ANNEX I
Action programme

WHITE **PAPER**

European transport policy for 2010:
time to decide

ACTION PROGRAMME

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

1. Shifting the balance between modes of transport

1.1. IMPROVING QUALITY IN THE ROAD SECTOR

- Harmonise inspections and penalties by the end of 2001 in order to:
  — promote efficient, uniform interpretation, implementation and monitoring of existing road transport legislation;
  — establish the liability of employers for certain offences committed by their drivers;
  — harmonise the conditions for immobilising vehicles;

- increase the number of checks which Member States are required to carry out (currently on 1 % of days actually worked) on compliance with driving times and drivers' rest periods.

- Keep the road transport profession attractive by promoting the necessary skills and ensuring satisfactory working conditions.

- Harmonise the minimum clauses in contracts governing transport activity in order to allow tariffs to be revised should costs increase (e.g. a fuel price rise).

1.2. REVITALISING THE RAILWAYS

- Gradually open up the railway market in Europe. By the end of 2001 the Commission will submit a second package of measures for the rail sector with a view to:
  — opening up the national freight markets to cabotage;
  — ensuring a high-level safety for the railway network based on rules and regulations established independently and a clear definition of the responsibilities of each player involved;
  — updating the interoperability directives for all components of the high-speed and conventional railway networks;
  — gradual opening-up of international passenger transport;
  — promoting measures to safeguard the quality of rail services and users' rights. In particular, a directive will be proposed to lay down the terms of compensation in the event of delays or failure to meet service obligations. Other measures relating to the development of service quality indicators, terms of contract, transparency of information for passengers and out-of-court dispute resolution mechanisms will also be proposed.

- Step up rail safety by proposing a directive and setting up a Community structure for railway interoperability and safety.

- Support the creation of new infrastructure, and in particular rail freight freeways.

- Enter into dialogue with the rail industries in the context of a voluntary

agreement to reduce adverse environmental impact.

1.3. Controlling the growth in air transport

- Propose the introduction by 2004, in the context of the single sky, of:
  — a strong regulator with adequate resources independent of the various interests at stake, and capable of setting objectives allowing traffic to grow while guaranteeing safety;
  — a mechanism enabling the military to maintain defence capabilities while using the scope for cooperation to ensure more efficient overall organisation of airspace;
  — social dialogue with the social partners, which could begin with the air traffic controllers, allowing consultation, following the experience in other sectors, on aspects of the common aviation policy that have a considerable social impact. This dialogue could lead to agreements between the organisations concerned;
  — cooperation with Eurocontrol to draw on its expertise and know-how to develop and administer the Community rules;
  — a surveillance, inspection and penalties system ensuring effective enforcement of the rules.

- In the framework of the International Civil Aviation Organisation, rethink air transport taxation and negotiate the introduction of a kerosene tax by 2004 and differential en route air navigation charges.

- Launch a debate in 2002 on the future of airports in order to:
  — make better use of existing capacity;
  — review the airport charges systems;
  — integrate air transport into a logical system with the other modes of transport;
  — determine what new airport infrastructure is required.

- Present a revision in 2003 of the slot allocation system, in order to improve market access while taking account of the need to reduce environmental impacts at Community airports.

- Negotiate with the United States a joint transatlantic aviation agreement to replace the current open skies agreements.

1.4. Adapting the maritime and inland waterway transport system

- Develop the infrastructure needed to build veritable 'motorways of the seas'.

- Simplify the regulatory framework for maritime and inland waterway transport by encouraging in particular the creation of one-stop offices for administrative and customs formalities and by linking up all the players in the logistics chain.

- Propose a regulatory framework for safety controls for passengers embarking on ships offering European cruises in order to combat the risk of attacks, along the lines of what is done in air transport.

- Tighten up the maritime safety rules in cooperation with the International Maritime Organisation and the International Labour Organisation, in particular:
  — by incorporating the minimum social rules to be observed in ship inspections, and
  — by developing a genuine European maritime traffic management system.

- Encourage the reflagging of the greatest possible number of ships to Community registers, based on the best practices developed in social and fiscal matters, by proposing in 2002 measures on tonnage-based taxation and the revision of the guidelines on State aid to maritime transport.

- Improve the situation of inland waterway transport through:
  — the current standardisation of technical requirements for the entire Community waterway network by 2002;
  — greater harmonisation of boatmasters' certificates throughout the Community's inland waterway network, including the Rhine. The Commission will present a proposal on this subject in 2002;
  — harmonisation of conditions in respect of rest periods, crew members, crew composition and navigation time of inland waterway vessels. The Commission will present a proposal on this subject in 2002.

1.5. Linking up the modes of transport

- Establish by 2003 a new programme to promote alternative solutions to road

transport (Marco Polo), which could have a budget of some EUR 30 million per year in help launch commercial projects.

- Propose by 2003 a new Community framework for the development of the profession of freight integrator and the standardisation of transport units and freight loading techniques.

