now tend to fall strictly within the ambit of the Community. For example, the European Union has concluded transport agreements with individual countries with a view to creating the conditions for mutual market access, particularly in the domains of road transport and combined transport. Such agreements have been concluded with Switzerland, Slovenia and the Former Yugoslav Republic of Macedonia (FYROM). This is also the thrust of the transport provisions in the ‘Europe Agreements’ that have been concluded with the applicant countries; these agreements stipulate that the opening and gradual liberalisation of transport markets and the conditions governing air and sea transport are to be dealt with by specific transport agreements negotiated between the parties on the basis of existing Community legislation. At the end of the day, the continued development of this dimension of the CTP is particularly important as a means of maintaining the competitiveness of the EU and of averting any diminution of the quality and safety of the transport system.

A.2.2.10 Improving quality and safety

Although the whole of the CTP is designed to improve quality, safety and environmental sustainability, the European institutions are also working on a number of targeted measures in these fields; these measures concern matters such as shipping inspections, technical standards, journey times, exhaust gases, vehicle standards, highway codes, etc. The European Parliament is very firmly of the opinion that the redefinition of the CTP must produce suitable responses to the environmental51 and social requirements and to the need to improve safety and that it must establish a strong, uncompromising framework. Similarly, environmental-protection strategies must make more precise reference to the objectives of transport policy, which does not seem to be the case at the present time, the Commission being content to proclaim a number of general priorities without laying down either a timetable for their achievement or quantified targets.52

These issues are particularly important in the context of enlargement. In this domain, Parliament considers it essential that all legal provisions relating to the established body of Community law and practice, the acquis communautaire, be put into effect, particularly the social, environmental and safety provisions. In the opinion of the European Parliament, these matters must be regarded as fundamental in any assessment of an applicant country’s attitude to accession. The reports and draft opinions produced by members of the European Parliament Committee on Regional Policy, Transport and Tourism underline not only the need to implement the acquis in these policy areas but also the need to develop a strategy for the implementation of new Community provisions that are adopted in the period leading up to accession.53

53 Draft opinions, presented by the rapporteurs from the Committee on Regional Policy, Transport and Tourism, on the regular reports from the Commission on the progress of the applicant countries towards accession, April 2001.
Safety is one of the dominant themes of the transport debate. The Community is bound by Article 71(1)(c) of the EC Treaty to lay down measures to improve transport safety. It is essential to improve the safety and quality of every mode of transport, but priority is given at the present time to the safety of road and sea transport, primarily in the light of the recent Mont Blanc Tunnel and Erika disasters.

Road transport, which claims the lives of 40 000 victims every year, is by far the least safe mode of transport and is the priority area for Community action. Human behaviour is a key factor in road safety, but human behaviour is subject to widely divergent cultural influences. For that reason, the subsidiarity principle is frequently invoked in the context of road-safety measures. The development of the TEN-T will have to surmount this hurdle. As the volume of international traffic grows, more and more drivers from diverse countries are using the European road network and are confronted with different rules and standards in every country they traverse, which is a recipe for diminished safety. It is therefore desirable to seek more extensive harmonisation of the rules governing traffic movements and safety on the TEN-T. Various measures are planned in the realms of infrastructure (especially tunnels), vehicles (limitation of fuel-tank capacities, speed limiters, etc.) and behaviour (compulsory wearing of seat belts for all passengers). On 17 March 2000, the Commission presented a communication (COM 2000/125) on road safety and plans to draw up a third road-safety programme, covering the period from 2002 to 2010.

In the sphere of maritime transport, Community safety policy is generally based on the conventions and regulations of the International Maritime Organization (IMO). However, following numerous appalling accidents at sea (the Amoco Cadiz, the Exxon Valdez, the Herald of Free Enterprise, the Estonia, the Erika, etc.), it proved necessary to take more rigorous measures at the Community level; the Community institutions have been particularly active in putting these measures in place. Following the disaster caused by the sinking of the oil tanker Erika in December 1999, the European institutions focused their efforts on the creation of measures to improve safety at sea and to prevent pollution of the environment by oil slicks. In various resolutions, Parliament called for significant tightening of Community laws and regulations. The Commission responded rapidly, presenting a series of measures known as the ‘Erika I package’, which provided in particular for more stringent inspection of vessels by the port State, the establishment of a Community regime for the recognition of classification societies and a timetable for the elimination of single-hull tankers (the EU will ask the IMO to lay down a timetable under which single-hull tankers are to be phased out between 2003 and 2015). The European Parliament made several significant amendments, particularly on the introduction of ‘black boxes’ (voyage data recorders - VDRs) on board vessels. This process paved the way for a new package – ‘Erika II’, which the Commission presented in December 2000 and which provides for three categories of measures:

- measures designed to improve safety at sea: compulsory ship signalling, automatic identification systems, requirement to make provision for ports of refuge, ban on the departure from European ports of ships carrying dangerous cargoes in extreme meteorological conditions;
- establishment of a strict regime of responsibility and compensation in the event of accidents and creation of a fund for the compensation of oil-pollution damage in European waters (COPE, €1 bn) to supplement payments from the International Oil Pollution Compensation Funds (IOPC Funds) for the reimbursement of environmental damage;
- creation of a European Maritime Safety Agency, which should assist the Commission and the Member States in monitoring the application of Community legislation and assessing the effectiveness of adopted measures.

The discussion on the Erika II package that took place at the meeting of the Council of Transport and Telecommunications Ministers on 5 April 2001 revealed a division between the Member States, some of which favoured only international action within the IMO framework on safety matters, while others believed there was scope for a two-pronged approach comprising both international action and action within the Community.

54 The development of the European quality shipping information system (EQUASIS) is intended to make it easier to identify substandard vessels.

55 Draft recommendation for second reading, presented by F. Watts of the Committee on Regional Policy, Transport and Tourism, with a view to the adoption of a directive on port-State control (5179/1/2001 - C5-0074/2001 - 2000/0065(COD)), March 2001.
As far as rail transport is concerned, the level of safety is already very high by comparison with other modes of transport. Nevertheless, the safety of Europe’s railways is a vital and delicate subject which requires the utmost attention of policymakers, so that:

(1) high skill levels are maintained among the operational personnel who form part of the human and technological safety chain (such as train guards and signalmen) by means of training programmes and refresher courses on safety;

(2) European command and control standards are gradually put in place with a view to further reducing the risks of human error through the installation of technical failsafe mechanisms which automatically activate a train’s emergency braking system if it passes a red light.

Aircraft are also a very safe means of transport, especially in Europe. However, the huge rise in the volume of air traffic, which is likely to double in the course of the next decade, makes it necessary to provide for improved accident-prevention measures and closer cooperation. The realm of air safety is already highly organised, particularly by virtue of the cooperation between the Community and the Member States of the Joint Aviation Authorities (JAA). Be that as it may, besides a clarification of the relationship between the EU and Eurocontrol, whose sphere of activity extends beyond the frontiers of the Union, the establishment of a European air-safety authority could be a means of bolstering the Community position in the international context.

A.2.2.11 Technology at the service of a sustainable transport system

The creation of sustainable transport systems will have to involve maximum use of the opportunities offered by technological innovation, which can facilitate the implementation of effective solutions in the aforementioned areas of activity. A recent study, which examined a number of potential scenarios, highlighted the key role of technology as a means of improving the sustainability of transport without restricting economic growth.\(^\text{56}\) Innovation can reduce the adverse environmental impact of transport operations by reducing emissions, noise levels, etc., and can improve their quality in terms of speed, comfort, etc., as well as their safety. Similarly, by increasing the competitiveness of certain modes of transport, it can present them with new opportunities and can strengthen their position in relation to the other modes, one example being the TGV high-speed trains.

If the potential offered by new technological solutions is to be fully exploited in the development of transport systems, the foremost priority is to work on the obstacles which, at various levels, can slow down the innovation process. The High-Level Group (HLG) established by the European Ministers of Transport has identified six categories of obstacles to innovation in the domain of transport:\(^\text{57}\)

- lack of knowledge of the available information sources,
- regulatory and legislative barriers,
- technical barriers,
- commercial and financial barriers,
- social barriers, and
- obstacles to decision-making.

The HLG report identifies three domains which should develop together so that technological innovation has the desired results: (1) technology itself, (2) the institutional situation in the relevant field (e.g. legislation, division of responsibilities, ownership), and (3) the prevailing culture (attitudes, preferences, values, etc.).


\(^{57}\) High-Level Group, *Document de travail sur l’innovation dans le domaine des transports*, European Commission, DGVII, Brussels, October 1999
The European Union plays a decisive role in the complex process of technological innovation, much of which is undertaken by the private sector. The main role of the EU is to regulate and stimulate innovation. Regulation consists in establishing interoperability and in promoting the introduction of useful technology which, although it is already fully developed, requires the imposition of more stringent rules to make it economically justifiable. Stimulation proceeds from the identification of market developments which demand active EU involvement and of technological solutions for which the market is unlikely to initiate the innovation process, and the aim of stimulatory action by the EU is to develop key innovations which are interoperable on a European scale, especially by means of research support (see point A.2.2.12 below).

The conclusion of the HLG report on innovation in the domain of transport identifies seven conceivable packages of political measures relating to the main technological challenges in the transport sphere. These packages are not based on specific technological solutions but tend to reflect the transport challenges of the future in Europe:

- the propulsion package,
- the urban package,
- the intermodal package,
- the aviation package,
- the rail-systems package,
- the package on information concerning navigation and transport movements, and
- the package on traffic management, communication and payment.

According to this report, these rafts of measures only outline solutions in the domains that should be covered by the European policy on innovation in the transport sector. In practice, there are huge numbers of potentially interesting innovations in each domain. The close link between technological options and political choices presents decision-makers with a complex task, requiring them to assess the possible medium- and long-term economic, social and other implications of emerging technology.

The identification of the most promising forms of new technology is important, not only as a means of supporting European innovation policy but also because it makes it easier to take due account of the potential impact of innovations in the formulation of strategic transport policies. An analysis conducted as part of the Fantasie research project identified a number of sustainable, appropriate and politically acceptable technological innovations. This analysis highlights what appear to be particularly promising technological solutions, not only in the unimodal domain but also in the realms of multimodal transport and information technology (see the table at Annex A-49).

Admittedly, delays in the development of some technological innovations make it unlikely that their impact – if they are to have an impact – will be felt within the next ten years. This is no excuse for neglecting the significant progress that has been registered over the past 30 years, such as the establishment of the Euro 1, 2 and 3 standards, the reduction of permissible HGV noise levels by 14 dB, the demonstration of the insufficient effect of hush kits in reducing aircraft noise, and so on. In numerous domains, moreover, innovations have already become so established that they are available for widespread adoption and for inclusion in transport policies. This applies especially to intelligent transport systems (ITS) and satellite navigation, which feature very prominently in the debate, since they are directly affected by the redefinition of the TEN-T.

The Commission attaches great importance to the development of new technological applications. Parliament also deems it important that emphasis be placed as far as possible on the use of modern technology and ITS. In Feira in June 2000, the Heads of State and Government approved the e-Europe programme, comprising a plan of action for the deployment of ITS. The political consensus is hardening in favour of these systems, which will be

59 For example, engines powered by a fuel cell consuming only hydrogen should be able to achieve the same price-quality ratio as combustion engines at some time during the period from 2020 to 2030.
able to contribute to the reduction of bottlenecks through better use of existing infrastructure, thereby making traffic flow more smoothly and improving safety.

**ITS** are a result of the application of ‘telematics’ (French télématique, a neologism combining télécommunications with informatique (computer science)) to transport. ITS cover all modes of transport and offer a wide range of services. In particular, new information and communication technology enables ITS to:

- facilitate intermodal transport and define new logistics strategies for both passenger and goods transport (online through-ticketing systems covering various modes of transport, monitoring of vehicles and freight and dissemination of information on available services, creation of an electronic market in intermodal services, etc.).
- improve the efficiency of transport infrastructure and services (traffic management, etc.).
- improve safety by means of both positioning and traffic control (air and sea) as well as by detecting incidents and disseminating information and by introducing other innovations in due course, such as automated roadways and electronic coupling of vehicles (anti-collision systems and vehicle platooning),
- establish automated charging and payment systems for infrastructure use, and
- providing infrastructure users with information and navigation services.

At the present time, the ITS development priorities identified by the Commission are as follows:

- road transport: speeding up the deployment of applications and services concerned with traffic management operation and control, travel and traffic information including route guidance, tolling, electronic payment and booking, commercial vehicle operations, collective transport services and advanced vehicle safety;
- rail transport: implementation of an advanced harmonised command and control system for the trans-European high-speed and conventional rail network;
- inland waterways: helping to develop technical and ICT installations for traffic management;
- air transport: rationalisation and better utilisation of airspace through the establishment of an efficient route network, and increasing air-traffic control capacities through the development of automated systems; harmonisation of facilities and procedures with a view to coordinating more effectively the activities of the various service providers; planning and management of air-traffic flow to optimise the use of available control capacity;
- maritime transport: implementation of new information systems (vessel recognition, interconnection of management systems, etc.) with a view to improving the surveillance, management and safety of shipping.

The creation of a European global navigation-satellite system (GNSS) must be regarded as the keystone of this new approach to the common transport policy, with its greater emphasis on the development of ITS. The many potential applications of GNS systems will make it possible to increase considerably the efficiency and safety of all modes of transport and to optimise the management of traffic flows by improving intermodal integration. Expert assessments indicate that the market for the numerous potential applications of GNS systems, both in transport and in other domains, is poised for considerable growth.

The two existing systems, GPS and Glonass, are already used extensively for civilian applications but remain under military control in the United States and Russia respectively. This state of affairs does not offer users and investors adequate guarantees of quality and continuity of service and limits the scope for the development of new applications. The need to ensure that the EU has control of positioning and navigation within its own territory and that European industry has access to this technology prompted the decision to launch the **Galileo programme** for the establishment of an autonomous satellite-based system for civilian use.

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61 The Galileo unit of the European Commission estimates that, over the first 15 years, the programme and its spinoffs should create a new market in goods and services that will be worth about €80 bn to European businesses as well as creating some 100 000 jobs. These economic effects would therefore justify a significant injection of public funding.
The numerous benefits associated with the development of such a system have served to create a degree of convergence among decision-makers. At its meeting in December 2000, the Council of Transport Ministers acknowledged the communication of November 2000 from the European Commission and confirmed that the development of the Union’s own constellation of satellites is a political priority; none the less, the Council refrained from taking a decision to initiate the next stage of the programme to follow on from the definition phase which is drawing to a close. It asked the European Commission to set up an interim management structure in association with the European Space Agency (ESA). So that the programme can develop efficiently, it is planned to create as quickly as possible a definitive management structure which will take over responsibility for EGNOS and will have control of the full budget comprising all the funds allocated to the project. The meeting of the Council of Transport Ministers on 5 April 2001 endorsed an action plan for Galileo presented by the Swedish presidency. Under this plan, the current priority is to lay down details of the funding and organisation of the programme.

In spite of some highly encouraging assessments, there remain stumbling blocks, most of which relate to the very high cost of the programme, which means that its economic viability must be assessed with the utmost care. Given the magnitude of the financial effort, the European Commission is relying on the active participation of industry in the funding of the project. Large-scale mobilisation of the private sector is fundamental in the view of the Council, which insists that private funds must be firmly committed before the deployment stage can begin. At the end of March 2001, the private sector signalled its interest and seems to be prepared to back up that interest with hard cash.

The draftsman of the opinion of the European Parliament Committee on Regional Policy, Transport and Tourism re-emphasised the importance of Galileo to the transport system and endorsed the preparation of a coherent European space strategy. In that context, he emphasised the importance of close collaboration between the Commission and the ESA and of a permanent mechanism that would permit periodic reviews of the strategy. He asked that Parliament be kept regularly informed of the progress made and, specifically, that it be sent the annual report on the state of progress in the joint implementation of the strategy with the ESA. He stressed that Galileo, GPS and Glonass must be made compatible and interoperable, especially with regard to the frequencies used, although Galileo must operate in a fully autonomous manner. He also highlighted the objective of enabling markets and society in general to reap the benefits of the system through demand-driven exploitation of the technical capabilities of the space community.

While the civilian character of Galileo gives it an advantage over GPS and Glonass in the sense that Galileo is able to attract more private funding, it is also essential that the system be designed in such a way that the range of services it offers can be adapted to suit the needs of users and to respond to developments in the market. The participation of the private sector and of other countries will depend directly on the technological choices that are made regarding the development of the system. The consultations that took place within the applications forum, comprising 50 members from the European and non-European countries involved in the programme, highlighted the need to develop a global service, covering the entire planet, so that uninterrupted navigation services can be provided for aircraft and shipping and so as to achieve the economies of scale that are needed if the programme is to attract the participation of equipment manufacturers and of industry in general. The selection of this option entails high costs, which could be defrayed in part if the satellites were to carry payloads for communication services. This option can only be exercised if a guarantee can be given to public funding bodies that it will not cause them to incur net liabilities, to which end it will be necessary to define the regulatory framework very clearly.

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62 The predecessor of Galileo, EGNOS is a radio-navigation system which depends on the GPS and Glonass satellites.
63 Communiqué issued by the Swedish presidency of the Council.
64 The development and commissioning of the system will require a huge financial effort. It is estimated that the cost of launching the Galileo system will amount to between €2.2 bn and €2.9 bn in the period up to the year 2008; the Community budget would cover about €750 m. of this amount; in particular, €500 m. should be earmarked in the budgets for the TEN-T and the framework R&D programme.
65 Draft opinion of the Committee on Regional Policy, Transport and Tourism on a communication from the Commission to the Council and the European Parliament on Europe and Space: turning to a new chapter (COM(2000)597 - C5-0000/2001 - 2001/0000(COS)). Draftsman: Mr Luís Queiró.
The applications of new information and communication technology (ITC) in the domain of transport present great opportunities, but they must not be seen as a panacea or as a vehicle for the expansion of the electronics industry. They must be exploited as fully as possible, but it must also be borne in mind that their use can do no more than contribute to a global solution. A number of studies conducted by specialists in this field have shown that technological innovations will not achieve their full potential unless they are part of a strategy which is designed to restructure the supply of transport services and the demand for mobility.\(^\text{66}\)

ITS should therefore be regarded as a means to an end rather than as an end in themselves; in the TEN-T framework, given the large number of potential applications, the choice of applications to be developed should focus on those that are consistent with the aims of the TEN-T. This assessment is an important factor in view of the increasingly significant role of technology in the definition of the CTP; it has a high strategic value, and some experts even warn against an excessively precise definition of priority activities in the realm of ITS, since developments in that field occur very rapidly, making it important not to take premature decisions which could preclude subsequent options.\(^\text{67}\) The effectiveness of this assessment could be enhanced by establishing a technology observatory, involving industry and users, and a regular report on the present situation and future prospects with regard to innovation.

Research plays a strategic role in support of innovation and in the development of early-warning systems, based on transport performance indicators, which can serve to improve:

- the monitoring of the transport system in terms of demand and supply,
- the definition of short-term and long-term transport policies and the reviewing of strategies, and
- the range of information available to operators.

These systems are able to help decision-makers to respond to the developing needs of society by quantifying trends in European transport, assessing the impact of the various political options and allowing constant fine tuning of policies in line with objectives (see also point A.2.2.7 above and subsection B.1.2 below).\(^\text{68}\)

**A.2.2.12 The role of Community research**

Research has a key role to play in the achievement of sustainable mobility in Europe. Parliament, the Commission and the Council attach great importance to the development of a technology-based approach, particularly to ITS, in order to improve the safety, efficiency and environmental sustainability of transport, and they recognise the important role of research as a catalyst in this domain. The role of Community research is particularly important in that it lends a European dimension to innovation while helping to ensure that the systems which are developed will be interoperable.\(^\text{69}\)

So Community research is also one of the keys to a stronger single market in transport services and equipment. This aspect is of particular importance to the Commission, which emphasises that the creation of the conditions for the efficient operation of a Union-wide market is a prerequisite for the successful marketing of innovations. Since the national markets are too small, the introduction of new technology must be effected on a European scale.

