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The future development of the common transport policy

A global approach to the construction of a Community framework for sustainable mobility

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Contents

I — Introduction: 1992 as a turning point for the CTP

1. The end of 1992 will mark the beginning of a new departure for the Community's common transport policy (CTP).

2. For many years progress towards the realization of the CTP was slow, especially when measured against the importance of transport in the Community economy.

3. The Court of Justice had to intervene several times on basic questions of interpretation of the transport provisions of the Treaty of Rome in order to make progress possible. This process reached its climax in 1985 when the Court declared that the inland transport of goods and passengers should be open to all Community firms, without discrimination as to nationality or place of establishment.

4. The 1985 landmark judgment of the Court coincided with the Commission's White Paper on the completion of the internal market now entering its final phase in the run-up to 1993. The Commission then placed transport in the forefront of the moves towards the completion of the internal market recognizing that the abolition of restrictions on the provision of transport services was essential if the elimination of administrative, technical, fiscal, customs and other barriers to trade were to realize their full potential.

5. The Single European Act that followed accelerated the decision-making process by introducing majority voting on questions of shipping and air transport policy.

6. Since then, the CTP has developed rapidly, encompassing a wide range of measures, actions and initiatives aiming at bringing about the single market for transport services. The end-result of this process, now emerging as a tangible reality throughout the Community, is the creation of a new, more open market, free from unnecessary red tape and quantitative restrictions, but at the same time maintaining such guarantees as are necessary to ensure fair competition. Other important components of this emerging reality are improved competitiveness, financial performance and efficiency of transport undertakings and improvements in the functioning and quality of transport systems, including safety, realibility and passenger comfort. Measures have also been taken for the protection of the environment, while a beginning has been made concerning transport-related research and development and transport infrastructure. Transport relations with third countries have also begun to be dealt with at Community level.

7. The implementation of the Treaty on European Union agreed at Maastricht will at once confirm and give a new impulsion to the evolution of the CTP. Measures to improve transport safety receive for the first time explicit recognition. The provisions on trans-European networks and economic and social cohesion provide a new basis for the Community to contribute to the establishment and development of transport infrastructure. The new title on industry underlines the need for conditions that will ensure the competitiveness of Community enterprises. At the same time the Union Treaty emphasizes that in accordance with the principle of subsidiarity, the CTP must consist of actions which cannot be realized adequately by the Member States individually and therefore, by reason of their dimensions or effects, are better realized by the Community.

8. Therefore, 1992 marks an important turning point in the evolution of the CTP from a policy which has aimed essentially at the completion of the internal market through the elimination of artificial regulatory barriers to the provision of services, towards a more comprehensive policy designed to ensure the proper functioning of the Community's transport systems, on the basis of an internal market in which any remaining restrictions or distortions should be eliminated as rapidly as possible, while taking into account the new challenges likely to confront transport policy in the post-1992 period. Among those challenges one of the most important is the integration of environmental objectives as now laid down in the Union Treaty. The identification of the new challenges taken as a whole, and of the extent to which they require a Community response, constitutes the necessary first step in the development of the Community's CTP up to the end of the decade and beyond into the new century.

9. The purpose of this paper is to set out a global approach to these issues that will enable those concerned and, in particular, the Community's political institutions to consider them as a whole before particular initiatives are launched, starting in 1993.

II — The transport economy: trends and tendencies

General

10. Transport is a growth industry. Its development depends on the development of the economy as a whole. Despite regional variations and different developments in the various transport modes, transport demand has experienced virtually uninterrupted growth since the 1970s. In general, transport demand, for both goods and passengers, runs in parallel to growth in GDP, although there are indications that lower GDP growth rates may result in disproportionately smaller, and higher GDP growth rates in disproportionately higher, growth of transport activity. Since 1970 the annual economic growth in the Community has averaged 2.6% in real terms. For the same period the growth rates of transport services averaged 2.3% for goods and 3.1 % for passengers.

11. The following main factors have generally been identified as contributing to this growth:

(i) changes in the structure of manufacturing industry have resulted in locational shifts from urban to new industrial sites and contributed towards a dispersal of economic activities; these changes have been amplified by the continuing process of economic integration within the Community;

(ii) changes in the production methods of manufacturing industry have led more and more towards stock-reducing, flexible, diverse, rapid and tailored transport with reductions in shipment size and increases in shipment frequency;

(iii) the rising share of the service industry and its multi-site businesses have caused rapidly growing professional mobility over short, medium and long distances;

(iv) the increase of net disposable income and demographic changes have led to higher rates of car ownership and increased holiday and leisure-time travelling.

12. This general pattern of growing demand is likely to persist if economic growth is maintained. While simple extrapolation of past trends should not be treated as a forecast of what will inevitably happen, Graph 1 shows, if current trends continue, the pressures which the Community's transport systems may have to accommodate. It should be noted that the trend for goods understates the probable growth in traffic since average shipment size is still decreasing while shipment frequency is increasing.

Modes

13. However, transport growth in the Community for both goods and passengers has not been spread evenly between modes.

14. As regards goods, as shown in Graph 2 and Table 1 (Annex I), transport activity [1] has increased by well in excess of 50% in the last 20 years, road transport accounting for most of the increase:

(i) transport by inland navigation has slightly increased its transport volume in absolute terms but its relative share has decreased by a third to 9%;

(ii) transport by rail has contracted by 15% in absolute terms and decreased in relative terms from 28 to 15%;

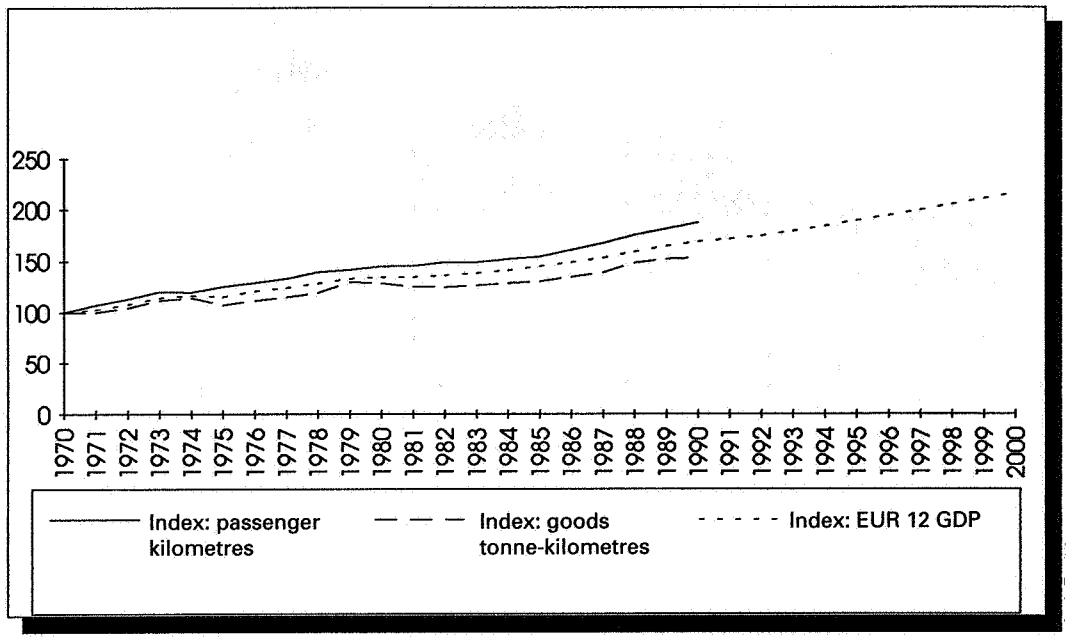
(iii) transport by pipeline has slightly grown in absolute terms but is relative share has decreased to 6%;

(iv) with substantial annual growth rates, transport by road has more than doubled in absolute terms and now accounts for about 70% of all transport activity.

Maritime transport has always been a major mode in terms of tonnage for longer, mainly cross-border routes. After volume growth of about 35% between 1975 and 1985 the volume of goods transported has since undergone little change in absolute terms. Maritime transport is of particular importance for trade between Member States in the Community where at least 30% of all goods are transported by sea, but is much less significant for domestic transport within a Member State with only an estimated 2 to 3% of all goods transported by sea, although generally over substantially longer distances.

[1] In tonne-kilometres (tkm) excluding maritime transport and after adjustments for the accession of Spain and Portugal. Maritime transport does not lend itself to the conventional measure of transport activity, namely tkm, but is normally measured only in terms of total tonnage.

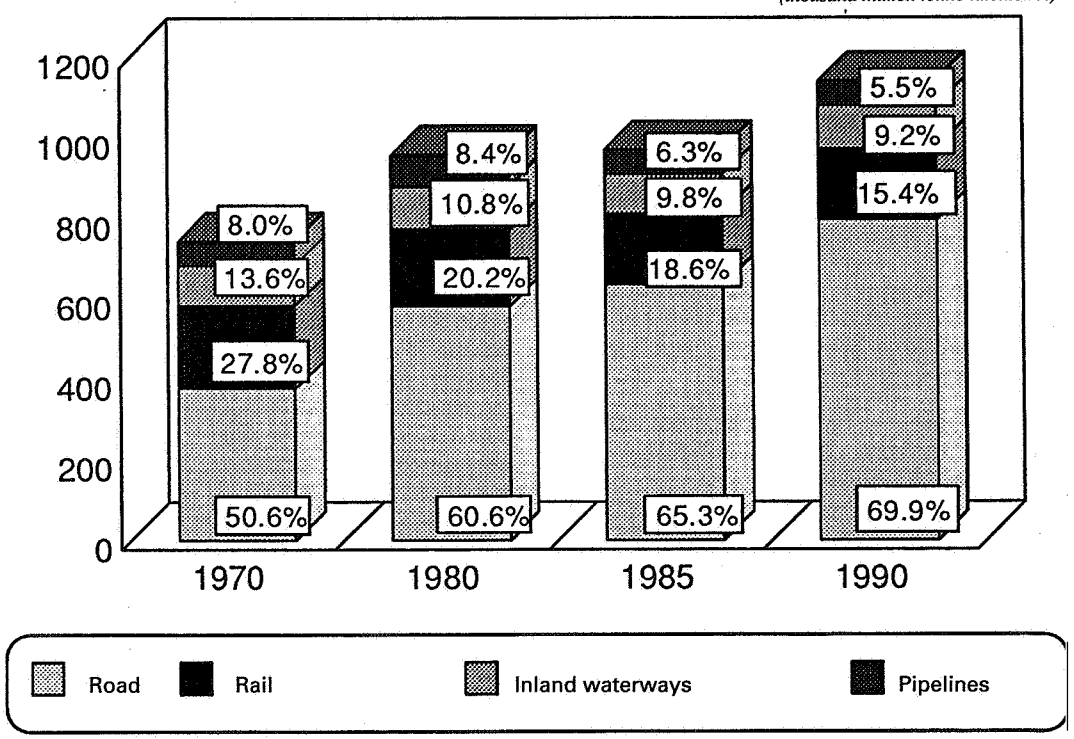
Graph 1 — *Trends in the transport of goods and passengers* [1]



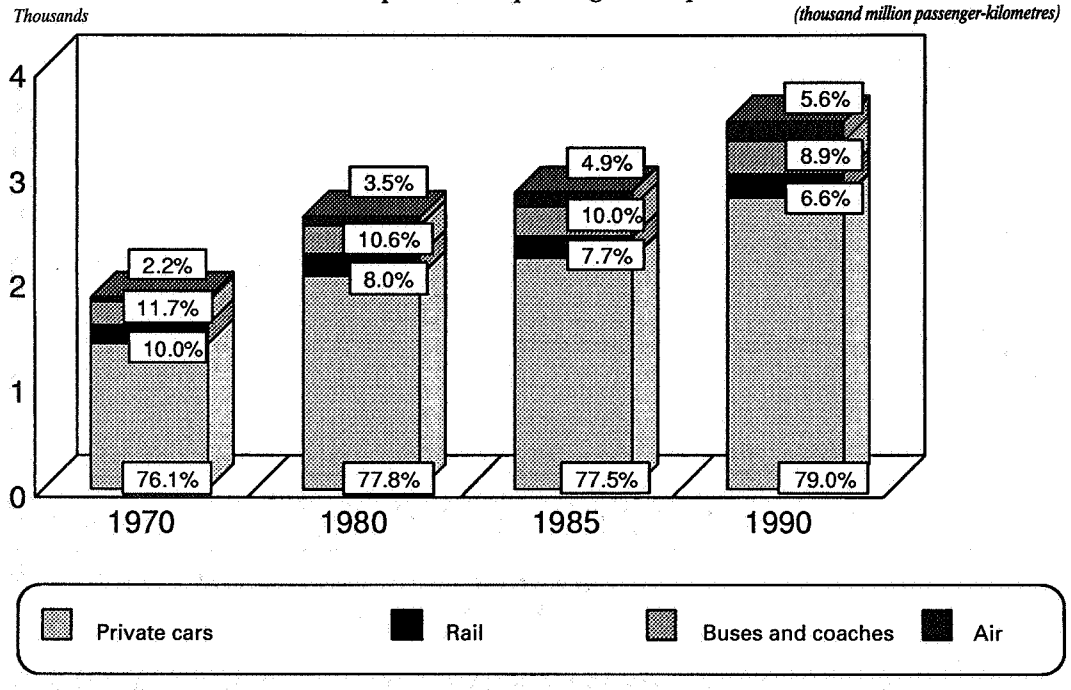
[1] Projected GNP growth rate until 2000 of 2.7% p.a.

Graph 2 — *EC freight transport*

(thousand million tonne-kilometres)



Graph 3 — *EC passenger transport*



15. As regards passengers, as shown in Graph 3 and Table 2 (Annex I), transport activity [1] has increased by more than 85% in the last 20 years, most of the increase being attributable to use of the private car:

(i) although transport by rail has increased by about 25 % in absolute terms, its relative share has been reduced from about 10% to between 6 and 7% of all passenger transport;

(ii) equally, transport by bus has increased in absolute terms by about 45% but its relative share decreased by 3% to under 9%;

(iii) air transport although now representing only about 6% has experienced the biggest growth rates and more than quadrupled in absolute terms over the period;

(iv) the bulk of the increase of total passenger transport is due to the use of the private car which has doubled in absolute terms. Although it was already the predominant mode in 1970 with 76%, its share has further increased to about 79%.

16. A more detailed analysis [2] shows that transport of goods by road has always taken place principally over short distances: 66% of all goods are transported within 50 km and a further 20 % within distances of between 50 and 150 km, leaving only 14% to longer distances. Although comprehensive data for passenger transport by private cars are lacking, indications from two major Member States [3] point to the predominance of short distance transport. It was found in one country that half the car passenger journeys were over a distance of less than five km and only

[1] In passenger-kilometres after adjustments for the accession of Spain and Portugal.

[2] Based on: Eurostat, *Carriage of goods — Road,* 1989.

[3] OEST, Synthèse mai 1992, Paris.
Socialdata GmbH, Munich.

every fourth over more than 10 km. Data from the other country show that a private car is on average only used for 2.7 journeys per year over a distance of more than 200 km and that half the private cars never travel that distance. Transport of goods by rail takes place primarily over medium distances. Although detailed information is only available on national rail traffic in the Member States, it is estimated that just under half of all national and international rail transport takes place over distances of more than 150 km and about 15% over distances in excess of 500 km. The characteristics of transport by inland waterways result in the majority of goods in the Community being transported over medium distances.

17. Although the factors affecting growth of transport activities are complex, it would appear likely that in the absence of new policy measures growth will continue to concentrate on road transport of both goods and passengers. Air transport of passengers is generally expected to continue to grow at rates above the rate of growth in GDP mainly because of the low base, increasing commercial and industrial links between different parts of the Community, and changing patterns in holiday travel resulting from higher disposable income. However, under certain conditions, including the application of particular transport policy measures, patterns may develop differently. For example, recent figures from the Netherlands show a stabilization in car use and a steady increase in rail passenger traffic. [1] To what extent such developments may modify the general trend is at present unclear.

Investment and pressure on capacity

18. While transport demand has grown, investment in inland transport infrastructure in Europe [2] expressed as a percentage of gross domestic product actually declined between 1975 and 1980 from 1.5 to 1.2%, but this decline was halted in the early 1980s and the relative investment share remained at about 1% throughout the decade. [3]

19. Although there are fluctuations on a year-to-year basis, the relative importance of investments in all modes [4] in the years 1980 and 1989 shows that:

(i) road accounted for just over 66% of all investments with a small downward trend;

(ii) rail's share has slightly increased to about 23%;

(iii) the shares for both ports and inland waterways have decreased from 5 to 3.5% and from 2 to 1.5% respectively;

(iv) airports have benefited most from investments, increasing their share substantially from 2.9 to 5.6%.

Growth in transport demand and relative decline in inland transport infrastructure investment have increased pressure in particular on the road and rail networks' capacity which have reached saturation at many points. Even substantial investments in airports have proved insufficient, resulting, in combination with unsatisfactory air traffic control mechanisms, in pressure on existing capacity.

Broader environmental and other pressures

20. The growth in transport activity not only leads to pressures on capacity, but raises broader environmental issues. The effects on transport of the economic and technological developments over the last two decades have exacerbated the areas of conflict between transport and the environment. These areas of conflict take the form of energy consumption, operational pollution, land-intrusion, congestion and risks inherent to the carriage of dangerous goods.