2.   Eliminating bottlenecks

- In 2001 revise the trans-European network guidelines in order to eliminate bottlenecks by encouraging corridors with priority for freight, a rapid passenger network and traffic management plans for major roads, and adding to the 'Essen' list such projects as, by way of illustration:
  — a high-capacity railway route through the Pyrenees for freight;
  — East European high-speed train/combined transport Paris–Stuttgart–Vienna;
  — the Fehmarn bridge/tunnel between Germany and Denmark;
  — the Galileo satellite navigation project;
  — improvement of the navigability of the Danube between Straubing and Vilshofen;
  — the Verona–Naples rail link, including the Bologna–Milan branch;
  — the interoperability of the Iberian high-speed rail network.

- In 2001 increase to 20 % the maximum funding under the trans-European network budget for the main bottlenecks, including those still remaining on the Union's frontiers with the accession candidate countries, and then introduce conditionality rules.

- In 2004 present a more extensive revision of the trans-European network aimed in particular at integrating the networks of the accession candidate countries, introducing the concept of 'motorways of the seas', developing airport capacities and improving territorial cohesion on the continental scale.

- Establish a Community framework for allocating revenue from charges on competing routes to the construction of new infrastructure, especially rail infrastructure.

- Harmonise minimum safety standards for road and rail tunnels belonging to the trans-European transport network.

3.   Placing users at the heart of transport policy

3.1. UNSAFE ROADS

- Set a target for the EU of reducing by half the number of people killed on European roads by 2010.

- By 2005 harmonise the rules governing checks and penalties in international commercial transport on the trans-European road network, particularly with regard to speeding and drink-driving.

- Draw up a list of 'black spots' on trans-European routes where there are particularly significant hazards and harmonise their sign-posting.

- Require coach manufacturers to fit seat belts on all seats of the vehicles they produce. A directive to this end will be proposed in 2003.

- Tackle dangerous driving and exchange good practices with a view to encouraging responsible driving through training and education schemes aimed in particular at young drivers.

- Continue efforts to combat the scourge of drink-driving and find solutions to the issue of the use of drugs and medicines.

- Develop a methodology at European level to encourage independent technical investigations, e.g. by setting up a committee of independent experts within the Commission.

3.2. THE FACTS BEHIND THE COSTS TO THE USER

- In 2002 propose a framework directive setting out the principles and structure of an infrastructure-charging system and a common methodology for setting charging levels, offset by the removal of existing taxes, and allowing cross-financing.

- Make the tax system more consistent by proposing uniform taxation for commercial road transport fuel by 2003 to round off the internal market.

- In 2002 propose a directive guaranteeing the interoperability of means of payment on the trans-European road network.

- In 2001 increase air passengers' existing rights through new proposals concerning in particular denied boarding due to overbooking, delays and flight cancellations.

- In 2001 put forward a regulation concerning requirements relating to air transport contracts.

- By 2004, and as far as possible, extend the Community measures protecting passengers' rights to include other modes of transport, and in particular the railways, maritime transport and, as far as possible, urban transport services. This concerns in particular service quality and the development of quality indicators, contract conditions, transparency of information to passengers and extrajudicial dispute settlement mechanisms.

- Propose an adjustment of procedures for notifying State aid, particularly in cases relating to compensation for public service obligations on links to the Community's outlying regions and small islands.

- Clarify the general principles which should govern services of general economic interest in the field of transport in order to provide users with a service of quality, in keeping with the Commission communication on services of general interest in Europe.

4. Managing the effects of transport globalisation

- Link the future Member States to the EU's trans-European network by means of infrastructure of quality with a view to maintaining the modal share of rail transport at 35 % in the candidate countries in 2010 by mobilising private-sector finance.

- Make provision in the Community's future financial perspective for adequate public funding of infrastructure in the new member countries.

- Develop the administrative capacities of the candidate countries, notably by training inspectors and administrative staff responsible for enforcing transport legislation.

- Full membership for the European Community in the main international organisations, in particular the International Civil Aviation Organisation, the International Maritime Organisation, the Rhine Navigation Commission, the Danube Commission and Eurocontrol.