It is important to make the best possible use of Community research support by striking the right balance between measures that can best be implemented at the European level and those which should be taken nationally or locally in accordance with the general Community principle of subsidiarity and with the

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\(^\text{68}\) The SIMPT system, for which the Italian general transport and logistics plan (PGTL) provides, is an example; the system architecture is based on the logging of data on the range of available transport services, the production of macroeconomic and socio-demographic scenarios and the production of models relating to demand, analysis of the distribution of demand among transport networks and assessment of the impact of various policy options.

requirement that every Community involvement in an activity must create demonstrable added value. In other words, Community support is not necessarily appropriate in areas where industrial R&D has already been active; in such cases, the Community would achieve more by focusing its efforts on standardisation initiatives.

The various research programmes, particularly the framework R&D programmes, have led to significant progress, particularly by taking account of the specific nature of transport problems. The projects conducted at the national and Community levels have culminated in the demonstration of diverse ICT applications, some of which are already considered ripe for putting into service on a large scale. These successes, incidentally, were what prompted the EU institutions to incorporate ITS into the TEN-T policy.\(^70\)

Progress still has to be made, however, in a number of areas in which major safety improvements are essential, such as road and maritime transport, where the scope offered by technology is far from being fully exploited. There are also other domains, such as the railways, which have fallen behind because of the fact that technological innovation has traditionally taken place on a national scale and where research therefore needs to assume a stronger European dimension. Researchers themselves also recognise the need to engage in more intensive cross-border collaboration so that their national research can acquire ‘European added value’ in accordance with the European Research Area (ERA) concept.\(^71\) The stakes are particularly high in the debates on the forthcoming framework research and development programme (the sixth FRDP).\(^72\)

The success that has already been achieved shows that transport has been one of the main beneficiaries of Community research, which is chiefly due to the specific features of transport provision. There seems to be some doubt as to whether due consideration is being given to these specific features in the preparations for the sixth framework research and development programme, which could restrict the effectiveness of a forward-looking CTP.

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\(^70\) For a detailed summary of the ITS development projects implemented in the TEN-T framework, such as Ecortis, Eden, Marta and Cesare, see [http://europa.eu.int/comm/transport/themes/network/english/its/tent-projects.htm](http://europa.eu.int/comm/transport/themes/network/english/its/tent-projects.htm). For a more general summary of the projects that have been developed with the aid of Community support (from the TEN-T budget and the budget of the framework research programme), see [http://europa.eu.int/comm/transport/themes/network/english/tn_8_en.html#t2](http://europa.eu.int/comm/transport/themes/network/english/tn_8_en.html#t2).


\(^72\) Most of the governments have already published their opinions on ERA. A special website offers centralised access to the debates that have been taking place on the sixth framework R&D programme: [http://www.cordis.lu/rtd2002](http://www.cordis.lu/rtd2002)
PART B Transport in Europe – analysis and prospects

B.1 General aspects of transport policy

B.1.1 The development of the demand for transport in Europe

The continued increase in the demand for transport over the past few years is the main factor that has to be addressed in the effort to formulate a sustainable transport policy. The creation of the single market and economic growth have palpably increased the demand for freight transport in recent decades. The people of Europe are also travelling more and more, for various reasons: the increase in disposable income, the new geographical distribution of workplaces, etc. (see point A.2.2.3 above). Between 1979 and 1993, the average daily distance travelled has risen from 16.5 to 31.5 kilometres. In Eastern Europe, mobility is growing at the rate of 2% per annum for passenger transport and 3% for freight. Commission projections indicate that, if the growth in traffic remains tied to economic growth, the demand for passenger transport is likely to rise by about 20% and the demand for freight transport by some 40% by the year 2010.

The growth in demand for transport has been unevenly distributed among the various modes of transport. In general, road and air transport have been the growth sectors, while the other modes have stagnated. The volume of freight transported by road, for example, increased by about 3.5% every year between 1980 and 1996; for cross-border road haulage, the rate of increase was 6%. In 1970, 50% of the total volume of transported freight was carried by road; today, this figure has reached 75%. If present conditions continue to obtain, the volume of heavy goods traffic on European roads is likely to increase by 50% within ten years. The number of private cars on the roads is also increasing, albeit at half the rate for heavy goods vehicles. For all that, the number of private cars in the EU has almost doubled since 1975 (whereas there were 230 vehicles per 1 000 inhabitants in 1975, there are now 450 – see Annex A-43). Air transport has been experiencing spectacular growth, thanks to the increase in business travel and tourism, rising at annual rates of 5-6% and by 10% at peak times. It is certainly true that these two modes of transport are the most advanced in terms of liberalisation, but the main reasons for this shift in mobility lie in the development of the demand for quality.

As far as personal mobility is concerned, the factors that determine an individual’s choice of transport have developed with the general increase in prosperity and with social trends, which means that people are now demanding faster and more comfortable transport and are choosing means of transport to project a particular image. These factors have favoured private cars and fast means of transport, such as aircraft and high-speed trains. In the realm of freight transport, the transformation of the economy, the crisis of heavy industry and companies’ general tendency to reduce their stocks have brought about a marked decrease in the volume of bulk transport; hauliers’ customers are now interested in transporting consignments of freight with a high added value on a more sporadic basis; these consignments frequently comprise less than a full lorryload and far less than a railway truck or river barge could carry. Lastly, business customers require flexibility on the part of transport providers; they demand freight tracking and the ability to respond to logistical problems. It is for these reasons that customers prefer to deal with road hauliers, who can offer them a full logistics package and high-quality door-to-door service.

The territorial dispersal of industrial activity (see point A.2.2.3 above), which means that a high percentage of the total volume of freight transport is effected over short or medium distances, has not helped the development of the railways and inland navigation, which is inextricably linked with the development of intermodal transport. The latter accounts for barely 8% of the total number of tonne/kilometres transported annually within European territory. Maritime transport continues to play a vital part in the external trade of the European Union, with 90% of visible imports and exports travelling by sea, while the shipping lines’ share of the intra-Community transport market remains stable.

These trends are reflected in current developments in the countries of Central and Eastern Europe, where, alongside the growth in car ownership (see Annex A-44), road haulage is growing very rapidly at the expense of rail, which was the traditional mode of transport in those countries. In the years following German reunification,
the volume of rail transport in the territory of the former German Democratic Republic has fallen by 80%. It should be emphasised that the total volume of freight transport between the countries of Central and Eastern Europe decreased by 37% between 1989 and 1996; every mode of transport was affected by the decline in trade within the old Comecon market, but the railways were hit particularly hard, registering a 50% drop in freight business. Personal mobility, which is more difficult to measure, also declined sharply, with 40% fewer passengers travelling by rail. Trade with the EU has been the only area to buck the trend of general decline in Central and Eastern Europe in the period from 1989 to 1996, imports from the EU having increased by 20% to 102 million tonnes in 1996 and exports to the EU by 460% to 38 million tonnes. At the present time, the volume of EU exports to Central and Eastern Europe represents a small fraction of the Union’s total exports, but they are set to grow at a considerable rate.\textsuperscript{33}

As things stand, there is nothing to suggest that the growth in demand is slowing down. On the contrary, the strengthening of the single market through the introduction of the euro and the enlargement of the EU could ultimately increase the GDP elasticity of demand for transport. In the countries of Central and Eastern Europe, the slump of the nineties now seems to have been reversed, and a general increase in demand is observable; the TINA report foresees net growth in the volume of freight transport in the period from 1996 to 2015 – 40-70% in the volume of internal goods traffic, 90-150% in exports and 80-140% in imports. The number of travellers is expected to double, and even to quadruple in the case of international travel.

This growth in demand could, on the other hand, be accompanied by changes in its characteristics and distribution. If we analyse the trends, it becomes apparent that the \textit{growth in cross-border freight transport} has been more rapid than the general growth rate; this trend is likely to become even more marked as the single market gains in strength. Indeed, as the Commission has demonstrated, the average journey distance in the EU increased by 2% per annum in the course of the period from 1970 to 1997, and this trend will continue. In the medium term, this could result in an increase in demand for intermodal transport, which is more efficient over long distances. For the first time in decades, the transport of freight by rail is experiencing rapid growth, in the order of 10% in tonne/kilometres, whereas road haulage is growing at an annual rate of only 5%.

The GDP of the countries on the southern shores of the \textit{Mediterranean} is growing at an annual rate of 5.3%. About 150 million tonnes of goods are transported every year between the EU and the twelve partner countries that took part in the Barcelona conference; this represents about 10% of the external trade of the EU in terms of tonnage. Seagoing vessels carry 75% of these goods, which seem poised to grow considerably in volume. The growth in Euro-Mediterranean trade is likely to generate considerably more demand for maritime transport, especially in the case of trade with Tunisia and Algeria. As far as Morocco is concerned, shippers face competition from road-dominated transport chains which use the Gibraltar crossing and which specialise in the carriage of products for which the length of journey and the dependability of the service are vital factors (early fruit and vegetables and products of subcontracting industries, particularly textiles).

\textbf{B.1.2 Transport planning in the Member States}

The effectiveness of the CTP is closely linked to the coherence of national transport policies. It is effectively the Member States’ task to lay down the details of projects, to define their structure, arrange for their funding and set the timetable for their implementation in accordance with the relevant national programmes and in strict compliance with the principle of subsidiarity. The Member States are required to pursue the objectives of the Treaty in the framework of the CTP; it should also be emphasised that much of the Community legislation in the domain of transport takes the form of regulations, which are directly applicable to the Member States, rather than Directives, which must first be transposed into domestic law. The development of the CTP has increasingly significant implications for national and local transport policies, which require a high degree of \textit{coordination}.

The \textit{development of the TEN-T} could and should be an ideal basis for this coordination. However, the TEN-T that emerged from the 1996 decision is essentially a wish list produced by the Member States and the

\textsuperscript{33} For a detailed review of trade between the Member States of the EU and the applicant countries, Russia and Switzerland, see \textit{Statistical annex on enlargement}, European Parliament Briefing No 22, PE 167.614/rev.8, Luxembourg, April 2000.
juxtaposition of various unimodal networks. The current process of revising the TEN-T does not seem to have afforded the opportunity to transcend this narrow perspective (cf. the third paragraph of point A.2.2.1 above). We do not have comprehensive comparable data on each country’s proposals because, at the time of writing, neither the Commission nor a sizeable number of Member States divulge such information. However, the information that is available seems to suggest that the demand for revision will vary quite widely; some countries, such as Sweden and Finland are in favour of a revision of limited scope, while others, such as Italy, call for the inclusion of larger amounts of infrastructure (in the order of 18% for the road network). It would be logical to expect substantial requests from the least prosperous Member States (the ‘cohesion countries’), although the revision requested by Greece seems rather moderate and focuses primarily on the development of the network of island airports.

The requests reflect diverse needs. For example, the purpose of extending the Austrian road network is to establish good connections with the neighbouring applicant countries (roads linking Vienna and Linz with the Czech Republic and Slovakia), while the Italian request for the extension of the priority projects to include the Verona-Naples and Milan-Bologna railways is designed to upgrade important stretches of the Euro-Mediterranean transport corridors. Other requests seek to establish better connections with remote regions (such as the proposed link with the county of Västerbotten in Sweden) or isolated areas (by means of island airports, for example) or to rectify structural deficits (particularly in the cohesion countries).

The reasons for each request are legitimate in terms of the major objectives of the EU, but it is imperative that the Member States reach agreement on the principles underlying the revision of the TEN-T maps, which must be more clearly coordinated with the objectives of other policies (regional policy, cohesion policy, etc.). The reluctance of several governments to divulge the proposals they have submitted to the Commission indicates a lack of coordination. The development of the TEN-T suffers from the absence of any real method in the application of selection criteria (such as the anticipated demand or trans-European benefits). The desire to obtain funding often prevails over the substantive pursuit of a policy of European integration. The 14 priority projects were also largely proposed by the Member States, even though there was a broad debate on the criteria for assigning priority at the time of selection. This is one reason why some of the projects have fallen behind the timetable set in 1994 by the Christophersen Group – all, in fact, except those which were already being implemented at that time; apart from one airport project, most of these relate to road and conventional rail. This raises the question of the weight assigned to the maturity of projects in relation to other selection criteria. This aspect should be regarded as a priority criterion for the future selection of TEN-T projects and for their extension to the applicant countries.

There is a certain degree of bilateral cooperation, as in the case of the Nordic Council, some of whose activities relate to transport infrastructure and in particular to the coordination of supranational projects. One example of the activity of the Nordic Council is the coordination carried out in connection with the construction of the Øresund bridge and tunnel crossing. Another example of bilateral cooperation is the document produced jointly by Spain and Portugal on the multimodal connection of the Iberian Peninsula with the rest of the continent. European policymakers could take an example from these cooperative activities which are conducted within a clearly defined framework.

Lastly, it would be naive to underestimate the importance of the national concerns which outweigh Community interests, concerns reflected in municipal by-laws for the prevention of congestion in conurbations, in the provision of feeder

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75 Finnish Ministry of Transport and Communications, Update of Finland’s TEN Maps, letter to the TEN Committee dated 5 November 1999.
78 H. Adelsberger, National Transport Infrastructures in Austria. Federal Ministry of Transport, Innovation and Technology (BMVIT).
79 The guidelines are contained in the document Nordic infrastructure, signed by the Ministers of Transport of the Nordic Council States in 1997.
corridors to and from gateways or in measures to end the isolation of remote areas. Transit traffic is generally of somewhat secondary importance, even though its marginal social cost can turn out to be very high when parts of the road network approach saturation point. On the other hand, concentration on national advantages alone may rule out certain projects of real socioeconomic value which would be viable if implemented on a wider scale. In a single market where national borders no longer exist, is it logical to go on speaking of international traffic rather than of transit traffic serving the Community? The motorway linking Paris with Lille and the Benelux countries, for example, possesses the characteristics of an interregional cross-border motorway, whereas most Community transit traffic between North and South crosses further to the east, using the Burgundy corridor; the mere juxtaposition of national approaches, coupled with a lack of consideration of regional-development problems and failure to integrate the Community dimension into international trade, will not take us beyond cosmetic improvements and into the essential analysis of the very foundations of the common transport policy.

Every Member State presents its own medium-term transport policy; these policy documents come in various shapes and sizes, some are more formal than others, and not all of them distinguish clearly between programming and planning. As far as programming is concerned, the principle of annual budgeting predominates and robs the implementation targets of some, if not all, of their practical value. Moreover, consideration of the Community dimension is effectively non-existent, except in the case of the four countries that benefit from the Cohesion Fund. The reason for this is the modest volume of financial support that is available from the Community and the random manner in which it is granted. It must be said that the haphazard nature of this procedure has had an extremely detrimental effect on the administration of ISPA aid, at least in the year 2000.

With regard to planning, it goes without saying that each country’s guidelines reflect the main objectives of the CTP, namely the modernisation of the infrastructure networks, more effective use of the existing infrastructure, the definition of a fairer and more efficient charging system, redressing the balance between modes of transport, development of the intermodal approach, respect for the environment and the application of new technology. If we look beyond these politically correct intentions, however, we find the following fundamental divergences:

- the various socio-economic models that obtain in Europe – the Germano-Nordic model, the Mediterranean model and the anomalous British model - as well as differing national sensitivities to the environment, noise levels, etc.;
- differing levels of economic development; the countries at the lower end of the development scale tend to favour the development of the conventional transport infrastructure and are more often in receipt of Community support;
- diverse demands on the physical infrastructure: volume of Community transit traffic, size and importance of gateways.

In short, behind the stated commitment to a set of largely uniform principles lie substantive differences that are probably quite extensive, and even the practice of couching national policy documents in standardised language makes an authentic interpretation of these documents a largely illusory aim. The very nature of the documents varies considerably (see Annex A-24). Some are simple explanatory brochures; this does not mean, of course, that the countries in question have taken little care to define a strategy, because other procedures may exist. Other governments provide a general statement of objectives (the UK White Paper, for example), while others present a long-term framework, such as the Dutch plan, which is produced after a broad consultation process, or a comprehensive and methodologically rigorous catalogue such as the Italian plan; still others, like the French Government, with its 20-year public-service strategies (schémas de service collectif), adopt a pragmatic approach.

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In general, it remains difficult to find any genuine unity of vision in the approach and objectives of the Member States. For example, the methods of economic assessment on which investment choices are based are largely unique to each country; what is more, there are differences in the relative weighting assigned to the assessment parameters (time, human lifespan, etc.), which can count for up to ten times more in one country than in another; this undoubtedly reflects disparities in economic development and in the preferences of different societies, but it also indicates a degree of arbitrary choice. Technocrats and politicians also differ in the way they set these parameters. It would certainly be futile to try to unify the assessment process, but it seems essential to possess unambiguous data and to be aware that the quantified findings which are often presented as evidence of the ‘scientific’ and ‘objective’ basis of policy choices are obtained by means of assessment formulae with no claim to objectivity.

Differences in procedural approaches are sometimes very striking too. Some governments, such as that of Germany, collect data on the needs of each politico-administrative unit and categorise national needs on this basis; this method is a cross between programming and planning. Other governments establish master plans with a greater or lesser intermodal element as a framework for subsequent planning; programming, in these cases, is a purely budgetary operation. Others, like France with its public-service strategies, try to assess needs and then to identify the response that best meets those needs. Whatever approach is adopted, the same questions arise: what place is assigned in the decision-making process to users, to the general public and to the electorate, and in what spirit do the executive and administrative authorities enter into the process: do they listen to the people, or do they take decisions then try to ‘sell’ their choices to the people, assuming them to be objective and consistent with the general interest?

The analysis of these documents reveals a certain development in the direction of more and more political rather than technological content. This affirmation of the political value of transport planning is accompanied by a certain quest for transparency; the development of consultation procedures, especially through the Internet, is a step forward, enabling the public to interact with the governmental structure. What makes this aspect all the more important is the fact that transport plans cover a lengthy period of time – generally between 10 and 20 years – which demands a high degree of flexibility to keep pace with the rapidly changing needs of society and technology but also with the need for increasingly close European coordination.

The desirability of strengthening the environmental dimension of the guidelines is emphasised by various contributions to the process of revising the TEN-T. The difficulties involved in achieving that aim lie in the widely differing physical and cultural contexts in which it is pursued. The development of strategic assessment is a very important as a means of verifying the effectiveness of policies and adjusting their alignment if need be. Four European countries (Denmark, Finland, Italy and the Netherlands) have anticipated the establishment of European rules in the domain of strategic environmental assessment. Significant progress has been made by the Member States in this field.

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82 The governments of almost all the Member States provide for plans to be updated to take account of any intervening economic and social changes. The Dutch NVVP, for example, which sets out the main priorities for the period up to 2020, attaches great importance to this concept, prescribing a regular updating of the Government’s political agenda and of the various programmes that are being implemented. This includes the annual updating of the multiannual infrastructure and transport programme (Meerjarenprogramma Infrastructuur en Transport).

