



WHITE PAPER

European transport policy for 2010:
time to decide



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time to decide



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FOREWORD



Transport is crucial for our economic competitiveness and commercial, economic and cultural exchanges. This sector of the economy accounts for some €1000 billion, or over 10 % of the EU's gross domestic product, and employs 10 million people. Transport also helps to bring Europe's citizens closer together, and the Common Transport Policy is one of the cornerstones of the building of Europe. However, the warning signs are clear. Congestion, resulting in environmental nuisance and accidents, is getting worse day by day, and penalising both users and the economy. If nothing is done, the cost of congestion will, on its own, account for 1 % of the EU's gross domestic product in 2010 while, paradoxically, the outermost regions remain poorly connected to the central markets.



Europe must bring about a real change in the Common Transport Policy. The time has come to set new objectives for it: restoring the balance between modes of transport and developing intermodality, combating congestion and putting safety and the quality of services at the heart of our efforts, while maintaining the right to mobility. One of the main challenges is to define common principles for fair charging for the different modes of transport. This new framework for charging should both promote the use of less polluting modes and less congested networks and prepare the way for new types of infrastructure financing.

The Transport White Paper adopted by the European Commission on 12 September 2001 paints a realistic picture of the present situation with regard to transport and sets out an ambitious action programme comprising 60 or so measures between now and 2010.

However, the White Paper is only the first step, and transport policy as such is only one part of the answer. To meet our objectives, it will inevitably be necessary to take additional measures in other areas, e.g. budget policy, industrial policy, regional policy, social policy and the organisation of working time.

Loyola de Palacio

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POLICY GUIDELINES OF THE WHITE PAPER

Transport is a key factor in modern economies. However, there is a permanent contradiction between society, which demands ever more mobility, and public opinion, which is becoming increasingly intolerant of chronic delays and the poor quality of some transport services. As demand for transport keeps increasing, the Community's answer cannot be just to build new infrastructure and open up markets. The transport system needs to be optimised to meet the demands of enlargement and sustainable development, as set out in the conclusions of the Gothenburg European Council. A modern transport system must be sustainable from an economic and social as well as an environmental viewpoint.

Plans for the future of the transport sector must take account of its economic importance. Total expenditure runs to some EUR 1 000 billion, which is more than 10 % of gross domestic product. The sector employs more than 10 million people. It involves infrastructure and technologies whose cost to society is such that there must be no errors of judgment. Indeed, it is because of the scale of investment in transport and its determining role in economic growth that the authors of the Treaty of Rome made provision for a common transport policy with its own specific rules.

I. The mixed performance of the common transport policy

For a long time, the European Community was unable, or unwilling, to implement the common transport policy provided for by the Treaty of Rome. For nearly 30 years the Council of Ministers was unable to translate the Commission's proposals into action. It was only in 1985, when the Court of Justice ruled that the

Council had failed to act, that the Member States had to accept that the Community could legislate.

Later on, the Treaty of Maastricht reinforced the political, institutional and budgetary foundations for transport policy. On the one hand, unanimity was replaced, in principle, by qualified majority, even though in practice Council decisions still tend to be unanimous. The European Parliament, as a result of its powers under the co-decision procedure, is also an essential link in the decision-making process, as was shown in December 2000 by its historic decision to open up the rail freight market completely in 2008. Moreover, the Maastricht Treaty included the concept of the trans-European network, which made it possible to come up with a plan for transport infrastructure at European level with the help of Community funding.

Thus, the Commission's first White Paper on the future development of the common transport policy was published in December 1992. The guiding principle of the document was the opening-up of the transport market. Over the last 10 years or so, this objective has been generally achieved, except in the rail sector. Nowadays, lorries are no longer forced to return empty from international deliveries. They can even pick up and deliver loads within a Member State other than their country of origin. Road cabotage has become a reality. Air transport has been opened up to competition which no one now questions, particularly as our safety levels are now the best in the world. This opening-up has primarily benefited the industry and that is why, within Europe, growth in air traffic has been faster than growth of the economy.

The first real advance in common transport policy brought a significant drop in consumer

prices, combined with a higher quality of service and a wider range of choices, thus actually changing the lifestyles and consumption habits of European citizens. Personal mobility, which increased from 17 km a day in 1970 to 35 km in 1998, is now more or less seen as an acquired right.

The second advance of this policy, apart from the results of research framework programmes, was to develop the most modern techniques within a European framework of interoperability. Projects launched at the end of the 1980s are now bearing fruit, as symbolised by the trans-European high-speed rail network and the Galileo satellite navigation programme. However, it is a matter for regret that modern techniques and infrastructure have not always been matched by modernisation of company management, particularly rail companies.

Despite the successful opening-up of the transport market over the last 10 years, the fact remains that completion of the internal market makes it difficult to accept distortions of competition resulting from lack of fiscal and social harmonisation. The fact that there has been no harmonious development of the common transport policy is the reason for current headaches such as:

- unequal growth in the different modes of transport. While this reflects the fact that some modes have adapted better to the needs of a modern economy, it is also a sign that not all external costs have been included in the price of transport and certain social and safety regulations have not been respected, notably in road transport. Consequently, road now makes up 44 % of the goods transport market compared with 41 % for short sea shipping, 8 % for rail and 4 % for inland waterways. The predominance of road is even more marked in passenger transport, road accounting for 79 % of the market, while air with 5 % is about to overtake railways, which have reached a ceiling of 6 %;
- congestion on the main road and rail routes, in towns, and at airports;
- harmful effects on the environment and public health, and of course the heavy toll of road accidents.

II. Congestion: the effect of imbalance between modes

During the 1990s, Europe began to suffer from congestion in certain areas and on certain routes. The problem is now beginning to threaten economic competitiveness.

Paradoxically, congestion in the centre goes hand in hand with excessive isolation of the outlying regions, where there is a real need to improve links with central markets so as to ensure regional cohesion within the EU. To paraphrase a famous saying on centralisation, it could be said that the European Union is threatened with apoplexy at the centre and paralysis at the extremities.

This was the serious warning made in the 1993 White Paper on growth, competitiveness and employment: 'Traffic jams are not only exasperating, they also cost Europe dear in terms of productivity. Bottlenecks and missing links in the infrastructure fabric; lack of interoperability between modes and systems. Networks are the arteries of the single market. They are the life blood of competitiveness, and their malfunction is reflected in lost opportunities to create new markets and hence in a level of job creation that falls short of our potential.'

If most of the congestion affects urban areas, the trans-European transport network itself suffers increasingly from chronic congestion: some 7 500 km, i.e. 10 % of the road network, is affected daily by traffic jams. And 16 000 km of railways, 20 % of the network, are classed as bottlenecks. A total of 16 of the Union's main airports recorded delays of more than a quarter of an hour on more than 30 % of their flights. Altogether, these delays result in consumption of an extra 1.9 billion litres of fuel, which is some 6 % of annual consumption.

Because of congestion, there is a serious risk that Europe will lose economic competitiveness. The most recent study on the subject showed that the external costs of road traffic congestion alone amount to 0.5 % of Community GDP. Traffic forecasts for the next 10 years show that if nothing is done, road congestion will increase significantly by 2010. The costs attributable to congestion will also increase by 142 % to reach EUR 80 billion a year, which is approximately 1 % of Community GDP.

Part of the reason for this situation is that transport users do not always cover the costs

they generate. Indeed, the price structure generally fails to reflect all the costs of infrastructure, congestion, environmental damage and accidents. This is also the result of the poor organisation of Europe's transport system and failure to make optimum use of means of transport and new technologies.

Saturation on some major routes is partly the result of delays in completing trans-European network infrastructure. On the other hand, in outlying areas and enclaves where there is too little traffic to make new infrastructure viable, delay in providing infrastructure means that these regions cannot be properly linked in. The 1994 Essen European Council identified a number of major priority projects which were subsequently incorporated into outline plans adopted by the Parliament and the Council, which provide a basis for EU co-financing of the trans-European transport network. The total cost was estimated at around EUR 400 billion at the time. This method of building up the trans-European network, as introduced by the Maastricht Treaty, has yet to yield all its fruits. Only a fifth of the infrastructure projects in the Community guidelines adopted by the Council and Parliament have so far been carried out. Some major projects have now been completed, such as Spata airport, the high-speed train from Brussels to Marseilles and the Øresund bridge-tunnel linking Denmark and Sweden. But in far too many cases, the national sections of networks are merely juxtaposed, meaning that they can only be made trans-European in the medium term. With enlargement, there is also the matter of connection with the priority infrastructure identified in the candidate countries ('corridors'), the cost of which was estimated at nearly EUR 100 billion in Agenda 2000.

It has not been possible to meet these significant investment requirements by borrowing at Community level, as the Commission proposed in 1993. The lack of public and private capital needs to be overcome by innovative policies on infrastructure charging/funding. Public funding must be more selective and focus on the major projects necessary for improving the territorial cohesion of the Union as well as concentrating on investment which optimises infrastructure capacity and helps remove bottlenecks.

However, in this connection, and disregarding the funds earmarked for the trans-European

network which are limited to around EUR 500 million a year and have always given clear priority to the railways, it is clear that more than half the structural expenditure on transport infrastructure, including the Cohesion Fund and loans from the European Investment Bank, have, at the request of Member States, favoured road over rail. It has to be said, nonetheless, that motorway density in countries such as Greece and Ireland was still far below the Community average in 1998. In the new context of sustainable development, Community co-financing should be redirected to give priority to rail, sea and inland waterway transport.

III. Growth in transport in an enlarged European Union

It is difficult to conceive of vigorous economic growth which can create jobs and wealth without an efficient transport system that allows full advantage to be taken of the internal market and globalised trade. Even though, at the beginning of the 21st century, we are entering the age of the information society and virtual trade, this has done nothing to slow down the need for travel; indeed, the opposite is true. Thanks to the Internet, anyone can now communicate with anyone else and order goods from a long way away, while still enjoying the option of visiting other places and going to see and choose products or meet people. However, information technologies also provide proof that they can sometimes help reduce the demand for physical transport by facilitating teleworking or teleservices.

There are two key factors behind the continued growth in demand for transport. For passenger transport, the determining factor is the spectacular growth in car use. The number of cars has tripled in the last 30 years, at an increase of 3 million cars each year. Although the level of car ownership is likely to stabilise in most countries of the European Union, this will not be the case in the candidate countries, where car ownership is seen as a symbol of freedom. By the year 2010, the enlarged Union will see its car fleet increase substantially.

As far as goods transport is concerned, growth is due to a large extent to changes in the European economy and its system of production. In the last 20 years, we have moved from a 'stock' economy to a 'flow' economy. This phenomenon has been emphasised by the

relocation of some industries — particularly for goods with a high labour input — which are trying to reduce production costs, even though the production site is hundreds or even thousands of kilometres away from the final assembly plant or away from users. The abolition of frontiers within the Community has resulted in the establishment of a 'just-in-time' or 'revolving stock' production system.

So unless major new measures are taken by 2010 in the European Union so that the Fifteen can use the advantages of each mode of transport more rationally, heavy goods vehicle traffic alone will increase by nearly 50 % over its 1998 level. This means that regions and main through routes which are already heavily congested will have to handle even more traffic. The strong economic growth expected in the candidate countries, and better links with outlying regions, will also increase transport flows, in particular road haulage traffic. In 1998 the candidate countries already exported more than twice their 1990 volumes and imported more than five times their 1990 volumes.

Although, from their planned economy days, the candidate countries have inherited a transport system which encourages rail, the distribution between modes has tipped sharply in favour of road transport since the 1990s. Between 1990 and 1998, road haulage increased by 19.4 % while during the same period, rail haulage decreased by 43.5 %, although — and this could benefit the enlarged European Union — it is still on average at a much higher level than in the present Community.

To take drastic action to shift the balance between modes — even if it were possible — could very well destabilise the whole transport system and have negative repercussions on the economies of candidate countries. Integrating the transport systems of these countries will be a huge challenge to which the measures proposed have to provide an answer.

IV. The need for integration of transport in sustainable development

Together with enlargement, a new imperative — sustainable development — offers an opportunity, not to say lever, for adapting the common transport policy. This objective, as introduced by the Treaty of Amsterdam, has to

be achieved by integrating environmental considerations into Community policies ⁽¹⁾.

The Gothenburg European Council placed shifting the balance between modes of transport at the heart of the sustainable development strategy. This ambitious objective can obviously only be fully achieved over the next 10 years. The measures presented in the White Paper are nonetheless a first essential step towards a sustainable transport system that will ideally be in place in 30 years' time.

As stated in the Commission's November 2000 Green Paper on security of supply, in 1998 energy consumption in the transport sector was to blame for 28 % of emissions of CO₂, the leading greenhouse gas. According to the latest estimates, if nothing is done to reverse the traffic growth trend, CO₂ emissions from transport can be expected to increase by around 50 % to reach 1 113 billion tonnes in 2010, compared with the 739 million tonnes recorded in 1990. Once again, road transport is the main culprit since it alone accounts for 84 % of the CO₂ emissions attributable to transport. However, internal combustion engines are notorious for their low energy efficiency, mainly because only part of the combustion power serves to move the vehicle.

Reducing dependence on oil from the current level of 98 %, by using alternative fuels and improving the energy efficiency of modes of transport, is both an ecological necessity and a technological challenge.

In this context, efforts already made, particularly in the road sector, to preserve air quality and combat noise have to be continued in order to meet the needs of the environment and the concerns of the people without compromising the competitiveness of the transport system and of the economy. Enlargement will have a considerable impact on demand for mobility. This will involve greater efforts in order to break the link gradually between transport growth and economic growth and make for a modal

⁽¹⁾ In June 1998, the Cardiff European Council set the process in motion by asking a number of sectoral Councils to develop concrete integration strategies. The Transport Council defined its strategy in October 1999, highlighting five sectors in which measures should be pursued, namely (i) growth in CO₂ emissions from transport, (ii) pollutant emissions and their effects on health, (iii) anticipated growth in transport, in particular due to enlargement, (iv) modal distribution and its development, and (v) noise in transport.

shift, as called for by the European Council in Gothenburg. Such a shift cannot be ordered from one day to the next, all the less so after more than half a century of constant deterioration in favour of road, which has reached such a pitch that today rail freight services are facing marginalisation (8 %), with international goods trains in Europe struggling along at an average speed of 18 km/h. However, this is by no means inevitable in modern economies, since in the USA 40 % of goods are carried by rail.

A complex equation has to be solved in order to curb the demand for transport:

- economic growth will almost automatically generate greater needs for mobility, with estimated increases in demand of 38 % for goods services and 24 % for passengers;
- enlargement will generate an explosion in transport flows in the new Member States, particularly in the frontier regions;
- saturation of the major arteries combined with accessibility of outlying and very remote areas and infrastructure upgrading in the candidate countries will in turn require massive investment.

This is the context in which we have to consider the option of gradually breaking the link between economic growth and transport growth, on which the White Paper is based.

- A simplistic solution would be to order a reduction in the mobility of persons and goods and impose a redistribution between modes. However, this is unrealistic as the Community has neither the power nor the means to set limits on traffic in cities or on the roads or to impose combined transport for goods. To give just one example of the subsidiarity problems, it must be remembered that several Member States contest the very principle of a general Community-wide ban to keep heavy goods vehicles off the roads at weekends. Moreover, dirigiste measures would urgently require unanimous harmonisation of fuel taxes, but just a few months ago the Member States took diverging paths on taxation in response to the surge in oil prices.

Bearing in mind the powers of the European Union, three possible options emerge from an economic viewpoint.

- The first approach (A) ⁽²⁾ would consist of focusing on road transport through pricing alone. This option would not be accompanied by complementary measures in the other modes of transport. In the short-term it might curb the growth in road transport through the better loading ratio of goods vehicles and occupancy rates of passenger vehicles expected as a result of the increase in the price of transport. However, the lack of measures to revitalise the other modes of transport, especially the low gains in productivity in the rail sector and the insufficiency of infrastructure capacity, would make it impossible for more sustainable modes of transport to take over the baton.
- The second approach (B) also concentrates on road transport pricing but is accompanied by measures to increase the efficiency of the other modes (better quality of services, logistics, technology). However, this approach does not include investment in new infrastructure and does not cover specific measures to make for a shift of balance between modes. Nor does it guarantee better regional cohesion. It could help to achieve greater uncoupling than the first approach, but road transport would keep the lion's share of the market and continue to concentrate on saturated arteries and certain sensitive areas despite being the most polluting of the modes. It is therefore not enough to guarantee the necessary shift of balance and does not make a real contribution to the sustainable development called for by the Gothenburg European Council.
- The third approach (C), on which the White Paper is based, comprises a series of measures ranging from pricing to revitalising alternative modes of transport to road and targeted investment in the trans-European network. This integrated approach would allow the market shares of the other modes to return to their 1998 levels and thus make for a shift of balance from 2010 onwards. This approach is far more ambitious than it looks, bearing in mind the historical imbalance in favour of road for the last 50 years. It is also the same as the approach adopted in the Commission's contribution to the

⁽²⁾ See explanatory table in Annex II.

Gothenburg European Council which called for a shift of balance between the modes by way of an investment policy in infrastructure geared to the railways, inland waterways, short sea shipping and intermodal operations (COM(2001) 264 final). By implementing the 60-odd measures set out in the White Paper there will be a marked break in the link between transport growth and economic growth, although without there being any need to restrict the mobility of people and goods. There would also be much slower growth in road haulage thanks to better use of the other means of transport (increase of 38 % rather than 50 % between 1998 and 2010). This trend would be even more marked in passenger transport by car (increase in traffic of 21 % against a rise in GDP of 43 %).

V. The need for a comprehensive strategy going beyond European transport policy

The objective — never yet achieved — of shifting the balance of transport involves not only implementing the ambitious programme of transport policy measures proposed in the White Paper by 2010, but also taking consistent measures at national or local level in the context of other policies:

- economic policy to be formulated to take account of certain factors which contribute to increasing demand for transport services, particularly factors connected with the just-in-time production model and stock rotation;
- urban and land-use planning policy to avoid unnecessary increases in the need for mobility caused by unbalanced planning of the distances between home and work;
- social and education policy, with better organisation of working patterns and school hours to avoid overcrowding roads, particularly by traffic departing and returning at weekends, when the greatest number of road accidents occur;
- urban transport policy in major conurbations, to strike a balance between modernisation of public services and more rational use of the car, since compliance with international commitments to curb CO₂

emissions will be decided in the cities and on the roads;

- budget and fiscal policy to achieve full internalisation of external — in particular environmental — costs and completion of a trans-European network worthy of the name;
- competition policy to ensure that opening-up of the market, especially in the rail sector, is not held back by dominant companies already operating on the market and does not translate into poorer quality public services;
- transport research policy to make the various efforts made at Community, national and private level more consistent, along the lines of the European research area.

Clearly, a number of measures identified in this White Paper, such as the place of the car, improving the quality of public services or the obligation to carry goods by rail instead of road, are matters more for national or regional decisions than for the Community.

VI. Principal measures proposed in the White Paper

The White Paper proposes some 60 specific measures to be taken at Community level under the transport policy. It includes an action programme extending until 2010, with milestones along the way, notably the monitoring exercises and the mid-term review in 2005 to check whether the precise targets (for example, on modal split or road safety) are being attained or whether adjustments need making.

Detailed proposals, which will have to be approved by the Commission, will be based on the following guidelines:

REVITALISING THE RAILWAYS

Rail transport is literally the strategic sector, on which the success of the efforts to shift the balance will depend, particularly in the case of goods. Revitalising this sector means competition between the railway companies themselves. The arrival of new railway undertakings could help to bolster competition in this sector and should be accompanied by measures to encourage company restructuring that take account of social aspects and work conditions. The priority is to open up the

markets, **not only for international services, as decided in December 2000, but also for cabotage on the national markets (to avoid trains running empty) and for international passenger services.** This opening-up of the markets must be accompanied by further harmonisation in the fields of interoperability and safety.

Starting next year, the Commission will propose a package of measures which should restore the credibility, in terms of regularity and punctuality, of this mode in the eyes of operators, particularly for freight. Step by step, **a network of railway lines must be dedicated exclusively to goods services** so that, commercially, railway companies attach as much importance to goods as to passengers.

IMPROVING QUALITY IN THE ROAD TRANSPORT SECTOR

The greatest strength of road transport is its capacity to carry goods all over Europe with unequalled flexibility and at a low price. This sector is irreplaceable but its economic position is shakier than it might seem. Margins are narrow in the road transport sector because of its considerable fragmentation and of the pressure exerted on prices by consignors and industry. This tempts some road haulage companies to resort to price dumping and to side-step the social and safety legislation to make up for this handicap.

The Commission will propose **legislation allowing harmonisation of certain clauses in contracts in order to protect carriers from consignors and enable them to revise their tariffs in the event of a sharp rise in fuel prices.**

The changes will also require modernisation of the way in which road transport services are operated, while complying with the social legislation and the rules on workers' rights. Parallel measures will be needed to harmonise and tighten up **inspection procedures** in order to put an end to the practices preventing fair competition.

PROMOTING TRANSPORT BY SEA AND INLAND WATERWAY

Short-sea shipping and inland waterway transport are the two modes which could provide a means of coping with the congestion of certain road infrastructure and the lack of railway infrastructure. Both these modes remain underused.

The way to revive short-sea shipping is to build veritable **sea motorways** within the framework of the master plan for the trans-European network. This will require better connections between ports and the rail and inland waterway networks together with improvements in the quality of port services. Certain shipping links (particularly those providing a way round bottlenecks — the Alps, Pyrenees and Benelux countries today and the frontier between Germany and Poland tomorrow) will become part of the trans-European network, just like roads or railways.

The European Union must have **tougher rules on maritime safety** going beyond those proposed in the aftermath of the Erika disaster. To combat ports and flags of convenience more effectively, the Commission, in collaboration with the International Maritime Organisation and the International Labour Organisation, will propose incorporating the **minimum social rules** to be observed in ship inspections and developing a **genuine European maritime traffic management system.** At the same time, to promote the reflagging of as many ships as possible to Community registers, the Commission will propose a **directive on the tonnage-based taxation system**, modelled on the legislation being developed by certain Member States.

To reinforce the position of inland waterway transport, which, by nature, is intermodal, **'waterway branches'** must be established and transshipment facilities must be installed to allow a continuous service all year round. Greater, fuller harmonisation of the **technical requirements for inland waterway vessels, of boatmasters' certificates** and of the **social conditions for crews** will also inject fresh dynamism into this sector.

STRIKING A BALANCE BETWEEN GROWTH IN AIR TRANSPORT AND THE ENVIRONMENT

Today, in the age of the single market and of the single currency, there is still no 'single sky' in Europe. The European Union suffers from over-fragmentation of its air traffic management systems, which adds to flight delays, wastes fuel and puts European airlines at a competitive disadvantage. It is therefore imperative to implement, by 2004, a series of specific proposals establishing **Community legislation on air traffic** and introducing effective cooperation both with the military authorities and with Eurocontrol.

This reorganisation of Europe's sky must be accompanied by a policy to ensure that the inevitable **expansion of airport capacity** linked, in particular, with enlargement, remains strictly subject to new regulations to **reduce noise and pollution caused by aircraft**.

TURNING INTERMODALITY INTO REALITY

Intermodality is of fundamental importance for developing competitive alternatives to road transport. There have been few tangible achievements, apart from a few major ports with good rail or canal links. Action must therefore be taken to ensure fuller integration of the modes offering considerable potential transport capacity as links in an efficiently managed transport chain joining up all the individual services. The priorities must be **technical harmonisation and interoperability** between systems, particularly for **containers**. In addition, the **new Community support programme 'Marco Polo'** targeted on innovative initiatives, particularly to promote sea motorways, will aim at making intermodality more than just a simple slogan and at turning it into a competitive, economically viable reality.

BUILDING THE TRANS-EUROPEAN TRANSPORT NETWORK

Given the saturation of certain major arteries and the consequent pollution, it is essential for the European Union to complete the trans-European projects already decided. For this reason, the Commission intends to propose revision of the guidelines adopted by the Council and the European Parliament, which will remain limited until funding is secured for the current projects. In line with the conclusions adopted by the Gothenburg European Council, the Commission proposes to **concentrate the revision of the Community guidelines on removing the bottlenecks in the railway network, completing the routes identified as the priorities for absorbing the traffic flows generated by enlargement, particularly in frontier regions, and improving access to outlying areas**. To improve access to the trans-European network, development of the secondary network will remain a Structural Fund priority.

In this context, the list of 14 major priority projects adopted by the Essen European Council and included in the 1996 European Parliament and Council decision on the guidelines for the trans-European transport network must be amended. A number of large-scale projects have

already been completed and six or so new projects will be added (e.g. Galileo or the high-capacity railway route through the Pyrenees).

To guarantee successful development of the trans-European network, a parallel proposal will be made to **amend the funding rules to allow the Community to make a maximum contribution — up to 20 % of the total cost — to cross-border railway projects crossing natural barriers but offering a meagre return yet demonstrable trans-European added value, such as the Lyon-Turin line already approved as a priority project by the Essen European Council**. Projects to clear the bottlenecks still remaining on the borders with the candidate countries could qualify for the full 20 %.

In 2004 the Commission will present a more extensive review of the trans-European network aimed in particular at introducing the concept of 'sea motorways', developing airport capacity, linking the outlying regions on the European continent more effectively and connecting the networks of the candidate countries to the networks of EU countries ⁽³⁾.

Given the low level of funding from the national budgets and the limited possibilities of public/private partnerships, innovative solutions based on a pooling of the revenue from infrastructure charges are needed. To fund new infrastructure before it starts to generate the first operating revenue, it must be possible to constitute national or regional funds from the tolls or user charges collected over the entire area or on competing routes. The Community rules will be amended to open up the possibility of allocating part of the revenue from user charges to construction of the most environmentally-friendly infrastructure. Financing rail infrastructure in the Alps from taxation on heavy lorries is a textbook example of this approach, together with the charges imposed by Switzerland, particularly on lorries from the Community, to finance its major rail projects.

IMPROVING ROAD SAFETY

Although transport is considered an essential for the well-being of society and of each individual,

⁽³⁾ Without prejudice to the outcome of the accession negotiations, the candidate countries' networks will be integrated into the Union's network via the accession treaties.

increasingly it is coming to be perceived as a potential danger. The end of the 20th century was marred by a series of dramatic rail accidents, the Concorde disaster and the wreck of the Erika, all of which are etched into the memory. However, the degree of acceptance of this lack of safety is not always logical. How else can the relative tolerance towards road accidents be explained when every year there are 41 000 deaths on the roads, equivalent to wiping a medium-sized town off the map. Every day the total number of people killed on Europe's roads is practically the same as in a medium-haul plane crash. Road accident victims, the dead or injured, cost society tens of billions of euro but the human costs are incalculable. For this reason, the European Union should set itself a target of reducing the number of victims by half by 2010. Guaranteeing road safety in towns is a precondition for, for example, developing cycling as a means of transport.

It must be said that the Member States are very reluctant about action at Community level, whether on seat belts for children or in coaches or on harmonisation of the maximum permitted blood alcohol levels, which they have been discussing for 12 years. Up until 2005 the Commission intends to give priority to **exchanges of good practice** but it reserves the right to propose legislation if there is no drop in the number of accidents, all the more so since the figures are still high in the candidate countries.

In the immediate future, the Commission will propose **two measures for the trans-European network only**. The first will be to **harmonise signs at particularly dangerous black spots**. The second will be to harmonise the rules governing **checks and penalties** for international commercial transport with regard to **speeding and drink-driving**.

ADOPTING A POLICY ON EFFECTIVE CHARGING FOR TRANSPORT

It is generally acknowledged that not always and not everywhere do the individual modes of transport pay for the costs they generate. The situation differs enormously from one Member State and mode to another. This leads to dysfunctioning of the internal market and distorts competition within the transport system. As a result, there is no real incentive to use the cleanest modes or the least congested networks.

The White Paper develops the following guidelines:

- **harmonisation of fuel taxation for commercial users, particularly in road transport;**
- **alignment of the principles for charging for infrastructure use. The integration of external costs** must also encourage the use of modes of lesser environmental impact and, using the revenue raised in the process, allow investment in new infrastructure, as proposed by the European Parliament in the Costa report ⁽⁴⁾. The current Community rules, for instance Directive 62/99 on the 'Eurovignette', therefore need to be replaced by a modern framework for infrastructure-use charging systems so as to encourage advances such as these while ensuring fair competition between modes of transport and more effective charging, and ensuring that service quality is maintained.

This kind of reform requires equal treatment for operators and between modes of transport. Whether for airports, ports, roads, railways or waterways, the price for using infrastructure should vary in the same manner according to category of infrastructure used, time of day, distance, size and weight of vehicle, and any other factor that affects congestion and damages the infrastructure or the environment.

In a good many cases, taking external costs into account will produce more revenue than is needed to cover the costs of the infrastructure used. To produce maximum benefit for the transport sector, it is essential that available revenue be channelled into specific national or regional funds in order to finance measures to lessen or offset external costs (double dividend). Priority would be given to building infrastructure that encourages intermodality, especially railway lines, and offers a more environmentally-friendly alternative.

In certain sensitive areas there might be insufficient surplus revenue where, for example, infrastructure has to be built across natural barriers. It should therefore be made possible for new infrastructure to receive an 'income' even before it generates its first operating revenue. In other words, tolls or fees would be levied on an entire area in order to finance future infrastructure.

⁽⁴⁾ A5-034/2000.

One final point for consideration is that different levels of taxation apply to the energy used by different modes, such as rail and air, and that this can distort competition on certain routes served by both modes.

RECOGNISING THE RIGHTS AND OBLIGATIONS OF USERS

European citizens' right to have access to high-quality services providing integrated services at affordable prices will have to be reinforced. Falling fares — as witnessed over the last few years — must not signify giving up the most basic rights. With the air passenger rights charter the Commission therefore set an example which will be followed for other modes. In particular, **air passengers' rights to information, compensation for denied boarding due to overbooking and compensation in the event of an accident could be extended to other modes.** As in the case of the air passenger rights charter, the Community legislation must lay the foundation for helping transport users to understand and exercise their rights. In return, certain safety-related obligations will have to be clearly defined.

DEVELOPING HIGH-QUALITY URBAN TRANSPORT

In response to the general deterioration in the quality of life of European citizens suffering from growing congestion in towns and cities, in line with the subsidiarity principle the Commission proposes to place the emphasis on **exchanges of good practice** aiming at making better use of public transport and existing infrastructure. A better approach is needed from local public authorities to reconcile modernisation of the public service and rational use of the car. These measures, which are essential to achieving sustainable development, will certainly be among the most difficult to put into practice. This is the price that will have to be paid to meet the international commitments made at Kyoto to reduce CO₂ emissions.

PUTTING RESEARCH AND TECHNOLOGY AT THE SERVICE OF CLEAN, EFFICIENT TRANSPORT

The Community has already invested heavily (over EUR 1 billion between 1997 and 2000) in research and technological development over the last few years in areas as varied as intermodality, clean vehicles and telematics applications in transport. Now it is time for less concrete and more intelligence in the transport system. These efforts must be continued in the future, targeted on the objectives set in this White Paper. The European Research Area and one of its main

instruments, **the new research framework programme for 2002–06**, will provide an opportunity to put these principles into action and to facilitate coordination and increase efficiency in the system of transport research.

Specific action will have to be taken on cleaner, safer road and maritime transport and on integrating intelligent systems in all modes to make for efficient infrastructure management. In this respect the eEurope action plan proposes a number of measures to be undertaken by the Member States and the Commission, such as the deployment of innovative information and monitoring services on the trans-European network and in towns and cities and the introduction of active safety systems in vehicles.

Based on recent results, the Commission will propose a **directive on harmonisation of the means of payment for certain infrastructure**, particularly for motorway tolls, plus another directive on **safety standards in tunnels**.

In the case of air transport, the priority will be to improve the environmental impact of engine noise and emissions — a sine qua non for adoption of stricter standards — and to improve air safety and aircraft fuel consumption.

MANAGING THE EFFECTS OF GLOBALISATION

Regulation of transport has long been essentially international in character. This is one of the reasons for the difficulties encountered in finding the proper place for the common transport policy between the production of international rules within established organisations on the one hand and often protectionist national rules on the other.

As the main objective of these international rules is to facilitate trade and commerce, they do not take sufficient account of environmental protection or security of supply concerns. Consequently, for some years now, certain countries such as the USA have been implementing regional transport accords, particularly in the maritime or aviation sector, to protect specific interests. The European Union has followed closely in their footsteps in order to guard against catastrophic accidents at sea or to abolish inappropriate rules on aircraft noise or on compensation for passengers in the event of accidents.

With enlargement on the horizon, and the transport policy and trans-European networks

soon to extend across the continent, Europe needs to rethink its international role if it is to succeed in developing a sustainable transport system and tackling the problems of congestion and pollution. As part of negotiations within the World Trade Organisation, the European Union will continue to act as a catalyst to open up the markets of the main modes of transport while at the same time maintaining the quality of transport services and the safety of users. The Commission plans to propose **reinforcing the position of the Community in international organisations, in particular the International Maritime Organisation, the International Civil Aviation Organisation and the Danube Commission**, in order to safeguard Europe's interests at world level. The enlarged Union must be able to manage the effects of globalisation and contribute to international solutions to combat, for example, abuse of flags of convenience or social dumping in the road transport sector.

It is paradoxical that the European Union, which is the world's leading commercial power and conducts a large part of its trade outside its own borders, carries so little weight in the adoption of the international rules which govern much of transport. This is because the Union as such is excluded from most intergovernmental organisations, where it has no more than observer status. This situation needs to be remedied without delay, by having the Community accede to the intergovernmental organisations which govern transport so that the 30-odd members of the enlarged Union not only speak with a single voice but, above all, can influence those organisations' activities by promoting a system of international transport which takes account of the fundamental requirements of sustainable development. A European Union bringing all its weight to bear could, in particular, see that raw materials are processed locally to a greater extent, rather than encouraging processing in other locations.

DEVELOPING MEDIUM AND LONG-TERM ENVIRONMENTAL OBJECTIVES FOR A SUSTAINABLE TRANSPORT SYSTEM

Numerous measures and policy instruments are needed to set the process in motion that will lead to a sustainable transport system. It will take time to achieve this ultimate objective, and the measures set out in this document amount only to a first stage, mapping out a more long-term strategy.

This sustainable transport system needs to be defined in operational terms in order to give the policy-makers useful information to go on. Where possible, the objectives put forward need to be quantified. The Commission plans to submit a communication in 2002 to spell out these objectives. A monitoring tool has already been put in place by way of the TERM mechanism (transport and environment reporting mechanism).

To support the package of proposals to be implemented by 2010, which are essential but not sufficient to redirect the common transport policy towards meeting the need for sustainable development, the analysis in the White Paper stresses:

- the risk of congestion on the major arteries and regional imbalance,
- the conditions for shifting the balance between modes,
- the priority to be given to clearing bottlenecks,
- the new place given to users, at the heart of transport policy,
- the need to manage the effects of transport globalisation.

So we need to decide between maintaining the status quo and accepting the need for change. The first choice — the easy option — will result in significant increases in congestion and pollution, and will ultimately threaten the competitiveness of Europe's economy. The second choice — which will require the adoption of proactive measures, some of them difficult to accept — will involve the implementation of new forms of regulation to channel future demand for mobility and to ensure that the whole of Europe's economy develops in sustainable fashion.

'Large sacrifices are easy: it is the small continual sacrifices which are difficult.'