21. Since the beginning of the 1970s transport has become a major consumer of non-renewable energy. Over the last two decades the energy consumption of road transport has increased by 103%, which represents an average annual growth of 3.8%, whereas energy consumption for air transport increased by approximately 93%, an average increase of 3.6% per annum.

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1 *Auto's in Nederland* — Centraal Bureau van de Statistiek, September 1992.

2 Comprising new construction, extension, reconstruction and renewal.

3 *Source:* ECMT — *Investment trends in transport infrastructure in ECMT countries in the 1980s* — ECMT/CM(91) 9, Chapter 4.

4 Except pipelines.

22. The available data for atmospheric pollution caused by road transport show a substantial increase over the last two decades for a number of pollutants. Most important of these is the emission of carbon dioxide (CO_2), the main man-made 'greenhouse gas', by motor vehicles, which increased by 76% between 1971 and 1989, an average annual increase of 3.2%.

(%)

Means of transport	Share in total CO_2 emissions by transport sector	
1. Road: total	79.7	
of which:		
Private car		55.4
Goods vehicles		22.7
Buses + coaches		1.6
2. Aviation	10.9	
3. Railways: total	3.9	
of which:		
Passengers		2.8
Goods		1.1
4. Inland waterways	0.7	
5. Other transport	4.3	

Source: TNO Consultant. *TNO policy research,* 'Possible Community measures aiming at limiting CO_2 emissions in the transportation sector', Delft, August 1991, pp. 6–7.

Other pollutants include:

(i) nitrogen oxide (NO_x), which contributes indirectly to the 'greenhouse effect' and directly to acid rain and the build-up of tropospheric ozone, which increased by 68%;

(ii) particulates detrimental to human health, which increased by 106%;

(iii) hydrocarbon (HC) emissions, which contribute to the 'greenhouse effect' and the build-up of tropospheric ozone and may have potential carcinogenic effects, which increased by 41%.

23. Trends indicate that, in a 'business as usual' scenario, energy consumption and CO_2 output by the transport sector are likely to increase by 24.6% between 1990 and 2000. [1]

24. Transport also causes water and soil pollution and is a source of noise and vibrations.

25. Transport infrastructure causes land-intrusion with permanent and often irreversible impact on the landscape and the urban environment.

26. Transport is also increasingly the cause of congestion. Between 1970 and 1989 the volume of road traffic (in vehicle-kilometres) doubled both for private cars and freight vehicles (average annual growth of about 3.7%). One of the main contributory factors for this growth was the development of car ownership in the Community. On the basis of trends since 1975 the number of cars in the Community is expected to increase between 25 and 30% during the period 1990 to 2010.

27. In addition to the effects identified above, transport activity is also the cause of physical damage to persons and property, including fatal accidents. The resulting economic costs are impossible to quantify but despite progress made in the prevention of accidents in recent years, they remain a substantial burden, financial and otherwise, to be borne by society as a whole.

Prospects, in particular for the environment

28. As to the future, forecasts of growth in transport demand show that in a 'business as usual' scenario with a reasonably favourable economic climate the expansion of the road sector is likely to be buoyant. Under these conditions, a near doubling of road transport demand for both passengers and freight seems likely. Although technological progress and measures already taken will mitigate the environmental impact, in the absence of additional policy actions, significant worsening of the situation is still likely as regards pollution, notably CO_2 emissions, congestion and accidents. Even if lower economic growth slows the rate of deterioration for a time, the risk of the development of the transport sector being unsustainable in the medium to long term due to its broad environmental impact remains real.

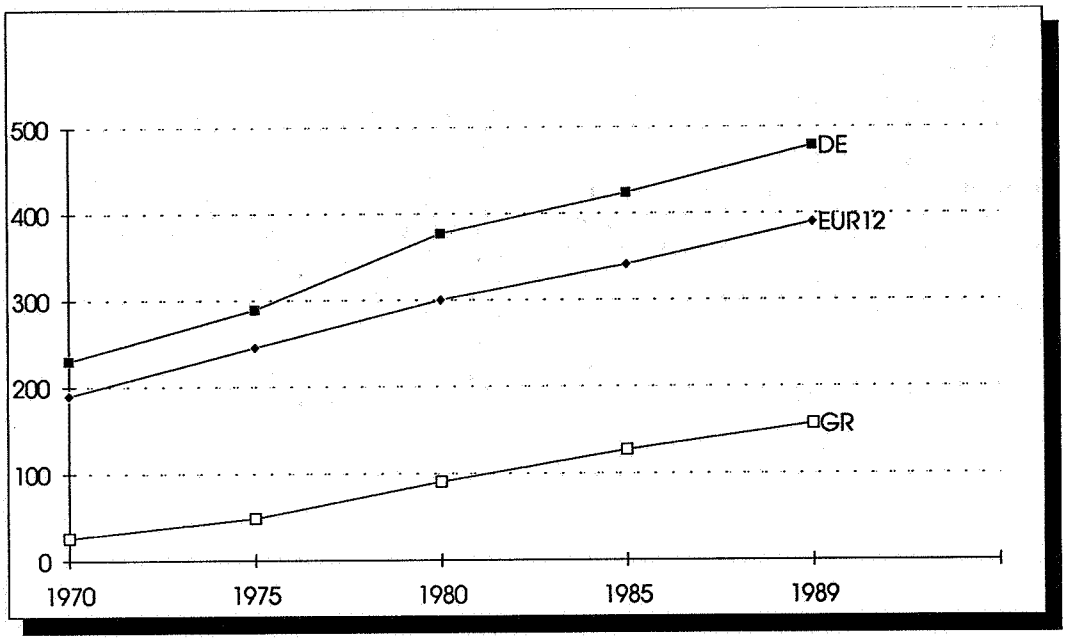
The transport economy

29. While the scale and growth of transport activity pose problems, they also underline the importance of this sector to the continued health of the Community's economy.

30. With only marginal changes since the beginning of the 1980s, the transport service industry has repre-

[1] *Energy in Europe,* 'A view to the future', Commission of the European Communities, September 1992.

Graph 4 — *Cars per 1 000 inhabitants*



sented about 4% of gross domestic product. [1] If own account and private transport are included, the share rises to an estimated 7 to 8%. Employment figures over the last decade reflect the changes in the relative importance of transport modes with only insubstantial changes in the aggregate number of salaried employees representing a percentage of between 4 and 5% of the total salaried workforce. [2] In 1991, a total of about 5.6 million persons were employed in transport, distributed between the sectors as shown below.

Transport sector	Total number of jobs in each sector (x 1 000) in Community countries
1. Railways	897.8
2. Inland waterways	24.2
3. Road and other inland transport	2 509.0
4. Maritime	217.3
5. Aviation	349.6
6. Associated activities	1 569.9
Total	5 567.8

Source: Estimate based on Community labour force survey, 1991.

31. The transport equipment industry [3] is one of the principal industrial sectors in the Community, in terms of turnover second only to the food industry. Its most important sector is the motor vehicle industry, including parts and accessories, which accounts for over three quarters of the sector's output in 1989, the aerospace industry being second with around 14%. [4] Following the second oil crisis at the beginning of the 1980s, little growth was registered until 1985. However, from 1985 onwards until recently, substantially improved growth rates, in particular in the motor vehicle and aeronautical industries, were among the main catalysts for the continued growth of the entire Community economy, both through own-growth and because the transport equipment industry is one of the most important customers for a number of other industrial sectors, the most important being

1 Eurostat, *Transport, annual statistics* 1989, p. 3; some estimates are higher.

2 Eurostat, *Basic statistics,* 1991, p. 120.

3 Motor vehicles (including parts and accessories), shipbuilding, railway rolling stock, moped and motorcycles, aerospace equipment.

4 *Panorama of EC industries 1991-92,* Chapter 13. The share of the other sectors being: shipbuilding 4.5%, rail and tram 1.6%, cycles and motorcycles 1.3%, other 2%.

the iron, steel and metal industries, mechanical engineering, and the electrical, plastic and chemical industries. Technical developments in all sectors of the transport equipment industry have transformed it into a pace-setting industry for technological innovation from which a wide range of other industries benefit.

32. The transport equipment industry employs an estimated 2.6 million people [1] representing about 6.5% of total Community industrial employment. It is estimated that one in ten jobs in the Community depends directly or indirectly, from third-tier supplier to servicing and repair shops, on the motor vehicle sector.

33. Apart from being a substantial industry in its own right, the transport equipment industry is of vital importance for the proper functioning of other manufacturing and service industries which depend on the availability of efficient state-of-the-art transport equipment.

34. Finally, the transport service industry is essential for the integration of the Community, its economic performance and the mobility of its citizens. The problems of the more peripheral regions show that geographic disadvantages may be exacerbated by insufficient transport resulting in a lack of competitiveness and difficult market contacts of the economies concerned. Should the Community's transport system cease to function adequately under pressures of growth, it could not fail to have a serious negative impact on the Community as a whole.

[1] 1989 figure; *Panorama of EC industry, statistical supplement 1992*, Chapter 13.

III — Objectives and scope of the common transport policy: sustainable mobility for the Community as a whole

Objectives of the common transport policy

35. According to Article 74 of the EEC Treaty, the fundamental objectives of the CTP are those of the Treaty itself. These are set out in Article 2 and, following the Maastricht agreement, consist of the promotion throughout the Community of a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment, a high degree of convergence of economic performance, a high level of employment and of social protection, the raising of the standard of living and quality of life and economic and social cohesion and solidarity among Member States. Moreover, as held by the European Court of Justice in Case 167/73,[1] Article 74, by referring expressly to Articles 2 and 3, preserves the application of the Treaty's general rules to the transport sector except in so far as it specifically provides otherwise. The specific provisions on transport, far from setting aside fundamental Treaty rules such as those concerning the establishment of a common market, have as their object to give effect to and complement them by common actions.

36. The development of the CTP has also to respond to wider issues of depletion of natural resources and environmental degradation at the global level. Even before the Rio Summit the Community had in the Dublin declaration of June 1990 committed itself to the application of the principles of sustainable development. This commitment has been developed by the Commission in its fifth environmental action programme which has identified the importance of the integration of environment and resources issues into sectoral policies. The transport sector is of particular importance in this respect. For example, the 'greenhouse effect' linked directly to energy use and CO_2 emissions is without question of paramount importance. The Community has set itself clear targets for CO_2 stabilization and the transport sector is a key actor in the efforts necessary to achieve the stabilization target of 1990 levels by 2000. Finally, in accordance with the Maastricht Agreement, Article 130r of the Treaty will oblige the Community to integrate environment protection requirements into the definition and implementation of other Community policies including transport.

37. In addition, the formulation and implementation of the CTP will have to take proper account, in accordance with Article 130b of the Maastricht Agreement, of the objective of strengthening the Community's economic and social cohesion, in particular, by reducing disparities between the regions and the backwardness of those least favoured. The link between the improvement of transport infrastructure and the accessibility of the regions should be seen in the light of its consequences on the planning of residential areas and centres of employment, production districts and areas of consumption as well as on the volume of traffic and its organization. Therefore, the provision of transport infrastructure, including projects within assisted areas, and the development of trans-European networks should be carefully planned in order to remove imbalances and secure effective mobility.

38. Accordingly, in the transport field, these objectives require the development of policies to ensure that the transport sector can take full advantage of the Treaty's provisions on a single market and that the different geographical components of the Community benefit from transport systems that will provide services efficiently, safely, under the best possible social conditions and fully respecting the objectives of the Community's environment policy.

39. Transport efficiency requires that, on the basis of a properly functioning internal market, the development of trans-European transport networks and the possibilities offered by the best available technologies, citizens and enterprises should have access to means of mobility corresponding as closely as possible in quality and performance to their needs and expectations. Access to these facilities should be at a reasonable cost consistent with their long-term maintenance and development. At the same time, transport services must be safe from the point of view both of the user and others who are placed at risk.

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[1] Judgment of the Court of Justice of 4 April 1974: Case 167/73 [1974] ECR 367.

They must also be provided under conditions which promote the Community's social cohesion. Finally, transport systems must contribute to the protection of the environment and, in particular, to the solution of major environmental threats such as the 'greenhouse effect' and to the achievement of sustainable development. The realization of all these objectives implies that, as a general rule, all transport users should pay the full costs — internal and external — of the transport services that they consume, even if these costs are in some cases paid by society to assist those in need. In particular, internalization of external costs should be a major element of a transport policy integrating the protection of the environment.

Global approach

40. This approach, which can be summarized as the pursuit of sustainable mobility, calls then for a global programme including:

(a) the continued reinforcement and proper functioning of the internal market facilitating the free movement of goods and persons throughout the Community;

(b) a transition from the elimination of artificial, regulatory obstacles towards the adoption of the right balance of policies favouring the development of coherent, integrated transport systems for the Community as a whole using the best available technology;

(c) the strengthening of economic and social cohesion by the contribution which the development of transport infrastructure can make to reducing disparities between the regions and linking island, landlocked and peripheral regions with the central regions of the Community;

(d) measures to ensure that the development of transport systems contributes to a sustainable pattern of development by respecting the environment and, in particular, by contributing to the solution of major environmental problems such as the limitation of CO_2;

(e) actions to promote safety;

(f) measures in the social field;

(g) the development of appropriate relations with third countries, where necessary giving priority to those for which the transport of goods or persons is important for the Community as a whole.

41. The adoption of such a global programme requires an analysis of issues arising in the transport sector in order to identify those on which a Community initiative appears necessary, bearing in mind the subsidiarity principle. What actions should be proposed at Community level, because only the Community can resolve the problem or because it is best placed to do so? The following chapters seek to answer this question in relation to each of the main areas of activity forming part of the global programme in accordance with the undermentioned principles flowing from the provisions of the Maastricht Agreement.[1]

42. As regards the preparation of new Community actions in the transport field, a distinction must be made between those matters for which the Community has an exclusive power and those for which it shares power with the Member States.

43. In relation to the areas of exclusive power, notably the realization and functioning of the internal market in transport services and transport relations with third countries which are increasingly important, the Community is obliged to realize the objectives assigned to it and the necessity for action is established by the Treaty itself. Nevertheless, even in these areas, in accordance with the principle of proportionality, Community actions should not go beyond what is necessary to achieve Treaty objectives and the manner in which the Community intervenes must be evaluated from this point of view.

44. In areas of shared power, such as transport networks and certain aspects of safety, it is first necessary to establish the necessity for Community action, bearing in mind the context of the action within the Treaty system. In the transport field, many possible initiatives will be ancillary to the harmonious functioning of the internal market in transport services, the common policy on transport, the obligation to integrate environment protection and common actions on economic and social cohesion. In such areas, the political commitment to Community action is very strong. In addition, criteria such as the transfrontier dimensions of a transport problem, the difficulty for Member States to address the issue individually together with the risk of competitive distortions if they do, and the added value at limited cost of the Community complementing actions at national or regional level should be applied to distin-

[1] For a fuller explanation reference can be made to 'The subsidiarity principle', SEC(92) 1990 final, 27 October 1992.

guish those issues on which Community action is justified. Again, it will also be necessary, as a second stage, to evaluate the manner in which the Community should intervene in accordance with the principle of proportionality. The use of relatively flexible instruments such as network guidelines and their accompanying measures, as well as the continued development of effective approaches to enable Community objectives to be realized through international organizations and instruments, should prove particularly useful in this regard.

45. As to the management and control of Community actions, the goal will be, as it has been in the past: the maximum decentralization compatible with the realization of Community objectives and obligations. The use of the directive and network guidelines, by their nature, will facilitate this task. In the field of controls, other than controls for which the Commission has its own responsibility such as those connected with the Community budget or the implementation of Community law by Member States, the emphasis will be on action by national authorities, the Community's involvement being designed to increase the effectiveness of those controls where necessary.

IV — Issues and possible answers

The completion, reinforcement and proper functioning of the internal market

General

46. The adoption of legislation necessary for the establishment of an internal market in the transport sector, in accordance with the Single European Act, is now close to being realized. A legislative framework will be in place which will provide the legal basis, in particular, for the provision of transport services without discrimination based on nationality or place of establishment. As the general rules on right of establishment also apply to transport, and as restrictions on capacity have been largely eliminated or limited to a safeguard role, transport undertakings should accordingly be able to take full advantage of the internal market and operate in the manner that seems to them most effective. They will do so on the basis of conditions of competition which have been harmonized in a number of important areas such as safety requirements, technical specifications and professional standards. In addition, movements by persons and undertakings on their own account, whether of goods or persons, have also been freed from many restrictions. They will also have been facilitated by such initiatives as common rules on insurance and driving licences and, in the interests of improved safety, made subject to harmonized standards, for example, on the wearing of seat belts.

47. The completion, reinforcement and proper functioning of the single market for transport services will undoubtedly continue to constitue one of the main components of the CTP.

Application of the 1992 measures

48. First, action will be necessary to ensure that the measures adopted in the context of the 1992 programme for the realisation of the internal market are properly applied. The magnitude of this task should not be underestimated. The legislation contains provisions the application of which requires more than the simple deletion of restrictions in national regulations.