83 See, for example, the Swedish and Greek contributions.

In the realm of infrastructure policy, following the expansive policies of the postwar decades, constraints deriving from tight budgetary discipline have reduced the general level of public investment as well as posing problems for some of the priority projects. Although tight budgetary discipline will continue to obtain in the coming years, the favourable economic context and the improvement of the budgetary situation in many countries could lead to higher spending. One of the key objectives of budgetary consolidation, in fact, is to assign a more important place to this type of investment, which is highly productive in macroeconomic terms. The Member States’ programmes would appear to signal a large increase in spending over the next five years as the most ambitious projects enter the construction phase; according to the Commission, investments could be twice as high as they were during the period from 1995-1999. These optimistic forecasts should, however, be refined; some countries, such as Spain, are likely to commit substantial resources (about 1.4% of GDP) to transport projects during the period from 2000 to 2010, a period when their general public investments will exceed the EU average (3.4% of GDP, as against 2.4%).65 Others, such as the Netherlands, do not seem to have planned an increase in funding; the Dutch ‘megaprojects’ are due to have the greatest financial impact in the years after 2010.66

These diverse situations do not facilitate the implementation of a European infrastructure policy, especially since, as the European Commission has emphasised, such a policy cannot easily be monitored, because the requisite information is not always available, and the available information is not always complete and varies considerably in quality from one country to another. The need that the Commission has highlighted67 for a more methodical approach to the collection of data on investments remains obvious. It is essential that the Member States undertake more extensive adaptation of their programmes in order to increase their level of investment, especially in the priority projects, and that they find the resources they need to achieve that goal, which may involve recourse to public-private partnerships, in order to optimise the use of Community aid.

Investments in new infrastructure reflect a variety of needs (see the third paragraph of this subsection). We might well ask, however, whether there is not a danger of sinking into symbolism, in other words of implementing some projects because of their symbolic value or political correctness rather than any intrinsic socioeconomic utility. Moreover, infrastructure is not useful in its own right but is the medium for the provision of a transport service; the efficiency of operators and their ability to respond to demand therefore seem to be paramount. In this respect, comparative studies on services provided on a cooperative basis, such as Eurostar or Thalys, would undoubtedly deliver some extremely illuminating insights.

The national transport policies also show the depth of desire to redress the intermodal balance. In this respect too, a certain degree of variety emerges among the Member States. For example, Austria, a transit country, intends to invest first and foremost in rail transport and is also pursuing a policy of diversification into inland waterway transport.68 Greece’s geographical situation compels it to accompany its motorway programme with support for the development of air and sea transport. The Netherlands has decided to abandon its traditional policy of limiting the relative volume of road traffic,69 while its neighbour, Belgium, in its National Mobility Plan, which should be ready by the middle of 2001, seems to be opting for more active management of traffic flow.70

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65 Comision de Infraestructuras del Senado, Comparecencia de F. Alvarez-Cascos, Ministro de Fomento, 15 September 2000
67 Trans-European transport network – 1998 report on the implementation of the guidelines and priorities for the future. Report from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions.
68 Austria focuses especially on the improvement of the navigability of the Danube (Corridor 7), which requires a pooling of efforts on the part of the numerous states whose territories are crossed by the Danube (Germany, Austria, Slovakia, Hungary, Yugoslavia, Bulgaria and Romania).
69 The policy and measures defined by the Dutch National Traffic and Transport Plan are no longer based on government regulation of the volume and direction of traffic flow. Mobility is accepted as being an inherent feature of modern society. The main policy aim is to reduce the adverse effects of the growth in mobility. There is no longer any attempt to designate priority modes of transport for particular routes, as in the second structural traffic and transport management strategy (Tweede Structuurschema Verkeer en Vervoer). There is no longer a prescribed ceiling on the growth of motorised traffic.
70 General policy statement issued by the Belgian Ministry of Communications and Infrastructure for the financial year 2001.
Intermodal transport is the focus of particular attention at both the Community and national levels. Some countries, such as Germany and the Netherlands, have been adopting a multimodal approach to transport policy for decades, and in general the Member States have been attaching more and more importance to this approach, devising integrated transport schemes such as the Italian national integrated transport system SNIT and the public-service strategies in France. Some Member States have specific instruments for the promotion of combined transport, for example tax concessions, road-toll exemptions and tax exemptions for the purchase of vehicles. The European Union itself has implemented programmes designed to encourage the use of combined transport in the framework of the PACT (Pilot Actions for Combined Transport) scheme, which is to be replaced by the Marco Polo programme. Another important feature which distinguishes PACT from other forms of Community aid is that it is not confined to investment expenditure but can also be granted in respect of operating costs.

In the European context, intermodal transport takes different forms, which depend on various factors such as geography, existing networks and logistical resources. While the main intermodal adjustment effort centres on the development of combined rail/road transport, each Member State is also trying to develop other approaches in accordance with its own infrastructural resources – inland navigation in the Netherlands, Austria and Germany, seaways in Italy, etc. The diversity of national situations requires a broader approach to the definition of specific strategies that will reflect the transport priorities of the various Member States and allow intermodal transport to achieve its full potential on a European scale. The development of the European dimension is one of the keys to an intermodal system, but it presupposes the resolution of issues with technical, economic, legal and political aspects (problems of interoperability, lack of coordination between operators, user charging, etc.), issues which are obstacles to a generalised intermodal approach. Factors which place particular countries in dominant positions, such as the multimodal resources possessed by countries where major European gateways are located and the rationale that results in the concentration of major shipping companies, run counter to the aim of a universally beneficial trans-European system.

In the domain of infrastructure pricing, the European rules are still being defined, and in the Member States the debate is centred on the problem of determining external costs and including them in a pricing system. The funding of transport policies is maintained in the majority of cases by means of fiscal revenue (fuel duty, road tax, etc.) and through government and local-authority grants. But a number of governments are currently examining the possibility of a contribution that is more closely linked to the actual use of the transport infrastructure. This option has the twofold advantage of coping with the growth in demand and generating funds for investment in infrastructure. Studies conducted as part of the fifth framework R&D programme (CAPRI and TRENEN) have produced exhaustive analyses of the present charging system and have found that in some countries the costs arising from the use of infrastructure are essentially recouped by fiscal means, whereas in other countries most costs are met from toll revenues. In general, the present taxation and charging systems do not reflect the social cost that is assignable to each mode of transport and do not, in general terms, serve to defray all the internal and external costs that are generated by the use of the transport infrastructure. When the principles of user charging are defined on a European scale, the question of the subsidiarity principle must also be addressed.

The national planning processes vary in the division of roles and powers. There seems to be a desire for greater subsidiarity at the national level in various countries, where the intention is to devolve some powers from central government to the regions or to strengthen the powers that are already devolved. This approach enhances the role of infrastructure as an engine of local development, an infrastructure which is designed not only on the basis of broader national or European objectives but also in awareness of the need to integrate it more fully with the other

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91 In the realm of road haulage, the Dutch Government is planning to replace the Eurovignette road-tax disc with a variable tax, preferably based on the number of kilometres travelled. In this context, the Netherlands is focusing on cooperation with Germany as well as on the examination of systems, based on a charge per kilometre, to be introduced for private cars. The rate will also depend on the pollutant properties of the vehicle in question and the time of day at which it is driven. The legislative proposal on Bereikbaarheid en Mobilitéit (Accessibility and Mobility Bill) comprises general provisions on charges designed to decongest the road system (peak-hour charge) or to part-finance the construction of high-quality roads in collaboration with private funding bodies. From 2006 onwards, pay lanes and toll roads, built by public-private partnerships, can become operational. Charges will be collected by a national body, which will be an easier way for users to pay and will make the system more accessible.
instruments of local development. While national policymakers, and hence the authors of national transport policies, are opting resolutely for devolved decision-making and resource management, the national authorities retain sole legal responsibility for the proper execution of these policies and their consistency with European rules and regulations. This implies the need for close communication in order to guarantee the efficiency of the interface with the European Community.

Maritime transport requires a high degree of coherence among the Member States, particularly in view of the extent of its extra-Community dimension. In this domain too there are areas of incoherence between national actions. Because of the legitimate quest for control of maritime transport, a number of countries negotiate deals with their shippers to induce them to sail their ships under the national flag again.92 This means that there are considerable disparities between the tax rules that apply to investment in ships and to the rules and costs relating to the various flags of the EU Member States93 (see Annex A-22). This situation means that maritime transport is far removed from the Community principles of encouraging healthy competition and improving quality and efficiency (see point A.2.2.10 above and subsection B.2.7 below). One cannot but deplore the fruitlessness of the efforts that have been made to date at the Community level to promote the harmonisation of national policies and to create a European maritime flag. There is a need to give more thought to the organisation of a competitive framework that will enable European shippers to invest in and modernise their fleets. As far as the ports are concerned, it is also obvious that each country’s interest in either maintaining the major European gateways or ensuring that it has as many ports as possible within its own territory is incompatible with the aim of obtaining a port network that is coherent with the development of trans-European road, rail and waterway links.

B.1.3 Transport planning in the applicant countries

The abandonment of command economies in 1989 shattered the status quo in the domain of transport in Central and Eastern Europe. The prospect of forthcoming accession necessitates intensive cooperation with the European Union, especially during the preparatory phase, with a view to establishing a common transport policy that is designed to develop the transport system and promote sustainable mobility. The main areas of this cooperation are:

- harmonising national laws and regulations with Community legislation,
- developing the institutional structure and the administrative capacity to apply the body of Community law and practice,
- restructuring transport services, improving the quality and safety of transport and adapting it to EU standards, and
- developing, modernising and interconnecting the transport infrastructure.

Alignment with Community law and practice (the acquis communautaire) constitutes a major challenge to the applicant countries, particularly those in Central and Eastern Europe, including the Baltic States. Following the political upheaval of the last decade, these countries have to undertake extensive restructuring at every level, beginning with the administrative machinery, which is often ill prepared to set about applying EU standards. This alignment process entails high levels of expenditure, which are liable to rise still further in the coming years. These countries can count on strong economic growth in excess of 4% per annum.94 This favourable economic context will greatly stimulate the development of transport and promote the restructuring of that sector of the economy. However, despite the economic recovery, the economic situation of these countries remains difficult, and considerable resources will have to be released by the international community, and more

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92 This aim is clearly proclaimed by the Belgian Ministry of Communications and Infrastructure, for instance.
93 The cost of registering a small vessel can vary, the cheapest second registrations (minimum fee in Denmark, Madeira (Portugal), Norway (Norwegian International Ship Register (NIS) and the Netherlands) costing five or six times less than in the most expensive flag State (France).
94 Average inflation nevertheless remains high (more than 10% per annum). External deficits are likely to remain at fairly high levels (over 6%) but should be sustainable at those levels, in accordance with the terms set by the Commission. One of the Commission’s stipulations is that guaranteeing such sustainability should be one of the main objectives of the economic pre-adhesion programmes which will be drawn up by the applicant countries from 2001 onwards as part of the budgetary surveillance procedure for that period.
especially by the EU, to prime their economies. In the realm of transport, upgrading the institutional structure remains a matter for the PHARE programme, while infrastructure support is now provided from the structural pre-accession instrument (ISPA).

The request made by the EU for full alignment of the applicant countries and the inability of the latter to fulfil that request without considerable financial and administrative support from the EU are the source of a certain degree of tension. Even with a sizeable injection of aid, some objectives will remain unattainable by the prescribed date. This has led to negotiations on transitional arrangements, such as those concluded with Hungary on tax harmonisation and on the right of EU-based operators to provide domestic road-haulage services within Hungary (cabotage). It is essential to harness the impetus of the accession process in order to achieve alignment, and so these arrangements must be clearly restricted to particular domains and should only apply for a limited time; they must also be accompanied by detailed and realistic alignment plans in which the requisite investments must be specified.

The applicant countries have made remarkable efforts, and some have already achieved significant progress. According to the Commission’s progress reports for the year 2000, the rules that apply in many areas are already similar to those in force in the EU or are at a fairly advanced stage of preparation;\textsuperscript{95} it seems unlikely that the harmonisation of transport legislation will be an obstacle to accession. This statement, however, requires qualification; it applies to some countries, such as Slovenia, which already have the necessary legal framework in place and therefore seem able to meet the requirements of the EU with regard to transport prior to their accession. But a good number of the applicant countries have some leeway to make up in significant areas.

A quick appraisal shows that good progress has been made in the harmonisation of legal provisions on road transport but that major steps still have to be taken in the field of social legislation (maximum driving times, for example)\textsuperscript{96} and in the law governing transport contracts. Constraints on national budgets have resulted in drastic reductions in the maintenance of infrastructure and equipment in most of the applicant countries; the need to improve the quality and safety of transport is a major problem and affects every mode of transport. The progress that has been made in these directions is, to some extent, satisfactory and even encouraging, but some countries, such as Romania and Bulgaria, need to step up their efforts to come up to Community standards.

The opening of markets demands a considerable effort. For all the legislation that has been adopted in the various countries, liberalisation of the railways has fallen behind, beginning with the restructuring of the monolithic national companies, some of which, such as the Polish State Railways, are on the verge of bankruptcy. In some cases, reforms have led to the closure of uneconomical lines and stations as well as staffing reductions, as in Romania, and have met with fierce resistance. Nor has restructuring been an easy matter in the realm of air transport. The privatisation of national airlines has run into difficulties, as in Hungary, where the Government has been unable to find private investors.\textsuperscript{97} In the sphere of maritime transport, the restructuring and privatisation of the state-owned merchant fleets and the strengthening of administrative structures remain the priority tasks for some countries, such as Poland. This situation makes for a lack of competitiveness within the markets as well as having a detrimental effect on the balance between the various modes of transport.

The intermodal approach and combined transport are still in their infancy in the applicant countries. Most freight has traditionally been transported by rail, but in recent years, as we saw above, the railways’ share of the market has been dwindling rapidly in favour of the road hauliers. Enlargement presents a great opportunity to redress the transport balance in the EU. It seems essential that the development of road and rail links is accompanied by the development of a network of interfaces such as interports and intermodal terminals to encourage the use of intermodal transport and to ensure that the best possible use is made of the infrastructure network.

\textsuperscript{95} See the European Commission’s Progress Reports dated December 2000, at http://europa.eu.int/comm/enlargement/index.htm

\textsuperscript{96} The discussions taking place on distortions of competition that result from EU-based businesses employing Central and Eastern European drivers at reduced pay rates (the ‘Willy Betz’ syndrome) emphasise the importance of alignment in the realm of social legislation.

\textsuperscript{97} Hungary has asked for a transitional period until 2005 to enable it to restructure and strengthen the national airline before the market is thrown open; see chapter 9 of the relevant progress report (CONF-H 37/00).
Besides the transposition, application and enforcement of Community legislation, it seems important to focus on the definition of a strategic approach, of an **infrastructure policy** that is capable of guaranteeing long-term sustainable mobility. This aspect is particularly important in relation to land transport, which, because of the territorial continuity between the EU and the countries of Central and Eastern Europe, will carry most of the trade between the old and new Member States of the enlarged Union. The ten continental applicant countries have quite large terrestrial transport networks, especially rail networks (see Annex A-46) 

but in many cases these networks are not equipped to meet the requirements of modern-day transport. The infrastructure is often below EU standards, and the pursuit of interoperability is dogged by major problems.

A major technical effort is required if **interoperability** is to be achieved within the rail system, especially by means of the eventual adoption of the ERTMS command and control system. Considerable investment is needed to equip roadways to bear the prescribed maximum axle weights, and it is likely that a transitional period will be required in Poland, Hungary and other countries. The length of that period and the upgrading plan will certainly be major subjects of negotiation, along with the likely demand of the Member States that, as a reciprocal concession and an incentive, a certain linkage be established between compliance with EU standards and the opening of the Community transport market to enterprises from the applicant countries, which enjoy advantages over their EU competitors and will continue to do so until their countries have incorporated the entire body of European transport legislation.

The development of an integrated transport system in Europe which can guarantee the proper level of safety and the best possible use of the various modes of transport is a priority objective of the CTP. One major effort which the new Member States will have to support is the **development and improvement of links** with the rest of the EU and with other adjoining countries in accordance with the trans-European rationale. This objective implies the pursuit and development within the countries of Central and Eastern Europe of the TEN-T policy, the guidelines for which are set out in the TINA report. 

The adoption of national plans which take account of the Community guidelines and the pursuit of the modernisation and development of priority infrastructure must be undertaken in full awareness of the amount of investment these things will require. The establishment of the TINA network would tie up about 1.5% of GDP for the next 15 to 20 years (see Annex A-24b). Some governments are finding it difficult to sustain that level of commitment. 

The scope for recourse to public-private partnerships seems to be more limited in the countries of Central and Eastern Europe than in the West. 

The strategy reports produced in the ISPA framework paint a largely uniform picture. As the TINA projections suggested (see Annex A-24b), government investments are concentrated primarily on the modernisation and development of road and rail links. In Romania, the Ministry of Transport intends to devote the entire ISPA funds to road and rail projects, with the possibility that a small allocation could also be devoted to internal waterway transport. Some countries are attaching priority to rail projects, which is a good thing, since it can help to halt the decline of the railways; one such country is Slovenia, one of the most advanced countries in terms of its infrastructure, a country that has made considerable progress towards the attainment of Community standards. Generally speaking, however, preference seems to be given to road projects. Given the scarcity of resources, the construction of new motorways and the upgrading of existing roads seem to offer the prospect of higher returns in macroeconomic terms. In some areas, the entire investment budget is being devoted to upgrading – for

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98 The rail networks of these countries amount to 66 462 km, which is the equivalent of about 40% of the aggregate length of all operational railway lines in the 15 countries of the EU. Passenger traffic in the ten continental applicant countries represents 19.4% of the total in the present EU and rail freight accounts for 58.5% of the EU total. It should be mentioned that the gauge of the rail tracks situated beyond the border of the former Soviet Union and in Finland differs from the standard European gauge, which poses a huge technical problem with regard to interoperability.

99 See the TINA final report at http://www.tinasecretariat.at/report.html

100 An ECMT study reveals that the countries of Central and Eastern Europe will not be able to contribute more than 20% of the volume of investment that is required for the creation of an appropriate transport system; see European Parliament, *Transport policy and the enlargement of the EU* (see footnote 10 above).

101 In Romania, for instance, the call for tenders for concessions under the motorway programme, which was organised in 1998 with the support of the EBRD, proved fruitless, because the potential return on investment was very low. At the end of 1998, Romania adopted an improved legal framework for the organisation of concession schemes (Law on Public Property and Law on Concessions) and is now planning the creation of public-private partnerships for the development of ports and intermodal terminals.
example, the work that is being done to bring the Romanian rail network up to the standards laid down in the European Agreement on Main International Railway Lines (AGC) and the European Agreement on Important International Combined Transport Lines and Related Installations (AGTC) and the upgrading of the link between Zidani Most and Maribor in Slovenia, which forms part of strategic rail corridors 5 and 10 – and may be accompanied by technical-assistance projects, such as the introduction of the global standard for mobile communication – rail (GSM-R) and the European Rail Traffic Management System (ERTMS) and European Train Control System (ETCS) into the Slovenian rail network.

Efforts are generally focused on a limited number of large-scale projects as a matter of preference, the principle being that they should complement the projects funded by the international financial institutions. International funding is substantial, accounting for 30% of all investments on average. It goes without saying that such funding is reserved for projects that are consistent with national priorities, which is not always the case; some parts of the infrastructure can be more valuable as part of a trans-European route than as a national transport artery. Conversely, some of the projects implemented by national authorities do not relate to trans-European corridors and are therefore ineligible for support from ISPA. 102

The lack of coordination we have observed among the Member States is a fact of life in Central and Eastern Europe too, as is demonstrated by the difficulty experienced in coordinating investments in the Danube between the Governments of Bulgaria and Romania. Moreover, the of the Danube corridor has been sharply reduced by the Kosovo conflict; following the destruction of numerous bridges, the navigable part of the river has been cut in two, with Serbia in-between. However, recent political developments and the creation of a Community fund to unblock the Danube at Novi Sad are likely to enhance the appeal of the Danube corridor (see the map at Annex A-16), which is a key element in the development of trade between the EU, the Balkans and the Black Sea.