'Elective affinities'; Johann Wolfgang Goethe (Minister for the Rebuilding of Roads in the State of Weimar... and writer)

SHIFTING THE BALANCE BETWEEN MODES OF TRANSPORT

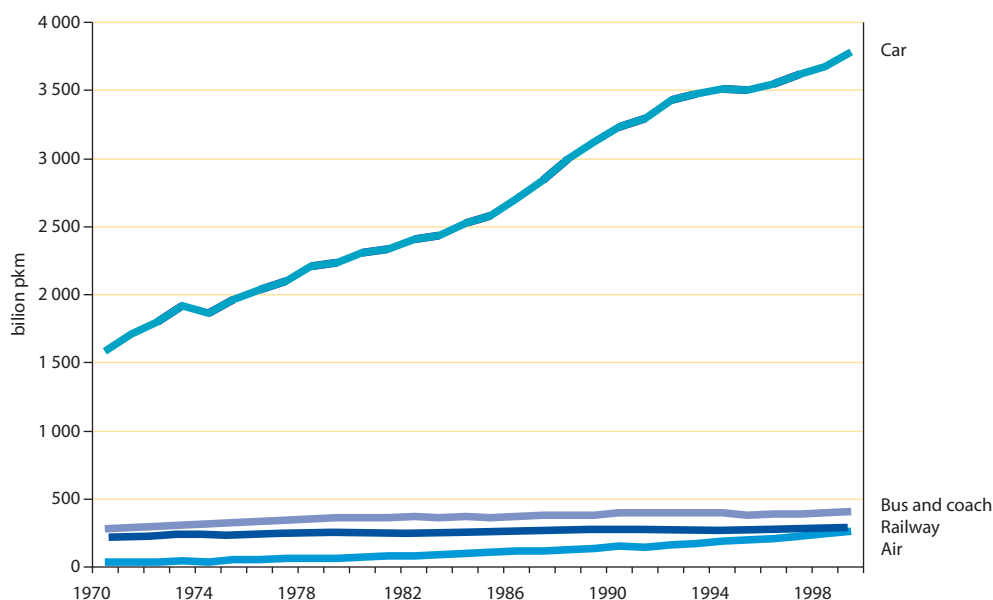


There is a growing imbalance between modes of transport in the European Union. The increasing success of road and air transport is resulting in ever worsening congestion, while, paradoxically, failure to exploit the full potential of rail and short-sea shipping is impeding the development of real alternatives to road haulage. However saturation in certain parts of the European Union must not blind us to the fact that outlying areas have inadequate access to central markets.

This persisting situation is leading to an uneven distribution of traffic, generating increasing congestion, particularly on the main trans-European corridors and in towns and cities. To solve this problem, two priority objectives need to be attained by 2010:

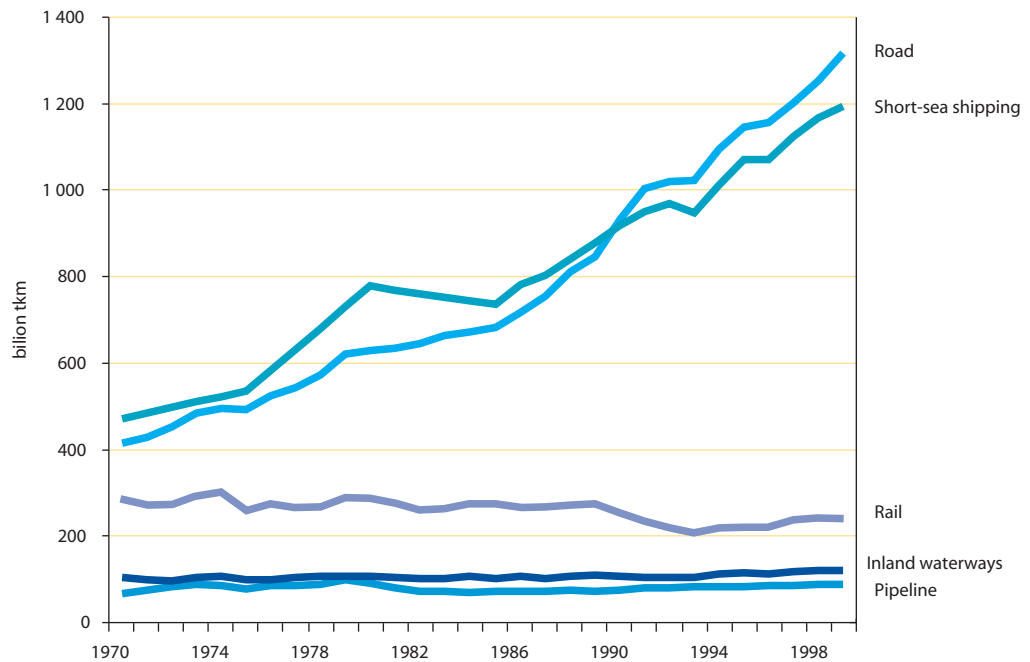
- regulated competition between modes;
- a link-up of modes for successful intermodality.

Fig. 1 — Passenger transport — Growth of traffic by mode of transport, EU-15: 1970–1999



Passenger kilometre: transport of a passenger over one kilometre

Fig. 2 — Goods transport — Growth of traffic by mode of transport, EU-15: 1970–99



Tonne kilometre: transport of one tonne over one kilometre

I. Regulated competition

Unless competition between modes is better regulated, it is Utopian to believe we can avoid even greater imbalances, with the risk of road haulage enjoying a virtual monopoly for goods transport in the enlarged European Union. The growth in road and air traffic must therefore be brought under control, and rail and other environmentally friendly modes given the means to become competitive alternatives.

A. Improving quality in the road sector

Most passenger and goods traffic goes by road. In 1998, road transport accounted for nearly half of all goods traffic (44 %) ⁽⁵⁾ and more than two thirds of passenger traffic (79 %). The motor car — because of its flexibility — has brought about real mass mobility, and remains a symbol of personal freedom in modern society. Nearly two households in three own a car.

⁽⁵⁾ Road's share of the goods market has been growing constantly, from 41 % in 1990 to 44 % in 1998, and, if no action is taken, is expected to reach 47 % by 2010.

Between 1970 and 2000, the number of cars in the Community trebled from 62.5 million to nearly 175 million. Though this trend now seems to be slowing down, the number of private cars in the Community is still rising by more than 3 million every year, and following enlargement the figure will be even higher.

Every day, another 10 hectares of land are covered over by new roads. Road-building has been particularly intense in the regions and countries furthest from the centre, as a means of helping their economic development, and particularly in the cohesion countries, where motorway density increased by 43 % in the 10 years from 1988 to 1998, though it remains below the Community average. Taking the Union as a whole, the number of kilometres of motorway trebled between 1970 and 2000.

Despite all these new roads, saturation is still a serious problem in industrialised **urban** areas such as the Ruhr, the Randstad, northern Italy and southern England. Failure to control road traffic has compounded the situation in the major cities. The stop-start motoring characteristic of bottlenecks means higher

emissions of pollutants and greater energy consumption.

Studies of climate change put the blame on fossil fuels. More than half the oil consumed by transport is accounted for by private cars, and in 1998, transport was responsible for more than a quarter (28 %) of CO₂ emissions in Europe. Because road transport is totally dependent on oil (accounting for 67 % of final demand for oil), road transport alone accounts for 84 % of CO₂ emissions attributable to transport.

But the problem of congestion is now spreading to **major trunk roads** and sensitive areas.

Much of this growth is due to **international road haulage**. Forecasts for 2010 point to a 50 % increase in freight transport alone unless action is taken to counter the trend. Transport by lorry is unavoidable over very short distances, where there is no alternative mode sufficiently tailored to the needs of the economy. By contrast, we might ask what factors are sustaining, indeed encouraging, the expansion of road transport over middle and long distances, where alternative solutions are available. Part of the answer lies in the perpetuation of practices which distort competition. The ending of these practices will call not so much for further regulation as for effective enforcement of the existing regulations by tightening up and harmonising penalties.

1. A restructuring to be organised

The greatest competitive advantage of road transport is its capacity to carry goods all over the European Union, and indeed the entire continent, with unequalled flexibility and at a low price. But this capacity has been built up in highly paradoxical circumstances. Haulage companies compete fiercely against other modes and against each other. As operating costs (for fuel and new equipment) mount, this has reached such a pitch that, in order to survive in this extremely competitive environment, undertakings are forced to side-step the rules on working hours and authorisations and even the basic principles of road safety. Such breaches of the law are becoming too common. The risk is that, operating costs being lower in the candidate countries, enlargement could further exacerbate this price competition between undertakings.

The argument that road transport is placed at a competitive disadvantage by the financial advantages the railway companies supposedly receive as of right from the public authorities is becoming less and less true. It glosses over the fact that, in terms of infrastructure, road transport, too, receives benefits from the public authorities. For instance, motorway maintenance would cost six times less if cars were the only vehicles to use the motorways. This benefit is not offset by any corresponding differential between the charges paid by heavy goods vehicles and by private cars.

However, the market share captured by the roads cannot conceal the extremely precarious financial position of many haulage companies today, particularly the smallest, which are finding it increasingly difficult to maintain often even a semblance of profitability in the face of the pressure exerted on prices by consignors and industry, especially in times of crisis such as the rise in diesel prices.

The tax relief measures taken hastily and unilaterally by certain Member States to appease the truckers discontented by the sharp rise in diesel prices in September 2000 are no long-term solution. They are a palliative, not a cure. The danger is not just that they will have only a limited impact on the sector's financial health but also, and above all, that they could harm other modes by giving road transport an even greater competitive edge. These measures could possibly be interpreted as disguised subsidies and could eventually destabilise the industry, since road transport prices would not reflect real costs.

Despite this, no real plan to restructure the sector has yet been produced in Europe. The fear of industrial action and of paralysis of the major routes is certainly a factor here. Given the current context, however, it would seem desirable to clean up practices and put companies on a sounder footing by encouraging mergers and diversification. Undertakings which are big enough and have a large enough financial base to capitalise on technological progress will be able to stand up — on a sound footing — to the arrival on the road haulage market of competitors from eastern Europe, where labour costs are currently lower than in the west European countries. Support must be provided to encourage micro-businesses or owner-operators to group together in structures better able to provide

high-quality services, including, for example, logistics-related activities and advanced information and management systems, in line with competition policy.

In this context, harmonisation of transport contract minimum clauses regarding the passing-on of costs should help protect carriers from pressure from consignors. In particular, transport contracts should include clauses allowing, for example, revision of tariffs in the event of a sharp rise in fuel prices. It must not be forgotten that, as the dominant mode, it is road transport which sets the price of transport. In the circumstances, it tends to keep prices down, to the detriment of the other modes, which are less adaptable.

2. Regulations to be introduced

Very few measures have been taken at Union level to provide a basic regulation of social conditions in the road transport sector. This goes some way towards explaining the sector's high competitiveness. It took the Council of Ministers until December 2000 to finally decide to harmonise driving time at a maximum of 48 hours per week on average, even then with certain exceptions, as in the case of self-employed drivers. In other modes, working hours have long been strictly limited, starting with train drivers, who are restricted to an average of between 22 and 30 hours per week in the main railway undertakings.

A large number of Commission proposals are designed to provide the European Union with full legislation to improve working conditions and road safety and ensure compliance with the rules for the operation of the internal market. In particular, they seek:

- to reorganise working time; though self-employed drivers are excluded, this proposal will regulate working time throughout Europe, establishing an average working week of 48 hours and a maximum of 60 hours;
- to harmonise weekend bans on lorries; this proposal seeks to align the national rules in this area and introduce an obligation to give notification before such bans are imposed;

- to introduce a 'driver's certificate'; this will enable national inspectors to conduct effective checks to make sure that the driver is lawfully employed and, if necessary, to record any irregularity (and impose penalties);
- to develop vocational training; common rules have been proposed on compulsory initial training for all new drivers of goods or passenger vehicles and on ongoing training at regular intervals for all professional drivers.

Adoption of this package of measures is essential if we are to develop a high-quality road transport system in the enlarged European Union. This package could be backed up by action undertaken by the employers' and employees' organisations represented on the Sectoral Dialogue Committee, particularly activities focusing on worker employability and on adapting the way work is organised in haulage companies. If necessary, specific measures could be taken to combat the practice of subcontracting to bogus 'self-employed' drivers.

3. Tightening up controls and penalties

EU regulations on road transport, particularly on working conditions, are not only insufficient; they are also, and above all, extremely poorly enforced. This laxity in enforcing the regulations creates problems. For instance, it is not unusual for a driver whose driving licence is suspended in one Member State to be able to obtain another in a neighbouring country.

Extract from a mission report (Directorate-General for Energy and Transport)

Roadside checks were carried out in the framework of 'Euro contrôle route' — the cross-border inspection system introduced in 1999 by Belgium, the Netherlands, Luxembourg and France. Inspectors, police officers and customs officials from each of these four countries carried out checks.

On 7 July 2000 a total of 800 lorries and coaches were checked, approximately 100 of which were found to have committed infringements (this proportion of 1 to 8 was considered a normal average for checks such as this). Half the infringements detected were

against national legislation (irregularities with licences, insurance, road tax, etc.), while the other half were breaches of European legislation, the most common offences being against the rules on driving time.

Consequently, the effectiveness of Community and national legislation depends on correct, impartial application throughout the Community.

To this end, **by the end of 2001** the Commission plans to submit a **proposal on harmonisation of controls and penalties** designed to:

- **promote efficient, uniform interpretation,** implementation and monitoring of Community road transport legislation. This amendment to the existing legislation will also contain provisions to establish the liability of employers for certain offences committed by their drivers;
- **harmonise penalties and the conditions for immobilising vehicles;**
- **increase the number of checks** which Member States are required to carry out (currently on 1 % of days actually worked) on compliance with driving times and drivers' rest periods;
- **encourage systematic exchanges of information,** such as the scheme in the Benelux countries, coordination of inspection activities, regular consultation between national administrations and training of inspectors to ensure better compliance with the legislation.

New technologies will have an important role to play in this context. **The introduction, by the end of 2003, of the digital tachograph,** a device to record data such as speed and driving time over a longer period than is possible with the mechanical tachograph of today, will bring significant improvements in monitoring, with better protection of the recorded data than is offered by the current equipment, and greater reliability. Account will also have to be taken of the new opportunities opened up by satellite radionavigation. The **Galileo** programme will make it possible to track goods wherever the lorry is, and to monitor various parameters relating to driving and other conditions, such as container temperature. Where appropriate,

parameters not relating to vehicle location could be monitored remotely by means other than **Galileo** (for example, GSM or telecommunications satellite).

B. Revitalising the railways

Rail is a contrast: a mixture of ancient and modern. On the one hand, there are high-performance high-speed rail networks serving their passengers from modern stations; on the other, antediluvian freight services and decrepit suburban lines at saturation point, with commuters jammed into crowded trains which are always late and eventually release their floods of passengers into sometimes dilapidated and unsafe stations.

Between 1970 and 1998 the share of the goods market carried by rail in Europe fell from 21.1 to 8.4 % (down from 283 billion tonnes per kilometre to 241 billion), even though the overall volume of goods transported rose spectacularly. But while rail haulage was declining in Europe, it was flourishing in the USA, precisely because rail companies were managing to meet the needs of industry. In the USA, rail haulage now accounts for 40 % of total freight compared with only 8 % in the European Union, showing that the decline of rail need not be inevitable.

The fact is that, almost two centuries after the first train ran, the railways are still a means of transport with major potential, and it is renewal of the railways which is the key to achieving modal rebalance. This will require ambitious measures which do not depend on European regulations alone but must be driven by the stakeholders in the sector.

The growing awareness on the part of the operators who recently engaged on a joint definition of a common strategy for European rail research to create a single European railway system by 2020, must be welcomed. In this document signed by the International Union of Railways (UIR), the Community of European Railways (CER), the International Union of Public Transport (IUPT) and the Union of European Railway Industries (UNIFE), the rail stakeholders agree to achieve the following objectives by 2020:

- for rail to increase its market share of passenger traffic from 6 to 10 % and of goods traffic from 8 to 15 %;

- a trebling of manpower productivity on the railways;
- a 50 % gain in energy efficiency;
- a 50 % reduction in emissions of pollutants;
- an increase in infrastructure capacity commensurate with traffic targets.

What is needed, therefore, is a veritable cultural revolution to make rail transport, once again, competitive enough to remain one of the leading players in the transport system in the enlarged Europe. The priority must be to resolve the problems holding back its development: the lack of infrastructure suitable for modern transport and of interoperability between networks and systems, the constant search for innovative manufacturing technologies, the non-transparency of costs, and the patchy productivity and shaky reliability of the service, which is failing to meet customers' legitimate expectations.

1. Integrating rail transport into the internal market

Community involvement in the sector came late, at the beginning of the 1990s, when it attempted to breathe fresh life into the railways ⁽⁶⁾ and end the operating difficulties caused by geographical fragmentation of the networks by introducing a policy for the regulated opening-up of the markets.

The foundation stone was laid in 1991 with a directive requiring separate accounts to be kept for railway infrastructure management and the provision of railway transport services. Amongst other things, this directive opened the way for independent, transparent management and for future competition between rail companies. Building on this foundation, several Member States now have separate undertakings to operate railway services and to build and manage the network. A second package of measures to help open up the market came into force on 15 March 2001 ⁽⁷⁾ following an historic

⁽⁶⁾ If nothing is done, rail's share of the freight market, which has already fallen from 11 % in 1990 to 8 % in 1998, can be expected to slip to 7 % by 2010. Its share of passenger traffic stood at 6 % in 1998 and is expected to hold steady until 2010.

⁽⁷⁾ Directives 2001/12/EC, 2001/13/EC and 2001/14/EC. OJ L 75, 15.3.01.

agreement between Parliament and the Council in November 2000.

(a) Creating a genuine internal market in rail transport

Opening up rail transport to regulated competition — which will start properly in March 2003 when international goods services on the 50 000-kilometre **trans-European rail freight network** are opened up — is the central precondition for revitalising the railways. By 2008 the entire European international freight network will have been opened up completely, thanks, in particular, to the determination of the European Parliament ⁽⁸⁾. The arrival of new railway companies from other backgrounds, with solid experience of logistics and intermodal integration, must make this sector more competitive and encourage the national companies to restructure while also taking social issues and working conditions into account. This restructuring will thus need to include accompanying measures to minimise its social impact.

New operators

BASF, the German chemicals giant, is becoming the first major rail freight operator to join the traditional companies, with the aid of 'Rail4Chem', a joint venture which it has launched with Bertschi AG, Hoyer GmbH and VTG-Lehnkering AG.

The Swedish group IKEA recently set up a separate company to manage the transport of its own goods. At the moment, 18 % of them are carried by rail. IKEA's management wants to raise this to 40 % by 2006 (equivalent to around 500 trains a week). In this context, IKEA plans to publish a call for tenders for railway companies to carry goods between its different subsidiaries — at the lowest cost and giving the best guarantees. In the long term, IKEA could seize the opportunity offered by this opening of the European market to become a major rail company.

If more room is made for competition between operators, the rail industry as a whole will become more competitive against other modes of transport. The arrival of new operators on an

⁽⁸⁾ Jarzembowski report A5-0013/2201 and Swoboda report A5-0014/2001.

opened-up market can make the industry more competitive by encouraging healthy competition between the existing operators and their new competitors. The existing technical and regulatory barriers work in favour of existing companies, and are continuing to hamper the entry of new operators. This is why it is important that the Community competition rules be applied properly here to prevent anti-competitive practices and ensure that the Community rail transport market is genuinely opened up.

However, in too many cases there is still no proper separation between the body which owns the infrastructure and the body which operates services. Moreover, companies do not have clear commercial objectives allowing them to make a distinction between freight services and passenger services. Indeed, in some countries, rail companies not only own the infrastructure; they also operate the trains, allocate the rights to use the network and conduct their own safety checks.

Examples of malfunction

- **Companies can't count: Some rail companies admit that they would not be able to say how many locomotives or wagons they have available or give the precise location of trains. So sometimes trains which are scheduled (usually freight, but also passenger trains) have to be cancelled because there is no locomotive, or no driver, or because the driver has not been told.**
 - **Trains don't run properly: It takes 30–40 minutes to replace the locomotive on a goods train and to check that the train is in proper working order (changing the locomotive, filling out the composition form, checking the brakes, changing over the driver and crew, inspecting the train, carrying out checks on dangerous materials, checking documents, making up the train, labelling the wagons, train report, checking the rear light). All this work is obviously wasted if the locomotive and crew are not ready on time. According to Werner Kulper, President of the UIRR ⁽⁹⁾, of 20 000 full combined international transport trains investigated, only half were on time.**
 - **Missing information: At borders, one network hands over the train to another. They exchange information on loads, destinations, and train composition. Computer links between systems do exist, but are not used systematically because they are not particularly reliable, so information is often exchanged on paper. This information may arrive too late or it may not be accurate, and will need to be checked.**
 - **'Ghost trains': A goods train stops to change locomotive, but it may then be held up even longer while waiting for a train path to become free on the neighbouring network. A locomotive may have to wait for a train: a train may have to wait for a locomotive. Often there is no information on when they will arrive, which just makes matters worse.**
 - **One train — lots of drivers: Relief crew requirements also undermine the productivity of international rail services. Even Louis Gallois, Chairman of the SNCF, has said 'I think the Charleroi–Paris route needs five driving crew members: two in Belgium and three in France.'** ⁽¹⁰⁾
 - **With all the various delays, the average speed of international rail haulage is only 18 km/hour, which is slower than an ice-breaker opening up a shipping route through the Baltic Sea!**
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To make international freight services competitive and reduce movements of empty wagons, it is important that railway companies be allowed to refill trains en route, where appropriate between two points within the same Member State. For this reason the Commission will, by the end of 2001, as part of the second railway package, propose extending rights of access to all freight services, including the possibility of cabotage.

As for the possibility of extending access to international passenger services, which account for around 6 % of all passenger-kilometres, this will have to be achieved gradually. The Commission will give particular priority to opening up competition on lines where a monopoly exists and will see to it that the lack of

⁽⁹⁾ Preface to the 2000 report of the International Union of Rail/Road Transport Companies (UIRR).

⁽¹⁰⁾ Addressing a meeting at the French National Assembly on 8 June 2000.

competition which could eventually emerge on certain intra-Community routes does not end in abuse of a dominant position and excessive fares.

In this context, in **2001** the Commission will submit a **further package of measures to create a genuine internal rail market. The package will have to take account of general interest tasks and of economic and territorial cohesion**, and will hinge around:

- opening up the national freight markets to **cabotage**;
- setting **high safety standards** for the rail network, based on regulations established by an independent body and on clear definition of the responsibilities of each player involved in order to ensure smooth operation of this market in which several operators will share the same stretches of the network (see below);
- **updating the interoperability directives** to harmonise the technical requirements and provisions on use of all components of the high-speed and conventional railway networks;
- **gradual opening-up of international passenger services**;
- promotion of measures to safeguard the **quality of rail services and users' rights**. In particular, a directive will be proposed to lay down the terms of compensation in the event of delays or failure to meet service obligations. Other measures on the development of service quality indicators, terms of contract, transparency of information for passengers and mechanisms for out-of-court settlement of disputes will also be envisaged;
- **creation of a Community structure for safety and interoperability**.

In addition, the Commission will start round-table talks with the railway industry to examine ways of reducing air pollution and noise, as it did with carmakers in the 'auto-oil' programme. At the moment 13 % of rail traffic in the Union is diesel-powered.

No railway system can be fully competitive unless all matters relating to the removal of technical barriers to trade in trains and to their

interoperability — that is, their ability to run on any stretch of the network — are resolved first. In particular, although goods wagons and a large proportion of passenger carriages have, for decades, been technically capable of travelling from Sicily to Scandinavia, the same cannot be said of locomotives, which suffer numerous constraints concerning electrification and signalling systems ⁽¹¹⁾. Significant differences remain between the networks in Europe, most of which were built from a national perspective and which have long played on these differences to protect their own interests or those of their national railway industry.

This handicapped the development of rail transport, at a time when road was capitalising on its freedom from technical barriers to fuel its development. The net result is that these differences have perpetuated several compartmentalised markets instead of a single network. The wide availability of multi-current locomotives (capable of operating at different voltages) is already making railway services more flexible, but not all the problems have yet been resolved. This technical harmonisation will cost tens of billions of euro.

To help change national traditions in social matters which could become an obstacle to interoperability, it would be useful to provide accompanying social measures for staff so as to improve the general level of qualifications. The resulting European-level solutions on working conditions, particularly driving time and rest periods, would offer definite added value compared with the national rules. Employers' and employees' organisations would also be involved in producing the technical specifications for interoperability wherever social aspects are involved.

Since the end of last year, interoperable type BB 36000 (France) and E402 B (Italy) locomotives capable of running on the French and Italian networks alike have been in use — for the time being on an experimental basis — on the Lyon–Turin line. This new rolling stock has cut waiting time at the frontier to 15 minutes for some trains, compared with an average of an hour and a half for the rest. However, the potential of

⁽¹¹⁾ The benefits of interoperability are estimated at 30 % of the cost of rolling stock.

this new rolling stock is limited by a number of factors:

- **two drivers are needed on the Italian side, against one on the French side, which forces the train to stop at Modane, even though the transport papers are now processed electronically;**
- **French train drivers are not authorised on the Italian network and vice versa;**
- **the passing tracks are of different length, which sometimes makes it necessary to split trains in two, wasting considerable time; the traffic regulations also differ, with 1 150 tonnes authorised on the Italian railways, compared with 1 000 tonnes in France, with the same result;**
- **at the moment, there are only a limited number of interoperable locomotives. Because of their design, Italian locomotives can operate at only half power on the 1 500 volt supply in France.**

In this context, deployment of the ERTMS system ⁽¹²⁾ developed since the early 1990s under the Community framework programmes of research, marks a considerable step forward in network and system interoperability. Moreover, use of the ERTMS has been made a condition for Community co-financing of rail infrastructure and equipment. Telematic applications such as interconnection of seat reservation systems, real-time information systems or even the possibility of on-board telephone communications are all options which need to be developed on a larger scale in order to make the railway sector more competitive.

Technological research also needs to be carried out to support rail interoperability. It needs to focus on integrating track design and construction characteristics and on rolling stock specifications, to ensure safe, clean, economically viable operations.

(b) Guaranteeing rail safety

Rail has always been far safer than road. This is reflected in the safety statistics, which show a very marked improvement in passenger safety, with the number of fatalities falling from 381 in 1970 to 93 in 1996, when, by way of comparison, there were some 43 500 deaths on the roads.

⁽¹²⁾ European rail traffic management system.

Despite these encouraging figures, a number of dramatic train accidents over the last three years have alerted public opinion and the authorities to rail safety. The growing demand for international services in the context of network and system interoperability combined with the opening of the market has therefore meant rethinking the approach to rail safety first.

Interoperability must guarantee a level of safety at least equal to, if not higher than, that achieved today in the national context.

That is why the directive on the interoperability of the high-speed rail system ⁽¹³⁾ and the recently adopted directive on the conventional rail system ⁽¹⁴⁾ both list safety amongst the **essential requirements** for operation of the trans-European railway system.

This entails simultaneous action at two levels:

- at technical level, standards need to be set for each component of the railway system (track, rolling stock, signalling system, operating procedures, etc.). This is the role of the 'interoperability directives';
- at administrative level, duties and responsibilities need to be established for all stakeholders, from the infrastructure managers to the Community authorities, and including the railway undertakings and the national authorities. This is the role of the 'Safety Directive' which will be proposed in the near future. In this connection, consideration will be given to establishing a **Community structure for rail safety** to look after the technical coordination of all these measures.

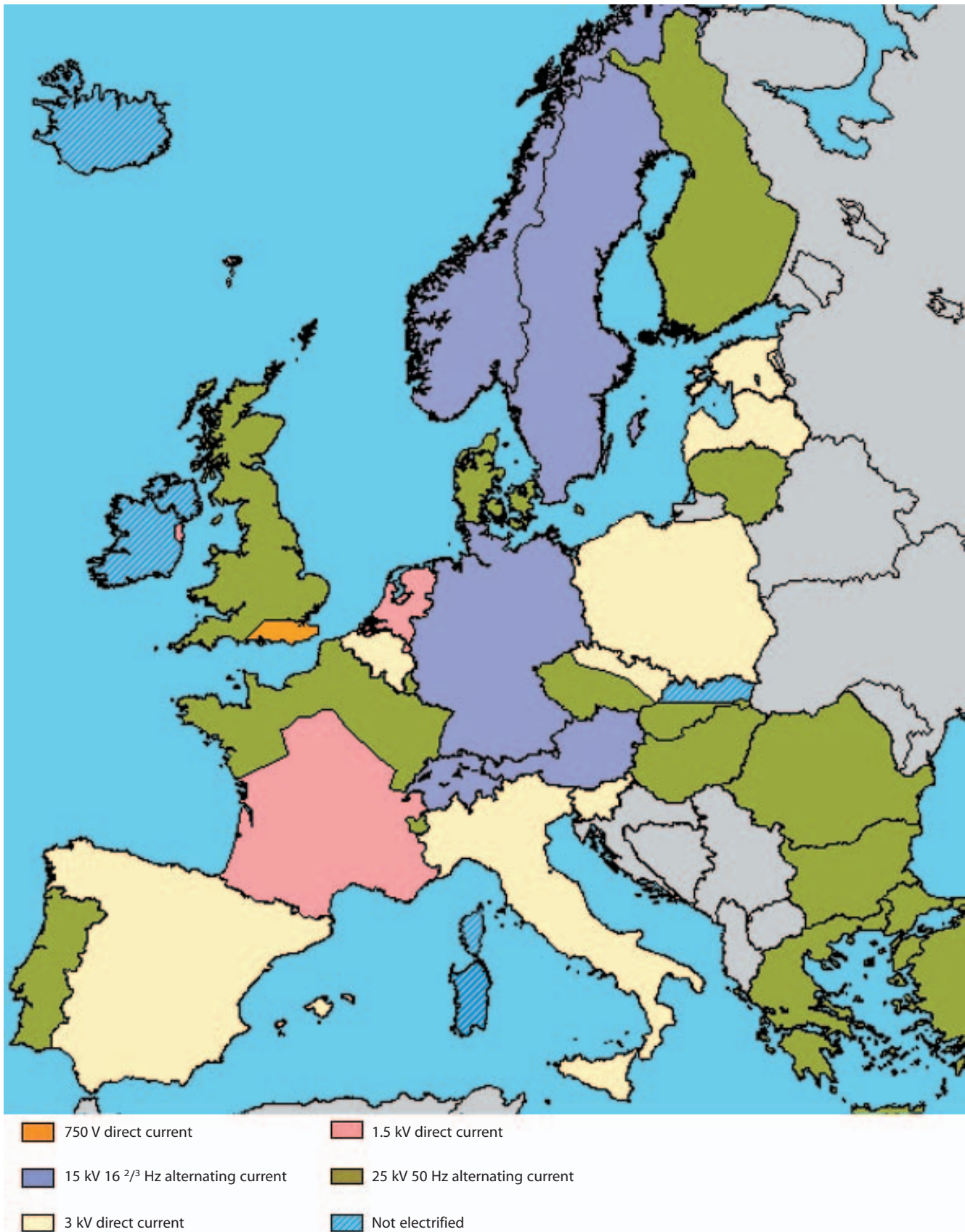
Safetrain: passive safety technologies for rail vehicles

The Safetrain project is a good example of technological research to support transport policy. Its results have been taken into account, following a dynamic validation test, by the European Association for Interoperability in the Rail Sector (AEIF), which is responsible for implementing Directive 96/48/EC of 23 July 1996 (the 'interoperability directive'). Safetrain has provided the scientific expertise necessary

⁽¹³⁾ Council Directive 96/48/EC of 23 July 1996 on the interoperability of the trans-European high-speed rail system.

⁽¹⁴⁾ Directive 2001/16/EC on the interoperability of the trans-European conventional rail system. OJ L 110 of 20 April 2001.

Maps of the main rail electrification systems in Europe



for the mandatory technical specifications on the mechanical characteristics of rolling stock. The project has produced significant improvements in the strength of passenger compartments and of the driver's survival space at the front of trains, without any adverse effect on weight or energy consumption.

2. Making optimum use of the infrastructure

A sign of the decline in rail transport is that over the last 30 years an average of 600 km of railway lines have been closed each year in Europe, while at the same time the motorway network was increasing by 1 200 km a year. Of the thousands of kilometres of lines which have been closed to traffic, or even dismantled, there are branches and lines which today would have been extremely useful for coping with saturation on parts of the rail network.

With an interoperable trans-European network gradually being put together and traffic growth expected to rise, we need to look again, from a truly trans-European perspective, at how the networks are organised and how they can be better integrated. **The rail market shows the greatest potential for growth over long distances.** Successful reorganisation means making optimum use of the existing capacity.

Much railway infrastructure was designed and built between the middle and the end of the 19th century, with an eye to national or even regional requirements. This infrastructure is no longer able to cope with the growth in traffic and, in recent years, more and more bottlenecks have formed in the vicinity of the largest conurbations, where trains of different types — goods, local or long-distance — share the same infrastructure. Priority is given to passenger trains, with the result that goods consignors have lost confidence in the railways.

If rail transport of goods in Europe is to recover, efficient international train paths will have to be allocated to freight, either in the form of infrastructure or as time slots.

Measures such as this can hardly be ordered at Community level in the short term, but all measures taken at national level should be directed towards this objective. Construction of the high-speed network, for instance, is helping

attain this objective: the new lines brought into service will absorb some of the traffic from conventional lines, which currently carry all the traffic.

From opening-up the market to building a dedicated European freight network

Directive 2001/12/EC defines a trans-European rail freight network (TERFN) comprising approximately 50 000 km of line open to European freight services by 2003. Any European company holding a licence may use these lines and compete with other companies by offering new services. As of 2008, however, the European freight services market will be opened up over the whole 150 000 km network. The TERFN is just an interim solution.

Another trans-European rail network was identified in the guidelines adopted by the European Parliament and the Council in 1996 in Decision No 1692/96, which the Commission proposes to revise in order to eliminate bottlenecks. This network provides the reference framework for European and national infrastructure funding.

This infrastructure network must be distinguished from the specific network defined in the directive on opening up the market. The two networks are not strictly identical. As the map below shows, some lines that will shortly be opened up to competition are not part of the trans-European infrastructure network (shown in blue). In the same way, some parts of the infrastructure network, though potentially important to freight and port connections, such as the Brest–Rennes line (France), will not necessarily be opened up to competition by 2003 (shown in green). The lack of consistency between the two is evident.

The above-mentioned revision includes proposals to include a number of TERFN lines in the outline plan for the rail network to make them eligible for European aid. There are thus proposals, at the request of the countries concerned, to include approximately 2 000 km of the rail network, such as the Boulogne–Reims line in France or the Rimini–Parma line bypassing the Bologna railway junction in Italy.

Some of the regions linked to the trans-European infrastructure network, particularly coastal regions, will find it useful to take

advantage of the opening of the market as quickly as possible in order to develop their hinterland. Some countries would be well advised to go beyond the TERFN and open up lines in these areas to competition, particularly port access routes to provide European operators with easier port access. Accordingly, when selecting infrastructure projects to receive Community support, the Commission will consider the extent to which the line has been opened to competition.

Optimum use of existing infrastructure also means taking account of the noise generated by railway vehicles. Recent estimates by the European Environment Agency put the number of people disturbed by train noise at three million ⁽¹⁵⁾. The interoperability directives therefore provide for limits on noise emissions from rolling stock.

3. Modernisation of services

At the end of the 1990s, to respond to the challenge of traffic growth by offering integrated services, some railway companies started developing the principle of international cooperation, particularly on international routes. This was only partially successful, as it proved impossible to solve a host of operating problems which prevented the continuity of traffic across borders. Nor did these efforts result in any fundamental qualitative changes in company organisation.

As a result, the standard of services which the railways can provide for shippers is in most cases considerably below industry's requirements in terms of punctuality, reliability and speed — requirements which can, however, be met by road transport.

With **passenger transport**, on the other hand, railways were able to innovate in order to face up to competition from other modes, and volumes increased from 217 billion passenger/kilometres in 1970 to 290 in 1998. Even so, the railways' market share fell from **10 to 6 %** on account of the much larger increases in private car and air transport. Air traffic volumes are similar to rail in terms of passenger/kilometres.

⁽¹⁵⁾ The same study estimated the number of people disturbed by road and air traffic noise at 24 million and 40 million respectively.

However, the success of new high-speed rail services has resulted in a significant increase in long-distance passenger transport. Also the regional development policies which several Member States have implemented over the last decade to improve local services have increased train use. However, in some countries inter-city rail users consider the quality of services to be mediocre ⁽¹⁶⁾.