- By 2008 develop for the EU a satellite navigation system with global cover, over which it will have control and which will meet its accuracy, reliability and security requirements (Galileo).
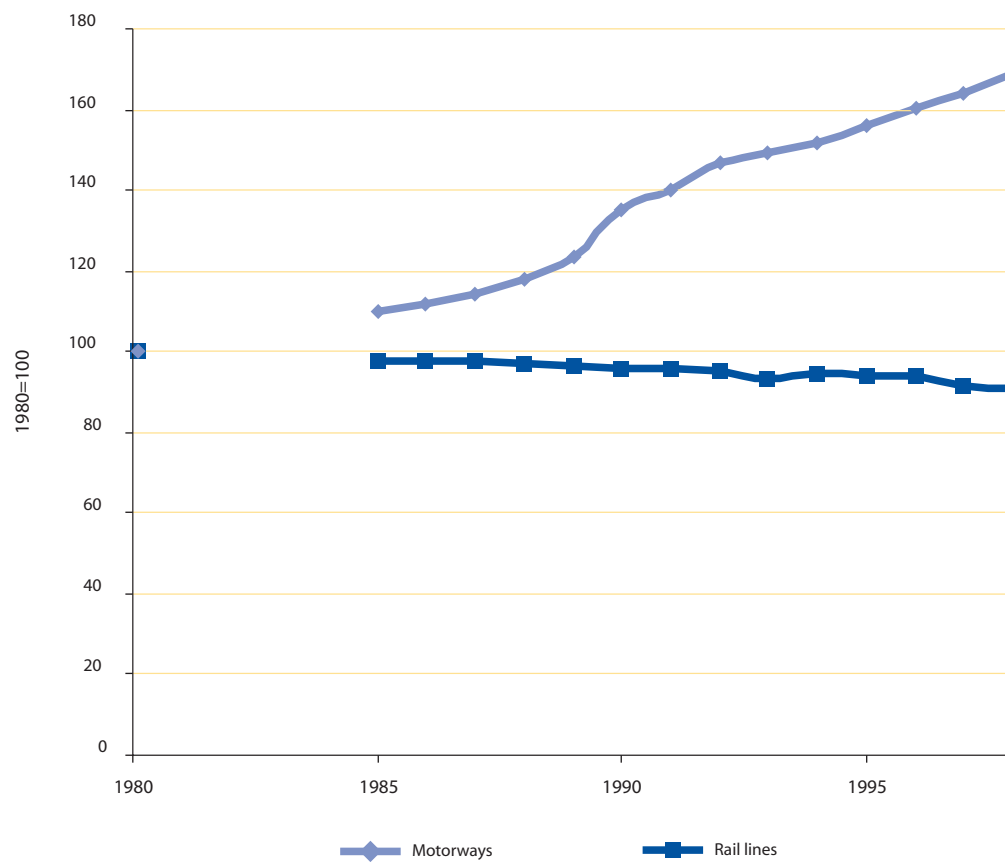
WHITE **PAPER**

European transport policy for 2010:
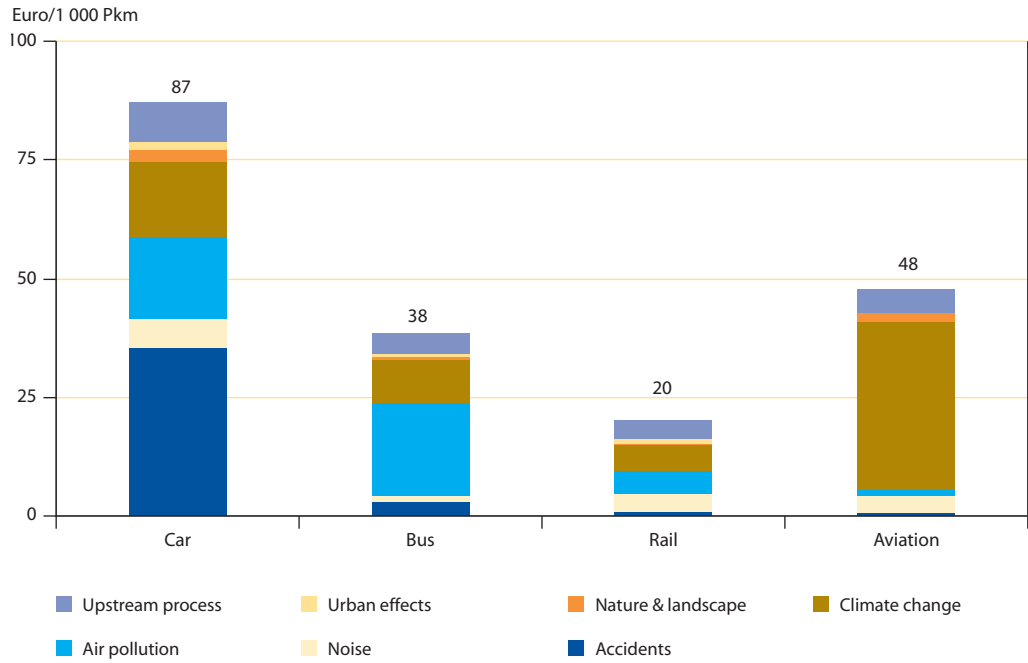time to decide

ANNEX II

INDICATORS AND QUANTITATIVE ILLUSTRATIONS

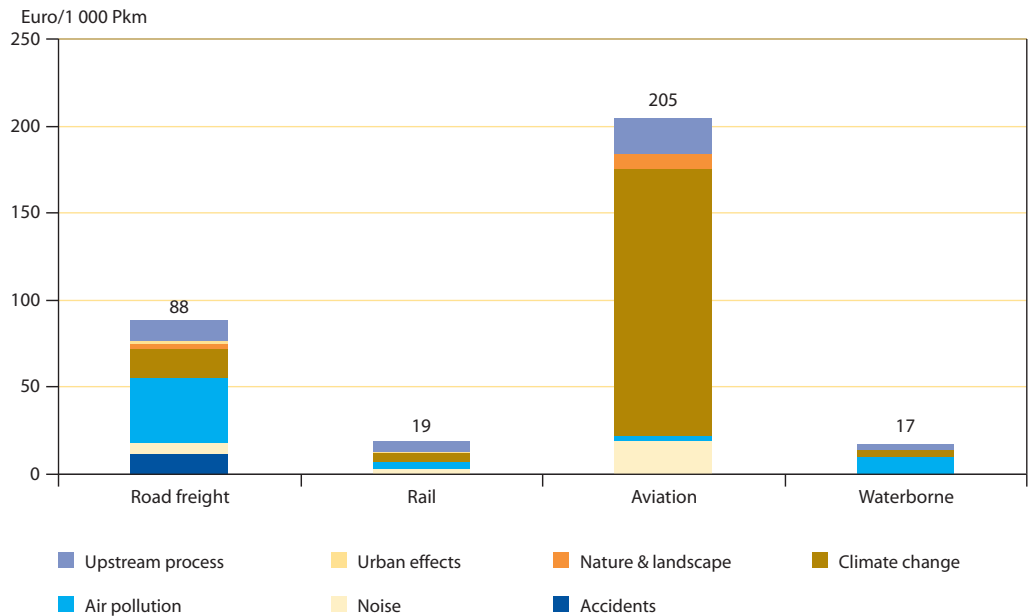**Figure 1: Length of motorways and rail track (EU-15)**

Source: Eurostat, 2001.