A number of projects are already the subject of calls for tender, which raises the question of transparency in the administration of funds. Fund administration, which largely devolves upon the recipient governments, should be governed by the principles that apply to the structural funds (additionality, complementarity, coordination and financial control). Despite considerable progress and the adoption of new rules, there remains some cause for concern, particularly in view of the widespread inexperience and the absence of a general framework for the identification of any irregularities. Since the structural funds are supposed to increase on accession, it is very important that the authorities in the acceding countries should be able to allocate and administer these funds properly. These authorities are therefore expected to strengthen their human resources and their capacity for interdepartmental coordination. Finally, it is essential to obtain hard and fast evidence that, in accordance with the additionality principle, the national authorities will be able to raise matching funds to cofinance all of the projects which are programmed and administered on a multiannual basis. 103 On the other hand, the mobilisation of Community support has sometimes been frustrated by a cumbersome administrative apparatus, and the applicant countries have certainly not been the only source of this problem.

As far as Cyprus and Malta are concerned, the main questions that need to be answered relate to maritime transport. These countries were among the first to compile major shipping registers and continue to feature today among the countries with the largest registered fleets in the world. 104 A considerable percentage of the vessels registered in Cyprus and Malta belong to EU-based shipping companies. The conditions of registration and operation that apply to these vessels are a matter of concern for the European Union, especially in terms of the distortion of competition, safety risks and marine pollution. The progress reports for the year 2000 indicate that

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102 This is the case, for example, in Romania; see National ISPA Strategy: Transport Sector - Final, May 2000.
103 This question was raised, for example, in the draft opinion presented in April 2001 by Mr A. Poli Bortone, on behalf of the European Parliament Committee on Regional Policy, Transport and Tourism, on the regular report from the Commission for the year 2000 on the progress of the Czech Republic towards accession.
104 In Malta, for instance, total gross tonnage registered in accordance with the Merchant Navy Act 1973 amounts to 28.6 million tonnes, or approximately 1 500 ships (including 430 bulk carriers, 420 dry cargo ships and 330 oil tankers), which makes the Maltese merchant navy the fifth-largest in the world. It is a fair assumption that registration in Malta enables ships from 49 countries to sail under a flag of convenience. There is no classification society in Malta, where it is possible to effect ‘emergency registration’ of a vessel 24 hours a day. The Maltese flag is regarded as a high-risk flag. See the draft opinion presented on 10 April 2001 by M.F. Watts, on behalf of the European Parliament Committee on Regional Policy, Transport and Tourism, on the regular report from the Commission for the year 2000 on the progress of Malta towards accession.
these countries, especially Cyprus, have made remarkable advances, but it is a fact that vessels registered on the two islands are still subject to an immobilisation rate of about 10%, which is far higher than the EU average of 3.2%. Cyprus and Malta must endeavour to align themselves with EU quality and safety standards. Their accession depends on their assimilation of Community law and practice in the realm of maritime transport and of the measures contained in the Erika I and Erika II packages which are currently being examined by Parliament and by the Council (see point A.2.2.10 above). This implies that sufficient resources must be made available to meet the target of a 25% inspection quota and to satisfy the other requirements. Cyprus and Malta must take due account of all measures relating to seaports, especially the Directive on access to the market in port services.

B.1.4 Strategic transport planning by the enlarged European Union

The issues that have been addressed in this study show us how very important it is to intensify planning activity at the supranational level on the basis of a strategic approach when it comes to redefining the common transport policy. The increasing strength of the single market and the integration of the applicant countries will be accompanied by growth in the demand for transport.

The enlargement of the EU is a major investment in the future of transport in Europe. Developments over the last few years have indicated a massive swing to road transport in those countries, setting the scene for the same process that has taken place in Western countries in recent decades. This trend could have disastrous consequences, and curbing it is one of the priorities of the European Union. Aware of the limits of road transport, the Union aspires to a form of mobility which relies more heavily on integrated systems and an intermodal approach. The development of a balanced system of road transport is undoubtedly necessary, especially in the countries of Central and Eastern Europe, for the sake of economic growth, but such development must take place in the framework of a strategy designed to achieve sustainable mobility in the long term. The transport patterns in those countries will have a vital bearing on the quest for sustainable transport in our continent because, with enlargement on the horizon, they could nullify the achievements of the Community in this domain.

An active policy in this domain could be bolstered by the enlargement process. By increasing the volume of trade and lengthening journey distances, enlargement offers a good opportunity to achieve greater balance within the European transport systems. The integration of the Central and Eastern European countries rekindles the prospects of rail transport, which still plays a key role in those countries, despite the crisis of the nineties. Globalisation, which increases the volume of intercontinental trade, will lead to growth in the volume of maritime transport, which could facilitate the development of shipping as a vehicle of intra-Community trade too. The development of intermodal transport is a priority; efficient intermodal services can be the key to optimising the use of the transport infrastructure.105

Infrastructure policy is especially important as a means of coping with the growth in demand and rebalancing our transport systems. To this end, it is essential to make more resources available and to ensure that they are used more efficiently. At the Community level, we must satisfy ourselves that the aid which is granted is fully in line with the political priorities of the EU and that critical projects, such as those promoting rail and intermodal transport, are given precedence. In the realm of pre-accession aid, the financial involvement of the EU has a highly strategic character, and it seems legitimate that such aid should be used as a matter of priority to support projects designed to promote sustainable mobility in accordance with the aims of the Community. Thus, in view...

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105 An example may be found in the development of trade with Russia and the other countries of the Commonwealth of Independent States (CIS). It had traditionally been almost compulsory for all traffic to or from those countries to be routed through the countries of Central and Eastern Europe. This traffic was starting to saturate parts of the overland transport network, and enlargement seemed likely to exacerbate these problems. Transport operators have found a solution to these problems by reorganising the flow of traffic in the area of the Baltic States and Finland, from where they are forwarded by road or rail to their final destinations. So whereas only two million tonnes of freight cross the border at Brest on the railway between Poland and Belarus, a total of 15 million tonnes crosses the Russo-Finnish border, bypassing Poland. When the goods have been discharged at a Finnish port, they are then loaded onto railway wagons with Russian-gauge wheels, since Finland and Russia use the same gauge. This solves the interoperability problem. So there is effectively intermodal sea/rail transport. Once the new port is built at Vuosaari, near Helsinki, Finland will play an even greater role as an EU gateway to the Baltic States and Russia.
of the importance of rail in the countries of Central and Eastern Europe, it would appear expedient to extend the
rules governing the distribution of funds as specified in the TEN-T Regulation (minimum 55% to rail and
combined transport) to cover pre-accession aid too; this will presumably entail coordination with the PHARE
programme so that the necessary institutional adjustments can be made. In addition, the systematic development
of pilot actions for combined transport (PACT) involving these countries can make a significant contribution to
the maintenance of a fairer balance between road transport and the other modes.

The above analysis has highlighted a number of fields of activity in which the efficiency of the CTP could be improved with a view to addressing demand and achieving sustainable mobility:

- **Closer coordination** of national policies is necessary at the project planning and implementation stages,
  so that greater coherence can be achieved and so that Community support can be used to the greatest possible effect.

- Systematic use should be made of the **lever of Community support** (TEN-T, ISPA, the Cohesion Fund,
etc.), so as to promote the coordinated involvement of the governments of the Member States and
  applicant countries and of the private sector.

- **The linkage between planning and programming should be strengthened** with a view to ensuring
  that the Community funds are used more effectively. The priorities in the guidelines and those in the
  multiannual indicative programme should be closely linked.

- **Criteria** – for example the expected level of demand, expected completion dates, contribution to the
  improvement of environmental safety and of the territorial balance – must be more clearly specified,
  so that the priority projects can be selected and implemented. A well-defined framework is essential;
  consideration of national advantages alone may exclude projects offering socioeconomic benefits on a
  wider scale.

- **Clear data should be available** as a basis for sensitive selection and planning, as a means of improving
  transparency at every decision-making level (through reports presented to the European Parliament,
  consultation procedures, etc.).

- Efforts should be made to give a **common dimension to strategic assessment**; the common standards
  should then be applied as far as possible in network-based assessments. For example, the manner in
  which bottlenecks are relieved should be described in the context of the network.

- **Greater account should be taken of environmental considerations**; the instrument of strategic
  environmental assessment (SEA) should be used at every stage in the planning process, and care should
  be taken to avoid the practice of using SEAs to defend previous decisions instead of using them to assess
  available options.

- The **complementary nature of the various support instruments** should be exploited in order to
  maximise the degree of cross-fertilisation between policies (TEN, cohesion, regional development,
  ISPA, etc.), so that the best possible use is made of Community contributions.

- Care should be taken to verify the effectiveness and coherence of the **interface between the regions,
  national governments and the EU**.

- In the **domain of maritime transport**, the harmonisation of national policies should be promoted in
  order to create a level playing field. A systematic effort should be undertaken to establish strong
  common positions which would lend greater weight to the Community Member States and institutions in
  international negotiations.
• The impetus generated by the accession process should be exploited with a view to ensuring that the applicant States align themselves as closely as possible with the body of Community law and practice (the *acquis communautaire*), especially as regards social legislation (to prevent social dumping), the opening of markets and transport quality and safety, in order to improve the efficiency of the various modes of transport and to achieve the best possible intermodal balance.

• The effort to improve the transport infrastructure should be stepped up as a means of coping with the growth in demand, *minimising interoperability problems* in the Member States and applicant countries (introduction of the European road-traffic management system (ERTMS), improvement of the traffic-bearing capacity of European roadways, etc.) and promoting the intermodal approach.

• An *efficient charging system* for the use of infrastructure should be established with a view to controlling the level of demand more effectively, restoring fair competition between the various modes of transport and helping to fund investment in the infrastructure. ‘Shadow tolls’ (paying the private sector to build new infrastructural facilities) could be used in areas where user-funded investments are a less viable proposition.

• The *efficiency of the transport infrastructure and of transport services should be improved* by means of closer cooperation between infrastructure providers (such as the trans-European rail freight freeway (TERFF), which operates as a one-stop shop) and between service operators in domains such as rail transport and intermodal services, as well as through the application of intelligent transport systems (ITS) to traffic management, etc.

• The *efficiency of intermodal transport services should be improved* by means of greater investment in transshipment points such as ports and terminals. The support framework for multimodal initiatives should be broadened. The systematic development of pilot actions for combined transport (PACTs) in the applicant countries could help to maintain a fairer balance between the demand for road transport and the demand for other modes of transport.

### B.2 The benefits of the various modes of transport and the prospects for each mode

Because of the very high cost and long-term impact of transport provision and in particular of transport infrastructure, a strategic approach to transport planning must be adopted, an approach that allows for assessment of the potential impact of innovations within each mode of transport. Technical innovations can actually create new potential for particular modes of transport, thereby altering the balance between the various modes. This section of the study analyses the prospects for each mode of transport in greater detail with a view to refining the foregoing observations and assisting those in the decision-making chain who have strategic choices to make.

One of the main purposes of the present section is to assess the impact that innovation in the domain of transport systems can have on the definition of future mobility. To that end, we shall indicate the technological options which have the potential to become the instruments of an effective and sustainable transport policy for Europe. These options can help to ensure that each mode of transport is used to best advantage as part of a developing intermodal system.

#### B.2.1 Road transport

For several decades, road has been by far the dominant mode of transport in Western Europe, although this statement should be put into the proper perspective: the overall volume of road traffic in absolute terms and its share of the transport market have been rising, but the other modes of transport have generally maintained their volume of traffic, except in the countries of Central and Eastern Europe, where the major economic and social upheavals of the nineties led to a general decline in trade. Road therefore retains the lion’s share of the market, while the other modes of transport are having obvious difficulties in coping with new demands.
Working conditions, and frequent breaches of welfare legislation, go part of the way to explaining the competitive edge enjoyed by road transport, but its main advantages lie in its high degree of adaptability and responsiveness, especially in the realm of freight transport, and these are substantial advantages in today’s market. Road transport appears to be suited to the needs of the present production system: production to order, low-density coverage and consignments requiring less than the full capacity of a road lorry and even less of the capacity of a railway truck. It has also benefited from the increasing demand for products with high added value, since it can offer companies rapid delivery services, thereby enabling them to minimise their stocks, for example.

The demand structure also favours road transport. In fact, 82% of the tonnage carried on the road network in the European Union travels less than 150 kilometres. The importance of these short journeys must be emphasised; if we exclude companies transporting their own products or purchases, more than half of the goods transported entirely by road are moved by a chain comprising at least three vehicles. In this segment of the market, road transport is virtually the only feasible option.

Road hauliers are able to offer a whole raft of services and to move a wide range of products within a vast geographical area. Road transport offers flexibility, consignment tracking (even by the ‘primitive’ method of telephone communication with the driver, by means of a fixed line if need be) and, quite paradoxically, regularity, as well as responsiveness to any untoward occurrences. The flexibility of road transport gives it a powerful competitive edge over the other modes of transport; unimodal road transport can more easily absorb fluctuations in demand.

The private car has also reigned supreme in the domain of passenger transport for several decades; in most people’s eyes, it continues to be the best way of satisfying their demand for a flexible means of transport and for leisure travel. The factors that determine an individual’s choice of transport have developed with the general increase in prosperity and with social trends, which means that people are now demanding faster and more comfortable transport and are choosing means of transport to project a particular image. The private car is perceived as meeting all these needs. In fact, it offers greater freedom at what users regard as a lower cost, because they tend not to take account of the ancillary costs (vehicle purchase, maintenance, insurance, etc.), let alone any unquantified social costs, whereas the fares payable for all other modes of transport cover all costs. And so, almost inevitably, people opt to use private cars.

On the other hand, the numerous disadvantages associated with excessive and undue reliance on road transport have spawned a growing demand in political circles and among the general public for a reduction in the relative volume of goods and passenger traffic carried by road. The legitimate demand for a review of the role played by road transport, however, must be made in a realistic and objective manner; anti-juggernaut crusades do not always take sufficient account of the fact that road-haulage vehicles account for an infinitely smaller percentage of total pollution than private cars or that the latter are responsible for the majority of road accidents. As far as the environmental credentials of the various modes of transport are concerned, the roads lobby has been calling for a more objective assessment of the environmental impact of road transport, arguing that the percentage of total pollution caused by each mode of transport should be measured against the percentage of the total volume of transport carried by the mode in question. Comparisons should be made on the basis of an entire logistics chain rather than on one link in the chain, and more objective criteria should be applied; thus, for example, the energy-efficiency of a single railway truck is lower than that of a 40-tonne lorry. Moreover, the roads lobby stresses that there are other pollutants besides carbon oxides and that the primary energy source must never be disregarded: for example, the environmental efficiency of the French railways is due to the fact that the electricity used to power them is generated by nuclear energy, which is not a pollutant west of the Rhine …

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106 For example, the energy balance of road transport is distorted by the high number of short trips to purchasers’ premises, generally made by low-tonnage vehicles which are less energy-efficient per tonne/km.
Be that as it may, the vast majority of logistics experts consider it inevitable that road haulage will continue to dominate the freight market for decades to come, by reason of its intrinsic advantages. The real challenge is to prevent its unbridled growth. The ultimate aim of the legitimate and necessary efforts to redress the balance must be the rational use of road transport, which is part of almost every transport chain and remains an indispensable instrument of economic development.

On the other hand, road transport benefits from some very brisk research activity, the aim of which is to develop innovative solutions in the realms of infrastructure, services and vehicles in an attempt to improve the efficiency and minimise the disadvantages of this type of transport – congestion, pollution, noise, accidents, etc. The following are among the most interesting options that have been proposed by these researchers:

- new forms of propulsion,
- safety improvements through vehicle design,
- the development of applications and services relating to traffic management and control,
- new technological options for the collection and processing of traffic information,
- dynamic route planning,
- development of electronic roadwatch facilities for motorists,
- development of electronic tolling and reservation systems,
- new types of public transport service,
- development of car-sharing schemes,
- use of ICT applications in freight transport,
- vehicle platooning, and
- speed limiters.

These innovations are examples of solutions that open up interesting avenues. A number of technological solutions, indeed, are already ripe for application and could become economically appealing if tighter rules were put in place.

The implementation of innovative solutions could limit the adverse effects of road transport on the environment by making vehicles more energy-efficient, reducing emissions (engines with low energy consumption, substitute fuels, better filtration techniques, etc.) and reducing noise levels (quieter asphalt surfaces and tyres, etc.).

Road safety could also be enhanced by means of technological innovations. Vehicle design (cf. Annex A-50) can incorporate new safety features, such as protection systems, more effective wing mirrors to minimise blind spots and anti-rocking systems for heavy goods vehicles. The risk of injury will be diminished if vehicle safety features are coordinated to improve their ‘collision compatibility’. In due course, it ought to be possible to use collision-prevention technology. A self-adjusting speed limiter could regulate the maximum speed of a vehicle on the basis of external parameters. In heavy traffic or inclement weather, vehicles could thus be made to travel at an appropriate speed, which would eliminate the risk of drivers losing control.

Technology can also help road users in other ways. The automotive industry has made sizeable investments to ensure that navigation, communication and identification devices will be part of the standard equipment of all new cars in a few years’ time. Over the coming years, an increasingly large percentage of the vehicles on the road will thus be equipped with driving aids, such as traffic reporting, navigation aids, parking information, alarm buttons, etc. The development of systems to simplify driving also has an effect on drivers’ behaviour, enabling them to pay more attention to safety factors, which are particularly important in the context of road transport.

**B.2.2 Rail transport**

Europe is made to measure for rail travel. Congestion of the road network and the introduction of major innovations on the railways, such as high-speed trains, are restoring rail transport to its former status as a viable alternative to road and air. At the present time, the rail networks are often underused, whereas congestion of the
road networks and airspace is worsening as demand for road and air travel increases. This situation is liable to become even more critical with the incorporation of the countries of Central and Eastern Europe, as the rapid growth in the volume of road traffic in Germany seems to indicate. This is giving rise to growing concern about road congestion and brightening the prospects for Europe’s railways.

The railways are likely to play a greater role in international freight transport, given the growth in the volume of intra-Community trade and the large reserve capacity of the rail network (even though bottlenecks are starting to emerge on some lines). The outlook for rail transport is further enhanced by the prospect of the integration of Central and Eastern European countries into the system, which represents a great opportunity for the revitalisation of the railways, because it will increase journey distances and because rail still plays a major role in those countries. The outstanding environmental and safety attributes of rail transport (see Annexes A-47 and A-48) are also powerful arguments in favour of its revitalisation.

In the realm of passenger transport, four areas may be regarded as key market segments for the coming years:

- **Suburban services in large cities and conurbations.** The development of suburban services, for which demand is constantly rising, will have a direct positive impact on the quality of urban life. The fact is that the car will no longer be able to satisfy the need for mobility that urban spread has created. The daily transport of masses of commuters is one of the tasks for which rail is ideally suited. While it is true that rail cannot replace the private car, it can significantly increase its share of the commuter market in densely populated corridors by offering a high-quality service in terms of frequency, journey times, comfort, safety and dependability. The combined use of suburban trains and private cars in a park-and-ride system implies the need for a coherent package of measures, such as the development of long-stay car parks at suburban stations and parking restrictions in city centres. Market forces alone cannot make this happen; it is not feasible at the present time to expect users to pay the real cost of the journey, and the capital expenditure has to be met from the public purse.

- **Intercity transport.** Although the vast majority of journeys between cities that are two or three hundred kilometres apart are currently made by private car, there should be scope for more and more such journeys to be made by train. City-centre access and parking problems are factors that may induce people to opt for rail travel. A radical improvement in the quality of regional rail services in terms of speed, frequency and comfort, following the Swiss example, would enable rail operators to win over many of their potential customers.

- **High-speed interregional services.** The high-speed rail services that have already been introduced in Europe on an interregional scale (distances in excess of 300 km) have been technologically and commercially successful. Among other things, the development of these services has helped to relieve congestion at airports and along major road corridors. If the potential of these services and their benefits are to be fully exploited, it will be necessary to develop them into a network with connecting services and more extensive territorial coverage.

- **The development of the European high-speed network.** On a European scale, high-speed trains remain the most appropriate mode of transport between densely populated areas within 800 km of each other. Thanks to increasing cooperation between companies, significant progress has been made in the removal of technical obstacles, and many trains (such as the French trains à grande vitesse (TGV), the German InterCity Express (ICE) and the Italian-made Pendolino tilting trains) can now travel on various different networks.