The same applies to rail freight services. Over the last 18 months, there have been worrying developments in freight movements from the Iberian peninsula to Northern Europe via France. Large numbers of car parts are carried on this route, mainly by trucks. Although a number of competitive combined and rail-only transport services were set up, some of them have been compromised by a recent deterioration in the quality of the rail freight service, and a number of car manufacturers have reverted to road transport services. On top of the problem of track gauge differences, this is the result of inadequate numbers of locomotives and drivers, some persistent internal organisational problems and a number of social disputes. Any compensation for delays is proving insufficient to offset the real damages suffered by clients, especially when they have to shut down a production line for hours on end or make last minute arrangements for the urgent delivery of goods by air or road instead of the unreliable rail service. The only way to gain the confidence of clients when dealing with this type of high added-value product is to provide a reliable service.

Fiction or prediction? Rail transport in 2010

The railway companies enjoy access to the railway network on equal terms, published by the infrastructure managers: capacity is allocated in real time with reference to the entire European network, and charging principles are harmonised.

Railway equipment manufacturers ought to be benefiting from the introduction of Community provisions on the interoperability of the railway system to gain non-discriminatory access to the European market and enjoy the possibility of using innovative technology rapidly.

⁽¹⁶⁾ Only 46.1 % of German rail users are satisfied with the service; the Community average is around 57 %.
Source: Eurobarometer No 53, September 2000.

Map of the trans-European rail freight network



- Lines open to European freight services in 2003 and included in the trans-European rail network
- Other lines of the trans-European rail network
- Other lines open to European services in 2003

Engine drivers can drive anywhere on the trans-European network and are trained for European routes at European training centres open to all railway companies.

The national infrastructure managers are organised at European level and jointly decide the conditions for access to the network. Observing the competition rules, they decide on investment priorities together and establish a dedicated infrastructure network exclusively for goods.

The railway regulators meet regularly to exchange information on the development of the rail market and propose measures to adapt to competition from other modes.

All rail operators offer travellers integrated online services covering information, bookings and payment for both leisure and business travel.

The European network offers high safety standards, backed up by a Community structure responsible for ongoing appraisal of safety levels in the European rail system and for recommending any improvements necessary. An independent body investigates any accidents or incidents on the network and makes appropriate recommendations to reduce the risks.

Train punctuality is guaranteed and passengers and customers receive compensation if trains run late.

Average speeds for international goods trains in Europe are up to 80 km/h, four times faster than in the year 2000.

C. Controlling the growth in air transport

Of all the different modes, air transport has shown by far the largest increase over the last 20 years. Expressed in passenger/kilometres, air traffic has increased by 7.4 % a year on average since 1980, while the traffic handled by the airports of the Fifteen has shown a five-fold increase since 1970 ⁽¹⁷⁾.

Every day, more than 25 000 aircraft fly the skies above Europe, and judging by growth trends this figure can be expected to double every

⁽¹⁷⁾ The proportion of passenger transport accounted for by air is set to double between 1990 and 2010 from 4 to 8 % (it was 5 % in 1998).

10–14 years. Though the skies are vast, this traffic density poses some real problems. The increasing number of delays is a clear sign of saturation ⁽¹⁸⁾.

Yet airlines expect air traffic almost to double by 2010. To sustain such growth, an air-traffic management will need to be reformed and sufficient airport capacity guaranteed in the enlarged European Union.

1. Tackling saturation of the skies

The idea behind hub and spoke networks is to allow a number of different flights to arrive at an airport around the same time, so as to allow connections with minimum delay. Replacement of direct flights by indirect flights via hub airports has resulted in a reduction in the average size of aircraft, since airlines prefer to run more frequent flights rather than have a more limited schedule using larger aircraft. Unfortunately, not only does this cause congestion on the ground; it also means that far more effort is necessary to control all the aircraft trying to use a limited amount of space.

Different problems are caused by 'en route' traffic, i.e. flights in the upper airspace where aircraft reach their cruising speed. Aircraft use corridors which give air traffic controllers an accurate view of the traffic situation. However, these corridors do not always follow the most rational paths because they reflect constraints arising from national organisation of airspace, such as the positioning of military zones, or lack of coordination regarding the vertical division of airspace over different areas of national territory.

In addition, air navigation services are responsible for national airspace. There is still considerable diversity between air traffic control systems and regulations, which makes it extremely difficult to coordinate operations.

Partitioning of Europe's skies

A plane flying from the United Kingdom to France has to fly at two different altitudes: over British territory it flies at 24 500 feet and then has to drop to 19 500 feet when it enters French airspace.

⁽¹⁸⁾ There were bad delays in 2000: one flight in six was late, with an average delay of 22 minutes.

The European air traffic control system is divided up into 26 subsystems consisting of 58 en route control centres. This is three times as many as for a comparable area in the USA.

The Union is handicapped by air traffic control still being insufficiently integrated. It is true that effective cooperation between the various services via Eurocontrol ⁽¹⁹⁾ has eased the passage of aircraft between national airspaces. Nonetheless, the current air traffic control system is limited by the intergovernmental nature of Eurocontrol, itself limited by a decision-making system based on consensus, insufficient means of control, lack of powers to impose sanctions, and a confusion between its regulatory responsibilities and its responsibilities as service provider. Since the organisation is both umpire and player, there is no guarantee that its decisions will always be impartial.

Creation of the single European sky is one of the European Union's current priorities, as emphasised by the European Council on several occasions ⁽²⁰⁾, particularly in Stockholm, and by the European Parliament ⁽²¹⁾.

A high-level group of representatives of the civil and military authorities in the Member States and chaired by the Commission Vice-President responsible for energy and transport has come up with guidelines for a fundamental reorganisation of air traffic control in Europe ⁽²²⁾.

To overcome the current over-fragmentation of the air traffic management system, Community rules on air traffic control are needed.

To follow up the report from the high-level group, the European Commission will, in 2001, propose that **the European Union should create a single sky by 2004** by adopting:

⁽¹⁹⁾ Eurocontrol is the European Organisation for the Safety of Air Navigation, which was set up in 1960. It is an intergovernmental organisation and currently has 30 members.

⁽²⁰⁾ European Councils in Lisbon (23–24 March 2000), Santa Maria Da Feira (19–20 June 2000) and Stockholm (23–24 March 2001).

⁽²¹⁾ Report by Sir Robert Atkins on the communication from the Commission to the Council and the European Parliament on the creation of the single European sky, 26 May 2000 (PE 232.935).

⁽²²⁾ Report of the high-level group on the single European sky, November 2000.

- a **regulatory framework** to ensure that aircraft crossing the airspace of the enlarged Community follow harmonised procedures, use regulation equipment and observe common rules on use of airspace. A Community regulator with adequate resources will set objectives allowing traffic growth while maintaining safety. This regulator must have powers over a more uniform airspace, defined as a common resource and managed as a continuum, starting with the upper airspace;
- a mechanism enabling the military to **maintain defence capabilities** while using channels for cooperation to ensure more efficient overall organisation of airspace. The objective is to achieve genuine joint civil/military management of airspace;
- **social dialogue with the social partners, possibly starting with air traffic controllers**, based on experience in other sectors, allowing concertation on the common aviation policy where the latter has considerable social impact. This dialogue could lead to agreements between the organisations concerned;
- **cooperation with Eurocontrol** to draw on its know-how and expertise to develop and administer the Community rules. The objective will be to ensure that the European Union's regulatory powers and the expertise available within Eurocontrol genuinely complement each other;
- a **surveillance, inspection and penalties system** ensuring effective enforcement of the rules.

Legislation will be proposed on the provision of services (particularly on mutual acceptance of authorisations granted by Member States, to guarantee provision of air traffic control services and to keep control of charges), on organisation of airspace (particularly to create an upper airspace region and optimum cross-border control sectors) and on equipment interoperability.

Ultimately, however, the real capacity gains must come from modernisation of working methods and equipment. Besides the measures needed to reorganise airspace, investment in research and in control centre equipment must be backed up by an effort to make sufficient human resources

available. For while the Union has some very highly qualified air traffic controllers to deal with air traffic safety, it also has a chronic shortage of control tower operators ⁽²³⁾. It is often difficult to ensure that there are enough air traffic controllers in all control centres to handle traffic management. In addition, disparities in procedures and training rule out any real mobility of ATC staff within Europe. One solution could be to introduce a **Community licence for air traffic controllers**.

2. Rethinking airport capacity and use

In response to the growth in traffic, it is time to rethink how airports operate in order to make optimum use of existing capacity. However, this will not be enough and **Europe will not be able to cope without new airport infrastructure**, including in the candidate countries, few of which have sufficient capacity to cope with the traffic growth which enlargement will inevitably bring. This is also one of the key conditions for saving airlines from losing competitiveness against their rivals, particularly from North America. The turnover of the largest European company is not as much as that of the fourth largest American company ⁽²⁴⁾.

The current structure of the air transport system prompts airlines to concentrate their activities on major airports which they turn into hubs for their intra-Community and international activities. Congestion then centres around the big hub airports, with all the consequent pollution and air traffic management problems.

There is already a specific action plan on congestion of the sky, but congestion on the ground is not yet receiving the necessary attention or commitment. Yet almost half of Europe's 50 largest airports have already reached or are close to reaching saturation point

in terms of ground capacity. Such airports are calling for further efforts to develop integrated management and control systems to ensure airport efficiency and safety.

More efficient use of airport capacity means defining a new regulatory framework.

While the single sky is being created, the rules on slot allocation at airports will have to be amended, as recently proposed by the Commission. In particular, measures must be taken to ensure consistent planning of airspace and airport capacity. Airport slots granting the right to take off or land at a specific time at a congested airport must be correlated with the airspace capacity available. If adopted, the Commission's proposal should contribute to time slot management, in particular by allowing more transparent exchanges of slots, immediate penalties in the event of non-use of slots and, finally, clearer criteria for allocation priorities. The second stage must be for the regulations to move towards greater flexibility, *inter alia* with recourse to market mechanisms. To this end, the Commission will, in 2003 — following a new study and consultation of interested parties — propose further revision of the slot allocation system to allow greater access to the market, while taking account of the need to reduce the environmental impact of Community airports.

- **Airport charges must be adjusted to deter bunching of flights at certain times of day.**
- **Environmental rules must encourage efforts to find alternative measures before restricting operators at an airport.**
- **Intermodality with rail must produce significant capacity gains by transforming competition between rail and air into complementary between the two modes, with high-speed train connections between cities. We can no longer think of maintaining air links to destinations for where there is a competitive high-speed rail alternative. In this way, capacity could be transferred to routes where no high-speed rail service exists ⁽²⁵⁾. More efficient, more rational use of airports will not obviate the need for increases in**

⁽²³⁾ There is a current shortage of between 800 and 1 600 air traffic controllers out of a total of 15 000 for the whole of the Union. The number of controllers has not kept pace with traffic increases. One particularly disturbing aspect is that a third of today's air traffic controllers are expected to be retiring between now and 2010 (report by the high-level working group on the single European sky, November 2000).

⁽²⁴⁾ In 2000, American Airlines, the world's largest company, recorded a turnover of USD 19.7 billion, Federal Express, the fourth largest company, USD 15.6 billion, and Lufthansa, the largest European group, made USD 13.3 billion.

⁽²⁵⁾ For example, there are plans for the new Turin–Milan high-speed line to include a connection to Malpensa airport.

capacity. The fact is that new airport projects are few in number (Lisbon, Berlin, Paris).

Today the stated priority is thus to limit the construction of new airports, for which it is hard to gain public support, and to seek to rationalise traffic with the aid of the air traffic management regulations and the use of larger aircraft. In so doing, there is another risk, namely of neglecting the sizeable group of users of regional lines to destinations with no high-speed train service. To cater for them, the current preference for major infrastructure must be adjusted to maintain 'air taxis' between regional centres and between such centres and hub airports where no alternative rail services exist. More generally, it is clear that the policy-makers will not be able to find a way out of building new runways or new airports, long-term investments which will require proper planning at European level over the next 20 years.

In response to the congestion at most major European airports, airlines must seek to maximise the number of passengers carried per flight and, hence, aircraft size. However, organisation around a hub has the opposite effect, with airlines tending to opt for higher frequency with medium-capacity aircraft in preference to a limited service with large planes.

Medium-capacity aircraft can be expected to continue to predominate on most intra-Community flights. By contrast, on high-density long-haul flights many airlines will probably opt for very large aircraft. The Airbus A380 is the first example of what the next generation of aircraft will probably look like: large carriers capable of transporting more passengers. The aviation industry is preparing for this ⁽²⁶⁾. Nevertheless, intensive use of such large carriers will pose a number of problems. First, airports must be adapted to cope with such aircraft — embarkation and disembarkation of 500 to 600 passengers instead of 150 to 200 poses a greater strain on organisation of baggage delivery, security checks, customs formalities and passenger reception at airports. And, of course, use of such large carriers will do nothing to reduce connecting traffic, since passengers taking these new aircraft will have to continue

their journey, thus creating an even more acute need for efficient intermodality.

Turning to the legal status of airports, another factor to take into account is the shift towards privatisation which has now started in Europe. At this stage it is hard to assess what impact this will have on capacity. In any event, this trend must be kept under control given the de facto monopoly held by airports. In particular, care will have to be taken to make airport charges actually correspond to the services provided. For this reason, the Commission has long been proposing a framework laying down the principles governing airport charges.

3. Striking a balance between growth in air transport and the environment

Air transport is having growing problems gaining acceptance, particularly from local residents who suffer from the noise generated by airports. Introduction of measures to reduce noise and gaseous emissions ⁽²⁷⁾ caused by air traffic is a sine qua non if the industry is to continue to grow. However, such an exercise is difficult since the European Union has little room for manoeuvre: **in particular, account must be taken of the international commitments entered into by the Member States within the International Civil Aviation Organisation (ICAO).**

The Community has taken specific action by adopting the 'Hushkits Regulation' ⁽²⁸⁾ the simple purpose of which was to ban from Europe hushkitted aircraft (old aircraft whose noise performance has been improved but still falls short of acceptable standards). Nevertheless, this limited measure has been contested by the USA and a dispute settlement procedure is now under way before the ICAO. Unless ambitious new noise standards are rapidly introduced internationally to prevent further degradation of the plight of local residents, there is a great risk that airports could be deprived of any possibility of growth (limitation of the number of flights authorised) or be forced to apply varying local bans on the noisiest aircraft. The next ICAO Assembly in September/October 2001 should therefore adopt a new noise standard to apply to all

⁽²⁶⁾ 'The future of European aerospace: a shared vision for 2020': report presented by Mr Philippe Busquin, January 2001.

⁽²⁷⁾ Flying from Amsterdam to New York, an average aircraft emits one tonne of CO₂ per passenger.

⁽²⁸⁾ Regulation No 925/1999 of 29 April 1999.

aircraft to be brought into service in future ⁽²⁹⁾. If such a standard is to have a tangible impact over the next few years, it must be backed up by a plan to phase out the noisiest aircraft in the world fleet, starting with hushkitted aircraft. By 2002 the ICAO will also have to take specific measures to reduce greenhouse gas emissions, one of the priorities stated in the sixth action programme on the environment.

Should aviation kerosene continue to enjoy a tax exemption?

Airlines enjoy substantial tax exemptions, particularly from all taxes on kerosene, under international agreements ⁽³⁰⁾. This exemption for kerosene applies to international and intra-Community flights alike. However, the USA has introduced a tax limited to cargo carried on domestic flights.

This tax exemption for fuel provides no incentive for airlines to use the most efficient aircraft and to contribute to reducing CO₂ emissions (of which air transport accounts for 13 %). It also creates situations where the competition between air transport and other modes is unfair. Taxation of kerosene has long been under consideration at European level, especially since the Commission communication on taxing aviation fuel. The Ecofin Council subsequently approved a recommendation that Member States should, in close cooperation with the Commission, work together more closely within the International Civil Aviation Organisation with a view to introducing an aviation fuel tax, and other instruments with similar effect. The European Union has requested — thus far without success — that this issue be discussed within the International Civil Aviation Organisation. It will renew its efforts in this direction at the next ICAO Assembly.

Without calling into question the international rules, consideration might be given to abolishing the tax exemption for kerosene on intra-Community flights ⁽³¹⁾. This

⁽²⁹⁾ The next noise standard is expected to lower the limit set in 1977 by 10dB in 2006, although the technology is available to reduce noise levels by 18dB. Moreover, as the service life of engines grows longer, so does the time which it takes for the most efficient technologies to penetrate the market.

⁽³⁰⁾ The Excise Duties Directive exempts kerosene used in aviation, in line with international practice based on the Chicago Convention.

⁽³¹⁾ Own-initiative report by Anders Wijkman, adopted on 28 February 2001.

path is by no means free of problems since it will demand equal treatment vis-à-vis non-Community carriers operating intra-Community flights. Another option which could be explored, as is done already in Sweden, could be to tax flights only where an alternative, for example, a high-speed train service exists, since this would allow a switch to another mode, whereas an across-the-board tax would simply lead to higher fares.

As an additional or alternative solution the Commission proposes, as part of the programme to create the single sky, to introduce differential en route air navigation charges to take account of the environmental impact of aircraft ⁽³²⁾.

4. Maintaining safety standards

Air transport is one of the safest modes. Nevertheless, the experts expect one serious accident a week, somewhere in the world, in the years ahead. The media coverage of such accidents could become the one factor curbing air traffic growth in Europe, even if the European Union can proudly point to the best safety record in the world.

The current cooperation between the Community and the administrations of a large number of European states, within the Joint Aviation Authorities (JAA), has reached its limits, particularly on the legislative front, for lack of real power. The Commission has therefore proposed the establishment of a **European Aviation Safety Authority (EASA)** ⁽³³⁾ which will provide the essential machinery for all aspects of air transport activities, from aircraft certification to the operational rules.

However, air safety does not end at the Community's frontiers and it is vital that European citizens who travel or who live close to airports can be sure that aircraft from non-Community countries also offer all the guarantees required. For this reason, the Commission will submit a proposal to guarantee minimum safety conditions in aircraft from non-Community countries as well.

⁽³²⁾ It might also be stressed that VAT is generally not included in air tickets but is added to the ticket prices paid by rail passengers. This point too will have to be considered.

⁽³³⁾ COM(2000) 144.

II. Linking up the modes of transport

Shifting the balance between modes involves looking beyond the rightful place of each particular mode and securing intermodality. The biggest missing link is the lack of a close connection between sea, inland waterways and rail. For centuries sea and river dominated goods transport in Europe. Major towns were built on rivers or on estuaries and the large trade fairs in the Middle Ages were always held at river or sea ports. Nowadays, despite a slight revival, water transport is the poor relation even though it is a mode which is not expensive and does less damage to the environment than road transport ⁽³⁴⁾.

The European fleet has shrunk to the benefit of flags of convenience, and fewer and fewer people want to become seafarers. There is a growing shortage of sailors in the European Union. Since the beginning of the 1980s, the European Union has lost 40 % of its seamen. There is a desperate need for merchant shipping officers. Between now and 2006 the Union will be some 36 000 sailors short. If properly trained and competent, sailors ensure the safety of shipping, efficient operation of vessels, proper maintenance, and reductions in the number of accidents and victims, and in sea pollution. Finally, there are strategic implications relating to the Community's oil supply; the European Union requires shipping know-how in order to maintain strict control over its tanker fleet.

For all that, ships carry over two thirds (70 %) of all trade between the Community and the rest of the world. Each year, some two billion tonnes of different goods pass through European ports. These goods are essential for the European economy and trade with other parts of the world (hydrocarbons, solid and mineral fuels, and manufactured products).

Paradoxically, we have not seen the same growth in cabotage between European ports, even though this could ease congestion within the Community, particularly by bypassing the Alps and the Pyrenees. The fact is, though, that

short-sea shipping cannot offer a real alternative solution unless the goods can then be carried by waterway and rail instead of by road. Generally, intermodality must be given a firm, practical shape.

The proposal is to launch a large-scale programme (Marco Polo) to support intermodal initiatives and alternatives to road transport in the early stages until they become commercially viable. Intermodality will also require rapid introduction of a series of technical measures, particularly on **containers**, loading units and the profession of **freight integrator**.

A. Linking up sea, inland waterways and rail

Intra-Community maritime transport and inland waterway transport are two key components of intermodality which must provide a means of coping with the growing congestion of road and rail infrastructure and of tackling air pollution. Up until now these two modes have been underused, even though the Community has huge potential (35 000 km of coastline and hundreds of sea and river ports) and virtually unlimited transport capacity.

The way to revive them is to build motorways of the sea and offer efficient, simplified services. To help to establish this trans-European shipping network, priority should be given at national level to ports which have good connections to the inland network, particularly along the Atlantic and Mediterranean coasts, and which could form part of an authentic logistics chain.

1. Developing 'motorways of the sea'

Short-distance shipping has been around for a very long time: there are thousands of wrecked vessels around the Mediterranean dating back to Roman times. Short-sea shipping carries 41 % of goods traffic within the Community ⁽³⁵⁾. It is the only mode of goods transport with a growth

⁽³⁴⁾ Sea transport must also work to reduce emissions of pollutants from ships, particularly SOx. It is regrettable, in this connection, that not all Member States have yet ratified Annex VI to the Marpol Convention, which restricts emissions of used sulphur and introduces control mechanisms in the North Sea and the Baltic.

⁽³⁵⁾ The percentage for 2010 is estimated at 40 %. Inland waterway transport, which was 5 % in 1990, will drop from 4 % in 1998 to 3 % in 2010.

rate between 1990 and 1998 (+ 27 %) approaching that of road transport (+ 35 %). In millions of tonne-kilometres, the volume of trade carried between 1970 and 1998 increased by 2.5, representing 44 % of the total volume and 23 % of the total value of the goods transported within Europe. There are examples of efficient services between southern Sweden and Hamburg, between the ports of Antwerp and Rotterdam, and between south-east England and the inland port of Duisburg. However, the current volume of traffic in Europe is well below potential capacity. Sea transport is not just a means of carrying goods from one continent to another; it is a **real competitive alternative to land transport**.

For container traffic, a year ago an Italian company launched a fast ferry service to carry whole lorries (trailer plus traction unit) from Genoa to Barcelona in 12 hours. This new service offering speed and punctuality has been a marked success, allowing haulage companies to avoid some of the busiest motorways in Europe at a competitive cost. This example could be followed for other destinations. It combines the capacity of maritime transport with the flexibility of road ⁽³⁶⁾.

For this reason, certain shipping links, particularly those providing a way around the bottlenecks in the Alps and Pyrenees, should be made part of the trans-European network, just like motorways or railways. At national level, shipping routes between European ports will have to be chosen to create networks, for example between France and Spain or between France and the United Kingdom. Similar routes will also have to be encouraged between Poland and Germany. However, these lines will not develop spontaneously. Based on proposals from the Member States, they will have to be 'sign-posted', notably by granting European funds (from the Marco Polo programme and the Structural Funds) to encourage start-ups and give them an attractive commercial dimension.

⁽³⁶⁾ A recent study by Grimaldi for the European climate change programme, transport working group, topic group 3, entitled 'Reducing CO₂ emissions in Europe through a door-to-door service based on short-sea shipping' demonstrated that on any given link the intermodal option based on short-sea shipping produced 2.5 times less pollution, in the form of CO₂ emissions, than the road option.

The evidence shows that as yet this is not always the case: for example, 75 % of the timber exported by Finland to Italy crosses Germany and the Alps although it could be carried by sea.

The European Union has an important natural asset: a dense network of rivers and canals linking up the basins of the rivers which flow into the Atlantic and the North Sea ⁽³⁷⁾, and more recently linked up to the Danube basin by the Rhine–Main–Danube Canal. In the six Member States which can use this network, inland waterway transport carries 9 % of goods traffic. If we include the countries preparing for accession, and the Danube basin as far as the Black Sea, that brings the total number of Member States which can use this network to 12 and the annual volume of goods carried to 425 million tonnes.

Inland waterway transport complements sea transport perfectly. It is being used increasingly by the major North Sea ports, which use the inland waterways for a large part of their inward and outward container traffic. Some of the countries too which are not connected up to the north-west European network have their own systems, such as the Rhône, the Po or the Douro, which are becoming increasingly important at regional level, but also in the development of river–sea transport thanks to technical progress in designing vessels suitable for both river and sea.

Inland waterway transport is energy-efficient and quiet, and takes up little space.

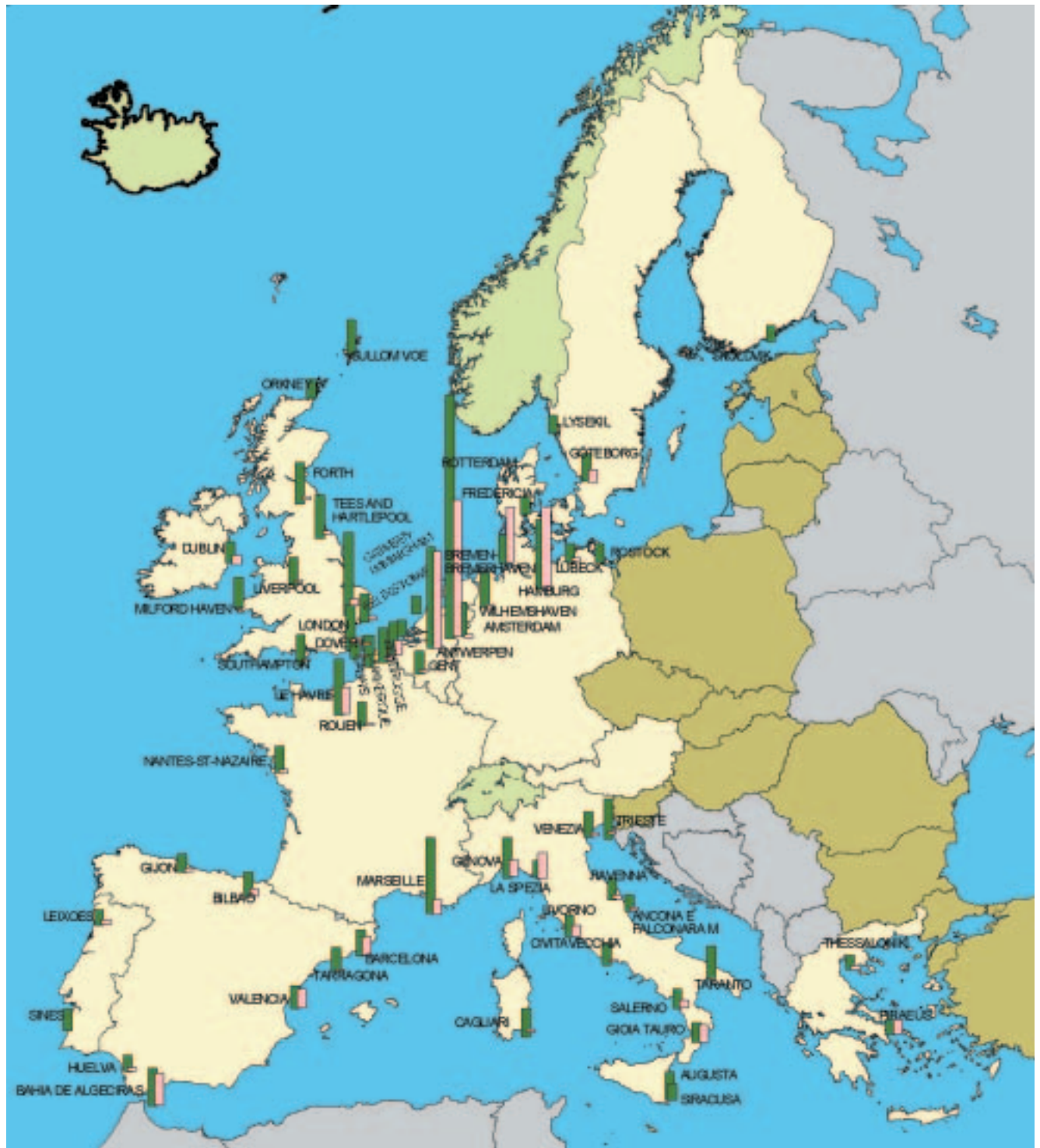
In terms of energy efficiency and the weight of goods which can be moved one kilometre by one litre of fuel, the figure for road haulage is 50 tonnes, for rail haulage 97 tonnes and for inland waterways 127 tonnes ⁽³⁸⁾.

Apart from anything else, this is a very safe mode of transport so it is particularly suitable for transporting dangerous goods, such as chemicals. In terms of the volumes carried, the accident rate is virtually zero. River transport is reliable and ideal for the carriage of heavy low-cost commodities over long distances (heavy

⁽³⁷⁾ Seine, Rhine, Meuse, Schelt, Elbe and Oder.

⁽³⁸⁾ Source: ADEME. Agence française de l'environnement et de la maîtrise de l'énergie. (French environment and energy management agency).

Map of Europe's main industrial ports



Ports > 13 million tonnes/year

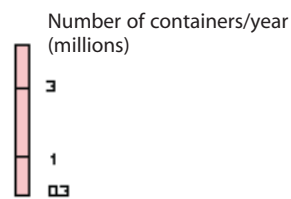
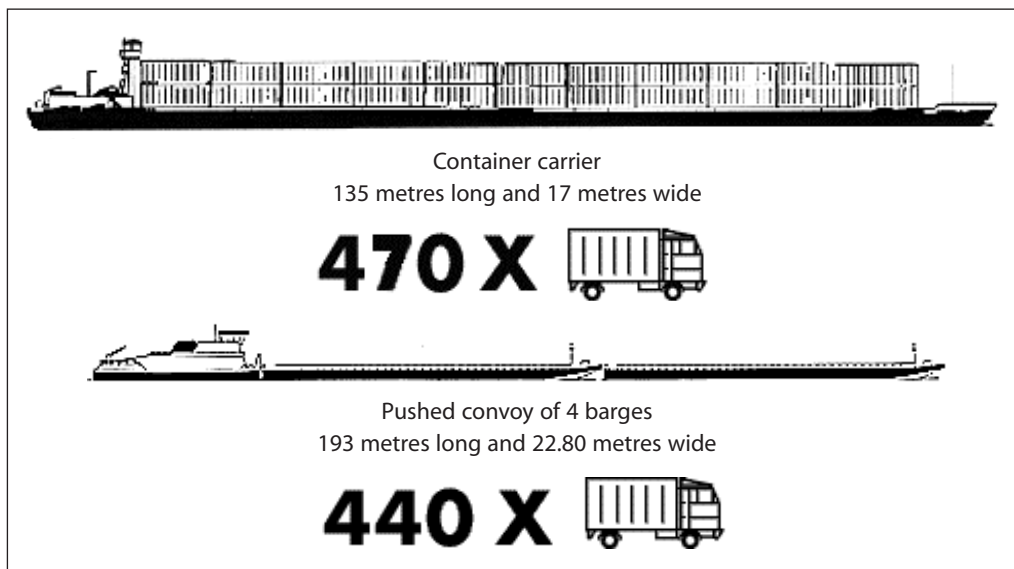


Fig. 3 — Container carriers and convoys



materials, bulk industrial goods, building products, waste, etc.). Vessels can travel from Duisburg to Rotterdam, a distance of 225 kilometres, in half a day, regardless of conditions which affect other modes. This makes inland waterway transport a very competitive alternative to road and rail transport, on those routes which are suitable. Following enlargement of the European Union, this mode could do much to relieve traffic on east–west routes.

Moreover, the capacity of the inland waterways is considerably underused in terms of infrastructure and vessels. They could handle much greater volumes of traffic than at present. This is because national infrastructure investment policies have given priority to other modes of transport without maintaining the inland waterways and without eliminating existing bottlenecks on the network. As the abandonment of the Rhine–Rhône canal shows, any new canal construction project can have a potentially negative environmental impact and should be assessed in very close detail.

2. Offering innovative services

Further development of inland waterway services and short-sea shipping also depends on an efficient port service based on the principles of regulated competition.

Throughout the 1990s, there was a rapid emergence of feeder, or hub, ports which serve as the gateways to Europe, where the ships

belonging to the main shipping companies stop for as short a time as possible to load and unload their containers. The predominance of the container ports of the northern range, from Le Havre to Hamburg, with a hinterland of between 1 200 and 1 300 kilometres, has been one of the **reasons for the increase in north–south traffic in Europe on routes which are already stretched to the limit**. Ports such as Antwerp, Rotterdam and Hamburg were used — and still are — principally because of the high quality/price ratio of the services provided, since they have modern equipment and better developed links with the rest of the world.

Though Community rules already allow service-providers access to the port services market, they are often unable to exercise this right satisfactorily. For this reason, in February 2001 the Commission proposed a new legislative framework to lay down new, clearer rules setting high quality standards for access to the **port services** market (piloting, cargo-handling and stevedoring) and laying down more transparent rules of procedure. Steps must also be taken to simplify the rules governing **operation of ports** themselves so that the port authorities are no longer both umpire and player when it comes to port management.

Experience has shown that short-sea shipping requires efficient, integrated commercial services. Thought should be given to bringing together all the links in the logistics chain (consignors, shipowners and any others involved in the shipping industry, plus road, rail and

inland waterway operators) in a **one-stop shop** to make intermodal transport by sea and inland waterway as reliable, flexible and easy to use as road transport.

The development of advanced telematic services in ports can also improve operational reliability and safety. Active cooperation between the various partners, in particular through electronic data interchange, enhances both the quality and the efficiency of the intermodal transport chain.

Various Community measures designed in particular to renew the fleet and to fully open up the inland waterway market have enabled the sector to achieve a growth rate of more than 10 % over the last two years in most countries which have a large inland waterway network. The most dynamic markets are those for container transport, but also niche markets such as waste transport, which could expand. Modernisation and diversification of the fleet have also made it possible to meet customers' needs better.

There are limits to the system

Coasting vessels which want access to Europe's inland waterways from Belgian or Dutch ports must first put in at the coastal ports in those two countries to complete the customs transit formalities. They have to stop — thus wasting time — and pay port dues without benefiting from any specific services. This reduces the competitiveness of these vessels compared with other modes which are not bound by these outdated rules. One pragmatic solution would be to develop and authorise throughout the Community the use of an advance electronic reporting system and the inland customs clearance system already used in Sweden and Portugal. These electronic data interchange (EDI) systems save time and reduce costs. There are similar problems in France. Port authorities also try to find other devious ways of requiring river and coastal vessels to pay port dues, such as making them stop to take on board a pilot.

Despite progress following the fleet renewal and the full opening-up of the inland waterway market, better use could still be made of the mode. For example, there are still a number of infrastructure problems (bottlenecks, inappropriate gauge, height of bridges,

operation of locks, lack of transshipment equipment, etc.) which prevent the uninterrupted passage of vessels throughout the year. The free movement of vessels is also hampered by the diversity of legal systems with different rules, particularly on technical specifications for vessels and pilots' certificates.

This mode of transport needs to be made more reliable, efficient and accessible by:

- **eliminating bottlenecks**, correcting gauges, providing missing links, revitalising goods transport waterways which have fallen into disuse, **establishing links to rivers and installing transshipment equipment**;
- **installing highly efficient navigational aid and communication systems** on the inland waterway network;
- **continuing to standardise technical specifications** throughout the Community's inland waterway network;
- **further harmonisation of pilot certificates** throughout the Community inland waterway network, including the Rhine; the Commission will be making a proposal in 2002;
- **harmonising the rules on rest times**, crew members, composition of crews and sailing times of inland waterway vessels; the Commission will be making a proposal in 2002.

B. Helping to start up intermodal services: the new Marco Polo programme

The PACT ⁽³⁹⁾ programme introduced in 1992 has led to a great many initiatives, with 167 projects launched between 1992 and 2000, despite the modest budget (EUR 53 million over the period 1992–2001).

A few PACT successes

- **A new combined rail/sea link between Sweden and Italy, via Germany and Austria. This service takes some 500 000 tonnes a year off the busy roads and**

⁽³⁹⁾ Pilot action for combined transport.

improves journey times significantly (by up to 48 hours).