Figure 2: Average external costs 1995 (EU-17) by transport mode and type of cost: passenger transport (without congestion costs)

Euro/1 000 Pkm

Legend: Upstream process, Urban effects, Nature & landscape, Climate change, Air pollution, Noise, Accidents

Values: Car 87, Bus 38, Rail 20, Aviation 48

*Source*: Infras, IWW for the IUR, 2000.

Figure 3: Average external costs 1995 (EU-17) by transport mode and type of cost: freight transport (without congestion costs)

Euro/1 000 Pkm

Legend: Upstream process, Urban effects, Nature & landscape, Climate change, Air pollution, Noise, Accidents

Values: Road freight 88, Rail 19, Aviation 205, Waterborne 17
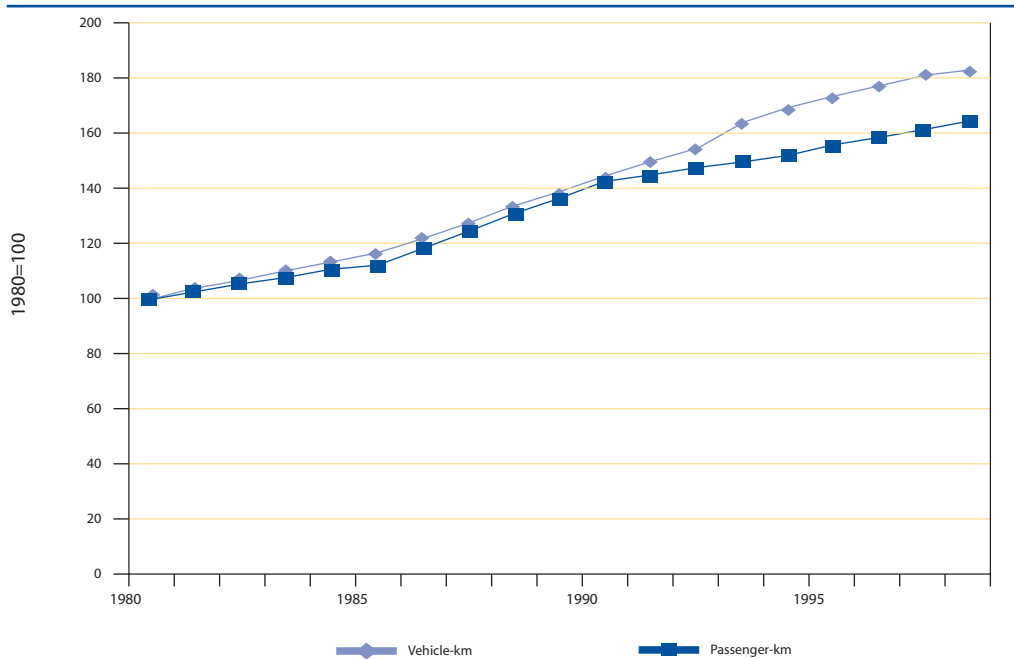
Source: Infras, op. cit., 2000.