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107 For example, between Belgium and Spain via France, there are theoretically 43 possible train slots per day, but only three are used for international transport at the present time. This illustrates the immensity of the prioritisation problem between freight trains, mainline passenger trains and, at peak periods, suburban trains.

108 Swiss Federal Railways (CFF/SBB) launched the Rail 2000 scheme in order to offer travellers faster, more frequent and more comfortable nationwide rail services. The cities and major towns are served by direct trains at half-hourly intervals throughout the day. Journey times have been cut considerably, thanks to the use of tilting trains.
In general, the extension of the high-speed network is essential if the railway companies are to compete successfully in the passenger-transport market. More widespread use of tilting-train technology, costing up to 80% less than high-speed trains, with their new dedicated infrastructure, for interregional and intercity services, would enable a larger number of towns and cities to benefit from remarkable cuts in journey times. Tilting-train technology enables trains to negotiate curves at faster speeds and minimises the need for the creation of new infrastructure, with its adverse environmental and social impact. It is particularly suitable for certain routes through undulating and sensitive landscapes, where, at a reasonable extra cost, journey times can be significantly reduced. On the basis of the technology used and the type of route, a distinction can be made between high-speed and ultra-high-speed lines. The latter tend to bypass urban centres, whereas one of the principal advantages of a train is the fact that it takes travellers right into the heart of towns and cities. On the basis of customer demand, there will be a need to maximise the quality of service by striking a balance between central stations and ‘second stations’ located on the edge of cities. It also seems important to pursue a policy of democratising high-speed rail travel by charging normal fares, thereby enabling high-speed trains to compete with road as well as with air transport.

The competitiveness of the railways in passenger transport depends on a number of services designed to improve the quality of the range of services on offer and to promote a system in which the modes of transport complement each other:

- establishing or improving station amenities with a view to enhancing the quality of travellers’ waiting times,
- identifying new on-board services,
- improving access routes and creating convenient facilities for passengers to change to other modes of transport at railway stations,
- devising a uniform European signalling system,
- ensuring blanket provision of real-time information in mainline and suburban stations,
- developing the ticketing system,
- providing facilities for real-time consultation of rail timetables and Internet ticket booking, and
- introducing intermodal through ticketing (combined tickets for train + urban bus/tram network, train + plane, etc.).

Freight transport is generally in a more difficult situation than passenger transport; demand has developed in such a way that there is now a need to offer a full logistics package, and the existing services do not satisfy that demand. Compared with road transport, rail suffers from a lack of flexibility, which prevents it from responding effectively to variations in demand, and from a lack of speed and dependability, which are inexcusable faults in the eyes of companies which operate on a ‘just in time’ basis. However, long-distance international transport is potentially a major growth area, especially with the increase in trade with Central and Eastern Europe, and there are three market niches in which rail freight can flourish in the future:

- **Full trainloads.** Goods trains can transport large quantities of freight between the major economic areas of Europe. This is a profitable activity at the present time, but it is only appropriate to a few categories of consignor.

- **Combined container transport** may be an answer to saturation of the road network. Conventional piggyback transport consists in transporting semi-trailers alone by train. In the ‘rolling roadway’ piggyback system that already exists on the Alpine crossings, the entire lorry is transported, accompanied by its driver. A very recent technical innovation, comprising a lowered wagon with a pivoting platform, should permit rapid loading and unloading. Road and rail transport are fully complementary in this form of combined transport, which protects the environment and improves road safety, and these factors alone justify its cost, which is still high at the present time.

- **Freight Freeways (TERFFs)** are international corridors designated for use by goods traffic, offering regular high-quality rail services and administered on a centralised ‘one-stop shop’ basis. They make it easier for a railway company to use the infrastructure of several European networks, to book train slots and to pay the
appropriate track-access charges. The aim of these corridors is to make rail more competitive over long distances without the need for border stops. Widespread extension of the TERFFs into the countries of Central and Eastern Europe seems to be an essential means of guaranteeing the competitiveness of rail transport for freight operations to and from those countries.

The creation of efficient intermodal centres is essential if the logistics gap between road and rail is to be bridged. With a view to reducing transport times for goods in the transport chain, it will be necessary to focus on strengthening the weakest links in the chain, especially transshipment and marshalling points. The construction of platforms where incoming railway trucks can be easily and automatically made up into trains for various destinations is indispensable if railway freight services are to become more competitive.

New technology, such as ICT and intelligent transport systems, can improve the quality of transport services by offering better tracking and tracing of freight consignments. Tomorrow’s services will be designed to maximise the flexibility of the system by computerised real-time management of the movement of international trains. The EU-funded Optirails project will find ways of achieving this aim. In addition, some companies are looking at the possibility of involving high-speed trains in freight transport.\(^{109}\)

Rail will be able to carve out a place for itself within the future transport structure if it can maximise the degree of interoperability between networks and of interaction with other modes of transport. This aim poses a technological challenge, which requires the introduction of major innovations, such as technology that will enable trains to operate at different voltages and a high-tech command and control system for the high-speed and conventional networks.

The revitalisation of rail will have to make the most of the opportunities offered by technological innovation, because a number of significant advances remain to be made. Technological change will have a profound impact on the role of the railways in Europe, enabling them to offer a better service, to capture new customers and to cut their costs considerably, especially their operating costs, by optimising the way in which they are used.

### B.2.3 Waterway transport

Waterway transport is a very economical means of moving large volumes of goods over long distances. It offers considerable carrying capacities, the only possible saturation points being locks and port installations. Barges make very economical use of non-renewable energy resources, thereby limiting dependence on oil, and they are a means of reducing very substantially all sorts of nuisance factors – pollution, noise, accidents, etc. – that are ascribable to transport activities. From a logistical point of view, the two drawbacks of waterway transport are that it is only suitable for large consignments and that barges move slowly; its chief advantage is its dependability, which road transport is sometimes hard pressed to match in congested areas.

Waterway transport was once in widespread use, but it too has suffered from the hegemony of road transport. Nevertheless, Europe possesses an extensive network of inland waterways. There is a high-quality waterway infrastructure, especially in Northern Europe, comprising European-gauge arterial waterways connected to major navigable rivers (the Rhine and Danube, for example), an infrastructure that is capable of coping with increasing demand. Some of the countries of Central and Eastern Europe that are candidates for accession to the Union are also well equipped with waterways. The restoration of through traffic on the Danube between the northern and southern borders of Serbia (corridor 7, which is potentially very important because of the Rhine-Danube link; see Annex A-16) would be enormously advantageous, because it would open the door for long-distance waterway transport from the Balkans and the Black Sea to the heart of Europe.

The existing waterway network would benefit greatly from the development of new infrastructure in the form of links between river basins, since traffic grows at a faster rate than the size of networks.

\(^{109}\) The Belgian SNCB is conducting studies to examine the possibility of combining air and high-speed rail transport for the carriage of certain goods.
It seems important to explore the possibilities of revitalising waterway transport, focusing especially on the prospects for the development of technological innovations, such as on-board computers linked to waterway control centres, with a view to improving traffic management and intermodal interfaces, avoiding empty returns, reducing lay time for ships, providing the information required by consignors (tracking and tracing) and even creating virtual marketplaces through which transport services can be offered and requested. Waterway transport will not realise its full development potential unless it can offer integral door-to-door service in which consignors can track and trace each link in the transport chain.

B.2.4 Air transport

Air transport is booming; over the past few decades, air has asserted itself forcefully in the realms of medium- and long-haul passenger services and, to a lesser extent, in certain parts of the cargo market. Of all the modes of transport, air is the fastest-growing, with an annual average growth of 5 to 7% that seems set to continue over the next 15 years. This is because most air traffic is international and because it is a highly competitive sector, and the European single market can only reinforce this situation. The economic importance of air transport is growing; some fundamental areas of economic activity such as tourism and other rapidly expanding areas such as parcel services are largely dependent on civil aviation.

There are, however, technical limits on the growth of air transport. While progress remains to be made in the domains of safety, quality and environmental protection, the main problem facing airlines is how to offer more capacity to satisfy the growing demand. The main bottleneck for air transport seems to lie in the realm of air-traffic management rather than in any lack of new aviation technology.

Many of the major European airports frequently reach saturation point, as do air routes and the air-traffic control (ATC) system. This situation is at the root of increasingly lengthy delays and is liable to worsen in the coming years. The congestion of airports in the large metropolitan areas is a major problem, and any attempt to resolve it is confronted with various constraints in terms of land use and environmental concerns, especially regarding noise levels, which limit the scope for expansion of the existing facilities or the creation of new airports in urbanised areas.

Air-traffic management (ATM) services also have an efficiency problem to overcome. The steady growth of air traffic since the fifties has led to the harmonisation and coordination of ATM services provided by each European country in its own territory. Making the national ATM systems mutually compatible is the task that has been entrusted to Eurocontrol, which now manages the air traffic of 35 countries (for a summary of the functions of the Eurocontrol organisation, see Annex A-23). The management of air traffic is made all the more important by the fact that the airlines are locked in fierce competition in a deregulated market, which makes for greater flexibility in the use of air corridors and the lowest possible prices. The outcome of the debate on control and on the single airspace, as well as the development of satellite-aided positioning and navigation systems, could provide solutions to the problem of increasing demand.

When all is said and done, the main issue today is the need to solve the saturation problems affecting airports and airspace in order to satisfy a very rapidly growing demand for air travel within the continent and to and from other parts of the world. To that end, it seems that the following avenues should be explored:

- examining ways of achieving rationalisation and better use of airspace through the establishment of an efficient route network,
- increasing air-traffic control capacity by developing automatic systems,
- harmonising techniques and procedures in order to integrate the various service providers more fully into the ATM system,

110 For several years now, the EU has been supporting the policies of the European Civil Aviation Conference (ECAC), which seek to increase European airspace and ATC capacity by means of harmonisation, integration and development of the operations of national installations. These policies also address the question of consistency between the European systems and those of neighbouring countries.
planning and management of traffic flows in order to ensure that the best possible use is made of ATC capacity, and
• building new large-capacity airports outside urbanised areas, efficiently connected to surrounding population centres by terrestrial links (direct links with city centres, high-speed rail stations, etc.) and short-haul connecting flights.

The future of air transport is also linked to the development of the European high-speed rail network. For about 20 years, the creation of high-speed rail services has been helping to spawn intermodal competition between rail and air on certain routes between European cities less than 800 km apart.\textsuperscript{111} This competition is likely to evolve gradually towards a \textit{modus vivendi} between rail and air, with high-speed trains targeted principally at the market for inter-city travel over distances in the order of 500 km, thereby taking short-haul business away from the airlines. The airlines, on the other hand, will focus chiefly on longer-distance links within Europe (medium-haul flights) and long-haul intercontinental travel.

This \textit{modus vivendi}, which is manifesting itself in the establishment of stations for high-speed trains at international airports, effectively reflects the \textbf{complementarity of rail and air}, which will ultimately benefit both modes of transport; on the one hand, it will contribute to the renaissance of rail transport; on the other hand, it will promote more efficient use of airspace by helping to prevent saturation, which is the greatest problem facing air transport in the future. The transfer of short-haul air traffic to the railways can actually serve to free up some flight slots in saturated European airports and make more room for the medium- and long-haul flights which are more profitable for the airlines.

We shall therefore see a continuation of the trend towards jumbo-style aircraft, the development of airport installations and even their duplication at other sites and the optimisation of air-traffic management.

\textbf{B.2.5 Maritime transport}

The increase in trade between Europe and the rest of the world and the prospect of Maltese and Cypriot accession to the EU are liable to lend greater weight to the role of maritime transport, which remains the standard mode for the intercontinental transport of goods. Moreover, factors such as the geographical configuration of Europe, with its numerous peninsulas and inland seas, the availability of an abundant port infrastructure along its coasts and a hallowed maritime tradition make it desirable that sea transport should play a more prominent role in intra-Community trade too.

As in the case of inland-waterway transport, maritime transport possesses a \textbf{great capacity}, and the only possible limits on that capacity would be saturation of the port infrastructure and of the road and rail corridors feeding the hinterland. Shipping is also a mode of transport that can move goods in huge quantities at very attractive rates. It is likewise economical in its consumption of non-renewable energy resources and is a means of reducing the adverse external effects of transport operations in terms of nuisance and environmental damage.

For some types of transport, circumstances dictate the use of the maritime mode (island and transoceanic services, where there is no viable alternative). The challenges are therefore to make maritime transport as safe as possible, which implies the need for a regulatory framework that is capable of guaranteeing safety and of preventing accidents and pollution, to perfect maritime-transport technology, to further improve the economic efficiency of maritime transport and, lastly, to ensure that Europe possesses a reasonable degree of control over maritime operations within its waters.

\textbf{Safety} issues are among the prime concerns of the European institutions (e.g. the Erika I and Erika II packages of safety measures – see point A.2.2.10 above). This regulatory effort should pave the way for considerable improvements in safety and in the prevention of marine pollution by ships with the aid of technological

\textsuperscript{111} For example, very significant reductions in the volume of air traffic have been observable on routes where high-speed trains are putting up stiff competition, such as Parts-London, Paris-Brussels, Paris-Lyons, Paris-Marseilles and Madrid-Seville.
innovations such as a European system providing more comprehensive information on shipping movements, voyage data recorders, etc.

Maritime transport is making considerable **technical and economic progress**, especially in the realm of containerised traffic: ocean-going vessels are becoming ever larger (the largest vessels today exceed capacities of 7 000 TEU, with the imminent prospect of ships with capacities of 12 500 TEU)\(^{112}\), and there are good prospects for rapid container ships (fastships), high-speed passenger ships (40 knots), modular construction and increasingly powerful marine engines. At the same time, ports and port terminals are being adapted for this new deal, with more and more powerful equipment, and innovative techniques are being introduced, especially with a view to speeding up the handling of cargo in order to reduce the lay time of these ever larger and hence ever more expensive vessels. However, work still needs to be done to raise standards (quality services, accessibility, intermodal facilities, etc.) and to increase competitiveness (productivity, reliability, prices, etc.) in the ports of certain countries of the Union and, needless to say, in the applicant countries too.

The question of **port charges** is crucial to the development of short sea shipping. In this respect, the draft directive commonly referred to as the ‘ports package’ could bring about major progress through the rules of competition and transparency it seeks to introduce, but also – and perhaps especially – through the implementation of the ‘self-help’ concept it advances. This concept includes the possibility of exemption from compulsory piloting for vessels calling frequently at a given port and possible scope for loading and unloading ro-ro (roll-on, roll-off) vessels without the services of a stevedoring company or of dockers.

As for the issue of **controlling maritime transport operations**, Europe today possesses numerous quality shipping companies in every sphere of navigation, companies that have succeeded in developing in a context of very keen international competition, especially from Asian shipowners. It will be necessary to give more thought to the creation of a level playing field for European shipowners which will enable them to invest and modernise their fleets, for there are still wide disparities in Europe in the fiscal rules that apply to investments in shipping (see also point A.2.2.6 and subsection B.1.2 above), and to train and employ officers to take responsibility for the equipping of their ships. Another point that should be examined concerns the considerable disparities in the rules and charges relating to the registration of ships in the various Member States (see Annex A-22).

These developments will be crucial in improving the prospects of maritime transport as an alternative to road haulage within the continent. Potentially, **short sea shipping** and **feeder services**\(^{113}\) can supplant road transport for the carriage of very large cargoes and can absorb part of the increase in the volume of traffic. This development will help to realise the potential of the large number of ports that are dotted along the coasts of the Union. The Member States offer a total of 67 000 km of coastline for short sea shipping. It is estimated that 60 to 70% of Europe’s industrial centres are located within 200 km of the coast. In many cases, geography favours short sea shipping, especially where the contours of the coastline mean that the shortest distance between two points is a sea crossing - for example, the link between the English Channel and the North-West of Spain or certain routes in the Mediterranean region, such as the links between Barcelona or Valencia and Rome.

Feeder services, which are operated by the shipping lines, will develop easily, given the rapid growth in the size of ocean-going vessels and the need to reduce the number of their port calls in order to cut costs. The same is not necessarily true of short sea shipping, which requires a more complex intermodal chain and represents a break with the habits of consignors, who ultimately call the tune.

The issues in this domain are therefore technical (enhancing the service and adapting it more closely to consignors’ needs), economic (especially the limitation of transshipment costs) and organisational (developing complete delivery packages which make intermodal services accessible to consignors).

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\(^{112}\) TEU = twenty equivalent units; a ship with a capacity of 7 000 TEU is typically 320 metres long by 42 metres wide.

\(^{113}\) This includes services such as collection and distribution organised by a shipping company by means of small vessels shuttling between secondary ports and a ‘hub’, i.e. the only port served by the company’s large ocean-going vessels.
Lastly, the development of short sea shipping implies the need to coordinate the activities of the operators in the intermodal chain, to establish comprehensive door-to-door service packages, which would enable consignors to track and trace their consignments while freeing them from concerns about the regulatory procedures that are specific to each mode of transport and making the use of short sea shipping just as simple as road haulage.

New technology can increase the efficiency, and hence the quality, of the services on offer and opens up interesting avenues for the development of maritime transport. Special mention should be made of the introduction of new information systems (vessel recognition, interconnection of management systems, etc.) designed to improve the surveillance, management and safety of shipping and of measures for the creation of an integrated transport chain (faster turnaround times in ports of call, tracking and tracing, coordination and interfacing with the other modes of transport).

B.2.6 Satellite-assisted positioning and navigation

Radionavigation by satellite is a form of advanced technology that enables users to capture signals emitted by a constellation of satellites; these signals enable users to establish at any moment the exact time and their precise, their position in terms of latitude, longitude and altitude. A number of experts believe that, in the next few years, the development of this type of service will trigger a revolution similar to the one that has been generated by recent developments in the field of telecommunications. They believe this because of the large number of applications, both private and industrial, that such a system will be able to offer. The European programme Galileo should provide three categories of service:

- services of general interest: basic services, free of charge, for applications intended for use by any member of the general public who has a receiver (leisure activities, hiking, marine activities, etc.);
- commercial services: a more elaborate signal intended for commercial and professional applications where a greater wealth of information and guaranteed service are required and are provided in exchange for payment of a fee;
- services in the public interest: these signals relate to applications of a very high standard which, for security reasons, must not be subject to any interruption or disturbance (e.g. navigation services for aviation and shipping, etc.).

The transport sector will be one of the main users of GNSS services, because it will be able to make full use of the scope offered by these systems. The numerous potential applications will serve to improve considerably the efficiency and safety of all modes of transport and to optimise traffic management.

The information provided by GNSS systems will make for better control of the logistics chain by enabling operators to track and trace vehicle and container movements at any time. These applications can improve the operability and efficiency of all modes of transport – road, rail, inland navigation, etc. – and can make a tangible contribution to the development of the intermodal approach.

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114 Global navigation-satellite systems (GNSS) can be applied to a very wide range of activities; for example, they can be used in the development of remote medicine, in search and rescue services and in guidance systems for the blind. It could be applied in the field of law enforcement (monitoring persons charged with an offence, locating stolen vehicles and goods). It would enable the authorities to keep a closer watch on the environment by improving the quality of information available to mapmakers, pinpoint wrecks and dangerous substances, reveal oil and gas reserves, identify fishing areas, etc. The list of potential applications is growing steadily longer, and for that reason it is important to ensure that the system is kept as flexible as possible.
The greater precision of the data that Galileo should be able to provide, compared with the GPS and Glonass systems, and its guaranteed continuity of service will make it possible to develop safer and more effective traffic-control and management systems for maritime transport, which already makes extensive use of satellite-assisted navigation services, and for air transport. Short sea shipping will benefit from the Galileo services, which will facilitate the communication of data (transmission to traffic-management centres) and enable interested parties to ascertain the operational status and movements of shipping – the same data that will be stored in the ‘black boxes’ carried by vessels. In addition, these transmissions of data will allow better planning of the processing of ships in port and make for better synchronisation of the intermodal transport chain. Galileo will be able to support the introduction of new technology for the control and management of airspace for the purpose of improving the efficiency and increasing the capacity of the air-transport system. In particular, Galileo will be able to improve the quality and safety of air transport in parts of the world where the present air-traffic control and management systems are inadequate. As well as improving safety, this can help considerably to reduce delays.