49. In the field of inland transport, for example, situations may develop in which the crisis mechanisms envisaged for carriage of goods and persons by road may need to be employed.

50. In the railway field, rights of access to infrastructure granted to international railway groupings and for the purposes of international combined transport require the groupings and enterprises concerned to conclude non-discriminatory agreements on the different administrative, technical and financial matters needed to ensure adequate and safe management of the traffic concerned. [1] The conclusion of such agreements may raise issues of some complexity and sensitivity. For this reason, it is necessary for the Commission to be in contact with those directly concerned to see whether it can assist in finding workable solutions as rapidly as possible, a process already begun. The Commission in the light of those discussions, which have already begun, will decide whether and what form of further action is required.

51. In the field of civil aviation, the Commission has a number of responsibilities concerning the execution of the third liberalization package. It may have to pronounce on the correct interpretation of the regulation on licensing of air carriers where an air operator's certificate has been refused by a national licensing authority. [2] It may have to decide whether decisions taken by national authorities restricting exercise of traffic rights for reasons of distribution of traffic between airports within an airport system or on grounds that serious congestion or environmental problems exist are justified. [3] Finally, the Commission may have to decide on complaints concerning excessively high air fares or a downward spiral of fare levels causing widespread losses. [4] In this connection, it will publish in an appropriate form the methods

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1 Article 10 of Council Directive 91/440/EEC of 29 July 1991 (OJ L 237, 24. 8. 1991).

2 Article 13 of Council Regulation (EEC) No 2407/92 of 23 July 1992 (OJ L 240, 24. 8. 1992).

3 Articles 8 and 9 of Council of Regulation (EEC) No 2408/92 of 23 July 1992 (OJ L 240, 24. 8. 1992).

4 Article 7 of Council Regulation (EEC) No 2409/92 of 23 July 1992 (OJ L 240, 24. 8. 1992).

which it intends to use to evaluate whether air fares are too high or too low. This will permit those interested better to predict how the complaint mechanism will work and so reduce the number of unjustified complaints.

52. Besides these specific tasks, the proper implementation of Community legislation will have to be checked for all modes and, if necessary, action taken to ensure the conformity of national laws, regulations and administrative procedures. In addition, to avoid the expected effects of the 1992 measures being undermined, work will have to be done to ensure that facilities such as port, airport and container terminals can be used as effectively as possible under non-discriminatory access and usage conditions.

53. After all, it makes little sense to spend many years adopting Community legislation if, once adopted, it is not taken seriously and effectively implemented. It should be noted, however, that in the transport field this activity concerns, for the most part, ensuring the conformity of national regulatory systems with Community law and objectives and not interventions in cases involving particular transport enterprises or transactions. These are primarily the responsibility of national and local authorities. The possible interventions in the civil aviation field on licensing, routes and fares are necessary exceptions, not the rule. They have been considered necessary by the Community legislator in order to ensure that certain key decisions can be subject to independent verification.

Generally applicable Treaty rules

54. The proper functioning of the internal market in the transport sector is guaranteed not only by the provisions of the transport chapter of the Treaty but also by its generally applicable rules, particularly those on competition. [1] The transport sector is indeed likely to pose particular problems in this regard in the years immediately ahead.

55. First, the economic and technical characteristics of transport activities are such that issues concerning the application of competition rules are bound to arise. Transport systems based on the exploitation of single networks tend to monopoly or oligopoly. Integrated systems, including in particular intermodal transport, may require cooperation by agreement between different economic operators. Service obligations in the public interest tend to involve the granting of correlative special or exclusive rights. Finally, transport entities frequently rely on public finance, including subsidies some of which may not be compatible with the functioning of the internal market. All of these tendencies mean that the application of competition rules in the transport field is of fundamental importance for the efficiency of the sector and, at the same time, must continue to take into account its specific characteristics.

56. Second, in the period immediately ahead, transport markets in the Community will be progressively opening up to greater competition between operators not only as regards services between Member States but also within their formerly national markets, many of which have been traditionally protected. This process of liberalization is certain to provoke important changes as both operators and policy-makers seek to adapt to the scale and challenges of a genuinely single market. More dynamic operators can be expected to seek economies of scale and scope both to defend their present market position and to exploit the new opportunities that are opening up. Productivity gains through technical modernization will also be sought, some of these changes being associated also with the industry's response to environmental and safety requirements.

57. Accordingly, it is to be anticipated that the transport sector will undergo important structural changes involving both the arrival of new entrants on certain markets and, at the same time, new relationships between transport enterprises as well as concentrations of different types. New investments will be made both in the public and private sectors. The relevant authorities at national and regional levels can be expected to assist this process of adaptation through the different means at their disposal, including financial measures, some of which will fall within the scope of the Treaty's provisions on aids. The Community's policies on concentrations, agreements and concerted actions between enterprises will accordingly have a vital role to play. The same is true so far as State aids and special and exclusive rights are concerned. The Community must ensure that the process of adaptation to the single market takes place under conditions which avoid market distortions, allow participants a fair opportunity to compete and afford users the benefit of competitive industrial organizations. These are a necessary element in the realization of the Community's fundamental objective in the transport field: transport systems that will

[1] Judgment of the Court of Justice of 30 April 1986, Joined Cases 209-213/84 [1986] ECR 1457.

provide services efficiently, safely and under the best possible environmental and social conditions.

58. The Community already disposes of a series of instruments concerning State aids in the transport sector, some of them dating back as far as the 1960s. Similar situations in different subsectors are often not treated in similar ways, while recent developments are not always properly reflected. The instruments should accordingly be re-examined with a view to their rationalization and updating.

59. In the area of transparency, the Commission intends to develop an inventory of aids in force to the benefit of all transport modes. This will permit periodic assessments to be made of the scale and nature of public financial support to the transport system. In order that this inventory should better reflect the reality of the different ways in which support is given, it will also propose measures to increase, where necessary, the transparency of the financial accounds of entities responsible for providing transport infrastructure and services. This has already been achieved for railway undertakings and in some other subsectors information already available may well be adequate. But there are fields in which available information leaves much to be desired, making it difficult to evaluate the extent and impact of State aids, for example, where public authorities make investments in infrastructure which may be compatible with the rules of competition. Ports and other terminals are a case in point. Measures will accordingly be prepared to increase the transparency of their financial accounts, taking account of the different way in which ports are organized and their diverse legal status. Basic transparency of this kind is essential for sound application of the Community's aids regime.

60. In the field of notification of new aids, it should be possible to work in two directions simultaneously.

61. On the one hand, it is desirable to enlarge the category of aids not requiring prior notification and examination pursuant to Article 93(3) of the Treaty. Regulations 1191/69 and 1107/70 provide for certain types of aid in the field of inland transport, notably those which constitute compensation for public service obligations, to be subject to the requirement only that they be notified after the event. Now that the necessity and ligitimacy of public service obligations have been recognized in the fields of civil aviation and maritime cabotage in the context of the 1992 programme, consideration should be given to the possibility of proposing similar treatment for those areas. Such exemptions would recognize that this category of aids does not normally disrupt the functioning of the internal market and can accordingly be left primarily to authorities at national or local level.

62. Consideration will also be given in this context to the preparation of a proposal for the adoption of a *de minimis* rule to apply generally to aids in the transport sector which by reason of their limited scale are also unlikely to have adverse effects on the functioning of the internal market.

63. In the other direction, events have shown that aids take many forms, not all of them obvious, particularly in the context of complex financial operations linked to the opening up of previously closed markets to competition or the privatization of transport undertakings. Consideration will accordingly be given to the development of rules clarifying the prior notification requirements in the case of certain operations of this type in order to ensure that any financial intervention which in fact constitutes an aid is indeed properly notified.

64. Finally, the guidelines that the Commission has published [1] concerning the criteria that it uses to evaluate State aids will be reviewed to adapt them as necessary to current conditions. The opportunity will also be taken to examine whether, at the same time, any other changes are needed in existing Community legislation. Such exercises have particular value since they give an indication to national and local authorities and to transport operators concerned of the scope which is available for measures designed to support them particularly in periods of adaptation to new conditions. Given the very different characteristics of the different transport subsectors, it will be necessary to proceed separately for each subsector though on the basis of common principles which will ensure the coherence of the CTP's general approach to aids. The question of aids in the context of intermodal transport is considered further in points 93 – 117.

Further legislative development of the internal market

65. The adoption of the measures included in the 1992 programme will not mark the end of Com-

[1] Memorandum No 2 on the development of the Community air transport policy, COM(84) 72 final, Annex IV. 'Financial and fiscal measures concerning shipping-operations with ships registered in the Community', SEC(89) 921 final.

munity legislation concerning the internal market in transport services.

66. Certain internal market measures already adopted themselves contemplate further legislative activity. For example, in the railway field, further proposed actions are foreseen with regard to the development of the railways, in particular, in the field of international transport of goods. [1] Similar provisions or undertakings have also been made amongst others in the fields of a permanent system of market observation for carriage of goods by rail, road and inland waterway; passenger services by road; inland waterways and, in the maritime sector, manning rules for island cabotage and any other measures needed in the context of cabotage liberalization. The action programme in Annex III identifies measures of this kind.

67. Where further legislative activity has been contemplated expressly in existing Community legislation, the Commission intends to make any necessary proposals in the light of conditions prevailing at the time. It will also consider, taking into account the proportionality dimension of the subsidiarity principle, how the objectives in question can best be realized.

68. The Commission will also review the functioning of Community legislation with a view to determining whether the objectives of the internal market in transport services are being effectively attained. In addition, Community legislation includes obligations for the Commission to review the functioning of Community legislation though without any explicit reference to possible future initiatives. For example, reports are called for on the application of the Council Regulations on route access and fares in the field of civil aviation. [2] The same applies to the implementation of the 1986 shipping Regulations [3] and to the Regulation on social issues in the field of road transport such as driving time. [4] Whether these reports will be accompanied by proposals for action will be decided at the appropriate time.

69. In addition, the 1992 programme concentrated on known priorities. But problems that were put to one side as being of secondary importance, or simply not anticipated, may well now emerge as meriting attention. Here it will be necessary to establish, under the conditions now prevailing or likely to prevail in the future, what type of initiative would most effectively realize the Treaty's objectives. Areas requiring analysis include general aviation, taxi services, security transport, ambulances, own-account transport and rental of motor vehicles. On the harmonization side, the opening up of hitherto national markets calls for a continued examination of the need for Community measures to address problems which liberalization measures will not by themselves resolve through the working of the internal market. Indeed these problems may indeed be aggravated by the development of direct competition between operators subjected to still divergent national or regional regulatory regimes applying to matters as diverse as the organization of market, taxes and other charges, technical requirements, social, environmental and safety obligations, civil liability regimes and so on. These matters are considered further in subsequent chapters since they need to be examined in the light of major developments which will have a decisive impact on the development of the Community's transport system and consequently on the provisions of the CTP relating to the functioning of the internal market in transport services.

Information and analysis of the functioning of the market

70. The justification for future initiatives and their possible content depends in large measures on the availability of relevant information on the functioning of the market in transport services and of the different transport systems upon which it depends. This applies to measures directly addressing the functioning of the market and also to other possible developments of the CTP.

71. As to inland goods transport statistics, the collection of statistical information is coordinated by Eurostat under four Council Directives. [5] Informa-

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[1] Article 14 of Council Directive 91/440/EEC of 29 July 1991 (OJ L 237, 24. 8. 1991).

[2] Article 13 of Council Regulation (EEC) No 2408/92 (OJ L 240, 24. 8. 1992) and Article 9 of Council Regulation (EEC) No 2409/92 (OJ L 240, 24. 8. 1992).

[3] Article 11 of Council Regulation (EEC) No 4055/86 of 22 December 1986 (OJ L 378, 31. 12. 1986).

[4] Article 16(1) of Council Regulation (EEC) No 3820/85 of 20 December 1985 (OJ L 370, 31. 12. 1985).

[5] Council Directive 78/546/EEC of 12 June 1978 (OJ L 168, 26. 6. 1978, p. 29).
Council Directive 89/462/EEC of 18 July 1989 (OJ L 226, 3. 8. 1989, p. 8).
Council Directive 80/1177/EEC of 4 December 1980 (OJ L 350, 23. 12. 1980, p. 23).
Council Directive 80/1119/EEC of 17 November 1980 (OJ L 339, 15. 12. 1980, p. 30).

tion is obtained by national statistical institutes or national transport administrations for road and inland waterways and by the main railway enterprises for rail data. The responsibility for data collection and survey methodology lies, and will continue to lie, essentially within the Member States and their national networks of statistical sources.

72. Other information is at present dispersed, incomplete, inconsistent and often of very uneven quality. The 'temporary' system for observing markets for the carriage of goods by rail, road and inland waterways continues to function under the Council Resolution of 21 March 1992 [1] for the purpose of providing information on the development of inland transport markets. In other sectors no such mechanism exists. Information is gathered as occasion demands from a variety of sources including statistical offices, research institutes, consultancies, industrial organizations and transport operators.

The suggestion has been made that in order to improve this situation an organization such as a transport observatory should be created to generate relevant information in a more systematic way.

73. However, work currently under way to extend the European transport statistical information system is based on a global approach aimed at improved comparability between the different modes of transport, and considers all modes. A significant effort is in progress to widen the coverage of existing statistical work to include, within the statistics framework programme, other transport sectors such as combined, maritime, air and passenger transport as well as transport safety.

74. While new initiatives in this field are welcome, such as the actions being taken to set up a European Centre for Prospective Analysis on Infrastructure, it would not be practical to try to centralize the function of gathering and analysing all transport data in a central 'observatory' as some have proposed. Instead it would be preferable to promote the cooperation of bodies engaged in this field, existing and yet to be created, by developing a network between them. To this end, under the EURET programme, stocktaking of national and other data-gathering and forecasting activities will be carried out with a view to evaluating the possibilities for cooperation and coordination. In the light of that evaluation, initiatives will be taken, building on what already exists. The future of the Community's existing system for market observation should be decided in the light of these developments.

From the elimination of barriers towards an effective integrated system

Imbalances and inefficiencies

Modal disequilibria

75. As was shown in Chapter II, economic growth, the increasing importance of services and major social and economic changes have contributed towards a considerable expansion of the transport sector. The completion of the internal market, including the lifting of cabotage restrictions, the creation of the European Economic Area and the movement into market economics of the countries of Eastern and Central Europe and the CIS will certainly contribute to further expansion in the future. The expansion of the transport sector has, however, brought problems in its wake; growth has produced or exacerbated a number of imbalances and inefficiencies in the transport system taken as a whole and also within transport modes. Despite the considerable success of transport in meeting consumer demand, inadequate integration of modes is denying users some practical alternatives to current services. Inadequate capacity in some modes in producing congestion and environmental damage, while, in others, underused capacities exist. Inadequate or incomplete networks cause bottlenecks in some areas; in others, they prevent fuller integration of peripheral regions into the single market. These imbalances and inefficiencies are not simply the cause of inconvenience and frustration. They are unacceptable to a growing body of public opinion and, uncorrected, they threaten to damage the Community's development, slowing the process of economic integration and adversely affecting its international competitiveness.

Road

76. 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 and because the construction of transport infrastructure has been lagging behind what was needed. Individual decision-making thus gave socially sub-optimal results by distorting the balance between transport demand and supply,

[1] OJ C 86, 7. 4. 1992, p. 4.

both across modes and within. 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.

77. Road transport activity has grown faster than other modes and in general continues to do so. Moreover, the distances of road journeys for both passengers and goods are in the vast majority of cases relatively short, making it more difficult for alternative solutions to compete. The private car and lorry have thus emerged as the dominant means of transport causing congestion in main road corridors and urban centres. The present traffic situation in many city centres and conurbations is one of complete saturation or close to it. Further development of road infrastructure alone is unlikely to resolve the problem, necessary as it may be in some areas. In others, the construction of new capacity is in any case meeting significant obstacles, physical and political. Moreover, associated with a continuing increase of cars and lorries is an inevitable increase in pollution and in the number of dead and injured from accidents on the road, not always off-set by technical or other improvements in the fields of environment protection and safety.

Rail

78. In the case of rail, traffic and destinations have changed with a growth in some traffic, notably urban and inter-city, but a fall in others, notably in the old industrial areas and those suffering a decline in population. Insufficient investment in infrastructure has produced a numer of saturation points in the rail network. However, the entry into service of new sections of high-speed lines and the closure of many lightly used services have created surplus capacity, even if this surplus capacity is not always available where it is most needed. Reductions in rolling-stock have reduced the spare resources that could be rapidly deployed. Nevertheless, in the future, the further development of the high-speed network will release more capacity on the existing lines which, with limited investment, could be used for long-distance freight or other new services.

Inland waterways

79. Waterways are particularly efficient for bulk traffic but have not yet been widely exploited for other trades; the possibilities are limited by accessibility to suitable, well-equipped waterways, such as the Rhine and the Rhone. Evidence available suggests that the overall European waterway network is capable in time of handling much more than the current traffic, provided realistic investment is made in maintenance and works to improve the existing network, in particular, to remove some major bottlenecks and stimulate transport particularly along the north-south axis and eastwards towards the new *Länder* of Germany and Eastern and Central Europe. Improved handling facilities to cope with the increase in container traffic are particularly necessary if any expansion in this sector is to occur.