Figure 4: Average external costs of congestion, 1995, EUR/1 000 passenger-km and tonne-km
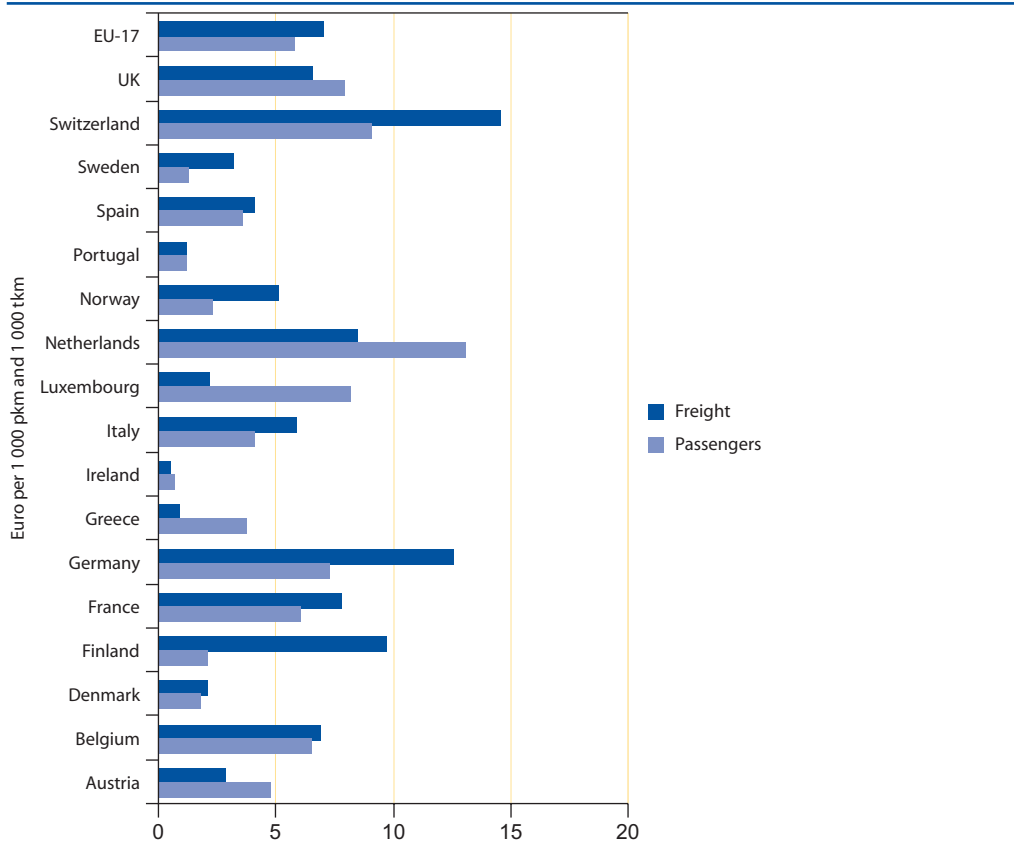
Source: ECMT, 1998; Infras, op. cit., 2000.

Figure 5: Passenger-km and vehicle-km in France, Portugal, Finland and the United Kingdom, 1980–98

Source: Eurostat, 2001.

Tables 1 (summarised) and 3 (in detail) illustrate the results of the approaches.

Table 1: Comparison of options according to their increasing impact between 1998 and 2010

1998=100 EU-15	Passenger Kilometre	Tonne Kilometre	Vehicle Kilometre	CO_2 emissions
Anticipated trend	124	138	126	127
Option A	124	138	115	117
Option B	124	138	115	115
Option C	124	138	112	110
GDP	143	143	143	143

Table 2 is a rough attempt to classify the main measures which could be taken to reconcile transport with sustainable development. The programme of measures set out in the White Paper needs to be backed up by cross-sectoral action, that is, in sectors of the economy other than transport, to ensure the success of the options being proposed, particularly option C.

Table 2: A typology of link-breaking

Area of link-breaking	Economic activity	Transport system	Environmental impact
Indicators	GDP (passenger- and tonne-kilometres)	Vehicle-kilometres	Polluting emissions
Link-breaking measures (examples)	• Town planning	• Charging	• Less polluting vehicles and fuels
	• Work organisation (e.g. teleworking)	• Intelligent transport systems	• Speed control
		• Modal transfer	• Energy-efficient engines
	• Industrial production system	• Better rates of vehicle loading and occupancy	
	• Land-use planning		

Source: Fifth Commission research programme — SPRITE: 'SePaRating the Intensity of Transport from Economic growth'.

Explanation:

Passenger kilometre: transport of a passenger over one kilometre

Tonne kilometre: transport of one tonne over one kilometre

Vehicle kilometre: number of kilometres covered by a vehicle

CO_2: estimates of carbon dioxide emissions. These take account, in the anticipated trend and the three options, of the gains in vehicle energy efficiency expected from the voluntary agreement with the automobile industry (ACEA, KAMA, JAMA).

GDP: hypothetical growth of GDP of 3 % per year.

Table 3: Illustration of results of approaches

EU–15	1998			2010 Anticipated trend			2010 — Option A			2010 — Option B			2010 — Option C		
	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO_2	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO_2	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO_2	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO_2	Bn Pkm-Tkm	Bn Vehkm	Mio Tonnes CO_2
Cars	3 776	2 221.2	434.2	4 650	2 735.3	453.4	4 650	2 486.6	412.2	4 650	2 486.6	412.2	4 559	2 438	404.1
Bus–coach	415	24.4	18.7	441	25.9	19.8	441	25.9	19.8	441	23.6	18.0	501	26.8	20.5
Metro–tram	50	0.5	0	53	0.5	0.0	53	0.5	0.0	53	0.5	0.0	61	0.5	0.0
Railway	290	1.5	6.4	327	1.7	7.2	327	1.7	7.2	327	1.5	6.5	400	1.8	8.0
Air transport	241	1.9	59.3	458	3.7	112.7	458	3.7	112.7	458	3.3	102.4	408	3.0	91.2
Total passengers	4 772	2 249.5	518.6	5 929	2 767.1	593.1	5 929	2 518.4	551.9	5 929	2 515.5	539.1	5 929	2 470.1	523.8
Growth 1998–2010				24 %	23 %	14 %	24 %	12 %	6 %	24 %	12 %	4 %	24 %	10 %	1 %
Road	1 255	313.8	271.1	1 882	470.5	406.5	1 882	427.7	369.6	1 882	427.7	369.6	1 736	394.5	340.9
Railway	241	1.3	1.9	272	1.5	2.2	272	1.5	2.2	272	1.4	2.0	333	1.7	2.4
Inland waterways	121	0.3	3.6	138	0.4	4.1	138	0.4	4.1	138	0.4	3.8	167	0.4	4.6
Pipelines	87		1.0	100		1.0	100		1.0	100		1.0	100		1.0
Short sea shipping	1 166	0.3	23.3	1 579	0.4	31.6	1 579	0.4	31.6	1 579	0.4	28.7	1 635	0.4	29.7
Total goods	2 870	315.76	300.9	3 971	472.8	445.4	3 971	430	408.5	3 971	429.8	405.1	3 971	397.0	378.6
Growth over 1998				38 %	50 %	48 %	38 %	36 %	36 %	38 %	36 %	35 %	38 %	26 %	26 %
Total		**2 565.2**	**819.5**		**3 239.9**	**1 038.5**		**2 948.4**	**960.4**		**2 945.3**	**944.2**		**2 867.1**	**902.4**
Growth 1998–2010					26 %	27 %		15 %	17 %		15 %	15 %		12 %	10 %
Growth in GDP 1998–2010					43 %	43 %		43 %	43 %		43 %	43 %		43 %	43 %