- **Rail/air services between Schiphol (Amsterdam) and Milan airports have already taken the equivalent of 45 air freight pallets per week off the roads in their first year in operation.**
- **Every day a barge service between Lille and Rotterdam removes some 50 lorries from a heavily used road corridor.**
- **A shipping service in La Rochelle–Le Havre and Rotterdam has shifted 643 000 tonnes of cargo from road to sea in three years.**
- **A rail/sea service between Spain and Germany avoids approximately 6 500 lorry journeys per year on congested roads.**
- **An information system for freight tracking, accessible via PC and the Internet, translates messages written in different languages into a single, common language.**

When the PACT programme comes to an end in December 2001 the Commission plans to replace it with a new programme to promote intermodality, called 'Marco Polo'. As the financial programming currently stands ⁽⁴⁰⁾, the margin available would allow an annual budget of around EUR 30 million, which could be spread over four years. Marco Polo will be open to all appropriate proposals to shift freight from road to other more environmentally friendly modes. **Efforts will be made to harness the advantages of short-sea shipping.**

Three principal objectives have been set for this support:

- the first is to support measures proposed by players on the logistics market, with particular emphasis on starting up new services which will be commercially viable in the long term and will lead to substantial shifts from road to other modes, without necessarily being technological innovations. Community aid will be limited to the start-up phase for these services;
- the second is to improve the operation of the entire intermodal chain;

⁽⁴⁰⁾ Heading 3 (internal policies).

- the third concerns innovation in cooperation and dissemination of best practice in the sector.

To back up the Marco Polo programme, the Commission will take steps to make the Community fleets more competitive.

The mounting pressure exerted by international competition has prompted the Member States to take different sequences of initiatives to safeguard their shipping interests and jobs in this sector. The 1997 Community guidelines on State aid to maritime transport have allowed the Member States to take a number of measures which have generally had a positive impact in terms of 'repatriation' of the Community fleet. After learning lessons about the most appropriate action for making the European fleet more competitive, the plan is to revise these guidelines in 2002 to smooth the way for action by the Member States within a coordinated framework avoiding distortions of competition.

C. Creating favourable technical conditions

The principal limitation of modes such as rail, inland waterway or sea is that they are unable to carry freight from door to door. Unloading and reloading wastes time and adds to costs, making the services less competitive, to the benefit of road haulage, which has the advantage of a feeder network enabling it to carry goods almost anywhere.

Technological research has produced many innovations in logistics concepts and systems. Many, however, have never got beyond the drawing-board or prototype stage, because all too often they have focused on just a single link in the intermodal chain. From now on it is imperative to target research and development on the integration and consistent validation of the most innovative concepts and systems. The critical technologies developed for vehicles and transshipment equipment, for communications and for management must be tested in real conditions, with technical coordination.

If this research is to bear fruit, it is important to create the right technical conditions for developing the profession of freight integrator, and to standardise loading units.

1. Encouraging the emergence of freight integrators

For goods transport, making the right use of the most efficient mode in the transport chain, based on different criteria at any given time, is the job of transport flow 'organisers', and a new profession is emerging: that of freight integrator. Modelled on what has been done at world level for package distribution, **a new profession specialising in the integrated transport of full loads** (exceeding around 5 tonnes) should emerge. These 'freight integrators' need to be able to combine the specific strengths of each mode at European and world level to offer their clients and, consequently, society at large the best service in terms of efficiency, price and environmental impact in the broadest sense (economic, ecological, energy, etc.).

As the European Parliament has already stated ⁽⁴¹⁾, such a profession must develop within a '*single, transparent scheme which is easy to enforce*', clearly defining, in particular, where responsibility lies all along the logistics chain and laying down the corresponding transport documents. The Commission will make a proposal along these lines in 2003.

2. Standardising containers and swap bodies

Conventional shipping containers cannot meet all consignors' needs. In particular, they are too narrow to accommodate two standard pallets side by side. In addition, the spread of the large containers used by US or Asian companies exporting all over the world would pose safety problems on European roads when it comes to delivery to the final destination.

⁽⁴¹⁾ Reports by Mr U. Stockmann of 21 January 1999 and by Mrs A. Poli Bortone of 27 November 2000.

For this reason, European inland transport operators have developed wider containers suitable for palletisation and posing no problems at the time of final delivery. Most of these 'swap bodies' are easily transferable from rail to road (and vice versa). They are wider than containers and allow easy palletisation but, on the other hand, are more fragile and not stackable. Measures must therefore be taken to design and standardise new loading units offering the advantages of both containers and swap bodies plus optimum intermodal transshipment. This subject, already highlighted in reports by the European Parliament ⁽⁴²⁾, is one of the issues the Commission wishes to explore in the sixth RTD framework programme. **The Commission may possibly make a proposal on harmonisation in this area in 2003.**

The Commission proposes the following work programme:

- **include the concept of 'motorways of the sea' in the future revision of the trans-European networks;**
- **introduce a new 'Marco Polo' programme, to come into operation in 2003 at the latest, to support intermodality;**
- **encourage the emergence of freight integrators and standardise loading units (containers and swap bodies). Proposals to this end will be submitted in 2003;**
- **improve the situation of inland waterway transport by mutual recognition of boatmasters' certificates throughout the Community's inland waterway network and discuss with the social partners the minimum social legislation to be applied on crews, time at the helm and navigation.**

⁽⁴²⁾ See previous footnote.

ELIMINATING BOTTLENECKS

With the transport boom outstripping economic growth, the persistence and indeed the very size of a number of bottlenecks on the main international routes is posing a major problem for the transport system in Europe. Whether located on the outskirts of conurbations or at natural barriers or borders, these bottlenecks affect all modes of transport.

Unless infrastructure is interconnected and free of bottlenecks, to allow the physical movement of goods and persons, the internal market and the territorial cohesion of the Union will not be fully realised.

Foreseeable bottlenecks

In border areas, the present infrastructure networks still reflect the narrow national views (sometimes going back to the 19th century), which influenced their construction. Wattlelos in France, which is not connected to the Belgian motorway network, which passes only a few metres away, is a good example of the dysfunctions that can arise. Between Germany and France, the towns of Kehl and Strasbourg are still linked only by a low-capacity single track over the narrow bridge which crosses the Rhine. In the Pyrenees a single track crosses the border to link the national double-track systems. However, it is not only at borders that problems are to be found. In Bordeaux a double-track bridge which is well over a century old has to be used by TGVs, regional trains and freight trains alike to travel from northern Europe to Spain, the Pyrenees or the Toulouse region. Similarly, on the roads and motorways, the lack of bridges means that the meeting of local and interregional or international flows creates the notorious

Bordeaux bottleneck. Little has been done in terms of traffic management and user information on these routes. Other famous bottlenecks include the one due to the delay in the construction of the Lanaye Lock, preventing the linking of the Meuse and the Rhine, and the ones on certain sections of the Danube (e.g. Straubing–Vilshofen).

The paradox is that these bottlenecks remain even though the European Union has adopted an ambitious policy on the trans-European network. The Maastricht Treaty gave the Community the powers and instruments to establish and develop the trans-European network. In 1993, the Commission endeavoured to give high priority to the trans-European network, as highlighted in the White Paper on growth, competitiveness and employment. The conception of the transport sector network was initially based largely on the juxtaposition of national infrastructure plans, particularly for the conventional rail and road networks. The Heads of State or Government themselves gave a series of incentives to the development of this policy, particularly by setting up, in 1994, a group made up of their personal representatives who, by focusing on existing national priorities, selected a series of priority projects, the famous projects of the Essen European Council, which attracted the attention of investors to some extent ⁽⁴³⁾.

In 1996, the first guidelines for the development of the trans-European transport

⁽⁴³⁾ The method adopted by the group of personal representatives of the Heads of State or Government, the 'Christophersen' Group, was to look at priorities at national level (bottom-up approach) rather than first of all considering European priorities (top-down approach).

network were adopted by decision of Parliament and the Council, bringing together within a single reference framework these Essen priority projects as well as the concepts and criteria for each mode of transport, enabling other projects of common interest to be identified. These guidelines thus identified those projects into which much of EU infrastructure funding is channelled (budget heading for the trans-European network, Cohesion Fund, Structural Funds) ⁽⁴⁴⁾, as well as that of the European Investment Bank. The priority areas identified by these guidelines also serve as a reference for other Community legislation aimed at international traffic (bans on weekend travel) or the interoperability of networks (rail interoperability).

It is apparent today that the development of the trans-European network is not only far from uniform but also very slow. **Scarcely 20 % of the infrastructure planned in the 1996 decision has been finished.** It is debatable whether it can be completed by the planned deadline of 2010. It is true that significant progress has been achieved in providing regions lagging behind and countries aided from the Cohesion Fund with road infrastructure almost on a par with that of other regions and countries, as acknowledged by the Second Cohesion Report. And certain major projects such as the Øresund fixed link and Malpensa airport have been completed according to plan. However, much remains to be done in the other modes. Barely 2 800 km of new high-speed lines are currently in service. At the present rate, it will be more than 20 years before the 12 600 km of high-speed lines planned in 1996 have been completed. These delays are due to local opposition to the building of new infrastructure, the lack of an integrated approach during the planning, evaluation and funding of cross-border infrastructure, and also reduced public funding as a result of a general slowdown of investment in transport infrastructure, which fell from 1.5 % of GDP in 1970 to around 1 % in 1995.

Nevertheless, whatever the delay to certain projects, support should continue to be given to the trans-European network, which is an

⁽⁴⁴⁾ A total of EUR 18 billion is estimated as being available for Community funding during the period 2000–06 through the various financial instruments for projects of common interest relating to the trans-European network.

important factor in European competitiveness and improves the links between the European Union's outlying regions and its central markets.

This is why the Commission plans to propose a two-stage revision of the trans-European network guidelines.

The first stage in 2001 will aim at a limited adaptation of the existing guidelines, in line with Article 21 of the decision on the guidelines ⁽⁴⁵⁾. This revision, which the Commission should already have proposed in 1999, must not be the occasion to start adding a lot of new infrastructure routes for which no funding has been secured. It should concentrate on eliminating bottlenecks on the routes already identified, completing the routes identified as priorities for absorbing the traffic flows generated by enlargement, particularly in frontier regions, and improving access to outlying areas. In this context, the list of 14 major priority projects adopted by the Essen European Council needs to be updated, as called for on several occasions by Parliament and as the Commission has been trying to do since 1997.

The second stage in 2004 will involve a more extensive revision, in the light of reactions to the White Paper, aimed in particular at introducing the concept of 'motorways of the sea', developing airport capacity, and including sections of pan-European corridors situated on the territory of candidate countries, including those which will still not be members of the Union at that time. The idea is to concentrate on a primary network made up of the most important infrastructure for international traffic and cohesion on the European continent ⁽⁴⁶⁾.

In this context the Commission will look at the idea of **introducing the concept of declaration of European interest** where specific infrastructure is regarded as being of strategic importance to the smooth functioning of the internal market and would help reduce congestion, but is of less interest at national or local level. This mechanism will be designed to assist arbitration to bring the points of view of

⁽⁴⁵⁾ Article 21 of Decision 1692/96/EC provides that the guidelines should be adapted to take account of economic developments and technological developments in the transport field, in particular in rail transport.

⁽⁴⁶⁾ See section on enlargement.

the various local, national and European players closer together.

For the time being, revision of the trans-European network ⁽⁴⁷⁾ means concentrating on

unblocking the main arteries. Irrespective of the issue of priority infrastructure routes, the main problem is to solve the headache of funding, for which the White Paper makes concrete proposals, notably the pooling of funds.

I. Unblocking the major routes

The revised Community guidelines on the trans-European network must form part of an environmentally sustainable policy which, as the Gothenburg European Council underlined, should *'tackle rising levels of congestion and encourage the use of environment-friendly modes of transport'*. To this end, they must redirect Community action to allow the development of multimodal corridors giving priority to freight and a high-speed network for passengers. This also means a limited number of new major infrastructure projects. The most important European routes will also need to be provided with traffic management plans to make better use of existing capacity. The Commission will ensure a general balance in the choice of projects.

A. Towards multimodal corridors giving priority to freight

The establishment of multimodal corridors giving priority to freight requires high-quality rail infrastructure. The physical characteristics of the railways in Europe do not lend themselves to a mass transport system for freight. Nor is it possible to stack containers or make up long trains, and generally speaking the system has to cope with dense passenger train traffic ⁽⁴⁸⁾ sharing the same infrastructure as freight trains.

Though it will not be possible in the immediate future to establish a complete rail network reserved for freight, as in the United States, **investment must encourage the gradual development of trans-European corridors for priority or even exclusive use by freight**

trains. These will consist mainly of existing lines used primarily or even exclusively by freight trains. In areas with intensive traffic, particularly urban areas, having separate lines for freight and passengers will be the guiding principle in the development of the network, which will require the construction of new lines or loop lines around rail nodes. In other areas, the gradual establishment of corridors giving priority to freight will be achieved through improvements in capacity including the upgrading and rehabilitation of infrastructure on alternative low-traffic routes or through the development of traffic management systems (programme control and signalling) capable of separating trains more efficiently.

Rail access to ports provides an essential link in multimodal corridors giving priority to freight. This is the essential condition for the development of short-sea shipping to reduce traffic through the Alps and the Pyrenees.

The terminals through which goods are routed to their final destinations or at which trains are made up again constitute major bottlenecks. In the freight terminals open to all operators, public incentive investment in marshalling yards and transshipment equipment can play an important role in increasing capacity, particularly in intermodal terminals.

B. A high-speed passenger network

The increasing distances between centres at opposite ends of the Union as it enlarges mean that an effective high-speed passenger network is required. Such a network comprises the high-speed lines, including upgraded lines, connections and systems which will allow the integration of air and rail transport services and airports.

⁽⁴⁷⁾ Proposed in parallel with this White Paper.

⁽⁴⁸⁾ In general, the lines designed for high-speed trains (more than 250 km/h) are used only by high-speed trains, the only goods transported being express freight.

The ambitious programmes to develop a **high-speed rail network** of the last decade have to be continued in order to achieve this objective. This does not mean that a freight network cannot be established, however. On the contrary, they are both part of the same effort to increase the capacity of the rail network as a whole. That said, the difficulties in finding funding encountered in the past dictate a degree of caution when it comes to setting objectives. Aid for new high-speed lines must be linked to the development of freight capacity by freeing up the lines previously used by passenger trains which freight trains will now be able to use much more easily ⁽⁴⁹⁾.

On routes where it is impossible to construct new lines, **the upgrading of existing tracks** for high-speed trains is a solution offering an adequate level of comfort and service thanks to progress with tilting train technology.

On many routes, high-speed trains are a very attractive alternative to flying in terms of time, price and comfort, particularly if access times to airports from city centres are taken into account. Contrary to the widely-held view, the advantage of high-speed trains for passengers is not limited to journeys of less than three hours.

⁽⁴⁹⁾ To cover certain sections where it is difficult to construct several tracks, such as in tunnels or on long bridges, it may be necessary to have mixed freight and passenger rail use.

Between Paris and the Mediterranean, before the inauguration of the new high-speed line, the market share claimed by high-speed trains exceeded 25 % although the journey time to Marseilles and other stations on the Côte d'Azur was well in excess of four hours ⁽⁵⁰⁾.

The above graph ⁽⁵¹⁾ shows that the market share for flying between Madrid and Seville fell from 40 to 13 % with the entry into service of the high-speed line (AVE). Similarly, between Paris and Brussels, the market share claimed by car journeys has fallen by almost 15 % since Thalys started its operations.

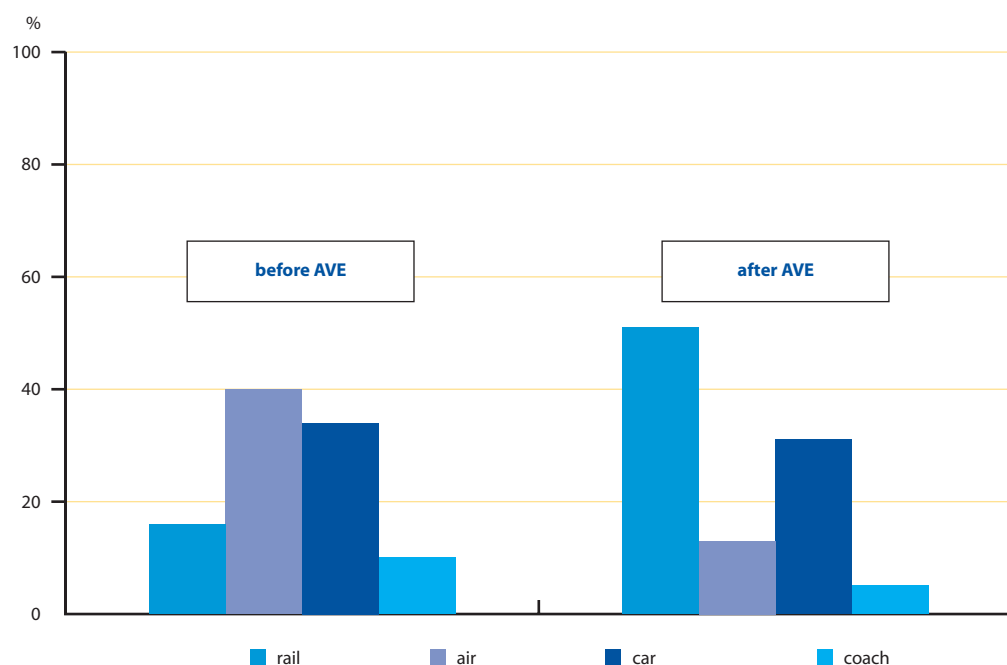
Network planning should therefore seek to take advantage of the ability of high-speed trains to replace air transport and encourage rail companies, airlines and airport managers **not just to compete, but also to cooperate**.

Investment geared to integrating the high-speed train network with air transport needs to be encouraged. This investment could be channelled into railway stations at airports and terminals for passenger and baggage check-in in railway stations. Other measures could encourage the integration of systems and services for passenger information, reservations,

⁽⁵⁰⁾ The opening of the high-speed line over its entire length in June 2001 has reduced the journey time between Paris and Marseilles to three hours.

⁽⁵¹⁾ AVE: Alta Velocidad Española.

Fig. 4 — Evolution of traffic between Madrid and Seville



ticketing and baggage transport which make it easier for passengers to switch from one mode to the other ⁽⁵²⁾. Otherwise, over and above a limited number of new airport hubs planned for some time in the future, the high-speed network for passengers in Europe is completed by smaller airports in regions not served by high-speed trains.

C. Improving traffic conditions

Specific traffic management measures

coordinated at European level can produce an overall improvement in traffic conditions on the major inter-city routes, whatever the causes of congestion (accidents, weather conditions, one-off or recurring incidents, etc.). There are many road infrastructure managers in Europe who now have experience in this field. For a number of years, the European Union has provided financial incentives to introduce such measures on international corridors. Such measures are already applied between Germany and the Netherlands (e.g. traffic diversions on routes between Cologne and Eindhoven) and a number of tests are under way between the Benelux countries and their neighbours and at the Alpine (between France and Italy in particular) and Pyrenean crossings. **By 2006, all the main trans-European links should have traffic management plans.**

For heavy goods vehicles, precise traffic management at peak times will make it possible to offer more suitable routes, better schedules and driver assistance. This could result in capacity gains while reducing the risks of accidents and pollution.

D. Major infrastructure projects

Of the 14 projects ⁽⁵³⁾ approved by the Essen European Council, three have now been completed and six others, which are in the

⁽⁵²⁾ The integration of the high-speed rail network and airports should also benefit rapid freight transport, particularly express courier services since at present almost 50 % of pre- and post-routing of air freight, a booming sector, is by road.

⁽⁵³⁾ The 'Christophersen' Group had identified 26 major priority projects, the 14 most important of which had been approved by the Essen European Council in 1994. The list of these projects was subsequently incorporated in Annex III to the European Parliament and Council decision on the guidelines for the development of the trans-European network.

construction phase, should be finished by 2005, such as the high-speed rail link between Barcelona and Figueras. As regards the remaining projects, the Alpine routes which require the construction of very long tunnels such as Lyon–Turin are encountering numerous difficulties and delays because of technical uncertainties and the difficulty in finding the capital to complete them. Equally, a new European bottleneck will appear across the Pyrenees if nothing is done to ensure a trouble-free passage. There is also a need to launch or modify other major projects. These changes are the reason why the list of priority projects established by the Heads of State or Government in 1994 needs to be updated and incorporated into the guidelines adopted by the European Parliament and the Council. Implementation of these projects also highlights the need to improve tunnel safety.

1. Completing the Alpine routes

In spite of the difficulty of completing them according to schedule, the two projects involving rail links in the Alps remain priority projects of particular importance in helping, as part of an overall transport policy in the Alps, to switch part of the growth in road traffic to rail in this region, which is a crossroads in the trans-European network. The growth of traffic in the Rhône corridor shows the urgent need to take measures.

Financial aid from the Union in the form of direct contributions over the last 10 years has not created a sufficient lever effect to commit the Member States concerned to the process of completing these major Alpine projects within the timescale laid down by the Essen European Council, i.e. 2010.

It may be expected that the new ways of operating existing tunnels will, because of safety requirements, lead to a not insignificant reduction in their capacity, which could rapidly be translated into an increase in the level of congestion. According to studies carried out by the Italian operator of the Fréjus tunnel, the only Alpine road tunnel between France and Italy is already 20 % above the maximum capacity authorised by these new safety rules. The re-opening of the Mont Blanc tunnel scheduled for the end of 2001 will reduce this pressure to some extent. However, it is clear that the rules governing heavy goods traffic will henceforth be

much more rigorous than those in force before the accident in 1999, quite apart from the fact that local residents are increasingly opposed to the presence of these heavy goods vehicles. The adoption of bilateral agreements between the European Union and Switzerland and the completion of the Swiss programme of new Alpine rail links are a step forward in the process of improving Alpine transit. However, these measures will only do so much to ease what is a very difficult situation in terms of congestion: the transport system in this region does not need a placebo but a genuine solution to recurring problems.

An alternative to the Alpine road routes and a complement to the present rail network is needed in the next 10 years, which means that the firm commitment to establish this new rail link between Lyon and Turin, already decided on at the European Council in Essen, must be acted upon without delay, failing which the regions concerned, mainly Rhône Alps and Piedmont, will see their economic competitiveness compromised.

Similarly, the quality of life of those living in the Tyrol and Alto Adige is likely to deteriorate further as a result of the constant and growing heavy goods traffic, and the question of completing the new Brenner tunnel between Munich and Verona needs to be settled within a reasonable timescale. Beyond these regions, much of the east-west flows, between the Iberian Peninsula and central Europe and the Balkans would be affected by these bottlenecks.

2. Easier passage through the Pyrenees

If nothing is done to improve the passage through them, bottlenecks could occur in the Pyrenees, which are crossed by long-distance traffic, half of it involving trade between the Iberian Peninsula and countries beyond France. Studies by the Franco-Spanish centre which monitors trans-Pyrenean traffic have shown that more than 15 000 heavy goods vehicles cross the two ends of this mountain range every day and that this traffic is increasing all the time at a very high rate (+ 10 % per year). In 1998, flows between Spain and Europe already amounted to 144 million tonnes a year (53 % by road, 44 % by sea and 3 % by rail). The centre estimates that by 2010–15 an additional 100 million tonnes will have to be distributed between the various

modes. The improvement of existing lines and completion of the HST south will enable capacity to be increased in the medium term, on top of which there is the potential of short-sea shipping. The capacity of short-sea shipping to provide a genuine solution depends, however, on whether operators can gain the confidence of shippers. In this connection, new rail capacity will have to be harnessed, in particular through the central Pyrenees. **This is why the Commission is proposing in the revision of the guidelines for the trans-European network the inclusion of a major project for a high-capacity rail crossing in the Pyrenees (Annex III), the route being left to the interested countries to agree.**

This raises the issue of upgrading the existing line between Pau and Zaragoza via Canfranc to provide a short-term improvement in the passage through the Pyrenees. Despite its low capacity in terms of anticipated long-term needs⁽⁵⁴⁾, the point is that the existing tunnel could be made use of and consignors and carriers could be encouraged to gear their logistics chain to this future high-capacity crossing. It is therefore proposed that this line should be included in the conventional rail outline plan of the current revised guidelines, given that this is what the governments of the two countries in question want. Apart from the positive environmental aspect of this project in the Pyrenees, the Commission will ensure that any financial aid will result in work on the project paving the way for a high-capacity link as part of a long-term, economically viable programme that is the product of cross-border coordination.

It will also be necessary to rethink the question of a future road link through the Pyrenees which, for reasons connected with environmental impact, cost and acceptance by local residents, should ensure that piggyback transport is adopted as of right.

3. Launching new priority projects

The need to launch, speed up or modify priority projects is apparent. The list of 'specific' projects

⁽⁵⁴⁾ The line can only take 2.8 millions tonnes, i.e. barely more than 1 % of the traffic between the Iberian Peninsula and the rest of Europe by 2010–15, and poses serious operating constraints on account of the steep inclines.

in Annex III to the decision on the guidelines for the trans-European network ('Essen' list) can be amended by joint decision of the European Parliament and the Council. The Commission is therefore proposing that projects which have already been completed or are nearing completion be removed from the list and that a very limited number of new major projects be added ⁽⁵⁵⁾.

Apart from the project for a new high-capacity rail crossing in the Pyrenees

mentioned above, the new or amended projects which the Commission is considering including in this future proposal are as follows:

- **East European high-speed train/combined transport:** For historical reasons there has been little development of west-east links to the candidate countries. However, trade with these countries is already generating significant traffic flows. On the rail corridor along the Danube, more than 60 % of traffic is already international. The forecasts point to sustained growth in traffic. It is therefore necessary to facilitate the development of a new high-capacity west-east rail link for freight and passengers from Stuttgart-Munich to Salzburg/Linz-Vienna. This project involves building or upgrading 780 km of track for high-speed trains and lines for freight transport. With a view to enlargement, it could conceivably be extended to Budapest, or even Bucharest and Istanbul. As the line between Stuttgart and Mannheim is operational, the extension of the current TGV east (project No 4) linking Paris to Mannheim via Strasbourg by these sections will make for a continuous trans-European rail corridor from Paris to Vienna.
- **Fehmarn Belt:** The bridge/tunnel crossing the natural barrier of the Fehmarn Belt between Germany and Denmark is a key link which will complete the north-south route connecting Central Europe and the Nordic countries and allow the development of trade between them. This project on the route including the recently-opened Øresund fixed link aims to cross the 19 km-wide belt. Completion of this project, which is still at the preliminary study stage, should contribute to the development of the Baltic Sea region.

- **Straubing-Vilshofen:** The aim is to improve navigability on the Danube between Straubing and Vilshofen in Germany. This section, which is too shallow over some 70 km, does not allow the uninterrupted passage of vessels. Eliminating this bottleneck on the Rhine-Main-Danube route linking the North Sea with the Black Sea would enable a great deal of freight traffic to be switched from road to waterway in this increasingly congested corridor. The project, which has to be conceived and implemented in accordance with Community law on the environment, would help to integrate the candidate countries more fully into the European Union and bring the eastern Danube countries closer to the Union.
- **Satellite radionavigation project (Galileo):** This global project has a great deal of potential for traffic management and information for users of the trans-European network, as, too, for numerous applications in sectors other than transport, and requires an intensive development phase until 2005 and then a deployment phase with a view to operation from 2008 (see also Part 5).
- **Interoperability of the Iberian high-speed rail network:** The difference in gauge between the network of the Iberian peninsula and the rest of the trans-European network is a major obstacle to effective operation of the European railway system as a whole. On the basis of the Spanish and Portuguese plans for high-speed lines, which include the construction of new lines and the upgrading of existing track, the alignment of the gauge in Spain and Portugal with European standards by 2020 will improve links between Spain and Portugal and the rest of the trans-European network.

A number of existing projects also need to be redefined. The Verona-Naples rail link with its Bologna-Milan branch line, for example, should be added to the project including the Munich-Verona Brenner route (project No 1). These 830 km of new high-speed lines will provide better connections between this north-south rail corridor and the major towns and industrial areas on the Italian Peninsula. To improve the link between the Mediterranean branch of the HST South Madrid-Barcelona-Montpellier (project No 3)

⁽⁵⁵⁾ See Annex III.

Map of 'specific' projects adopted in 1996 ('Essen' list) (*)



1. High-speed train/combined transport north/south
2. High-speed train PBKAL
3. High-speed train south
4. High-speed train east
5. Conventional rail/combined transport: Betuwe line
6. High-speed train/combined transport, France-Italy
7. Greek motorways Pathe and Via Egnatia
8. Multimodal link Portugal-Spain-Central Europe

9. Conventional rail Cork-Dublin-Belfast-Larne-Stranraer (completed)
10. Malpensa airport (completed)
11. Fixed link between Denmark and Sweden (completed)
12. Nordic Triangle (rail/roads)
13. Ireland/United Kingdom/Benelux road link
14. West Coast main line (rail)

— Rail
— Road

* Decision 1692/98/CE modified by Decision 1346/2001/EC

Map of potential 'specific' projects



- | | |
|--|---|
| 1. High-speed train/combined transport north-south | 18. River Danube improvement between Vilshofen and Straubing |
| 3. High-speed train south | 19. High-speed rail interoperability on the Iberian peninsula |
| 15. Galileo | 20. Fixed link Fehmarn Belt |
| 16. High-capacity rail line across the Pyrenees | |
| 17. High-speed train/combined transport east-west | |

and the French network, it should be extended to Nîmes. This extra 50 km will connect this project to the Paris–Marseilles route, improve the profitability of the cross-border section between Perpignan and Figueras and facilitate freight clearance.

4. Improving safety in tunnels

Safety in long tunnels is another vitally important aspect in the development of the trans-European network. A significant number of road or rail cross-border links, either at the project stage or under construction, include major tunnel sections, sometimes exceeding 50 km. These projects, which have already received or will receive Community financial support, include the 8 km long Somport tunnel between France and Spain, the rail/road link between Denmark and Sweden (Øresund), the future Lyon–Turin transalpine rail link, the Brenner project and the Bologna–Florence high-speed line currently being constructed, where 60 of the 90 km will be in tunnels. Existing infrastructure in some parts, both rail and road, also has

ageing problems (80 % of rail tunnels were constructed in the 19th century), or has increasing difficulty in coping with the inexorable growth in traffic. Current national legislation varies greatly: some Member States have legislation on safety in tunnels while in others it is rudimentary or even non-existent. The European Union can help to improve safety both at a technical level and in the way in which tunnels are operated.

Consideration should therefore be given to **European regulations, which could take the form of a directive on the harmonisation of minimum safety standards**, so as to put in place the conditions guaranteeing a high level of safety for the users of road and rail tunnels, particularly those forming part of the trans-European transport network.

Moreover, the Commission will be very vigilant with regard to the safety measures planned for infrastructure works which include sections in tunnels and which receive Community funding, particularly under the budget for the trans-European network.

II. The headache of funding

The main obstacle to carrying out infrastructure projects, apart from technical or environmental considerations, remains the difficulty of mobilising capital. The Commission sounded the alarm in this connection in its 1993 White Paper on growth, competitiveness and employment. The suggestion of raising a loan through bonds issued by the Union to help funding has not been followed up. The headache of funding remains. To overcome this problem, not only must public and private funding be equal to the task, but also innovative methods of funding must be applied.

A. Limited public budgets

Traditionally, transport infrastructure has been built on the basis of **public funding**, whether regional, national or Community. Most of the road or rail projects currently underway follow this pattern. In these circumstances, it is society as a whole which contributes. The funds needed to develop the trans-European transport

network exceed EUR 110 billion for the major priority projects alone, which meant that some projects had to be selected ahead of others. Public funding has therefore given priority to high-speed lines within Member States, such as the Paris/Strasbourg TGV, to the detriment of projects such as Alpine crossings, which have an international vocation mainly geared to freight and which therefore, because of their cross-border nature, appear to be less cost-effective than other projects. The logic dictating national choices is not unconnected with the road/rail imbalance.

Complementing national funds, **Community funding** (Structural Funds, Cohesion Fund and budget for the trans-European network) is available for studies or works in the form of direct subsidies ⁽⁵⁶⁾. In the case of the budget for the trans-European network, the Community's

⁽⁵⁶⁾ The budget for the trans-European network also offers interest rate subsidies and loan guarantees.

contribution is limited to 10 % of the total cost of investment. The aim is to facilitate the launch on a co-funding basis of the project or of studies prior to projects, to mobilise and coordinate potential investors and to stimulate innovative financial packages. For projects extending over several years, the Commission has suggested establishing a multiannual indicative programme for 2001–06, which will make for better scheduling of expenditure and ensure continuity of Community financial aid from the point of view of the promoters.

Experience has shown, however, that in some cases, particularly those involving cross-border priority projects such as Lyon–Turin or the future central crossing of the Pyrenees, the present Community contribution rate is not a sufficient incentive to act as a lever to mobilise and coordinate the required investment. It is therefore proposed that **this rate should be raised to 20 %** for ‘critical’ projects with a high added value for the trans-European network but a low socioeconomic return at national level. Specifically, this will concern cross-border rail projects crossing natural barriers, such as mountain ranges or stretches of water, requiring de facto major civil engineering works such as long tunnels or bridges. Trans-European network projects with the aim of eliminating clearly identified rail bottlenecks at borders with candidate countries will also be eligible, on a one-off basis, for this 20 % rate.

Although for some projects eligible for the Structural Funds the very size of the Community contribution is the determining factor, since aid can be as much as 80 % of the total cost in the case of the Cohesion Fund, Community funding in other cases is granted sparingly and has to be complemented by substantial funding from other sources. The EUR 4 170 million available for the period 2000–06 under the budget for the trans-European network, and allocated mainly to the major priority projects, will cover only a small part of requirements. This means firstly that it is necessary to be more **selective** with the projects and secondly that other public or private funding — or a combination of the two — is needed for implementing the projects. To maximise the return on Community aid, therefore, and without waiting for the revision of the guidelines, the aim is not only to tighten up the selection criteria but also to ensure that Community funding is much more **conditional** upon the implementation of projects guaranteeing interconnection of the infrastructure concerned, their interoperability,

their contribution to the development of intermodality, greater safety, and the recovery of the aid where this principle is not met.

B. Reassuring private investors

When the Channel Tunnel was built, funding was provided by **private investors**. While this project is an undeniable technical triumph, it has however proved to be a notorious financial failure affecting small savers and major financial groups alike. The main weakness of a financial package of this type lies in the time lag between the capital expenditure and the first returns, which come only when the project becomes operational. These first returns do not necessarily mean profits. The most tangible effect of this failure at the financial level has been the lack of interest on the part of private investors to fund transport infrastructure, especially cross-border infrastructures on which profits, often low, are by no means certain.

In an attempt to remedy this situation, the Commission launched a consultation process in 1995–97 aimed at encouraging the development of **public/private partnerships**. Some major projects — the Øresund bridge/tunnel for example — have been funded by this partnership mechanism. The guarantees are such that almost the entire risk is borne by the State. In spite of this advance, the public/private partnership formula has still not been able to attract private investors, just as in other cases the inflexibility shown by some States has not encouraged the development of public/private partnerships.

By introducing new procedures for **public contracts**, the Commission is hoping to achieve greater involvement of private capital in infrastructure funding. The revision of the rules on public contracts already proposed⁽⁵⁷⁾ and clarification of the rules applicable to public works concessions should result in the involvement of the private sector at the earliest possible stage in the planning of projects and greater legal certainty in the way in which they are put together. Experience has also shown that setting up a single body responsible for obtaining and utilising funding is a precondition for the success of projects involving the private sector. Such mechanisms should therefore be encouraged.

⁽⁵⁷⁾ COM(2000) 275 and COM(2000) 276.

C. An innovative approach: pooling of funds

For many major projects there is no return on investment for several decades.

The Lyon–Turin link — a textbook example of a new funding mechanism

The difficulty of financing the international section of the new Lyon–Turin link between St Jean de Maurienne and Bussoleno, consisting of two major tunnels, one 54 km in length, the other 12 km, provides an ideal opportunity for applying a new approach to funding which goes beyond tried and tested forms. The new Lyon–Turin line (mixed rail line, high-speed and combined transport) is one of the 14 projects sanctioned by the Essen European Council in 1994. This project had been identified as the missing link for connecting, by 2010, the Italian high-speed network, currently under construction, to its French counterpart.