In the domain of road transport, vehicles are starting to be equipped with devices which combine satellite-aided positioning with the reporting of traffic data. These indications enable drivers to avoid traffic jams and to reduce journey times by an estimated 15-25%. Such systems will also help to lower fuel consumption very significantly and therefore reduce the pollution associated with road transport. The use of GNSS services in connection with a telecommunication system such as the second-generation GSM system of mobile telephony or the third-generation universal mobile telecommunication system (UMTS) will make it possible to supply positioning data in a more user-friendly manner, enhancing the transmitted data with road maps, bottleneck indications, details of distance to be travelled, alternative routes, etc. One very interesting application of GNSS is that it could eliminate all the formalities relating to the collection of tolls, which could make it easier to implement user-charging policies.

B.2.7 Intermodal and intramodal transport

The highly robust growth in demand for road transport of both freight and passengers which has characterised the decade that has just ended and seems unlikely to slacken in the foreseeable future, raises questions about the problem of the sustainability of such a development model. If this demand is to be satisfied by means of a raft of attractive transport services without resulting in an environmental logjam, there is no alternative to the exploitation of the potential of the modes of mass transport that are underused today. This can be done by offering intermodal services that meet the expectations of the relevant economic players, particularly in terms of service quality.

Intermodal selection (seeking the most appropriate mode of transport for a given type of operation, i.e. not necessarily the most efficient in absolute terms but the mode that offers the best cost/benefit ratio) and intramodal selection (seeking the most appropriate vehicle for a particular link in the transport chain, e.g. heavy goods vehicles for inter-city deliveries and light transporters within urban and suburban areas) are key elements in the quest to make better use of transport systems and thus to guarantee sustainable mobility of people and goods. This approach, which is designed to optimise the use of each mode of transport, is essential if we are to marry the aims of safety, reduced environmental impact and decongestion of the main urban areas and arterial roads with the aim of improving the efficiency and quality of transport services.

Public passenger transport will be able to develop all the more effectively as a genuine alternative to the private car if it is able to offer a high-quality (comfortable and fast, as in high-speed rail travel) and comprehensive transport service, incorporating several links and several modes as necessary. Stations and airports should be integrated with numerous modes of transport so that long-distance passengers can enjoy continuity of service and convenient connections. For example, some of the high-speed train lines could be connected to airports to provide fast connections between provincial cities and intercontinental and European air routes. Stations and airports should also be served, of course, by an extensive network of public transport covering the adjoining city and the surrounding region, in addition to the traditional car parks. The administrators of these terminals could also add to their appeal by enhancing the range of services they offer, so that passengers...
could make enjoyable use of the time spent waiting for connections. At the same time, the income from these commercial activities and services could help to fund the public infrastructure.

Likewise, in the realm of freight transport, there is a need to create conditions that are conducive to the widest possible use of the means of mass transport which are most efficient in terms of infrastructure costs and external effects. Maritime transport, including short sea transport, inland waterways and rail transport are predestined to perform the long-distance leg of intermodal transport operations. This ideal cannot be fully achieved in practice without a great deal of adaptation and organisation, particularly with a view to making the intermodal chains compatible with the logistics of consignors (just-in-time delivery, etc.). Above all, the development of an intermodal approach to freight transport will require more efficient intermodal terminals, whether ports or delivery bays and marshalling yards, and the definition of new standards (intermodal loading units, for example) and procedures governing the entire transport chain (documentary records, customs and insurance formalities, etc.).

The development of intermodal transport can also be accelerated by the definition and application of new standard loading units. The present ISO shipping containers, of whatever size (20', 40', standard height or high cube), are less efficient when carried by road on semi-trailers, because their width does not lend itself to loading with standard pallets (80 x 100 cm or 100 x 120 cm). This results in wasted space and hence extra cost. This is an obstacle to the development of short sea shipping, an obstacle which could be overcome by the introduction of containers with the same storage volume as semi-trailers (see Annex A-41). There is also a need to encourage the use of swap bodies, which come in competitive sizes but which, unlike shipping containers, are not stackable and are therefore less expensive than the latter. The development of the concept of a ‘logistics box’, which would be better suited to the transport requirements of the contemporary economy (small quantities, short handling times, etc.) could help to swing part of the market towards intermodal transport.

In addition, standardisation of the dimensions of road and rail vehicles could facilitate the use of containers and pallets; it is essential, however, not to overlook either the constraints arising from the physical characteristics of the existing infrastructure or safety problems, such as those that would be connected with the use of wider road vehicles. Any planned standardisation must be measured against the size of the present pool of loading units and vehicles, but the creation of specialised fleets on particular routes – which is already being undertaken by some operators, incidentally – seems to us to be a realistic approach.

The effort to integrate the transport chain will be able to enlist the support of new technology for the transmission and management of information, developments which will open the door to further innovation. The advantages offered by this new technology, such as ITS and GNSS, are important in terms of efficiency, of guaranteeing the continuity of transport flows and of operational safety and reliability at every stage of the intermodal chain, especially with regard to the tracking and tracing of consignments, the surveillance of freight, automatic access control, the management of equipment and even the integrated processing of information on freight. These innovations are also liable to promote the development of a market in intermodal services, particularly through the creation of an electronic market.

Despite these innovations and the prospects they open up in terms of the development of intermodal transport services, it does seem probable that road transport will retain its leading role at the heart of the transport system. We should bear in mind that the vast majority of road journeys at the present time involve short distances to which combined transport has no relevance.

In fact, it should be stressed that intermodal complementarity presupposes the provision of a level of service that meets the needs of users, which implies in turn that each link in the chain must perform its function in a reasonably efficient manner, even if some modes of transport are subject to inherently rigid parameters, and that the interfaces between vehicles operate efficiently, which requires flexible and responsive organisation and a real-time information system. The rail link is particularly prone to administrative and technical rigidity; the railways also have difficulty in adopting a user-centred approach and are hampered by reliance on obsolescent
equipment, especially in Central and Eastern Europe. In a report dated November 2000,\textsuperscript{115} the International Union of Combined Road-Rail Transport Companies (UIRR) stressed the need for closer cooperation between the various players in the field, if not politically and institutionally driven integration. The report emphasised that quality was deteriorating and that in 65\% of the cases in which combined transport failed to deliver, the fault lay with the railways.

Short sea shipping and inland-waterway transport will not be able to develop in the absence of this type of cooperation, which can pave the way for the emergence of a range of door-to-door transport services which include a sea or waterway leg and in which the transporter takes responsibility for all the physical and documentary aspects of the transport operation, shielding customers from the whole complexity of the transport chain and making intermodal transport as easy for them as a straightforward road-haulage job.

Sterling efforts have been made to increase the take-up of combined-transport services (ro-ro and piggyback services, etc.) as an alternative to road transport. Reducing the threshold distance at which combined transport becomes competitive is a formidable task, because certain costs, such as transshipment and equipment costs, are so high as to make the cost of short intermodal journeys prohibitive. The liberalisation of road transport has further increased the competitive pressure it exerts on combined transport.

Finally, while it seems unrealistic, on the basis of a logistical approach, to aim for a reduction in the volume of road traffic, it is nevertheless necessary to optimise the use of road transport and to ensure that intermodal transport increases its share of the market. We should therefore emphasise the need to improve intermodal complementarity, i.e. the use of the most appropriate mode for a given purpose, and intramodal complementarity, i.e. the use of the most suitable vehicle within a particular mode of transport. It happens in many cases, in fact, that road transport involves the use of at least three vehicles; in other words, the transport chain is similar to the one that is most often associated with rail transport, namely convergence on a central loading point, followed by medium- or long-distance haulage to a distribution point, followed by local delivery. The present situation requires the organisation of interfaces, in other words exchange platforms (along the lines of the Italian interporti) which are well served by the various modes of transport. There is also a need to avoid interruptions in the progress of a consignment, an aim which can best be achieved with the aid of a computerised system of vehicle and consignment tracking (intelligent transport system (ITS)).

In conclusion, it seems indispensable to us, in general terms, to address the question of intermodal transport in a spirit of innovation and realism that will help us to guarantee the effectiveness of the intermodal approach, which is the key to the achievement of sustainable mobility in Europe.

\textsuperscript{115} PACT (Pilot Actions for Combined Transport), \textit{Developing a quality strategy for combined transport}, November 2000.
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Centre for Sustainable Transportation: www.web.net/~cstctd
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Project on Environmentally Sustainable Transport: www.oecd.org/env/trans
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PART C  TECHNICAL DOCUMENTATION

Annexes
EUROPEAN RAILWAY NETWORKS
(as proposed at the second Pan-European Transport Conference, Crete, 14 to 16 March 1994)

Non-European Union/EFTA States: Railways of the European Agreement on main international railway lines and other main railways (layer 1)

European Union and EFTA States: Report of the ad hoc group of the Commission (DG VII, October 1993; layer 2)

Priority corridors in Central and Eastern Europe
Including part of the TER network (layer 2, 2010)

1. Talin-Riga-Warsaw
2. Berlin-Warsaw-Minsk-Moscow
4. Berlin/Nuremberg-Prague-Budapest-Constanta/Theessaloniki/Istanbul
5. Trieste-Ljubljana-Budapest-Bratislava-Uzgorod-Lvov
6. Gdansk-Warsaw-Zilina
7. Danube (waterway corridor)
8. Durres-Tirana-Skopje-Sofia-Vara
9. Helsinki-Kiev/Moscow-Odessa/Kishinev/Bucharest-Plodiv

Source des cartes A-7 et A-8: Trans-European Networks Report
EUROPAÆISKE VEJNET

EFTA-lande: Veje under ECE-aftalerne om internationale hovedtrafikrør (prioritet 1)

Andre lande uden for Den Europæiske Union: Veje under ECE-aftalerne om internationale hovedtrafikrør og andre hovedveje (prioritet 1)

Den Europæiske Union: Rådets beslutning nr. 93/629/EØF af 29. oktober 1993 om etablering af et transeuropæisk vejet (prioritet 2)

Prioriterede strækninger i Central- og Østeuropa
inklusive en del af TEM-nettet (prioritet 2, 2010)

1  Talinn-Riga-Warszawa
2  Berlin-Warszawa-Minsk-Moskva
3  Berlin/Dresden-Wroclaw-Lvov-Kiev
4  Berlin/Nürnberg-Prag-Budapest-Constanta/Thessaloniki/Istanbul
5  Trieste-Ljubljana-Budapest-Bratislava-Uzgorod-Lvov

6  Gdansk-Warszawa-Zilina
7  Donau (vandvej)
8  Durrës-Tirana-Skopje-Sofia-Varna
9  Helsinki-Kiev/Moskva-Odessa/Kishinev/Bukarest-Plovdiv

Havn, der indgår i en strækning

**Objectifs**

- Mettre progressivement en place à l’horizon 2010 le réseau transeuropéen de transport, en intégrant à l’échelle communautaire des réseaux d’infrastructure de transport terrestre, maritime et aérien, conformément aux schémas décrits sur les cartes figurant à l’annexe I et/ou aux spécifications prévues à l’annexe II de la décision.

**Champ d’application**

- La décision vise les États membres. Elle constitue un cadre général de référence destiné à encourager les actions des États membres et, le cas échéant, de la Communauté en ce qui concerne des projets d’intérêt commun dont la réalisation dépend de leur degré de maturité et de la disponibilité de ressources financières (article 1 paragraphe 2).
- Les orientations couvrent des infrastructures de transport, des systèmes de gestion du trafic et des systèmes de positionnement et de navigation. Les infrastructures de transport comprennent des réseaux de routes, de voies ferrées et de voies navigables, les ports de navigation maritime et intérieure, des aéroports ainsi que d’autres points d’interconnexion. Les systèmes de gestion du trafic et les systèmes de positionnement et de navigation comprennent les installations techniques, informatiques et de télécommunications nécessaires (article 3).

**Contenu**

- La décision procède de l’article 129 B à D du traité instituant la Communauté européenne, et notamment de l’article 129 C paragraphe 1 premier alinéa. Elle établit les orientations visant les objectifs, les priorités ainsi que les grandes lignes d’action envisagées dans le domaine des réseaux transeuropéens de transport; elle identifie les projets d’intérêt commun. Cette décision a été conjointement adoptée par le Conseil et le Parlement européen. Les orientations et les projets d’intérêt commun doivent obtenir l’approbation de l’État membre concerné.
- Les articles 9 à 17 définissent les caractéristiques principales et précisent les objectifs spécifiques de chacun des éléments de ces réseaux.
- Les orientations doivent être adaptées tous les cinq ans au développement de l’économie et à l’évolution des technologies dans les transports (article 21).
- Pour suivre l’évolution de ces orientations et leur mise en œuvre, la Commission est assistée par le comité du réseau transeuropéen de transport, composé de représentants des États membres.

**Références**

JO n° L 228 du 9. 9. 1996

Source: Commission Européenne, Guide de l’acquis communautaire des transports, novembre 1999
**Le règlement financier 2236/95 de 1995 et le nouveau règlement**


Les principales conditions de financement sont les suivantes :

- L’UE ne peut financer que les projets identifiés dans les orientations (et visibles sur les cartes)
- L’UE ne finance que jusqu’à 50 % du coût des études préalables (études de faisabilité), et 10 % du coût des travaux.
- Le reste doit être couvert par des engagements soit publics soit privés.
- Il faut que chaque projet ait fait l’objet d’une étude d’impact environnemental
- Il faut que le projet offre des garanties de viabilité financière et présente un degré de maturité suffisant
- Le projet doit être en conformité avec les autres politiques de l’Union, notamment dans les domaines de l’environnement, de la concurrence et des règles sur l’attribution des marchés publics
- Chaque projet est évalué selon ses propres mérites.

**Ce règlement a été modifié par un nouveau texte (règlement 1655/99) adopté en juin 1999 par le Conseil des ministres et le Parlement européen qui prévoit un certain nombre d’innovations :**

- Mise en place d’un programme indicatif pluriannuel afin d’assurer une plus grande visibilité des financements européens pour les projets.
- Introduction du capital-risque pour le soutien financier de l’Union.
- Extension du taux maximal d’intervention communautaire qui pourra atteindre 20 % du coût total du projet pour les systèmes de positionnement et de navigation par satellite, ceci à partir de 2003.
- Allocation de 4,6 milliards d’€ aux réseaux transeuropéens (y compris les réseaux de télécommunications et d’énergie) d’ici à 2006 ; la part réservée aux réseaux transeuropéens de transport doit encore être fixée par le parlement européen. Elle devrait tourner autour de 4 à 4,2 milliards d’€.
- D’allouer au rail au moins 55% des fonds pour les RTE de transport et au maximum 25% à la route.
- De permettre à la Commission d’annuler ses décisions de financement si le projet n’a pas démarré dans les 2 ans.

5.10 Affaires européennes

5.10.1 Présidence belge

Pendant le deuxième semestre de 2001, la Belgique assurera la Présidence du Conseil de l'Union européenne.

Le transport, et notamment ses aspects environnementaux et de sécurité, figurera en bonne place parmi les priorités de la Belgique au cours de sa présidence de l'Union européenne.

La politique des transports de l'Union européenne poursuit un objectif, à savoir la mobilité durable, qui est basée sur trois lignes directrices :

- la concurrence loyale entre les modes de transport et entre les États membres ;
- l'intégration du souci de l'environnement;
- tendre vers une sécurité maximale dans les transports.

Depuis l’entrée en vigueur du Traité d’Amsterdam (1 mai 1999), l’article 251 du Traité s'applique aussi à la politique des transports, ce qui signifie que le Parlement européen et le Conseil Transports décident ensemble de la nouvelle législation européenne (procédure de co-décision).

Dans notre pays et selon le sujet, les transports sont aussi bien de compétence fédérale que régionale, ce qui exige une concertation avec les Régions avant de déterminer le point de vue de la Belgique.

Il convient de promouvoir au niveau de l'Union européenne des conditions de travail adéquates dans le secteur des transports et un encadrement public accompagnant les adaptations nécessaires imposées au secteur, des mesures à long terme allant vers une internalisation des coûts externes de transport, l’intensification des efforts menés jusqu’ici pour le transport combiné, et une politique commune de l’énergie.

La Belgique organiserait une réunion commune des Ministres responsables des transports et de l’environnement et au cours de sa présidence. Le calendrier des activités européennes permet d’envisager que seront alors discutées de nombreuses initiatives qui permettront de donner une priorité accrue aux questions environnementales. Celles-ci seront également abordées au cours de divers séminaires organisés au cours de la présidence belge.

| Au plan sectoriel, on anticipe les priorités suivantes: |

Transport routier
- Poursuite des discussions sur le paquet social, entamé pendant la présidence française;
- Promotion de la sécurité routière, révision des directives sur les permis de conduire et amélioration de la réglementation technique des véhicules;
- Tendre vers une harmonisation minimale de l'interdiction faite aux camions de rouler pendant le week-end.

Transport aérien
- Tendre vers une législation européenne en ce qui concerne la limitation des vols de nuit (problématique des nuisances sonores autour des aéroports);
- Tendre vers la réalisation d'un espace aérien unique en Europe;
- Poursuite des travaux en vue de créer une Agence européenne pour la sécurité de l'aviation civile.

Transport maritime
- Discussion de la proposition de la Commission relative à l’accès au marché des services portuaires;
- Poursuite des discussions du paquet de mesures en faveur de la sécurité maritime;
- Promouvoir et développer le transport maritime à courte distance (short sea shipping);
- Obtenir une harmonisation des documents administratifs destinés à faciliter le trafic maritime conformément à la convention FAL de l'OMI.

Transport fluvial
- Établir un bilan de la libéralisation du transport fluvial;
- Adapter la directive 82/714 (fixation des prescriptions techniques pour les bateaux de navigation intérieure) aux nouvelles dispositions du Règlement de visite des bateaux du Rhin et l’étendre au transport de passagers;
- Harmoniser les prescriptions minimales en matière d’équipage (aspect sécurité et aspect économique) si un accord est obtenu d’ici là au sein de la Commission centrale du Rhin.

Transport ferroviaire
Poursuivre les politiques visant à améliorer la sécurité du rail.

Mesures horizontales
- Nouveau livre blanc sur la politique des transports de l'Union européenne, où l'environnement figure faible parmi les priorités principales;
- Livre vert sur les transports urbains;
- Nouvelles lignes directrices pour les Réseaux transeuropéens de transport – TEN.