Source: For the 1998 data on passenger-km and tonne-km, *EU transport in figures, statistical pocketbook*, European Commission 2000. The data on CO_2 emissions and vehicle-km are estimates produced by the Commission's departments.

PROJECTS SUBMITTED BY THE MEMBER STATES AND THE EUROPEAN PARLIAMENT AND BEING EXAMINED BY THE COMMISSION FOR INCLUSION IN THE LIST OF 'SPECIFIC' PROJECTS ('ESSEN' LIST)

Project			Length (km)	Type	Completion date	Remaining investment (million EUR)
1	IT	Milan–Bologna and Verona–Naples	830	Mixed high-speed line	2007	13 994
3	F	Montpellier–Nîmes	50	Mixed high-speed and freight line	2012	790
15	EU	Galileo	–	European satellite navigation system	2008	3 250
16	E/F	High-capacity Pyrenees crossing	180	Rail freight line	2020	5 000
17	D/A	Stuttgart–Munich–Salzburg–Vienna	713	Mixed high-speed and freight line	2012	9 501
18	D	Vilshofen–Straubing	70	Improving the navigability of the Danube	—	700
19	E/P	Interoperability of the Iberian high-speed rail network	7 800	New and upgraded high-speed lines	—	29 600
20	D/DK	Fehmarn fixed link	50	Rail and road bridge/tunnel	2013	3 650
				Total		**66 485**

ANNEX IV

TECHNOLOGICAL DEVELOPMENTS AND INTELLIGENT TRANSPORT SYSTEMS

Technological innovation provides an excellent opportunity to integrate the transport modes, optimise their performance, make them safer and help make the European transport system compatible with sustainable transport development. The European Union is very actively involved in technological innovation in transport. Its research and development programmes are promoting innovation upstream, while the trans-European networks lend themselves perfectly to large-scale application. The technologies emerging from the information society can make an outstanding contribution here.

(1) Technology development

Over the period 1998–2002 the EU's contribution to national and industrial RTD efforts in the transport field is estimated at around EUR 1.7 billion, in areas as varied as intermodality, energy and the technology of means of transportation, including telematics applications. **Instead of expanding this Community effort, it would in future be better to keep it at a constant level while focusing it more specifically on the objectives of the common transport policy.** The new framework programme of research for 2002–06 will provide the opportunity to put these principles into effect in the field of transport. The Commission's new proposal ([109]) includes among its priority objectives those of perfecting new technologies to back up the development of safe and clean modes of transport and developing the European transport system. In the framework programme proposal, the priority areas of thematic research that are the most promising for supporting the common transport policy set out in the White Paper are:

1. AERONAUTICS AND SPACE

RTD priorities in the aeronautics field will focus, on the one hand, on lessening the environmental impact of engine emissions and noise and improving aircraft safety and, on the other, increasing the capacity and operating safety of the air traffic management system so as to facilitate the achievement of the single European sky initiative.

Regarding space, the development of Galileo is one of the priority research activities and its goal is to help build up the necessary expertise and knowledge in Europe to exploit this emerging technology as effectively as possible.

([109]) COM(2001) 279.

Safer and less polluting aircraft

The aim of research and development in the safety field will be to achieve a fivefold reduction in accident rates in order to compensate for the growth in traffic. Research will focus on the development of technologies which give the crew constant and controllable situation awareness.

As regards the environment, the aim is to compensate for the increase in air traffic by reducing CO_2 emissions by 50 % and NOx by 80 % and by reducing aircraft noise by 10 dB in order to cut the perceived noise level by 50 %. Research will focus on aircraft technology, low-drag aerodynamics and flight operating procedures.

2. SUSTAINABLE DEVELOPMENT AND GLOBAL CHANGE

The research activities proposed within this priority area aim to enhance the scientific and technological capacities Europe needs in order to implement its sustainable development strategy, especially by applying new technologies.

The strategic objectives deal in particular with the reduction of greenhouse gases and pollutant emissions, the security of energy supply and the balanced use of the various transport modes, all of these being priority research themes with a contribution to make to the implementation of the transport policy recommended in the White Paper.