The present line, the ‘Maurienne’ (Chambéry–Modane–Susa–Turin) ⁽⁵⁸⁾, which links France to Italy through the Mont Cenis tunnel (almost 13 km) and dates from the 1870s, is used by long-distance passenger trains but is of strategic importance above all for the transport of freight between Italy and its neighbours (France–Benelux–Spain). Even at the beginning of the 1990s, it was near to saturation with traffic (in both directions) of around 8 million tonnes, and this figure has now reached 10 million. Over the period 1994–2000, Community financial aid for studies on the construction of the new link amounted to some EUR 60 million, which accounts for approximately 50 % of total expenditure. Thus, so far, the Community has been by far the biggest provider of funds for the project.

Between 2001 and 2005, the existing line will be upgraded and operating conditions improved (use of dual-current locomotives to reduce journey times) in order to cope with the expected growth of traffic over the next few years and launch a trans-Alpine ‘rolling road’. The bilateral traffic as well as flows between Atlantic Europe and a Balkan

⁽⁵⁸⁾ The line has gradients of almost 35 per 1000 on the French side and 30 per 1000 on the Italian side, sometimes requiring three locomotives to pull the heaviest trains.

Central Europe in the throes of change should soon saturate this upgraded route. The 11 000 or so heavy goods vehicles which travel daily through France or Switzerland to Italy are a major source of nuisance that is becoming less and less tolerable and less and less tolerated. Ultimately, we are heading towards total paralysis of the region. Everything must be done to ensure that this project comes into operation at the beginning of the next decade. To avoid any further delay, sources of funding other than budget contributions from the Member States and the Community must be found.

New infrastructure projects should therefore benefit from an ‘income’ even before the first operating revenue is generated. The income from charges on competing routes — once these have been amortised — could provide a reserve of surplus financial resources ⁽⁵⁹⁾. Some of this income could therefore be used to make up the shortfall in funds needed to complete other infrastructure projects, particularly rail, in the region in question.

In other words, the toll or charge is applied to the area as a whole to finance any future infrastructure. We can no longer expect, as with the Channel Tunnel, to repay investment by charging users once the infrastructure has been opened to traffic. If this approach were applied to the Alpine crossings, the Alpine motorways and tunnels would contribute to the funding of construction work on new crossings before they opened. Switzerland has adopted the radical solution of funding this type of major work almost entirely through charges on heavy goods vehicles, starting with EU lorries.

Switzerland: a special case

Switzerland is the first country to adopt a programme of rail infrastructure projects which is more than 50 % funded from roads. The Swiss do not take lightly the question of transferring goods from road to rail: the method of funding major rail projects for the next 20 years is enshrined in a specific article in the Federal Constitution (Article 196).

This article governs the funding of rail infrastructure, including modernisation of the conventional rail network and the new

⁽⁵⁹⁾ See also the chapter on charging.

rail links through the Alps, which are the most ambitious infrastructure projects in the Alpine region (Lötschberg and Gothard tunnels which are due to open in 2007 and 2012 respectively). The total cost of more than EUR 19 billion over 20 years is funded by:

- **a charge paid by heavy goods vehicles to use the Swiss road network which should account for almost half of the total cost of the planned infrastructure. Road hauliers from third countries will fund almost 20 % of the costs of constructing the infrastructure through the payment of a charge on transit through Switzerland;**
- **part of the proceeds from the mineral oil tax, which will fund 25 % of the costs of the new rail links through the Alps;**
- **a 0.1 % increase in VAT together with loans from the Swiss Confederation and private lenders, which will provide the remainder. The railway companies will have to repay these loans with interest.**

The novelty of the Swiss approach lies essentially in the creation of a special fund made up of the charge on Swiss and foreign heavy goods vehicles. The federal law of 19 December 1997 relating to this charge is clear in this respect: 'the payment-related charge on heavy goods traffic is intended to cover in the long term the infrastructure costs and costs incurred by the local community as a result of such traffic, insofar as it does not offset such costs through other payments or charges. The introduction of this charge is also intended to help improve the framework conditions for railways on the transport market and to route more goods by rail.'

It is not necessary for the corresponding funds to be administered at Community level; this is better done by the countries or infrastructure managers concerned, on the basis of bilateral agreements. Replenished by a contribution from the income from road pricing on routes with dense traffic, these funds would offer sufficient guarantees to borrow rapidly and under favourable conditions on the capital market. This system could provide an even more interesting solution in that it would encourage the countries concerned to improve cross-border coordination and would pool the risks associated with traffic trends between road and rail infrastructure managers.

Motorway concessionaires, who could become full partners in the construction and management of these future rail links, would benefit from this in the long term, by helping to relieve the congestion which is already badly affecting their own networks. Nor would such a system penalise the regions concerned. The financial burden would be borne by the users, including vehicles in transit and from other countries, and would replace traditional funding from taxes paid only by the inhabitants and businesses in the countries or regions crossed.

This new approach ties in with many of the ideas to emerge at national level since the basic principle is to allocate part of the surplus income from charging for existing infrastructures to funding the completion of missing links in the network and this principle is already applied or is under discussion in various forms in a number of Member States. It is also highlighted in the parliamentary report by Paolo Costa ⁽⁶⁰⁾, which points out that *'it should be considered that if there is any surplus revenue over infrastructure construction and maintenance costs, the revenues could be used for reducing external costs within the mode of transport from which they arise or in other modes.'*

Precedents and projects in Member States

In Germany, the government is currently examining the suggestions of the independent commission (Pällmann Commission) to introduce a new system of rights of use based on kilometres covered, the revenue from which could be used to fund transport infrastructure, including other modes, by way of derogations to be examined on a case-by-case basis. This possibility of derogations proposed by a commission made up mainly of leading figures in the road industry — representatives of public works and constructors — is clearly aimed at projects such as the Brenner.

In France, the Investment Fund for Land Transport and Inland Waterways, which has been in existence since 1995 ⁽⁶¹⁾ is replenished by a tax of 0.69 (euro) cents per km paid by motorway concessionaires ('land planning tax'). This fund can be used to finance infrastructure projects, more than half of which are on the railways.

⁽⁶⁰⁾ A5-0345/2000.

⁽⁶¹⁾ For technical reasons, this fund was budgeted in 2001.

This approach also suggests a revision of current Community legislation, which not only fails to encourage transfers of revenue from road tolls to railway infrastructure projects, but can even be interpreted as obstructing such transfers. The Directive on the charging of heavy goods vehicles for the use of certain infrastructures ⁽⁶²⁾ thus restricts toll amounts to the costs of constructing, operating and developing the road network. Although the directive states that it does not 'prevent the Member States from attributing to environmental protection and the balanced development of transport networks a percentage of the amount of the user charge or of the toll', it is nonetheless true that the method of calculating the toll laid down by this legislation limits its amount to the costs of

⁽⁶²⁾ Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures.

constructing, operating and developing the road network. As the European Parliament has emphasised, there is then an intrinsic contradiction in this provision, as the amount of the toll cannot be related both to the costs of constructing, operating and developing the infrastructure network concerned and be used for environmental protection and balanced development of transport networks. The possibility of using part of the tolls to fund, for example, rail projects is therefore legally ambiguous, and this legal uncertainty should be removed as soon as possible.

The introduction of the new Community framework for infrastructure charging as announced in Part Three will bring in the changes and adjustments to allow Member States to use income from infrastructure charging to fund this type of project.

As regards the guidelines for trans-European networks, the Commission plans to propose:

In 2001, an adaptation of the current guidelines with the aim of:

- *eliminating bottlenecks to encourage rail corridors with priority given to freight, greater integration of high-speed lines with air transport, and the introduction of traffic management plans on the main road arteries;*
- *amending the list of 'specific' projects (the 'Essen list') adopted by the Community in 1996 by adding major projects. By way of illustration:*
 - *the high-capacity freight rail route through the Pyrenees;*
 - *East European high-speed train/combined transport: Paris–Stuttgart–Vienna;*
 - *the Fehmarn Belt bridge/tunnel between Germany and Denmark;*
 - *the Galileo satellite radionavigation project;*
 - *improved navigability of the Danube between Straubing and Vilshofen;*
 - *the Verona–Naples rail link, including the Bologna–Milan branch;*
 - *interoperability of the Iberian high-speed rail network.*

In 2004, major changes to the guidelines on the trans-European network aimed at integrating the networks of candidate countries, introducing the concept of 'motorways of the sea', developing airport capacity and improving links with outlying regions.

As regards the financing of infrastructure, the Commission plans to propose:

- *a change to the funding rules for the trans-European network, increasing to 20 % the maximum Community contribution for cross-border projects crossing natural barriers and projects at the borders of candidate countries;*
- *the establishment of a Community framework to channel revenue from charges on competing routes towards the building of new infrastructure, particularly rail.*

As regards technical regulations, the Commission plans to propose:

- *harmonisation of minimum safety standards for road and rail tunnels forming part of the trans-European transport network;*
- *a directive designed to guarantee the interoperability of toll systems on the trans-European road network.*

PLACING USERS AT THE HEART OF TRANSPORT POLICY



Whether they be members of the public or transport sector professionals, everyone should enjoy a transport system that meets their needs and expectations.

Users therefore need to be put back at the heart of transport policy.

Users' prime concern is **road safety**, which they feel is constantly under threat.

They also want to know exactly what they are paying for when they use motorways or public transport. Using infrastructure and tackling pollution and congestion comes at a cost. It is time to say exactly **what these costs are** so that future decisions on modes of transport can be taken with complete transparency and coherence.

People do not just want to be transported in ever greater safety; they also expect

straightforward and flexible conditions of transport, especially when they have to use several modes of transport. They also want more account taken of their **rights**.

Finally, users expect **more rational transport in towns and cities**. Noise and air pollution and its effects on health are of greater concern in towns and cities, and a clear line needs to be drawn urgently between the respective roles of private cars and public transport. Given the constraints of the Treaty, and in particular the **principle of subsidiarity**, the Commission intends essentially to encourage the exchange of good practice. In achieving sustainable transport development, it is undoubtedly the measures which need to be taken in urban transport which will be the most difficult to implement. They fall within the jurisdiction of the local authorities.

I. Unsafe roads

Of all modes of transport, **transport by road is the most dangerous and the most costly in terms of human lives**. Viewed as something of a fact of life, it is only recently that road accidents have aroused any particularly strong reaction. How else can the relative acceptance of road accidents be explained when every day the total number of people killed on Europe's roads is practically the same as in a medium-haul plane crash?

And yet road safety is a major concern of the people of Europe, possibly even their prime concern ⁽⁶³⁾.

Studies indicate that drivers in Europe expect stricter road safety measures, such as improved road quality, better training of drivers, enforcement of traffic regulations, checks on vehicle safety, and road safety campaigns ⁽⁶⁴⁾.

⁽⁶³⁾ A BVA poll in France published in *Journal du Dimanche* on 21 January 2001 showed it to be the number one concern of the French, ahead of serious diseases, food scares, etc.

⁽⁶⁴⁾ Sartre (Social attitudes to road traffic risk in Europe) projects; Sartre 1 involved 15 countries in 1992 and Sartre 2, 19 countries in 1997.

Until the 1990s, the Community's lack of explicit powers with regard to road safety made it hard for it to formulate action in that area. Nonetheless, the Community has long been contributing to road safety. The creation of the internal market made it possible, especially via technical standardisation, to develop safe motor-vehicle equipment and accessories by means of over 50 directives ⁽⁶⁵⁾ (compulsory use of seatbelts, transport of dangerous goods, use of speed limitation devices in lorries, standardised driving licences and roadworthiness testing of all vehicles).

The Maastricht Treaty finally provided the Community with the legal means to establish a framework and introduce measures in the field of road safety ⁽⁶⁶⁾.

Yet even today, despite these new powers in the Treaty, some Member States still fail to recognise the obvious need for a proper European road safety policy, and invocation of the principle of subsidiarity is making Community action difficult ⁽⁶⁷⁾.

The European Union must, over the next 10 years, pursue the ambitious goal of reducing the number of deaths on the road by half; this by way of integrated action taking account of human and technical factors and designed to make the trans-European road network a safer network.

A. Death on a daily basis: 40 000 fatalities a year

The price paid for mobility in Europe is still far too high. Since 1970, for example, more than 1.64 million of our fellow citizens have been killed on the road. Though the number of deaths in road accidents dropped significantly at the beginning of the 1990s, the trend has been less marked in recent years.

⁽⁶⁵⁾ For instance, provisions standardising the fitting of laminated windscreens, the fitting of seatbelts for all passengers, standardised lateral and frontal protection, standardisation of braking systems.

⁽⁶⁶⁾ Article 71 of the EC Treaty, as amended by the Treaty on European Union.

⁽⁶⁷⁾ Witness the fact that a proposal first put forward in 1988 to set a legal blood alcohol limit has remained a dead letter on the agenda of 24 Council presidencies. It has never been brought to a successful conclusion. On 17 January 2001 the Commission adopted a recommendation including and improving the main objectives of the original proposal.

In 2000, road accidents **killed over 40 000 people** in the European Union and injured more than 1.7 million. The age group most affected is the 14–25 year olds, for whom road accidents are the prime cause of death. **One person in three will be injured in an accident at some point in their lives.** The directly measurable cost of road accidents is of the order of EUR 45 billion. Indirect costs (including physical and psychological damage suffered by the victims and their families) are three to four times higher. **The annual figure is put at EUR 160 billion,** equivalent to 2 % of the EU's GNP ⁽⁶⁸⁾.

The sums spent on improving road safety fail to reflect the severity of the situation. Efforts to prevent road accidents are still woefully inadequate, corresponding to less than 5 % of the total cost of those accidents, including the amount the insurance companies spend on compensation and repairs, which totals EUR 60 billion.

The scattering of responsibilities and resources over a large number of organisations and authorities responsible for road safety, both centrally and regionally, tends to rule out large-scale action and discourage the introduction of coordinated policies.

The programmes set in motion are often no more than forerunners, containing little in the way of substance. Faced with the difficulty of achieving real results, Member States sometimes cite cultural particularities to justify their fatalistic attitude. Certain technical measures, e.g. involving the safety of the infrastructure, call for major investments that Member States have thus far been dilatory in making.

If all the Member States were to achieve the same results as the United Kingdom and Sweden, for example, the numbers killed would be cut by 20 000 a year. In 1998 the ratio between the number of persons killed in road accidents in Sweden and Portugal, two countries with comparable population figures, was 1 to 4.5. The ratio between the United Kingdom and France was 1 to 2.5 ⁽⁶⁹⁾. There is also huge scope

⁽⁶⁸⁾ Report by Ewa Hedkvist Petersen on the communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on 'Priorities in EU road safety — Progress report and ranking of actions' (COM(2000)125 — C5-0248/2000 — 2000/2136(COS)), adopted by Parliament on 18 January 2001.

⁽⁶⁹⁾ The number of road deaths in 1998 was 531 in Sweden, 2 425 in Portugal, 3 581 in the United Kingdom and 8 918 in France.

for improvement in the countries applying for accession, whose vehicle fleets are on average older than those of the EU Member States and are not fitted with the latest technology (ABS, airbags, etc.).

In 1997 Sweden adopted an ambitious plan of 'zero deaths and zero serious injuries in road accidents' for the country as a whole. The programme addresses all areas in which local authorities and companies have a leading role to play. They were asked, for example, to introduce safety criteria into their public contracts for vehicles and transport services in order to increase the supply of safe vehicles. Systematic improvements to the road network have been undertaken to reduce the severity of accidents, and incentives have been provided, in conjunction with the private sector, to reduce the demand for road transport and thus the exposure of road users to risk.

B. Halving the number of deaths

In the battle for road safety, the European Union needs to set itself an **ambitious goal to reduce the number of people killed between 2000 and 2010. The Commission plans to marshal efforts around the target of halving the number of road deaths over that period.**

Though responsibility for taking measures to halve the number of road deaths by 2010 will fall chiefly to the national and local authorities, the European Union too needs to contribute to this objective, not just through the exchange of good practice, but also through action at two levels:

- harmonisation of penalties, and
- promotion of new technologies to improve road safety.

The Commission may, following a review of the situation in 2005, propose regulatory measures.

1. Harmonisation of penalties

It is a fact that controls and penalties vary considerably from one Member State to another. Car and lorry drivers know that they have to

'take their foot off the gas' in some countries but that they can drive almost with impunity in others. This is worrying inasmuch as anyone behind the wheel can move easily from one country to another. For a given infringement, the penalty (immediate immobilisation of vehicle, loss of licence) should be the same regardless of the driver's nationality and the place where the infringement occurs. Yet it is possible for a lorry driver disqualified from driving in one Member State to obtain another licence in a neighbouring country.

A motorist driving from Cologne to London on the E40 and E15 motorways has to restrict his speed to 120 km/h on crossing the Belgian frontier, then to 130 km/h in France before slowing down to the speed limit of 112 km/h in the United Kingdom. Once there he can drink alcohol up to a blood alcohol level of 0.8 mg/ml, but on the way back he will have to observe a maximum limit of 0.5 mg/ml.

The French authorities have the power to take away the driving licence of a motorist driving with a blood alcohol level of over 0.8 mg/ml or exceeding the speed limit by more than 40 km/h. In neither case, however, does French law allow this to be done to a driver who is not of French nationality.

Dangerous driving is a scourge on a par with crime, and the Commission plans, as part of the Community's justice policy, to take initiatives aimed not just at lorry drivers but at all motorists.

By way of example, the Belgian association RED has come up with innovative and effective road safety initiatives including:

- organising defensive driving courses, i.e. teaching drivers how to regain control of a vehicle during an emergency stop in wet conditions, how to sit properly at the steering wheel, etc. (these are *not* courses in skidding);
- in collaboration with the Ministry of Justice, organising alternative measures to deal with offences, that is, instead of paying a fine or losing their licence, offenders would, subject to their agreement, receive defensive driving tuition and spend time helping multiple trauma victims of road accidents in special institutions.

Work is needed on the problem of harmonising certain regulations, penalties and controls (particularly regarding speeding and drink-driving), first and foremost on the trans-European motorway network, which enjoys Community co-financing and is used by growing numbers of people from different Member States, and starting with international road haulage. This will mean approximating the technical characteristics of the infrastructure, but will also involve basic harmonisation of signs and road markings.

The great diversity of road markings and road signs on European routes, especially directional signs which have not been harmonised by UN conventions, is a constant hazard to drivers. The rules for indicating direction can differ from one country to another for the same type of road. For instance, five countries use green to indicate motorways, while the others use blue. Language rules for indicating place names also vary, as does route numbering. **Plans ought therefore to be made for the gradual introduction of harmonised signs and signals throughout the trans-European network**, with the same signals to be used on board vehicles. In the long term, a common system for identifying stretches of the trans-European road network is bound to be required in order to make things clearer and guarantee continuous network quality for users.

Proper sign-posting of **black spots** — including an indication of the number of victims they have claimed — should make them more apparent to European motorists driving on major routes through the various countries.

The scope ought to be examined for road safety impact studies and audits (along the lines of environmental impact studies) to be made systematic on the main routes of the trans-European road network, particularly for projects for which European funding is requested.

Efforts must also continue to **combat the scourge of drink-driving** and find answers to the question of the **use of drugs or medicines** that affect people's ability to drive safely. On 17 January 2001 the Commission adopted a recommendation urging the Member States to prescribe a general limit of 0.5 mg/ml as **the maximum permitted blood alcohol level of drivers** and 0.2 mg/ml for commercial drivers, motorcyclists and inexperienced drivers.

In an effort to combat drink-driving in Belgium, the 'Bob' campaign (i.e. the person driving does not drink) launched in 1995 has been a great success. Groups are encouraged to select one person from among them who will refrain from drinking and can thus drive the others home safely.

In France, in addition to awareness campaigns, other practices have been developed to reduce the number of deaths among people leaving night clubs. Some establishments ask people to hand in their car keys on arrival and only return the keys after checking the blood alcohol level of the driver.

Also, to encourage motorists to drive more carefully on some roads, several regions have marked the places where people have been killed in accidents by tracing silhouettes by the roadside. Seeing them, some 37 % of motorists say they take more care and 20 % slow down.

Several Member States have introduced a range of initiatives to prevent risky behaviour, particularly with warnings to the young about the dangers of alcohol. It is important to encourage the spread and exchange of these good practices.

In addition, the Council and the European Parliament are currently discussing a proposal for a directive which would require coach passengers to use safety belts, where fitted. An existing directive on 'safety belts for coaches' lays down technical standards for belts but does not require manufacturers to fit them. **To make this measure effective, action needs to be taken to require coach manufacturers, like car manufacturers before them, to fit all seats with safety belts.** A directive along these lines will be proposed in 2002.

2. New technologies for improved road safety

Technological developments will also enhance the usual methods of control and penalties, with the introduction of automatic devices and on-board driving aids. In the same context, the eventual fitting in road vehicles, as in other forms of transport, of black boxes to record parameters which help explain the causes of accidents, will make motorists more responsible, speed up court proceedings following accidents,

Table 1: Permitted speed limits and blood alcohol levels in EU countries

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Built-up areas (km)	50	50	50	50	50	50	48	50	50	50	50	50	50	50	48
Trunk roads (km)	90	80	100	110	90	90	96	90	90	80	100	100	80	90	96
Motorways (km)	120	110	(⁷⁰)	120	120	130	112	130	120	120	130	120	120	110	112
Blood alcohol level (mg/ml)	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8	0.8	0.5	0.5	0.5	0.5	0.2	0.8

Source: European Commission and Member States.

lower the cost of court proceedings and enable more effective prevention measures to be taken. In June 2001 the Commission also adopted a proposal to make it compulsory to fit speed limitation devices in vehicles of more than 3.5 tonnes or vehicles carrying more than 9 passengers (the maximum speed is 90 km/h for utility vehicles and 100 km/h for buses).

The need for independent investigations

There is a particular problem regarding the investigations which follow accidents. At present, the chief concern in investigations conducted by the authorities or by insurance companies is to compensate for any damage caused by the accident and to determine liability under the codes established by the legislator. However, such investigations are unable to stem the growing need felt in Europe and the United States for independent technical investigations geared towards revealing the causes of accidents and ways of improving the law.

For some years now, European law has provided for this type of investigation for civil aviation (⁷¹). A similar obligation has now been provided for in the rail sector (⁷²). The Commission is already planning to propose the same kind of investigations for the

maritime sector (⁷³) and in the longer term the same should be done for road accidents.

Independent investigations such as these need to be conducted at national level but following a European methodology. The results should be communicated to a committee of independent experts within the Commission, whose job would be to improve the existing legislation and adapt the methodology *inter alia* to technical developments.

As Mr P. van Vollenhoven (⁷⁴) reminded the third conference on accident investigation organised by the European Transport Safety Council (ETSC), 'a permanent independent organisation not only guarantees independence of investigation; it also ensures that its recommendations are followed up by action.'

The introduction of electronic driving licences could also help with the enforcement of penalties, such as the immobilisation of vehicles whose drivers have lost their licences.

The European Union has considerable, even sole, responsibility for encouraging the deployment of innovative technologies which should lead to the introduction of **safe new vehicles** on the market. **Intelligent transport systems are another opportunity, and broad provision for them is made in the eEurope plan adopted by**

(⁷⁰) Motorways: no speed limit, recommended limit of 130 km/h, more than half the network with speeds limited to 120 km/h or less.

(⁷¹) Directive 94/56/EC provides a model for the other modes of transport. It establishes the basic principles governing the investigation of civil aviation accidents and incidents. In addition to that, in December 2000 the Commission adopted a proposal for a directive on occurrence reporting in civil aviation. Supplementing the existing Community legislation, the proposal deals with analysis of incidents and occurrences that are usually precursors of accidents.

(⁷²) The amendment to Directive 91/440/EEC, adopted last December as part of the 'railway package', requires Member States to ensure that all accidents are followed by investigations. Before the end of 2001 the Commission will adopt a proposal for a directive on railway safety requiring Member States to set up wholly independent

national bodies to be responsible for investigating accidents. A cooperation mechanism will be put in place at Community level, possibly as part of the future Railway Safety Agency.

(⁷³) Directive 1999/35/EC on a system of mandatory surveys for the safe operation of regular ro-ro ferry and high-speed passenger craft services requires, as from 1 December 2000, that objective investigations be conducted in the event of accidents on any such vessels and craft bound for or leaving Community ports. The Commission intends to propose a harmonised system for all maritime accidents by 2004.

(⁷⁴) Chairman of the Dutch Transport Safety Board.

the Feira European Council in June 2000 and confirmed by the Stockholm European Council in March 2001. In this context, it would be useful to encourage the introduction of active safety systems for all new vehicles, the generalisation of which could be facilitated by a Community-level agreement with the automobile industry ⁽⁷⁵⁾. Fitted with innovative technologies, for example, in the area of traffic management and collision-avoidance systems, such vehicles hold out the prospect of road safety being improved by 50 %. Technological progress should also increase vehicles' impact resistance thanks to the development of new materials and the introduction of new advanced design processes for structural integrity.

In the same context, current progress with tyres (reduced water projection for HGV tyres, improved road holding on slippery surfaces, warning system to indicate under-inflated tyres) should in the short term make for reduced fuel consumption and rolling noise while maintaining a high level of safety. This should produce a 10 % saving on fuel and around 1 000 fewer deaths per year.

Protection of vehicle occupants in the event of impact is progressing remarkably. Electronic systems will enable new smart protection devices (airbags for example) to adjust for the number of vehicle occupants, their morphology and the nature of the impact so as to provide more tailored protection. Reminders to put safety belts on must become standard vehicle equipment.

In Sweden, 95 % of car occupants wear their seatbelts. However, half of all those killed in accidents were not wearing their seatbelts at the time of the accident.

To make life safer for pedestrians and cyclists, safety standards for the design of car fronts could help save up to 2 000 lives a year. A voluntary agreement on the application of such standards is currently being discussed with the industry ⁽⁷⁶⁾.

Finally, as the volume of traffic increases, **better vehicle-speed management is an essential aspect of safety** that will also help tackle

congestion. In addition to improved road safety, observation of speed limits will also reduce greenhouse gas emissions significantly. The most promising prospects here are offered by new technologies that can determine optimum speed at any moment with reference to traffic conditions, road features and external conditions (such as weather) and pass the information on to drivers by way of information display boards or on-board communication systems. Roads and vehicles throughout the Union need to be equipped with these new technologies as soon as possible, and information systems made accessible to everyone.

— ***A new road safety action programme covering the period 2002–10 will identify what measures need to be taken to achieve the overall objective of 50 % fewer deaths on the road, and will provide follow-up for all national and European measures that help reduce the number of fatalities.***

— ***Member States will be asked to step up their cooperation and exchange of experience on accident prevention and analysis, notably by means of common tools developed via the CARE database ⁽⁷⁷⁾ or the creation of a European road safety observatory bringing all support activities under one roof for the benefit of road safety experts and the general public.***

— ***Harmonisation of current rules and penalties (in particular for disregarding road signs and signals, drink-driving and speeding) will be proposed for international transport on the trans-European motorway network.***

— ***A list of black spots where there are particularly significant hazards will be compiled with a view to appropriate signposting.***

— ***A committee of independent experts specialising in accident investigations will be established within the Commission to provide it with information on the development of rules and regulations in all areas of safety.***

Should improvements not be significant within three to four years, the Commission might also submit regulatory proposals as of 2005.

⁽⁷⁵⁾ This agreement, which the Commission is currently working on, will include systems for distance control, for collision prevention and for monitoring driver alertness.

⁽⁷⁶⁾ Commission communication of 11 July 2001 proposing a voluntary agreement with the industry.

⁽⁷⁷⁾ CARE: Community database on accidents on the road in Europe.

II. The facts behind the costs to the user

Transport users are entitled to know what they are paying for and why. Containing congestion in Europe, tackling the greenhouse effect and building infrastructure while at the same time improving safety on the road or in public transport and minimising environmental disturbance all comes at a price. And on top of this social cost comes the cost of investment to provide better control of transport, put new trains on the tracks and build new infrastructure (e.g. airports). The quid pro quo of these benefits for society and transport users is that they ought in future to be more or less reflected in the price users pay for transport, but without affecting access to a good quality, continuous service throughout the Community.

Though a global increase in transport prices may be on the cards, the biggest change will nonetheless be in price structure. In its earlier *White Paper on a common transport policy* the Commission already concluded that *'one of the important reasons why imbalances and inefficiencies have arisen is because transport users have not been adequately confronted with the full costs of their activities ... As prices do not reflect the full social cost of transport, demand has been artificially high. If appropriate pricing and infrastructure policies were to be pursued, these inefficiencies would largely disappear over time.'*

The paradox is that transport has too many taxes: registration tax, road and insurance tax, fuel taxes and infrastructure charges. However, while transport may be heavily taxed, it is above all badly and unequally taxed. Users are all treated alike, irrespective of the infrastructure damage, bottlenecks and pollution they cause.

This failure to spread the burden fairly between infrastructure operators, taxpayers and users causes considerable distortion of competition both between transport operators and between modes of transport.

For the modes to enjoy a level playing field, taxation should work according to the same principle regardless of mode and ensure a fairer distribution of the burden of transport costs, which are generally borne more by society, i.e. taxpayers and companies, than by users. Applying the 'user pays' and 'polluter pays' principles, it should be the case, as Mr Paolo Costa, MEP, so rightly said in a recent

report ⁽⁷⁸⁾, that *'transport users should pay for the quantifiable components of transport costs arising from the use, the quality and the safety of infrastructure ...'*

The Gothenburg European Council, too, pointed out that *'a sustainable policy should tackle... the full internalisation of social and environmental costs. Action is needed to bring about a significant decoupling of transport growth and GDP growth, in particular by a shift from road to rail, water and public passenger transport.'* **The thrust of Community action should therefore be gradually to replace existing transport system taxes with more effective instruments for integrating infrastructure costs and external costs.** These instruments are, firstly, charging for infrastructure use, which is a particularly effective means of managing congestion and reducing other environmental impacts, and, secondly, fuel tax, which lends itself well to controlling carbon dioxide emissions. The introduction of these two instruments, which will allow greater differentiation and modulation of taxes and rights of use ⁽⁷⁹⁾, needs to be coordinated, with the first being backed up by the second.

A. Towards gradual charging for the use of infrastructure

The fundamental principle of infrastructure charging is that the charge for using infrastructure must cover not only infrastructure costs ⁽⁸⁰⁾, but also external costs, that is, costs connected with accidents, air pollution, noise and congestion. This goes for all modes of transport and all categories of user, both private and commercial.

In the case of private vehicles, cross-border traffic is, however, limited, and infrastructure charging raises issues of freedom of movement and the need not to reintroduce frontiers. It would not, therefore, be expedient for the

⁽⁷⁸⁾ EP report — A5-0345/2000.

⁽⁷⁹⁾ Taxation of vehicles, including passenger vehicles, on the basis of environmental criteria may also encourage people to purchase and use cleaner vehicles (see part IV.A of this Section: Diversified energy for transport).

⁽⁸⁰⁾ These various costs are detailed in Chapter 3 of the White Paper on fair payment for infrastructure use (COM(1998) 466).

Community to intervene in the arbitration handled by national and local authorities, such as the setting of charges for the use of utilities such as transport infrastructure. Instead, the Community can act most usefully by identifying, disseminating and encouraging good practice, for example, through research programmes. In the case of commercial transport, on the other hand, in order to avoid distortion of competition the Community needs to establish a framework that will enable the Member States gradually to integrate external and infrastructure costs and guarantee consistency in their initiatives.

Price structures must better reflect the costs to the community. Given the profusion of current regulations in this field and the risk of distorting competition, a Community framework for

infrastructure charging seems to be required in all modes.

1. A price structure that reflects the costs to the community

Costs to the community can be assessed in monetary terms. The table below shows the cost levels generated by a heavy goods vehicle covering 100 km on a motorway in open country at off-peak times. Estimates are made of the costs of air pollution (cost to health and damaged crops), climate change (floods and damaged crops), infrastructure ⁽⁸¹⁾, noise (cost to health), accidents (medical costs) and congestion (loss of time).

Table 2: External and infrastructure costs of a heavy goods vehicle travelling 100 km on a motorway with little traffic (EUR)

External and infrastructure costs	Average range
Air pollution	2.3–15
Climate change	0.2–1.54
Infrastructure	2.1–3.3
Noise	0.7–4
Accidents	0.2–2.6
Congestion	2.7–9.3
Total	8–36

Source: Directorate-General for Energy and Transport

Some of these external and infrastructure costs are already covered by the charges imposed on the goods vehicle itself, as shown by the table below indicating average charges, comprising fuel and vehicle taxes and infrastructure charges. Also shown are average infrastructure charges, in the countries that levy them in the form of tolls or user charge stickers, and the rates planned in Germany and those already applied in Switzerland.

Whatever option is currently applied for motorway charging, the average charge for a heavy goods vehicle covering 100 km varies between EUR 12 and 24, of which little more than EUR 8 corresponds to infrastructure charges.

Where costs are increased by an infrastructure charge or fuel tax there is a drop in traffic, which has the effect of reducing external and infrastructure costs all the more quickly, leading ultimately to a **balance between costs and charges. The goal of effective and fair pricing must be to find that balance.**

The said balance will be achieved all the more easily by having fair and effective charging systems on all transport networks.

A number of measures already in the pipeline should help narrow the gap between costs and

⁽⁸¹⁾ Ibid.

Table 3: Costs and charges for a heavy goods vehicle travelling 100 km on a toll motorway with little traffic (EUR)

Total costs (external and infrastructure)	Average charges ⁽⁸²⁾	Average infrastructure charges	Charges planned in Germany	Charges already applied in Switzerland
8–36	12–24	8.3	13	36

Source: Directorate-General for Energy and Transport (1998 figures)

charges; for instance, the gradual tightening of motor vehicle emission standards should reduce air pollution. Pricing that takes account of the real level of costs generated by different types of engine, congestion and other external cost factors will not therefore mean a uniform rise in charges across the board. Charges are likely to be higher in areas with high traffic density than in less-developed regions.

Contrary to popular thinking, such integration would not work against European competitiveness. It is not so much the overall level of taxes that needs to change significantly, but rather their structure, which needs to be altered radically to integrate external and infrastructure costs into the price of transport. If some Member States wanted to raise the overall level of transport taxes, this policy could, as Mr Costa underlined ⁽⁸³⁾, be *‘designed in such a way as to avoid a net increase in taxation (including charges) in the economy as a whole’*; for instance by offsetting any increase in infrastructure charges by lowering existing taxes, such as taxes on labour, or by allocating revenue to the financing of infrastructure.

Systems to locate, identify and monitor vehicles and their loads will become increasingly reliable through the use of information and telecommunication technologies, especially satellite navigation systems (Galileo). Tariff schedules can then be more targeted and be drawn up according to infrastructure category (national, international) and use (distance travelled, length of time used). Other objective factors can also be taken into account, such as vehicle category (environmental performance, factors influencing infrastructure

deterioration ⁽⁸⁴⁾, even the loading ratio), level of congestion (period of the day, week or year) and location (urban, suburban, interurban or rural).

International standards are being adopted on short-range communication automatic toll systems, and work is under way to establish the contractual and legal aspects of network interoperability. Other aspects also need clarifying (how to handle users not possessing automatic equipment, fraud, etc.). Despite its efforts the Commission has not managed to convince operators to achieve operability on a voluntary basis and in the short term. **It therefore plans, on the basis of the current work, to present Community legislation in 2002 in the form of a directive to guarantee the interoperability of toll systems on the trans-European road network.** This will ensure users have a quick and easy way of paying infrastructure charges, using the same means of payment throughout the network without losing any time at toll stations. At present, for example, a motorist driving from Bologna to Barcelona has to pay tolls at more than six stations without the ‘electronic payment’ systems being harmonised, even within individual countries.