Air

80. Strong growth rates in air traffic inside and to and from Europe have been sufficient to place severe strain on some parts of the air transport infrastructure. Problems resulting from the fragmented and non-standardized nature of air traffic management and control (ATM/ATC) systems in Europe and from the division of the airspace concide with a serious lack of available runway and terminal capacities at some major airports. The structure of the Community air space which is constrained by the fixed civil air traffic routeing systems, the dedication of extensive volumes of air space for military purposes, the separation of air traffic control systems along national lines and the fact that commercial air traffic control of *en route* traffic does not generally apply below 10 000 feet is an important obstacle to improvements in capacity and efficiency. Peak period air traffic delays have worsened over the years and are now at an unacceptable level with predictions of serious worsening in future. Competitive pressures leading airlines to opt for higher frequencies with smaller aircraft and hub and spoke networks are likely to exacerbate the problem.

81. Physical extension of infrastructure capacities in air transport is very often hampered by extremely long planning periods and a significantly increased sensitivity in relation to the environmental impact of aircraft movements. Short-term relief by making better use of existing capacities is delayed by a lack of technical and an economically meaningful degree of intermodality, in particular between rail and air.

Maritime

82. The maritime transport sector has played and will continue to play an important role in the transfer of goods between Member States. However, the use of the maritime mode is too often limited to situa-

tions where, due to geographical factors such as the existence of a necessary sea crossing, land modes do not constitute an alternative. The potential contribution of short-sea transport in competition with land modes will have to be fully developed, particularly now that cabotage will provide new opportunities for services around the Community's maritime periphery. Instead of the usual combined sea-rail/sea-road journey involving the shortest searcrossing and longer rail/road journeys, a longer sea journey could reduce considerably those necessary by land. Obstacles barring the exploitation of this short-sea potential include handling costs and delays when transferring goods between modes, delays in ports due to factors considered below, complex documentation procedures, customer demands for just-in-time delivery, contractual liability systems in case of accidents and the poor image of much traditional short-sea shipping. To this list should also be added the relatively minor role at present of short-sea transport in combined transport networks and the fact that possibilities of coastal traffic have not yet been widely exploited due in part to the restrictions on cabotage.

83. When discussing maritime transport, particular mention should be made of seaports which play a vital role in providing transfer facilities to other modes of transport. Shortage of basic capacity is not a general problem among the ports of the Community. Competition between ports of different countries, and within the same country, has resulted in capacity being provided to match, or even run in advance of demand. However, there are ports in some parts of the Community, notably in Ireland and on the southern periphery, where investment in new infrastructure and connecting links to inland networks has lagged behind, particularly in providing facilities to meet the increasing demand for commodities to be delivered quickly and predictably. Combined with organizational and operational difficulties, these handicaps have contributed to the development of a situation in which the hinterland of some North Sea ports extends very far to the south and west, even south of the Alps, generating inland traffic which in other circumstances would not seek to transit such long distances.

84. Moreover, the demand for rapid and reliable services is reflected in the continuing trend for traditional methods of handling goods to be replaced by the use of containers, which offer advantages in terms of speed, reliability and security. Forecasts available on container traffic point to a growth of approximately 30% between 1990 and 1995. The same advantages are even more apparent in the case of ro-ro traffic, and use of this type of service has grown rapidly on short and medium-length sea crossings within Europe. To cope with continuing increases in these fast-moving types of traffic new facilities will probably be required. Previous experience suggests that in the largest ports of the Community there will be little difficulty in providing them. The position may be different in the peripheral areas and for small ports, however, where resources may not be readily available. In many ports, improvements to present organizational and operational arrangements will also be necessary in order to ensure that existing and future facilities are used as effectively as possible, to enable the ports concerned to share in the increased traffic of the single market and to play their proper part in a more balanced distribution of traffic.

85. Finally, as regards the maritime sector, mention should be made in this context of the continued erosion of the Community's deep sea fleets through flagging out. If maritime transport is to make a full contribution to the functioning of the Community's internal transport system, it will be better able to do so to the extent that the shipping industry, its skills, structures and associated activities have not been allowed to decline so seriously that it will be very difficult, in some areas perhaps impossible, to reverse the trend. Measures like EUROS which seek to restore the competitiveness of all Community deep-sea fleets by re-balancing the conditions under which they have to operate in competition with third country carriers, including these operating under flags of convenience, have an important role to play in this respect.

Regional dimension

86. Furthermore, when examining the problems of imbalances and inefficiencies of the transport sector, the regional dimension must be included. There is a close interaction between the development of transport and the spatial distribution of economic activity.

87. Most of the critical performance sectors of the European economy, namely services and high-tech manufacturing, tend to be located in congested, environmentally sensitive areas: on the one hand, major cities and conurbations, and on the other, in the corridor Barcelona – Marseille/Lyon – Milan/Strasbourg – Stuttgart – Munich. These are places in which provision of supplementary infrastructure is particularly difficult due to environmental and economic costs. Alpine routes, which have strategic importance for the linkage of the northern part of the

Community to the south, pose particularly sensitive problems.

88. At the same time, as growing congestion affects the economic core, there has also been underinvestment in peripheral areas. None the less it is widely accepted that reliable transport systems are instruments capable of making an important contribution to the redressing of current centre/periphery disparities. Indeed, regions eligible for ERDF Objective 1 funding show a level of transport infrastructure representing only 50 to 60% of the Community average. In addition, the functioning of regional transport networks has been negatively affected by several factors, for example changes in transport demand due to increased car use, rural exoduses and the closing down of numerous transport lines. The reasons for this lack of investment are: the relatively low ranking of infrastructure investments in the periphery, mainly due in part to the difficulties in identifying and quantifying benefits from such schemes; and the high costs involved in overcoming the problems of isolation of these areas, often related to the existence of natural barriers (the Alps, the Pyrenees or sea crossings); this situation is particularly disadvantageous for Ireland and Greece. The result is a failure to complete networks which clearly acts to the detriment of the periphery and therefore to the coherent development of the Community as a whole. Of course the regions most affected by this investment gap tend to be the least prosperous parts of the Community.

89. The Community has long fought to overcome the geographic disadvantages of its less well-off regions. The European Investment Bank (EIB) has been acting since the origin of the Community in the financing via loans of infrastructure projects of common interest and in the financing of projects aimed at the promotion of regional development, including transport projects. In 1975 it was joined by the European Regional Development Fund (ERDF) which had, up to 1988, granted ECU 8 786.6 million to improve transport infrastructure in lagging regions, that is 36% of the total ERDF expenses. In 1982 a specific budget line was created to contribute to the development of transport infrastructure. The overall infrastructure deficit of the Community was accentuated by the entry of Greece in 1981 and then of Spain and Portugal in 1986. The Community responded to that challenge with the 1988 reform of the Community's Structural Funds which will contribute, between 1989 and 1993, ECU 5 583.9 million to transport projects in Objective 1 regions via the Community support frameworks. Additional projects are to be funded through programmes such as Interreg (crossborder cooperation) and REGIS (ultraperipheral islands). The Commission has now proposed a reinforced financial framework for the Community budget in the period 1993 to 1997.[1] This includes a substantial increase in the Structural Funds and provision for the Cohesion Fund agreed at Maastricht under which help is specially targeted on transport infrastructure and environment needs in the four poorest Member States.

90. In addition, given the Community's geography, physical and economic, some areas have to bear a disproportionate burden of the costs of cross-frontier traffic, particularly road traffic. This issue has become particularly acute regarding the transit of heavy goods vehicles from which transit regions may derive little or no economic benefit. In very simple terms, it can be said that some Member States enjoy an approximate balance in that their lorries travel as much on roads in other Member States as do other lorries on theirs. Others do not, however. Some enjoy a significant positive balance while conversely others have to support a burden which significantly exceeds the use their lorries make of roads in other countries.[2] Progress on tackling the problem at Community level has consisted in the fixing of a common minimum rate for excise duty on diesel fuel[3] but much remains to be done in the area of approximation of user's charges and particularly on taxes for lorries.[4]

Environment

91. Finally, the growth in transport, though contributing positively to the Community's industrial and service economy, has caused a variety of increasingly serious problems as already indicated in Chapter II. This question is further developed in points 148–184.

The Challenge

92. The challenge for the Community's transport system is how to provide, in the most efficient man-

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1 'The Community's finances between now and 1997' COM(92) 2001 final, 10 March 1992.

2 See *Elimination of distortions of competition of a fiscal nature in the transport of goods by road*, European Comission, 1986.

3 Council Directive 92/82/EEC of 19 October 1992 (OJ L 316, 31. 10. 1992).

4 COM(92) 405 final, 30 September 1992.

ner, the services that are necessary for the continued success of the single market and the mobility of the individual traveller, while continuing to reduce the inefficiencies and imbalances of the system and safeguarding against the harmful effects that increased transport activity generates. It is possible to meet this challenge, while respecting the basic tenets of the free market, by the introduction of economically efficient transport policies. However, this will require a number of actions, Community and national, in order to ensure that the transport market contributes to the highest possible societal welfare, taking into account both the benefits for the user and the cost to the environment, in all regions of the Community.

Transport demand, intermodal competition and complementarity

Capacity constraints and possible responses

93. The trends presented in Chapter II indicate that, in a 'business as usual' scenario, the demand for transport, both passenger and freight, is likely to continue to increase at a rate at least as fast as that of the economy as a whole. This would imply that by the end of the decade demand could well be between a quarter and a third higher than it is today. Unless action is taken, much of this increase will probably be concentrated in the road sector which is already under pressure, sometimes severe. The reasons for this pressure stem largely from the following factors:

first, transport users have not been obliged to pay the full cost of the services that they use, notably the external costs;

second, public investment in infrastructure has been reduced in real terms over the past 10 years while traffic has increased;

third, planning requirements and the resistance from public opinion have imposed increasing restraints upon the development of new projects.

The net result is a shortfall in the level of infrastructure needed to meet demand.

94. One possible solution, at least in part, is to look for ways to increase resources available for investment, particularly by involving the private sector. The approach being developed on the basis of the Union Treaty's provisions on trans-European networks pursues these objectives as explained more fully in points 118–147. But new investment can only be part of the answer. Also important is a continued effort to eliminate artificial restrictions on the provision of transport services which prevent the most efficient solutions being used, a matter already considered in points 46–74. In addition, it is essential to examine how under-used capacity in the transport system, particularly in the modes other than road, could be brought into service, while respecting the principle of free choice for the user. There are good grounds to consider, as indicated in the preceding section of this chapter, that spare capacity, actual and potential, does exist as regards rail, inland waterways and short-sea shipping. Policy measures and advanced technologies can seek both to increase the attractiveness of the individual mode in question and promote the combined use of different modes. Combined transport should include the wider possibilities that are offered by different combinations of services, rail/sea, rail/inland waterway, rail/air in particular. These intermodal operations should provide the best combination of the different systems to meet the needs of operators and users.

95. Beyond these measures, however, it will be necessary to address the fundamental question of the true costs of transport and the necessity of internalizing external costs so as to ensure the development of a sustainable transport system. Such a policy will influence the demand for all modes by increasing the price of individual modes to the extent that these impose costs on society which are presently not paid for by the respective transport users. As the external costs associated with various modes differ significantly, the price increases will also vary across transport modes, leading transport users to adjust their demand, in particular, to favour those forms of transport that impose fewer external costs or even to reduce or avoid unnecessary movements.

Costs, charges and subsidies

96. Why has such a strong shift to road occurred both in passenger and freight transport, in the past 30 years, seemingly neglecting the possibilities offered by rail, inland waterways and short-sea? To answer this fundamental question it is necessary to look at the determinants of mode choice. Obviously, the increasingly finer penetration and availability of road haulage at virtually all locations plays an important role and is something that is not within the reach of the other modes, thereby limiting intermodal competition, especially on short hauls. In transport markets where all modes compete, various elements enter into

the mode choice process: flexibility, speed, reliability, frequency and price are probably the more important ones. In freight transport, the increasing share of high-value/low-volume goods and the surge in the use of information technologies, both in production and distribution, have favored modes that score relatively well on the first four criteria, which could be described by the label 'quality'. Road haulage and air transportation, the latter offering high-quality transport though at relatively high cost, profited strongly from this development. Furthermore, due partly to the fact that external costs were not fully internalized, the constant relative reductions in road costs charged to users stimulated this process, as they not only made road haulage more attractive in itself, but also reduced the incentive to further develop and exploit the potential of other systems.

97. To change this situation action might be taken at different levels:

first, to reduce the charged cost differences between modes, by incorporating into the transport prices the infrastructure and external costs which are presently not taken into account;

second, to improve the quality of service that is available, particularly for intermodal systems.

98. The problem of coverage of infrastructure and external costs is complex and involves a wide range of issues. However, the weight of the best available evidence suggests that certain sections of the road transport industry do not cover their costs, particularly when external costs are taken into account.

99. As to whether changes in the level of charges can vary the distribution between modes, common sense suggests that, under the right conditions, it will. After all, the growth in the share of the road sector has owed much to the constant reductions in its charged costs relative to other modes. Clearly, however, changes will only take place where there are viable alternatives, which is not always the case, particularly over short distances. But for medium and longer hauls potential alternatives do indeed exist and in this case should make other modes more competitive and therefore moves to ensure that road transport does pay its proper share of infrastructure and external costs should effect a shift in their favour, particularly if other measures are also being taken to increase their attractiveness.

100. Two further considerations reinforce the case for proceeding in this direction. First, even if road users were covering the real costs of the road transport system, it is a finite resource in the sense that road capacity cannot be constructed to meet any growth in demand. In congested and other environmentally sensitive areas, in particular, the possibilities for increasing the capacity of the system by adding to the network are now rather limited. In conditions of scarcity it makes sense to ensure that demand management mechanisms including charges are imposed which will create an incentive for users to reflect on the value of a particular journey or to consider other alternatives. Second, to rely on cost imputation or even road pricing is to use a market mechanism which still leaves operators with choice while ensuring a better utilization in time and space of different transport modes. Some other possible techniques for dealing with problems do not have these advantages. It makes sense to explore fully the possibilities for resolving problems on the basis of such a mechanism if it can avoid the need for more direct techniques substituting regulation for user choice, albeit a conditioned one.

101. The objection may be made that increasing the charged costs of transport, particularly road transport, would be economically damaging not only to transport operators but to the economy generally. One option that could be examined which would avoid or limit general increases in the cost of transport would be to reduce simultaneously the licence and other charges applied to heavy goods vehicles that are used in intermodal systems, while increasing the level of the charges overall, including those imposed on use of the private car. An idea to be explored in this context might be in the inclusion in specifications for heavy intermodal road vehicles of high standards as regards safety and protection of the environment. The special tax regime to apply to such vehicles would reflect the fact that they would have lower road mileages than ordinary ones and would also impose lower external costs. The specifications would also have the effect of promoting the interoperability of intermodal systems throughout the Community.

102. The relationship between the charged costs of different transport modes can also be modified by the use of public financing to reduce those of the modes which have the potential capacity to relieve modes under stress. However, a general policy of permanently subsidizing certain types of transport operation, particularly long distance passenger and freight movements, is unacceptable. It relieves the entities concerned from competitive pressure while simultaneously disadvantaging their competitors. It is unlikely to produce viable, efficient, long-term solutions. Nevertheless, aids do have a role to play not only in modifying the cost relationship of modes but also in rendering certain modes more attractive in

themselves. It is necessary to develop guidelines concerning the conditions under which they are to be considered acceptable under Community law. Aids to investment, particularly in new systems, for example, a new approach to the movement of road freight vehicles by rail, or which encourage the switch of environmentally sensitive flows away from the road will merit particular attention in this regard. Such guidelines would not only serve to clarify what measures may be taken by national or local authorities. They would also serve to orient discussions made on Community financing of projects forming part of trans-European networks and on positive measures to support transport modes offering the possibility of new capacity under favourable environmental conditions, in particular, inland waterways and maritime transport.

103. Measures affecting the charged costs of transport have a direct impact on the competitive position of transport systems and operators. It is difficult for national or local authorities to act alone if by doing so they will prejudice the position of their enterprises relative to those from other regions. For this reason, measures of this kind are best taken within a framework decided at Community level. Indeed, it may be that they can only be taken in this way. The development of a Community framework in this field can nevertheless leave scope for national or local authorities to take account of their particular circumstances, for example, in deciding on the introduction of particular road pricing schemes. Likewise, in so far as charging systems will increasingly use electronic devices for payment, action is justified at Community level to ensure that compatible technologies are developed so that vehicles from different Member States can be processed with equal facility. Past and current Community R & D work has verified the compatibility and capability of technologies and is currently assisting the development of common specifications for a pan-European system for charging operations.

Complementary measures

104. Other complementary measures to improve the quality of different modes and of intermodal services as such will also need to be considered.

New entrants in intermodal services

105. First, the development of more attractive intermodal services depends to a considerable degree on the efficiency of the management and supervision that is applied.

Particularly as regards international routes, existing services have often not met performance requirements. In this context, the railway Directive 91/440/EEC will as from next year allow new railway operators into the combined transport market, which should stimulate a higher quality of service from all concerned. Further steps now need to be taken to give full effect to the principle contained in the Directive. An examination will be made of the need for new measures in relation to access to and charging for railway infrastructure and for the establishment of railway companies, since present indications are that in its absence, Directive 91/440 [1] might well have rather limited or unacceptably divergent practical results.