With regard to short and medium-term research activities aiming to reduce greenhouse gases and pollution and ensure a secure energy supply, the proposal is to focus research on action to develop renewable energy sources and on cleaner and more efficient energy use, especially in urban areas, and to develop new transport concepts that are cleaner and more energy efficient.

Clean urban transport

Rationalising conventional private car use in town centres and promoting clean urban transport are also priority objectives, as are the efforts being made towards using hydrogen as the fuel for tomorrow's vehicles. Projects envisaged include supporting demand management measures, integrating urban transport services and promoting the marketing of low-polluting or non-polluting vehicles. The development of a new generation of hybrid electric cars (electric motor combined with a heat engine) and cars which run on natural gas or, in the longer term, hydrogen fuel cells, looks very promising. With regard to short and medium-term research activities aimed at making transport modes sustainable, the proposal is to focus research on cleaner and safer road and sea transport, the integration of intelligent transport systems for efficient infrastructure management, railway interoperability and the development of intermodality for passengers and freight.

Railway interoperability

Research and development must help with the design and introduction of a framework guaranteeing full interoperability between rail infrastructures, vehicles, cabs and crews. It will focus on technologies which will help improve the capacity of means of transport and traffic management systems (longer trains, optimal allocation of slots, maintenance procedures) and introduce more competitive services (operating systems such as freight tracking, crew training). The long-term research objective is to develop new sources of renewable energy: hydrogen technologies and fuel cells which are intrinsically clean and can be used in transport.

3. ANTICIPATING THE EU'S SCIENTIFIC AND TECHNOLOGICAL NEEDS

Activities in this priority area will consist of specific research or research complementing that in the above-mentioned priority thematic areas in support of policies of EU interest, such as the common transport policy presented in this White Paper.

Monitoring and evaluating the White Paper programme

Harmonised data, forecasting tools and indicators will be used to monitor and evaluate the action programme and the guidelines for transport and the trans-European networks contained in this White Paper.

(2) *e*Europe

The need to provide new services was underlined by the *e*Europe 2002 Action Plan, adopted by the Heads of State or Government at the Feira European Council in June 2000. Specific objectives have been set for 2002 to speed up the development and deployment of intelligent transport systems, for instance:

— 50 % of Europe's major towns and cities ought to be provided with traffic and travel information services;

— 50 % of Europe's major motorways ought to be equipped with systems to manage traffic and to detect accidents and congestion;

— all new vehicles sold in Europe should be equipped with more effective active safety systems;

— all Europe's mobile citizens should have access to location determination of emergency calls on the 112 number, with multilingual assistance and a full range of emergency services;

— legislative initiatives should be taken to promote the single European sky, mobile communications for trains, maritime information and control systems, and Galileo.

The *e*Europe action plan provides a framework for efforts to research, develop and deploy intelligent transport systems. The role of the action plan, which is to be implemented by the Member States and industry, is to facilitate the deployment of new solutions and to speed up their development. The private sector has a key role in the development of intelligent transport services. In implementing the *e*Europe initiatives, Member States should ensure that obstacles to the development of private services are removed.

(3) Deployment of intelligent transport systems

The potential impact of intelligent transport systems has been assessed both during research and in the early stages of deployment. Journey time reductions of up to 20 % and increases in network capacity of 5–10 % have often been achieved in various combinations. Safety improvements have often been estimated at around 10–15 % for certain specific types of accident (rear-end collisions) thanks to coordinated information and control strategies, while survival rates have also increased thanks to automatic incident detection systems for the management of emergency situations. Only 6 % of road accidents appear to be unavoidable and beyond the reach of improved technology. Lastly, integrated strategies for pollution control and traffic limitation have led to initial estimates of reductions in ground-level emissions. Intelligent transport's most significant impact is probably on road transport, though it helps make other modes safer and more efficient, too.

The trans-European transport network is an ideal candidate for the deployment of intelligent transport. It is not limited to large traditional infrastructure such as roads and motorways, railways, ports and airports, but also includes the traffic management systems and information, positioning and navigation systems and services which make it possible to operate such infrastructure to best effect. Galileo ([110]), which the Commission is considering for inclusion on the list of specific projects ('Essen' list), is an example here of a project acting as a catalyst for the development of intelligent transport. In 1998–99, some EUR 100 million, i.e. over 10 % of the TEN budget, was allotted to traffic management systems ([111]). The financial support provided through the multiannual indicative programme for 2001–06 for the trans-European network has been increased to the unprecedented level of around EUR 800 million.

Such co-financing should focus on projects which encourage large-scale, coordinated deployment, stimulating the synchronisation of investment, which is particularly critical for this type of project in view of the multitude of players involved. Without such coordination a veritable mosaic of fragmentary services on a regional or national scale might emerge, compromising continuity of service beyond the geographical frontiers of States and the organisational frontiers of operators. For users, this would ultimately be a major new obstacle to the smooth working of the internal market.

The private sector has a key role to play in the launching of new services: from this point of view, the Commission strongly recommends the development of a legal and commercial framework for the participation of the private sector and for partnerships between public and private operators in order to facilitate the development of value-added services for traffic information and travel.