It should be noted that infrastructure charging that allows external costs, especially environmental costs, to be internalised in the price of transport could, in sensitive areas, replace the system of rationing transit rights, such as Austria’s ‘eco-points’ system whereby goods vehicles wishing to access the Austrian network are allocated points according to their environmental performance. The Commission will look into the expediency of proposing a transitional system to apply to sensitive mountain areas should it not be possible to bring the general modification of charging legislation into force at the beginning of 2004.

⁽⁸²⁾ Not including VAT.

⁽⁸³⁾ See footnote 78.

⁽⁸⁴⁾ In road transport, the number of axles and type of suspension, for example.

2. A profusion of regulations

Most modes of transport already have infrastructure charging systems, such as rail, port and airport taxes, air navigation charges and motorway tolls. These systems were conceived individually for each mode of transport and for each country, which sometimes leads to anomalous situations that can hamper international transport and even discriminate between operators and modes of transport. For instance, a goods train passing through heavily congested urban areas might have to pay charges to the infrastructure manager whereas a lorry can pass through an entire conurbation without paying any road charges.

In its 1998 White Paper on fair payment for infrastructure use, the Commission proposed a programme for a Community approach in stages. This programme is still far from taking concrete shape and the Community framework in this respect is still incomplete.

In the road haulage sector, the Commission's proposal to take better account of environmental costs in the Community framework for charging heavy goods vehicles for infrastructure use achieved only partial success, and even then only under the pressure of negotiations on the transport agreement between the European Union and Switzerland. The current Community framework for heavy goods vehicles simply establishes minimum vehicle charges, sets maximum limits on motorway network access rights and governs calculation of toll amounts ⁽⁸⁵⁾. **The European Union is currently made up of a Europe of tolls, where users have to pay on toll motorways, a Europe of 'eurovignettes' paid by heavy goods vehicles throughout the entire network, generally by the year, and a Europe where no charges are applied at all.**

The result is therefore a disappointment, in terms of both the harmonisation of national systems and the inclusion of environmental costs.

Current road pricing legislation

European law does not allow Member States to levy road charges above the level of infrastructure costs ⁽⁸⁶⁾. Moreover, while

⁽⁸⁵⁾ Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures.

⁽⁸⁶⁾ In its judgment of 26 September 2000 concerning the Brenner motorway, the Court of Justice of the European Communities drew attention to a number of obligations

charges have the advantage of being a system more in proportion with the intensity of use, they are usually only applied to motorways. In the Eurovignette system, heavy goods vehicles have to pay an annual charge according to the damage they cause to the environment and roads. Charges are based on emissions (Euro standard) and the size of the vehicle (number of axles) and range from EUR 750 to 1 550 per year. The system is restricted to six Member States (Belgium, Denmark, Germany, Luxembourg, Netherlands and Sweden). Nonetheless, this system ties in only partly with the principle of fair and efficient pricing (i.e. that external costs should be paid in full by users) since it is a fixed cost not linked to the distance covered by a vehicle in any one year. In maritime transport, the Commission is looking at the tariffs currently applied in Sweden in this sector, particularly port taxes and taxes to reduce pollutant emissions, in order to see whether this approach might encourage greater account to be taken of external costs elsewhere in the Community. In the light of this examination a Community framework may be proposed which links port taxes to these costs.

In rail transport, existing Community legislation already allows for rail traffic costs to be internalised where this does not affect the railways' competitiveness vis-à-vis other modes of transport. In other words, Member States may introduce rates that take account of environmental costs only where the latter are also paid by competing modes of transport. The possibility of noise-related charges still needs to be looked at and, if need be, a new pricing system introduced which takes account of this social cost.

In air transport, the proposal to regulate airport charges has not been followed up. Nonetheless, several other options are being examined in this sector, such as taxes on ticket prices, charges based on the distance covered and the type of aircraft engine used, and charges for take-off and landing ⁽⁸⁷⁾.

arising out of Community law in this area (C-205/98: *Commission v Austria*).

⁽⁸⁷⁾ The 1999 Communication on air transport and the environment analyses the various possible types of environmental charges, examines kerosene taxation and puts forward a more general strategy covering the full range of environmental impacts produced by aviation.

Generally speaking, the Member States' arrangements for the various transport modes vary appreciably, are fragmented and lack coherence on a Union-wide scale, which makes it difficult to take external costs into account.

3. Need for a Community framework

Several Member States have expressed their willingness to spread the external costs of transport infrastructure more equitably. Germany, the Netherlands and Austria, for example, plan to set up a system of charges based on distance covered instead of on a sticker issued for a given period of time or on tolls.

The current Community rules therefore need to be replaced by a modern infrastructure-pricing scheme which encourages advances of this kind while ensuring fair competition between the different modes of transport and more effective pricing. This kind of reform requires equal treatment for operators and between modes of transport. Whether for airports, ports, roads, railways or waterways, the price for using infrastructure should vary in the same manner according to category of infrastructure used, time of day, distance, size and weight of vehicle, and any other factor that affects congestion and damages the infrastructure or the environment.

This kind of change will require a root and branch review of accounts in the transport sector, including a close look at all taxes, rates and State aid in each mode of transport as well as external costs.

On the basis of the current work, the Commission plans to propose a framework directive in 2002 to establish the principles of infrastructure charging and a pricing structure for all modes of transport.

The proposal, which will leave each Member State wide scope in terms of implementation, will include a common methodology for setting price levels which incorporate external costs, and will specify the conditions for fair competition between modes.

This methodology is already well advanced, and the principal external costs it will take into account are those shown in Table 3.

For road transport, charges will vary according to the vehicle's environmental performance ⁽⁸⁸⁾. They will also be based on the type of infrastructure (motorways, trunk and urban roads), distance covered, axle weight and type of suspension, and degree of congestion. These charges will be introduced gradually and tie in with a reduction in other charges such as vehicle tax so as to minimise the impact on the sector.

This directive should gradually be applied to the other modes of transport. In rail transport, for example, charges will include mechanisms for allocating time slots and will be graduated according to scarcity of infrastructure capacity and adverse environmental effects. Maritime transport will need to integrate charges which incorporate costs relating to maritime safety (especially assistance to shipping at sea, buoyage, availability of tugs such as '*l'Abeille*'). All ships sailing in European waters should pay such charges.

In a good many cases, taking external costs into account will produce more revenue than is needed to cover the costs of the infrastructure used. **To produce maximum benefit for the transport sector, it is essential that available revenue be channelled into specific national or regional funds in order to finance measures to lessen or offset external costs (double dividend).** Priority would be given to the building of infrastructure that encourages intermodality and offers a more environmentally friendly alternative.

There might be insufficient surplus revenue in some cases where, for example, transport policy considerations call for major infrastructure to encourage intermodality, such as railway tunnels. **The framework directive will therefore have to authorise exceptions allowing an element to be added to the amount needed to offset the external costs. This element would be for the financing of alternative, more environmentally friendly, infrastructure. This option would be reserved for infrastructure essential for crossing natural, environmentally fragile barriers, and would have to be examined in advance and closely monitored by the Commission.**

⁽⁸⁸⁾ In addition to euro standards 1 to 5 used for emissions, this classification might reflect performance in terms of noise emissions.

B. The need to harmonise fuel taxes

Taxes on fuel complete the transport infrastructure charging picture by adding external costs to the prices paid by users. In particular, they incorporate the external cost component linked to greenhouse gas emissions. With the road transport sector now fully opened up to competition, the absence of harmonised fuel taxes seems increasingly to be an obstacle to the smooth functioning of the internal market.

Fuel tax is to a large extent made up of excise duty. The Member States decided unanimously in 1992 to introduce a Community system of taxation on mineral oils based on two directives providing for a minimum rate of tax on each mineral oil according to its use (fuel, industrial and commercial use, heating). In practice, excise duties are often way above the Community's minimum values, which have not been reviewed since 1992, and differ enormously from one country to another, ranging, for example, from EUR 307 per 1 000 litres on unleaded petrol in Greece to EUR 783 in the United Kingdom.

Moreover, several special arrangements allow Member States to waive or reduce excise duty on oil products. For instance, Community legislation allows exemptions to be made for fuel used in commercial aviation.

Community law also allows Member States to submit specific requests for exemption from, or reduction in, excise duties provided this is consistent with Community policy, notably on environmental protection, energy and transport, but also on the internal market and competition. These exemptions have encouraged the introduction of new technologies and clean fuels (e.g. unleaded or with low sulphur content).

Towards harmonised taxation of commercial road transport fuel

When fuel prices took off in the middle of 2000, the Community's road hauliers came under severe economic pressure. The fact is that fuel accounts for around 20 % of the operating costs of road haulage companies. Also, the structure of the sector, especially the large number of micro-businesses, weakens their negotiating power with customers, making them adjust their rates

more slowly to increases in the cost of raw materials. Furthermore, excise duty on diesel varies considerably from one Member State to another, ranging from EUR 246 to 797 per 1 000 litres, adding to tensions on a liberalised market.

The Commission also notes that excise duties on diesel are on average about EUR 140 (per 1 000 litres) lower than on unleaded petrol.

The principle of sustainable development also requires transport users to be presented to a greater extent with 'real' prices, i.e. including adverse external effects, particularly the effects of greenhouse gases. Taxation also clearly serves to offset the effect of fluctuations in the price of crude oil.

Uncoupling the taxation arrangements for fuel for commercial uses from the tax arrangements for fuel for private use would enable Member States to reduce the differences in tax on cars using petrol and cars using diesel.

What ought to be proposed in the short term, therefore, is harmonised taxation of fuel used for commercial purposes. The aim would be to introduce a harmonised Community excise duty on diesel for commercial uses which in practice would be higher than the current average tax on diesel. This approach would:

- **meet the requirements of Community policy on transport, the environment and energy by moving, thanks to increased excise duties, towards modal rebalance and greater internalisation of external cost;**
- **improve the functioning of the internal market by restricting distortions of competition;**
- **give the road transport sector a major edge in terms of greater retail price stability.**

In the medium term, it would be desirable for petrol and diesel to be taxed similarly for all consumers of fuel.

It should be pointed out here that Directives 92/81/EEC and 92/82/EEC provided for different excise duties on petrol (EUR 337 per 1 000 litres) and diesel (EUR 245 per 1 000 litres) used as fuel. Examination shows this petrol/diesel differentiation to have been clearly linked to the economic needs of road transport. At the end of the 1980s, when the directive was being drawn up, there was a

need to impose less taxation on road hauliers, the main consumers of diesel, so as not to jeopardise their businesses.

The Commission notes, finally, that when the price of crude increases significantly additional budgetary resources from greater VAT revenue could, if need be, provide the basis for a cyclical adjustment mechanism.

Lastly, substitute fuels often enjoy tax exemption or reduction, but to different degrees within the Member States. These substitute fuels are of particular importance both to the security of energy supply and to lessening the impact of transport on the environment. **The Green Paper on the security of energy supply proposes that 20 % of total consumption by 2020 be made up of substitute fuels. The future proposal for a directive on energy products, which will allow tax exemption for hydrogen and biofuels, should therefore be adopted as soon as possible.** Another key element in this programme of gradual introduction of different types of substitute fuels is the directive now

being drawn up by the Commission which sets a minimum percentage of biofuel to be added to diesel and petrol placed on the market.

Aside from fuel taxes, problems are also raised in certain countries by different VAT arrangements for air, rail and coach travel. These problems of unfair competition between modes, not to mention the risk of upsetting the proper functioning of the internal market, will need to be examined. In particular, air transport could be made liable to VAT.

In addition, there are considerable difficulties in determining the place in which transport service provision is to be taxed, difficulties which the Commission intends to resolve with new proposals put forward as part of its new VAT strategy. Lastly, the deductibility rules for the purchase of company cars vary from one Member State to another, resulting in differences of treatment which also need to be corrected. It should be noted here that a proposal harmonising entitlement to deduction is already before the Council.

III. Transport with a human face

The enormous changes wrought in the transport sector by opening up to competition and by technological progress should not obscure the fact that transport is not only a commodity subject to market rules; it is also a service of general interest for the public benefit. This is why the Commission wants to encourage measures in favour of intermodality for people and pursue its action on users' rights in all modes of transport, while also considering whether in future it might not also introduce user obligations.

A. Intermodality for people

In passenger transport, there is considerable scope for improvements to make travelling conditions easier and facilitate modal transfers, which are still highly problematic. Far too often passengers are put off using different modes of transport for a single journey. They have problems obtaining information and ordering tickets when the journey involves several transport companies or different means of

transport, and transferring from one mode to another can be complicated by inadequate infrastructure (lack of parking space for cars or bicycles, for example).

The principle of subsidiarity notwithstanding, priority should be given in the short term to at least three fields of action:

1. Integrated ticketing

To facilitate transfers from one network or mode to another, encouragement needs to be given to the introduction of ticketing systems which are integrated (and thus ensure transparency of fares) between rail companies or between modes of transport (air — coach — ferry — public transport — car parks).

Some railway companies, as in the Netherlands, are already offering an integrated 'train & taxi' service in a single ticket. This same could be done for public transport or for train/air services

and car rentals. Integrating the services offered by different operators within a single tariff band and with a single ticket, as has existed in Île-de-France since 1976 and in Naples since last autumn, offers users greater flexibility and so makes public transport more attractive ⁽⁸⁹⁾.

2. Baggage handling

Intermodality also means providing related services, especially baggage handling. While it is currently possible to check in for a flight at a station, passengers have to look after their baggage themselves and hold on to it during transfers.

Air-rail: a combination that works

An innovative way of promoting intermodality for travellers has been developed in Germany and between Belgium and France.

Lufthansa has concluded an agreement with Deutsche Bahn to offer trips combining a rail journey between Stuttgart and Frankfurt with flight connections in Frankfurt to or from anywhere in the world. Passengers can book a single rail-air ticket in a single transaction. They can check in their baggage when arriving at the station and in the event of a problem enjoy the same rights as ordinary air passengers, regardless of whether they are dealing with Deutsche Bahn or Lufthansa.

Should this service, which is currently at the test stage, prove a success, the two companies could conclude similar agreements for other connections where the train journey time is under two hours. Estimates point to 10 % of Lufthansa's short and medium-haul domestic flights eventually transferring to rail. The capacity this creates would be to the benefit of medium and long-haul flights.

Similarly, Air France and Thalys have concluded an agreement whereby all Air France customers travelling from Brussels to catch a medium/long-haul flight in Paris will travel to Paris on the Thalys train. For this

purpose, Air France directly charters two coaches on the five Thalys trains which serve Charles de Gaulle airport each day, and has provided a ticket counter and train crew at the railway station in Brussels. The reservation system treats the Thalys journey as an Air France flight, and customers do not need to make any additional reservation, but travel with just their plane ticket, as previously. Passengers and baggage undergo preliminary check-in at the station in Brussels; in future, full baggage check-in will be possible at the station of departure.

Innovative and efficient services of this kind should help reduce congestion problems in some of Europe's main airports and improve the punctuality and quality of passenger transport.

3. Continuity of journeys

Journeys have to be thought of as continuous, which means land-use and town planning policies will play a vital role. The main metro, train and bus stations and car parks should be geared towards exchanges between the car and public transport and should offer related services (e.g. shops), and so encourage the use of public transport, which causes less pollution. Providing car parks on the outskirts of towns (and also near railway, underground, bus and tram stations) where motorists can leave their cars and link up with the main means of public transport (including taxis) is an option already implemented in a number of cities, such as Munich and Oxford. Adapting public transport to carry bicycles is another way of encouraging a certain form of intermodality over short distances. It should be recognised that the bicycle is still too often neglected as a mode of transport, even though some 50 million journeys (i.e. 5 % of the total) are made by bicycle each day in Europe. The proportion is as high as 18 % in Denmark and 27 % in the Netherlands.

The success of intermodality also requires recognition of the role of taxis, a role which goes far beyond merely carrying passengers, but also includes additional services (minor carriage of goods, express deliveries, etc.). Equally, the development of intelligent traffic systems to inform passengers of transport conditions should eventually help reduce the time lost on transferring between modes. Successful intermodality obviously depends also on easy

⁽⁸⁹⁾ 1976: introduction of the *Carte Orange* combining SNCF-RATP-APTR and FNTR. Since November 2000 Naples and 43 municipalities have had a single transport ticket called *UNICO*. The experiment was due to run for a year, but consideration is already being given to extending it.

access to all transport modes. In this context, it is important that account be taken of the difficulties encountered by people with reduced mobility who use public transport, for whom changing from one mode to another can sometimes be a real obstacle.

B. Rights and obligations of users

The gradual opening-up of markets in the various transport modes has placed operators at the centre of transport development. Though users may have derived certain benefits in terms of prices, this is not a reason to overlook their rights. Passengers must be able to invoke their rights, both vis-à-vis the transport company and vis-à-vis the public service. The Commission's aim over the next 10 years is to develop and define the rights of users, to which end it will work with consumer and user organisations. In this context it will also consider whether user rights need to go hand in hand with user obligations.

1. User rights

It is on air transport that the Commission has thus far concentrated its efforts to accompany the opening-up of markets and protect passengers against conflicting national rules and regulations. Several texts have defined the rights of passengers. All of these rights have been published in a **charter** which, thanks to their collaboration, is **displayed in most airports in the Community**. The Charter specifies the national authorities which users can contact in order to assert their rights and inform the Commission of how they have been treated. It will be adapted to reflect legal developments and voluntary agreements.

New proposals have been made to increase the airline companies' liability in the event of accidents, delays or loss of baggage. **The Commission will shortly be proposing a reinforcement of passenger rights, including compensation where travellers are delayed or denied boarding due to overbooking by airlines**. Measures will also be proposed which give passengers the benefit of service quality indicators. In line with current practice in the United States, and following up the commitment it has already made, the Commission is therefore going to **publish a classification of airlines**

according to their performance (or lack of performance) in terms of punctuality, number of passengers denied boarding, baggage loss levels, etc. Users will thus be given objective criteria for comparing the various airlines and this transparency will without any doubt be the best way of putting pressure on airlines to improve their services.

Passengers are also entitled to be properly informed of the contract they enter into with the air carrier; the clauses of that contract must be fair. The Commission will take initiatives along these lines in 2001.

At the same time, working in conjunction with the European Civil Aviation Conference (ECAC), the Commission has launched initiatives to bring European airlines and airports to an agreement on voluntary codes to round off and clarify the regulatory framework.

Lastly, the Community must address the problems all passengers encounter in enforcing whatever rights they have: how to identify the party responsible; how to start procedures in other Member States; how to obtain compensation for damage. **This is necessary inasmuch as in airports, unlike in ports, no-one seems to be in charge and all the parties involved (airport operators, service providers, police, airlines, etc.) pass the buck for any problems encountered by passengers.** This is why air passengers need to be given greater protection, as well as access to rapid means of redress.

The next step is to extend the Community's passenger protection measures to the other modes of transport, notably rail and maritime navigation and, as far as possible, urban transport services. Specific new measures are needed on users' rights in all modes of transport so that, regardless of the mode of transport used, users can both know their rights and enforce them. These measures need in particular to meet users' requirements as referred to in the Commission Communication on services of general interest in Europe ⁽⁹⁰⁾.

2. User obligations

It would nonetheless be oversimplifying matters and even unfair on transport professionals not

⁽⁹⁰⁾ Paragraph 11 of the Communication 'Services of general interest in Europe' COM(2000) 580.

to point out that users also have obligations during their journeys. Irresponsible behaviour, especially as encountered on aircraft, can have serious consequences for safety. The risk of fire on board from a cigarette smoked furtively in the toilets of an aircraft is a serious in-flight problem. If a fire breaks out stewards only have one and a half minutes before the toxic fumes spread.

Air France classifies on-board incidents according to three degrees of severity.

- 1. Simple verbal altercation, passive resistance.**
 - 2. Unruly and insulting behaviour, aggression, cigarettes smoked in toilets.**
 - 3. Flight safety threatened, physical violence.**
-

Passenger aggression, sometimes fuelled by alcohol consumption, has prompted some airlines to provide psychological training for their staff on how to defuse situations. In fact, this aggression is also encountered against drivers and ticket inspectors on public transport and trains. Penalties for such acts of indiscipline run first of all into practical problems, but also raise legal problems. Thought needs to be given at European level to finding answers to these legal problems.

The Commission will publish a new version of the air transport Charter covering the rights and obligations of passengers and including the latest legal developments, and will start producing a charter of users' rights and obligations for all modes of transport.

3. A high-quality public service

Providing a physical link in both social cohesion and balanced regional development, transport is a major component of public service. It is, moreover, the only area for which the Treaty of Rome expressly enshrines the notion of public service. Article 73 of the EC Treaty stipulates that '*aids shall be compatible with this Treaty if they meet the needs of coordination of transport or if they represent reimbursement for the discharge of certain obligations inherent in the concept of a public service.*'

In a declaration on services of general economic interest, the Nice European Council in December

2000 specifically stressed the importance of such services, considering *inter alia* that '*there is a need here especially for clarification of the relationship between methods of funding services of general economic interest and application of the rules on State aid. In particular, the compatibility of aid designed to offset the extra costs incurred in performing tasks of general economic interest should be recognised, in compliance with Article 86(2).*'

This public service role may therefore involve special arrangements regarding competition law or the freedom to provide services, but it must also comply with the principles of neutrality and proportionality. The role of the public service is to serve the interests and needs of its users, not its officers and officials, and to ensure that services operate smoothly at all times. Nonetheless, recent industrial action in some countries has led operators that were using rail transport to have second thoughts because of its lack of reliability and to switch to road transport.

The public service requirement (e.g. frequency and punctuality of services, availability of seats, preferential fares for certain categories of user) is the main tool for ensuring that services of general economic interest are provided in the transport sector. Thus a Member State or any other public authority can, under certain conditions and without impeding competition, require, or reach an agreement with, a private or public undertaking to meet public requirements which that undertaking would not take on (or at least not in the same way) if it were only considering its commercial interests.

The Commission recently proposed a new approach to inland transport, to open up the market while guaranteeing the transparency, quality and performance of public transport services **by means of regulated competition**. The draft regulation ⁽⁹¹⁾ stipulates that the national or local authorities must see to it that a suitable public transport service is put in place, based on minimum criteria such as the health and safety of passengers, accessibility of services, level and transparency of fares and limited contract duration. To this end, the authorities' initiatives will take the form of public

⁽⁹¹⁾ Proposal for a regulation of the European Parliament and of the Council on action by Member States concerning public service requirements and the award of public service contracts in passenger transport by rail, road and inland waterway. COM(2000) 7.

service contracts awarded by tender for periods of five years. Nonetheless, public transport operators will, by way of derogation from this procedure, be able to conclude public service contracts with a specific operator below an annual threshold of EUR 800 000 and to take account of safety considerations in certain rail services. Provisions are also planned which will control mergers and protect employees in the event of a change of operator.

Generally speaking, experience has shown that limited amounts of aid have not threatened to distort competition or affect trade. Nonetheless, and contrary to practice in the other economic sectors, all aid to transport still has to be notified in advance to the Commission. **This general obligation seems disproportionate, especially when the aid is intended to compensate for public service obligations on links with the Community's outlying regions and small**

islands. The Commission will be proposing an alignment of procedures in this area.

To guarantee users a high-quality, affordable, continuous service throughout the Community, and one which complies with the Community competition rules, the Commission will continue its work to ensure that transport services of general economic interest are governed by a series of general principles, notably:

- **use of the tendering procedure within a clear legal framework defined at Community level;**
 - **granting of exceptions or exclusive rights where necessary;**
 - **awarding financial compensation to operators responsible for performing public service tasks.**
-

IV. Rationalising urban transport

The expanding urban fabric, lifestyle changes and the flexibility of the private car combined with not always adequate public transport provision have over the last 40 years caused a huge upsurge in traffic in towns. Though decentralisation of activities or housing may occasionally have been flanked by the development of appropriate public transport infrastructure or services, the lack of an integrated policy approach to town planning and transport is allowing the private car an almost total monopoly. Omnipresent and a burden though it may be in the town centres, it is above all in the peripheral areas of towns and cities that traffic growth has been fastest. However, in these areas, where transport needs are harder to determine and satisfy, public transport is not proving flexible enough in its present form. And to make matters worse a feeling of insecurity puts people off using public transport in certain areas and at certain times of day.

Increased traffic and urban congestion go hand in hand with more air and noise pollution and accidents. Frequent short journeys made with the engine cold increase fuel consumption exponentially, and emissions may be three or four times higher while traffic speed is three or four times slower. Urban transport on its own

accounts for 40 % of carbon dioxide emission from road vehicles. Carbon dioxide is the main greenhouse gas causing climate change. In addition, there are the other pollutants which have a disturbing effect on the health of town and city dwellers, in particular nitrogen oxides, which cause peaks in ozone levels, and unregulated small particles. The most vulnerable sections of the population, such as children, the elderly and the ill (with respiratory, cardiovascular or other diseases), are the chief victims and some studies have put the cost to the community at 1.7 % of GDP ⁽⁹²⁾. In terms of safety, one fatal accident in two takes place in urban surroundings, and the highest casualties are among pedestrians, cyclists and motorcyclists.

Even if the subsidiarity principle dictates that responsibility for urban transport lies mainly with the national and local authorities, the ills besetting transport in urban areas and spoiling the quality of life cannot be ignored. The big problem these authorities will have to resolve, sooner than might be thought, is that of traffic

⁽⁹²⁾ World Health Organisation. *Health costs due to road traffic related air pollution. An impact assessment project for Austria, France and Switzerland.* June 1999.

management and in particular the role of the private car in large urban centres. However one looks at the problem (pollution, congestion, lack of infrastructure), **society is taking the line that it has to be curbed**. The alternative is to promote clean vehicles and develop good-quality public transport.

The subsidiarity principle allows the European Union to take initiatives, including regulatory initiatives, to encourage the use of diversified energy in transport. On the other hand, the Union cannot use regulation as a means of imposing alternative solutions to the car in towns and cities. That is why the Commission is confining itself to promoting good practice.

A. Diversified energy for transport

Conventional heat-engine vehicles, whose energy efficiency is far from optimal, are one of the main sources of urban pollution and greenhouse gases and contribute to the European Union's excessive energy dependency. Important progress has been made thanks to anti-pollution standards for motor vehicles and fuel quality. The tougher standards already adopted will gradually deliver results, as the graph below shows.

This genuine progress should not overshadow the inadequacy of the measures taken to date

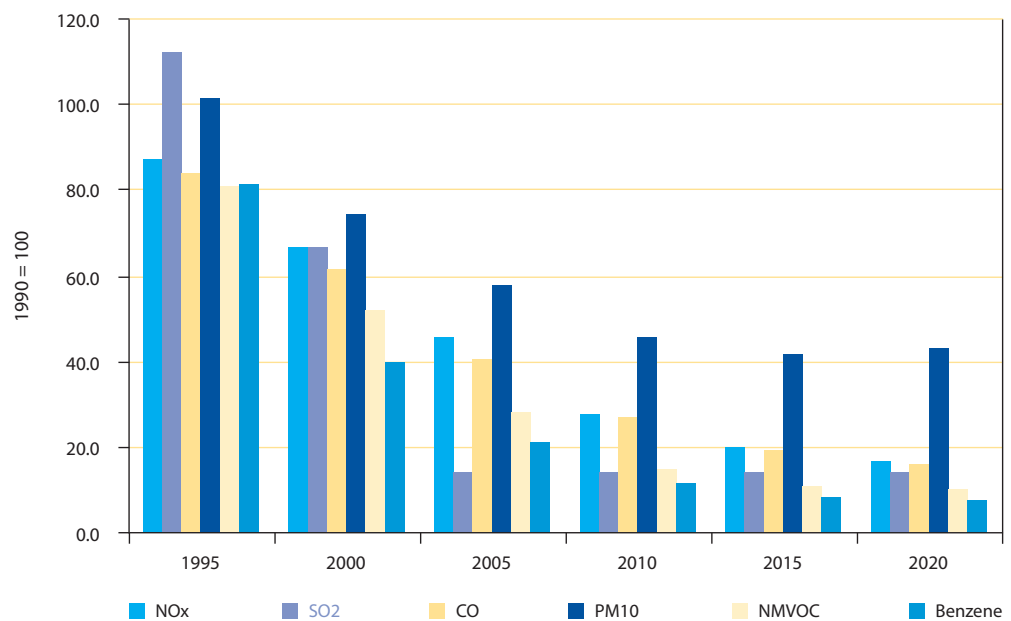
both to reduce greenhouse gas emissions from motor vehicles and to reduce the European Union's energy dependency. The agreement with the Association of European Carmakers should produce a 25 % reduction in average emissions of carbon dioxide from new cars by 2008. On top of this agreement, for which new emission reduction objectives ought to be set for after 2008 and extended to utility vehicles, additional measures should be taken at Community level to introduce substitute fuels, especially biofuels, and to stimulate demand by experimentation.

1. Establishing a new regulatory framework for substitute fuels

Research and development work has also brought progress in the development of new vehicles which run on lower-emission alternative energies. Urban transport is already providing a useful market for expanding the use of **alternative energies**. Several European cities have already set things in motion: Paris, Florence, Stockholm and Luxembourg, to name but a few, are already using buses which run on natural gas, bio-diesel or zero-sulphur diesel. In future, private cars and heavy goods vehicles too could run on alternative energy.

The most promising forms are biofuels in the short and medium term, natural gas in the

Fig. 5 — Reduction in road pollution as a result of the auto-oil directives



medium and long term and hydrogen in the very long term. In the Green Paper on the security of the European Union's energy supply the Commission therefore proposed that the objective for road transport be to **replace 20 % of conventional fuels with substitute fuels by 2020.**

The spread of biofuels will help reduce the European Union's energy dependency, improve the environment and also diversify production and jobs in agriculture. Indeed, the production of raw materials for biofuels may be of particular interest under the common agricultural policy for creating new economic resources and preserving employment in the rural community ⁽⁹³⁾.

To promote biofuels the Commission intends to put forward two specific measures in 2001:

a directive on the gradual introduction in each Member State of a minimum percentage of compulsory biofuel consumption: a 2 % rate will be proposed as a first stage, with total flexibility as to whether this objective is achieved by mixing biofuels with fossil fuels or by using pure biofuels. In this way, unforeseen effects on engines and the environment will be avoided. At the same time it will create a stable market and should increase fivefold the production capacity of existing biofuels. The second stage will need to aim at achieving a biofuel penetration rate of almost 6 % by 2010;

new Community rules on tax reductions for biofuels: while meeting the need to approximate the national arrangements on biofuel taxation, the proposal will also help Member States create the necessary economic and legal conditions for achieving, and even exceeding, the objectives laid down in the above-mentioned proposal for a regulatory directive. This proposal would give Member States the option of introducing tax reductions consistent with their budgetary constraints, with local circumstances (e.g. for agricultural crops) and with the technological choices they make.

A review will also be needed of the overall consistency of automobile taxes and the scope

⁽⁹³⁾ If biofuels accounted for 1 % of the Union's overall consumption of fossil fuels, this would result in jobs being created for some 45 000 to 75 000 people.

for creating a broader framework at Community level for the introduction of mechanisms for differentiating passenger vehicle taxes according to environmental criteria. This new approach, which can be designed to have no impact on the Member States' budgetary revenue, would make car taxes 'greener' by encouraging people to buy and use more environmentally friendly vehicles.

2. Stimulating demand by experimentation

For natural gas and hydrogen, work is still needed to single out the most effective approach for encouraging the spread of these fuels to an extent consistent with achieving the ambitious target of 20 % of all fuels being substitute fuels. As the Green Paper on the security of energy supply has already emphasised, **the available new clean car technologies will in future need to be given greater Community support, especially under the sixth framework programme of research.** For the immediate future, the Commission has brought together several sources of financing in the Civitas initiative. Launched in October 2000, Civitas's aim is to help realise innovative projects on clean urban transport. A budget of EUR 50 million has been allocated under the fifth framework programme of research and development. A total of 14 pioneering cities have been pre-selected ⁽⁹⁴⁾, while five cities in the countries which are candidates for accession have been associated ⁽⁹⁵⁾.

Great promise is held out by the development of a new generation of hybrid electric cars (electric motor coupled with a heat engine) ⁽⁹⁶⁾, cars which run on natural gas and, in the longer term, cars which run on a hydrogen fuel cell. The battery-driven electric car is also an example of directly applicable technology. However, with its range currently restricted to around 100 km, sales are confined to niche markets usually made up of captive fleets of municipal vehicles, or public services (water, electricity, gas, postal services, etc.) which only cover short distances each day.

⁽⁹⁴⁾ Aalborg, Barcelona, Berlin, Bremen, Bristol, Cork, Gothenburg, Graz, Lille, Nantes, Rome, Rotterdam, Stockholm and Winchester.

⁽⁹⁵⁾ Bucharest, Gdynia, Kaunas, Pécs and Prague.

⁽⁹⁶⁾ One might also cite hybrid vehicles which have a small-capacity heat engine which acts as a generator to recharge the batteries. This gives them a greater range than conventional electric vehicles.

In La Rochelle, the 'Liselec' experiment is enabling the public transport operator to offer its customers a fleet of 50 electric vehicles available on a self-service basis at high-use locations. Over 400 subscribers are already taking advantage of this new offer. Following the example set in Genoa, the municipal authorities have established zones where priority for access/parking is given to clean cars. For experiments such as these to bear fruit, they need to be encouraged on a scale large enough to have an appreciable impact on air quality. The vehicles involved need to use non-petroleum fuels so as to lower greenhouse gas emissions and reduce our dependency on oil.

Thought might therefore be given to developing the use in towns and cities of taxis and utility vehicles which run on electricity or natural gas or even hydrogen (fuel cell) to perform deliveries (including services of public interest). Under the principle of subsidiarity, any incentives would come under national or regional jurisdiction.

B. Promoting good practice

Traffic congestion and pollution — the two are closely linked — are among the things that detract from town living, and one of the main causes of congestion is excessive use of private vehicles.

We therefore need to make the alternatives to the car more attractive in terms of both infrastructure (metro lines — trams — cycle tracks⁽⁹⁷⁾ — priority lanes for public transport) and service (quality of service, information given to users). Public transport needs to achieve levels of comfort, quality and speed that come up to people's expectations. This quality option has been the choice of many European cities which have decided to innovate by bringing into service new metro or tram lines or new buses with easier access for people with reduced mobility. It is essential for public transport to adapt to societal changes: journeys are becoming increasingly staggered throughout the day and may make the separation between peak and off-peak hours a thing of the past. Similarly, the construction of

⁽⁹⁷⁾ Protected, so that cyclists are not risking their lives every time they use them.

new housing or shopping centres on city outskirts needs to involve a change in the routes and means of transport used by public transport operators.

Light rail vehicles running on segregated track — highly valued today by many towns and cities — are an economic form of transport that is also popular among passengers, as the designers have revitalised the trams with a decidedly futuristic look⁽⁹⁸⁾. Cities such as Vienna, Stuttgart, Freiburg, Strasbourg and Nantes have made tangible progress in shifting the balance between their transport modes by opting for this form of transport. They have put the brakes on car use by investing in non-road transport modes, and have shown that the proportion of car use can be reduced by 1 % per year, whereas in most city centres it is growing by more than that.

Some cities have adopted by-laws to keep to the strict minimum the number of parking spaces to be provided with each new office building, making car use less practical.

Some local authorities are planning to allocate priority lanes to public means of transport (buses and taxis) and also to private vehicles being used for car pooling, for example, while increasing the number of lanes reserved for cyclists and even motorcyclists. In cities and conurbations, initiatives could be encouraged to persuade the largest employers (firms or administrations) to help organise their employees' journeys or even to pay for public transport. This has been done in Vienna, for example, where the metro is partly funded by the city's companies.

Recent years have seen a development promising an innovative form of mobility, associating 'car sharing' with other means of transport⁽⁹⁹⁾. Alongside the development of new means of public transport, the reduction of urban congestion must also involve setting up urban infrastructure-charging schemes, the most simple form of which is charging for parking. Some cities, including London, are envisaging other, more elaborate forms involving road

⁽⁹⁸⁾ Accessibility has been improved, for people with reduced mobility too, thanks to the introduction of purpose-built low-floor trams. New projects, financed in part from Community funds, have made it possible to develop other innovative solutions which are going to revolutionise the image of the tram.