Cooperation and competition rules

106. Second, intermodal services may require cooperation between different transport enterprises, particularly in the light of the provisions of Directive 91/440. Such agreements will have to comply with Community competition law. In this context, the Commission will examine possible options, including the possibility of a modification to Regulation (EEC) No 1017/68, [2] and will inform concerned undertakings by appropriate means of its policy in this respect. The treatment of maritime undertakings operating in intermodal transport will also be reconsidered.

Technical harmonization

107. The third area of activity is the vital one of technical harmonization, in particular to guarantee the interconnection of intermodal systems and the interoperability of mobile equipment. The field is vast and complex. Accordingly it will be necessary to fix priorities and begin by addressing those problems likely to yield useful results quickly such as divergences causing problems for the transfer of loads and incompatible linkages between components. In the somewhat longer term, more comprehensive initiatives might be taken such as the possibility mentioned above of developing specifications for heavy

[1] Council Directive 91/440/EEC of 29 July 1991 (OJ L 237, 24. 8. 1991).

[2] Council Regulation (EEC) No 1017/68 of 19 July 1968 (OJ L 175, 23. 7. 1968).

goods vehicles dedicated to intermodal operations. In addition appropriate compatible information systems must be developed. Research and development projects to prepare the ground for these initiatives will have an important role to play.

108. Technical harmonization, essential to the interoperability of systems throughout the Community and affecting the output of its equipment industries, necessarily requires action at Community level based as far as possible on the Community's new approach to technical harmonization followed since 1985, whereby essential requirements are established in Community Directives and technical specifications are achieved through reference to European standards developed by recognized standardizing bodies. Initiatives to extend the effect to the measures beyond the Community's borders will also need to be considered.

Liability and insurance

109. Fourth, at present, different regimes apply to the liability of intermodal operators not only as between Member States but also to the different modal stages of an intermodal journey. As a United Nations Convention on multimodal international transport of goods was adopted on 24 May 1980 but has not yet come into force, an investigation is needed of the extent to which a more uniform approach would increase the attractiveness of multimodal services. Should it appear desirable, the different methods of realizing that objective will then require evaluation, bearing in mind the Community's interest in seeing rules applicable to the operators being applied also to those from third counries, particularly those from the European Economic Area and Eastern and Central Europe.

Trans-European intermodal networks

110. The fifth area of activity concerns the development of trans-European networks for different modes and their progressive integration. This topic is developed as a whole in points 118–147, but certain aspects of particular relevance to intermodal relationship merit attention at this point.

Freight

111. As regards freight, efforts will have to be made to identify those corridors where the maximum potential for transfer exists and also those flows of goods that particularly lend themselves to transfer. A start has been made with the recent proposal for pilot actions for combined transport: PACT. Specifications for tracking and information systems should also be developed. In order to include as rapidly as possible certain peripheral regions in the benefits of the exercise, and bearing in mind difficulties that will be encountered with track and loading guages on certain routes, particular attention should be given to the interfaces between the core network and the systems with which it connects. Hubs will have to be provided with the necessary equipment to ensure efficient transfers to spokes which will continue to have different technical specifications for some time to come.

112. Indeed, in the context of intermodality, terminals of all kinds are of particular importance. They constitute the vital interfaces which in large part will determine the competitiveness and utility of the systems. To the extent that they become more effective, the average distance at which combined journeys become competitive with road which is at present estimated to be in the region of 700 km, will decrease. Given the reality that most freight transport takes place over shorter distances, as indicated in Chapter II, the future contribution of intermodal transport depends critically on improvements in efficiency which will allow it to compete effectively in those markets.

113. Terminal efficiency can also make contributions to the reduction of some other imbalances and inefficiencies. More effective ports in the western and southern periphery are essential if short-sea shipping is to play a bigger role, relieving some of the pressure on north-south transit across the Alps. Freight distribution centres located near large urban areas can contribute in various ways. Carefully sited, they can act as intermodal hubs and, through the application of up-to-date technology and logistical practices, greatly improve the efficiency of distribution in urban areas, reducing the number of trips needed to stock shops and factories by appropriate sorting and consolidation of loads. Where freight centres can also be developed as sites for productive activity (the concept of the 'freight village'), they also attack some current transport problems at their root by reducing the need for movement directly.

Passengers

114. Turning to passengers, intermodality needs a new appraisal if alternatives are to be developed

which, by approximating the door-to-door convenience and flexibility of the private car, can compete with it. In this regard there is a strong argument that in addition to the Community networks already envisaged, an effort should also be made to create an integrated network for collective transport, having at its core complementary air, bus and rail systems, including the capillary systems that provide access to and from the longer haul terminals.

This citizens' network would include systems and services offered by different types of operator, public and private. Combined with other measures such as the development of user-friendly information systems, appropriate mobile communications facilities and flexible collective transport including taxi services, such an approach would give public service transport a true Community dimension and so contribute to reducing the power of the car 'reflex' which so dominates many individual travel decisions at present. After all, it makes little sense to bring a high-speed train into a crowded city centre if many of its passengers must then fight their way through congested streets to an airport some distance away, not served by efficient collective transport.

115. One accompanying measure that should be considered is the establishment of a 'Quality charter' for the services forming part of the network. Such action would contribute to both the future CTP and to the development of a citizens' Europe by defining the quality of service that Community citizens would be entitled to expect.

It would address such issues as frequency, reliability, accessibility, availability and quality of information, ease of interchange between services, comfort and so on. It should build on efforts already made in this direction, such as the International Road Union's (IRU) service standards for buses and the quality assurance movement based on the International Organisation for Standardization's (ISO) 9000 series.

116. An approach to a citizens' network based on the trans-European network provisions of the Union Treaty will ensure that the Community's intervention is limited to what is necessary to meet its needs while leaving plenty of scope for authorities at other levels to discharge their own responsibilities.

It also permits the Community to have an impact on decisions at other levels, for example, in the field of land-use planning, while still leaving a large measure of liberty to other responsible bodies to take account of their particular circumstances. These issues are exposed in greater detail in points 118 – 147.

Traffic management and restrictions

117. The problems caused by road traffic, both lorries and private cars, have led to the introduction of many schemes for guiding and limiting traffic flows: bans on access to certain areas, restrictions on parking, obligatory routes for certain vehicles, night and weekend restrictions, car pooling, park-and-ride schemes, and traffic information and guidance. Such techniques clearly have their part to play as one component in the range of policy responses that need to be made to the problems. In general, such measures are best taken at national, regional or local level depending on the scope of the measure. It has not so far proved necessary to consider Community action to harmonize these approaches, which, of course, must not discriminate against vehicles from other Member States. This safeguard, flowing directly from the Treaty, may well be enough to ensure that measures taken do not pose a significant problem from the point of view of the CTP. The Commission accordingly considers that, in general, no Community measures are needed. However, in so far as management systems may increasingly rely on telematic technologies, such as those being developed in the context of DRIVE, action may be needed to ensure that the systems are compatible, as already indicated for technologies used in automatic toll collection and road pricing. The Commission will also keep the situation under review to identify developments that might pose a problem for the free circulation of goods and persons.

System and network development

Introduction

118. The capacity of the Community's transport systems to respond to the challenges already outlined depends to a considerable extent on the ability of European industries to develop new systems using the latest technologies and of all those concerned to incorporate those systems in networks which maximize their practical utility to the user. Successful results of research programmes in the transport field can ensure that the latest scientific and technological developments are applied to enhance the performance and quality of transport systems serving the objectives of transport policy. For its part, the progressive development of transport network guidelines must ensure that the systems, and their different components, operate smoothly and effectively together,

transcending frontiers whether these are modal, geographical, or technical.

119. The Community has an important role to play in these areas since many problems are common to all Member States, if in different degrees, and indeed have cross-border dimensions and effects. Accordingly, it makes sense to find new common solutions and develop common specifications through cooperation at Community and even broader European levels. Risks can be shared and economies of scale are likely to be realized, assisting the development of new systems requiring heavy 'up-front' investment. The industrial implications of such activities are accordingly considerable.

120. The potential synergy between research and network development should also be noted. If new technologies are developed in common 'up-stream', it becomes far easier to decide on the application of those technologies through appropriate standards and technical regulations for the subsequent development of European networks and new services in the interests of compatibility, interconnection and interoperability. Conversely, the progressive development of European networks and new transport services will certainly stimulate the search for new technical solutions to realize those same objectives. Again the industrial implications of the relationship between research and network development are considerable for they constitute a potentially powerful means of improving the competitiveness of Community industries in accordance with Article 130 of the Union Treaty.

121. Finally, it should be borne in mind that advances in information and telecommunications technologies are transforming the interdependence which has always characterized transport and communications, in parallel with advances in information technology, the telecommunications network operators are now beginning to introduce broadband transmission facilities and new digital mobile communications services within the open network policy of the Community. Broadcasters envisage the early introduction of digital audio transmission which will enormously increase the capacity available for the distribution of coded transport and travel information. These new techniques promise to offer unprecedented services to support the whole transport chain and to facilitate cooperation between different transport modes. In addition, new electronic techniques such as teleconferencing, teleworking, teleshopping and various forms of personal electronic communication are quite likely to modify significantly the way in which people regard the need for physical displacement. However, while the relationships between physical movement and communication over distance may well change significantly, it should not be assumed that increased use of telecommunications will lead to a reduction in transport. For while they reduce the need for movement, personal communications actually increase the freedom to move without losing access to others.

122. The hybrid character of transport and communications means that an appropriate regulatory framework must be developed through cooperation between a diversity of actors from both sectors including the final users who increasingly draw on the combined services of transport and telecommunications. This framework is vital if industry and government are to contribute most effectively to the advances in the industrial and economic infrastructure in Europe.

Research and development

123. Community research and development actions concerning transport should provide new tools for realizing sustainable mobility: efficient, safe transport under the best possible environmental and social conditions.

Efficiency

124. Improvements in the efficiency of the transport system can be sought as regards the performance of individual modes and operators, the capacity of each mode to operate with others, and the functioning of the transport system taken as a whole.

125. The efficiency of an integrated system will be limited by the quality of its weakest components. Availability, reliability, flexibility and rapidity of each mode should therefore be enhanced as much as possible, while at the same time any negative effects on safety, the environment or social conditions should be minimized. Improvements should be sought both in relation to modes under stress and those which offer the prospect of spare capacity, actual or potential. They should be sought in the material used; the design of equipment and infrastructure; manufacturing and processing techniques; and operational efficiency, notably through the application of information and communication technologies for the development of new tools to be used by network managers, operators and users.

126. Improvements within different modes should be developed, however, in the context of other actions designed to ensure that each mode can function more effectively with the others. All modes should accordingly be regarded as part of a larger system which should function increasingly as an integrated whole. Careful attention should be given to avoiding new divergences and contradictions such as information or tracking systems for one mode that cannot, or only at high cost, be connected to others or new transhipment techniques for road and rail that cannot be easily used for road and inland waterway or shipping. Progress in the flow and management of information and information-based services also contributes to the increased efficiency of physical movements. Compatibility, interconnection and interoperability should be key criteria. They are the necessary conditions to bring about the integration of all modes into one European transport system in which each mode contributes where it is strongest allowing the operator and user to choose the best combination for his journey.

127. Indeed beyond improvements in the efficiency of particular modes and their capacity to operate with others, actions are needed that address the functioning of the transport system as a whole, though distinguishing between its local, regional and long distance components. The goal would be to develop new tools that enable those who use or manage parts of the system to be as fully informed as possible about their present functioning and likely future development in the short and long term. Such tools are essential for those concerned to make sound decisions, not only about current operations but also the longer-term development of the system and its component parts. This combination of rapid technological change with changes in user requirements presents a major challenge if Europe is to maintain the necessary technical compatibility while enabling its industries to compete effectively with the rest of the world. Collaboration in the development of common specifications and European standards is essential for the development of an 'open' transport network permitting interoperability of mobile equipment and access to users of all modes of transport. It is one of the domains where the Community can best fulfil its role.

Safety

128. The safety of transport operations, for all modes but particularly for road transport, remains a major preoccupation of the Member States as explained more fully in points 148 – 184. Research and development programmes have already made significant contributions, primarily at national level and more modestly through Community actions such as those on telematics systems applied to road transport, vessel traffic systems, air traffic control and control and command systems for railways. These initial actions constitute a sound basis for the development of future activities, building on what has been achieved, in particular, to produce operational results as soon as possible.

Environment

129. Research and development, when combined with complementary actions, can contribute to alleviate many of the environmental problems outlined in Chapter II and so help realize the basic objective of sustainable mobility. Moreover, environmental performance is an area in which transport and environment policy provides a clear orientation for research and development programmes by setting targets which are not attained by current technology but which can and must be achieved in the foreseeable future. In this context too, the possibilities for including environmental factors in traffic management and influencing the user of the private car and the overall demand for transport and the implications of such possibilities for the vehicle industry require further attention.

Social dimension

130. The development of new transport technologies and systems is not simply a matter of developing new hardware and software. The human factor remains central whether it is a question of innovations that improve labour productivity while requiring higher skill levels; automating functions previously carried out by human operators; or permitting more effective enforcement of rules and systems. The development of new technical components needs to be accompanied by appropriate investigation of the behavioural implications of the new technology, including telematics, and the best means for ensuring that it will receive a positive reception from those who will operate it or use it as clients. Moreover, the technical changes cannot be viewed in isolation from other measures that may be necessary to ensure their effective application, for example, the use of fiscal and other economic instruments to influence user and operator choice, their incorporation in technical standards including those associated with guidelines for trans-European transport networks or their association with measures aimed at making collective transport more attractive. Actions concerning

technical innovation need to be accompanied by an investigation of how they can be integrated into their social and organizational context and by other supportive measures forming part of the CTP.

A new integrated approach

131. Community research and development activities concerning transport have been carried on in the context of a number of programmes having different primary objectives. As a result the approach appears somewhat fragmented and the links with the objectives of the common transport policy were not always clearly established.

132. In the fourth framework programme, provision will be made so that activities concerning transport-related research and development will be conceived in a coherent manner ensuring that those activities will also serve the objectives of the CTP. Priority will be given not only to common problems having cross-border implications, guaranteeing the interoperability of equipment and the interconnection of networks, the sharing of risk and the realization of economies of scale but, in addition, the projects selected will reflect, wherever appropriate, objectives and priorities of the CTP.

133. The approach will establish a transparent, coherent framework for transport-related research and development. The framework has three main components: a foundation, designed to establish the strategic parameters for the technical changes to be developed, and two technological components, one focused on telematics in their application to transport and the other on the application of other industrial technologies. The foundation activity will focus on an assessment of the possible impacts of new technologies on the transport and distribution system, its users and operators distinguishing between local, regional and long-distance movements. A key issue in this domain will be the relationship between human factors and possible technical change. The telematics component will focus on how these technologies can be applied to all modes and their more integrated operation. The final component will investigate how other technologies, including generic technologies developed in areas such as advanced manufacturing, materials and processing technologies, can contribute to the solution of transport problems and promote synergies with industries which interface with transport. These activities are described in greater detail in Chapter V and in the fourth framework programme itself.

Trans-European network development

The problem

134. Until very recently, transport networks have been designed largely from a national point of view. Moreover, emphasis has frequently been placed on the development of particular modal networks rather than on the relationships between them, much less their integration as a transport system. From the point of view of the Community, the traditional approach has inevitably led to a number of important problems.

These include the frequent absence of adequate interconnections between national networks, missing links and bottlenecks, as well as obstacles to interoperability entailing huge inefficiencies. Such obstacles are found both within modes, for example, as regards differences in gauge and electric current in the railway sector, and between modes, for example, incompatible approaches to the technical specifications for combined transport.

A particularly significant example exists in the air traffic area where wide divergences exist between incompatible national systems, standards and operating practices. In addition, differences in the geographical situation and economic history of the Member States have resulted in considerable divergence in the availability and quality of transport infrastructure, in general the centre and north of the Community being much better equipped by comparison with the periphery and the south. The general stagnation in investment in transport infrastructure over the last decade has not provided an environment favouring the early elimination of these obstacles and imbalances.

135. Beyond these difficulties, the overall efficiency of the Community's transport networks, on which the free circulation of persons and goods depends, is increasingly determined and indeed threatened by the growing concentration of traffic on a certain number of routes, modes and destinations with which the present organization of the networks is finding it increasingly difficult to cope.

Examples include the unbalanced development of the Community's ports to which reference has already been made in points 93–117; the continuously rising demand on the Rhine and Rhone corridors; the crossing of London and Paris by train; the stress on the air traffic management (ATM) system particularly in north-western Europe; congestion on roads leading to the newly opened regions of Eastern and Central Europe, particularly at border crossings, and, more generally, at major motorway nodes and urban centres.

The Community's role

136. The planning and development of European transport networks involves authorities at all decision-making levels: European, Community, national, regional and local. Up to now the Community has had a rather limited role, though in recent years the pace has quickened notably. Beginning in 1978 with the setting up of a Committee on Transport infrastructure and a consultation procedure for the purpose of coordinating the development of transport links in the Community, the Community began to make modest *ad hoc* financial contributions to investment in projects of Community interest in 1982. In 1990, a medium-term multiannual budget was decided for a three-year period and, at about the same time, a network for high-speed trains was developed on the basis of preparatory work by a high-level working group consisting of experts from government, industry, transport operators and users.