Source : Note de Politique Générale du Ministère des Communications et de l'Infrastructure Belge

A-19
LES PORTS DANS LES RESEAUX TRANS-EUROPEENS DE TRANSPORT

Au 1er trimestre 2001, un accord est intervenu sur les critères à retenir pour l'inclusion des ports dans les RTE. Une conciliation entre le Conseil et le PE a permis de faire adopter tous les amendements retenus par le PE en deuxième lecture concernant le volume de trafic. En définitive, les ports inclus dans les RTE et qui pourront donc bénéficier de financements européens, sont classés en quatre catégories :

- **ports maritimes internationaux** : trafic annuel supérieur à 1,5 millions de tonnes ou 200 000 passagers et existence d'une connexion intermodale avec le reste du RTE

- **ports maritimes communautaires** : trafic annuel supérieur à 0,5 millions de tonnes ou 100 000 passagers et existence d'une connexion au reste du RTE

- **ports maritimes régionaux** : ne répondent pas aux critères des deux catégories ci-dessus mais sont situés dans des régions ultra-périphériques ou éloignées dont ils assurent la connexion aux régions centrales de l'Europe

- **ports intérieurs** : trafic supérieur à 500 000 T de fret

Source : CATRAM
LA REGLEMENTATION DU MARCHE DES TRANSPORTS MARITIMES ET FLUVIAUX

En matière d’action antitrust, la Commission a mené une action continue depuis les années 80 pour préciser les conditions d’application (et les dérogations jugées acceptables) des articles 81 (ex 85) et 82 (ex 86) (et notamment de l’article 81 §3) du traité CE au transport maritime. Elle a dans ce sens fait adopter le règlement 4056/86 instituant une exemption de groupe au bénéfice de certaines pratiques des conférences maritimes\(^1\). Ce règlement permet en particulier aux armateurs de se grouper, de coordonner leurs services et d’appliquer des tarifs de transport communs. La justification de cette exemption repose sur le fait que les investissements maritimes sont particulièrement lourds et ne peuvent être rentabilisés que dans la durée

Une réflexion a ensuite été poursuivie sur les consortiums\(^2\), qui diffèrent des conférences. La Commission a soumis en juin 1990 un rapport en faveur d’exemptions de groupe les concernant, sous certaines réserves. Une telle réglementation a été adoptée par la Commission en avril 1995 avec le règlement 870/95 dont la durée de validité était de 5 ans. Celui-ci définissait les conditions dans lesquelles les consortia pouvaient bénéficier d’une exemption de groupe.

Une controverse importante a alors opposé la Commission à certains armateurs, portant sur la question de la tarification commune des positionnements terrestres. Le transport maritime conteneurisé a en effet amené les armateurs à offrir des services multimodaux de transport de porte à porte ("Carrier Haulage") et à ne plus rester confinés à l’exécution du seul transport maritime. Les armateurs plaideraient le fait que l’exemption de groupe accordée aux conférences maritimes valait pour elles autorisation d’établir des tarifs multimodaux. La Commission a alors confié un arbitrage à un groupe de réflexion présidé par Sir Bryan Carsberg ("groupe multimodal"). Le rapport final de ce groupe, remis en Novembre 1997 a tranché en faveur de la thèse de la Commission, considérant notamment que les Conférences comme les Consortia ou même les armements n’investissent pas sur le segment terrestre et que seule la nécessité de rentabiliser des investissements très lourds générant d’importants effets d’échelle bénéficiant à la clientèle peut justifier une exemption de groupe.

La Commission a établi depuis un nouveau règlement consortia remplaçant le 870/95 et définissant précisément les règles applicables pour l’attribution d’exemptions de groupe ou individuelles (en fonction notamment des parts de marché détenues par les consortia) et précisant le champ des actions autorisées aux consortia (par exemple interdiction de la pratique des gels de capacité). Un long débat a opposé la Commission à des "Conférences" de nature particulière comme le TAA\(^3\) transformé en TACA\(^4\), ou encore l’EATA\(^5\).

Au titre de l’action antitrust, la Commission a été amenée à plusieurs reprises à sanctionner par des amendes parfois lourdes des armements qui ont contrevenu à la réglementation. On peut citer notamment le cas d’armements desservant la Côte Ouest-Africaine au sein de différentes conférences (1992), celui des armements transmanche (1996), ou encore plus récemment quelques grands armements membres du TACA.

Les institutions communautaires sont également intervenues dans la régulation du marché du transport fluvial, d’une part en libéralisant ce marché par la suppression de la pratique du "tour de rôle" qui interdisait toute concurrence effective et la modernisation des relations entre clients et transporteurs d’autre part en aidant les transporteurs fluviaux à réduire les surcapacités et plus encore à moderniser la flotte pour la rendre plus compétitive sur le marché des transports face aux autres modes (politique de déchirage de cale).

Source : CATRAM

---

\(^1\) Les conférences sont des institutions très anciennes du monde maritime agissant comme des structures de régulation du marché régional (coordination des offres sur une desserte donnée et tarification selon un barème commun) et de lutte contre les "outsiders"

\(^2\) Les consortiums sont des groupes d'armateurs, formés à l'intérieur ou en-dehors des conférences, qui passent des accords plus ou moins étendus de partage de moyens (navires, terminaux portuaires...), des coûts et des recettes (le partage des coûts et recettes ne concerne que les consortiums les plus intégrés, aujourd'hui rares)

\(^3\) Trans Atlantic Agreement

\(^4\) Trans Atlantic Conference Agreement

\(^5\) Europe Asia Trade Agreement
### Coûts comparatifs des équipages par types de navire et par registre (moyenne UE : 100) b) - Situation en Janvier 1996

<table>
<thead>
<tr>
<th></th>
<th>Marchandises diverses</th>
<th>Marchandises diverses</th>
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<td>ISLANDE</td>
<td>n.a.</td>
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<td>75</td>
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<tr>
<td>DIS-Equipage DK Danemark c)</td>
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<td>107</td>
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a) Estimation par le consultant sur la base des données communiquées par les armateurs.

b) Classement sur la base des coûts estimés pour un navire de 1 500 TB.

c) "DIS Minimal" signifie un capitaine danois et un équipage entièrement étranger, payé sur la base d'une convention collective conclue avec les syndicats de marins étrangers. "DIS-Equipage KD" signifie un capitaine danois avec un équipage danois ou mixte, payé selon les normes danoises.

Sources : Tecnecon/MERC/ISF

[Sources](http://www.senat.fr/rap/a98-06820/a98-068205.html) 18/05/01
La gestion du trafic aérien par EUROCONTROL

La croissance continue du trafic aérien depuis les années 1950 a conduit à une harmonisation et une mise en cohérence des services dits «ATM» (Air Traffic Management) fournis par chacun des pays d’Europe sur son propre territoire. De plus, les compagnies aériennes sont placées dans un contexte de forte concurrence avec un marché réglementé qui milite pour une plus grande flexibilité de l’exploitation des couloirs aériens et au prix le plus bas possible. Cette mise en cohérence des services ATM de chaque pays est la mission affectée à EUROCONTROL qui gère maintenant le trafic aérien de 35 pays avec les objectifs suivants :

1) gérer les vols de « porte à porte » en assurant la continuité du suivi avec les ATM nationaux qui ne couvrent qu’une zone géographique limitée autour de l’aéroport.
2) améliorer la flexibilité et l’efficacité de la gestion par l’optimisation en continu de la trajectoire d’un vol compte tenu des événements en temps réel et des possibilités d’émission et de réceptions des vols (slots) par les ATM régionaux.
3) processus de décision basé sur la collaboration et le consensus entre les différents acteurs (ATM, centres d’exploitation des flottes, pilotes et centre d’exploitation des aéroports).
4) gestion du trafic réactive à tous moments afin de satisfaire les demandes dues aux perturbations de temps réel.
5) gestion en commun de l’espace aérien entre autorités civiles et militaires. Ces principes directeurs de la gestion sont la neutralité, l’équité (le petit avion est traité au même niveau que les gros porteur), l'impartialité et la non-discrimination entre compagnies aériennes afin qu’elles respectent les conditions de concurrence. En pratique, ces principes se traduisent par la règle simple « premier prêt/ premier servi ».
6) amélioration des prévisions opérationnelles à court terme part l’utilisation de modèles informatiques et algorithmes performants, et de dialogues homme-machine ergonomiquement éprouvés.

EUROCONTROL est régi par une convention signée par le Conseil des Ministres de l’Aviation civile des États membres qui contribuent financièrement.

Source : SYSTRA
Typologie des documents de planification des transports dans l’Union Européenne


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<th>DOCUMENT</th>
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<td>Plan Général des Transports</td>
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<td>Belgique</td>
<td>Planification des transports au niveau régional, (un Plan National de Mobilité est en préparation)</td>
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<tr>
<td>Danemark</td>
<td>Livre Blanc, Plan Général du Trafic (en préparation)</td>
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<tr>
<td>EIRE</td>
<td>Document stratégique du département des participations publiques</td>
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<td>Plan des Infrastructures de Transport</td>
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<td>Finlande</td>
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<td>France</td>
<td>Schémas Directeurs des Services de Transport</td>
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<td>Suède</td>
<td>Plan Général des Transports</td>
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Années

Période d'investissement prévue pour les extensions du RTE. La période d'investissement indiquée pour chaque pays a été estimée en partant de l'hypothèse d'un financement du réseau ne dépassant pas 1,5% du PNB.

Rail Route

Bulgarie - Chypre - République tchèque - Estonie - Hongrie - Lettonie - Lituanie - Pologne - Roumanie - Slovaquie - Slovénie

Taux d'investissements rail/route dans les PECO

Source : TINA
Transport Growth EU 15

1995 = 100

Notes:
(1): passenger cars, buses & coaches, tram+metro, railways, air
(2): road, rail, inland waterways, pipelines, sea (intra-EU)

Annual Growth Rates EU 15

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<tr>
<th>% change</th>
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<th>1.6</th>
<th>2.6</th>
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La source des graphiques et des tableaux suivants est (sauf indication contraire) est :
Eurostat, Transports in Figures, 2000
http://europa.eu.int/comm/transport/tif/contents.htm#General Data
### Statistical Overview EU Transport

*Data for 1998, otherwise indicated*

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>Total GDP</strong> is ECU 7586 billion or ECU 20 200 per person&lt;br&gt;- of which value created by the transport services sector was 4% = ECU 300 billion&lt;br&gt;- in addition value created in own account transport was 1% = ECU 75 billion</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6 million persons are employed in the transport services sector = 4% of all persons employed</strong>&lt;br&gt;In addition, 2 million persons are employed in the transport equipment industry, and over 6 million in transport related industries</td>
<td></td>
<td></td>
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<tr>
<td><strong>Investment in transport infrastructure is ca. ECU 75 billion or 1% of GDP - of which 65% road, 25% rail and 10% other modes</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Private households in the EU spend ECU 800 billion per year or 14% of their income for transport</strong>&lt;br&gt;- of which about ECU 500 billion for private transport (mainly cars) and ECU 90 billion for purchased passenger transport services.</td>
<td></td>
<td></td>
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<tr>
<td><strong>Transport demand is 2870 billion tkm or 7700 tkm per person (20 tkm per person and day)</strong>&lt;br&gt;- of which road 44%, sea 41%, rail 8%, inland waterways 4%, pipelines 3%</td>
<td></td>
<td></td>
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<tr>
<td><strong>Intra-EU and domestic transport demand is ca. 4772 billion pkm or 12700 pkm per person (35 pkm per person and day)</strong>&lt;br&gt;- of which car 79%, bus &amp; coach 9%, railway 6%, air 5%, tram &amp; metro 1%</td>
<td></td>
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</tr>
<tr>
<td><strong>Goods transport</strong> ca. 3% per year (1990-98)&lt;br&gt;114% growth since 1970</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Passenger transport</strong> ca. 2% per year (1990-98)&lt;br&gt;121% growth since 1970</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Road</strong>: 42 687 persons killed in 1998 (fatalities within 30 days)&lt;br&gt;Rail: 139 passengers killed in 1997</td>
<td></td>
<td></td>
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<tr>
<td><strong>Share of emissions (man made) originating from transport (1997)</strong>:&lt;br&gt;CO₂: 28% (29% if maritime bunkers are included)&lt;br&gt;NOₓ: 63%</td>
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### General Economic Data

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<tr>
<td>F</td>
<td>520</td>
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</tr>
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<td>L</td>
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### External Trade by Member State and Partner 1998

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Notes: CEC countries: Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia, Slovak Republic, Mediterranean countries: Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, Palestinian Authority, Syria, Tunisia, Turkey

A-28
## European Countries not in EU

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<tr>
<th></th>
<th>Population (million)</th>
<th>GDP (ECU billion)</th>
<th>GDP (PPP) / capita (EU=100)</th>
<th>Trade (ECU billion)</th>
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**Source:** Eurostat European Commission: Agenda 2000, UN, World Bank, OECD

**Notes:** PPP = Purchasing Power Parities  
(1): EU declarations  
(2) : figures refer to the Republic of Cyprus
### External Trade EU 15-CEC

**1000 tonnes**

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<td><strong>110 383</strong></td>
<td><strong>112 332</strong></td>
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EU imports by mode from CEC (1998): see 36%, road 29%, rail 25%, inland waterway 6%, pipeline 0%.

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<td>1 101</td>
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<td><strong>38 367</strong></td>
<td><strong>45 821</strong></td>
<td><strong>50 247</strong></td>
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EU exports by mode to CEC (1998): road 51%, sea 29%, rail 16%, inland waterway 2%, pipeline 1%.

Source: Eurostat
### External Trade by Mode of Transport

#### 1998

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**Source**: Eurostat
### Échanges commerciaux

L'économie mondiale évolue dans un processus de globalisation. Les exportations de marchandises représentent déjà 20% du PIB mondial (les exportations de services commerciaux représentent 5% de plus, soit 1 000 milliards d'écus) et la croissance des échanges commerciaux est plus rapide que celle de la production (croissance annuelle moyenne 1990-1996 dans le monde: exportations de marchandises + 6%, production de marchandises + 2%, PIB + 1,5%). Cependant, les flux de trafic augmentent moins vite que les échanges (1990-1996: tonnage transporté par le commerce maritime + 3% par an) du fait de l'augmentation de la densité en valeur des marchandises de plusieurs % par an (1990-1996: 3% en env.). La mondialisation et l'expansion commerciale sont stimulées par la libéralisation des échanges commerciaux dans le monde. Au cours des huit réunions de négociation du GATT, les droits de douane sur les produits industriels ont évolué en moyenne de 47% en 1947 à 4% environ maintenant (dans les pays industrialisés). L'Uruguay Round (1986-1993) a donc abouti à une forte réduction des droits de douane, à la création, en 1995, de l'Organisation Mondiale du Commerce (OMC) et a permis d'étendre le processus de libéralisation aux secteurs du textile, de la production agricole et des services.

**Sources d'information:** Eurostat, OMC

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<th>Commerce mondial</th>
<th>L'UE assure 20% environ des exportations mondiales (40% en incluant les échanges intra-communautaires).</th>
<th>Milliards d'écus, 1996</th>
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<tbody>
<tr>
<td></td>
<td>Marchandises exportées en % du PIB: commerce mondial: 20%, UE: 25%. La part des exportations dépend de la taille de l'économie. Plus l'économie nationale est faible, plus la part des exportations est importante; par exemple, États-Unis: 11%, Allemagne: 22%, France: 66%.</td>
<td>Intra-UE: 15 (63%)</td>
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<td>Extra-UE 15 (37%) .</td>
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<td>DEA (Sud-Est asiatique)</td>
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<td></td>
<td>Monde (hormis intra-UE)</td>
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<td>Monde (y compris intra-UE)</td>
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<td></td>
<td>Les échanges intra-UE représentaient plus de 60% du commerce des pays de l'UE.</td>
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<tr>
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<td>Les États-Unis sont le partenaire commercial le plus important de l'UE (environ 20% du commerce extérieur de l'UE), suivis des pays de l'ASEE.</td>
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<td>Actuellement, le bilan des exportations de l'UE est excédentaire (mais avec les pays du bassin méditerranéen).</td>
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<td>AELE: 75 (13)</td>
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<td>CCE: 47 (8)</td>
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<td>Russie: 23 (4)</td>
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Source : CE, Guide de l'acquis communautaire
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<td>992 (100)</td>
<td>543 (100)</td>
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<td>565 (100)</td>
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<table>
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<tr>
<th>Commerces de l'UE par mode de transport et en poids</th>
<th>Million de tonnes</th>
<th>Intra-UE</th>
<th>Importations</th>
<th>Export.</th>
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<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mer</td>
<td>280 (30)</td>
<td>909 (74)</td>
<td></td>
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<td>Route</td>
<td>383 (41)</td>
<td>64 (5)</td>
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<td>56 (17)</td>
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<tr>
<td>Rail</td>
<td>65 (7)</td>
<td>51 (4)</td>
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<td>21 (6)</td>
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<td>Voies navigables</td>
<td>118 (13)</td>
<td>40 (3)</td>
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<td>15 (5)</td>
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<tr>
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<td>161 (13)</td>
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<td>2 (0.2)</td>
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<td>Tous modes de transport</td>
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<th>Commerces de l'UE par catégories de marchandises</th>
<th>Milliard d'écus (mil. de tonnes)</th>
<th>Intra-UE</th>
<th>Importations</th>
<th>Exportat.</th>
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<tbody>
<tr>
<td></td>
<td>(mil. De t)</td>
<td>(mil. de t)</td>
<td>(mil. de t)</td>
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<tr>
<td>Produits agricoles</td>
<td>125 (173)</td>
<td>65 (142)</td>
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<td>6 (147)</td>
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<tr>
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<td>58 (594)</td>
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<td>9 (65)</td>
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<tr>
<td>Min. de fer, acier, produits métall.</td>
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<td>37 (191)</td>
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<td>26 (43)</td>
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<tr>
<td>Ciment, matériaux de construction</td>
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<td>9 (54)</td>
<td></td>
<td>12 (45)</td>
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<tr>
<td>Produits chimiques, engrais</td>
<td>122 (122)</td>
<td>48 (64)</td>
<td></td>
<td>73 (43)</td>
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<tr>
<td>Machines, produits manufacturés</td>
<td>639 (143)</td>
<td>319 (69)</td>
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<td>396 (57)</td>
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Goods Transport

**Evolution 1970-98**

**Performance by mode**

1000 mio tkm

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<th>Year</th>
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<th>Air</th>
<th>Water</th>
<th>Total</th>
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<td>1970</td>
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<td>932</td>
<td>255</td>
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<tr>
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<td>221</td>
<td>114</td>
<td>83</td>
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<tr>
<td>1990</td>
<td>1,152</td>
<td>220</td>
<td>112</td>
<td>85</td>
<td>2,641</td>
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<tr>
<td>1995</td>
<td>1,205</td>
<td>238</td>
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<td>85</td>
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<tr>
<td>2000</td>
<td>1,255</td>
<td>241</td>
<td>121</td>
<td>87</td>
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+35% -6% +12% +17% +27% +25%

**Average annual change**

% per year

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<th>Year</th>
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<th>Air</th>
<th>Water</th>
<th>Total</th>
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<td>+1.4</td>
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<td>+3.0</td>
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<tr>
<td>1985</td>
<td>+4.1</td>
<td>+1.1</td>
<td>+2.2</td>
<td>+2.4</td>
<td>+3.8</td>
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**Modal split**

%  

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<th>Year</th>
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<th>Air</th>
<th>Water</th>
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<td>21.1</td>
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<tr>
<td>1985</td>
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<td>3.0</td>
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**Source:** EUROSTAT, ECMT, UIC, national statistics

*Note:* for a modal split based on 4 modes, see table 4.4

**Evolution 1970-98**

billion tkm
## Modal Split by Country

### 1998

<table>
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<tr>
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<tr>
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<td>89.3</td>
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<td>84.6</td>
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<td>92.7</td>
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<td>70.9</td>
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<td>47.9</td>
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<td>38.3</td>
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<td>87.4</td>
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<td>63.1</td>
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### Modal split for EU 15

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<tr>
<td></td>
<td>47.9</td>
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</table>
Goods Transport

**CEC : Evolution 1970-98**

Performance by mode of transport

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<th>145</th>
<th>144</th>
<th>143</th>
<th>152</th>
<th>175</th>
<th>172</th>
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<tbody>
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<td>274</td>
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<td>16</td>
<td>272</td>
<td>12</td>
<td>174</td>
<td>170</td>
<td>171</td>
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<td>364</td>
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<td>37</td>
<td>336</td>
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</table>

Source: national statistics, ECMT, UIC

Average annual change

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<th>+2.9</th>
<th>+3.0</th>
<th>+8.7</th>
<th>+4.2</th>
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<td>+2.2</td>
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Note: Road: results affected by breaks in time series

Modal split

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### EU Merchant Fleet

Ships of 1000 gt and over  
Data as at January 1st, 1996

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<th>EU15</th>
<th>EU15 as at 1.1.1996</th>
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</tr>
<tr>
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<td>132</td>
<td>572</td>
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<tr>
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<td>1737</td>
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<td>3867</td>
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<tr>
<td><strong>Foreign flag</strong></td>
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</tr>
<tr>
<td><strong>Total fleet</strong></td>
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<td><strong>Total ships</strong></td>
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<td><strong>Total gt</strong></td>
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<tr>
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<tr>
<td><strong>EU15 as at 1.1.1996</strong></td>
<td>7,970</td>
<td>227.0</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Share of foreign flag in total fleet</th>
</tr>
</thead>
<tbody>
<tr>
<td>99% 30% 67% 74% 44% 42% 29% 24% - 24% 50% 25% 32% 60% 84% 99%</td>
</tr>
<tr>
<td>100% 48% 64% 60% 56% 48% 21% 38% - 38% 83% 51% 67% 92% 71% 84%</td>
</tr>
</tbody>
</table>

Source: ISL merchant fleet data bases; aggregates based on quarterly updates from the Lloyd's Maritime Information System.