⁽⁹⁹⁾ Notably in cities such as Bremen and Vienna.

charging based on electronic vehicle-identification technology and an electronic payment collection system, which could be harmonised at Community level ⁽¹⁰⁰⁾ (see section on charging). However, urban road-charging schemes are well received by the local population only if competitive alternatives are on offer in terms of public transport services and infrastructure. This is why it is essential to use the revenue to help finance new infrastructure for all-round improvement of urban transport services ⁽¹⁰¹⁾.

In line with the principle of subsidiarity, and aware that most measures will fall within the

⁽¹⁰⁰⁾ See the eEurope ACTION plan proposed by the Commission to the Feira European Council.

⁽¹⁰¹⁾ Cities such as Bristol, Copenhagen, Edinburgh, Genoa, London and Rome are studying and testing urban road charges as part of an integrated programme to reduce congestion and significantly improve their public transport networks.

jurisdiction of the national, regional or local authorities, the Commission intends to promote the following:

- **support (using Community funds) for pioneering towns and cities ⁽¹⁰²⁾, with each Member State remaining responsible for coming up with national plans;**
 - **increased use of clean vehicles and of forms of public transport accessible to all users, including people with reduced mobility (especially those with disabilities and the elderly);**
 - **identification and dissemination of best urban transport system practice, including urban and regional rail services, and best practice in management of the relevant infrastructure.**
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⁽¹⁰²⁾ Civitas initiative.

MANAGING THE GLOBALISATION OF TRANSPORT

Much of transport is regulated at international level. The beginnings of transport regulation are found in Roman law. Since the Renaissance, international law has developed in part around principles governing transport, especially shipping law. Over the last two centuries, the regulatory framework has been built up within intergovernmental organisations, from the Central Commission for Navigation on the Rhine (the first of its kind) to the International Civil Aviation Organisation.

This is one reason why it is hard for the common transport policy to secure a position between, on the one hand, the production of international rules within established organisations and, on the other, national rules which often seek to protect domestic markets.

The main objective of the international rules being to facilitate trade and commerce, they fail to take sufficient account of key environmental protection concerns, security of supply requirements or the industrial and social

dimensions. For some years now, this has been leading certain countries such as the USA to implement regional transport accords, particularly in the shipping and aviation sectors, to protect specific interests. The European Union has followed suit in order to guard against disasters at sea and to do away with inappropriate rules on aircraft noise or on compensation for passengers in the event of accidents.

In addition, transport services — particularly in air and sea transport — should be included in the negotiations being conducted within the World Trade Organisation. The Community could act as a catalyst in opening up markets that are still too closed.

With enlargement on the horizon, and the transport policy and trans-European network soon to extend across the continent, Europe needs to rethink its international role if it is to succeed in developing a sustainable transport system and tackling the problems of congestion and pollution.

I. Enlargement changes the name of the game

The unprecedented enlargement of the next few years will give the Union a truly continental dimension. Though its maximum extent already exceeds 4 000 km, for example, between the south of Spain and the north of Finland, enlargement will extend the Union's uninterrupted landmass to more than 3 000 km, for example, between Lisbon and Constanza in

Romania. Its fleet is set to increase substantially, given that the flags of Cyprus and Malta alone represent a tonnage almost equivalent to that of the current Community fleet.

Adoption of the Community transport *acquis* does not appear to be posing any major problems for the candidate countries. The latter

are already linked to the EU Member States by international agreements, notably covering the international carriage of goods and air transport. One problem, however, which is not specific to transport, concerns their administrative capacity to apply the *acquis* and more particularly to recruit sufficient numbers of inspectors.

The first challenge in making enlargement a success will be to connect the future Member States to the trans-European network; this is a precondition for their economic development, based on anticipated growth in transport, as was the case with the accession of Spain, Portugal and Greece.

However, the substantial role played by rail transport in the candidate countries means that enlargement is above all a prime opportunity to restore the modal balance of transport.

Last but not least, enlargement will help step up maritime safety.

A. The infrastructure challenge

As identified in Agenda 2000, the trans-European transport network of the candidate countries amounts to some 19 000 km of roads, 21 000 km of railways, 4 000 km of inland waterways, 40 airports, 20 sea ports and 58 inland ports. The ratio of network length to surface area is generally much lower in the candidate countries than in the Union, while the ratio of network length to population is generally about the same.

In this context, enlargement is set to trigger a veritable explosion in exchanges of goods and people between the countries of the Union.

In 1998, exports from the candidate countries to the Union were already running at 112 million tonnes, that is, 2.2 times the 1990 level, and were worth EUR 68 billion. Their imports stood at 50 million tonnes, more than five times the 1990 level, and were worth EUR 90 billion. Bottlenecks are already forming at the borders and there is a real risk of saturation on the major east-west corridors. It is not unusual for queues of lorries more than 50 km in length to form at the German-Polish border.

The lack of efficient transport infrastructure networks to cope with this anticipated growth in movements is still greatly underestimated.

And yet that infrastructure is a key element of the strategy for the economic development of the candidate countries and their integration into the internal market.

For historical reasons, the links between the EU Member States and the candidate countries are poorly developed. Intensive technical cooperation between the national experts of the various countries and the Commission has already led to the identification of several corridors, as agreed by the Pan-European Conferences in Crete in 1994 and Helsinki in 1997, and the launch of a global assessment of the candidate countries' infrastructure needs (TINA ⁽¹⁰³⁾).

It has emerged from this that public budget resources fall manifestly short of the EUR 91 billion needed to build the priority transport infrastructure in the candidate countries of central and eastern Europe by 2015, that is, 1.5 % of their GDP during this period. Moreover, the aid scheduled under the instrument for structural pre-accession policies (ISPA) is also extremely limited (EUR 520 million per annum for transport) ⁽¹⁰⁴⁾. **This is an issue of key importance in the context of the Community's future financial perspective.**

It is therefore essential for private funding to be mobilised, particularly through European Investment Bank loans. As far as possible, the countries concerned will have to tap non-traditional sources of financing, based on funds derived from fuel taxes and infrastructure charges, as some of them are already doing.

Priority must be given to funding infrastructure that eliminates bottlenecks, particularly at the frontiers, and modernises the railway network. In addition to restoring or building infrastructure, it is essential to connect it to the current trans-European transport network. Consequently, the revision of the TEN guidelines which the Commission will propose for 2004 will have to take account of the candidate countries.

⁽¹⁰³⁾ Transport infrastructure needs assessment (TINA). Final report published in October 1999.

⁽¹⁰⁴⁾ On accession, the candidate countries will also qualify for the structural aid already provided for under the 'enlargement' heading of the financial perspective adopted at the Berlin Summit. The proportion reserved for transport is not known, however.

B. The opportunity offered by a well-developed rail network

Rail still retains over 40 % of the freight market in the countries of central and eastern Europe (not including maritime cabotage), a level similar to that in the United States, as compared with 8 % in the European Union. On the basis of current trends, this modal share could fall to 30 % by 2010. Commodity flows began to tumble in 1990, reaching their lowest point in 1995 when they stood at 65 % of their 1989 levels. This drop followed the collapse of traditional heavy industry and the economic crisis that hit these countries. The rail companies have had to cope with radical changes in the economy, for which they were ill-prepared. The freight service they operated essentially involved moving heavy goods — with low value-added — between mining areas and industrial combines. This ‘traditional’ type of transport is steadily disappearing from these countries as modern economies develop. ‘Just in time’ and intermodality were unknown concepts only a few years ago, and the entire rail transport system will have to be reviewed: the whole thing is outdated, investment in infrastructure and new rolling stock having plummeted in recent years.

The existence of this particularly extensive, dense rail network and of significant know-how is a unique opportunity, however, which must be seized in order to rebalance the transport modes in an enlarged Europe. Every effort must therefore be made to convince the countries in question of the need to maintain the railways’ share of the freight market at a high level, with a target of around 35 % **for 2010**.

One way of averting this decline is to reform rail transport in the candidate countries (separating operation of services from infrastructure management, restructuring the railway companies, etc); this needs to be accomplished before road transport completely gains the upper hand.

Maintaining the modal share of the railways in the candidate countries will also require even firmer action on road transport to ensure fair competitive conditions between the different transport modes, inasmuch as road transport will find itself even more competitive once it is integrated into the Community market. The

impact of the road haulage markets being opened up upon accession should not be overestimated, however, given the small proportion of the candidate countries’ fleet likely to be authorised (technical standards) to carry out international transport operations, and the relative convergence in terms of operating costs, including pay, that is gradually taking place (see table below). East–west traffic represents 3 % by value of total international road haulage in the European Union. For this reason, the Member States are on the whole in favour of opening up the road haulage market immediately upon accession, provided the candidate countries effectively apply the Community *acquis*. However, there is a considerable difference in costs owing to the low rates of drivers’ pay in these countries, which could have an adverse effect on certain markets in the short term.

Effective application of the Community road haulage *acquis* should also bring significant environmental and road safety benefits (less polluting lorry fleets).

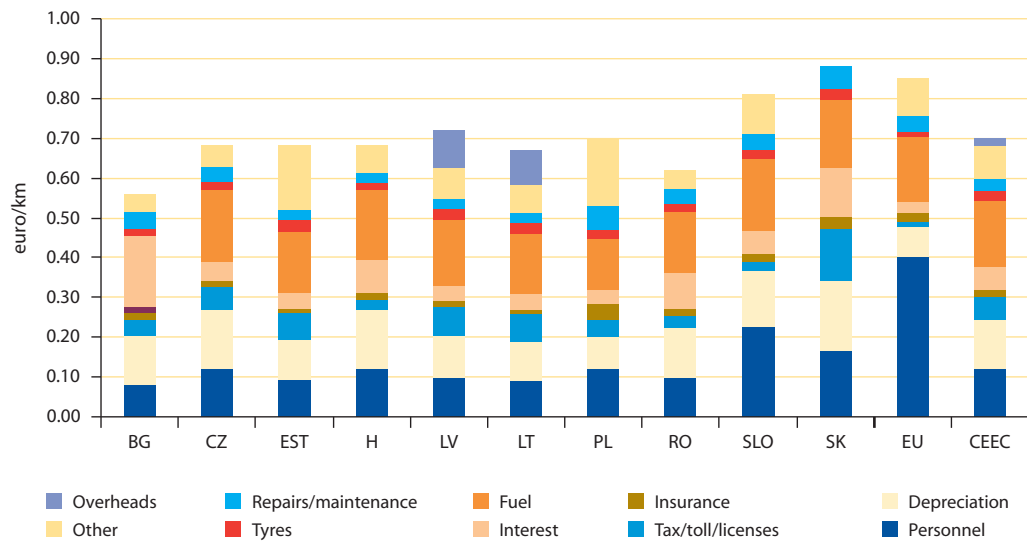
C. A new dimension for shipping safety

The extension of the Community’s seaboard upon enlargement will allow it to organise the monitoring of shipping more effectively and to minimise the risk of accidents, particularly those caused by ships carrying dangerous or polluting goods. It must be remembered that 90 % of oil trade with the European Union is seaborne and that almost 70 % of imports pass the shores of Brittany and the English Channel.

To reduce these risks, the Commission has proposed a package of major measures designed principally to:

- reinforce port State controls;
- tighten up the legislation on classification societies to ensure that only competent societies meeting strict quality criteria will be authorised to act on behalf of Member States;
- gradually phase out old single-hull tankers;
- introduce a compensation system for victims of marine pollution;
- create a European Maritime Safety Agency.

Fig. 6 — Costs per km of international road haulage (1998)



Source: Cost and benefit of enlargement study for Phare MCTP, Halcrow/NEI, 1999.

Yet even when all these — urgently required — measures have been adopted, the Community will still have few means at its disposal to tackle the risks inherent in the substandard fleets of some candidate countries and the inadequate safety inspections in certain ports. Enlargement should enable more stringent controls of the type proposed by the Commission after the Erika accident to be carried out on ships in all ports, which should lead to the gradual disappearance from the European continent of **ports of convenience** with their notoriously inadequate controls.

Enlargement must also be the occasion on which to include not only technical requirements regarding ships' structure and maintenance in the criteria to be met by ships calling at European ports, but also social standards, starting with the International Labour Organisation's standards for seafarers.

The blacklist of substandard ships which will soon enable the European Union to close its ports to dangerous ships should logically include ships whose crews are underqualified and underpaid. To this end, the European Union should rapidly define the minimum social conditions it intends to enforce for crews. The Commission is proposing ⁽¹⁰⁵⁾ to initiate a

dialogue among all the international maritime actors to examine the issues of training and shipboard living and working conditions. This should make it easier for the enlarged Europe with double the tonnage of the present fleet to take steps against ships flying **flags of convenience and the emergence of ports of convenience**.

Whatever the European Union's firmness of purpose in this respect, one of the key problems is the lack of any powers of inspection or enforcement on the part of the International Maritime Organisation (IMO), the body which makes the rules. The IMO needs control instruments to make flag States assume their responsibilities. Taking the International Civil Aviation Organisation as a model and in view of enlargement, the European Union should support Japan's initiative to give the IMO the power to audit flag States. Internationally acknowledged inspectors could thus carry out audit missions enabling States to identify shortcomings in ships flying their flag. This would be the first step in verifying compliance with the international obligations entered into by all States party to the IMO conventions. While the recommendations emerging from these audits might not be internationally binding, they could nevertheless be incorporated into the blacklist of ships banned from Community ports.

⁽¹⁰⁵⁾ COM(2001) 188 final.

In addition, best social or fiscal practices developed at national level, such as the tonnage-based taxation system, should be emulated **to promote the reflagging of as many ships as possible to Community registers**. Under this system, shipowners pay a tax based on the tonnage they operate, regardless of the actual earnings of the business. The Commission plans to present a proposal on this subject in 2002.

Stricter control of flags of convenience, particularly from the point of view of compliance with minimum social standards, is imperative not only to prevent accidents involving ships carrying polluting substances, but also to combat the new form of **organised illegal immigration**. Recent events have shown that illegal immigration is developing around the deliberate beaching of entire ships on European shores. Targeted checks on certain flags of convenience need to be combined with measures taken in the framework of Community policy on judicial cooperation.

Illegal immigration

The transport sector is not immune to the problem of illegal immigration. A number of rules and administrative practices (civil liability of carriers, border checks) are already in place to curb the inflow of illegal migrants, but they need to be reinforced as the scale of the problem is unlikely to diminish in future.

The civil liability of carriers, an important tool in the battle against illegal immigration, has yet to be fully harmonised at European level. The strict provisions on carrier liability that exist in some Member States are the subject of various criticism. The issues raised relate, in particular, to the question of whether delegation of inspection tasks to carriers is an appropriate political instrument, the degree of diligence that can be expected of carriers and whether the effects of such legislation are compatible with the provisions of international law.

A round table of interested parties, including the Member States, the transport industry and humanitarian organisations, should pave the way to a possible subsequent initiative by the Commission, an initiative that will need to be built up on the basis of a reasonable political balance.

Strict controls at the external borders are another key element in the battle against

illegal immigration. In order to compensate for the abolition of controls at the internal borders, a common, comparable level of controls at the external borders is required and strict compliance with existing obligations in the Schengen framework is essential. Border controls can of course result in delays, to which sophisticated inspection equipment, recourse to new technologies and cooperation and the exchange of personnel may provide an answer.

Lastly, the Community should gradually establish a **management system for shipping off its coasts**. At present, ships' movements are regulated by bilateral agreements concluded in the framework of the IMO, for instance, for the English Channel or the 'Ushant traffic separation scheme'. These local controls focus on traffic (spacing, speed, routes). If the proposals already tabled by the Commission (in the 'Erika II' package) are adopted, they should also concern the dangerous nature of cargoes and permit the re-routing of ships in stormy weather, including those sailing outside territorial waters.

Irrespective of the nature of the controls, however, the information collected is generally neither used nor transmitted to the other centres, authorities or bodies along the route taken by a ship.

The future European Maritime Safety Agency will facilitate systematic exchanges of information, the more so as the appearance of identification systems (transponders), the obligation to carry black boxes on board and, soon, the Galileo programme will make it possible to establish a ship's position to within a few metres. By 2010, the enlarged Union could thus, as in the air transport sector, have a traffic management system in place to protect itself against dangerous or suspicious movements of ships, in particular by diverting them to ports of refuge. A harmonised system of this nature for the management of shipping from the Bosphorus to the Baltic, taking in the Bay of Biscay and the English Channel, will give the **European Union the means to coordinate intervention and control and thereby, without going so far as setting up a common coastguard**, to take effective action on the US model against all hazards on its seaboard (particularly drug trafficking, illegal immigration and the transport of dangerous goods).

The success of enlargement will depend on:

- making provision in the Community's post-2006 financial perspective for adequate public funding of infrastructure in the new member countries and connecting the future Member States to the Union's trans-European network by means of high-quality infrastructure while aiming to maintain the modal share of rail transport in the candidate countries at 35 % in 2010 and mobilising private sector finance to that end;
 - developing the administrative capacities of the candidate countries, notably by training inspectors and administrative staff responsible for enforcing transport legislation;
 - promoting the reflagging of as many ships as possible to Community registers by following the best national practices in terms of social and fiscal policy, such as the tonnage-based taxation system;
 - enhancing maritime safety controls by establishing a European traffic management system.
-

II. The enlarged Europe must be more assertive on the world stage

It is paradoxical that the European Union, which is the world's leading commercial power and conducts a large part of its trade outside its own borders, has so little say in the adoption of the international rules which govern much of transport. This is because the Union as such is excluded from most intergovernmental organisations, where it has no more than observer status. This situation needs to be remedied without delay, by having the Community accede to the inter-governmental organisations which govern transport so that the 30-odd members of the enlarged Union not only speak with a single voice but, above all, can influence those organisations' activities in the common interest and in support of sustainable development.

The need for Europe to speak with a single voice in defence of its industrial and environmental interests is particularly urgent in the field of air transport.

The clearest demonstration of the Union's higher profile in the global transport market is the challenge it has set itself with the Galileo programme. Until it achieves independence in the field of satellite radionavigation, Europe risks losing out on an effective tool to manage transport modes.

A. A single voice for the European Union in international bodies

The Community has built up a considerable body of law over the last 10 years, especially in air and sea transport. This legislation no longer simply reproduces the text of international conventions, as in the past. The Community has adopted specific regulations which do not always coincide with the recommendations and agreements made in international organisations.

In the field of maritime safety, the Community has agreed to ban single-hull tankers from its ports by 2015. This determination on the part of the European Union has led the International Maritime Organisation to change its planned timetable for phasing out such ships. The Commission's efforts to achieve a progressive reduction in aircraft noise have also helped speed up the multilateral discussions on the revision of aircraft noise standards in the International Civil Aviation Organisation (ICAO).

This shows that carefully coordinated action by the EU has a real impact on the decisions taken in international bodies.

However, the fact is that the Member States do not always adopt a consistent position within these organisations in relation to what has been agreed at Community level.

Enlargement reinforces the need for the European Union to send out a positive signal of consistency between the standards adopted by the 15 and those applied in international bodies of 150 members. The Union needs to increase its ability to assert itself in the international arena and speak with a single voice in defence of its social, industrial and environmental interests. In the negotiations within the World Trade Organisation, the European Union will continue to push for the transport market to be opened up, while at the same time maintaining the quality of transport services, the accomplishment of tasks of general economic interest, and passenger safety.

The Community needs to provide itself with the means of exerting real influence in the international organisations which deal with transport, in particular the International Civil Aviation Organisation and the International Maritime Organisation. At the end of 2001 the Commission will propose that the Council open negotiations with these organisations with a view to the European Union becoming a full member. In the same context, the Commission has already proposed that the Community accede to Eurocontrol.

The forthcoming enlargement poses a specific problem concerning the Community's status in the intergovernmental organisations responsible for navigation on the Rhine and the Danube. For historical reasons, the Central Commission for Navigation on the Rhine has been responsible for drawing up the rules governing shipping on the Rhine and its tributaries, that is, 70 % of the European tonnage. The Community has generally endeavoured to incorporate these rules in the Community legislation applicable to the entire inland waterways network. Nevertheless, the coexistence of these two judicial systems poses problems concerning the issue of certificates, protection of crews and gaseous emissions.

This discrepancy is likely to increase with enlargement. If nothing is done to alter the situation, when the six candidate countries connected to the Community's international network of inland waterways have adopted the

acquis there will be one system in force on the Rhine and a Community system in force on the other inland waterways such as the Upper Danube, the Oder and the Elbe, and yet all these waterways will be interlinked on Community territory. The new Member States would thus be asked to adopt the Community legislation and to issue Community certificates that were not valid on the Rhine. This would be incompatible with the single market.

The Commission will therefore **propose that the Community become a full member of the Central Commission for Navigation on the Rhine and the Danube Commission.**

B. The urgent need for an external dimension to air transport

Air transport, more than other modes, is particularly dependent on the international context. To hold their own alongside the big world players, the major European airlines need to operate worldwide. As long-haul and, more especially, transatlantic flights are some of the most profitable, it is vital to the competitiveness of European airlines to participate fully in this market, especially as domestic traffic will be exposed to growing competition from high-speed trains. Bilateral agreements, including the 'open skies' agreements between certain Member States and the USA ⁽¹⁰⁶⁾, limit the exercise of air transport rights to national airlines. In the event of a merger between two airlines from different countries, both would risk losing their portfolio of traffic rights. When agreements are negotiated between the USA and EU Member States, the US administration only recognises the companies of each Member State, not the European airlines. One reason for this is the lack of a suitable legal statute that would enable such a nationality clause to be removed. The European company statute should

⁽¹⁰⁶⁾ Belgium, Denmark, Germany, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland and Sweden have all signed an open skies agreement with the USA. These agreements give free access to all carriers designated by each of the parties and which meet nationality conditions (majority of capital held by nationals of the country concerned). The agreement between the United Kingdom and the USA differs, in that it is a free access agreement for all destinations in the UK except Heathrow airport and to a lesser extent Gatwick. Specifically as regards Heathrow, the agreement only authorises two British and two US carriers to use that airport on flights to and from the USA.

be a driving force in the abolition of these clauses, which limit market access to 'purely' national carriers. In other words, the objective is to give European airlines 'Community' nationality in relations with third countries.

All in all, this situation whereby each Member State separately, and not the Union, negotiates access conditions with third countries is a handicap. To take but one example, the European airlines have only been able to obtain 160 slots at Tokyo's Narita airport, while the American carriers have 640.

Despite the liberalisation of air transport in the Community, the airlines can only operate from their national base and do not have the same merger possibilities as other sectors. The transatlantic routes are divided up between more than 20 airlines on the European side as opposed to seven US companies, which might soon be reduced to four or five as a result of the ongoing mergers in the United States. The European airlines are limited to a single market for their intercontinental services and often to a single hub. A French company, for example, can offer flights from Berlin to Malaga, but not a service from Berlin to New York. Their competitors, notably the US airlines, have several hubs from which they can propose intercontinental services not only to their final destination in the Community but also to other destinations on the basis of inter-company alliance.

This international context goes a long way towards explaining the current situation in the air transport sector: the three leading American airlines each carry an average of 90 million passengers every year compared with between 30 and 40 million for the biggest European carriers. The smallest among them do not have a sufficiently large domestic market to guarantee their competitiveness.

There is thus an urgent need to develop an external dimension for air transport commensurate with the importance of the internal *acquis*. This is why the Commission has contested the compatibility of the 'open skies' agreements in the European Court of Justice. Without awaiting the outcome of these cases, the Member States should, as a matter of urgency, accept the Community as negotiator of air transport agreements, especially with the

USA, a role it has already played in negotiations with Iceland, Norway, Switzerland and the candidate countries.

The Community must base these agreements with its main partners on principles guaranteeing free access to traffic rights, equal conditions of competition, protection of safety and the environment and the elimination of property rights. These are the principles underpinning the concept of a common transatlantic area in air transport, which the Commission wishes to see replace the current transatlantic agreements. The common transatlantic area will create the biggest liberalised airspace in the world: any airline, European or American, will be able to operate freely without restrictions on traffic rights, subject to compliance with the rules agreed between the parties on competition, safety and the environment. These rules will be administered by common bodies. It will also be necessary to examine the possibility of opening aviation negotiations with other major partners, in particular Japan and Russia.

C. Galileo: the key need for a global programme

Satellite radionavigation is a technology enabling anyone with a receiver to pick up signals transmitted by an array of satellites and at any given moment obtain not only an exact time reading but also their precise position by longitude, latitude and altitude.

This technology is meeting with increasing success, and new applications are constantly being discovered. Their market and uses cover a whole range of public and private activities and already include transport (location and measurement of the speed of vehicles, insurance, etc), telecommunications (network integration signals, bank interconnections, electricity grid connections), medicine (e.g. telemedicine), law enforcement (e.g. electronic tagging), the customs service (field investigations, etc.) and agriculture (geographical information systems).

It is therefore clearly a strategically important technology and likely to generate considerable profits.

Only the USA (GPS) and Russia (Glonass) currently have this technology, both systems

being financed for military purposes, with the result that the signals can be blocked or jammed at any moment to protect these countries' own interests. This happened during the Kosovo war, when the United States cut the GPS signal. Neither system is totally reliable: for example, users are not immediately informed of faults and transmission is sometimes unpredictable, particularly in the towns and regions situated in the far north of Europe.

Europe cannot afford to be totally dependent on third countries in such a strategic area.

The Commission has therefore presented an independent satellite radionavigation programme, Galileo, involving the launch of an array of 30 satellites covering the entire planet, with local ground transmitters to provide universal services available to all users in any location, including sheltered areas (tunnels, underground car parks, etc.).

The success of the Galileo programme depends to a large extent on the Community adopting a unified position in international negotiations. A first important step was taken with the procurement of the necessary frequencies at the World Radiocommunications Conference in Istanbul in May 2000. The Community also needs to conduct international negotiations to develop Galileo's complementarity with the American and Russian systems and ensure their synergy. The possibility of being able to use both a GPS and a Galileo signal will enhance the respective performance of the two systems. Negotiations are under way with the American and Russian authorities on system interoperability and on the frequencies needed to develop the project. The negotiations with the United States have not yet been completed, though Russia, at the Paris summit with the European Union on 30 October 2000, expressed its willingness to achieve complementarity between the Glonass and Galileo systems.

By 2008 this project will provide the European Union with a system with global cover over which it will have full control and which will meet its accuracy, reliability and security requirements. It will thus have at its disposal a tool essential to its transport development policy. For instance, it will be possible using

Galileo instantly to trace goods carried on the railway network, facilitating the development of a just-in-time policy. Galileo will permit highly accurate positioning of ships carrying dangerous cargoes and give the maritime authorities the means to ensure safe navigation, particularly in areas of high traffic density such as the Ushant TSS. The emergency, search and rescue and civil protection services are other applications for which Galileo will offer reliable, guaranteed solutions to the strictest standards. Galileo will open up access to a potential market of EUR 9 billion a year in return for an investment equivalent to approximately 150 km of high-speed railway track.

Galileo could thus revolutionise transport, much as the liberalisation of air transport did before it by creating a niche for low-cost airlines which opened up new markets for tourism; or mobile telephony, which has radically changed people's daily lives.

The four phases of the Galileo programme are:

- **a study phase which ends in 2001;**
- **a development and test phase for the launch of the first satellites in 2001–05;**
- **a deployment phase for an array of 30 satellites: 2006–07;**
- **an operational phase from 2008 onwards.**

Following the decision by the Stockholm European Council to launch this programme without delay, its future depends on mobilising the private sector to provide funding primarily for the deployment phase. The Commission has therefore proposed establishing a joint undertaking under Article 171 of the Treaty to complete the current development phase and prepare the pooling of public and private finance.

The European Space Agency (ESA) will be charged by the joint undertaking with implementing the system's space and terrestrial segment for the development phase. A European company could take over from the joint undertaking in the deployment phase.

CONCLUSIONS: TIME TO DECIDE

A large number of political measures and instruments will be needed to launch the process which, over the next 30 years, will lead to the kind of sustainable transport system we might hope to achieve. The measures advocated in this White Paper are merely the first stages of a longer-term strategy.

We will not be able to adapt the common transport policy to the requirements of sustainable development unless a number of problems can be rapidly resolved:

- adequate funding of the infrastructure needed to eliminate bottlenecks and to link the Community's outlying regions to its central regions. Creation of the trans-European network remains one of the preconditions for the rebalancing of transport modes. That is why it is fundamentally important that external costs, and in particular environmental costs, be internalised into the infrastructure charges that all users will have to pay;
- political determination to get the 60-odd measures proposed in the White Paper adopted. The EU will avoid congestion only if it remains very attentive to the question of regulated competition, in which, when it comes to freight transport, the railways are playing their last card;
- a new approach to urban transport by local public authorities which reconciles the modernisation of public services with rationalisation of private car use; this is part of what it will take to comply with the international commitments to reduce pollutant CO₂ emissions;
- satisfying the needs of users who, in return for the increasingly high cost of mobility, are entitled to expect a quality service and full respect for their rights, irrespective of whether the service is provided by public enterprises or by private companies; this will make it possible to place the user at the heart of transport organisation.

However, the common transport policy alone will not provide all the answers. It must be part of an overall strategy integrating sustainable development, to include:

- economic policy and changes in the production process that influence demand for transport;
- land-use planning policy and in particular town planning — we must avoid any unnecessary increase in mobility needs caused by unbalanced urban planning;

- social and education policy, through organisation of working patterns and school hours;
- urban transport policy at local level and especially in large cities;
- budgetary and fiscal policy, to link the internalisation of external, and especially environmental, costs with completion of the trans-European network;
- competition policy, to ensure, in line with the objective of high-quality public services, and particularly in the rail sector, that the opening-up of the market is not hampered by the dominant companies already present on the market;
- research policy for transport in Europe, to bring greater consistency to the various research efforts at Community, national and private level, in line with the concept of the European research area.

A number of measures identified in this White Paper, such as the place of the car and the quality of public services, will involve choices and action decided at national level, in the context of clearly delineated subsidiarity. The proposals put forward in the White Paper (Annex I) focus on 60-odd measures to be taken at Community level. Along the lines of what is happening in other areas such as energy, telecommunications and financial services, there is a need for a new form of regulation to be developed in relation to transport at European level, whereby the national regulatory authorities now being set up act in a coordinated fashion, e.g. for allocating slots in aviation or train paths on the railways, or for road safety. This is a characteristic phenomenon of the new governance ⁽¹⁰⁷⁾.

As already emphasised, these measures are more ambitious than they may seem. We should be aware that in terms of the adoption process — which more often than not entails European Parliament/Council co-decision — we need to break with the Transport Ministers' present practice of systematically seeking a consensus. We must fully exploit the opportunities offered by the Maastricht Treaty (and extended by the Amsterdam and Nice Treaties) for taking decisions by a qualified majority.

To speed up the decision-making process and assess progress, the Commission has decided to draw up a timetable with dates for achieving specific objectives, and in 2005 it will make an overall assessment of the implementation of the measures advocated in the White Paper. This assessment will take account of the economic, social and environmental consequences of the proposed measures ⁽¹⁰⁸⁾. It will also be based on a detailed analysis of those effects of enlargement liable to change the structure of the European transport system. As far as possible, the Commission will also continue to quantify the stated objectives and to this end intends to produce a communication in 2002 to specify those objectives.

⁽¹⁰⁷⁾ 'European governance: a White Paper': COM(2001) 428.

⁽¹⁰⁸⁾ Monitored in the framework of 'TERM': transport and environment reporting mechanism.

ANNEX I

Action programme

WHITE PAPER

European transport policy for 2010:
time to decide

ACTION PROGRAMME

The measures proposed in the White Paper may be summarised as follows:

1. Shifting the balance between modes of transport

1.1. IMPROVING QUALITY IN THE ROAD SECTOR

- Harmonise inspections and penalties by the end of 2001 in order to:
 - promote efficient, uniform interpretation, implementation and monitoring of existing road transport legislation;
 - establish the liability of employers for certain offences committed by their drivers;
 - harmonise the conditions for immobilising vehicles;
- increase the number of checks which Member States are required to carry out (currently on 1 % of days actually worked) on compliance with driving times and drivers' rest periods.
- Keep the road transport profession attractive by promoting the necessary skills and ensuring satisfactory working conditions.
- Harmonise the minimum clauses in contracts governing transport activity in order to allow tariffs to be revised should costs increase (e.g. a fuel price rise).

1.2. REVITALISING THE RAILWAYS

- Gradually open up the railway market in Europe. By the end of 2001 the Commission

will submit a second package of measures for the rail sector with a view to:

- opening up the national freight markets to cabotage;
 - ensuring a high-level safety for the railway network based on rules and regulations established independently and a clear definition of the responsibilities of each player involved;
 - updating the interoperability directives for all components of the high-speed and conventional railway networks;
 - gradual opening-up of international passenger transport;
 - promoting measures to safeguard the quality of rail services and users' rights. In particular, a directive will be proposed to lay down the terms of compensation in the event of delays or failure to meet service obligations. Other measures relating to the development of service quality indicators, terms of contract, transparency of information for passengers and out-of-court dispute resolution mechanisms will also be proposed.
- Step up rail safety by proposing a directive and setting up a Community structure for railway interoperability and safety.
 - Support the creation of new infrastructure, and in particular rail freight freeways.
 - Enter into dialogue with the rail industries in the context of a voluntary

agreement to reduce adverse environmental impact.

1.3. CONTROLLING THE GROWTH IN AIR TRANSPORT

- Propose the introduction by 2004, in the context of the single sky, of:
 - a strong regulator with adequate resources independent of the various interests at stake, and capable of setting objectives allowing traffic to grow while guaranteeing safety;
 - a mechanism enabling the military to maintain defence capabilities while using the scope for cooperation to ensure more efficient overall organisation of airspace;
 - social dialogue with the social partners, which could begin with the air traffic controllers, allowing consultation, following the experience in other sectors, on aspects of the common aviation policy that have a considerable social impact. This dialogue could lead to agreements between the organisations concerned;
 - cooperation with Eurocontrol to draw on its expertise and know-how to develop and administer the Community rules;
 - a surveillance, inspection and penalties system ensuring effective enforcement of the rules.
- In the framework of the International Civil Aviation Organisation, rethink air transport taxation and negotiate the introduction of a kerosene tax by 2004 and differential en route air navigation charges.
- Launch a debate in 2002 on the future of airports in order to:
 - make better use of existing capacity;
 - review the airport charges systems;
 - integrate air transport into a logical system with the other modes of transport;
 - determine what new airport infrastructure is required.
- Present a revision in 2003 of the slot allocation system, in order to improve market access while taking account of the need to reduce environmental impacts at Community airports.
- Negotiate with the United States a joint transatlantic aviation agreement to replace the current open skies agreements.

1.4. ADAPTING THE MARITIME AND INLAND WATERWAY TRANSPORT SYSTEM

- Develop the infrastructure needed to build veritable 'motorways of the seas'.
- Simplify the regulatory framework for maritime and inland waterway transport by encouraging in particular the creation of one-stop offices for administrative and customs formalities and by linking up all the players in the logistics chain.
- Propose a regulatory framework for safety controls for passengers embarking on ships offering European cruises in order to combat the risk of attacks, along the lines of what is done in air transport.
- Tighten up the maritime safety rules in cooperation with the International Maritime Organisation and the International Labour Organisation, in particular:
 - by incorporating the minimum social rules to be observed in ship inspections, and
 - by developing a genuine European maritime traffic management system.
- Encourage the reflagging of the greatest possible number of ships to Community registers, based on the best practices developed in social and fiscal matters, by proposing in 2002 measures on tonnage-based taxation and the revision of the guidelines on State aid to maritime transport.
- Improve the situation of inland waterway transport through:
 - the current standardisation of technical requirements for the entire Community waterway network by 2002;
 - greater harmonisation of boatmasters' certificates throughout the Community's inland waterway network, including the Rhine. The Commission will present a proposal on this subject in 2002;
 - harmonisation of conditions in respect of rest periods, crew members, crew composition and navigation time of inland waterway vessels. The Commission will present a proposal on this subject in 2002.