The same approach has since been applied to the development of networks for combined transport for freight, motorways and inland waterways.

137. Of much larger quantitative importance have been the transport infrastructure investments financed by the Community through its Structural Funds and instruments. Since the reform of the Structural Funds in 1988 and the move away from the financing of individual projects, the assistance requirements of the less developed Member Sates and regions are integrated into overall economic development plans for the regions concerned. In these development strategies accessibility considerations have played a major role. Under the ERDF, commitment credits for transport infrastructure since 1975 have been estimated at about ECU 16 000 million. This has been additional to the huge and long-standing contribution of the EIB loans to transport infrastructure, evaluated at about ECU 14 000 million from 1982 to 1991 and the relatively smaller but still important contribution of the European Coal and Steel Community to promote steel consumption, around ECU 1 200 million since 1987. Many of the projects funded in these ways have had a broad Community interest since they have improved its transport networks from the point of view of all potential users.

138. Reference should also be made to the activities of the United Nations' Economic Commission for Europe which has, for 10 years, with the Community's participation, been developing its network projects, in particular, for motorways and rail, TEM and TER. These have ensured at least a minimum of coordination for the development of those networks throughout the larger Europe.

139. The provisions on trans-European networks in the Union Treaty provide a new basis for Community action, define more clearly the objectives and limits of Community involvement, and introduce a new decision-making process as well as a new approach to financing. All of these provisions provide clarification as to the application of the subsidiarity principle in this area and therefore as to how the Community should relate its activities to those of competent authorities at other levels. Environmental protection requirements must also be integrated into the establishment and development of these networks.

Objectives

140. The substantive goal of Community action is defined as the establishment and development of trans-European transport networks, within a framework of a system of open and competitive markets, through the promotion of interconnection and interoperability of national networks and access thereto. It must take particular account of the need to link island, landlocked and peripheral regions with the central regions of the Community. In brief, the goal to be pursued is not the improvement of transport infrastructure in general but the integration of the Community's transport system through the completion and combination of its networks, taking particular account of the needs of its more geographically isolated regions.

Territorial and regional aspects of the development of the trans-European transport network should be taken into account to enhance their regional productivity. New geographical and economic disparities should not be allowed to originate from a lack of complementarity between the trans-European, national and regional networks, on the one hand, and the absence of Interconnection between modes, for example plane and urban transport, or between two generations of the same mode, for example high-speed train and conventional railway, on the other hand.

The process

141. The realization of this goal accordingly requires, first, an examination, on the basis of work already completed or under way, of the strengths, weaknesses and potential of the different transport

networks and their interrelationships, with a view to identifying how best to proceed. This task must necessarily be carried out at Community level though with the maximum participation of concerned national, regional and local authorities as well as network managers, operators and users. In particular, the impact of new infrastructures on the directly concerned areas and on other affected areas should be assessed. Regional nodes of communication should be further developed to ensure the optimal efficiency of the connection between the main network and the capillary, regional/local networks. The structures and procedures used to prepare infrastructure initiatives already taken can be used for this purpose and, if necessary, further developed. On the basis of this preparatory work, the Commission must then propose guidelines, indicative in character, covering the objectives, priorities and broad lines of measures envisaged in the sphere of trans-European networks, including the identification of projects of common interest, together with any necessary accompanying measures to ensure network interconnection and interoperability of mobile equipment including the use of telematics for transport management, in particular, in the field of technical standardization. These guidelines are then to be adopted by the Council under the co-decision procedure with the European Parliament and after consulting the Economic and Social Committee and the new Committee of the Regions. Moreover, once the Community's guidelines have been adopted, the competent national, regional and local authorities determine the precise implementation of the infrastructure projects required to realize the networks as defined. As necessary the guidelines can be further amended and developed to reflect changes in circumstances.

142. This process and the indicative guidelines which it produces thus constitute the basis for a partnership between all those authorities involved in the design, realization, maintenance, management and use of transport networks. In this way, the interests of the Community and the role of its institutions are brought into harmony with those of competent authorities at other levels.

Financing

143. The financing of transport infrastructure in the Community poses a number of major problems. On the one hand, as already indicated, while traffic has been increasing for many years, the general level of investment in transport infrastructure has been stagnating at about 1% of GDP and in some areas there has been a decline. On the other hand, a reasonable estimate of the volume of investment required during the period 1990 to 2010 to guarantee adequate functioning of the total transport system is of the order of ECU 1 000 to 1 500 billion, or 1 to 1.5% of GDP, and probably towards the higher end of that range if significant improvements are to be realized. Given the size of the Community's total budget and the multiple claims upon it, the scale and nature of its financial participation have to be carefully considered. There is clearly no possibility at this time of the Community becoming the primary source of investment in place of the Member States or the private sector. It simply does not have the resources and, even if it did, its role under the network provisions of the Union Treaty is not to develop transport infrastructure as such but to focus on the more limited objectives described above. Moreover, those provisions also indicate that it should privilege certain forms of intervention, namely the financing of feasibility studies, loan guarantees and interest-rate subsidies. This clearly implies that such Community interventions are intended to support operations that are primarily funded by others. The Community contribution is to provide the financial leverage that will ensure that infrastructure programmes funded primarily at national or regional level will nevertheless integrate into the larger framework and priorities which the Community as a whole has decided that it needs. In the context of the Cohesion and Regional Development Funds, the situation is different in that the broader economic goals of those programmes require the Community to provide finance on a scale and in ways which permit the realization of projects that would otherwise probably not be realized, either at all or at least in the next five years or so. This is justified by the fact that weaker regions of the Community are already handicapped by insufficient levels of investment and that special efforts have to be made to reduce the gap.

144. The need to make the best possible use of limited funds will require that every effort be made to maximize the effectiveness of Community intervention through the careful selection and combination of available financial techniques. These include the encouragement of private investment through instruments like the declaration of European interest and the realization of synergies between different forms of Community intervention, for example, loans from the European Coal and Steel Community instrument or the EIB. More generally, the network guidelines provide a flexible tool for ensuring that Community investment in transport infrastructure, in whatever context it is made, forms part of an overall transport strategy.

Network development and the guidelines

145. The adoption of network guidelines and the necessary accompanying measures will constitute the foundation for Community actions on transport infrastructure. The technique is a flexible one which permits a broad range of issues to be addressed going well-beyond the establishment of a consensus on routes and destinations. For example, attention can be given to the application of information and communications technologies, in part developed by Community research programmes, to provide useful information both to network users about alternative modes, their costs, time consumption and to network managers on the real time-use of their networks, demand forecasts, capacity, and cost. Attention can be focused on the performance of nodes and terminals in the interests of promoting network access interconnection and interoperability. Environmental and safety considerations can also be given the attention that they deserve. The environmental implications of the different networks will be subject to analysis on the basis of common criteria with a view to ensuring their compatibility with the objectives of the Community's environment policy. This will permit the role of each mode, and its relationship with others, to be assessed in order to optimize their contribution to a global transport system which is effective and which respects the environment. Finally, the issue of quality assurance can also be addressed both as to infrastructure, fixed and mobile, and as to the service offered by operators. In this context, initiatives already taken by certain operators and in the context of quality standards based on the ISO 2000 series will need to be taken into account.

146. Proposals on combined transport, inland waterways and motorways have been recently added to the initiatives already taken concerning the high-speed train. Preparatory work has already begun on conventional railways; maritime and coastal shipping, including ports; airports and air traffic control. The guidelines will need to include provisions on the deployment of telematics appropriate to the particular sector. As already explained in points 93–117 initiatives will also be taken in relation to a citizens' passenger network on an intermodal basis. Indeed, the process of developing these different networks must have as its finality an intermodal transport system embracing, to the maximum extent possible, all of them.

147. Finally, the problems affecting Community transport networks also arise in relation to third countries, particularly those of the Community's European neighbours. The network provisions of the Union Treaty refer to trans-European not trans-Community networks and specifically provide for cooperation with third countries to promote projects of mutual interest and to ensure network interoperability (Article 129c(3)). The Community should adopt a global approach in its transport relations with these third countries as outlined in points 291–331. Network development should form an important part of those relations in the context of both bilateral cooperation agreements and relevant multilateral arrangements. The work of the Economic Commission for Europe in this field, to which reference has been made above, will form a useful basis for further action.

Environmental protection and conservation: improving the environmental performance of transport

Introduction

148. As already indicated, the sustained growth in transport services and traffic volume has led to environmental problems. These have so far been dealt with on a case-by-case basis with the adoption of Community legislation on particular issues such as motor vehicle emissions, aircraft noise emissions and marine pollution prevention.

149. However, growing concern about a number of global environmental issues, particularly the 'greenhouse effect', focused attention on the more wide-ranging effects of transport on the environment and the need to adopt a global approach. Such an approach was the basis for the Commission's recent Green Paper on the impact of transport on the environment, [1] which presented a comprehensive assessment of the overall impact of transport on the environment and suggested a strategy for the Community's response. Likewise the fifth environment action programme highlights transport as one of the key sectors requiring integration of environmental objectives.

150. Assessments made so far show that transport is never environmentally neutral, but that the effects on the environment vary in scale and nature according to the mode of transport. They take the form mainly

[1] COM(92) 46 final of 20 February 1992.

of energy consumption, operational pollution, land-take, congestion and the potential impact of the carriage of dangerous goods.

Main environmental problems

Energy consumption and operational pollution

151. All power-driven transport consumes energy and causes operational pollution. The energy consumption of the transport sector represents 30% of total final energy consumption in the Community, virtually equivalent to that of industry. The operational pollution caused by transport takes the form of air, soil, water or marine pollution. In the case of road transport, the operational pollution takes the form mainly of gaseous emissions such as CO_2, HC, NO_x, carbon monoxide (CO), volatile organic compounds (VOCs) and sulphur dioxide (SO_2), noise and vibrations. To a lesser extent it includes soil and, indirectly, water pollution. The railways cause noise and vibrations and, indirectly, air, soil and water pollution. In the case of inland navigation, operational pollution takes the form mainly of water pollution and gaseous emissions. Shipping causes mainly marine pollution, through accidental and operational discharges. Operational pollution in the case of aviation takes the form primarily of noise, vibrations, gaseous emissions and, indirectly, soil and water pollution.

152. Road transport has the biggest environmental effect in terms of energy consumption and operational pollution. Road transport consumes over 80% of the total final energy used in the transport sector and contributes over 75% to its total CO_2 output.

Congestion

153. Transport also leads to congestion where infrastructure capacity is insufficient to cope with demand, particularly at peak periods. Congestion not only adversely affects the operational efficiency of transport systems, it also increases energy consumption and operational pollution and thus exacerbates environmental inefficiency. Congestion is most prevalent for road and air transport, particularly in the core regions as well as in and around large conurbations.

Land-use

154. Transport does not only affect the environment in terms of energy consumption and operational pollution, its infrastructure through land-take and intrusion has a permanent and often irreversible impact on the environment. Again the impact varies according to the mode of transport. The total land-take of road infrastructure considerably outstrips that of the railways and other modes. At present the Community road network takes up 1.3% of the total land area of the Community, compared to 0.03% for the railway network. An important measure of land-take is land-use in terms of infrastructure needed to move one transport unit, expressed in persons or tonnes of freight, over a given distance. Land-use is most efficient for air and sea transport due to the relatively small land-take for a given journey, followed by inland navigation. It is less efficient for rail and least for road.

Carriage of dangerous goods

155. Transport also carries a potential risk for the environment as well as human life, in so far as the transport of dangerous goods is concerned. Since the bulk of these goods are carried by sea and road, these two sectors present the biggest potential impact for the environment in the form of air, soil, water and marine pollution.

Reactions to the Green Paper

156. The purpose of the Green Paper was to initiate a public debate on the issue of transport and the environment. The Community's institutions took part in this debate as did the stakeholders: industry, transport users and operators, the consumers, environmental protection groups, the social partners and regional and local authorities. The outcome of this consultation provides an insight into how it should be possible to integrate the environmental component into transport policy with the participation of the different actors.

157. The improvement of the environmental performance of transport cannot be achieved merely by Community legislation. It will require the participation of all the stakeholders. A clear indication on their part of the need and willingness to participate in this exercise and contribute to the objective was given during the public debate. The stakeholders in general endorse the comprehensive assessment of the overall impact of transport on the environment as well as the new 'global' approach set out in the Green Paper. The transport industry as a whole nevertheless

emphasizes the key contribution of transport to economic growth as well as economic and social cohesion in the Community. Views differ, however, as to which measures will best improve the environmental performance of the transport sector and, at the same time, satisfy other important policy goals.

158. The reduction of operational pollution is viewed by all stakeholders as essential, with special emphasis on the need to promote research into new technologies. Transport operators and industry stress that the best available technology should be seen as the best cost-effective technology or the best available technology not entailing excessive costs. Environmental protection groups, consumers, local and regional authorities maintain the reduction of operational pollution will not in itself suffice to improve the overall environmental performance of transport. It will also be necessary to rationalise and manage transport demand by means of a traffic volume oriented approach, including a shift towards environment-friendly modes and collective transport and a better utilisation of existing capacity. The development of multi-modal and combined transport, coastal shipping, the use of pipe-lines for freight transport are viewed by industry and transport operators as ways of inducing such a shift for the carriage of goods.

159. Limitation of land-take and land-intrusion is viewed as a key objective by the local and regional authorities, who stress the need to integrate transport in land-use and spatial planning.

160. The majority of stakeholders believe economic and fiscal instruments can be used in order to influence transport demand. While collective transport operators, environmental protection groups, local and regional authorities advocate the use of environmental charges and/or fiscal incentives in order to promote or to provide funding for the more environment-friendly modes as well as collective transport, industry warns against the possible negative effects of fiscal measures on economic growth.

The Community's response: environment protection as an integrated theme of the CTP

161. The deliberations on the Green Paper have accordingly confirmed that if the future development of transport policy in the Community is to meet the objective of 'sustainable mobility', not only will transport need to respond efficiently to market demand, it will need to do so at the lowest possible cost for society, taking fully into account environmental costs. This requires the pursuit of efficient policies in the field of pricing, including the internalization of external costs, infrastructure and the removal of market barriers as explained in points 93 – 117.

162. One of the key objectives of the CTP will therefore be to correct environmental inefficiencies and improve the environmental performance of the transport sector. This will require a full range of measures and initiatives adapted to the needs and characteristics of the different transport modes. They will also need to allow for the progressive integration of the modes in order to derive maximum benefits, economic and environmental, from intermodal transport in the largest possible sense. Indeed many of the Community actions already discussed which concern the proper functioning of the internal market, internalization of external costs, intermodal competition and complementarity as well as interoperability and integration of systems and networks contribute at one and the same time to both transport and environment objectives. They address the economic, operational and environmental efficiency of the transport system. Protection of the environment is thus not accessory to the CTP but one of its integral themes. In addition to the actions already mentioned, attention will need to focus on a broad range of measures that can contribute to the specific environmental efficiency of the different transport systems. Some of these will be most effectively taken at Community level, many others will be more appropriately pursued at national or local level.

Energy consumption and operational pollution

163. An essential element of the Community's strategy towards reducing pollution caused by the transport sector will be the setting of progressively higher standards for gaseous emissions, energy consumption and noise emissions for the different transport sectors by means of proposals in accordance with technical and technological progress.

164. In recent years the Community has made considerable strides in the establishment of strict emission standards for motor vehicles. The standards coming into force in 1993, if strictly implemented and backed up by efficient inspection and maintenance, should lead to significant reductions in emissions of the main sources of air pollution from motor vehicles over the next two decades. The introduction of progressively higher standards in the coming years

should help further reduce emissions though the reductions are likely to be proportionately less dramatic than those resulting from current legislation. Attention will also be paid to new developments in test procedures in order to take account of a broader range of conditions of use as well as conditions closer to the actual driving situation.

165. Stricter inspection and maintenance requirements and action on fuels have the potential of a greater impact on emissions as they are not dependent on turnover of the fleet as are standards on new vehicles. The promotion of R & D in the area of environment-friendly transport technology and management of operations will also make a contribution towards updating and improving these and other standards. Advanced technologies still have to be developed in order to improve substantially the efficiency of present conversion techniques, for example, through the use of heat pumps and fuel cells. They are also needed to reduce the level of emissions, for example, through the development of cleaner fossil technologies and advanced propulsion systems using new fuels.

166. While the main attention so far has been directed at gaseous emissions from motor vehicles, the problem of emissions from civil aviation will need to be addressed more fully. Although civil aviation is responsible for a relatively small percentage of gaseous emissions from all forms of transport, it is the only mode where these emissions are directly injected at critical altitudes.

167. Discussion on the Green Paper has shown that both the stakeholders and the Member States view improved technical standards as essential in improving the environmental performance of the transport sector and consider they should be taken at Community level. Introduced at that level they will ensure conformity throughout the Community which is essential in view of the implications for manufacturing industry and the free circulation of goods.