Apart from the Galileo programme described earlier in this White Paper, the main projects already under way or due to be launched are:

1. LARGE-SCALE DEPLOYMENT OF INTELLIGENT ROAD TRANSPORT SYSTEMS

Six Euro-regional initiatives involving the main players in traffic management in Europe have been receiving EU financial support since 1996; these initiatives are already accompanying the deployment phase in 14 Member

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([110]) European project for a satellite positioning system for civilian use.
([111]) Plus subsidies of around EUR 45 million for rail traffic management projects, which are not included.

States and are placing particular emphasis on the needs of European users. It is essential that the trans-European network be equipped with telematic infrastructure/systems for data collection and with traffic control and/or road information centres in order to guarantee the quality and reliability of information (e.g. journey times), just as cooperation between managers is indispensable if users are to be offered an uninterrupted high-quality service, whether for local or regional journeys, mass departures during the holiday season or at weekends, or medium or long-distance heavy goods traffic. On this basis, traffic management plans, information services provided before or during journeys, freight management services, breakdown and emergency rescue services and electronic road-charging systems need to be introduced as a matter of priority and their take-off should help greatly to alleviate the effects of road network saturation.

A European network of traffic management and road information centres

Work is under way to set up a European network of traffic management and road information centres by 2003; this network, which should cover the whole of the EU, will provide users with traffic management and road information services on a fully European scale. The network is central to the European programme for funding deployment (around EUR 200 million between 2001 and 2006), which will mobilise around EUR 1.2 billion of investment of European interest and generate complementary projects at the local, regional, national, cross-border and European levels. Electronic road-charging systems and any other automatic fee-collection systems appear particularly useful for restoring balanced prices. The fact that they are now being deployed or are planned in several countries, though not necessarily on a technically interoperable basis as yet, shows how useful it would be for Europe to introduce standards. An interoperability directive needs to be accompanied by Community aid for the deployment of such systems.

2. THE EUROPEAN RAIL TRAFFIC MANAGEMENT SYSTEM ([112])

This system, developed since the start of the 1990s with constant Community support through the framework research programmes, represents an unprecedented leap forward. The project is completing its tests and certification procedures and has now reached the stage of pilot testing on the trans-European network.

The main function of this automated system is to monitor and ensure a minimum distance between trains. It will allow a train to run on all European lines with only a single command-control system on board, while at present more than 11 different systems are in service in Europe.

While several countries are already beginning the operational deployment phase, in the years ahead it will be necessary gradually to equip the main lines with this system. The actual traffic management and operational assistance applications on which the development of freight transport by rail will rely are still in the development stage and may receive aid under the research framework programme. This system will be all the cheaper to deploy for the fact that the directive on the interoperability of the high-speed rail system requires common specifications to be used for this type of system in the construction of all new lines ([113]).

3. AIR TRAFFIC

Operating and pre-operating tests, especially in the North Atlantic and the Mediterranean sectors, have shown the potential for improving safety by means of more precise positioning information and better communications. The use of data transmission links also enables airlines and other operators to obtain operating data from aircraft during flights. Such systems will facilitate the adoption of 'free flight' solutions by enabling certain air traffic management functions to be carried out from the cockpit. Airport operations require greater integration and management of information so that the different controllers involved in the various flight phases can exchange data and plan their operations and aircraft movements. Such management and planning systems, along with advanced guidance/command systems for ground movements in airports, will increase the airports' capacity, especially during bad weather, while relieving the pressure on air traffic controllers.

Proper use of new technology is essential for increasing the available airspace (reapportioning civil and military use) and allowing genuinely European management (sector and route planning). In the past, decisions to invest in intelligent systems have often been taken on the basis of national industrial interests, resulting in limited technical and operational compatibility between the different centres and restricted interoperability. This lack of

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([112]) ERTMS.

([113]) Any request for funding of high-speed lines from the trans-European networks budget needs a guarantee from the national authorities that ERTMS will be installed on those lines.

interoperability has severely impaired efficiency, from the fragmentation of controller training to major operational coordination problems, and has pushed up investment and maintenance costs.

Interoperability is central to the single European sky

Interoperability will become a major criterion in selecting and evaluating projects for trans-European network support. Upstream, the demonstrators produced through the research programme will need to be large-scale.

4. MARITIME TRAFFIC SAFETY

The risk of accidents due to traffic concentration in Europe's main sea lanes is particularly high in bottlenecks such as the Straits of Gibraltar or the Ushant traffic separation scheme.

Traffic monitoring and management by coastal or port authorities is still often handled at a local level, and the information gathered is generally neither used nor passed on to the other centres, authorities or bodies along the ship's route. However, technologies are developing in the maritime sector: automatic vessel identification and monitoring systems, the development of standardised telematic exchange, the availability on the market of black boxes, and so on. These developments suggest a whole range of applications, not only in the areas of safety and pollution control but also for a general improvement in traffic conditions at sea and in ports.

A trans-European network of shipping management and information

The Commission has adopted a legislative proposal for a Community system to monitor and manage traffic information which will make it possible to identify and track ships entering European waters and to promote the systematic exchange of ship and cargo information among the different players in maritime transport (traffic control centres of the different Member States, sea rescue or pollution control bodies, port authorities, etc.).

Setting up a trans-European shipping management and information network such as this should improve the management and supervision of traffic and reduce the administrative burden on ships' captains, while improving the preparedness and response of maritime authorities faced with accidents or pollution risks.