1.5. LINKING UP THE MODES OF TRANSPORT

- Establish by 2003 a new programme to promote alternative solutions to road

transport (Marco Polo), which could have a budget of some EUR 30 million per year in help launch commercial projects.

- Propose by 2003 a new Community framework for the development of the profession of freight integrator and the standardisation of transport units and freight loading techniques.
- ## 2. Eliminating bottlenecks
- In 2001 revise the trans-European network guidelines in order to eliminate bottlenecks by encouraging corridors with priority for freight, a rapid passenger network and traffic management plans for major roads, and adding to the 'Essen' list such projects as, by way of illustration:
 - a high-capacity railway route through the Pyrenees for freight;
 - East European high-speed train/combined transport Paris–Stuttgart–Vienna;
 - the Fehmarn bridge/tunnel between Germany and Denmark;
 - the Galileo satellite navigation project;
 - improvement of the navigability of the Danube between Straubing and Vilshofen;
 - the Verona–Naples rail link, including the Bologna–Milan branch;
 - the interoperability of the Iberian high-speed rail network.
 - In 2001 increase to 20 % the maximum funding under the trans-European network budget for the main bottlenecks, including those still remaining on the Union's frontiers with the accession candidate countries, and then introduce conditionality rules.
 - In 2004 present a more extensive revision of the trans-European network aimed in particular at integrating the networks of the accession candidate countries, introducing the concept of 'motorways of the seas', developing airport capacities and improving territorial cohesion on the continental scale.
 - Establish a Community framework for allocating revenue from charges on competing routes to the construction of new infrastructure, especially rail infrastructure.
 - Harmonise minimum safety standards for road and rail tunnels belonging to the trans-European transport network.

3. Placing users at the heart of transport policy

3.1. UNSAFE ROADS

- Set a target for the EU of reducing by half the number of people killed on European roads by 2010.
- By 2005 harmonise the rules governing checks and penalties in international commercial transport on the trans-European road network, particularly with regard to speeding and drink-driving.
- Draw up a list of 'black spots' on trans-European routes where there are particularly significant hazards and harmonise their signposting.
- Require coach manufacturers to fit seat belts on all seats of the vehicles they produce. A directive to this end will be proposed in 2003.
- Tackle dangerous driving and exchange good practices with a view to encouraging responsible driving through training and education schemes aimed in particular at young drivers.
- Continue efforts to combat the scourge of drink-driving and find solutions to the issue of the use of drugs and medicines.
- Develop a methodology at European level to encourage independent technical investigations, e.g. by setting up a committee of independent experts within the Commission.

3.2. THE FACTS BEHIND THE COSTS TO THE USER

- In 2002 propose a framework directive setting out the principles and structure of an infrastructure-charging system and a common methodology for setting charging levels, offset by the removal of existing taxes, and allowing cross-financing.
- Make the tax system more consistent by proposing uniform taxation for commercial road transport fuel by 2003 to round off the internal market.
- In 2002 propose a directive guaranteeing the interoperability of means of payment on the trans-European road network.

3.3. RIGHTS AND OBLIGATIONS OF USERS

- In 2001 increase air passengers' existing rights through new proposals concerning in particular denied boarding due to overbooking, delays and flight cancellations.
- In 2001 put forward a regulation concerning requirements relating to air transport contracts.
- By 2004, and as far as possible, extend the Community measures protecting passengers' rights to include other modes of transport, and in particular the railways, maritime transport and, as far as possible, urban transport services. This concerns in particular service quality and the development of quality indicators, contract conditions, transparency of information to passengers and extrajudicial dispute settlement mechanisms.
- Propose an adjustment of procedures for notifying State aid, particularly in cases relating to compensation for public service obligations on links to the Community's outlying regions and small islands.
- Clarify the general principles which should govern services of general economic interest in the field of transport in order to provide users with a service of quality, in keeping with the Commission communication on services of general interest in Europe.

4. Managing the effects of transport globalisation

- Link the future Member States to the EU's trans-European network by means of infrastructure of quality with a view to maintaining the modal share of rail transport at 35 % in the candidate countries in 2010 by mobilising private-sector finance.
- Make provision in the Community's future financial perspective for adequate public funding of infrastructure in the new member countries.
- Develop the administrative capacities of the candidate countries, notably by training inspectors and administrative staff responsible for enforcing transport legislation.
- Full membership for the European Community in the main international organisations, in particular the International Civil Aviation Organisation, the International Maritime Organisation, the Rhine Navigation Commission, the Danube Commission and Eurocontrol.
- By 2008 develop for the EU a satellite navigation system with global cover, over which it will have control and which will meet its accuracy, reliability and security requirements (Galileo).

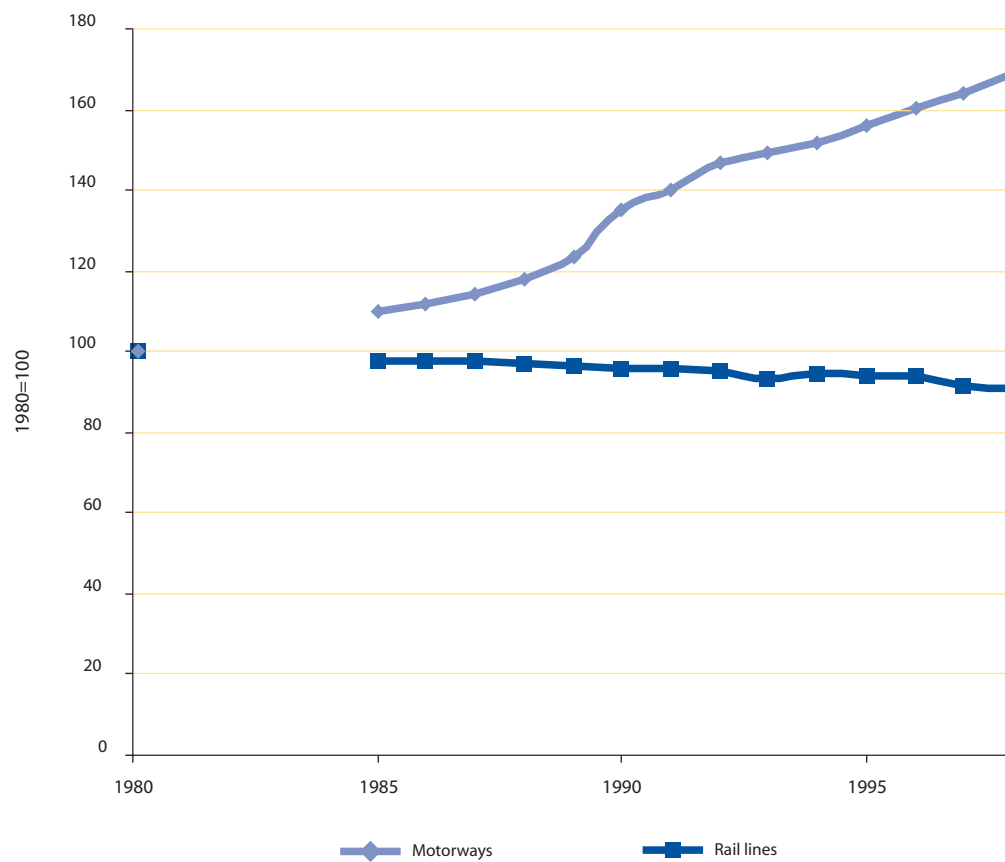
ANNEXES II-IV

WHITE PAPER

European transport policy for 2010:
time to decide

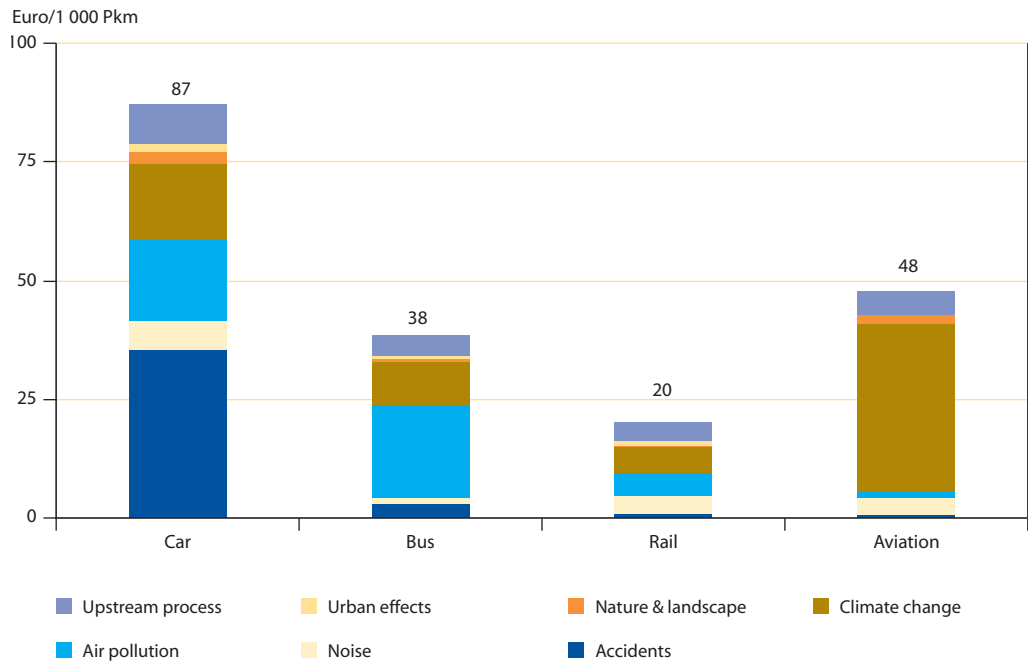
INDICATORS AND QUANTITATIVE ILLUSTRATIONS

Figure 1: Length of motorways and rail track (EU-15)



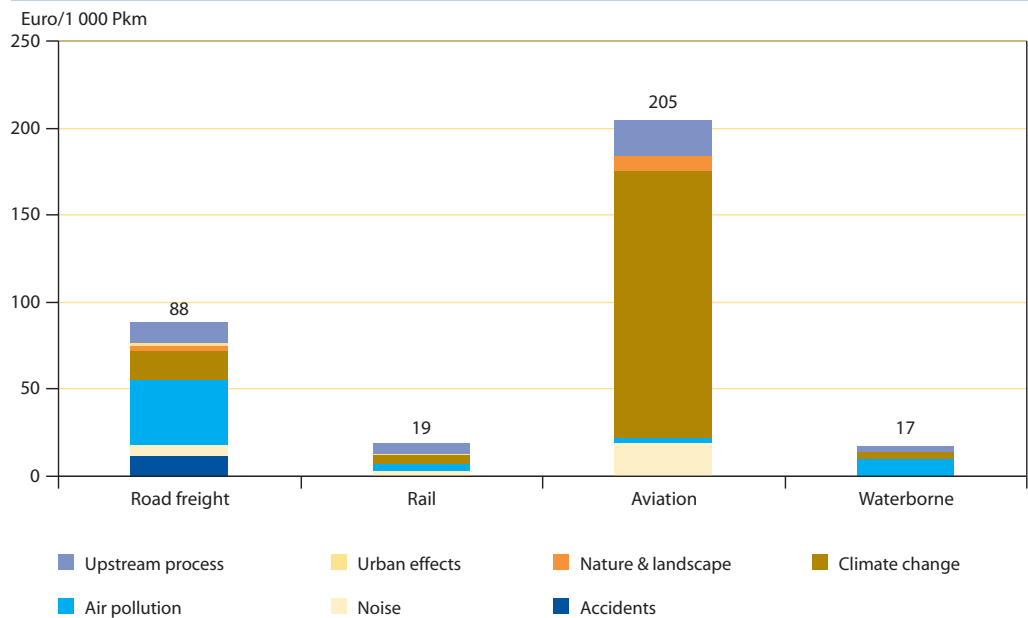
Source: Eurostat, 2001.

Figure 2: Average external costs 1995 (EU-17) by transport mode and type of cost: passenger transport (without congestion costs)



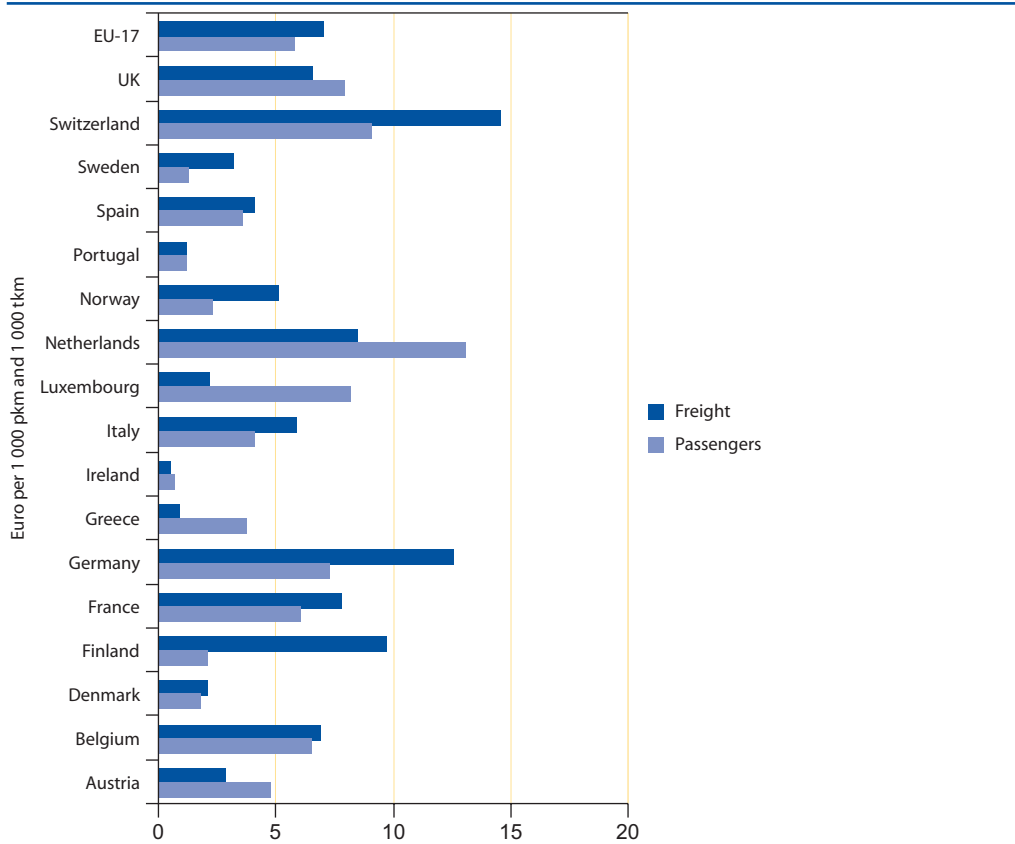
Source: Infras, IWW for the IUR, 2000.

Figure 3: Average external costs 1995 (EU-17) by transport mode and type of cost: freight transport (without congestion costs)



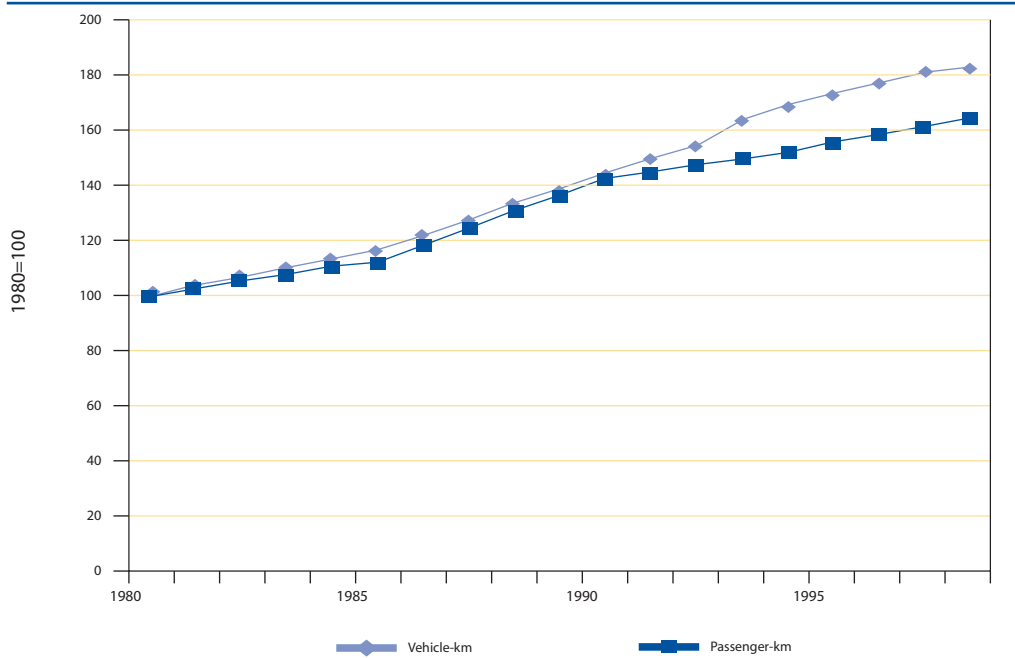
Source: Infras, op. cit., 2000.

Figure 4: Average external costs of congestion, 1995, EUR/1 000 passenger-km and tonne-km



Source: ECMT, 1998; Infras, op. cit., 2000.

Figure 5: Passenger-km and vehicle-km in France, Portugal, Finland and the United Kingdom, 1980–98



Source: Eurostat, 2001.

Tables 1 (summarised) and 3 (in detail) illustrate the results of the approaches.

Table 1: Comparison of options according to their increasing impact between 1998 and 2010

1998=100 EU-15	Passenger Kilometre	Tonne Kilometre	Vehicle Kilometre	CO ₂ emissions
Anticipated trend	124	138	126	127
Option A	124	138	115	117
Option B	124	138	115	115
Option C	124	138	112	110
GDP	143	143	143	143

Table 2 is a rough attempt to classify the main measures which could be taken to reconcile transport with sustainable development. The programme of measures set out in the White Paper needs to be backed up by cross-sectoral action, that is, in sectors of the economy other than transport, to ensure the success of the options being proposed, particularly option C.

Table 2: A typology of link-breaking

Area of link-breaking	Economic activity	Transport system	Environmental impact
Indicators	GDP (passenger- and tonne-kilometres)	Vehicle-kilometres	Polluting emissions
Link-breaking measures (examples)	<ul style="list-style-type: none"> • Town planning • Work organisation (e.g. teleworking) • Industrial production system • Land-use planning 	<ul style="list-style-type: none"> • Charging • Intelligent transport systems • Modal transfer • Better rates of vehicle loading and occupancy 	<ul style="list-style-type: none"> • Less polluting vehicles and fuels • Speed control • Energy-efficient engines

Source: Fifth Commission research programme — SPRITE: 'SePaRating the Intensity of Transport from Economic growth'.

Explanation:

Passenger kilometre: transport of a passenger over one kilometre

Tonne kilometre: transport of one tonne over one kilometre

Vehicle kilometre: number of kilometres covered by a vehicle

CO₂: estimates of carbon dioxide emissions. These take account, in the anticipated trend and the three options, of the gains in vehicle energy efficiency expected from the voluntary agreement with the automobile industry (ACEA, KAMA, JAMA).

GDP: hypothetical growth of GDP of 3 % per year.

Table 3: Illustration of results of approaches

EU-15	1998			2010 Anticipated trend			2010 — Option A			2010 — Option B			2010 — Option C		
	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO ₂	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO ₂	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO ₂	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO ₂	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO ₂
Cars	3 776	2 221.2	434.2	4 650	2 735.3	453.4	4 650	2 486.6	412.2	4 650	2 486.6	412.2	4 559	2 438	404.1
Bus-coach	415	24.4	18.7	441	25.9	19.8	441	25.9	19.8	441	23.6	18.0	501	26.8	20.5
Metro-tram	50	0.5	0	53	0.5	0.0	53	0.5	0.0	53	0.5	0.0	61	0.5	0.0
Railway	290	1.5	6.4	327	1.7	7.2	327	1.7	7.2	327	1.5	6.5	400	1.8	8.0
Air transport	241	1.9	59.3	458	3.7	112.7	458	3.7	112.7	458	3.3	102.4	408	3.0	91.2
Total passengers	4 772	2 249.5	518.6	5 929	2 767.1	593.1	5 929	2 518.4	551.9	5 929	2 515.5	539.1	5 929	2 470.1	523.8
Growth 1998–2010				24 %	23 %	14 %	24 %	12 %	6 %	24 %	12 %	4 %	24 %	10 %	1 %
Road	1 255	313.8	271.1	1 882	470.5	406.5	1 882	427.7	369.6	1 882	427.7	369.6	1 736	394.5	340.9
Railway	241	1.3	1.9	272	1.5	2.2	272	1.5	2.2	272	1.4	2.0	333	1.7	2.4
Inland waterways	121	0.3	3.6	138	0.4	4.1	138	0.4	4.1	138	0.4	3.8	167	0.4	4.6
Pipelines	87		1.0	100		1.0	100		1.0	100		1.0	100		1.0
Short sea shipping	1 166	0.3	23.3	1 579	0.4	31.6	1 579	0.4	31.6	1 579	0.4	28.7	1 635	0.4	29.7
Total goods	2 870	315.76	300.9	3 971	472.8	445.4	3 971	430	408.5	3 971	429.8	405.1	3 971	397.0	378.6
Growth over 1998				38 %	50 %	48 %	38 %	36 %	36 %	38 %	36 %	35 %	38 %	26 %	26 %
Total		2 565.2	819.5		3 239.9	1 038.5		2 948.4	960.4		2 945.3	944.2		2 867.1	902.4
Growth 1998–2010					26 %	27 %		15 %	17 %		15 %	15 %		12 %	10 %
Growth in GDP 1998–2010					43 %	43 %		43 %	43 %		43 %	43 %		43 %	43 %

Source: For the 1998 data on passenger-km and tonne-km, *EU transport in figures, statistical pocketbook*, European Commission 2000. The data on CO₂ emissions and vehicle-km are estimates produced by the Commission's departments.

ANNEX III

PROJECTS SUBMITTED
BY THE MEMBER STATES
AND THE EUROPEAN PARLIAMENT
AND BEING EXAMINED BY THE COMMISSION
FOR INCLUSION IN THE
LIST OF 'SPECIFIC' PROJECTS
(‘ESSEN’ LIST)

Project			Length (km)	Type	Completion date	Remaining investment (million EUR)
1	IT	Milan–Bologna and Verona–Naples	830	Mixed high-speed line	2007	13 994
3	F	Montpellier–Nimes	50	Mixed high-speed and freight line	2012	790
15	EU	Galileo	–	European satellite navigation system	2008	3 250
16	E/F	High-capacity Pyrenees crossing	180	Rail freight line	2020	5 000
17	D/A	Stuttgart–Munich–Salzburg–Vienna	713	Mixed high-speed and freight line	2012	9 501
18	D	Vilshofen–Straubing	70	Improving the navigability of the Danube	—	700
19	E/P	Interoperability of the Iberian high-speed rail network	7 800	New and upgraded high-speed lines	—	29 600
20	D/DK	Fehmarn fixed link	50	Rail and road bridge/tunnel	2013	3 650
Total						66 485

TECHNOLOGICAL DEVELOPMENTS AND INTELLIGENT TRANSPORT SYSTEMS

Technological innovation provides an excellent opportunity to integrate the transport modes, optimise their performance, make them safer and help make the European transport system compatible with sustainable transport development. The European Union is very actively involved in technological innovation in transport. Its research and development programmes are promoting innovation upstream, while the trans-European networks lend themselves perfectly to large-scale application. The technologies emerging from the information society can make an outstanding contribution here.

(1) Technology development

Over the period 1998–2002 the EU's contribution to national and industrial RTD efforts in the transport field is estimated at around EUR 1.7 billion, in areas as varied as intermodality, energy and the technology of means of transportation, including telematics applications. **Instead of expanding this Community effort, it would in future be better to keep it at a constant level while focusing it more specifically on the objectives of the common transport policy.** The new framework programme of research for 2002–06 will provide the opportunity to put these principles into effect in the field of transport. The Commission's new proposal ⁽¹⁰⁹⁾ includes among its priority objectives those of perfecting new technologies to back up the development of safe and clean modes of transport and developing the European transport system. In the framework programme proposal, the priority areas of thematic research that are the most promising for supporting the common transport policy set out in the White Paper are:

1. AERONAUTICS AND SPACE

RTD priorities in the aeronautics field will focus, on the one hand, on lessening the environmental impact of engine emissions and noise and improving aircraft safety and, on the other, increasing the capacity and operating safety of the air traffic management system so as to facilitate the achievement of the single European sky initiative.

Regarding space, the development of Galileo is one of the priority research activities and its goal is to help build up the necessary expertise and knowledge in Europe to exploit this emerging technology as effectively as possible.

⁽¹⁰⁹⁾ COM(2001) 279.

Safer and less polluting aircraft

The aim of research and development in the safety field will be to achieve a fivefold reduction in accident rates in order to compensate for the growth in traffic. Research will focus on the development of technologies which give the crew constant and controllable situation awareness.

As regards the environment, the aim is to compensate for the increase in air traffic by reducing CO₂ emissions by 50 % and NO_x by 80 % and by reducing aircraft noise by 10 dB in order to cut the perceived noise level by 50 %. Research will focus on aircraft technology, low-drag aerodynamics and flight operating procedures.

2. SUSTAINABLE DEVELOPMENT AND GLOBAL CHANGE

The research activities proposed within this priority area aim to enhance the scientific and technological capacities Europe needs in order to implement its sustainable development strategy, especially by applying new technologies.

The strategic objectives deal in particular with the reduction of greenhouse gases and pollutant emissions, the security of energy supply and the balanced use of the various transport modes, all of these being priority research themes with a contribution to make to the implementation of the transport policy recommended in the White Paper.

With regard to short and medium-term research activities aiming to reduce greenhouse gases and pollution and ensure a secure energy supply, the proposal is to focus research on action to develop renewable energy sources and on cleaner and more efficient energy use, especially in urban areas, and to develop new transport concepts that are cleaner and more energy efficient.

Clean urban transport

Rationalising conventional private car use in town centres and promoting clean urban transport are also priority objectives, as are the efforts being made towards using hydrogen as the fuel for tomorrow's vehicles. Projects envisaged include supporting demand management measures, integrating urban transport services and promoting the marketing of low-polluting or non-polluting vehicles. The development of a new generation of hybrid electric cars (electric motor combined with a heat engine) and cars which run on natural gas or, in the longer term, hydrogen fuel cells, looks very promising. With regard to short and medium-term research activities aimed at making transport modes sustainable, the proposal is to focus research on cleaner and safer road and sea transport, the integration of intelligent transport systems for efficient infrastructure management, railway interoperability and the development of intermodality for passengers and freight.

Railway interoperability

Research and development must help with the design and introduction of a framework guaranteeing full interoperability between rail infrastructures, vehicles, cabs and crews. It will focus on technologies which will help improve the capacity of means of transport and traffic management systems (longer trains, optimal allocation of slots, maintenance procedures) and introduce more competitive services (operating systems such as freight tracking, crew training). The long-term research objective is to develop new sources of renewable energy: hydrogen technologies and fuel cells which are intrinsically clean and can be used in transport.

3. ANTICIPATING THE EU'S SCIENTIFIC AND TECHNOLOGICAL NEEDS

Activities in this priority area will consist of specific research or research complementing that in the above-mentioned priority thematic areas in support of policies of EU interest, such as the common transport policy presented in this White Paper.

Monitoring and evaluating the White Paper programme

Harmonised data, forecasting tools and indicators will be used to monitor and evaluate the action programme and the guidelines for transport and the trans-European networks contained in this White Paper.

(2) eEurope

The need to provide new services was underlined by the eEurope 2002 Action Plan, adopted by the Heads of State or Government at the Feira European Council in June 2000. Specific objectives have been set for 2002 to speed up the development and deployment of intelligent transport systems, for instance:

- 50 % of Europe's major towns and cities ought to be provided with traffic and travel information services;
- 50 % of Europe's major motorways ought to be equipped with systems to manage traffic and to detect accidents and congestion;
- all new vehicles sold in Europe should be equipped with more effective active safety systems;
- all Europe's mobile citizens should have access to location determination of emergency calls on the 112 number, with multilingual assistance and a full range of emergency services;
- legislative initiatives should be taken to promote the single European sky, mobile communications for trains, maritime information and control systems, and Galileo.

The eEurope action plan provides a framework for efforts to research, develop and deploy intelligent transport systems. The role of the action plan, which is to be implemented by the Member States and industry, is to facilitate the deployment of new solutions and to speed up their development. The private sector has a key role in the development of intelligent transport services. In implementing the eEurope initiatives, Member States should ensure that obstacles to the development of private services are removed.

(3) Deployment of intelligent transport systems

The potential impact of intelligent transport systems has been assessed both during research and in the early stages of deployment. Journey time reductions of up to 20 % and increases in network capacity of 5–10 % have often been achieved in various combinations. Safety improvements have often been estimated at around 10–15 % for certain specific types of accident (rear-end collisions) thanks to coordinated information and control strategies, while survival rates have also increased thanks to automatic incident detection systems for the management of emergency situations. Only 6 % of road accidents appear to be unavoidable and beyond the reach of improved technology. Lastly, integrated strategies for pollution control and traffic limitation have led to initial estimates of reductions in ground-level emissions. Intelligent transport's most significant impact is probably on road transport, though it helps make other modes safer and more efficient, too.

The trans-European transport network is an ideal candidate for the deployment of intelligent transport. It is not limited to large traditional infrastructure such as roads and motorways, railways, ports and airports, but also includes the traffic management systems and information, positioning and navigation systems and services which make it possible to operate such infrastructure to best effect. Galileo ⁽¹¹⁰⁾, which the Commission is considering for inclusion on the list of specific projects ('Essen' list), is an example here of a project acting as a catalyst for the development of intelligent transport. In 1998–99, some EUR 100 million, i.e. over 10 % of the TEN budget, was allotted to traffic management systems ⁽¹¹¹⁾. The financial support provided through the multiannual indicative programme for 2001–06 for the trans-European network has been increased to the unprecedented level of around EUR 800 million.

Such co-financing should focus on projects which encourage large-scale, coordinated deployment, stimulating the synchronisation of investment, which is particularly critical for this type of project in view of the multitude of players involved. Without such coordination a veritable mosaic of fragmentary services on a regional or national scale might emerge, compromising continuity of service beyond the geographical frontiers of States and the organisational frontiers of operators. For users, this would ultimately be a major new obstacle to the smooth working of the internal market.

The private sector has a key role to play in the launching of new services: from this point of view, the Commission strongly recommends the development of a legal and commercial framework for the participation of the private sector and for partnerships between public and private operators in order to facilitate the development of value-added services for traffic information and travel.

Apart from the Galileo programme described earlier in this White Paper, the main projects already under way or due to be launched are:

1. LARGE-SCALE DEPLOYMENT OF INTELLIGENT ROAD TRANSPORT SYSTEMS

Six Euro-regional initiatives involving the main players in traffic management in Europe have been receiving EU financial support since 1996; these initiatives are already accompanying the deployment phase in 14 Member

⁽¹¹⁰⁾ European project for a satellite positioning system for civilian use.

⁽¹¹¹⁾ Plus subsidies of around EUR 45 million for rail traffic management projects, which are not included.

States and are placing particular emphasis on the needs of European users. It is essential that the trans-European network be equipped with telematic infrastructure/systems for data collection and with traffic control and/or road information centres in order to guarantee the quality and reliability of information (e.g. journey times), just as cooperation between managers is indispensable if users are to be offered an uninterrupted high-quality service, whether for local or regional journeys, mass departures during the holiday season or at weekends, or medium or long-distance heavy goods traffic. On this basis, traffic management plans, information services provided before or during journeys, freight management services, breakdown and emergency rescue services and electronic road-charging systems need to be introduced as a matter of priority and their take-off should help greatly to alleviate the effects of road network saturation.

A European network of traffic management and road information centres

Work is under way to set up a European network of traffic management and road information centres by 2003; this network, which should cover the whole of the EU, will provide users with traffic management and road information services on a fully European scale. The network is central to the European programme for funding deployment (around EUR 200 million between 2001 and 2006), which will mobilise around EUR 1.2 billion of investment of European interest and generate complementary projects at the local, regional, national, cross-border and European levels. Electronic road-charging systems and any other automatic fee-collection systems appear particularly useful for restoring balanced prices. The fact that they are now being deployed or are planned in several countries, though not necessarily on a technically interoperable basis as yet, shows how useful it would be for Europe to introduce standards. An interoperability directive needs to be accompanied by Community aid for the deployment of such systems.

2. THE EUROPEAN RAIL TRAFFIC MANAGEMENT SYSTEM ⁽¹¹²⁾

This system, developed since the start of the 1990s with constant Community support through the framework research programmes, represents an unprecedented leap forward. The project is completing its tests and certification procedures and has now reached the stage of pilot testing on the trans-European network.

The main function of this automated system is to monitor and ensure a minimum distance between trains. It will allow a train to run on all European lines with only a single command-control system on board, while at present more than 11 different systems are in service in Europe.

While several countries are already beginning the operational deployment phase, in the years ahead it will be necessary gradually to equip the main lines with this system. The actual traffic management and operational assistance applications on which the development of freight transport by rail will rely are still in the development stage and may receive aid under the research framework programme. This system will be all the cheaper to deploy for the fact that the directive on the interoperability of the high-speed rail system requires common specifications to be used for this type of system in the construction of all new lines ⁽¹¹³⁾.

3. AIR TRAFFIC

Operating and pre-operating tests, especially in the North Atlantic and the Mediterranean sectors, have shown the potential for improving safety by means of more precise positioning information and better communications. The use of data transmission links also enables airlines and other operators to obtain operating data from aircraft during flights. Such systems will facilitate the adoption of 'free flight' solutions by enabling certain air traffic management functions to be carried out from the cockpit. Airport operations require greater integration and management of information so that the different controllers involved in the various flight phases can exchange data and plan their operations and aircraft movements. Such management and planning systems, along with advanced guidance/command systems for ground movements in airports, will increase the airports' capacity, especially during bad weather, while relieving the pressure on air traffic controllers.

Proper use of new technology is essential for increasing the available airspace (reapportioning civil and military use) and allowing genuinely European management (sector and route planning). In the past, decisions to invest in intelligent systems have often been taken on the basis of national industrial interests, resulting in limited technical and operational compatibility between the different centres and restricted interoperability. This lack of

⁽¹¹²⁾ ERTMS.

⁽¹¹³⁾ Any request for funding of high-speed lines from the trans-European networks budget needs a guarantee from the national authorities that ERTMS will be installed on those lines.

interoperability has severely impaired efficiency, from the fragmentation of controller training to major operational coordination problems, and has pushed up investment and maintenance costs.

Interoperability is central to the single European sky

Interoperability will become a major criterion in selecting and evaluating projects for trans-European network support. Upstream, the demonstrators produced through the research programme will need to be large-scale.

4. MARITIME TRAFFIC SAFETY

The risk of accidents due to traffic concentration in Europe's main sea lanes is particularly high in bottlenecks such as the Straits of Gibraltar or the Ushant traffic separation scheme.

Traffic monitoring and management by coastal or port authorities is still often handled at a local level, and the information gathered is generally neither used nor passed on to the other centres, authorities or bodies along the ship's route. However, technologies are developing in the maritime sector: automatic vessel identification and monitoring systems, the development of standardised telematic exchange, the availability on the market of black boxes, and so on. These developments suggest a whole range of applications, not only in the areas of safety and pollution control but also for a general improvement in traffic conditions at sea and in ports.

A trans-European network of shipping management and information

The Commission has adopted a legislative proposal for a Community system to monitor and manage traffic information which will make it possible to identify and track ships entering European waters and to promote the systematic exchange of ship and cargo information among the different players in maritime transport (traffic control centres of the different Member States, sea rescue or pollution control bodies, port authorities, etc.).

Setting up a trans-European shipping management and information network such as this should improve the management and supervision of traffic and reduce the administrative burden on ships' captains, while improving the preparedness and response of maritime authorities faced with accidents or pollution risks.

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