168. Standards can be made more effective and deadlines for their implementation can be accelerated, if they are accompanied by 'targets' for both the values of the standards and the dates of implementation. Fiscal incentives could further encourage industry to meet these targets as quickly as possible, while fiscal penalties could be imposed on manufacturers who do not meet the deadlines. For example, fiscal incentives could encourage the user and the operator to opt for the technically most environment-friendly vehicle or aircraft, for example, before a 'target date' and thus in turn put pressure on industry to achieve the performance in question.

169. Fiscal and economic instruments have a number of advantages. They can be focused on the source of pollution and give equal treatment to different sources and uses. They can be made equivalent in amount to the external costs associated with pollution and are thus a particularly direct application of the principle that the polluter should pay through the internalization of external costs. They are flexible in the sense that they can be used as an incentive or to avoid or limit certain behaviours. Tax incentives can directly encourage the user, for example, to opt for a more energy-efficient vehicle while a progressively heavier charge on the user of less energy-efficient vehicles can discourage their use. The Commission has already adopted an approach of this kind in its proposal aiming at reducing the excise duties on biofuels, as the new fuels allow a significant reduction in CO_2 emissions. [1] Such instruments can easily take account of new situations by a variation in the rate of the fiscal charge or benefit with almost immediate effect to deal specifically with a local problem. Thus a surcharge on parking space in congested urban areas can rapidly discourage the user from taking his/her car into the city centre, particularly if tax relief is available on attractively priced season tickets for weekday commuter journeys. Although the choice of the user will thus be influenced and guided, the full range of options remains available.

170. Given the financial impact of many such measures on manufacturing industry and on transport operators, and the impact of some of them on the free movement of persons and goods, Community action is required in order to prevent distortions of competition. However, this should not exclude the possibility of allowing scope for some differences in approach at national or local level within a common framework.

171. Such a global approach is particularly necessary in relation to the main greenhouse gas – carbon dioxide. Transport is responsible for around 25% of total Community CO_2 emissions and its share is rising. On current trends CO_2 emissions from the transport sector will rise by some 24% between 1990 and 2000 and road transport alone will account for 30% of CO_2 emissions by 2010. The Community has set itself an interim target of stabilization of CO_2 emissions by 2000 at 1990 levels and a reduction in the years beyond. Addressing the issue of reducing road transport's CO_2 emissions will require in the first instance considerable improvements in fuel efficiency. Fuel consumption standards could be made more

[1] COM(92) 36 final.

effective and deadlines for their implementation can be accelerated by fiscal incentives.

172. However, in view of the expected growth in the car fleets and therefore traffic, technical norms targeted towards reducing CO_2 emissions will not suffice by themselves or in conjunction with fiscal measures. For example, calculations for CO_2 show that even with a 40% increase in fuel efficiency in passenger cars by 2005, stabilization of CO_2 would not be achieved by 2010. As regards other pollutants, such measures may also prove to be only a partial solution.

173. This is mainly due to the fact that the initial benefits of energy efficiency improvements will not be sufficient to compensate for the projected growth in the fleet. The technical and fiscal measures will therefore need to be accompanied by complementary measures addressing the demand for transport, particularly that currently satisfied by the private car. These measures will also help to tackle problems of congestion.

Congestion

174. Optimal use of spare capacity in the less encumbered sectors, as mentioned in points 93 – 117, will be essential in order to reduce the pressure in the most encumbered sectors. In addition, in the road sector, transport authorities will need to take action in order to deal more specifically with the congestion caused by the use of the private car. Such action should be twofold in order to be fully effective. It will require promotion of collective and environment-friendly transport and at the same time the dissuasion of private car use.

Promotion of collective and environment-friendly transport

175. Promotion of collective transport is a vital component of efforts to integrate environmental objectives into transport policy especially with regard to improving the urban environment. Public and private investment will be essential to promote collective transport as an alternative to the private car. Collective transport systems which offer a high-quality service, traffic management schemes which provide easy passage and enhanced accessibility for collective transport as well as attractive pricing and payment technologies should encourage the user to opt for collective transport, particularly for urban and inter-urban journeys and more specifically during certain periods of the day and certain times of the week and year. This shift can be made easier by a proper link-up of the different stages of a journey: from point of departure (home/office) to metro/bus stop to train station/airport to metro/bus stop to final destination. Such policy instruments could be supplemented by public information initiatives, providing the user with information, if possible, on-line, about available services, fares, frequencies and special facilities as well as by guaranteeing frequent, reliable and rapid services.

176. Action to promote the use of environment-friendly forms of transport such as the bicycle and the electric car can also make a useful contribution.

177. The role of national and, more specifically, local authorities will be important in the use of these instruments in order to promote collective and environment-friendly transport, whereas the Community's role will be more limited. Community action is nevertheless justified in such areas as introducing the citizens' network and the quality charter as well as R & D into the development and use of innovative technologies, such as the electric car, telematics and telecommunications. The Community contribution might also include clarification of the scope for aids for urban collective transport, bearing in mind the limited effect of such aids on trade between Member States and the social benefits derived from the wider use of environment-friendly forms of urban transport. The Community could further provide the framework for the use of tax incentives which make environment-friendly transport solutions more attractive. Employers and/or employees could, for instance, be given tax relief for collective transport fares. Such incentives could be recovered through fiscal deterrents and charges introduced to discourage use of the private car in sensitive areas.

Discouragement of private car use

178. The behaviour of the private car owner will be essential in reducing congestion. While leaving the owner the utlimate freedom of choice, it may nevertheless be useful to dissuade him/her from making inefficient use of his/her motor vehicle. The policy instruments available for this purpose, particularly in certain circumstances such as at peak times during the week and for intra-city journeys, include traffic demand management schemes which reduce accessibility to the most congested areas at peak times for motor vehicles, such as parking policies, congestion pricing and use of traffic lanes for high-occupancy vehicles only.

179. High occupancy rates are essential to the management of road traffic volume. Increasing the occupancy rate of passenger cars will require a more environmentally conscious approach to its use. Information campaigns to promote car pools and other similar arrangements based on a change of attitude towards the private car constitute the first step. Such approaches could be reinforced by the introduction of economic measures, for example, a progressive environmental charge on the annual mileage of private cars.

180. These measures are not primarily the Community's responsibility but a common framework and guidelines for the use of economic instruments could contribute to their effectiveness while Community involvement may be justified to ensure the compatibility of technical systems used for traffic management. These will in any event be kept under review as indicated in points 93 – 117.

Land-use

181. Although land-use and spatial planning are primarily a national and/or local matter, there is a Community dimension. This was examined in the Commission's report 'Europe 2000 — The outlook for the development of the Community's territory' and will be further considered in the follow-up work to that report. At the national level, urban and industrial planning as well as regional development can contribute to changes in travel patterns and thus reduce pressure points. Local authorities can also contribute by anticipating possible areas of conflict arising from transport development prospects, thus, making it possible to take preventive action in the form of land-use rules, for example, in the case of airport development.

Environmental impact assessment

182. Improvement of the environmental efficiency of transport infrastructure requires careful assessment of the environmental impact at the planning stage of transport infrastructure, according to common criteria, with the possibility of alternative options. When assessing such options transparency of the methodology used for the cost-benefit analysis, including external costs and benfits, of infrastructure investment for the different transport modes would allow for a better comparison of the different infrastructure options prior to investment decisions. A standard methodology of this kind would provide a useful tool in assessing the external costs and benefits of a particular project in the context of the development of trans-European networks. It would also encourage the responsible authorities to adopt more convergent approaches.

183. Complementarity between transport modes will be given effect by interconnection and interoperability of the different infrastructure networks which in turn will contribute to the environment-efficiency of the overall transport system.

Dangerous goods

184. The environmental performance of transport will be further enhanced by the safer carriage of dangerous goods. Strict Community requirements for such transport will reduce the risks inherent to such transport. As outlined in points 185 – 249 general transport safety measures, particularly in the maritime and road sectors, will, however, need to be supplemented by Community initiatives geared specifically towards the potential harmful effects of dangerous substances in the case of accidental discharge. However, the organization of rapid and efficient intervention in the case of accidents will necessarily continue to be done by national and local authorities.

Transport safety for the protection of user and non-user alike

General

185. The safety of transport, in the interests of user and non-user alike, is a major concern of those responsible for transport policy in the Community. Unsafe transport can have catastrophic effects and, despite improvements in safety standards in many areas, the scale of the damage caused by unsafe transport is still very great.

186. The completion of the internal market in transport, together with the continuing integration of the economies of the Member States, necessarily entails increased transport movements across frontiers and within Member States other than the country of origin of the transport operator. The need for appropriate Community action on safety is thus underlined and, for this reason no doubt, the Union Treaty contains a modification of the transport chapter in Article 75 to make explicit for the first time that the CTP should include 'measures to improve transport

safety'. Safety requirements may fall in any case within the area of the Community's exclusive powers, for example, because they affect the free circulation of vehicles or transport services. Where they do not fall within that area, the application of the subsidiarity principle may lead to the conclusion that action is best taken at other levels. But the amendment of Article 75 now makes it quite clear that, even in the absence of an exclusive power, transport safety is a matter which should be addressed by the Community when it is in a position to act usefully.

187. The main areas of concern in the field of transport safety relate to accidents on the road, at sea and in the air and, for all transport modes, to the movement of dangerous goods.

Road safety: the current situation

188. Each year, accidents are the cause of about 50 000 deaths and more than 1.5 million injuries on the roads of the Community. Since the Treaty was signed, almost 2 million people have been killed in the 12 countries which are now Community members and almost 40 million injured. But road accidents do not only have dramatic consequences in human terms; the economic cost is also substantial. For the Community, these losses can be valued at about ECU 70 000 million a year from estimates that, according to the method used, range between ECU 45 000 million and 90 000 million.

189. At the Community level, the principal actions taken so far in the area of road safety have been concerned with the harmonization of rules relating to vehicle construction, through the adoption of over 100 directives; maximum driver's hours; minimum tyre tread depth for private cars; the periodic inspection of vehicles including harmonized standards for the testing of brakes; the general standards for obtaining a Community model driving licence; and the mandatory wearing of seat belts including the restraining of children and speed limiters for heavy vehicles. In addition, two important draft directives are on the Council table: harmonization of speed limits for commercial vehicles and maximum permitted blood alcohol concentration.

190. Nevertheless, even with the advances that have been made in technical and behavioural standards, the road safety record of Member States varies significantly. The fatal accident rate (expressed per kilometre of travel) differs more than sevenfold as between the most advanced Member States and those with the worst figures. Moreover, the trend also varies considerably with some States improving their position much better than others while in a few the situation is actually deteriorating. Using the same basis of measurement, the average risk on Community roads is nearly twice that in the United States: if it were possible to attain the US level more than 20 000 deaths every year could be avoided. The scope for improvement is clearly considerable.

191. The reasons for the differences in road safety lie in the measures taken to enforce Community and national road safety legislation, the degree and effectiveness of national legislation and the particular social, geographical, demographic and infrastructural peculiarities that exist between and within Member States. Of particular relevance, but difficult to quantify, is the variance in general behavioural characteristics. All of these factors have an impact on the type of measure that should be envisaged at Community level.

Scope for action and the Community programme

192. A Community programme on road safety will be presented which proposes an integrated approach based on qualitative targets and the identification of priorities. The process of harmonization by means of legislation and the development and application of common research projects continue to be the main types of Community action which will cover three main areas: users' behaviour, vehicles and infrastructure.

Users

193. Human behaviour is the major factor contributing to road accidents: according to some estimates in as many as 90% of cases. [1] The Community programme must therefore address these issues while recognizing that since human behaviour necessarily reflects its social and cultural context, an approach should be adopted which takes account of present divergences in their regard.

[1] Report of the High-Level Group of Experts on a European Road Safety Policy (Gerondeau report), February 1991, p. 24.

194. It follows that in the field of legislation, the programme should concentrate on aspects of the problem where action at Community level can make an effective contribution. Measures have already been taken on driving licences and use of safety belts, and have been proposed concerning speed limits for heavy vehicles and blood alcohol limits. To complement these, consideration should accordingly be given to basic rules of the road and road signs; the improvement of the Community model driving licence from the enforcement point of view; and measures to protect vulnerable road users particularly.

195. Outside the legislative field, the Commission can also play a useful role, in conformity with the subsidiarity principle, in providing input and support for education, including road safety education in schools, training of professionals and public awareness campaigns. Such activities are primarily the responsibility of others, but Community support, particularly through the compiling and presentation of relevant information based on experiences gained throughout the Community, would add considerable value to them at a lower cost than uncoordinated individual efforts could achieve. In addition, research and development actions in the application of telematics are demonstrating the potential of these tools for tutoring and assistance.

196. The objective of promoting so-called 'calm driving' is a general target which can be reached in part by such measures and also by combining them with measures concerning vehicles and infrastructure.

Vehicles

197. There are some 50 basic directives harmonizing requirements for vehicle characteristics, most of which cover issues relating to vehicle safety. The Community has now realized the definition of a European whole-vehicle type-approval standard for passenger cars ensuring that the legislative standards for cars in the Community are the same in all Member States. Once achieved, the next task is to harmonize standards for other road vehicles, notably lorries, buses and trailers.

198. Adoption of Community directives has made a major contribution to the improvement of the safety and environmental performance of vehicles. In the light of continuing research and technical progress, the existing directives will need to be adapted and complemented. Emphasis should be placed on vehicle crashworthiness in association with the use of lightweight structures. Safety should not be prejudiced by the move towards smaller, lighter, more fuel-efficient cars.

199. Roadworthiness testing will ensure that the vehicle is as safe as cost-effective technology will allow. Periodic inspection will guarantee that vehicles are adequately maintained to comply with safety standards. Directives are currently in force for commercial vehicles and most Member States have schemes for passenger cars. However, periodic testing for passenger cars will not commence for certain Member States until 1998. It will be necessary to define the performance of vehicles in service. Testing standards are already on the Council's table for brakes and emission testing. These Directives should be adapted and complemented over time to take account of new technology.

200. A particulary interesting issue with regard to new technologies and telematics is the current DRIVE research programme concentrating on vehicle and traffic management. The objective of the programme is the improvement of road safety, transport efficiency and environmental quality. Future results of on-going DRIVE projects (Phase II) will equally contribute to the Community's integrated programme on road safety. The results of this and other research projects can then be used as the basis for appropriate new initiatives both on construction standards and on the development of a safer road network, as discussed further below.

201. Technical standards applying to the construction and roadworthiness of vehicles, having as they do important implications for the free circulation of vehicles, are particularly suited to action at Community level and indeed constitute one of its core functions.

Infrastructure

202. Road networks play an important role in road safety, as part of the total traffic system; improving the quality and capacity of road networks constitutes one of the most effective and longlasting exercises in safety improvement. The development of guidelines for the trans-European road network provides the context in which complementary measures can be envisaged concerning the planning, design, construction and maintenance of roads constituting the network and their associated facilities. Technical standards on road signs and signals should form an important part of this activity.

203. In parallel, a coordination role could be played by the Community on a non-legislative basis by

means of an exchange of know-how and experience or by means of recommendations (technical 'reference documents').

204. To the extent that the Community, in the context of the development of trans-European networks, supports the development and modernization of the road system, it is wholly appropriate that it gives full attention to the measures needed to reduce the accidents on the network which at present constitute such a terrible toll in both human and economic terms.

Maritime safety: the current situation

205. Most of the goods transported to and from the Community are transported by sea in ships flying the flags both of Member States and third countries. Transport by sea is indeed a global business and maritime safety accordingly raises issues having worldwide implications.

206. Every year ships continue to be involved in accidents, many of them serious. Since 1986, on average, 230 ships, or 1.1 million gross tonnes, have been lost every year, involving an annual average loss of more than a thousand lives. The highest percentage of accidents involve general cargo (46%), fishing vessels (26%), bulk carriers (6%) and tankers (5%). A limited number of accidents to passenger ships in recent years, because of their dramatic nature, has contributed to growing public concern about the issue. Moreover, there are indications that the situation could deteriorate in the near future. Approximately 35% of all bulk carriers sunk in the last 15 years were lost in the last two years, 74% of all tonnage lost in 1991 was more than 15 years old, while the world fleet as a whole is ageing and many flags with relatively good safety records, including several Community flags, are losing vessels to other registers with poorer records.

207. Directly related to ships' safety is the issue of pollution of the sea, whether through operational or accidental pollution or deliberate violation of international rules. While the total amount of oil entering the marine environment has been decreasing over the last two decades, it is still considerable and much higher in the Mediterranean than in other Community waters.

208. Indeed it is striking that despite the existence of international conventions designed to establish a universal safety regime for the world's fleets, wide variations exist in the safety levels actually achieved. The loss ratio of the fleet with the worst record is 114 times the best. Even within the Community the worst level is 50 times the best. Statistics derived from port State controls show a ratio of deficiencies over inspections of almost 79% for the worst flag compared with 12% for the best. Community Member States have ratios ranging from 52 to 12%.

209. Most of the rules and requirements for seagoing vessels are negotiated in the International Maritime Organization (IMO), a specialized agency of the United Nations, of which all Member States are members. The international framework developed by the IMO is of fundamental importance to maritime safety and, given the global character of the shipping industry, must remain so. At the same time, it is clear that the Community has an important role to play both within and in support of the IMO to ensure that ships trading in Community waters respect common standards providing the effective guarantees of safe operation required by its geographical condition and the demands of its citizens. Such Community action is fully justified since it is clear, as shown by the data referred to above, that in its absence adequate common standards are not being observed in practice. Also the IMO requirements do not apply to passenger vessels on national voyages. The liberalization of cabotage, opening domestic trade to ships from other Member States, thus emphasizes the need for appropriate initiatives which must of course also respect the roles of other authorities: international, national and local.