(s) including international registers like the Danish International Ship Register, including vessels registered at territorial dependencies.
### World Merchant Fleet

**ships of 1000 gt and over**

#### by region

<table>
<thead>
<tr>
<th>Region</th>
<th>302</th>
<th>311</th>
<th>305</th>
<th>321</th>
<th>336</th>
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<tbody>
<tr>
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**Source:** ISL

* Ships of 1000 gt and over

**Note:** In addition in 1998 23711 fishing vessels (> 100 gt) of which EU 3300 and 1185 research vessels (> 100 gt) of which EU countries ca. 200
### Sea

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#### Sum of above ports

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**Source**: Institute of Shipping Economics and Logistics, Bremen  
**Note**: Piraeus, EL: n.a.
## Goods Transport

### Sea

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#### Container service maritime operators (1998)

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**Source:** Containerisation International Yearbook, Port of Rotterdam

**Note:** In 1999 Maersk and Sea-Land merged
Definitions: Short sea shipping includes the following elements

- intermodal
- intra-European cargo
- door-to-door basis
- containers, trailers
- floating stock
- alternative to road transport

**Intermodal**
When cargo is shipped from door-to-door by short sea, various means of transport are involved. At the very least, a short sea vessel and a truck are used, but rail and inland barge can also be included. Therefore, short sea can be multimodal.

**Intra European cargo**
Short sea transport concentrates on moving cargo between European countries. The destinations from the Netherlands include GOS, the Baltic States, Scandinavia, UK, Ireland, France, the Iberian Peninsula, North Africa and the Mediterranean countries such as Greece and Turkey and the countries around the black sea.

**Door-to-door basis**
Short sea shipping is based on the concept of carrying freight door-to-door, or factory to factory, like road transport. This is accomplished by using fast, modern ships, incorporating intermodal transport for collection and delivery. The total transport operation can be arranged by the shipping line itself and/or the ships’ agent. The transit time to many destinations is only slightly longer than road transport and the cost is considerably cheaper, up to 25%, to many countries.

**Containers/trailers**
The majority of cargo moving in trailers is palletised. The short sea services that are the closest alternative to road transport use 12 m. or 13.60 m. trailers and containers. Standard containers are less suitable for palletised carg as the inside width is only 2.33 m., but many short sea operators offer so-called palletwide 40ft containers for which the loading capacity is 24 pallets of 1 x 1.20m. Which is 3 pallets more than in a standard 40 ft container. There are even destinations, such as the UK and Finland, where 45ft palletwide containers are available.

**Floating stock**
Short sea transport is especially suitable for larger volumes that have to be shipped regularly over longer distances within Europe. On shorter distances within Continental Europe, road, rail and inland shipping are more suitable. When larger quantities are shipped on short sea vessels, the exporter/importer has a floating stock which can cut his costs by reducing the need for land-based stock.
Main Modes of Transport

Performance by mode
1000 mio pkms

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Average annual change
% per year

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%

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Source: tables 5.5, 5.7, 5.8, 5.9, 5.15
Motorization 1950-97
Number of passenger cars per 1000 persons

USA: all 2-axle 4-tyre vehicles
USA: passenger cars
EU 15
CEC

Note: USA: 2-axle 4-tyred vehicles include passenger cars, pick-ups, light vans and sports utility vehicles. Some of these vehicles are used for commercial purposes.

Road

Motorization
Number of passenger cars per 1000 inhabitants

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Source: Energy and Transport DG calculations
Percentage of tax added to the price of a small new passenger car

- 21.0% 173.0 16.0 19.0 39.0 20.0 74.0 20.0 15.0 59.0 48.4 86.0 22.0% 52.4 17.5

Source: VDA (example of small car used: VW Polo)
** FIN: after import tax on cars of 100%
* B: plus a registration tax which depends on engine power and type of fuel, also applicable to used cars but at reduced rates

A-43
### Vehicle Stock: Passenger Cars

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### Cars per 1000 Inhabitants:

| Year | 219 | 332 | 222 | 311 | 219 | 265 | 197 | 230 | 125 | 403 |

Source: Study for Energy and Transport DG

Notes: (1) change in vehicle register, vehicle stock overestimated before 1994

### Passenger Transport

### Railways

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Source: Railways: UK, ECMT, national statistics (1), Tram / Metro: national statistics and estimates based on the number of passengers
CEC: Railway Transport
Passenger and goods traffic
1985 = 100
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<td>2353</td>
<td>122</td>
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</table>

| 110.9| 78.9| 49.0| 45.2| 93.0| 65.3| 64.6| 312.7| 238.6| 20.3|
| 39   | 120| 75 | 23 | 83 | 31 | 37 | 75 | 48 | 59 |

**Source:** UN-ECE

**Note:** The railways of Estonia, Latvia and Lithuania are broad gauge (1524 mm). The other railways are standard gauge.
CO₂ Emissions (EU 15)

CO₂ Emissions from Fossil Fuels

Emissions From Fossil Fuels
Mio tonnes CO₂

<table>
<thead>
<tr>
<th>Year</th>
<th>Transport</th>
<th>Energy branch</th>
<th>Electricity &amp; heat prod</th>
<th>Households etc</th>
<th>Industry</th>
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Source: Eurostat
Notes: (1) without fossil fuel for electricity production
       (2) including passenger transport and leisure boating
Traffic Safety EU 15
Fatalities by mode of transport

Note: Road - change in time series from 1991

Road Fatalities
number of persons killed

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<thead>
<tr>
<th>Year</th>
<th>B</th>
<th>DK</th>
<th>D</th>
<th>EL</th>
<th>E</th>
<th>F</th>
<th>IRL</th>
<th>I</th>
<th>NL</th>
<th>A</th>
<th>P</th>
<th>FIN</th>
<th>S</th>
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<td>1978</td>
<td>2650</td>
<td>1206</td>
<td>2103</td>
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<td>6656</td>
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<td>963</td>
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Source: Data from 1994. CARF Europe and Transport. Up to 1980, IFRSTE, ESCMT, and ERTAD.

Notes: Figures include all persons killed within 30 days of the accident. Corrector factor for Member States not using the definition.

Legend: (1: 0 days up to 1993, 1:07 from 1994, 1:07f from 1994, 1:20f from 1995), 1:18 (up to 1992),
(2: 1:20f daily, up to 1990, 1:20 up to 1992, & others 1:20 up to 1990, 1:12 up to 1990).
Tableau 1. Les innovations de transport
“les plus prometteuses”

<table>
<thead>
<tr>
<th>Catégories</th>
<th>Technologies (phase d’innovation)</th>
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</thead>
<tbody>
<tr>
<td>Technologies multimodales</td>
<td>• Information multimodale sur les déplacements (2,3)</td>
</tr>
<tr>
<td></td>
<td>• Information multimodale sur la planification de trajets (2,3)</td>
</tr>
<tr>
<td></td>
<td>• Terminals intermodaux de transbordement (3,4)</td>
</tr>
<tr>
<td></td>
<td>• Terminals intermodaux de passagers (2,3)</td>
</tr>
<tr>
<td></td>
<td>• Services de transport multimodal (2,3)</td>
</tr>
<tr>
<td></td>
<td>• Système de réservation pour les modes de transport (2)</td>
</tr>
<tr>
<td></td>
<td>• Système d’information pour la coordination des modes (2)</td>
</tr>
<tr>
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<td>• Système d’information pour identifier les préférences et les habitudes des voyageurs (1)</td>
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<tr>
<td>Technologies de l’information</td>
<td>• Systèmes de paiement intelligents (3,4)</td>
</tr>
<tr>
<td></td>
<td>• Cartes à puce (3,4)</td>
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<tr>
<td></td>
<td>• Systèmes d’authentification (2,3)</td>
</tr>
<tr>
<td></td>
<td>• Accès mobile à Internet (4)</td>
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<td>• Téléactivités (4)</td>
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<td>Route</td>
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<td>• Systèmes de propulsion de pointe (2,3,4)</td>
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<td>• Propulsion électrique et hybride (3,4)</td>
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<td>• Pile à combustible (2,3)</td>
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<td>• Voiture électrique urbaine (3)</td>
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<td>• Planification dynamique des itinéraires (3)</td>
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<td>• Système embarqué d’information sur le trafic (4)</td>
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<td></td>
<td>• Pilotes électroniques (4)</td>
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<td>• Systèmes de navigation (4)</td>
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<td>• Systèmes de contrôle du trafic (4)</td>
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<td>• Système de gestion des emplacements de stationnement (4)</td>
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<td>• Systèmes d’aide à la conduite (2,3,4)</td>
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<td>• Conduite programmable (2)</td>
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<td>b) Passagers</td>
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<td>• Véhicules propulsés par l’homme (4)</td>
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<td>• Nouveaux systèmes de transport en commun individualisé à haut débit (2,3)</td>
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<td>• Covoyage (4)</td>
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<td>• Partage de véhicule (4)</td>
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<td>c) Marchandises</td>
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<td>• Trains routiers (4)</td>
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<td>• Télématique du transport de marchandises (3,4)</td>
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<td>• Systèmes innovants de création d’infrastructures souterraines pour le transport de marchandises (2,3)</td>
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<td>Rails</td>
<td>• Recyclage et mise à niveau des matériaux usés (train urbain) (3)</td>
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<td>• Technologies de la pile à combustible et de la batterie (systèmes de rails à la demande) (2,3)</td>
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<td>• Nouveaux systèmes de rails pour de nouveaux concepts de transport (ex. train à lévitation magnétique et transport en commun individualisé à haut débit) (2,3)</td>
</tr>
<tr>
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<td>• Systèmes de gestion du trafic et utilisation des technologies de l’information avec des GNSS (systèmes mondiaux de navigation par satellite)</td>
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<td>• Systèmes de communication sans fil et réseaux de communication informatique (Internet, LAN, WAN) destinés aux passagers des grandes lignes et aux trains interurbains (3,4)</td>
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<td>• Réduction du poids et de la résistance à l’avancement (3,4)</td>
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<td>• Trains pendulaires à grande vitesse (3,4)</td>
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<td>• Technologies de gestion de diverses tensions (3,4)</td>
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<td>• Métros légers et conveyeurs de personnes (3,4)</td>
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<td>• Transport commercial supersonique (2,3)</td>
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<td>• Aéroplanes supersoniques (3)</td>
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<td>• Systèmes de dégivrage (3)</td>
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<td>• Gestion du trafic aérien (3)</td>
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<td>• Bateaux entièrement électriques (2,3)</td>
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<td>• Transbordeurs maritimes rapides pour le transport de passagers (3,4)</td>
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<td>• Transbordeurs rapides de navigation intérieure pour le transport de passagers (3,4)</td>
</tr>
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<td>• Canots de navigation intérieure (2)</td>
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Source: van Zuylen et al. (2000). Les chiffres entre parenthèses font référence à la phase d’innovation à laquelle se trouve la technologie: 1 = technologie en phase d’invention, 2 = phase d’essai, 3 = première application pratique, 4 = introduction sur le marché, 5 = maturité et utilisation, 6 = déclin ou remplacement par une nouvelle technologie.
Road vehicle communications:
- electronic traffic calming
- road pricing
- driver information and navigation

Pedestrian airbag

Pedestrian cushion

Energy absorbing structure

Collision avoidance system

- Lightweight construction
- Energy efficient powerplant
- Low emissions

Source: ICE, Vision 2020
Transport Research Publications

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Directorate General for Energy and Transport
Information, Communication and Diffusion of Technology
Unit/A5
Rue de la Loi 200
B-1049 Brussels

Tel: +32/2/295.54.52
Fax: +32/2/295.61.18

Titles available in the transport research publications series:

**EURET**

- EURET programme evaluation report

* EURET (European Research on Transport, 1991-93) was one of the specific programmes of the second framework programme of Community research and technological development

**CONCERTED ACTION 1.1**

- Cost-benefit and multi-criteria analysis for new road construction

**INTERMODAL TRANSPORT**

- SIMET - Smart intermodal European transport

**RAIL TRANSPORT**

- ERTMS - European rail traffic management system
- Eurobalise sub-system

http://www.cordis.lu/transport/src/public2.htm

6/11/01

A-51
• Euradio 2A & 2B sub-system

MARITIME TRANSPORT

• RTIS - Regional traffic information system
• TAIE - Tools to access VTS and to increase the efficiency of VTS
• ATOMOS - Advanced technologies to optimize manpower on board ships
• MASIS - Human factors in the man/ship systems for the European fleets

AIR TRANSPORT

• SWIFT - Specification for controller working positions in the future air traffic control
• EURATN - European aeronautical telecommunication network
• AEGIS - ATM European group for improvement of scenarios

APAS*

* The APAS (Actions de Préparation, d'accompagnement et du suivi) studies were carried out in 1994-95 in order to prepare for the future Transport RTD programme

STRATEGIC TRANSPORT

• Cost-benefit and multi-criteria analysis for rail infrastructure
• Cost-benefit and multi-criteria analysis for inland waterways infrastructure
• Cost-benefit and multi-criteria analysis for nodal centres for goods
• Cost-benefit and multi-criteria analysis for nodal centres for passengers
• Databases and scenarios for European transport
• Financing models for new transport infrastructure
• Methodologies for transport impact assessment
• Transport strategic modeling
• Space systems for navigation

INTERMODAL TRANSPORT

• SCIPIO - A new approach for research application

URBAN TRANSPORT

http://www.cordis.lu/transport/src/public2.htm

6/11/01
- Public transport prioritization
- Modeling of urban transport
- Effectiveness of measures influencing the levels of public transport use in urban areas
- Pricing and financing of urban transport
- New market oriented transport systems

ROAD TRANSPORT

- Investment, organisation and finance scenarios
- Assessment of road transport models and systems architectures
- Evaluation
- Harmonisation of European investigation systems
- Network architecture

RAIL TRANSPORT

- ERTMS - European rail traffic management system requirement specifications

MARITIME TRANSPORT

- VTMIS - Vessel traffic management and information systems
- THAMES - Technology and human aspects of maritime efficiency and safety
- Structure and organisation of maritime transport
- MST short sea shipping
- Impact of changing logistics on maritime transport
- RIACT - Relevance of information and communications technologies for shipping
- Inland waterways transport systems

AIR TRANSPORT

- FRAIS - Functional requirements for an airport ground movement control and management interconnection system
- VAPORETO - Validation process for users' requirements in air traffic operations
- MUFTIS - Model use and fast-time simulation
- Requirements for a functional organisation of the control tower operations and tools
- Study on potential benefit to airport/ATM congestion through special operational procedures for rotorcraft
- Wake Vortex reporting scheme and meteorological data collection system

Assessment of the impact of MLS implementation on Cat. II/III runways’ capacity in low visibility conditions

4th FP TRANSPORT PROGRAMME*

* The Transport Programme is one of the specific programmes of the fourth framework programme (1994-1998) of Community research and technological development (RTD).

- PRIVILEGE - Priorities for vehicles of essential user groups in urban environments
- ISOTOPE - Improved structure and organisation for urban transport operations of passengers in Europe
- HSR-COMET - Intermodal connection of HSR terminals in metropolitan areas
- OPTIMA - Optimisation of policies for transport integration in metropolitan areas (temporary out of print)
- DISC - Demonstration of ISC
- VTMIS- Concerted Action - Workshop report on the user's requirements of the vessel traffic management and information services
- NOAA - New optimisation approaches to air traffic flow management
- TAPE - Total airport performance and evaluation
- GORAC - GCAS operational requirements and certification
- ASIVAL - Assessment of the ATM system configuration subject to validation
- FACTOR - Development of functional concepts from the EATMS operational requirements
- GENOVA - Generic overall validation for ATM
- SECAM - Safety, efficiency and capacity of ATM methodologies
- 4MIDABLE - Requirement/benefit definition study leading to 4D meteorological data bases linked across Europe
- FRIENDLY - Functional requirements identification development of methodology
- QUTS - Quality indicators for Transport systems
- MAICA - Modelling and analysis of the impact of changes in ATM
- ADONIS - Analysis and development of new insight into substitution of short car trips by cycling and walking
- FARADEX - Functional architecture reference for ATM systems and data exchanges
- ESTEEM - Elaboration of a strategy for the transition from EATCHIP phase III to the European Air Traffic Management System
- MICA - MET improvements for controller aids
- ADORA - Analysis and definition of operational requirements for ATM
- REMAIN - Modular system for reliability and maintainability management in European rail transport

http://www.cordis.lu/transport/src/public2.htm
- VACANTINO - How to enhance walking and cycling instead of shorter car trips and make these modes safer
- QUATTRO - Quality approach in tendering urban public transport operations
- OSIRIS - Optimised system for an innovative rail integrated seaport connection
- INFOSTAT - Information systems
- ECOPAC - Econometrics of impacts
- VASME - Value added services for maritime environment
- INCARNATION - Efficient inland navigation information system
- EMARC - MARPOL rules and ship generated waste
- PATIO - Platform for ATM tools integration up to pre-operation
- ABEAM - Across the borders EATMS effect
- OD-ESTIM - Methods to obtain information about transport data from origin to destination cost-efficiently
- CASCADE - Contribution for assessment of common ATM development in Europe
- REFORM - Research on freight platforms and freight organisation
- SCANDINET - Promoting integrated transport in peripheral areas of the Union (temporary out of print)
- SHIFTING CARGO - Shifting cargo to inland navigation
- MEET - Methodology for calculating transport emissions and energy consumption
- STEMM - Strategic European multi-modal modeling
- EXTRA 2 - An assessment of European travel behaviour
- COMFORTABLE - Comfort - Advanced benefits for logical VTS equipment
- SAFECO - Safety of shipping in coastal waters
- INTRAMUROS - Integrated urban transport concepts and systems
- AIUTO - Assessment of innovative urban transport options
- PHOENIX - Identification and case study of variables and parameters in the human domain in evaluating fire risk on board ships
- MOSAIC - Mobility strategy applications in the Community
- ACRUDA - Assessment and certification rules for dogotal architecture
- SESAME - Derivation of the relationship between land use, behaviour patterns and travel demand for political and investment decisions
- HVB - High voltage booster
- TRAFFIC - Traceability of the evolution of communication, navigation and surveillance (CNS) requirements versus operational concepts
- EUROSIG - Development of the complete ERTMS concept
- Trenen II STRAN - Policy Analysis for externalities in road transport: models and results
- MASTER - Managing speeds of traffic on European roads
- TROPIC - Traffic optimisation by the integration of information and control
- PARIS - Performance analysis of road infrastructure

http://www.cordis.lu/transport/src/public2.htm

6/11/01
- FREIA - Towards the networking of European freight villages
- CONCERT-P - Cooperation for novel city electronic regulating tools
- ICE ROUTES - The application of advanced technologies to the routing of ships through sea ice

Last Updated: 04-09-2000

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