The Community's programme: general principles

210. In order to ensure that Community actions in the field of maritime safety form a coherent and effective ensemble, an approach is being developed based on three basic principles.

211. First, requirements should, to the maximum extent possible, be worldwide in their application. The IMO should therefore continue to play its preeminent role in the development and adaptation to technical progress of international agreements that will provide the necessary guarantees. In exceptional cases, higher standards for particular regions may be justified but the general objective should be international standards guaranteeing high levels of safety throughout the world and at the same time avoiding distortion of the conditions for competition between shipping companies.

212. Second, for the most part, the existing international agreements constitute a satisfactory framework,

the main problem being the inadequate and uneven application and enforcement by States of the rules that have been agreed. Such divergences not only have an adverse effect on safety, they can fragment the internal market for the maritime supply industry. Accordingly, the Community can make an important contribution by developing common approaches to the implementation of IMO rules and to their proper enforcement in relation to all ships in Community waters.

213. Third, a proper balance is needed between the roles and responsibilities of flag and coastal States. While the flag State has the primary responsibility for ensuring that its ships comply with international standards, both port and coastal States must accept their responsibility for ensuring that respect for those standards is effectively controlled. In the absence of effective port State controls, given the global nature of the industry, international standards will inevitably tend to be better respected on paper than on the high seas.

214. The application of these principles leads to a Community programme consisting of four main types of initiative: action to ensure convergent implementation of IMO standards; reinforcement of port State control; the development of the modern infrastructure necessary to ensure that maritime safety enters the electronic age; and standard setting, primarily in the IMO. The work of the Maritime industries Forum has confirmed in its final report the desirability of action of this kind.

Convergent implementation of international standards

215. Action by the Community to ensure convergent implementation of IMO standards by Member States can be taken in a number of ways, for example, by ensuring that all Member States adhere to IMO conventions, by giving legally binding effect to international rules that are not mandatory or by Community directives adopting common interpretations of rules that are framed as general principles. Where necessary, these could provide for the development of additional European technical standards. These and other techniques should permit present divergences in safety levels to be reduced to within acceptable limits.

216. In addition, the international standards could also be extended, as required, to vessels falling outside the scope of the international conventions, for example, passenger vessels on national voyages or cargo vessels below the IMO thresholds. This would ensure that the same safety requirements will apply throughout the internal market.

Port State control

217. The reinforcement of port State controls, for example, through the establishment of harmonized criteria for priority inspections and detention, is essential if substandard ships are to be eliminated from Community waters. Action within the framework of the Memorandum of Understanding on Port State Control to which a number of European third countries are parties, including within its Committee, could permit such measures to be given broader European application.

Infrastructure

218. Finally, Community action to develop vessel traffic management (VTM) using advanced technologies on shore and on ship as part of the Community's trans-European networks will enable maritime safety in Europe to take full advantage of the possibilities of the electronic age and thereby achieve improvements which would be hard to realize in any other way.

219. The action programme includes measures in each of these main areas of activity as explained in Chapter V. A more detailed presentation and explanation of all the measures under consideration will be contained in a specific communication on maritime safety and pollution to be presented in the near future.

Standard setting

220. Given that the IMO is the body responsible for setting standards on maritime safety at international level, it follows that the Community needs to ensure that the IMO's work develops in a way which will produce adequate solutions for ships sailing in its waters. Action is needed so that coordinated positions can be taken favouring the adoption of necessary new rules and the modification of old ones. Procedures will have to be developed which will allow the Community to act effectively to this end while respecting the IMO's methods of working and the technical character of much of its activity, as well as minimizing possible negative reactions to the development of a regional voice within the organization. In this context, one of the areas on which the

Community should concentrate its efforts is measures to reduce the risk of human error since this element has been recognized as the major cause of maritime accidents.

221. Standard setting by the Community itself will be limited to exceptional cases where efforts within the IMO have failed to produce a solution meeting the Community's particular needs and where action is imperative to guarantee an adequate level of safety in European waters.

Civil aviation: safe but perfectible

222. Civil aviation is recognized as being a very safe mode of transport. Although there is no entirely satisfactory index to measure the absolute safety of aircraft operations, the number of fatal accidents and the number of fatalities give a useful indication of the general safety level. Fortunately, there is a very limited number of accidents in the commercial operation of civil air transport aircraft and, therefore, individual annual figures are to a certain extent meaningless because one major accident would seriously influence the yearly result. For this reason, it is better to consider the yearly average in the last decade which is 37 accidents accounting for 1 022 fatalities worldwide. [1] This figure has to be compared with the more than 1 billion passengers a year carried by the airlines of the world.

223. In addition, the level of safety varies considerably in different parts of the world. Europe has a very good record in this field, being involved in only about 10% of fatal accidents although it accounts for approximately 34% of world air traffic. In the Community alone, there were 22 civil air transport fatal accidents between 1980 and 1990, an average of 2 accidents a year compared with the world average of 37.

224. However, the industry has expressed concern that safety levels in commercial aviation, which until now have been constantly improving, are beginning to plateau out. This could mean that the number of accidents could start to increase proportionally to the increase of traffic. It will therefore be necessary to explore new avenues permitting the achievement of substantial progress without unduly increasing burdens on operators, human factors being implicated in one way or another in about 80% of air accidents. In addition, increased congestion on the ground and in the air means that the space to spare over the safety margins built into the system is reducing and could disappear. Safety will of course remain the first priority of the ATM/ATC system but, if nothing is done, this will be ensured at the expense of the smoothness and efficiency of operations.

225. Civil aviation also includes general aviation and aerial work which comprises such activities as training, pleasure flying, business aircraft operations, aerial photography, crop spraying, medical evacuation and so on. However, these activities are far less developed in Europe than in some other regions of the world. For this reason and due to their diversity, it is very difficult to obtain reliable statistics and therefore to obtain a correct picture of the safety level of such aviation activity in Europe. As such activity increases, which it probably will, it will be necessary to ensure that its implications for aviation safety are properly evaluated and, if necessary, anticipated.

The Community's contribution to air safety

226. At the Community level, a number of measures in the field of air safety have already been adopted. They are in the fields of accident investigation, [2] mutual recognition of crew licences, [3] and technical harmonization. [4] There is also a proposal from the Commission in the field of ATM [5] which has been transmitted to the Council and a number of measures concerning accident investigations and incident-reporting have already been announced in a communication from the Commission. [6] In addition to those specific safety measures, other Community legislation will also indirectly have beneficial effects on safety, for example, the licensing of air carriers, as provided for in the third package of liberalization, [7] is dependent upon the possession of an air operator

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1 *Source: World airline accident summary,* published annually by the United Kingdom Civil Aviation Authority.

2 Council Directive 80/1266/EEC of 16 December 1980 — OJ L 375, 31. 12. 1980, p. 32.

3 Council Directive 91/670/EEC of 16 December 1991 — OJ L 373, 31. 12. 1991, p. 21.

4 Council Regulation (EEC) No 3922/91 of 16 December 1991, OJ L 373, 31. 12. 1991, p. 4.

5 Proposal for a Council Directive on the definition and use of compatible technical and operating specifications for the procurement of air traffic management and systems — COM(92) 342 final, 22 December 1992.

6 Commission communication to the Council on Community initiatives concerning air transport incidents and accidents — SEC(91) 1419 final, 4 September 1991.

7 Council Regulation (EEC) No 2407/92 of 23 July 1992, OJ L 240, 24. 8. 1992, p. 1.

certificate, the criteria for which ensure that operators meet certain safety standards.

227. Advances in technology will lead to the integration of airborne pilot systems and ground air traffic control into a single system structure. This will progressively utilize advanced satellite-dependent communication, navigation and surveillance capabilities. The introduction of this approach on a global scale sponsored by the International Civil Aviation Organization will begin to affect Community air traffic management and industrial strategies in the immediate future. The operational changes could begin to be effective during the second half of this decade. A Community response to this challenge has yet to be determined. Changes are necessary to ensure that safety levels do not deteriorate as the number of flights increase. The need for more available capacity will only be met by higher precision semi-automated air traffic control methods in areas of high traffic movements together with a reorganization of the air space routeing systems.

228. Future Community action in the field of air safety will be based on the work already achieved and on the perceived needs created by the political and technical evolution of this sector. The Community should act accordingly to realize its safety objectives within the general international context of civil aviation and the work of the relevant international organizations such as the International Civil Aviation Organization (ICAO), the European Civil Aviation Conference (ECAC), the Joint Aviation Authorities (JAA) and Eurocontrol. In the light of the basic principles established by the ICAO, Community action should permit the application throughout Europe of the strictest standards reflecting the Community's level of technological progress. It will be focused on measures which add value to actions at both national and international level, primarily in the fields of personnel licensing, technical harmonization, air traffic management and control, reporting on accidents and incidents, research and development as well as analysis of the long-term challenges to air safety.

Licences

229. The Directive of December 1991 on mutual recognition applied only to cockpit personnel. However, given important differences in national requirements, some of which do not meet ICAO recommendations, there is a need to arrive as soon as possible at common requirements for the granting of cockpit crew licences. Only these can provide the guarantee that the qualifications of the personnel will continue to meet acceptable standards. In addition, attention should be given to the possibilities of extending the system to other categories of personnel, for example, ground engineers and air traffic controllers.

230. The efficient management of common licensing requirements would be facilitated by the setting up of a support infrastructure including Community central databases containing a wide choice of examination questions submitted by Member States, medical information on licence-holders and pertinent data for licensed individuals such as type of licence, ratings, validity, and so on. Consideration will be given to the development of such systems.

Technical harmonization

231. The work already begun by the Council Regulation of December 1991 will have to be pursued. Further regulations to to take account as appropriate of new requirements developed by the JAA will be submitted to the Council for adoption.

Air traffic control

232. As explained further in Chapter V the objective of the Commission is to contribute to the development of a single unified system for air traffic management in Europe in association with Eurocontrol, ECAC and national authorities. Such a system will form a fundamental part of the Community's approach to aviation safety.

Accidents and incidents

233. In its communication to the Council of September 1991, the Commission expressed its opinion that a sensible air safety policy should be based on the early detection of weaknesses, needs and trends concerning the aviation system. The limited amount of data (accidents and incidents) available in each Member State do not allow such an early detection, while large worldwide databases pose problems of management and correct interpretation of data; in particular, they tend not to give adequate information about regional situations.

234. For this reason, Community initiatives in this field could be particularly beneficial and efficient and the communication contains a work programme addressing three items: mandatory incident reporting

systems, confidential reporting systems and accident investigations.

235. The aim of the first item is to improve air safety by bringing together the knowledge derived from the collection of incompatible occurrence reporting systems existing in a number of Member States by the setting up of a central database. The specification developed for this database could also be used to set up harmonized national reporting systems in the Member States having presently no such system. Each Member State would therefore have access to a large source of valuable safety data. Common analysis would permit deeper study of incident causes. The Joint Research Centre of the Community has started to work on a pilot project which should be finished in 1994.

236. The setting up of a confidential reporting system is considered by many safety experts as one of the most important steps to improve the knowledge of human factors in aviation. As most of the accidents are human-factor related, this initiative is potentially very promising. The realization of a prototype system launched in September 1992 should last between 24 and 30 months before final evaluation.

237. With regard to accident investigations, it will be necessary to take a series of measures to guarantee the availability of adequate investigation organizations in each Member State and ensure that they work effectively together. In this way, without excessive centralization, machinery can be developed which is at once of high quality and more cost-effective than national authorities could achieve on their own. The objectives would be: to adapt the existing national regulations taking into account the proposed modifications to ICAO Annex 13 to the Chicago Convention; to ensure the availability of a basic accident investigation structure in each Member State; to reinforce the national investigation bodies, establish closer contacts between members of these bodies; to provide the framework to allow improved cooperation, promote joint training of investigators; to study the possible creation of an air disaster fund; and to improve the dissemination of information.

238. Consultations with national experts have already started on a draft directive setting up the fundamental principles governing aircraft accident investigations. The five basic principles contained in this project are: mandatory investigation of aircraft accidents and serious incidents; status of the technical investigation sufficient to allow its unhampered realization; a permanent and independent investigation body; publication of a report containing recommendations for corrective measures; and follow-up of the implementation of those recommendations.

Reserach

239. Research is also an important aspect of an air safety policy. Current activities include the EURET, ATLAS, Fanstic and GAAS projects in the field of ATC. There may also be a need from time to time for additional research in other areas, one of those being human factors, where significant safety benefits could be obtained. The correct interpretation and analysis of safety data would also require the study of development of indices for safety measurement and risk evaluation. Similarly, the statistical categorization of aircraft operations and good data-gathering would also be useful to help improve research material.

Preparing the longer-term future

240. The rapid political and technical evolution of civil aviation obliges us to look ahead to find out what would be the future challenges for air safety. A number of questions already appear which should be addressed without delay. The following list is not at all exhaustive but could constitute a good start for a Community think-tank on civil aviation safety. What will be the consequences of the evolution of civil aviation worldwide to a multilateral system for the responsibilities of the aviation authorities? How do we share the responsibilities when an accident happens to a leased aircraft if the States of registry, of the owner and of the operator are different? What influence will the seventh freedom have on operational control? How shall we cope with measures to reduce congestion (reduction of horizontal or vertical spacing, use of parallel or convergent runways)? What influence will increasing automation have on human behaviour?

Transport of dangerous goods by all modes

241. Recent years have seen a significant increase in the volume and range of dangeous goods transported by all modes. At a time when public opinion is increasingly aware of the impact of accidents caused by the transport of dangerous goods on both man and the environment, great efforts need to be made to devise measures to avoid accidents or at least contain their impact.

Safety standards

242. At the international level, transport of dangerous goods is regulated by international conventions and agreements developed under the auspices of international or organizations which draw on sources of considerable experience and expertise in this field. These have been successful in providing solutions to many problems, solutions which have the added merit of broad international acceptance. [1]

243. However, in recent years, public concern over the safe transport of dangerous goods has led to the conception of various Community measures to reduce risks inherent in this type of transport, irrespective of modal choice. The overall aim is the transport of dangerous goods under the safest possible conditions. Without prejudice to the role of the international organizations responsible for the agreements, the Commission began initiating Community action to support and supplement the existing international legislation, whilst at the same time avoiding duplication of work. These efforts, were aimed at dealing with lack of transparency, inadequancy of certain provisions in the Community context and frequent recourse to diverging national safety standards.

244. Community action has been based on four essential principles:

(i) the adoption at the Community level of measures aimed at plugging the gaps in existing international regulations;

(ii) the legal enforcement of the international regulations at national level to achieve genuinely harmonized standards;

(iii) avoiding barriers to trade created by divergent national technical standards;

(iv) ensuring legislation coherent with other Community policies, for example, environment protection, such as the safe containment of genetically modified organisms.

On this basis, measures have been adopted or proposed on topics as varied as training of personnel, technical standards and the monitoring and supervision of movements of dangerous goods.

Future action

245. In the future, the Community should contribute to the work of responsible international organizations in the field and, at the same time, continue to support and supplement their efforts through the adoption of measures addressing its particular needs and circumstances.

Harmonization

246. At present, despite the measures adopted at international and Community levels, rules covering the transport of dangerous goods are far from being uniform. International rules are applicable to international transport operations. While in some cases States apply them to domestic movements, in others they do not. Under the cabotage freedoms being realized under the 1992 programme, transport of dangerous goods undertaken by non-resident operators will be subject to provisions governing dangerous goods in the host State. These may differ in some respects from the provisions applicable both to domestic operations in the home State and to operations under international rules. Accordingly it would appear desirable to ensure that in future rules for domestic operations are aligned with those applicable to international ones.

247. Action is also necessary to harmonize certain requirements which differ, depending on the mode of transport being used, without there being any real justification for the differences. Harmonization of rules applying to the classification, labelling and packaging of dangerous substances across the transport modes will not only simplify the life of those concerned but make a significant contribution to the efficiency of intermodal transport.

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[1] United Nations, New York, USA: 'United Nations recommendations on the transport of dangerous goods' 1957 (as amended); United Nations Economic Commission for Europe, Geneva, Switzerland: ',European agreement concerning the international transport of dangerous goods by road' 1959 (as amended); Central Office for International Rail Transport (OCTI), Berne, Switzerland: Annex 1 to Appendix B of COTIF, Annex 1 of CIM 'Regulations concerning the international carriage of dangerous goods by rail' (as amended); International Civil Aviation Organization, Montreal, Canada: 'Technical instructions for the safe transport of dangerous goods by air' (as amended); International Maritime Organization, London, England: 'International maritime dangerous goods code' (as amended); International Atomic Energy Agency, Vienna, Austria: 'Regulations for the safe transport of radioactive material, safety series 6' 1985 edition (as amended); Central Rhine Commission, Strasbourg, France: 'European Agreement concerning the international transport of dangerous goods on the Rhine inland waterway' (as amended).